

**The implementation and impact of sensory modulation
in Aotearoa New Zealand adult acute mental health
services: Two organisational case studies**

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ABSTRACT

Background: Sensory modulation is an emerging approach that aims to reduce distress and agitation in mental health service users, and potentially avoid the necessity for coercive practices such as seclusion and restraint. However, there has been limited research exploring the implementation of sensory modulation at an organisational level and the impact on seclusion and restraint use within the New Zealand context.

Design: An exploratory mixed methods case study design was used to investigate the implementation and impact of a sensory modulation programme in two New Zealand inpatient mental health services. This study had three key objectives: (1) Describe the existing practices, norms, beliefs, and policies related to de-escalation and the reduction of seclusion, and the factors that shaped these; (2) Explore how key organisational and staff factors (including policies and practices related to de-escalation and seclusion reduction) influence sensory modulation implementation; and (3) Examine the impact of using a sensory modulation programme within the acute mental health services. Pattern matching and cross-case analyses were used as analytic techniques to examine the findings in relation to theoretical propositions and the research questions.

Findings: Multiple contextual factors influenced the implementation of the sensory modulation programme within the acute mental health services. Strategies found to support implementation were identified at environmental, organisational, group, and individual staff levels. Aspects highlighted as being particularly important included taking an inter-professional approach in leadership and training, rostering flexibility, and leeway in staffing levels to support training attendance and responsiveness to crises. Similarly, the impact of sensory modulation was found to occur at multiple levels of the organisation, but particularly at the level of individual staff and service users.

Conclusion: The complexity of factors that influence the implementation and outcomes of the sensory modulation approach within an inpatient setting make determining the effectiveness of the approach challenging. However, the general principles and strategies identified in this study offer useful insights for the design and implementation of future sensory modulation programmes.

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ATTESTATION OF AUTHORSHIP

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Gilberto Flores Azuela

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Date

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ETHICS APPROVAL

The study has received ethical approval from the Auckland University of Technology Ethics Committee (15/161 – 03 June 2015; 15/161 – 21 June 2016); Southern Health and Disability Ethics Committee (15/STH/84 – 24 June 2015; 15/STH/84/AM01 – 05 May 2016; 15/STH/84/AM02 – 17 June 2016); [REDACTED] District Health Board Ethics Committee (02 June 2015); [REDACTED] District Health Board Ethics Committee (05 August 2015); and Maori Cultural Support Letter from [REDACTED] DHBs ([REDACTED], [REDACTED], [REDACTED], and [REDACTED]) Mental Health, Addiction and Intellectual Disability Service (13 May 2015).

CHAPTER ONE: INTRODUCTION

The purpose of this introductory chapter is to acquaint the reader with the overall focus of the research study. It contextualises the research within New Zealand and international literature, overviews the research design, positions the researcher, and outlines the subsequent chapters.

Service users of acute mental health units experience distress and anxiety when in a state of crisis, which may lead to behaviours perceived by mental health staff as challenging and aggressive (Bowers et al., 2011; Papadopoulos et al., 2012). Coercive interventions such as seclusion and restraint, that restrict the freedom and environmental access of service users, have been common practice to manage these types of behaviour (Standards New Zealand, 2007). The use of seclusion and restraint has an adverse impact on both staff and service users, including traumatic responses and reduced trust and confidence in both staff and service users; as well as reduced opportunities for service users to develop personal strategies for managing distress constructively (Bonner, Lowe, Rawcliffe, & Wellman, 2002). In New Zealand, a non-coercive, person-centred approach towards managing challenging and aggressive behaviour has become the expected standard for practice (Ministry of Health [MOH], 2011). However, despite this expectation, seclusion use increased by nearly three times from 2006 to 2012 (MOH, 2012b). The total number of people secluded increased by two percent from 2014 to 2015 (MOH, 2016b) and steadily increased by six percent from 2015 to 2016 (MOH, 2017). Therefore, the implementation of effective strategies to reduce the use of seclusion and restraint within inpatient mental health units is a priority. Additional strategies have been identified as necessary for the reduction of seclusion and restraint (American National Association of State Mental Health Programme Directors [NASMHPD], 2006), including the use of alternative methods for de-escalation and managing distress. The most commonly identified alternative strategy for managing distress and associated challenging behaviours is an approach known as sensory modulation (NASMHPD, 2006).

Acute mental health services in New Zealand have used sensory modulation widely (Sutton & Nicholson, 2011; Te Pou o te Whakaaro Nui [Te Pou], 2017a, 2017b);

however, there is considerable variation in the implementation of this approach and limited empirical evidence of its impact on seclusion and restraint use. Therefore, this study set out to investigate the impact of sensory modulation in two adult acute mental health services, together with the factors influencing the implementation process. A mixed-method organisational case study of each unit was developed with the aim of answering the following research questions:

1. What are the existing practices, norms, beliefs, and policies related to de-escalation and the reduction of seclusion and restraint, and what factors have shaped these practices?
2. How do organisational and staff factors, including policies and practices related to de-escalation and seclusion and restraint reduction, influence sensory modulation implementation?
3. What is the impact of using a sensory modulation programme within acute mental health services?

1.1. **Sensory Modulation**

Sensory modulation offers individualised, practical strategies to service users to calm physiological and emotional arousal before and during the state of distress and involves a variety of techniques. Examples of these techniques are:

1. Weighted items (soft toy and blankets) to increase the sense of touch or deep pressure;
2. A dedicated sensory room for exploration of individualised visual, auditory, olfactory, proprioceptive, and vestibular sensory input; and
3. Individualised sensory programmes to suit the needs of service users for optimum day-to-day well-being (Champagne & Sayer, 2003; Champagne & Stromberg, 2004).

The approach provides de-escalation methods that may prevent the need for seclusion and restraint (MOH, 2011; Sutton & Nicholson, 2011). Sensory modulation is an emerging practice within New Zealand mental health inpatient services, with a report indicating that it supports service users to experience calmer states (Sutton & Nicholson, 2011). However, there is limited research evidence exploring the implementation of sensory modulation and the impact on seclusion and restraint use within the New Zealand context.

1.2. **Seclusion and Restraint Reduction**

Restraint is “the use of physical, mechanical, and environmental intervention by the service provider that intentionally removes the general right to freedom” for service users (Standards New Zealand, 2007, p. 28). Seclusion is a particular type of restraint. This control of service users is applied by placing them in a room or area of the mental health facility from which they cannot freely exit (Standards New Zealand, 2007). The view that coercive practices are harmful and should be reduced or eliminated has emerged both nationally and internationally. The NASMHPD (2006) has advocated six core strategies that can be used to reduce restraint and seclusion within inpatient units. These strategies include the following:

- (1) Leadership for organisational change
- (2) Using data to inform practice
- (3) Developing tools to assist clinicians
- (4) Workforce development
- (5) Service user role in inpatient settings
- (6) De-briefing rigorously

The sensory modulation approach fits under the third strategy, as a tool to assist clinicians in facilitating seclusion and restraint reduction. Sensory modulation strategies denote a range of prevention tools, which are advantageous for both mental health service users and staff. Studies suggest multiple factors influence sensory modulation implementation and outcomes including: organisational culture, policies, procedures, readiness for change (Wale, Belkin, & Moon, 2001), developing relevant policies, leadership, consumer involvement, staff training (Sutton & Nicholson, 2011), and environmental modifications (Borckardt et al., 2011).

1.3. **New Zealand Health Delivery and Policy Context**

The New Zealand Ministry of Health (MOH, 2011) manages the delivery of health and disability services in New Zealand. Designated professionals manage the healthcare system with an overall goal of good health for New Zealanders. A Minister and Associate Ministers of Health are responsible for developing policy and providing leadership to the health and disability sector. At a local level, the District Health Boards (DHBs) have responsibility for planning, managing, and purchasing health services in their respective districts. New Zealand has 20 DHBs and each has an individualised organisational

structure. DHBs have responsibility to ensure effective and efficient health services for communities, including inpatient mental health services.

People accessing acute inpatient mental health services are often committed under New Zealand's Mental Health (Compulsory Assessment and Treatment) Act 1992, commonly known as the Mental Health Act. This Act requires people with mental health challenges to undergo assessment, voluntarily or involuntarily, which may result in compulsory treatment. A compulsory treatment order is a court order requiring a person with a mental health problem to undergo treatment for up to six months either in an inpatient hospital unit or with support from a community mental health team.

New Zealand inpatient hospital units still permit the use of coercive practices in managing service users' distress and aggression. Although the exact extent of seclusion use is unknown, national statistics indicate that the practice has been widely employed in all DHB mental health facilities (MOH, 2011, 2012b, 2016b, 2017; Shalev, 2017). The use of seclusion or solitary confinement over an extended period is viewed a breach of human rights and regarded as a form of torture (New Zealand Crimes of Torture Act, 1989; Shalev, 2017). While there is an expectation that all coercive practices should be reduced within New Zealand inpatient services, there has been a particular focus on eliminating seclusion use as a first step (MOH, 2011; Te Pou, 2008).

1.4. Positioning the Author as the Researcher

I am passionate about the use of sensory approaches in occupational therapy practice. From my past and present work experience as an occupational therapist, I have observed the positive impact of using sensory strategies. My view is that sensory approaches are practical, humanistic, and natural in that they deal with the organic needs of the human body. Since the beginning of my professional practice, I have been using sensory strategies to assist individuals such as children and young people to manage their sensory needs. As I gained expertise in using the approach, I have worked with, and influenced, other practitioners in using sensory strategies by providing training and education sessions on sensory modulation. I have led the initiation, development, and implementation of sensory modulation in the Inpatient Rehabilitation and Extended Care Services, for a DHB. My experience has also included facilitating workshops in New Zealand mental health services, lecturing to mental health support students, and providing

in-service presentations and educational sessions to DHB acute inpatient teams of three DHBs. I continued to develop my knowledge of sensory modulation through a Masters degree at Otago Polytechnic School of Occupational Therapy, including the development of a training package on sensory modulation for mental health staff. I published this work in *The Journal of Mental Health Training, Education and Practice* (Azuela & Robertson, 2016). My passion for working with mental health service users and supporting them to achieve their potential, reflects the goals of sensory modulation – that is, to increase self-awareness, and promote self-regulation and skills development and enhancement (Champagne, 2006, 2008). These goals are essential in supporting people to achieve their optimum strengths.

1.5. **Research Design**

In this research, an exploratory mixed-method case study design was used. Two New Zealand DHBs participated in the study. The two DHBs have an overarching directorate that provides mental health services across the local region, including the adult acute mental health units. An acute inpatient mental health unit from each of the two DHBs comprised the study sites. The present case studies focused on the implementation and impact of a sensory modulation programme within the organisations. For strict compliance with ethical research practice, the names of the inpatient units have been anonymised by using the pseudonyms ‘Unit A’ and ‘Unit B’. No personal names are given, to protect the identity of the participants providing data or information. Public presentation of the research findings was also considered to maintain the confidentiality of the two units.

This research had three phases: 1) collection of baseline data about the organisations; 2) observing the implementation of the sensory modulation programme, including training for staff, the introduction of sensory assessment and equipment, and application support; and 3) evaluation of the implementation and impact of the sensory modulation programme.

Survey questionnaires and service data were used to explore the organisational and staff factors influencing programme implementation and the implications of the programme. Semi-structured one-to-one interviews and focus groups were conducted in each unit to gather the perspectives of service users and staff regarding their experience of using

sensory modulation. Quantitative data from staff surveys and seclusion rates were analysed descriptively and qualitative data were analysed thematically to identify patterns within and across the findings from the two units.

1.6. **Structure of the Thesis**

The following chapters provide comprehensive information and critical analysis in relation to the organisational case studies. Chapter Two reviews the New Zealand and international literature on sensory modulation and the implementation of the approach. Included in this chapter is an outline of New Zealand mental health practice and the mental health system, to further clarify the context of the study. Chapter Three focuses on the aims and research methodology, and an account of the development of the organisational case study design.

Chapters Four to Eight present and evaluate the synthesised qualitative and quantitative research findings against the theoretical propositions of the research as part of the case study design. Chapters Four and Five describe the inpatient units—Unit A and Unit B respectively—to provide a clear and in-depth understanding of the context and factors potentially influencing sensory modulation implementation. Chapters Six (Unit A) and Seven (Unit B) describe the implementation and impact of the sensory modulation programme in those units. Collectively, these chapters provide an analysis of the process of implementing the sensory modulation programme, including relevant organisational and staff factors, and the qualitative and quantitative data related to the impact of the programme on the organisation, staff, and service users. Chapter Eight presents a cross-case analysis to compare and contrast the findings from the two units. Chapter Nine provides a critical examination of the research findings, including interpretations, evaluations, and explanations of the data against the research questions and propositions. It also highlights the primary results of the research, implications of the findings, limitations of the study, and recommendations for practice and future research.

The study findings are intended to inform the use of sensory modulation in acute mental health services, highlighting specific facilitators and barriers to implementation and the impact and acceptability of the approach. The findings have the potential to support staff's understanding of service users' needs in crisis and to promote the use of person-focused de-escalation. The study also provides useful information to guide inpatient mental health

services in New Zealand as they attempt to reduce, and eventually eliminate, seclusion use (MOH, 2017a, 2017b).

CHAPTER TWO: LITERATURE REVIEW

This chapter outlines the study context, and synthesises theory and research on sensory modulation and programme implementation in health services. The New Zealand health sector organisational and operations structure is described, including the underlying philosophy of practice and specific practices related to managing service user distress and agitation. Next, an overview of the strategies used to reduce seclusion and restraint in acute mental health settings provides further context for the present study and explains how sensory modulation entered New Zealand mainstream mental health practice. This section is followed by a discussion of sensory modulation theories and principles and a review of models of organisational change and strategies used in sensory modulation programme implementation. The chapter ends with a discussion of the research related to the implementation of sensory modulation in acute mental health settings.

2.1. New Zealand Health System

The Ministry of Health (MOH) manages the delivery of health and disability services in New Zealand, with an overall aim of optimal health for all New Zealanders. The Ministry describes the health system as a matrix of collaborations (MOH, 2011). The organisation is led by a Minister and Associate Ministers of Health who are collectively responsible for developing policy and providing leadership to the health and disability sector. At a local level, the DHBs have responsibility for planning, managing, and purchasing health services in their regions. The 20 DHBs, each with a unique organisational structure, manage services for mental health and addictions, primary care, general medical and surgical care, public health, and aged care. There is an array of frontline health services across New Zealand to meet the population's health and disability needs. These health services include private and community non-government organisations (NGOs) that provide health services, based on funding contracts with DHBs or the MOH. The following review focuses on the New Zealand mental health system, including the underlying philosophy of practice, service transformation, and practices related to acute inpatient care.

2.2. **New Zealand Mental Health Services**

The New Zealand mental health care system emerged in the 19th century, influenced by a colonial heritage of Victorian-era custodial care within largely uncaring institutions (Brunton, 2011). The term ‘lunatic’ was used at that time to describe people with mental illness who were deemed at risk to themselves or others. These people were perceived to be unable to look after themselves and typically had no one else equipped to look after them, including their own families. Initially, they were often confined and secluded in gaols, with no other options except for the overcrowded wards of public hospitals. In the innovation of the era, the Lunatic Ordinance Act of 1846 argued for the establishment of asylums for mentally ill people (Chaplin & Peters, 2003). An asylum was a “self-contained community, with security to keep society out” (Chaplin & Peters, 2003, p. 228). Placing people in asylums was viewed, at that time, as a better option of care in comparison to gaol, with a minimum of physical restraint (Brunton, 2011). The first Mental Health Act (known as the Mental Defectives Act) was developed in 1911 and allowed involuntary admission to mental hospitals (Brunton, 2011). The 1911 Act confirmed the existing model of institutionalised care and renamed the ‘lunatic’ asylums ‘psychiatric hospitals’. In 1928, the Mental Defectives Act was amended, as the asylum model was discredited. Mental hospitals acquired therapeutic philosophy, providing specialist care from trained professionals such as psychiatrists and nurses. The ‘villa system’ was introduced, consisting of a “hospital design based on a group of small detached buildings rather than a single large and forbidding structure” (Brunton, 2011, p. 3).

The 1928 legislation remained in place until 1969, when the Mental Health Act 1969 was enacted (Joseph & Kearns, 1996). The Mental Health Act 1969 focused more on monitoring of standards of care in psychiatric hospitals rather than community care, and the rate of institutionalised residents grew continuously during the 1970s and 1980s. In the 1980s, community care initiatives had emerged in several regional hospitals’ board settings. However, the rural psychiatric institutions continued to house large numbers of people, consuming an overwhelming proportion of the mental health care budget (Joseph & Kearns, 1996). This situation triggered an urgency to address the lack of focus on supporting people with mental illness in the community, seen as an apparent flaw of the 1969 Act (Mental Health Foundation of New Zealand, 1986). In the 1960s, acute mental health services began being established in general hospitals, and there was a movement

to shift from the custodial model to a medical model, with increasing availability of neuroleptic medication. These acute mental health service structures have remained in hospital sites around the country, and many have become dilapidated. Only recently, these sites were redesigned to be less institutional and more therapeutically focused. From the early 1960s to the mid-90s, a comprehensive and profound deinstitutionalisation process had emerged in the New Zealand mental health system and changed system processes to cope with the changing needs of people who experience mental health problems (Kelsey, 1997). The Mental Health Act (Compulsory and Assessment) Act 1992 was introduced. The concepts of empowerment and community-based care represented a paradigm shift from previously institutionalised mental health care in New Zealand (Joseph & Kearns, 1996; Kearns & Joseph, 2000). Rural psychiatric hospitals were closed and service users were moved to urban-centred communities (Joseph & Kearns, 1996). This shift in mental health care has been a highly complex and comprehensive transformation in New Zealand's mental health care service provision.

2.3. Acute Inpatient Mental Health Services in New Zealand

Since the closure of the large rural psychiatric institutions of the country, there has been increasing demand from acutely mentally unwell service users for the limited number of beds in the acute mental health inpatient units (Mental Health Commission, 2002). Reports highlight that there are long waiting lists for beds in mental health facilities (Wright, 2016). Most people admitted to inpatient services have been assessed under the Mental Health Act 1992 and are placed under compulsory treatment orders for up to six months (MOH, 2012a). There are two types of compulsory treatment order: (1) section 29 is for treatment in the community; and (2) section 30 is for treatment in an inpatient unit. In 2015, 9,904 people were committed under the Mental Health Act (MOH, 2016b); 86 percent of these people received compulsory treatment in the community and 14 percent in an inpatient unit.

The focus of service delivery within acute inpatient care in New Zealand is mental health assessment and stabilisation (MOH, 2011). The leading health professionals providing care to service users in acute services are mental health nurses. They aim to build a trusting therapeutic relationship and deliver crisis management care through assessment, stabilisation of psychiatric symptoms, and discharge planning (Fourie, McDonald, Connor, & Barlett, 2005). However, nurses are placed under pressure because of demands

for available beds and the high acuity of service users (MOH, 2016a). This situation has led nurses to spend less time face-to-face with service users due to having to attend to essential tasks such as managing the environment and staff, and completing growing amounts of paperwork and administrative duties (Whittington & McLaughlin, 2000). As a result, service users have experienced depersonalised treatment (O'Hagan, 2006). Consequently, this has diluted the trusting therapeutic relationship between service users and nurses (Jackson & Stevenson, 2000); suggesting that 'containment' has become a priority rather than therapy, rehabilitation, and resettlement (O'Hagan, 2006). In contrast, service users and their families expect a better quality of care and have increasing levels of understanding about their diagnosed condition and intervention options (Mental Health Commission, 2012). The power imbalance between medical and service user knowledge has been changing progressively in mental health practice, as service users and their families increasingly participate in decision-making about their care and in service delivery more broadly (Mental Health Commission, 2012; MOH, 2012c; O'Hagan, 2006).

2.4. Current Approaches to Managing Distress

Acute inpatient units are intended to provide a safe and therapeutic environment for people with acute mental health problems. However, service users may present with challenging behaviours because of their limited capacity to regulate their responses to intense sensations, extreme perceptions, and strong emotions. This capacity for regulation is necessary for managing distress. Behaviours such as aggression or self-harm are perceived by clinicians as challenging to manage and may be attributed purely to service users' personalities or their psychiatric conditions. This oversimplification can detract from gaining an understanding of the individual responses to specific internal and external factors which are usually both amenable and controllable (Anderson & Bushman, 2002). Aggression is multifaceted and can be understood within the General Aggression Model (GAM) as a response to multiple factors, namely the person, situation, and internal states (Anderson & Bushman, 2002). Some of the most significant factors in aggression are not psychiatric symptoms but situational factors, including institutional restrictions, the custodial attitudes and practices of staff, and service user feelings of being unheard, trapped, and powerless. Staff may perceive particular behaviours as challenging, but for people using services they are often ways of coping or the result of extreme distress in complex situations (Bowers et al., 2011; Papadopoulos et al., 2012).

Methods used to manage aggression and violence within mental health services differ in the extent to which they are considered to be intrusive or coercive (Duff, Redhead, Paxton, Icton, & Rochester, 2006). At the less intrusive end of the continuum, mental health staff are trained to use de-escalation techniques, including autonomy-confirming interventions, facilitating expression of emotion, offering alternatives to aggression, limit-setting, and authoritative interventions (Gaskin, Elsom, & Happell, 2007). These techniques are considered on a continuum between supporting autonomy and the setting of clear limits and boundaries. However, there may be no clear process for deciding which de-escalation technique should be used (Price & Baker, 2012). The process of choosing a de-escalation technique is commonly based on staff's instinctive and intuitive thinking during challenging situations with service users. This process requires staff flexibility, creativity, knowledge of the particular service user, and the ability to balance supporting service user autonomy and taking control of the situation for effective de-escalation (Richmond, Berlin, Fishkind, Zeller, Wilson, Rifai, & Ng, 2012). Strategies such as requiring time-out, forced medication, and seclusion and restraint are examples of the mental health inpatient unit current means of managing violence and aggression, with an emphasis on control by staff.

Restraint is defined as “the use of physical, mechanical, and environmental intervention by the service provider that intentionally removes the general right to freedom” of service users (Standards New Zealand, 2007, p. 28). The actions of service users are controlled using physical force, with the assistance of an object such as safety belt enablers, or by limiting service users' reasonable access to an environment. Restraint is controversial because of the potential risk of traumatic experiences for service users and staff.

Seclusion is a particular type of restraint, applied by placing the service user in a room or area of the mental health facility from which they cannot freely exit (Standards New Zealand, 2007). Seclusion involves containment, isolation and, normally, sensory input reduction. This approach can be distinguished from the practice of time-out, which is used according to an agreed care plan linked to identified behaviours and should not become seclusion to the extent that the person is prevented from exiting the timeout area (Shalev, 2017). Medication is commonly used pro re nata (PRN, or ‘as needed’) to avert an escalation of distress or when service users experience early warning signs that can lead

to challenging behaviour (Te Pou, 2008). If service users refuse medication, they may be forced to take it through an injection administered by staff (Standards New Zealand, 2007). The forced use of heavily sedating medication can be considered a form of chemical restraint.

New Zealand statistics show that seclusion has been widely employed in the 19 DHBs that have mental health facilities (MOH, 2011, 2012b, 2016b, 2017; Shalev, 2017). A report from the Office of the Director of Mental Health (MOH, 2006) indicated that 16.1 percent of service users experienced seclusion in adult mental health units. Six years later, the Office of the Director of Mental Health (MOH, 2012b) reported that the percentage of service users who experienced seclusion had decreased slightly. However, the total number of service users secluded had increased nearly threefold. The total number of people secluded increased by two percent from 2014 to 2015 (MOH, 2016b) and steadily increased by six percent from 2015 to 2016 (MOH, 2017). This anomaly is explained by the fact that the total number of service users has grown exponentially. The report stated that 14% of service users secluded were in adult mental health units. Statistics from forensic and other regional rehabilitation services were not included in the report. The episodes of seclusion continued to increase from 2006 to 2012. In the 2012 report, most episodes of seclusion lasted for less than 24 hours, which were similar to 2006 data when isolation time varied from under one hour up to 24 hours. These data provide evidence that, at least as recently as 2012, seclusion was still used widely in New Zealand mental health services. The Ombudsman's investigative report on inpatient mental health services found a lack of clarity in how and when seclusion should be used (Johnston, 2016a, 2016b, 2016c, 2016d; Smalley, 2016). However, it has been made clear that the use of seclusion or solitary confinement over an extended period of time is viewed as a breach of human rights and regarded as a form of torture (El-Badri & Mellsoy, 2008; Mayers, Keet, Winkler, & Flisher, 2010; New Zealand Crimes of Torture Act, 1989; Shalev, 2017).

There are many concerns raised in regard to seclusion use. The practice can foster negative feelings for people receiving mental health care, such as distress, anxiety, neglect, anger, fear, loneliness, humiliation, insecurity, powerlessness, or a sense of mistreatment and punishment (El-Badri & Mellsoy, 2008; Kontio et al., 2012; Roberts, Crompton, Milligan, & Groves, 2009). Being in seclusion decreases sensory stimulation

and may increase service users' symptoms, including psychosis and delusional thoughts, exacerbating the emotional impact of those symptoms (Simon & Tardiff, 2008). Service users have described seclusion as traumatic and as re-traumatising for people with histories of childhood physical and sexual abuse (Hammer, Springer, Beck, Menditto, & Coleman, 2011). The Royal College of Psychiatrists has recommended that it should not be used with suicidal or self-harming service users (Duff et al., 2006). Seclusion is seen to have no therapeutic value, resulting in negative consequences for both service users and staff (Department of Internal Affairs, 2007; Mental Health Commission, 2004). It results in reduced trust and confidence for both staff and service users, as well as reduced opportunities for service users to develop their own strategies for managing distress constructively (Bonner et al., 2002).

2.5. Reducing Seclusion and Restraint in Mental Health Services

The view that coercive practices are harmful and should be reduced or eliminated has emerged in the last 20 years both nationally and internationally. As mentioned in Chapter 1, the NASMHPD (2006) has advocated six core strategies for the reduction of restraint and seclusion use within inpatient units. These strategies are also relevant to sensory modulation implementation as described in the following.

1. Leadership for organisational change

In any organisation, leadership is essential to achieve an intended outcome. Effective leaders hold the vision of the desired change, act as role models, and drive the change process. This includes prioritising and supporting the application of alternative de-escalation strategies in practice, such as sensory modulation.

2. Using data to inform practice

Organisational data can be used to inform practice, which includes analysis and monitoring of key indicators (e.g. rates of seclusion and restraint, use of alternatives). These data can highlight what is working and confirm progress towards service improvement goals, including the application of sensory modulation.

3. Developing tools to assist clinicians

The use of seclusion and restraint reduction tools includes the application of assessment tools to identify risk factors for violence, death or injury, universal assessment of psychological trauma, and attention to institutional and environmental issues that can

trigger conflict. This strategy also includes the development of sensory modulation as an approach to managing distress and helping in de-escalation.

4. Workforce development

The workforce development goal is to create a treatment environment where policy, procedures, and practices are grounded in and directed by a thorough understanding of the effects of trauma and violence. This strategy relates to the training and mentoring of staff to work in a trauma-informed and non-coercive manner when supporting distressed service users and dealing with violent behaviour. This includes training in the use of sensory modulation.

5. Service user roles in the inpatient setting

The inclusion of affected service users during the seclusion and restraint review meeting is important. This inclusion ensures the service users' experiences of seclusion and restraint and alternative strategies, such as sensory modulation, are heard. Additionally, the involvement of service user representatives in broader service review, planning, and delivery is important, including consumer advisor and peer support roles.

6. De-briefing rigorously

Debriefing involves the rigorous analysis of seclusion and restraint events and the use of this knowledge to inform policy, procedures, and practices to avoid repeated coercion. Both staff and service users should be provided with the opportunity to debrief and learn from seclusion and restraint events. Debriefing can also involve reviewing the use of sensory modulation strategies and how these might be applied more successfully to avoid future coercion.

Increasing efforts to reduce seclusion and restraint use in New Zealand inpatient mental health services have been evident over the last decade (Te Pou, 2008). Te Pou, the National Centre for Mental Health Research and Workforce Development, has promoted the implementation of the six core strategies, including sensory modulation, in acute mental health services (Te Pou, 2008). Consequently, DHBs have introduced self-directed competency programmes that involve written and verbal self-directed learning opportunities as parts of the NASMHPD package, along with other seclusion reduction best practices. DHBs have attempted to increase nursing staff's understanding of policy and procedure related to seclusion use and its impact on service users (O'Hagan, Divis & Long, 2008; Te Pou, 2008). However, the methods for and results of implementing the

six core strategies across DHBs have varied considerably. There is a need to explore the implementation and impact of the strategies, including sensory modulation.

2.6. Sensory Modulation

This section defines sensory modulation and explains how it relates to managing distress in mental health practice. An overview of sensory modulation theory and principles is presented, followed by a discussion of the application of sensory modulation intervention. Finally, a summary of evidence and gaps in the sensory modulation implementation research are identified.

2.6.1. An overview of general theories and principles.

Miller, Reisman, McIntosh, and Simon (2001) defined sensory modulation as:

The capacity to regulate and organise the degree, intensity, and nature of responses to sensory input in a graded and adaptive manner. This capability allows the individual to achieve and maintain an optimal range of performance and to adapt to challenges in daily life. (p. 57)

The term sensory modulation relates to individuals' neurological processes, as well as behavioural strategies, for regulating and managing sensory input (Champagne, 2008). The central nervous system controls and organises sensory input received from the external environment, typically resulting in a behavioural and emotional response that corresponds to environmental demands. In using sensory modulation interventions, the individual's levels of physiological arousal are intentionally affected through the use of sensory tools, sensorimotor activities, and environmental modifications (Champagne, 2008).

Jean Ayres (1968, 1979) was an occupational therapist and neuroscientist who developed the theory and practice of 'sensory integration'. She examined the neurological processes involved when sensory information comes from multiple environmental sources and converges to be integrated into brain structures such as the brain stem and thalamus. Through processing and integrating sensory information, people are typically able to respond and adapt according to environmental demands. This aspect of neurological functioning is critical to learning and development.

Another occupational therapist, Claudia Allen (1982) proposed a hierarchy of six cognitive levels that relate to the information processing demands of life activities and corresponding functional capacities and limitations. Allen viewed information processing as having three dimensions, namely: (1) sensory cues; (2) sensorimotor associations; and (3) motor actions. Allen suggested that sensory information processing begins when individuals' attention is captured and sustained by cues that arise from the environment, including tactile, visual and auditory stimuli, as well as complex symbolic sensory cues arising from the 'inner world', such as subliminal and proprioceptive stimuli. These sensory cues must be interpreted before an individual can perform self-initiated or imitated actions and activities (Allen, 1985).

A further occupational therapist, Winnie Dunn (2001), focused on understanding the sensory nature of daily human experiences. Dunn believed that sensory processing differences among people can be understood at two levels, namely: (1) the neurological threshold for perceiving stimuli, and (2) the behavioural response to those stimuli. The mechanisms of individual sensory processing occur when sensory information is being filtered and inhibited at the neurological threshold, which results in certain behaviours. Different sensory processing patterns can be categorised within four quadrants reflecting sensory processing styles: (1) sensory sensitivity (or low neurological threshold); (2) low registration (or high threshold); (3) sensory avoiding (passive behavioural response); and (4) sensory seeking (active behavioural response) (Dunn, 1997, 2001). Varying patterns in these four quadrants are thought to arise from individual differences in both neurological habituation and sensitisation to stimuli and capacity for self-regulation. For example, an individual may have difficulties in habituating to specific sensory input, such as background noise, which results in sensory overload, leading to maladaptive behaviour such as inattention. People experiencing trauma and mental health issues have been found to have particular difficulties with regulating sensory input and this is thought to affect physiological and emotional arousal (Champagne & Tewfik, 2010; Habib, Labruna, & Newman, 2013; Steele & Steele, 2005; Zelechowski, Sharma, Beserra, Miguel, DeMarco, & Spinazzola, 2013).

2.6.2. Emotional arousal and sensory processing.

To clarify the relevance of sensory modulation in the management of emotional distress, establishing the relationship between emotion and sensory processing is necessary.

Emotion is defined as a “complex feeling of the state with psychic, somatic and behavioural components” that is related to affect and mood (Kaplan & Sadock, 1991, p. 214). This definition is related to Scherer’s (1984) categorisation of affective states such as stress, emotion, mood, and impulses. Though the concepts of ‘affect’ and ‘emotion’ are sometimes used interchangeably, they are different, although there is a link between the two. Affect is “the expression of feelings as observed by others” (Kaplan & Sadock, 1991, p. 214). The mood is “a pervasive and sustained emotion, subjectively experienced and reported by the patient, as well as seen by others” (Kaplan & Sadock, 1991, pp. 214-215). Gross (2007) proposed three core features of emotions, as follows:

- (1) “emotions arise when an individual attends to the situation and sees it as relevant to his or her goals”;
 - (2) “emotions are multifaceted, whole body phenomena that involve loosely-coupled changes in the domains of subjective experience, behaviour, and central and peripheral physiology (Mauss, Levenson, McCarter, Wilhelm, & Gross, 2005)”;
 - (3) “the multisystem changes associated with emotion are rarely obligatory.”
- (p. 4)

These three core features of emotions recognise the precursors of emotional responses as environmental demands or stimuli that influence individuals’ states, both consciously and unconsciously. The responses represent the ‘modal model’ of emotion as people attend to particular situations in a flexible multisystem response, including sensory-perceptual and autonomic nervous system responses (Gross, 2007). Gross’ theory in understanding emotions suggests a connection between emotion regulation and sensory processing.

Another way to understand emotion and its relationship to sensory processing is the view of Kaplan and Sadock (1991) who purported that human emotions are an expressed response to a received stimulus from an external or internal environment. This relationship could be from a variety of situational factors. The process of interpretation occurs both neurologically and physiologically. The degree of response may differ depending on one’s ability to deliver a constructive response, in relation to socio-cultural norms for behaviour. Studies of human development have emphasised the ongoing process of humans responding to both internal and external stimuli received by the human body (Steele & Steele, 2005). Some developmental theories present the notion that humans respond innately to environmental stimuli and through experience learn to self-regulate their responses (Peil, 2014). However, the inability to self-regulate responses can lead to functional problems and failure to reach developmental milestones. Furthermore,

difficulties with regulating and adapting to sensory stimuli may cause issues with the development of social attachments and emotional development (Steele & Steele, 2005).

Understanding ‘polyvagal theory’ helps to illustrate the relationship between developmental and sensory processing issues. In polyvagal theory, Porges (2001) has argued that there is a link between the evolution of the neural regulation of the vagus nerve and humans’ social engagement and flight/fight responses. The vagus nerve formed two branches during evolution. The first is the primitive branch that induces immobilisation of behaviour (the ‘freeze’ response), while the second branch developed for affective experience, emotional expression, and social behaviour. Porges explained that, through the pathway of the vagus nerve, the neural control of the heart is linked to the neural control of the face and head muscles. This mechanism can be relevant to individuals who suffer from anxiety and depression. For an anxious and depressed person, regulating the heart rate, social behaviour, and facial expression can be difficult. Research shows that deep inhalation through the mouth, relaxing the diaphragm and exhaling through the nose stimulates the vagus nerve and activates a parasympathetic or relaxation response. Porges (2004) coined the term ‘neuroception’ to describe the process of neural circuits distinguishing between stimuli to identify whether a situation or person is safe, dangerous, or life-threatening. This process allows an individual to evaluate and respond accordingly to different situations. Damaged neuroception, that is, neuropathology, will result in inaccurate assessments of danger and safety across varying circumstances. This damage can result in maladaptive physiological reactivity, where an individual may express defensive behaviours associated with specific psychiatric disorders. For instance, for people with autism and schizophrenia, areas in the temporal cortex are not activated that would typically activate to inhibit fight, flight, or freeze responses (Porges, 2004). This leads to hyper-reactivity to stimuli and behaviours such as withdrawal from overwhelming situations and difficulties in social engagement. This theory and related research contribute to understanding maladaptive responses to sensory input (Porges, 2009).

2.6.3. The relationship between sensory processing and mental health issues.

Over the past five decades, sensory processing theory has continued to evolve from Jean Ayre’s sensory integration and Claudia Allen’s dimensional information processing,

through to Winnie Dunn's sensory processing quadrants. Miller and colleagues (2001, 2005, 2007) have separated sensory processing issues into three sub-areas of sensory integration dysfunction, namely: (1) sensory discrimination disorder, (2) sensory-based motor disorder, and (3) sensory modulation disorder. Sensory Discrimination Disorder (SDD) refers to the inability to interpret qualities, locations, and similarities and differences of sensory stimuli, affecting motor, learning, or language ability (Miller et al., 2007). Sensory-Based Motor Disorder (SBMD) refers to postural instability or deficits in voluntary movement, including a) postural disorder—deficits resulting in poor postural stability; and b) dyspraxia—"an impaired ability to conceive of, plan, sequence, or execute novel actions" (Miller et al., 2007, p. 138). Whereas, Sensory Modulation Disorder (SMD) refers to a mismatch between the demands of the environment and a person's emotional and attentional responses, with three sub-types:

- a) sensory over-responsivity – characterised by faster and more intense responses to sensory input, causing a person to appear uninhibited, aversive or defensive, and occurring for a longer duration than expected;
- b) sensory under-responsivity – characterised by a lack of response to sensory input, causing a person to seem sluggish, passive, and apathetic; and
- c) sensory seeking – characterised by seeking out an abnormal type or amount of sensory input, causing a person to exhibit extreme behaviours that are disruptive, socially unacceptable, or unsafe (Miller et al., 2007).

A number of studies provide evidence that people with mental health conditions experience sensory processing issues, including issues with the modulation of sensory input. Conditions associated with altered sensory processing include schizophrenia, anxiety disorders, personality disorders, autism spectrum disorder, post-traumatic stress disorder, and psychosis (Champagne, 2003, 2006, 2008, 2011; Cusack, Frueh, Hiers, Keane, & Mueser, 2003; Moses, Reed, Mazelis, & D'Ambrosio, 2003; Mueser, Goodman, Trumbetta, Rosenberg, Osher, Vidaver, et al., 1998; Prescott, 2000; Rosenberg, Mueser, Friedman, Gorman, Drake, Vidaver, et al. 2001). For example, people with autism, schizophrenia, anxiety, and mood disorders are significantly more likely to avoid a high amount of sensory input (Dunn, 1997). People with these conditions generally avoid input because they have sensory sensitivities and become quickly overwhelmed by noise, visual stimuli, and a light touch.

The affective states of inability to identify personal feelings could lead to anxiety (Liss, Mailloux, & Erchull, 2008). There is a clear association between symptoms of anxiety disorder and over-reaction to sensory stimuli (Green & Ben-Sasson, 2010). Research has demonstrated a correlation between anxiety and hypersensitivity, where individuals with sensory sensitivity have shown elevated levels of state and trait anxiety (Gouze, Hopkins, LeBailly, & Lavigne, 2009; Neal, Edelman & Glachan, 2002; Spielberger, Gorsuch, Lushene, Vagg & Jacobs, 1983).

According to Champagne (2008), trauma also affects individuals' sensory experiences, and frequently people accessing inpatient mental health services have significant trauma histories (Le Bel, Champagne, Stromberg, & Coyle, 2010). Trauma can result in hypersensitivity and over-responding to sensory stimuli associated with the traumatic event or with perceived threats in general (De Bellis et al., 1999). For example, children who experience trauma may have their brain development and function affected due to states of hyperarousal, where sensory input may contribute to agitation and reduced ability to adapt to varied situations (Champagne & Tewfik, 2010; De Bellis et al., 1999; Habib et al., 2013; Ito, Teicher, Glod, & Ackerman, 1998; Perry, 1997; Perry & Marcellus, 1997; Schore, 2001; Teicher, 2002).

Overall, there appears to be a strong link between sensory processing difficulties, emotional dysregulation, and mental health conditions. The available evidence gives support to the idea that the emotional regulation in people with mental health issues can be improved through modulating their sensory experiences. The next section presents a general overview of theories and principles of sensory modulation as an intervention approach.

2.7. Sensory Interventions in Mental Health

In early 2000, due to increasing pressure to find ways of managing distress without coercion in acute services in the United States of America, Tina Champagne developed a sensory modulation programme and became a key proponent of sensory modulation in adult mental health. Champagne (2003, 2006, 2008, 2011) described her sensory modulation programme as involving the use of sensory approaches during both assessment and treatment for adolescent and adult populations to help manage distress and achieve their optimum well-being. This description is similar to that of O'Hagan et

al. (2008) who proposed the use of sensory modulation across New Zealand inpatient services. They referred to the approach as an intervention provided by trained clinicians after administering a sensory assessment to identify their preferred sensory strategies to manage distress.

Sensory modulation programmes can be used in a variety of settings, such as inpatient mental health units, school classrooms, and work environments. The sensory modulation programme developed by Champagne (2003, 2006, 2008, 2011) aims to increase individuals' self-awareness and promote self-regulation through skill development and habit stabilisation. Champagne's sensory modulation programme is an adaptation of sensory theories and principles of sensory integration. The programme aids mental health service users to identify personally preferred practical sensory strategies to self-manage crisis or distressing emotions. With this aim, it is imperative for mental health clinicians to explore and use a variety of strategies and techniques to facilitate service users' self-organisation and positive change. This approach should be used collaboratively with service users. In this way, the clinician's level of awareness and understanding of service users' experiences and responses to different stimuli will improve. According to Champagne, the components of a sensory modulation programme include: (1) the therapeutic use of self; (2) therapeutic use of modalities and activities; and (3) environmental modifications. These components will now be discussed in further detail.

2.7.1. Therapeutic use of self.

Studies of therapeutic outcome have shown that, irrespective of the model or approach, one of the strongest predictors of change is the clinician's therapeutic use of self (Hubble, Duncan, & Miller, 1999). According to Hughes (2004), a sensory intervention will be ineffective unless staff consciously employ the therapeutic use of self, and Champagne (2008) argued that the self is the most important sensory modulation tool any practitioner has. This aspect of sensory intervention includes the use of a softly modulated tone of voice, a service user-centred approach, appropriate and respectful body language, and positioning and sincerity (Champagne, 2008). Emphasis is placed on creating safety and establishing trust through the visual, auditory, and tactile cues communicated by practitioners.

One framework used to guide the therapeutic use of self is the ‘attachment-focused’ or PACE (Playfulness, Acceptance, Curiosity, Empathy) model of treatment. This model was developed by Daniel Hughes (2004), a clinical psychologist from the USA, specialising in the treatment of abused and neglected children and youth. The PACE model derives from the theories and research of attachment and inter-subjectivity. The PACE model can also be applied with adults, when a clinician is building a therapeutic alliance in the context of sensory modulation intervention and in providing a safe environment more generally. The key elements are as follows.

1. Playfulness – Staff show interest when interacting and supporting the service user in exploring, testing, and trialling tools in the sensory room. Staff facilitate a non-threatening environment, which is open to possibility and fun.
2. Acceptance – Staff actively communicate with service users without judgment about their experiences or their preferred sensory tools.
3. Curiosity – Staff genuinely attempt to understand the service user’s reactions or responses in a specific crisis. Staff support the service user to be curious in exploring his or her own sensory preferences and needs.
4. Empathy – Staff actively show compassion during times of crisis with service users by providing one-to-one time to talk, active listening, and validating distress. Empathy can also be demonstrated through tone of voice and other visual, tactile, and auditory cues from staff.

These elements provide a useful framework to guide the therapeutic use of self as an integral part of sensory modulation delivery. Another important component of a sensory modulation programme is the application of specific sensory tools and activities.

2.7.2. Therapeutic use of modalities and activities.

The human body contains millions of sensory receptors, which allow the identification of varied stimuli from environmental and internal bodily sources. The different types of sensory receptors can be broadly categorised as tactile, gustatory, olfactory, auditory, visual, vestibular, and proprioceptive (Dunn, 1997, 2001). The effect of sensory receptor stimulation can be ‘calming’ through activation of the parasympathetic nervous system responsible for ‘rest, digest, and bond’ responses, or ‘alerting’, through the activation of the sympathetic or ‘fight, flight, and freeze’ responses (Champagne, 2003). For example, light touch, cold temperature, and unfamiliar stimuli are generally considered ‘alerting’

sensory inputs (Champagne & Kroomar, 2012); while, regular use of a rocking chair activates vestibular receptors, giving the calming effect seen in older adults with dementia (Watson, Wells, & Cox, 1998). Massage provides deep pressure touch/tactile sensory input, and use of a massage chair was found to reduce the arousal associated with anxiety for service users (Heard et al., 2012). Inhaling different scented oils has been shown to both increase alertness and enhance relaxation (Buckle, 2007). Listening to music can be used to treat agitation and anxiety (Lin et al., 2011).

Consideration of individual sensory preferences is essential when using such sensory interventions for therapeutic purposes, as particular stimuli can have different effects across individuals (Champagne, 2008). Therefore, assessment of individual sensitivities and preferences, through exploration of different sensory-based activities and modalities, observation and self-report, is an essential aspect of utilising the sensory modulation approach (Champagne, 2008). With the assistance of trained staff, people can usually quickly identify supportive sensory strategies that are helpful to them when they are feeling distressed. Service users may also be provided with information to support them in understanding their senses, developing the ability to identify sensory-based warning signs and triggers, and using preferred sensory strategies to prevent a crisis (Champagne, 2008).

2.7.3. Environmental modifications.

Traditionally, environmental modification in mental health services has been in the form of the creation of low stimulus environments, often in the use of seclusion rooms. However, more recently multi-sensory rooms have been introduced in many New Zealand inpatient mental health services and community respite care facilities (Sutton & Nicholson, 2011). In practice, staff typically invite service users to use the sensory room, which can be employed as a place to explore different sensory input and for directed one-to-one or group activities, such as relaxation. Therapeutic relationships between staff and service users can be enhanced through the use of the sensory room when service users are in an early state of distress (Sutton, Wilson, Van Kessel & Vanderpyl, 2013). The approach is believed to support self-regulation (Champagne & Stromberg, 2004), and may encourage positive experiences and engagement when service users feel safe, aware, and in control (Linehan, 1993; Moore & Henry, 2002).

Ideally, sensory strategies need to be self-directed rather than staff-directed, and sensory rooms should be open at all times for service users to access, which promotes autonomy (Bluebird, 2005). The use of a sensory room and associated tools can be incorporated into service users' treatment plans, as mutually agreed upon and supported by the clinical team (Sutton & Nicholson, 2011). The staff who help the service user while using a sensory room are responsible for documenting observed therapeutic effects on the service user's medical charts and writing progress notes. The behaviour, mental state, time spent inside a sensory room, and sensory items used are variables to be observed and documented (Sutton & Nicholson, 2011). Staff observation and service user self-report are two outcome measures used to determine the impact of using sensory approaches. A sensory room may facilitate sensation regulation, which leads to a self-controlled response to environmental demands as well as internal states. Using sensory rooms may also assist with seclusion and restraint reduction (Bluebird, 2005; Champagne, 2006). The research evidence related to the implementation and outcomes of sensory modulation use will be reviewed later in this chapter. First, theories of organisational change and strategies used in programme implementation will be reviewed, including implementation in mental health services. In introducing a new programme such as sensory modulation it is relevant to consider implementation theory.

2.8. Intervention Implementation in Mental Health Services

The transformation in the New Zealand mental health system, as described earlier, has played an important role in shaping service delivery and has directly affected both mental health service users and practitioners. Some service users may consider change a threat, and staff may oppose organisational change because of actual or perceived powerlessness, lack of information, and limited participation in the change itself (Handy, 1995; Sarri & Sarru, 1992). However, as the old saying goes, change is inevitable; and is required if a service is to move forward, innovate, or adapt to meet current or imminent organisational needs (Lauer, 1991; Lincoln, 1985; Zimmerman, 1996). In the last decade, there has been increased interest in the development of models and theories to support organisational change, specifically in designing and selecting change implementation strategies. Taking into account the 'Science of Implementation', there are two known comprehensive frameworks informing key models and theories in implementation research, namely: (1) the Conceptual Model of Implementation Research (Proctor et al., 2009), and (2) the Consolidated Framework for Implementation Research (CFIR)

(Damschroder et al., 2009). These two models have guided the implementation of the sensory modulation programme and the analysis of findings in the present study. Details of the sensory modulation programme implementation are presented in Chapter 3, but now the discussion turns to the research and theory related to programme implementation.

2.8.1. Overview of Implementation theory.

There are a broad range of strategies used for implementing new interventions in mental health (Goldner et al., 2011; Herschell, Kolko, Baumann, & Davis, 2010). However, the use of evidence-based implementation is limited in the field (Landsverk, Brown, Rolls Reutz, Palinkas, & Horwitz, 2011). According to Powell et al. (2012), implementation approaches can be characterised by the number of strategies used:

1. *Discrete* – comprised of a single strategy, such as an educational workshop or reminders;
2. *Multifaceted* – combination of two or more discrete actions, such as training plus audit and feedback; and
3. *Blended* – incorporating multiple strategies packaged as a branded implementation intervention.

While various approaches have been used to implement change in mental health settings (Blasé et al., 2005), amongst the types above, the discrete strategy is the most common, despite research showing the use of a multifaceted method to be more effective (Powell, Proctor, & Glass, 2013).

The implementation approach is the ‘how’ of implementation (Powell et al., 2012) and can be classified in a multilevel system ranging from the more substantial organisational level to the individual staff member (Shortell, 2004). The levels of implementation and the corresponding principles for change are:

- (1) Individual refers to knowledge, skills and expertise;
- (2) Group or team refers to cooperation, coordination, and shared knowledge;
- (3) Organisation refers to structure and strategy;
- (4) Large system or environment refers to reimbursement, legal and regulatory policies.

The two frameworks used to guide programme implementation in the present study provide further detail of the types of factors at play and relevant strategies at each of these levels. The ‘Conceptual Model’ (Proctor et al., 2009) identifies strategies to achieve implementation at each level, and differentiates three types of outcome. These include: (a) Implementation outcomes, which focus on aspects of the intervention uptake and application; (b) Service outcomes, which include changes in organisational norms and practices; and (c) Client outcomes, which include individual changes such as symptom reduction, improved functioning and satisfaction with service delivery.

Similarly, the Consolidated Framework for Implementation Research (CFIR) (Damschroder et al., 2009) also suggests that successful implementation necessitates the use of an array of strategies that exert effects at multiple levels of the service context. This model suggests five domains that influence implementation:

- a. *Intervention characteristics* – including the supporting evidence, relative advantage, adaptability, trainability, and complexity of the intervention;
- b. *Outer setting* – includes factors external to the service, such as patient needs and resources, organisational connectedness, peer pressure, external policy, and incentives;
- c. *Inner setting* – includes structural characteristics, networks and communication, culture, climate, and readiness for implementation within the service;
- d. *Characteristics of individuals* – including the knowledge, self-efficacy, stage of change, and identification with the organisation of staff; and
- e. *The process of implementation* – includes the planning, engaging, executing, and evaluation of the intervention.

The following discussion expands on elements of both models to review the levels of implementation and associated key strategies.

2.8.2. Outer setting and organisational factors.

There are a number of outer setting factors, as well as organisational factors, which may influence implementation processes. The outer setting refers to the factors that influence implementing change outside the organisation. This includes patient needs and resources,

organisational connectedness (cosmopolitanism), peer pressure, external policy, and incentives (Damschroder et al., 2009). These factors are briefly discussed next.

2.8.2.1. *Patient needs and resources*

For successful change implementation, the organisation needs to be patient-centred by acknowledging the individual and collective characteristics and needs of its service users (Institute of Medicine, 2001). The Practical, Robust Implementation and Sustainability Model (PRISM) can be used to evaluate an organisation's service user-centred practice (Feldstein & Glasgow, 2008). This model has six elements, namely: (1) patient choices are provided, (2) patient barriers are addressed, (3) transition between programme elements is seamless; (4) complexity and cost are minimised, (5) patients have high satisfaction with the service and degree of access, and (6) patient receives feedback. These elements are all relevant to the implementation of sensory modulation with mental health service users.

2.8.2.2. *Organisational connectedness (cosmopolitanism)*

According to Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou (2004), organisations that support and promote external 'boundary-spanning' roles for their staff are more likely to implement new practices quickly. Boundary spanning involves individual staff developing relationships with external organisations and sharing a vision and practices in order to exchange and build up the social capital of the organisation (Brehm & Rahn, 1997). Networking with other external organisations can contribute to implementing new practices in an organisation.

2.8.2.3. *Peer pressure*

Here, peer refers to "any outside entity with which the organisation feels some degree of affinity or competition at some level within their organisation" (Damschroder et al., 2009, p. 4). Peer pressure works to create change through respectful interaction within and outside organisations (Walston, Kimberly, & Burns, 2001).

2.8.2.4. *External policies and incentives*

External policies and incentives from government or regulatory bodies are contextual factors that shape the conditioning and sustainability of new practices and innovations (Mendel, Meredith, Schoenbaum, Sherbourne, & Wells, 2008). Financial or non-financial

forms of incentive support new behaviours and practices within adopting organisations. These incentives might be embedded in regulatory policies, funding and reimbursement programmes, and rules and policies.

2.8.3. Group or team factors.

The 'inner setting' refers to the factors that influence implementation from within the organisation's team of staff. This includes structural characteristics, networks and communication, culture, climate, and readiness for implementation (Damschroder et al., 2009). To facilitate change, leaders within the organisation need to support involve people across the organisation, share information, and provide learning opportunities (Block, 1993; Collins, Insel, Chockalingam, Daar, & Maddox, 2013; Kates et al., 2011; Senge, 1990; Wheatley, 1992). This requires participatory decision-making processes for the planning and implementation of the change (Bullock, 1983; Carling 1995; Collins et al., 2013; Folger & Konovsky, 1989; Handy, 1995; Kates et al., 2011; Lincoln, 1985).

In organisational change within mental health services, 'strategic transactive planning' is a conventional approach designed to support informed decision-making through dialogue and group interaction (Bryson, 1988; Mintzberg, 1994). Ideally, staff members at every level of the organisation are involved in change planning and respected for their experiential knowledge. Developing partnership and collaboration amongst the team are important strategies for organisational change (Pyke & Lowe, 1996) and promoting high degrees of active participation within the organisation (Block, 1993; Lord, 1994; MacGillivray, 1996).

Readiness for implementation amongst the team is another essential factor in organisational change. Readiness for implementation has three constructs; namely leadership, staff engagement, and knowledge (Damschroder et al., 2009). The commitment, involvement, and accountability of leaders and managers at all levels of the organisation are essential to influence staff engagement and facilitate a successful change process (Klein, Conn, & Sorra, 2001; VanDeusen Lukas et al., 2007). Equally, the availability of resources and access to information about the implementation plan highly contributes to facilitating staff engagement and successful implementation (Edmondson, Bohmer, & Pisana, 2001; Fitzgerald, Wood, & Hawkins, 2002; Greenhalgh et. al., 2004;

Gustafson et. al., 2003; Simpson & Dansereau, 2007; Weiner, Savitz, Bernard, & Pucci, 2004).

To understand change processes within a mental health service, it is also important to examine the social context of the organisation. The social context includes three major constructs: culture, climate, and work attitudes (Aarons & Palinkas, 2007). These aspects of social context create and sustain three shared factors amongst team members, namely expectations, perceptions, and attitudes (Aarons & Palinkas, 2007; Glisson, 2002; Nelson & Steele, 2007; Nelson et al., 2007). These factors play an important role in effective and efficient organisational service delivery and relationships with service users. The three major constructs of the organisational social context affect the adoption and implementation of evidence-based practice and service quality and outcomes (Glisson et al., 2008). These constructs are described below.

Organisational Culture describes the behavioural expectations (outer layer or visible part) and values and assumptions (inner layer or invisible part) reported by members of the organisation (Hofstede, 1998; Rousseau, 1990). According to Aarons et al. (2012), an organisation's culture can be characterised in the following ways:

- *Rigid* – “expectations that clinicians will have little discretion or flexibility in carrying out their jobs, provide limited input into key management decisions, and carefully follow a host of bureaucratic rules and regulations”;
- *Proficient* – “expectations by the clinician will place the well-being of each client first and that clinicians will be competent and have up-to-date knowledge and clinicians are expected to be both skilled and attentive to the needs of individual clients”;
- *Resistant* – “expectations that clinicians will show little interest in change or in new ways of providing service, and that clinicians will suppress any interest in change with criticism and apathy”. (p. 5)

The *Climate* is the impact of the work environment on staff well-being. There are two types of climate. “Psychological” refers to the individual's perceptions; and “organisational” is the aggregated, shared perception of staff regarding the impact of the work environment on staff well-being. Collectively, organisational climate is defined as the employees' perceptions of the psychological impact of the work environment on their

well-being and functioning (James & James, 1989). Aarons et al. (2012) suggested that organisational climate can be characterised in the following ways:

- *Engaged* – “employee perception that they can personally accomplish many worthwhile things, remain personally involved in their work and sustain concern about their clients” ;
 - *Functional* – “employee perception that they receive the cooperation and help they need from coworkers and administrators to do a good job, have opportunities for personal advancement and growth, and have a clear understanding of how they fit in, and can work successfully within the organisation”; and
 - *Stressful* – “employee perception that they are emotionally exhausted from their work, overloaded from their work, and unable to get the necessary things done.”
- (p. 6)

The *Work Attitudes* of staff include their ‘job satisfaction’ and ‘organisational commitment’ (Glisson & Durick, 1988). Job satisfaction refers to the positive appraisal of one’s job or job experiences (Locke, 1976) and is viewed as an employee’s reaction to specific tasks or duties (Mowday, Porter, & Steers, 1982; William & Hazer, 1986). Organisational commitment is about a willingness to exert considerable personal effort on behalf of one’s organisation and a strong desire to remain a member of the organisation, and is viewed as an employee’s attachment to the organisation (Mowday et al., 1982).

Organisational culture, climate, and work attitudes are associated with worker turnover, new programme sustainability, service quality, and service outcomes (Glisson & James, 2002; Klein, Conn, & Sorra, 2001; Klein, Conn, Smith, & Sorra, 2001; Teal, Bergmire, Johnston, & Weiner, 2012). Aarons et al. (2012) suggested that strategies for improving the organisational context of mental health services may contribute to the success of evidence-based practice dissemination and implementation efforts by influencing clinician attitudes. Their case study of an intervention implementation in mental health found that more efficient organisational cultures and more engaged and less stressful organisational climate were associated with positive clinician attitudes towards adopting new evidence-based practices (Aarons et al., 2012).

2.8.4. Individual factors.

Characteristics of individual staff members relevant to implementing practice changes include their knowledge, self-efficacy, stage of change, identification with the organisation, and other personal attributes (Damschroder et al., 2009). Staff ability (knowledge and skills) and willingness (attitude) are linked to competence and confident job performance (Le Deist & Winterton, 2005; Lin, 2007). Therefore, investing in developing necessary skills and knowledge is one of the most critical steps that organisations can take to improve service delivery. The delivery of effective mental health services depends in large part on a skilled workforce of advanced-level practitioners. It is important that staff training be evidence-based and well designed. Providing a workshop or training manual is common in mental health service implementation, and while this strategy facilitates knowledge transition, it has minimal impact on behaviour change (Davis & Davis, 2009; Powell et al., 2013). The provision of multiple learning opportunities and supporting different learning styles have found to be more effective in creating and sustaining practice change (Herschell et al., 2010). The range of learning options might include a treatment manual, multiple days of intensive workshops, access to expert consultation, opportunity for live or taped review of client sessions, supervisor trainings, booster sessions following up previous training, and the completion of one or more training cases (Herschell et al., 2010). It is also essential for training to be dynamic and active to address a wide range of learning styles (Davis & Davis, 2009). Providing an opportunity for staff to practise what have they learned from training encourages learning acquisition (Elnaga, & Imran, 2013). Following completion of training, ongoing supervision, consultation, and feedback (Herschell et al., 2010) are necessary to reinforce effective implementation.

Training evaluation is a procedure to determine whether mental health staff achieve learning outcomes. The Kirkpatrick model is a well-established framework for the evaluation of learning outcomes (Carpenter, Milne, Lombardo, & Dickinson, 2007). This model is widely used for evaluation of training and learning (Kirkpatrick, 2006). The model has four levels of evaluation, namely:

Level 1: Reaction – what participants thought and felt about the training (attitudes);

Level 2: Learning – the resulting increase in knowledge and capability (knowledge);

Level 3: Behaviour – the extent of behaviour and capability improvement and implementation/application (work performance); and

Level 4: Results – the effects on the business or environment resulting from the trainee’s performance (impact on organisation).

In summary, research into factors affecting organisational change processes has resulted in the development of implementation theories and frameworks. The literature highlights the need to consider factors at all levels of the organisation, from external influences to individual staff characteristics. The next section focuses specifically on the literature related to the implementation of sensory modulation intervention within mental health services.

2.9. Sensory Modulation Implementation within Inpatient Services

The search strategy is presented in Table 2.1 summarising the approach in surveying literature on sensory modulation implementation in adult inpatient unit. Eleven keywords (*"sensory modulation" OR "sensory room" OR "sensory approaches" OR "sensory intervention" OR "inpatient unit" OR "mental health" OR "psychiatric unit" OR "seclusion and restraint reduction" OR "managing distress" OR "managing agitation" OR "challenging behaviour"*) were used in ten databases (CINAHL, Cochrane, EBSCO Host, Embase, Google Scholar, Medline, OT Seeker, ProQuest, PsychInfo, PubMed, Scopus). Initial search result was 1600 documents. Search were refined by year of publication (2000 to 2019), English articles only, excluding books, inpatient mental health setting of studies, and implementation focused of study (sensory modulation approaches used and outcomes). After applying the refinement, 38 articles were retained. The full text of these articles was retrieved, reviewed and analysed. A total of 13 articles were excluded because the settings were community (2), not related to implementation of sensory modulation (8), and interventions were related to sensory integration more than sensory modulation (3). The 25 reviewed articles are summarised in Table 2.2 presenting the literature of sensory modulation implementation in acute inpatient unit.

Table 2. 1. Summary of the search strategies used for developing literature survey on sensory modulation

Key words	"sensory modulation" OR "sensory room" OR "sensory approaches" OR "sensory intervention" OR "inpatient unit" OR "mental health" OR "psychiatric unit" OR "seclusion and restraint reduction" OR "managing distress" OR "managing agitation" OR "challenging behaviour"
Databases	CINAHL, Cochrane, EBSCO Host, Embase, Google Scholar, Medline, OT Seeker, ProQuest, PsychInfo, PubMed, Scopus
Results	Total 1600 results – search where refined relevant to the current study ie. year of publication, type of publication (articles not books), English articles only, setting of studies, and implementation focused (sensory modulation approaches used and outcomes)
Charting	Total of 38 articles reviewed (13 were excluded because settings were community, not related to implementation, and interventions were related to sensory integration than sensory modulation)
Analysing	Total of 25 articles retained related to sensory modulation in inpatient unit

Table 2. 2. Summary of sensory modulation literature in acute mental health inpatient units

Author	Location	Design & Method	Intervention	Outcome	Limitation
Andersen et al., (2017)	Denmark	Case control study	Sensory modulation assessment and tools	Physical restraint, forced medication, use of belts decreased significantly	Small sample size both service users and hospital units; service users self-rated distress not reported
Azuela & Robertson (2016)	New Zealand	Quantitative – pre-post design	Sensory modulation training workshop	Statistically significant increase in sensory modulation knowledge post training	Small sample size, tool has only face and content validity – reliability & inter-reliability absent
Barton et al., (2009)	United States of America	Quantitative – pre-post type	Conversion of the seclusion room into a sensory room (context of restraint reduction)	Reduction of restraint achieved without increase in use of anti-psychotic medications or sedative drugs	Measures for service users not included, service users report not included
Bjorkdahl et al., (2016)	Sweden	Cross-sectional descriptive study design	Sensory room	Staff reported positive use of sensory room: hopes and concerns, focusing in patients self-care and the room as a sanctuary	Low staff response rate, questionnaire is not standardised or not tested, results cannot be generalised, seclusion and restraint rates

					and service users self-rated distress were not reported
Chalmers et al., (2012)	Victoria, Australia	Pre-post trial (no control group); Quantitative evaluation post 3-year implementation	Sensory trolley, sensory room, sensory based programme	Service users self-rated distress significant reduction and clinician rated level of arousal post sensory room use and engagement in sensory based programme	Small sample size, no control group, used non-validated and non-standardised tool, no report in seclusion reduction
Champagne & Sayer (2003)	United States of America	Pre-post quality improvement study	Sensory room	Positive effect of sensory room use to service users	Convenience sampling (bias), used a non-standardised tool; seclusion and restraint rates not reported
Champagne & Stromberg (2004)	Massachusetts, United States of America	Literature review - Narrative approach Reflection on experience and literature	Sensory room	54% seclusion and restraint reduction; service users reported reduction of distress – 89% reported improvement; 10% reported same; and 1% reported worse	Narrative approach and results cannot be generalised
Cummings et al., (2010)	New Hampshire, United States of America	Comparative study of two units in same hospital without a sensory room Quantitative – pre-post with no control	Sensory room	No significant change in seclusion rates over a 9-month period; 89% of service users reported a reduction of distress	Specific scores of service users in distress reduction were not reported; no control group, no blinding, sample was small, used non-validated and non-standardised tool
Holland et al., (2015)	New Zealand	Qualitative study	Sensory modulation – kapa (group) haka (dance)	Engaging in kapa haka gain sense of connection and identity, physicality, and embodied emotion	Limited sample size in unique population and not a full representation of kapa haka

Knight et al., (2010)	Massachusetts, United States of America	Quantitative – pre-post type	Sensory modulation equipment selected by service users	Significant improvements noted in Brief Psychiatric Rating Scale (BPRS) pre-post scores both sensory and traditional interventions (1:1 staff contact and quiet time)	Rates of seclusion and restraint and service users dated distress were not measured
Lee et al., (2010)	Melbourne, Australia	Pilot study – Quantitative type	Sensory modulation items and safety plans	Completion of safety plan reduced likelihood of service user seclusion; staff report usefulness of safety plan (somewhat to moderate)	Seclusion rate and service user rated distress are not reported; safety tool used – not standardised tool/validated, sample too small, no randomisation
Lindberg et al., (2019)	Sweden	Qualitative analysis of service users experience	Sensory room	Majority of participants described positive experience using sensory room: enhanced wellbeing, reduced anxiety, increased self-management, and enhanced self-esteem	Retrospective interviews with service users, small sample size, heterogeneity of the service users, semi-structured interview
Lloyd et al., (2014)	South East Queensland, Australia	Observational study – case control/pre-post type; naturalistic convenience sampling	Sensory room and ‘sensory screen’	Substantial reduction in seclusion; service users self-rated distress significant reduction	No blind, no controls, sampling is convenience type where service users were not randomly assigned and were not categorised by conditions
Machingura & Lloyd (2017)	Australia	Reflective method – qualitative and quantitative	Sensory modulation implementation	Implementation factors identified such as reporting and integrated clinical process, staff training and engagement	Limited examination if implementation factors

				and governance.	
Maguire et al., (2012)	Victoria, Australia	Quantitative – pre-post	Sensory rooms, sensory assessments, and safety plans (six core strategies in seclusion reduction)	Reduction of seclusion rates; no change in number of service users secluded	No specific measures for service users rated distress
Meredith et al., (2016)	Australia	Quantitative – pre-post survey	Sensory modulation e-learning training package – custom-designed	Significant improvement in knowledge, perceived confidence, and attitudes post training	Measures is not standardised, absent categorisation of participants
Mullen et al., (2008)	United States of America	Mixed methods – experimental design	5 minutes lying down with 30 pounds (13.6 kg) weighted blanket	Healthy adult group – pulse, blood pressure or blood oxygen saturation did not decrease to unsafe levels; reductions in self-rated anxiety using weighted blanket; no difference in physiological measures of anxiety between weighted and no weighted blanket	Seclusion and restraint and client rated distress were not measured; results cannot be generalised; participants were healthy subjects
Novak et al., (2012)	Inner-city Sydney, Australia	Quantitative – pre-post with no control	Sensory room	No change in seclusion rates; significant reduction of service users self-rated distress and staff rated report on service user anxiousness, irritability, elevation and pacing were	Small sample size, tools were not standardised, no control, co blinding and no randomisation
Sivak (2012)	United States of America	Quantitative – pre-post type	Sensory room	Zero seclusion and restraint rates post implementation ; 8 out of 14 service users self-rated distress lower post sensory	Small sample size, tools were not standardised, no control, co blinding and no randomisation

				room use; 5 out of 14 service users increased distress post sensory room use	
Smith and Jones (2014)	United States of America	Mixed method – pre-post type	Sensory room	Increased in seclusion rates; sensory room was seen positive intervention and positive experience by both staff and service users	Service users self-rated distress not reported; Small sample size, tools were not standardised, no control, co blinding and no randomisation
Sutton & Nicholson (2011)	New Zealand	Qualitative inductive – pilot study	Sensory rooms (six core strategies in seclusion reduction)	Staff and service users both reported sensory approaches optimise arousal and regulate emotions	Retrospective interviews with staff and service users; No randomisation, characteristics of participants not explained, seclusion and restraint not reported, service users self-rated distress not reported
Sutton et al., (2013)	New Zealand	Qualitative inductive – pilot study	Sensory rooms (six core strategies in seclusion reduction)	Staff and service users both reported sensory approaches optimise arousal and regulate emotions	No randomisation, characteristics of participants not explained, seclusion and restraint not reported, service users self-rated distress not reported
Te Pou (2017)	New Zealand	Stocktake – online survey	Sensory modulation implementation	Identified key factors of sensory modulation implementation	Single method, small number size, service users input not included, participants were nominated person (bias)
Van Pomeran (2009)	New Zealand	Narrative – Description of implementation of sensory modulation	Sensory room	Reduction in seclusion	Narrative report and results cannot be generalised; service users self-rated

					distress not reported
Yakov et al., (2018)	United States of America	Quantitative – mode and effect analysis – quality improvement trial	Milieu based sensory management	Restraints and assault rates dropped post implementation : sensory items: light and sound reduction intervention	Does not distinguish the positive result whether from staff culture changes or sensory reduction techniques; service users self-rated distress not reported; impact to staff were not measured

Several studies have utilised sensory modulation as one of multiple strategies to successfully reduce seclusion and restraint (Borckardt et al., 2011; Chalmers, Harrison, Mollison, Molloy & Gray, 2012; Champagne & Stromberg, 2004; Knight, Adkinson, & Kovach, 2010; Lee, Whitecross, Williams, & Hollander, 2010; Machingura & Lloyd, 2017; Sutton et al., 2013; Wale et al., 2011). These studies have typically used naturalistic rather than experimental designs. Most were implemented within inpatient psychiatric settings and were intended to evaluate sensory modulation effectiveness and outcomes, through pre- and post-intervention evaluation. Service users’ self-report was the most common method of evaluating sensory modulation impact. The use of pre- and post-intervention ratings of distress, as well as qualitative feedback, have indicated that sensory interventions help individuals to manage their distress (Cummings, Grandfield, & Coldwell, 2010; Knight et al., 2010; Lee et al., 2010; Sutton et al., 2013; Te Pou, 2017). A small number of studies also indicated positive results related to the reduction of seclusion and restraint following the introduction of sensory modulation (Borckardt et al., 2011; Champagne & Stromberg, 2004; Lee et al., 2010; Wale et al., 2001). However, the number of variables influencing seclusion and restraint use, and the lack of a control group in the studies, makes drawing any firm conclusions about the effectiveness of sensory modulation for reducing coercive practices difficult. Anecdotal evidence suggests that practitioners who have used sensory modulation consider it safe and efficient in supporting service users to manage distress and reduce the need for seclusion and restraint (O’Hagan et al., 2008; Te Pou, 2008). The few qualitative studies completed to date have supported the anecdotal evidence (Sutton & Nicholson, 2011; Te Pou, 2008, 2017).

Studies suggest that multiple factors influence sensory modulation implementation and outcomes. These factors include organisational culture, policies, procedures, and readiness for change (Wale et al, 2001), developing policies, leadership, consumer involvement, and staff training (Sutton & Nicholson, 2011; Te Pou, 2017), and environmental modifications (Borckardt et al., 2011). Some studies have focused specifically on staff training and highlighted this as an important component of sensory modulation implementation, used to embed the approach into mental health practice (Azuela & Robertson, 2016; Machingura & Lloyd, 2017; Martin & Suane, 2012; Meredith, 2016; Scanlan & Novak, 2015; Te Pou, 2017). The complexity of factors that influence sensory modulation implementation within inpatient-settings makes determining the relative impact of different variables challenging. However, the literature suggests that sensory modulation implementation is more likely to be successful when it is supported by the combination of ward leadership, policy, culture and systems to support the new practice.

Overall, the research into the effectiveness of sensory modulation has methodological limitations, small sample sizes, and lack of comparison to other cohorts (Borckardt et al., 2011; Champagne & Stromberg, 2004; Knight et al., 2010; Lee, et al., 2010; Sutton et al., 2013; Wale et al., 2001). Published studies have lacked accurate results on the outcomes of seclusion and restraint rates and service users' measured distress because of the observational nature of the research design (Knight et al., 2010; Lee et al., 2010; Sutton et al., 2013). These identified gaps indicate that the evidence base for sensory modulation is emergent and lacks information regarding complex factors that may influence outcomes or achieve the range of benefits. Research into sensory modulation has been mostly restricted to non-experimental designs in acute inpatient wards. Using experimental designs to evaluate sensory modulation in acute inpatient wards, where it is very difficult to control for influencing variables, is challenging. Therefore study designs that can capture the complexity of the context and the relative impact of the sensory modulation approach are needed. Ideally studies should be prospective and specifically focused on exploring factors affecting implementation and impact in depth. No other studies have done this systematically. Sutton and Nicholson (2011) and Hedlund et al., (2019) only focused on retrospective interviews with staff and service users. Machingura

and Lloyd (2017) examined implementation of sensory modulation but this was a reflection rather than a systematic inquiry.

Despite the promising findings, that sensory modulation can reduce service user distress; there remains significant gaps in understanding related to the contextual facilitators and barriers for successful implementation of sensory modulation programmes within acute mental health services. Additionally, further research could add to current understandings of the broader impact of sensory modulation within acute mental health settings. Therefore, an in-depth organisational investigation was proposed to explore the application of a sensory modulation programme in adult acute inpatient mental health units. It was anticipated that further research into sensory modulation implementation would benefit acute mental health services in New Zealand and beyond in their efforts to support distressed service users and reduce the use of seclusion and restraint.

2.10. **Summary**

The MOH manages the delivery of health and disability services in New Zealand, with an overall aim of optimal health for all New Zealanders. The organisation is led by a Minister and Associate Ministers of Health who are collectively responsible for developing policy and providing leadership to the health and disability sector. At a local level, the DHBs have responsibility for planning, managing, and purchasing health services in their regions. New Zealand has 20 unique DHBs that manage different types of health services.

The New Zealand mental health care system emerged in the 19th century, influenced by a colonial heritage of Victorian-era custodial care within largely uncaring institutions (Brunton, 2011). The first Mental Health Act (known as the Mental Defectives Act) was developed in 1911 and allowed involuntary admission to mental hospitals (Brunton, 2011). In 1928, the Mental Defectives Act was amended, as the asylum model was discredited. Mental hospitals acquired therapeutic philosophy, providing specialist care from trained professionals such as psychiatrists and nurses. The 1928 legislation remained in place until 1969, when the Mental Health Act 1969 was enacted (Joseph & Kearns, 1996). A deinstitutionalisation process had emerged in the New Zealand mental health system from the early 1960s to the mid-90s to cope with the changing needs of

people who experience mental health problems (Kelsey, 1997). The Mental Health Act (Compulsory and Assessment) Act 1992 was introduced.

There was an increasing demand for inpatient beds from acutely unwell service users since the New Zealand large rural psychiatric institutions were closed (Mental Health Commission, 2002). Acute inpatient units are intended to provide a safe and therapeutic environment for people with acute mental health problems. However, service users may present with challenging behaviours because of their limited capacity to regulate their responses to intense sensations, extreme perceptions and strong emotions. Strategies such as requiring time-out, forced medication, and seclusion and restraint are examples of the mental health inpatient unit current means of managing violence and aggression, with an emphasis on control by staff. There were many concerns raised in regard to seclusion use and an increasing effort to reduce seclusion and restraint use in New Zealand inpatient mental health services.

There were six core strategies for the reduction of restraint and seclusion use within inpatient units: (1) Leadership for organisational change; (2) Using data to inform practice; (3) Developing tools to assist clinicians; (4) Workforce development; (5) Service user roles in the inpatient setting; and (6) De-briefing rigorously (NASMHPD, 2006). Under these six core strategies sensory modulation was introduced as a tool to assist clinicians to reduce seclusion and restraint use in New Zealand. The use of sensory modulation can assist clinicians to develop behavioural strategies for service users to regulate and manage sensory input. Sensory modulation programmes include: (1) the therapeutic use of self; (2) therapeutic use of modalities and activities; and (3) environmental modifications. However, there were varied implementations of the six core strategies across DHBs in particular sensory modulation.

The 'Science of Implementation' was taken into account and identified two models in implementation namely, (1) the Conceptual Model of Implementation Research (Proctor et al., 2009), and (2) the CFIR (Damschroder et al., 2009). These two models have guided the implementation of the sensory modulation programme and the analysis of findings in the present study. Implementation and key strategies (Damschroder et al., 2009) were also discussed in this chapter. These strategies were associated from different

levels of the organisation from outer setting or organisational factors, group or team factors, and individual factors.

The current literature suggests sensory modulation can be used to reduce service users' distress and agitation, is an acceptable approach for the majority of service users (Cummings, Grandfield, & Coldwell, 2010; Knight et al., 2010; Lee et al., 2010; Sutton et al., 2013; Te Pou, 2017) and staff that use it, and is a useful strategy in seclusion and restraint reduction (Borckardt et al., 2011; Chalmers, Harrison, Mollison, Molloy & Gray, 2012; Champagne & Stromberg, 2004; Knight, Adkinson, & Kovach, 2010; Lee, Whitecross, Williams, & Hollander, 2010; Machingura & Lloyd, 2017; Sutton et al., 2013; Wale et al., 2011). Prior studies suggest that environmental modifications are a significant factor in seclusion and restraint reduction, and that organisational culture, systems and leadership significantly affect the implementation of sensory modulation and seclusion and restraint reduction (Sutton & Nicholson, 2011). However, the studies, to date, are mostly from other countries and there is little understanding of the impact of the local context on implementation. More generally, there is limited research on the effectiveness and acceptability of sensory modulation, with inconsistent findings on programme implementation and outcomes, and lack of guidance on effective programme implementation. Accurate results on the outcomes of seclusion and restraint rates and service users' measured distress are lacking because of the observational nature of the research designs. It is difficult to determine the impact of sensory modulation as a stand-alone programme, because it requires culture and systems change for successful implementation, and thus cannot be done in isolation. To build on the previous research findings, an organisational case study was conducted to examine the implementation and impact of sensory modulation in acute mental health services. The next chapter discusses the research methodology and methods.

CHAPTER THREE: METHODOLOGY AND METHODS

This chapter focuses on the research methodology (Part A) and methods (Part B) used in this study. It provides an account of the case study methodology used to guide the research process and a rationale for its use. Part A presents the underlying assumptions of the current case study and the ‘bounds’ or parameters of the case are established. The research aim, propositions, and questions are described in accordance with case study methodology. The full research process is presented in Part B. Firstly, ethical and cultural considerations are discussed, followed by the research sampling, and a description of how access to the organisations was built and the sensory modulation programme developed. The data collection process is outlined and the range of data sources described. The last section of this chapter is a description of the data analysis process used in the study.

3.1. Part A: Methodology

Methodology refers to the philosophy and strategy that lies behind the choice and use of particular methods (Crotty, 1998; Denzin & Lincoln, 2005a, 2005b), while the methods are the specific techniques and procedures used to collect and analyse data (Crotty, 1998). In any study, it is essential to understand the research process and to define and justify why a particular approach was chosen (Weaver & Olson, 2006). The overall aim of this research was to investigate the implementation and impact of a sensory modulation programme in two adult acute mental health services. Case study methodology, as described by Yin (2014), was chosen as the most suitable approach to guide the research process. The ‘case’ being studied was ‘the implementation of a sensory modulation programme’ and two inpatient services made up the context of each case. The following discussion outlines the underlying assumptions and principles of case study methodology to show how this approach shaped the research questions and the methods used.

3.1.1. Underlying assumptions.

According to Guba and Lincoln (1994), it is important to make explicit the underlying assumptions on which a particular piece of research is based. This involves consideration of the fundamental beliefs underpinning the research design of the study. A paradigm is

a frame of reference that explains how individuals perceive the nature of the world and their place in it (Guba & Lincoln, 1994). A paradigm guides the researcher's thinking and decision-making during the research process. It is a way of thinking about the need for knowledge (research aims) and the means of producing that knowledge (research method) (Weaver & Olson, 2006). There are four fundamental beliefs in research paradigms in social sciences: (1) positivism (naïve realism), (2) postpositivism (critical realism), (3) interpretivism (constructivism), and (4) pragmatism (Guba & Lincoln, 2005; Hallebone & Priest, 2009; Saunders, Lewis, & Thornhill, 2009). These fundamental beliefs are briefly described below.

1. Positivism (naïve realism) assumes that there is a single reality that exists in a particular way, regardless of our knowledge of it and the language we use to describe it (Guba & Lincoln, 2005; Hallebone & Priest, 2009; Justesen & Mik-Meyer, 2012; Saunders et al., 2009).
2. Postpositivism (critical realism) acknowledges that meanings are co-constructed from the interaction of people with one another within a particular context (Jespersen, 2004; Justesen & Mik-Meyer, 2012; Mays & Pope, 1995).
3. Interpretivism (constructivism) assumes that our understanding of reality is a social and linguistic construction, and therefore really does not have any form in an original essence (Guba & Lincoln, 2005; Hallebone & Priest, 2009; Justesen & Mik-Meyer, 2012; Saunders et al., 2009).
4. Pragmatism – assumes that there are multiple realities since reality as a concept is only interesting and meaningful if we understand it in relation to people's diverse experience and actions (Guba & Lincoln, 2005; Hallebone & Priest, 2009; Justesen & Mik-Meyer, 2012; Saunders et al., 2009).

For the present organisational case study, pragmatism was used as the paradigm. This allowed the 'case' to be studied from multiple perspectives, combining the more 'objective' data associated with positivism with the 'subjective' data associated with interpretivism. This approach involved movement along the research philosophy continuum in order to find the best way to understand the social phenomena that were being studied in the context of practice (Wahyuni, 2012). Specifically, the focus was on the actions and experiences related to 'sensory modulation programme implementation' in the context of adult acute inpatient units. In line with the pragmatist view, the

researcher began with developing research questions based on theoretical propositions identified from previous practice based literature, prior to determining the current research framework.

The two main philosophical dimensions underlying any particular paradigm are ontology and epistemology (Creswell, 2007, 2009; Denzin & Lincoln, 2008; Parahoo, 2006). Ontology refers to “beliefs about reality and is the study of being” (Crotty, 1998, p. 10). Pragmatism involves the ontological belief that there are multiple views of a phenomenon and there is no one objective truth or reality that exists independent of social actors. Therefore, multiple perspectives about the factors influencing sensory modulation programme implementation and its impact on adult acute inpatient units were considered. Epistemology refers to the “relationship between the researcher and what can be known” and is “concerned with the nature and forms of knowledge” (Cohen, Manion, & Morrison, 2007, p. 7). This refers to acceptable and valid ways of knowing what we know (Krauss, 2005; Trochim, 1989; Wahyuni, 2012). In the present study both objective and subjective perspectives were collected to reveal meaning in the research participants’ experiences and stories of sensory modulation programme implementation. For example, changes in the rates of seclusion use are objective data relevant to the potential impact of sensory modulation, while subjective experiences of using the sensory approach to prevent the need for seclusion is equally valid data. Meaning making involves understanding the social situations, human behaviour, and experiences of the participants in the implementation (Chen, 2001; Lofland & Lofland, 1996). One of the most influential accounts of meaning making comes from Dewey’s (1933) seminal text that “Only when things about us have meaning for us, when they signify consequences that can be reached by using them in certain ways, is any such thing as intentional, deliberate control of them possible” (p. 19). Therefore, the exploration of actions taken and changes of practice became meaningful as the practical consequences and impact of sensory modulation became evident. One of the key organising concepts of the current study was guided by Dewey’s political philosophy on democracy. According to Dewey (1993) “democracy is only estimable through the changed conception of intelligence that forms modern science” (p. 39). The conception of inquiry can develop by sharing of ideas with people or group of people. This philosophy was applied in the development of the sensory modulation programme, as well as its implementation and evaluation, which focused on the perspectives and experience of management, staff and service users. Therefore, the

programme implementation was underpinned by a democratic collaboration between the researcher and stakeholders.

Using the pragmatic approach to guide the research design allowed the researcher to utilise aspects of the positivist and interpretivist research philosophies (Tashakkori & Teddlie, 1998; Wahyuni, 2012). An organisational case study mixed method design was chosen to better understand the social phenomena of implementing sensory modulation within inpatient mental health units. This aligns with the experiential learning process of Dewey (1939) which involves making meaning and learning through experiences in real life situations. Dewey's concepts of reflective thought and learning suggests that by taking practical action or 'doing', people learn naturally to adapt to their environment and develop new habits or routines. People are also able to reflect on their experience, hypothesise about the nature of reality and test these hypotheses through further action. This principle was applied in the current study by identifying and defining the research problems and propositions, which arose out of practice-based evidence and previous implementation experiences. The propositions were then tested through the actions of planning and implementing a sensory modulation programme, followed by evaluation and reflection on the actions taken to determine their impact. In an iterative process, the findings of the study led to revised propositions and further potential action related to implementing sensory modulation. The use of pragmatism provided an opportunity for collaborative interaction and open communication with the research participants in the practical development and implementation of the sensory modulation programme. This required consideration of the most relevant types of qualitative and quantitative data in order to meet the research objectives. The data collection allowed participants to express their views and the researcher to gain an understanding of participants' perspectives before and after the programme implementation, supporting the development of knowledge embedded in the reality of service delivery and practical action.

3.1.2. Case study methodology.

Case study methodology is "an empirical inquiry that investigates a contemporary phenomenon (the 'case') in depth within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident" (Yin, 2014, p. 16). A case is "a phenomenon of some sort occurring in bounded context" (Miles & Huberman, 1994, p. 25). Within the last decade, a growing number of studies have

successfully utilised a case study approach to explore the implementation of new programmes within health services, including mental health services (Clarke, O'Sullivan, & Barry, 2010; Harris et al., 2013). For instance, case studies have been employed to evaluate the process of implementing a complex intervention called the optimised suicide prevention programme in four European countries (Harris et al., 2013). These recent studies have highlighted the benefits of the approach in supporting quality improvement within health settings (Persell et al., 2011). The use of case studies is valuable for building theory in organisational research and provides a range of methods to explore the context of an organisation (Eisenhardt, 1989; Eisenhardt & Graebner, 2007; Yin, 1994). Exploratory case studies are used to explore interventions that are emerging and for which the outcomes are yet to be established (Yin, 2003, 2004).

3.1.2.1. Case study design

Another important aspect of case study research is the selection of cases, either single or multiple case study designs (Benbasat, Goldstein, & Mead, 1987; Eisenhardt, 1989; Lee, 1989; Yin, 1994, 2014). Single case design is appropriate when it represents a unique, revelatory, or critical case in testing a well-formulated theory, while literal and theoretical strategies are possible in multiple case design studies (Yin, 1994). The present study adopted a theoretical strategy for recruitment and selection criteria, using a multiple case study design to explore the contextual conditions relevant to the implementation of the sensory modulation programme in two acute mental health services.

3.1.2.2. Case study choice

According to Brown (2007), there were three case study approaches along the quantitative-qualitative continuum. Yin (2014) parks at the end of quantitative (post-positivist), Merriam (2009) at the center (pragmatic-constructivist), and Stake (2006) at the other end of qualitative (interpretatvist). Yin (2014) case study methodology was chosen to inform the structure and rigour of the current case study procedures. Using Yin's design facilitated search for rival propositions and replicated case studies. Yin also allowed the use of both quantitative and qualitative methods in the current study to attain the objectivity of the case being studied.

The replication of the programme across two mental health units increases rigour in testing the propositions (Yin, 2014). Due to the time constraints of the doctoral programme, the two case studies were conducted concurrently. While this does not allow theory to be developed and tested over time across multiple case studies, the use of two parallel case studies does support comparisons being made and more robust conclusions drawn (Yin, 2014). Each case study focused on embedded data related to the barriers and facilitators to successful implementation of a sensory modulation programme. The use of embedded case study design allowed analysis of the specific factors affecting implementation within each organisation (Yin, 2014).

3.1.2.3. Case study method

According to Yauch and Steudel (2003), using a mixed-method approach reduces bias and increases validity through triangulation of data types and sources, providing a deeper understanding of each organisation's culture, enabling the analysis of the values, attitudes, and behaviours within the organisations, and supporting the evaluation of outcomes. The mixed-method approach provides a "sequential collection of supporting data with separate data analysis and using of supporting data before, during and after the primary data collection" (Creswell & Clark, 2011, p. 73). Equal emphasis was placed on qualitative and quantitative data collection. The cross-case analysis allowed comparison and contrasting of findings to strengthened conclusions where findings aligned or highlighted contextual differences (Yin, 2014) that might affect the implementation of sensory modulation. The mixed-method approach also addressed the organisational culture factors relevant to programme implementation and impact.

3.1.2.4. Case study analysis

According to Yin (2014), case study analysis should be of the highest quality and apply the four principles of social science research, namely: (1) attending to all the pieces of evidence; (2) addressing all plausible rival interpretations; (3) addressing the most significant aspects of the case study; and (4) using the researcher's own prior and expert knowledge. These four principles were applied in the data analysis.

Case study analysis has no prescribed strategic analysis, unlike other research methods that offer a technical blueprint for data analysis. Therefore, careful and logical thinking are necessary for data analysis and presentation. Data analyses were guided by the

theoretical propositions and research questions posed in the present research. The description of the organisational structures within the two adult acute inpatient mental health units, including discussion of the process of building access to the organisation, were discussed in this chapter for a better understanding of the organisation being studied. The ‘multiple-case study’ format (Yin, 2014) was used to present findings in the succeeding chapters. Using this format has led to presenting individual case studies for the two units, followed by cross-case analysis. For each case study, a description of the unit is presented to generate a comparative picture of the two units for the reader.

To understand an overall case, Yin (2014) proposed five analytic techniques: pattern matching, explanation building, time-series analysis, logic models, and cross-case synthesis. Amongst the five analytical techniques, pattern matching was identified as the most relevant to the present study, as it is a valuable analytic technique in evaluating outcomes. It is a fundamental approach for developing construct validity (Campbell 1966; Campbell & Fiske, 1959) and strengthens the validity of the research approach (Trochim, 1985, 1989). Identification of pattern matches characterises a holistic, qualitative analysis (Campbell, 1966, 1975) and is a useful vehicle to integrate theory into the research process (Trochim, 1985, 1989).

‘Pattern-matching’ was used as an analytic technique in the present study to link the variables, research questions, and propositions (Yin, 2014). The aim of pattern matching is to make connections between important theoretical concepts and observed or operational patterns (Dul & Hak, 2008; Trochim, 1989; Yin, 2014). It is an essential part of a formative evaluation process, enabling the examination of the construct validity of a programme, as well as the sampling and measures used. There are two types of pattern-matching: process and outcome. Process pattern-matching has two dimensions of focus: (1) characteristics that refer to the contextual aspects of the programme, and (2) objects that refer to programme inter-relationships. Process pattern-matching addresses the construct validity of the programme, sampling and measures. Outcome pattern-matching addresses both the internal and external validity of the results. It requires a theoretical pattern of expected outcomes (related propositions), an observed pattern of effects (findings), and attempts to match the related propositions and findings (Trochim, 1989).

3.1.3. Defining the boundaries of the case.

A case study is useful for exploring broad research questions or topics with multiple objectives. The case of the current study is the sensory modulation programme. Placing boundaries on the scope of the case can prevent pitfalls associated with trying to explore too much in one case study (Stake, 1995; Yin, 2003, 2014). Operational definitions and contexts (Miles & Huberman, 1994) were included in the present study to contain the focus. These variables are observable and measurable, allowing related propositions to be developed and tested in the study (Gravetter & Wallnau, 1992). The following eight points outline the operational definitions relevant to the focus and scope of the selected case:

1. Sensory modulation programme: the six-month period of sensory modulation programme implementation in adult acute mental health practice, involving a one-day sensory modulation workshop, support in acquiring sensory equipment and making environmental modifications, and provision of regular implementation support to mental health staff and unit leaders.
2. Sensory modulation core competencies: the knowledge, skills, and attitudes of mental health staff related to using sensory modulation in practice (Azuela & Robertson, 2013, 2016). These competencies are:
 - a. knowledge of clinical principles;
 - b. therapeutic use of self;
 - c. use of a sensory assessment;
 - d. selection of sensory modulation therapeutic activities;
 - e. displaying a supportive staff attitude when using the sensory room; and
 - f. collaborating with service users to develop or modify personal safety plans.
3. Mental health staff: the staff of the adult acute mental health units, that is, managers, clinicians, and support staff varying in terms of gender, age, ethnicity, training, professional discipline, experience, and attitudes.
4. Mental health service users: the clients of the adult inpatient mental health units who consented to participate in the sensory modulation programme, varying in term of age and gender, ethnicity, mental health diagnosis, and their experience of sensory modulation during the study period.
5. Organisations: the inpatient mental health units of the two DHBs.
6. Organisational culture: the attitudes, beliefs, and practices of staff from the adult acute mental health units, specifically related to crisis situations, aggression, and

the use of seclusion and restraint (Martin & Daffern, 2006; van Doeselaar, Slegers, & Hutschemaeker, 2008).

7. Organisational climate: the mental health staff's and service users' perceptions of being in the adult acute mental health units, including their experience of the physical and social contexts, and their respective experience of seclusion and restraint use versus sensory modulation, during the study period (Schalast, Redies, Collins, Stacey, & Howells, 2008).
8. Organisational readiness: the factors that influence the reduction of seclusion and restraint, and the level of progress the organisation was making toward implementing and addressing each of these factors pre-implementation of the sensory modulation programme (Colton, 2004).

3.1.4. Case study propositions.

To guide the case study research process (see Figure 3.2) and the development of a conceptual framework, propositions need to be developed (Yin, 2003, 2014). A proposition refers to a theoretical statement about a significant hypothetical issue that gives direction to the researcher regarding what to investigate for relevant evidence, what data to collect, and the focus of analysis (Yin, 2003, 2014). For this study, the following theoretical propositions were developed, based on existing literature:

1. The organisational culture, climate, policies, and procedures significantly affect the implementation of a sensory modulation programme (Wale et al., 2011);
2. Services using multiple strategies for seclusion and restraint reduction, including developing policies, leadership, consumer involvement and staff training, are more likely to implement sensory modulation successfully (Sutton & Nicholson, 2011);
3. Environmental modifications as a sensory strategy are a significant factor in seclusion and restraint reduction (Borckardt et al., 2011);
4. Sensory modulation programmes have a significant impact on the reduction of seclusion in inpatient mental health settings (Champagne & Stromberg, 2004);
5. Sensory modulation contributes to the reduction and management of service user distress and agitation (Sutton et al., 2013);
6. Service users prefer sensory modulation as a strategy for de-escalation and management of distress over coercive and pharmaceutical methods (Lee et al., 2010); and

7. Sensory modulation programmes increase staff confidence in managing service user distress and agitation and alter staff attitudes away from coercive practices (Wale et al., 2011).

3.1.5. Research questions.

The above propositions guided the development of the research questions and identification of research participants (Yin, 2003, 2014). The development of research questions is an important step in research (Yin, 1994). The use of ‘why’ and ‘how’ questions are appropriate in case study research to reveal the operational links over time in addition to frequencies or incidence, while the ‘what’ research question is exploratory as are the why and how questions (Yin, 1994). The ‘how’ and ‘what’ research questions were used in this study to explore the sensory modulation programme implementation. These questions are appropriate in an exploratory case study context (Yin, 1994). Specific research questions were:

1. What are the existing practices, norms, beliefs, and policies related to de-escalation and the reduction of seclusion and restraint, and what factors have shaped these?
2. How do organisational and staff factors, including policies and practices related to de-escalation and seclusion and restraint reduction, influence sensory modulation implementation?
3. What is the impact of using a sensory modulation programme within two New Zealand acute mental health services?

3.1.6. Overall study design.

The use of an experimental design was considered; however, that approach would not have captured the complexity of the contextual factors influencing implementation of the sensory modulation programme. Critical examination was necessary to investigate the reality of the sensory modulation programme implementation in the two adult acute inpatient units. The research questions are approached from varied perspectives through qualitative and quantitative aspects. These diverse perspectives guided the development of research aims and identified the multiple methods of collecting data needed (Creswell, 2009; Yin, 2013).

Qualitative data were collected from identified sources to develop an understanding of contextual factors, and staff and service user experiences of implementing sensory

modulation. Additionally, a quantitative element was embedded in the case study (Yin, 2014), through the collection and analysis of a staff survey and pre-post intervention ratings of service user distress.

In this research, an exploratory mixed-method case study design was used. An initial descriptive exploratory investigation using qualitative and quantitative research tools was conducted in Phase One. This involved individual interviews, surveys, and document reviews within the organisations. Phase Two comprised the implementation of the sensory modulation programme in the two adult acute inpatient mental health units. Phase Three was a post-evaluation of the sensory modulation programme that involved interviews, surveys, and organisational document reviews, collecting information from multiple data sources and diverse stakeholders (management, staff, and service users) through triangulation (Creswell, 2007, 2009; Pratt, 2003).

The method of this organisational case study was guided by Yin's (2009, 2014) case study approach and followed four distinct stages as described below:

Design of the case study. The design has four important aspects, namely, definition of research questions, the 'a priori' specification of constructs or theory (and hypotheses), the definition of the unit of analysis, and the selection of the case.

Conduct of the case study. This stage refers to crafting the instruments to collect different types of data by different methods from various sources.

Analysis of the case study evidence. This stage searches for coherence and order (Kaplan & Maxwell, 1994) from the data through manipulation, analysis, and synthesis (Yin, 1994).

Writing the case report and research implications. This stage is the contact point between the research audiences and the researcher, and provides clear explanations of the implications of the research findings.

The process recommends protocols for all four stages. Figure 3.1 illustrates the process adopted for the present research.

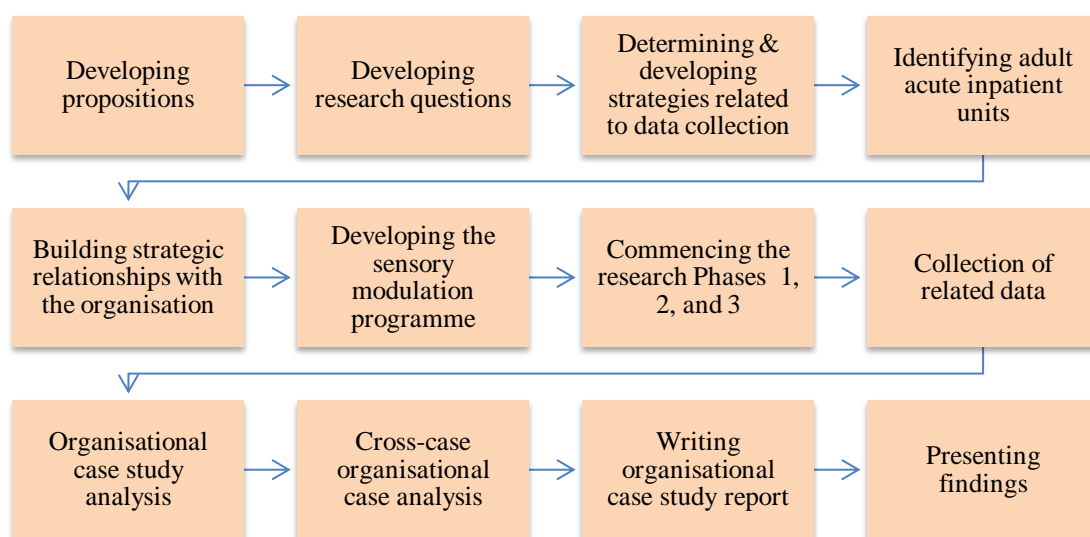


Figure 3.1. Illustration of the case study design

One way to illustrate the temporal nature of this organisational case study is to describe the three phases of the research project, as illustrated in

Figure 3.2. Research tools for each phase are described below.

Study Phases	Types of data collected
1. Baseline: One-month period of capturing initial baseline data from the mental health units to establish the case contexts.	<ul style="list-style-type: none"> • Organisational readiness • Ward climate • Staff confidence in behaviour management • Staff attitudes towards seclusion • Existing distress management and de-escalation practices • Seclusion, restraint, and PRN use • Organisational policy related to de-escalation and seclusion/restraint use • Clinical files
2. Implementation: Six-month period of implementing the sensory modulation programme within the units.	<ul style="list-style-type: none"> • Staff sensory modulation knowledge pre and post training • Records of sensory room use • Service user ratings of arousal pre and post sensory modulation use
3. Evaluation: Three-month period of evaluating the sensory modulation programme implementation and impact.	<ul style="list-style-type: none"> • Ward climate • Staff confidence in behaviour management • Staff attitudes towards seclusion • Seclusion, restraint, and PRN use • Staff views on implementation and impact • Managers' views on implementation and impact • Implementation fidelity rate • Clinical files

Figure 3.2. Overview of the research phases

3.2. Part B: Methods

As previously defined, the method refers to the specific techniques and procedures used to collect and analyse data (Crotty, 1998).

3.2.1. Cultural and ethical considerations.

The research project obtained cultural and ethical approval, as shown in Figure 3.3

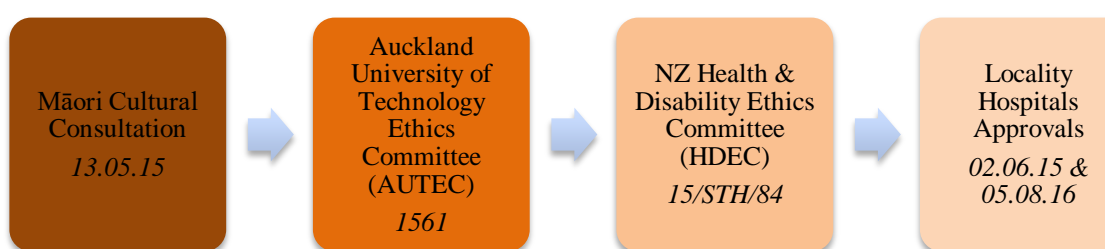


Figure 3.3. Illustration of cultural and ethical approval

3.2.1.1. Māori Cultural Consultation

Given the high mental illness rates for Māori and the over-representation of Māori in mental health services (MOH, 2013), cultural consultation was crucial. The DHB Māori Cultural Service was consulted for engaging with Māori individuals and communities, guided by the principles of the Treaty of Waitangi (Cheyne, O'Brien, & Belgrave, 2005) and the Auckland University of Technology Māori Research Facilitation Committee. The Treaty of Waitangi is a founding document to the political relationship between the Māori and the New Zealand government. A hui (meeting) (13.05.15) was held between the researcher and the DHB's kaumatua (old male with status) and whaea (old female with status) to discuss cultural factors that might affect the implementation of the sensory modulation programme in the two units (see Appendix C). The Māori Cultural Service identified no sources of harm in the implementation of the programme and thus they supported the research project.

3.2.1.2. Ethics

To ensure research compliance with ethical standards, ethical approvals were sought from the Auckland University of Technology Ethics Committee (AUTEK:15/161) (see Appendix A, Appendix D, Appendix E, Appendix F, and Appendix G), the Health and Disability Ethics Committee (HDEC:15/STH/84) (see Appendix H, Appendix I, and Appendix J), and the participating DHB Ethics Committees (see Appendix K and Appendix L). These documents are saved on a confidential ‘memory stick’ and intentionally not included in the appendices at the end of this thesis so as to protect the identity of the organisations.

3.2.2. Recruitment of organisations for the case study.

The recruitment of two organisations in this case study was purposive. Only services that had had limited exposure or success in using sensory modulation were approached, to be able to determine the impact of sensory modulation programme implementation and to investigate the research propositions. Additionally, organisations that had higher levels of seclusion and restraint use than other DHBs and that expressed a commitment to support the implementation of the sensory modulation programme were prioritised. Geographical location was relevant due to researcher travel costs. Staff from Te Pou (the national organisation for mental health research and workforce development) supported the identification of potential organisations. The DHBs’ operational managers of mental health services were approached to identify interest in bringing the sensory modulation programme to their adult inpatient mental health units. The unit managers were responsible for confirming if the service had had limited or no exposure to sensory modulation and whether they would be able to commit to supporting the introduction of the programme. For the units that expressed interest, a meeting between the primary researcher and the leadership team was arranged to discuss the study design, programme content, and requirements for participation. Recruitment was completed once suitable organisations had been recruited and informed organisational consent and locality agreements had been signed.

3.2.3. Recruitment of mental health staff and service users.

All mental health staff of the identified inpatient units were invited by the research assistants through e-mails and team meetings. Study participation included completing

study surveys/measures, sensory modulation training, using the sensory modulation intervention, and completing post-intervention documentation, including rating service user pre- and post- distress and arousal levels (see Appendix B).

All service users were offered the opportunity to use the sensory modulation room and tools, and the intervention would be available whether or not they wished to participate in the study. Staff informed all service users of the introduction of the sensory modulation programme and invited them to try the tools and room to explore their preferences. The staff then invited service users to participate in the study, which included the assessment of sensory preferences and sensitivities, the development of a safety plan, including sensory-based strategies to be used in times of crisis or distress, support to use the strategies as needed, and self-rating of pre- and post-intervention distress and arousal levels. Service users could use the intervention but decline study participation, at their preference.

Additionally, a purposive sample of staff and discharged service users from each unit were invited by the Research Assistants (see Appendix P and Appendix Q) to participate in focus groups about their experience of sensory modulation. This approach was successful for recruitment of participants. A key focus was on seeking representation from populations who experience a higher level of seclusion and restraint, including Māori and Pacific Island males. Written information about the study was provided to all interested staff and service user participants and signed consent was obtained before participation. Participants could decline the invitation and withdraw from the study at any stage up to the point when all the data had been collected. Withdrawal would not affect any other aspect of treatment for service users or work conditions for staff.

3.2.4. Building access to the organisation as single directorate,

The process of getting in and getting on with the organisation is paramount in conducting organisational case studies (Yin, 2015). In the present study, the process started with gaining access to the organisation by meetings between the researcher and the upper management and stakeholders of the organisation, followed by a series of planning meetings between the organisations' sensory modulation trainers and Learning and Development Department. Finalisation of the training schedule was sought from the managers of the inpatient units (see Appendix R for records of meeting minutes).

3.2.4.1. *The contextual overview of the organisation as one directorate*

In an organisational study, it is important to have an overview of the organisational structure and service provision to fully understand its operational systems. The two adult acute inpatient mental health units for this study have an overarching Directorate, with each unit belonging to a local DHB. The Directorate operates under the leadership of a regional Director of Mental Health Services appointed by the MOH. This directorate provides a full range of mental health and addiction services including the adult acute inpatient mental health units engaged in this study. The Directorate has two sub-directorates, namely (1) local and (2) national, providing services within their regions. It also has a well-equipped learning centre with a capacity of up to 130 people where meetings, training, seminars, and forums are held. The Directorate's education department has a stand-alone website for management of staff training and professional development, and a clinical governance group that guides, directs, and monitors service progress and activities, including quality improvement and increasing safety in service provision. The Directorate supports service users' participation in service development through a team of service user consultants who work in various specialist areas, linking closely with service users, clinical teams, and other stakeholders. A family advisor works in partnership with families to reduce the burden of the challenges in supporting a family member who is using the mental health service.

3.2.5. The sensory modulation programme development and delivery.

The following section describes the sensory modulation programme that was implemented in this study (Figure 3.4) including the five components drawn from existing guidelines for the implementation of the approach (Azuela & Robertson, 2016; Champagne, 2008; Sutton & Nicholson, 2011).

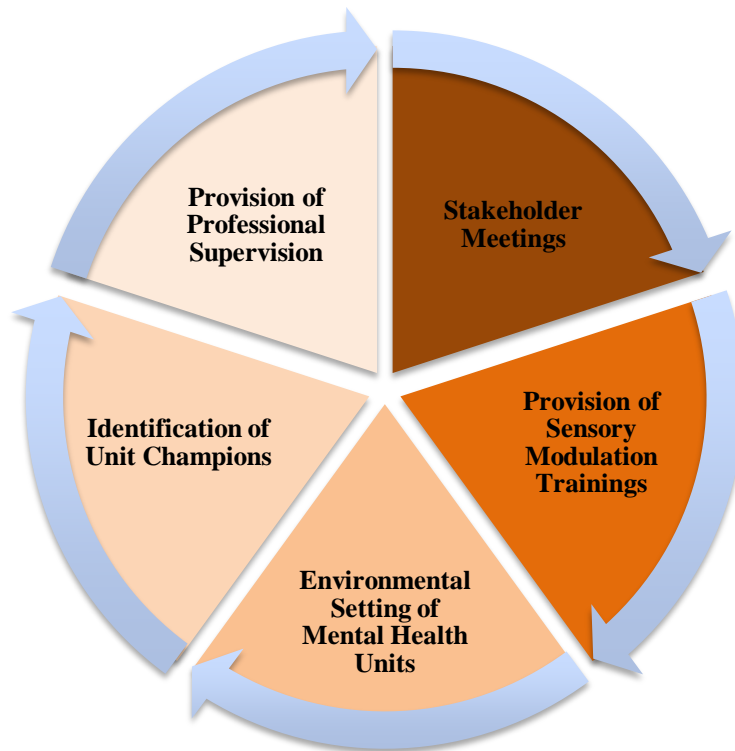


Figure 3.4. The cyclic process of sensory modulation programme implementation

1. Provision of sensory modulation training. This training was delivered to each unit’s mental health staff by an independent sensory modulation trainer (see Appendix M and Appendix N). The sensory modulation training focused on key principles and practice competencies (Azuela & Robertson, 2013, 2016) including:

- a. knowledge of clinical principles;
- b. therapeutic use of self;
- c. use of sensory assessments;
- d. selection of sensory modulation therapeutic activities, including tools and modalities;
- e. displaying supportive attitudes when using a sensory room; and
- f. development of personal safety plans with service users.

This training involved administration of the Sensory Modulation Competency Questionnaire (Azuela & Robertson, 2013, 2016) to mental health staff by the DHB’s sensory modulation trainer to determine baseline knowledge in sensory modulation. The sensory modulation training programme (Azuela & Robertson, 2013, 2016) was designed for mental health units to help clinical and support staff in facilitating a service user-centred approach to managing challenging behaviours. This training programme had been evaluated previously using pre- and post-survey evaluation in an inpatient mental health

setting to identify increases in the knowledge of mental health staff on sensory modulation competencies (Azuela & Robertson, 2013, 2016). However, the practice of mental health staff when they return to the workplace had not been evaluated to see whether they could apply their learning in the management of challenging behaviours.

2. Establishing key practitioners ('champions') (Champagne, 2006, 2008; Sutton and Nicholson, 2011). Two key practitioners in each unit were identified through discussions with the units' leaders. These staff members took the lead on introducing sensory modulation to the units and were the key contact people for the lead researcher. The key practitioners were provided with regular fortnightly supervision with the lead researcher to support the implementation of the programme. The supervision was by audio-conferencing, email, video conferencing or face-to-face, as needed.

3. Establishing clinical practice links (Champagne, 2006, 2008; Sutton and Nicholson, 2011). The key practitioners were linked to key practitioners from other mental health units which had implemented a sensory modulation programme to establish professional peer support. A peer support meeting was scheduled monthly via face-to-face meetings.

4. Provision of sensory modulation assessment forms, tools, and modalities (Champagne, 2006, 2008; Sutton and Nicholson, 2011). The resources required for the programme included sensory modulation tools (e.g. weighted blankets, stress balls, scented sprays, music player, pictures and other visual distractions, a rocking or massage chair), sensory assessments and measures, and training materials. The types of identified sensory items for the two units were determined by the needs of each service and its service user population. Training was related to the sensory modulation assessment forms, tools and modalities. Training materials were provided by the researcher and an allocation of NZ\$3,000.00 was provided to the units as a start-up for purchasing sensory items. The service was made aware before they committed to the study that they would need to provide ongoing resourcing of the sensory modulation tools. A budget for sensory items is commonplace in many New Zealand inpatient services and should not be an excessive burden.

5. Guidance for environmental modifications (Champagne, 2006, 2008; Sutton and Nicholson, 2011). The units received advice and support in the setting-up of sensory rooms and other environmental modifications within the units.

Collaborative work with the service manager was undertaken to ensure that the implementation of the programme conformed to each unit's policies, procedures, and guidelines on health and safety and best practice, including the New Zealand Health and Disability Code of Rights. Expectations related to responsibilities, issues of confidentiality, and other matters relevant to programme implementation were agreed on between the units and the lead researcher before programme implementation (see Stakeholders' plan in Appendix O).

3.2.6. Sensory modulation programme implementation fidelity.

A process for fidelity checks was developed and implemented to ensure the intended sensory modulation programme implementation, including a fidelity tool checklist of required implementation processes at an organisational level (see Appendix S). The researcher used the Sensory Modulation Programme Implementation Fidelity Guide (SMPIFG) to work with a member of each unit's leadership team in directing the implementation process. The development of the SMPIFG was guided pragmatically by the principles of implementation science using the CFIR (Damschroder et al., 2009). The SMPIFG, used to assess and determine the fidelity rate of the implementation, is a tool developed by the researcher specific to the present study that states the four domains with specific indicators of sensory modulation programme implementation in a 'yes/no' format. The tool was piloted in the two inpatient units to support stakeholders implementing the programme. The four major domains of programme implementation were the (1) programme design, with six indicators of effectiveness; (2) organisational milieu, with 12 indicators; (3) organisational workforce qualities, with five indicators; and (4) implementation process development, with 13 indicators. Collectively, there were 36 sensory modulation programme implementation indicators. The researcher used this tool post implementation to determine the fidelity rate of the implementation in the inpatient unit based on the researcher's objective observations. The computed percentage of 'yes' indicators illustrated the fidelity rate of the unit by the number of 'yes' indicator over the total number of indicators. The higher the percentage, the better the fidelity rate of programme implementation.

The implemented SMPIFG focused on the following elements: the percentage of staff completing the training; the inclusion of sensory strategies in service user safety/crisis plans; the use of sensory assessments and tools in practice; engagement of 'champions'

in supervision; and staff sensory modulation competency level. These elements were captured through quantitative and qualitative data based on sensory modulation training processes and outcomes, the staff sensory modulation competency survey, documented sensory modulation implementation, and staff interviews and survey.

3.2.7. Data collection.

The study used data collected from multiple sources to address the research questions and propositions, as outlined in Table 3.1. Data were collected over three phases: a baseline period, the implementation phase, and an evaluation phase. Data collection methods included reviews of organisational documentation, interviews, and questionnaires as described below.

Table 3.1. The conceptualisation of the case study on data collection plan

Study Propositions	Research Questions	Related Measures and Qualitative Data
<p>The existing organisational culture, policies, and procedures will significantly affect the implementation of a sensory modulation programme (Wale al., 2011).</p>	<p>Study Phase 1: What are the existing practices, norms, beliefs and policies related to de-escalation and the reduction of seclusion and restraint? What factors have shaped these?</p>	<ul style="list-style-type: none"> • Organisational Readiness Questionnaire (Colton, 2004) (Management and senior staff reps) • Review of organisational policy on seclusion and restraint and de-escalation; progress notes; incident and accident reports; and risk management plan. • Survey of physical context • Sensory Modulation Competency Questionnaire (Azuela & Robertson, 2013, 2016) • 1:1 Interviews with staff (Management and senior staff reps) • Upper Management Survey
<p>Services using multiple strategies for seclusion and restraint reduction, including developing policies, leadership, consumer involvement and staff training are more likely to successfully implement sensory modulation (Sutton & Nicholson, 2011).</p>	<p>Study Phase 2: How do organisational and staff factors including policies and practices related to de-escalation and seclusion and restraint reduction influence sensory modulation implementation?</p>	<ul style="list-style-type: none"> • Organisational factors • Incident/accident reports progress • Management perspective (focus group or 1:1 interview) • Document review • Survey of the physical context • Sensory Modulation Programme Implementation Fidelity
<p>Environmental modifications as a sensory strategy are a significant factor in seclusion and restraint reduction (Borckardt et al., 2011).</p>		<ul style="list-style-type: none"> • Staff factors • Staff focus groups • Service user focus group • Survey of the physical context
<p>Sensory modulation contributes to the reduction and management of distress and agitation (Sutton et al., 2013).</p>	<p>Study Phase 3: What is the impact of using a sensory modulation programme within acute mental health services?</p>	<ul style="list-style-type: none"> • Impact for service users • Service user focus group
<p>Service users prefer sensory modulation as a strategy for de-escalation and management of distress over coercive a pharmaceutical methods (Lee et al., 2010).</p>		<ul style="list-style-type: none"> • Impact for staff • Staff focus groups • Staff Survey Questionnaire: PATS-Q (Doeselaar et al., 2008), Confidence in Managing Inpatient Aggression (Martin & Daffern, 2006), & EssenCES (Schalast et al., 2008) • Upper management survey
<p>Sensory modulation programmes have a significant impact on the use of seclusion within inpatient mental health settings (Champagne & Stromberg, 2004).</p>		<ul style="list-style-type: none"> • Organisational impact • Incident/accident reports

Sensory modulation programmes increase staff confidence in managing service user distress and agitation and alter staff attitudes away from toward coercive practices (Wale et al., 2011).

- Progress notes
- Risks management plans
- Medication PRN chart
- Seclusion and restraint rates

3.2.7.1. Questionnaires

The chosen questionnaires were standardised, validated, and measured variables relevant to the implementation and impact of sensory modulation. The use of these questionnaires provided the opportunity to compare the outcomes of this case study to other research studies (Boynton & Greenhalgh, 2004). These questionnaires are outlined in Table 3.2.

Table 3.2. Questionnaires used for data collection in case study design

Standardised Questionnaire	Description	Measurement	Validity & Reliability
Organisational Readiness Questionnaire (Colton, 2004)	Internal assessment to identify areas in need of action for organisation's readiness for reducing seclusion and restraint.	Nine-section checklist using a scoring system from 0 (no action/no discussion) to 5 (sustained action/maintenance)	Validated Comprehensive checklist
Professional Attitudes Towards Seclusion Questionnaire (PATS-Q) (Doeselaar et al., 2008)	Measures attitudes of professionals; Sociodemographic questions. It has three main scales, namely function, reasons, and alternatives.	4-point Likert Scale from 1 (strongly disagree) to 4 (strongly agree)	Internal consistency (Cronbach's alpha) of the subscales ranged from good 0.84 (better care) to satisfying 0.68 (ethics)
Sensory Modulation Competency Questionnaire (Azuela & Robertson, 2013; 2016)	Measures knowledge of mental health staff on six sensory modulation core competencies; demographic questions.	5-point Likert Scale from 1 (not at all) to 5 (very well)	Face validity Construct validity and reliability to be established
Confidence in Managing Inpatient Aggression (Martin & Daffern, 2006)	Clinicians' perceptions of personal safety and confidence to manage inpatient aggression.	4-point Likert Scale from 1 (not at all confident) to 4 very confident).	Not validated Construct validity reliability to be established
Essen Climate Evaluation Schema (EssenCES) (Schalast et al., 2008)	Staff and clients complete a 15-item instrument with three subscales developed primarily for use in the forensic psychiatric inpatient unit and	5-point Likert Scale	Validated Satisfying internal consistencies (Cronbach's alpha was 0.82 for 'Patients Cohesion and Mutual Support', 0.74 for 'Safety' and 0.86 for 'Therapeutic Hold')

Further details of the assessment items and scoring for each of these measures are provided when the results are reported in the findings chapters.

3.2.7.2. Interviews

Interviews were conducted to explore the views of middle management and clinical staff in the baseline and evaluation phases (see Appendix B:Q3 & Q7). Semi-structured, one to one conversations were held where the interviewer carefully followed the interview guide so as to increase the reliability and the generalisability of the findings (Forlag, 2012). Semi-structured interviews allow for collaborative interaction and open communication between the researcher and the participants. The conversation allowed participants to express their views and for the researcher to gain an understanding of the participants' perspectives. Interviews with middle management and the clinical staff representative of each unit explored:

1. the existing de-escalation practices, including seclusion and restraint reduction strategies;
2. the previous implementation of sensory modulation in the unit; and
3. staff experiences of using sensory modulation.

3.2.7.3. Focus groups

In this study, the focus groups involved bringing together a representative sample of service users and mental health staff in separate sessions to capture their views on the impact of sensory modulation during the evaluation phase (see Appendix B:Q6 & Q8). Service users and staff were interviewed as separate groups and discussed various themes regarding the impact of the programme's implementation. Participants were asked to respond to a series of topics and questions posed by the researcher to explore the impact of sensory modulation programmes including:

1. the confidence and competency levels of mental health staff in using sensory modulation;
2. the facilitators and barriers in programme implementation;
3. the impact of sensory modulation on the unit, including service users and mental health staff; and
4. the acceptability of sensory modulation, particularly for males and service users who identified as Māori or Pacific Islander.

3.2.7.4. *Organisational documents*

The organisational documents were reviewed using the 'New Zealand Guidelines for District Health Boards: Mental Health Quality Monitoring and Audit' (MOH, 2002). Documents reviewed were incident and accident reports, monthly seclusion reports, service users' mental health clinical records (namely progress notes and risk management plans), and organisational policies related to the de-escalation of aggressive behaviour, agitated and distressed service users, and seclusion and restraint use.

3.2.7.5. *Survey of physical context*

A systematic survey of the physical and organisational context, including the physical layout of the building, was conducted to map the unit's operations and programmes.

3.2.8. Data analysis.

The process of pattern-matching is illustrated in Figure 3.5. The present study applied three stages of pattern-matching, namely: (1) presenting the theoretical propositions of the study; (2) evaluating the research findings against the theoretical propositions; and (3) exploring the patterns of findings.

Answers were sought for the three research questions and associated propositions. The collected data were analysed by returning to the theoretical propositions and explaining the influences and impact of implementing a sensory modulation programme in acute mental health units.

3.2.8.1. *Research phase 1: baseline*

In order to answer the research question of existing practices, norms, beliefs, and policies related to de-escalation and the reduction of seclusion and restraint, including the factors that shaped these practice baseline, data were analysed in the following ways:

- Descriptive statistics for the quantitative data on organisational readiness, ward climate, staff confidence in behaviour management, staff attitudes towards seclusion, seclusion rates.
- Thematic analysis of qualitative data on existing distress management and de-escalation practices, seclusion, restraint and PRN use, and organisational policy related to de-escalation and seclusion/restraint use, and service users clinical files.

3.2.8.2. Research phase 2: implementation

To answer the second research question on how organisational and staff factors influence sensory modulation implementation, data were analysed in the following ways:

- Descriptive statistics for the quantitative data on staff sensory modulation knowledge, records of sensory room use, and service users rating of arousal pre and post sensory modulation use.

3.2.8.3. Research phase 3: evaluation

In order to answer the third research question on impact of sensory modulation, data were analysed in the following ways:

- Descriptive statistics for the quantitative data on ward climate, staff confidence in behaviour management, staff attitudes towards seclusion and seclusion and restraint, PRN use, seclusion rates, and implementation fidelity.
- Thematic analysis of qualitative data on staff, managers', and service users' views on implementation and impact, and service users' clinical files.

Descriptive statistics for quantitative data were undertaken using IBM SPSS® Statistics (2015) to produce tables for frequencies, percentages, medians, and cross-tabulation analysis of key variables. The pre-(research phase 1: baseline) and post-(research phase 3: evaluation) data were analysed to examine the impact of the sensory modulation programme on ward climate, staff confidence in managing challenging behaviour, staff attitudes towards seclusion, and seclusion and restraint rates. A comparison of median scores was presented, rather than using statistical analysis, because of the small number of group participants (Fisher Box, 1987; Laerd Statistics, 2015a, 2015b, 2015c; Zar, 2009). However, a nonparametric Wilcoxon signed rank test was used to compare the pre-post data for each participant. This test is equivalent to the dependent t-test to incorporate information about the magnitude of changes in pre-post data (Laerd Statistics, 2015 a, 2015b, 2015c ; Roberson, Shema, Mundfrom, & Holmes, 1995) and to understand whether there was a difference in the ward climate, staff confidence on managing challenging behaviour, staff attitudes towards seclusion, and seclusion rates before and after programme implementation.

NVivo (v10) computer software was utilised to analyse the qualitative data. The embedded qualitative data from the focus groups, individual interviews, and

organisational documents were analysed using thematic analysis (Given, 2008; Nowell, Norris, White & Moules, 2017). This dual analysis provided a meaningful organisation of the themes and ideas within the qualitative data. Codes were developed to designate the identified strands of data. These codes were organised into categories for specific units or ideas to elicit key themes related to the study questions and propositions (Given, 2008; Nowell et al., 2017). Collectively, the themes from the qualitative data were compared and contrasted with the questionnaire data.

3.2.8.4. *Exploring propositions*

Using case study methodology, the findings in relation to each of the research questions and phases were used to either accept or reject the seven theoretical propositions. If a theoretical proposition is rejected, a rival explanation is explored. A rival explanation is “a plausible alternative different from a study’s originally stipulated propositions for interpreting the data or findings in a case study” (Yin, 2014, p. 240). There are several types of rival explanations in social science research (Yin, 2014). For the present study, the ‘real life’ rivals, namely implementation and theory rivals, were explored. ‘Implementation rival’ refers to the implementation process, which accounts for the results, while ‘theory rival’ refers to a theory different from the original theory, and which explains the results better (Yin, 2014). Not all sources of information are relevant to case studies (Yin, 1994, 2014); therefore, both qualitative and quantitative data were critically examined to explore rival explanations. A key tenet of the present study was that qualitative precedes quantitative method in the analysis of mixed-method data analysis (Palinkas, Aarons, Horwitz, Chamberlain, Hurlburt, & Landsverk, 2011). This examination process aimed to reduce analytical biases and increase data validity. According to Yauch and Steudel (2003), triangulation of data types and sources provides a deep understanding of each organisation’s culture, enables the analysis of the values, attitudes, and behaviours within the organisation, and supports the evaluation of outcomes for service users.

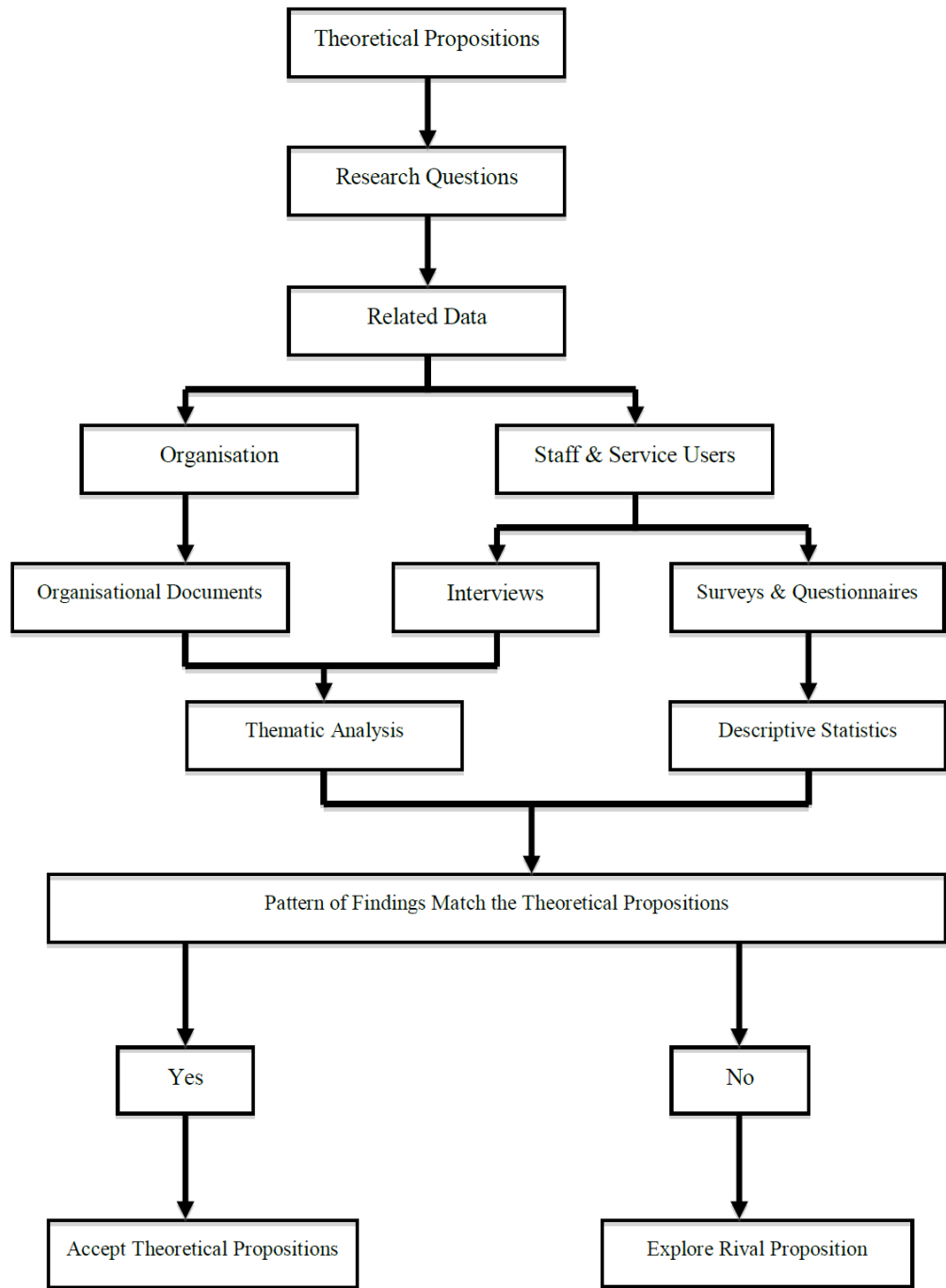


Figure 3.5. Pattern matching process

3.3. Summary

This chapter discussed how an organisational case study design methodology was used to explore the implementation of a sensory modulation programme in two acute adult inpatient mental health services in New Zealand. This chapter illustrated the development of an exploratory double case study with embedded units of analysis, in line with Yin's

(2014) approach to case study research. The benefits and considerations related to using case study methodology within implementation studies were presented. Both quantitative and qualitative data were collected from management, clinical staff, service users, and service records to evaluate the key variables affecting the implementation and impact of the sensory modulation programme. The use of an organisational case study as a research methodology aimed to provide an in-depth understanding of the factors influencing the implementation and impact of sensory modulation within the two acute mental health services. The current study featured the rigour of Yin's case study methodology. The data collected from multiple sources addressed the research questions and propositions. Data analysis included were triangulation, pattern matching and cross-case analysis. Supervision and expert consultation were also obtained for further analysis of results. The next chapter will present the collected findings, using Yin's (2014) approach of organisational case study presentation. The findings are presented under three major headings, namely; (1) description of the unit context, policies, and practices; (2) implementation of the sensory modulation programme; and (3) the organisational impact of the programme. Under these three major headings each proposition was assessed against the collated data.

CHAPTER FOUR: DESCRIPTION OF INPATIENT

UNIT ‘A’

This chapter discusses the findings regarding the research phase one on baseline data from Unit A in order to answer the research question: ‘What are the existing practices, norms, beliefs and policies related to de-escalation and the reduction of seclusion and restraint, and what factors have shaped these?’ A diagram (4.1) is provided below to show the link between the relevant study proposition, research question, and data collected in the first phase of the study.



Study Propositions 	Research Questions 	Related Measures and Qualitative Data
The existing organisational culture, policies, and procedures will significantly affect the implementation of a sensory modulation programme (Wale et al., 2011).	Study Phase 1: What are the existing practices, norms, beliefs and policies related to de-escalation and the reduction of seclusion and restraint? What factors have shaped these?	<ul style="list-style-type: none"> • Organisational Readiness Questionnaire (Colton, 2004) (Management and senior staff reps) • Review of organisational policy on seclusion and restraint and de-escalation; progress notes; incident and accident reports; and risk management plan. • Survey of physical context • Sensory Modulation Competency Questionnaire (Azuela & Robertson, 2013, 2016) • 1:1 Interviews with staff (Management and senior staff reps) • Upper Management Survey

Diagram 4. 1. Unit A link between propositions, research questions, and related measures and qualitative data

The chapter provides a description of inpatient unit A to give a clear and in-depth understanding of the context and factors potentially influencing sensory modulation implementation (Wale et al., 2011). The description of the unit is based on data collected during the first or ‘baseline’ phase of the study. The unit’s organisational and physical structure are described, along with a summary of the organisational practices, norms, beliefs, and policies related to sensory modulation, de-escalation, and the use of seclusion. A systematic survey of the physical and organisational context, including the physical layout of the building, was conducted to map the unit’s operations and

programmes. The survey involved site visits, accessing and reviewing organisational documents, and interviews with staff and management. Existing sensory modulation tools, modalities, and assessments were identified. Additionally, a questionnaire to assess the unit's organisational readiness for reducing seclusion and restraint (Colton, 2004) was conducted. The results of the site survey and questionnaire are presented in this chapter to highlight contextual factors that may have influenced sensory modulation implementation.

4.1. The Organisational and Physical Context

According to Unit A's Information Booklet, written in 2009, the unit provides services for people experiencing severe mental distress who pose risks to self and/or others and are considered too unwell to be cared for at home. During the study period, the service had beds for 29 service users, providing psychiatric assessment and treatment planning, medicine administration and monitoring, individual and group therapeutic activities, wellness education, and community services links. The service's mission statement was to provide the best possible clinical care in a respectful, supportive, safe, and caring environment. Admission to Unit A was either voluntary or under the Mental Health Compulsory Assessment and Treatment Act 1992. Middle management reported that the unit had between 30 and 40 admissions per month.

Unit A had a total of 66 full-time staff, composed of one team leader, one clinical nurse specialist (vacant position), two consultant psychiatrists, two psychiatric registrars, one consultant psychologist, two occupational therapists, three social workers, 35 registered nurses, three enrolled nurses, and 15 support staff. The support staff comprised of two occupational therapy support workers, 10 mental health support workers, one Māori cultural worker, and two consumer consultants. The team leader provided managerial leadership to the staff, while the clinical nurse specialist provided clinical practice leadership to the nurses. These health professionals and support staff worked as a multidisciplinary team (MDT) to provide treatment and care to service users.

Unit A operated from a two-storey building and the sensory modulation room was located on the second floor of the unit. The building floor plan was provided in the unit's Building and Property Services document (see Figure 4.1). On the ground floor, the unit had a locked side, an open side, and areas for intensive and acute care. On the locked side were

separate inpatient rooms for male and female service users, while on the open side, male and female service users could interact. The intensive and acute care areas were used for the care of service users who were acutely or sub-acutely unwell and required on-going monitoring of their mental state by staff. The unit's seclusion rooms and de-escalation areas were located on the ground floor in the locked side of the unit. Other facilities for daily living included a kitchen, laundry, toilets, lounges, individual bedrooms for service users, gym, music room, art and craft room, gardens, games room, and meeting rooms.



Figure 4.1. Unit A floor plan [figure was taken out to protect the confidentiality and anonymity of the unit]

4.2. Existing Organisational Strategies for Seclusion Reduction

Interviews about Unit A's existing organisational strategies for seclusion reduction were held with the middle management and allied health staff who led the unit's seclusion and restraint reduction strategies. Participants identified that two key aspects of organisational change had been put in place to reduce seclusion and restraint use. Firstly, Unit A's seclusion policy had been updated in 2015. The unit, as part of the Mental Health Directorate, expressed a commitment to seclusion and restraint reduction that applied to the entire staff directorate and outlined expected practice in the use of seclusion as a clinical intervention. The policy stated that the DHB aims "to minimize the use of restraint in all its forms, and to ensure that when restraint practice occurs it is in full regard for safety, personal dignity, cultural and legal requirements" (p. 1). The policy explained that use of restraint should only be used when all other calming strategies and clinical interventions had not worked.

The second strategy for organisational change that had been implemented was that the DHB's working committee on seclusion and restraint reduction met twice a month to plan strategies for seclusion and restraint reduction and monitor data and the implementation of strategies. The committee included the leaders of the inpatient units and the upper management of the Mental Health Directorate. The team leader, clinical nurse specialist, and consumer advisor of Unit A were members of the committee. Additionally, the Quality Monitoring and Audit Department of the Mental Health Directorate collected monthly data on seclusion and restraint for all inpatient units. The organisation's mental

health service and seclusion minimisation group monitored these data and made recommendations and actions. At the time of the document review, seclusion policy indicated that the policy document was due for a review.

4.3. Existing Practices for Managing Service User Distress and Agitation

Information related to the existing practices for managing service users distress and agitation came from individual interviews with staff and middle management. Interview data indicated that a range of existing strategies was used to manage or de-escalate service user agitation, distress, or aggressive behaviour. It was noted that, typically, nurses facilitated crisis management within the unit because they made up the majority of the workforce and had the most training in this area. Interviews with a member of the unit's middle management and a clinical staff representative revealed that staff utilised the following strategies.

4.3.1. One-on-one work by nurses, allied health and support staff.

Interpersonal and communication skills were considered by participants as an essential aspect of one-on-one de-escalation. The method of one-to-one work involved sitting down with the service user for an extended period, actively listening, and attempting to understand the service user's actual circumstance, "to work out what's going on for them and what's not working" (Nurse A1). Various staff, from doctors to support staff, might offer one-on-one time, to provide multiple opportunities to reduce distress and avoid coercion. There was an attempt to match staff with service users, including level of rapport, cultural identity, and gender. The ability to get alongside and listen to service users was seen as a strength of the ward staff:

The main practice really is the skill of the staff around talking and listening. That's always been very, very well [done] and that continues to be done really well. Our main strength is the way that the staff communicate with patients who are extremely distressed....The one-to-one work of the nurses and support workers. We've got a good group of allied health team, especially the social workers really, who get alongside people. (Middle management A1)

4.3.1. Distraction techniques and activities.

Interview data suggested that staff utilised the unit facilities to provide distractions and a change of environment for distressed service users:

Distraction techniques, we've had the internet, computers put on the ward to help. We use leave, take people out for walks when they're feeling too cooped up. We have therapeutic activities in the unit with various activities. We hit the gym here, we have a music room. (Middle management A1)

Many of these strategies, such as the use of music, gym activities, and going for a walk with the service user, had alerting or calming elements, but were not necessarily thought of as sensory modulation interventions. The occupational therapists had a key role in facilitating various group and individual activities for service users to engage in, which also provided meaningful distraction.

4.3.2. Utilisation of sensory modulation through occupational therapists.

Interviews indicated that Unit A's occupational therapists had been providing sensory modulation to distressed service users for a number of years prior to the study. However, nurses were usually the first point of contact during crises, and therapists were not always accessible. The interviewees suggested that having staff with dedicated time for leading and applying sensory strategies would be critical to embed the approach within the ward.

[Another DHB implemented SM], but that was really strongly driven by their OTs, I think they had two very, very good OTs who really did a nice job of driving it and it was quite well implemented. If you don't have anyone sort of championing new things like that they tend to not work, and you can't get the nurses to champion new things either because their workloads are just too big. And whenever they're here they have a caseload so they can't, you can't just leave your caseload. You've always got to be doing. (Middle management A1)

I think we need dedicated sensory modulation therapists. We certainly need increased staff available or we need to know we're working on this whole releasing time to care within the unit. (Allied health A1)

4.3.3. Time out.

Time out refers to a planned behaviour management approach where the service user spends time alone in a quiet room or bedroom that is not locked. Staff reported using this technique with service users who were threatening physical or verbal violence, with the aim of avoiding the use of the de-escalation area and preventing seclusion. Staff noted

that service users were generally escorted to their room to spend quiet time in a peaceful environment, and this may be combined with one-to-one time:

The time out technique is the one that's always been used by the nurses especially the experienced nurses have always used time out. Sitting with someone for a long period of time and listening, and trying to work out what's going on for them and what's not working. (Middle management A1)

4.3.4. PRN medication.

Interviews indicated that one of the most commonly used conventional approaches for managing distress and agitation was the use of PRN or 'as needed' medication. This use of medication was a widely accepted option amongst the team. Administration of PRN medication was generally the responsibility of nursing staff and could be initiated by staff or in response to a service user request.

I think it (PRN) has the desired effect in most cases, so it does contain the situation. It is most often effective in de-escalating a particular service user, and for some service users, there's quite a lot of insight into the use of PRN as one option. (Allied health A1)

4.3.5. The use of seclusion and restraint.

Interviews indicated that seclusion and restraint techniques were seen as acceptable and necessary options when service users were most distressed and highly escalated. However, they were also seen as a last resort when all other options had been exhausted:

It's only really worst case scenario that do restraints occur or seclusion occurs really. And it shows with our stats around, I mean, we've got quite a low seclusion stat compared with the rest of the country, but I'm not sure about the restraint statistics as well. (Middle management A1)

So if someone's needing the medication or a depot medication injection, you don't just run in there and restrain them and inject, that's not, that's sort of done towards the end of a whole bunch of steps. You're trying to get the person to take the medication in multiple attempts and different people make those attempts as well. From the doctor to any of the support workers, anyone. I'll go in and try, and different things as well, because you don't want to just run in and be restraining and giving people IM medication, because that's not going to be good for them in the long term essentially. We will do it if we have to, because we need to get people well, but whole bunch of things to try before that. (Middle management A1)

Interviews indicated that staff were aware of the drive to reduce the use of seclusion and its negative impact on service users. It was recognised that when seclusion and restraint were used, the sudden apparent presence of many people, the amount of direction given to the service user by staff, and the physical contact during the process are likely to make

the service user more anxious and distressed. This in turn increased staff's perception that coercion was necessary.

4.4. **Organisational Readiness for Reducing Seclusion and Restraint**

Six staff members from Unit A completed the 'Organisational Readiness for Reducing Seclusion and Restraint' questionnaire (ORQ) (Colton, 2004). The primary purpose of the ORQ is to rate the organisation's readiness for change in relation to nine factors that influence seclusion and restraint reduction. These factors are: 1) leadership; 2) orientation and training; 3) staffing; 4) environmental factors; 5) programmatic structure; 6) timely and responsive assessment and treatment planning; 7) processing after the event (debriefing); 8) communication and consumer involvement; and 9) systems evaluation and quality improvement.

The six staff were identified as key informants because of their knowledge of the unit's policy and practices related to reducing seclusion and restraint and included upper management, middle management, and clinical staff (nurse and allied health). Participants, as a group, collectively rated the ORQ using a six-point Likert scale through discussion, as follows. A rating of 0 was given for *insufficient information* ('additional information is needed to make this assessment'); 1 for *no action/no discussion* ('little if any recognition that there is a problem'); 2 for *espoused* ('some discussion and possibly some planning, but still no action'), 3 for *intermittent/inconsistent* ('some steps taken, but not necessarily as part of a well thought strategy'), 4 for *action* ('activities are consistent and based on strategic plan'), and 5 for *sustained* ('strategically focused activities are maintained over time') (Colton, 2004). Higher scores indicate greater readiness of the organisation in relation to seclusion and restraint reduction. In analysing the ORQ, median scores were used, as participants rated each item on an ordinal Likert scale (Fisher Box, 1987; Laerd Statistics, 2015a, 2015b, 2015c; Zar, 2009).

The nine readiness items produced a median score of no more than three (Figure 4.2), illustrating the strengths and gaps in Unit A's readiness for organisational change (Refer to Appendix B: Q1 for a detailed description of each item and their corresponding actions for reducing seclusion and restraint).

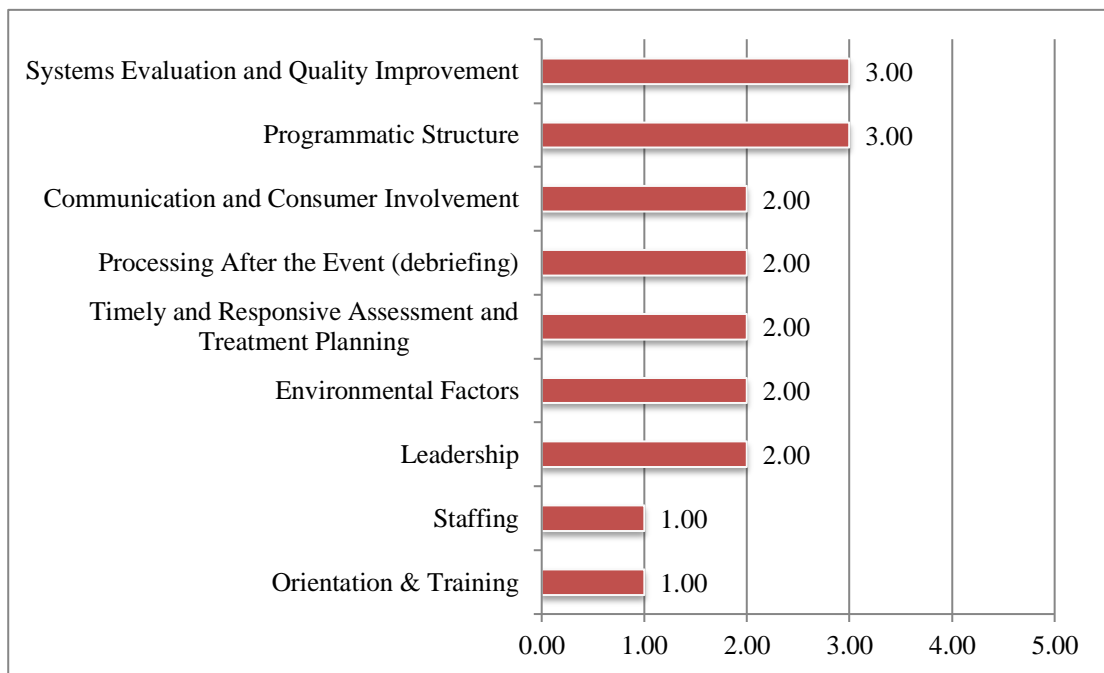


Figure 4.2. Median scores of Unit A participants on ORQ (n=6)

The two highest rated items—‘systems evaluation and quality improvement’ and ‘programmatic structure’—had median scores of 3, indicating readiness in aspects of the organisation’s systems, such as having established procedures for the evaluation of seclusion and restraint use. These included a) data management and qualitative data reviews on incidents and b) an internal audit system to investigate incidents and provide information that could be used to improve the quality of care. ORQ scores also indicated positives in the activities programme structure, in that it was designed to empower service users, was based on service users’ needs as well as evidence, and enhanced the process of learning through experience.

However, the scores also indicated that Unit A needed to take further action in relation to some aspects of quality improvement and programme structure. These included making seclusion and restraint data available to all staff so they can measure the effects of their reduction efforts, and to examine the relationship between seclusion and restraint use and other factors, such as service user demographics and time of incidents. The unit could also improve its activities programme structure by providing a written description of the programme to staff and service users that clearly outlined expectations, routines, and rules (Colton, 2004).

Several items on the ORQ had a median score of 2, which indicated significant gaps in Unit A's readiness for change. These items included leadership, environmental factors, timely responsive assessment and treatment planning, processing after the event (debriefing), and communication and service user involvement. The ORQ scores indicated the unit had a philosophy of treatment, which emphasised the use of non-restrictive interventions and had the resources needed to reduce seclusion and restraint. However, the leadership issues included a lack of documentation and articulation to staff about the goals or plan to reduce seclusion and restraint, overdue review of the seclusion and restraint policy, and staff at all levels were not encouraged to participate in the change process. The ORQ scores revealed that the unit's physical environment required attention, particularly in reducing the association between seclusion and time out. Ideally, separate rooms needed to be designated for time out and calming rooms. Another environmental factor identified as requiring improvement was the noise within the unit living areas, where carpeting and a soundproof ceiling would reduce ambient stress.

The ORQ scores also revealed that assessment and treatment planning processes were less timely and less responsive than they could be in the unit. In particular, greater involvement of caregiver staff was needed in treatment decisions on passes, transfers, and readiness for discharge. The assessment should identify approaches that have been tried and either worked or failed in managing service users' aggression and self-harm behaviours, and should include individualised behaviour management and preferred treatment interventions as identified by service users.

ORQ scores identified that Unit A did have a consistent process for service user and staff debriefing after critical incidents. Service users were given an opportunity to respond to staff perspectives during debriefing processes. However, ORQ scores also indicated serious attention was required to Unit A's mechanism of collecting information and analysing the results of debriefing. The ORQ scores revealed that the unit had a process in place to inform family members of significant changes in the service user's condition and response to treatment. However, there was no process for informing families and service users about the organisation's seclusion and restraint policies and when these interventions are used, including explanations as to why the intervention was necessary. The introduction of service user and family satisfaction surveys could inform decision-making and provide feedback for the development and review of programmes, processes,

policies, and procedures. Ensuring there is service user advocacy and representation in the development and review processes would support the empowerment of service users in the reduction of restrictive interventions.

The median score for the ORQ items of ‘orientation and training’ and ‘staffing’ was 1, which indicates ‘no action/no discussion’. The ORQ scores suggested that there was a problem in the orientation and training of staff in behaviour support and intervention in reducing seclusion and restraint. Training modalities, mentoring, coaching, and supervision opportunities for staff were limited, including a lack of access to regular re-training and refresher courses for staff. The ORQ scores indicated that there was an inadequate number of staff available in critical times, such as during transitions, at change of shift, in the evenings, and at times of high acuity. In line with limited staffing, the ORQ scores revealed that staff had limited time to attend training and limited opportunity to provide support to other staff for relief time to reduce burnout. The unit had no process to ensure staff were assigned to where and when they were most needed across shifts and units, including consideration of the mix of staff to implement various interventions. Similarly, processes of staff empowerment, such as self-scheduling and alternative schedules, were also seen to be lacking.

In summary, most ORQ items were rated between 1 (as no action/no discussion) to 2 (as espoused) for reducing seclusion and restraint. The overall ORQ median rating was 2 (*‘espoused’*), suggesting Unit A had “some discussion and possibly some planning, but still no action” (Colton, 2004, p. 22) in terms of their organisational readiness for reducing seclusion and restraint. These findings indicate that Unit A required further planning, development, and implementation of specific strategies and action steps including developing leadership, consumer involvement, and staff training in order to successfully reduce seclusion and restraint. According to the first two case study propositions, these aspects of organisational readiness may have been significant in facilitating or hindering the implementation of sensory modulation. There had been previous attempts to introduce the approach, with limited success, and these will be discussed now.

4.5. Existing Sensory Modulation Facilities and Past Implementation

At the baseline phase of assessment, Unit A had an existing sensory room situated on the second floor of the building in the open side (see Figure 4.1 Unit A floor plan). The design and layout of the existing sensory room is depicted in Figure 4.3. A good range of sensory tools was available in the room (see Table 4.1).

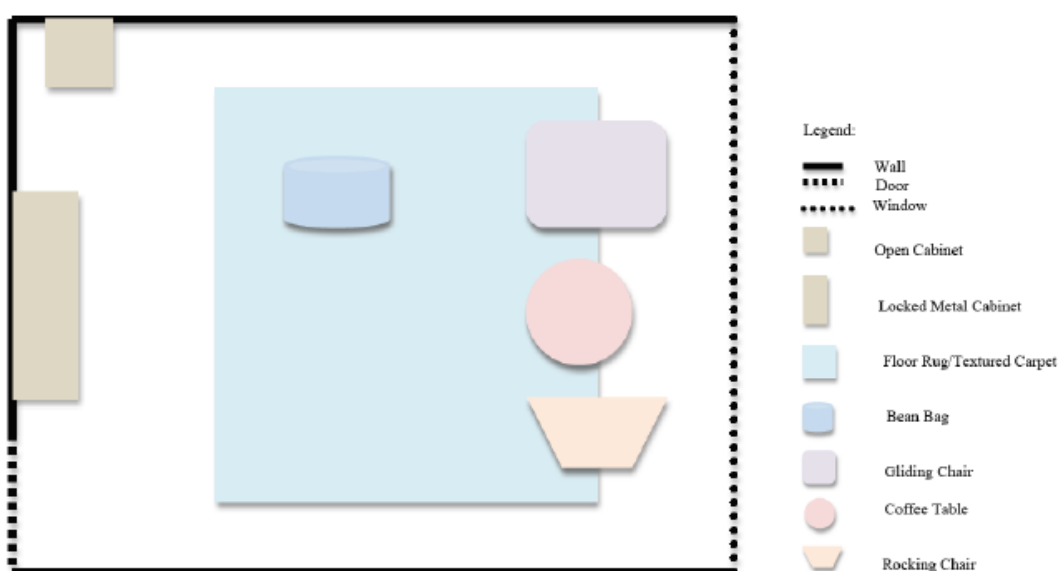


Figure 4.3. Unit A internal layout of existing sensory room

Table 4.1. Unit A existing sensory tools in the sensory room

Senses	Sensory Tools
Visual	Lava lamps (red/green), kaleidoscope, bubbles, lamp
Tactile	Light weighted soft toy (giraffe 5 kg), tapping bag, tactile brushes, fidget items – balls, squeeze, caterpillar stretch, Play dough, weighted blankets (7.5kg; 10 kg; 15kg), textured soft pillows, velvet blankets
Olfactory	Essential oils home fragrance, lotions fragrance, bells, drums, and shakers
Gustatory	Herbal teas
Auditory	CDs and sound system
Proprioception	Medicine balls (green and blue)
Vestibular	Leather synthetic beanbag, rocker glider

The use of a sensory approach on the unit had started in 2009, with the conversion of a bedroom into a dedicated ‘sensory room’. While the concept of the sensory room and sensory modulation had been present since 2009, staff reported that the approach had rarely been used or properly implemented in previous attempts. The unit’s sensory room became unavailable for 18 months when the service was temporarily moved to another town while the whole unit was being refurbished. The unit refurbishment was completed in 2011 and a purpose-built sensory room was established. However, this room was

under-utilised. The room was located on the ground floor, on the locked side of the unit directly across from the seclusion room, but had lost its purpose as a dedicated sensory space because of the location of the room.

In my view we've never had sensory modulation in the unit and we still don't. There is a sensory room and it looks quite pretty but it's completely underutilised. The training is meant to be compulsory but there's been no trainers. Yeah it's very seldom, it's very seldom used... (Middle management A1)

Service users accessing the sensory room within the seclusion area would put themselves at risk with other agitated service users who were also in the seclusion area. As a result, a room at the second floor of the unit was transformed into a sensory room as depicted in Figure 4.1 Unit A floor plan.

However, at the time of the Phase 1 interviews the sensory room's location on the second floor was seen to be limiting access for highly distressed service users, as well as staff. According to the allied health staff, accessing the room was problematic for service users with physical limitations, as there were two flights of stairs between the ground floor and second floor. While an elevator could be accessed from the unit's reception area, this was not convenient for highly distressed service users or the staff supporting them:

We need resources readily available; having a locked room positioned upstairs on the open unit is not particularly helpful. I feel like we need resources certainly on the locked side of the unit preferably within the de-escalation unit, as well as within the main area of the locked side unit. (Allied health A1)

Based on recommendations from its Learning & Development Department in 2012, the organisation made training in sensory modulation compulsory for all staff, as it was seen as a core competency for working in an inpatient unit. However, reports from the middle management indicated that such training was not held between 2012 and 2016. The allied health staff reported that there were previous attempts to restart the training, but sessions were often cancelled because of very low numbers of participants registering. The middle management thought that staff appeared to be reluctant to attend the training because of time constraints, rostering issues, and covering multiple duties. Staff who had participated in the 2012 training showed increased motivation and drive for sensory modulation. However, even these staff had prioritised other aspects of their work, resulting in challenges to applying what they had learned from the training. According to the middle

management, it was the limited number of trained staff that had prevented the implementation of sensory modulation.

Before you came along, there hasn't been any sensory modulation training. So, we've got a sensory room and you can't use it unless you've done the sensory modulation training, but there's no sensory modulation training, or when it was meant to be booked in, it was cancelled. So you've got essentially a room that is set up, that people can't use. (Middle management A1)

The nurses, they've wanted to use that space but sort of been told not to use it because you have to have the training but then the training's never been available. So, that hasn't really helped! (Middle management A2)

At the time the occupational therapist was the only trained staff member using sensory modulation. The sensory room was locked; and access was limited to trained staff, which excluded most staff due to their lack of training. The occupational therapy support worker had an understanding of sensory modulation principles, but was unable to apply this knowledge due to a lack of formal sensory modulation training.

Other staff believed that successful implementation required more than basic training:

Training is one part, but there are lot, way more fundamental changes that need to be put in place before people would be able to implement the new knowledge that they've got. (Allied health A1)

Despite the issues with training and uptake of sensory approach, nurses were genuinely interested in attending training and using sensory modulation as a therapeutic tool within the unit. The middle management also expressed a level of interest and belief that the approach could be helpful.

Like the [weighted] cats or the dogs and things like that generally been with patients with a borderline personality, and I've seen it, in my view it seemed to be quite effective. I think the sensory modulation room has been used for that client group at times as well, but I've mainly heard feedback about the weighted soft toys being quite useful for and therapeutic for people. (Middle management A1)

The allied health staff indicated that a few clinicians and support staff had mixed responses to the sensory modulation approach. Both allied health staff interviewed reported that the unit's doctors did not mention sensory modulation as a possible intervention in team meetings. They also suggested that nurses who had been nursing for a longer period were perhaps less open to using sensory modulation, due to lack of

knowledge and experience with the approach. They suggested that the lack of training opportunities and restrictions in using the sensory room and tools had likely affected most staff members' level of interest in using the approach.

And on one level they're feeling like they are being told and encouraged that they should be looking for alternative, yet their hands are tied because the room is locked and they're not allowed to access those tools. (Allied health A2)

There was an assumption that morning support staff had more exposure to sensory modulation because of the presence of occupational therapists during the day shift. There was a suggestion that support workers would be well placed to use sensory strategies, as they are involved with one-to-one observations with service users and may have greater understanding of service users' presentations. However, while support workers were eager to use the approach, they were not trained and made no contribution to the decisions around service users' clinical management.

On the whole the support workers are really eager... [However] I think they are kind of limited and it gets reinforced that they don't have a place in terms of medication they don't necessarily have a place in terms of restraint and seclusion and, and have no contribution at the moment to the decisions around those things at all. (Allied health A1)

Middle management and allied health staff shared the view that another challenge was the perception amongst nurses and support staff that sensory modulation is an approach used only by occupational therapists.

On our unit it's almost an unwritten rule that sensory modulation is something that only occupational therapist can do because up until now they're the only one with the training. (Allied health A1)

In summary, despite an interest in implementing sensory modulation and investment in a room and equipment, previous attempts had not been successful due to lack of access to training and poor room location. Perceptions related to responsibilities and roles in the use of the approach varied, and this lack of clarity was also seen to be a barrier to successful implementation.

4.6. Staff Sensory Modulation Competency

At the baseline phase of the current study, staff sensory modulation competency was assessed. Of the 66 staff members in Unit A, 21 completed the Sensory Modulation Competency Questionnaire (SMC-Q) (Azuela & Robertson, 2016), before participating

in the training. The response rate to completing the training was 32% of the total staff (see Table 4.2). Participants rated the 18 learning items in the questionnaire using a five-point Likert scale, ranging from 1 as '*not at all*', 2 as '*barely*', 3 as '*slightly well*', 4 as '*fairly well*', to 5 as '*very well*', to best describe their knowledge of each of the listed competencies and learning items. Six competencies were assessed: (1) Knowledge of Clinical Principles; (2) Therapeutic Use of Self; (3) Use of a Sensory Assessment; (4) Selection of a Sensory Therapeutic Activities; (5) Displaying Supportive Attitude when Using the Sensory Room; and (6) Personal Safety Tools. There were three specific learning items under each of these competencies. Higher scores on the SMC-Q are indicative of a higher level of sensory modulation knowledge.

The SMC-Q was used as a pre-training survey to identify baseline sensory modulation knowledge amongst staff participating in the training and to identify other considerations for the training delivery. Staff who participated in the survey were predominantly female, with nursing backgrounds, and aged 18-30 years. All participants held a tertiary degree. Five (24%) had previously attended sensory modulation training and 13 (62%) had previously attended training that was relevant to sensory modulation practice, such as calming and restraint, managing challenging behaviour, and trauma-informed care. These high percentages may indicate that staff who had attended previous sensory modulation or other relevant training were more likely to attend.

Participants rated the 18 learning items in the questionnaire using a five-point Likert scale, ranging from 1 as '*not at all*', 2 as '*barely*', 3 as '*slightly well*', 4 as '*fairly well*', to 5 as '*very well*', to best describe their knowledge of each of the listed competencies and learning items. Six competencies were assessed: (1) Knowledge of Clinical Principles; (2) Therapeutic Use of Self; (3) Use of a Sensory Assessment; (4) Selection of a Sensory Therapeutic Activities; (5) Displaying Supportive Attitude when Using the Sensory Room; and (6) Personal Safety Tools. There were three specific learning items under each of these competencies. Higher scores on the SMC-Q are indicative of a higher level of sensory modulation knowledge.

Table 4.2. Demographic distribution of Unit A SMC-Q respondents (n=21)

Demographics		Number (Percentage)
Gender	Male	6 (29 %)
	Female	15 (71 %)
Age	18-30 years	10 (48 %)
	31-40 years	5 (24 %)
	41-50 years	2 (9 %)
	51-60 years	4 (19 %)
Discipline	Nurse	14 (67 %)
	Occupational Therapist	2 (9 %)
	Social Worker	1 (5 %)
	Support Worker	1 (5 %)
	Others	3 (14 %)
Highest Education Level	Bachelor's Degree	6 (29 %)
	Bachelor with Honours	1 (5 %)
	Post-graduate Certificate	7 (33 %)
	Post-graduate Diploma	3 (14 %)
	Masters	1 (5 %)
	Others	3 (14 %)
Years of Working Experience In Mental Health	Less than 1 year	4 (19 %)
	1-2 years	7 (33 %)
	3-4 years	1 (5 %)
	5-6 years	2 (9 %)
	9-10 years	2 (9 %)
	11 years and above	5 (24 %)
Previous Sensory Modulation Training	Yes	5 (24 %)
	No	16 (76%)
Previous Training with Some Relevance to Sensory Modulation (e.g. Trauma informed care)	Yes	13 (62 %)
	No	8 (38 %)

Scores were analysed descriptively using SPSS[®] v25 (IBM, 2017). Median scores were used because it was considered to be the most appropriate method for an ordinal Likert scale (Fisher Box, 1987; Leard Statistics, 2015 a, 2015b, 2015c; Zar, 2009). Overall, the SMC-Q revealed that staff knowledge of sensory modulation ranged from 1 to 3.5, with an overall median score of 3 (SD=0.88), indicating that the staff had basic knowledge of sensory modulation practice. Results for each of the competency areas are presented in Table 4.3.

Table 4.3. Median, standard deviation and range scores of Unit A staff on the SMC-Q

Sensory Modulation Competency Areas	Median	SD	Range
1 – Knowledge in Clinical Principles	3	1.18	1-5
2 – Therapeutic Use of Self	4	1.10	1-5
3 – Use of a Sensory Assessment	2	1.08	1-4
4 – Selection of a Sensory Modulation Therapeutic Activities	3	0.91	1-4
5 - Displaying Supportive Attitude when Using the Sensory Room	3	1.02	2-5
6 – Personal Safety Tools	3	0.87	2-5
Overall Sensory Modulation Competency	3	0.88	1.5-5

Results from the SMC-Q showed that the highest median score was associated with competency 2, ‘Therapeutic Use of Self’, which refers to staff ability to purposely engage with service users in order to establish a therapeutic working relationship. This finding is not surprising because therapeutic use of self is core to most approaches in New Zealand mental health practice and is something the staff would have been familiar with in building a therapeutic alliance. The lowest median score was related to competency 3, ‘Use of a Sensory Assessment’, which refers to staff ability to carry out formal and informal sensory assessments. This finding suggests limited knowledge of sensory modulation principles related to selecting, conducting, and justifying appropriate sensory assessments. Overall, staff had some awareness of the idea and basic principles of sensory modulation, but lacked confidence and experience in applying them with service users.

In summary, most competency survey respondents were nurses and many had previously attended training directly related or relevant to sensory modulation practice. The data from the SMC-Q suggested that while staff had knowledge of the underlying principles their confidence and competence in applying sensory modulation needed development.

4.7. Pre-implementation Clinical File Review

At the baseline phase of the current study, a review of clinical files was undertaken to determine the documented evidence of the approach being used in practice. The audit was conducted using the ‘Review Template for Service Users’ Clinical Record’ (MOH, 2002).

Six clinical records were randomly selected from all available records three months before the sensory modulation programme implementation (see Table 4.4). The average age of the service users whose files had been selected was 42 years, with five files for females and three for males. Five were New Zealand European and one Māori. Five were single and one divorced. Primary diagnoses were drug-induced psychosis, bipolar and

personality disorders, depression and anxiety, schizophrenia (2x), and borderline personality disorder. All the service users had one to two admissions within the past two years, and the average length of the latest admission was four weeks.

Table 4.4. Audit of service users' clinical records pre-implementation of sensory modulation programme (n=6)

Sections	Service Users Clinical Records					
	File 1	File 2	File 3	File 4	File 5	File 6
Age	23	73	42	65	28	23
Sex	Male	Female	Female	Male	Female	Female
Ethnicity	Māori	NZ European	NZ European	NZ European	NZ European	NZ European
Diagnosis (axis 1 and 2)	Drug Induced Psychosis	Bipolar Mood Disorder II	Depression Anxiety	Schiz.	Schiz.	Borderline Personality Disorder
No. of admissions in past 2 years	1	1	1	2	1	1
Length of current admission	3 weeks	4 weeks	2 weeks	5 weeks	3 weeks	8 weeks
Orientation to SM room and strategies provided?	Yes	No	Yes	No	Yes	Yes
Sensory triggers and strategies for calming incorporated into safety plan?	Yes	No	Yes	No	Yes	Yes
Number and types of escalation/ critical incidents	None	None	None	1	None	None
For each incident: Was sensory modulation offered?	No	No	No	No	No	No
What level of escalation was SU at when sensory modulation was offered?	Not applicable	Not applicable	Not applicable	In de- escalation upon admission	Not applicable	Not applicable
Other strategies (sensory or other) used by staff or service user for managing distress?	Not applicable	Not applicable	Not applicable	One-on- one; weighted blanket	Not applicable	Not applicable

Out of these six clinical records, four records contained notes that service users received orientation to sensory modulation room and strategies. The same four clinical records contained notes that sensory triggers and strategies for calming were identified and incorporated into service users' safety plan. However, no records of escalation or critical incidents were identified in these files. Only one file contained notes about the use of a sensory modulation approach, where it was recorded that staff used the weighted blanket and one-to-one interaction with the service user as strategies for de-escalation and managing distress and agitation. After the clinical files were reviewed, it became evident

that purposive sampling of files for review may have provided more insights. The files randomly selected did not necessarily contain records of situations where sensory modulation for managing distress was indicated, making it difficult to determine whether sensory modulation was being used when and as needed.

4.8. Summary

At the time of the baseline survey, Unit A was a 29-bed facility for service users with severe mental distress. Existing strategies to manage or de-escalate service users' agitation, distress, or aggressive behaviour, included one-to-one work, limited sensory modulation, distraction techniques or activities, timeout, PRN medication and, as a last resort, the use of seclusion and restraint. However, the findings suggested that coercive practices were still regularly used in managing critical situations in Unit A.

Responses from the ORQ showed that Unit A's organisational readiness for reducing seclusion and restraint was low, with very limited actions taken related to all nine readiness items. The overall ORQ score for reducing seclusion and restraint was 2, which suggested that Unit A required further planning, development, and implementation of specific strategies and action steps. These included developing leadership, consumer involvement, and staff training to successfully reduce seclusion and restraint.

A sensory modulation room and tools were already present in Unit A, but were not being used frequently. Unit A had existing sensory modulation facilities, but had been unsuccessful in implementing sensory modulation in the past. The absence of training, poor sensory room location, and lack of clarity related to roles and responsibilities were barriers identified as hindering previous implementation. The competency questionnaire suggested that staff had knowledge of the underlying principles their confidence and competence in applying sensory modulation needed development. The files randomly selected did not necessarily contain records of situations where sensory modulation for managing distress was indicated, making it difficult to determine whether sensory modulation was being used when and as needed.

Baseline data from Unit A identified the existing practices, norms, beliefs, and policies related to de-escalation and the reduction of seclusion and restraint, which could have affected Unit A past implementation of a sensory modulation programme.

CHAPTER FIVE: DESCRIPTION OF INPATIENT

UNIT ‘B’

This chapter discussed the findings regarding research phase one on baseline data from Unit B in order to answer the research question one: ‘What are the existing practices, norms, beliefs, and policies related to de-escalation and the reduction of seclusion and restraint, and what factors have shaped these?’ A diagram (5.1) is provided below to show the link between the relevant study proposition, research question, and data collected in the first phase of the study.



Study Propositions 	Research Questions 	Related Measures and Qualitative Data
The existing organisational culture, policies, and procedures will significantly affect the implementation of a sensory modulation programme (Wale et al., 2011).	Study Phase 1: What are the existing practices, norms, beliefs and policies related to de-escalation and the reduction of seclusion and restraint? What factors have shaped these?	<ul style="list-style-type: none"> • Organisational Readiness Questionnaire (Colton, 2004) (Management and senior staff reps) • Review of organisational policy on seclusion and restraint and de-escalation; progress notes; incident and accident reports; and risk management plan. • Survey of physical context • Sensory Modulation Competency Questionnaire (Azuela & Robertson, 2013, 2016) • 1:1 Interviews with staff (Management and senior staff reps) • Upper Management Survey

Diagram 5. 1. Unit B link between propositions, research questions, and related measures and data

With a similar structure to Chapter 4, this chapter provides a description of inpatient Unit B in order to give a clear understanding of the context and factors potentially influencing sensory modulation implementation. A systematic survey of the organisational and physical context was conducted at the start of the project in order to map Unit B’s operations and programmes, including the physical layout of the building. The systematic survey involved site visits, accessing and reviewing organisational documents, interviews with staff and management, and data collection through the ORQ with selected staff. Existing sensory modulation tools, modalities, and assessments related to sensory

modulation were identified and the findings related to these baseline data will be presented.

5.1. The Organisational and Physical Context

At the time of data collection, Unit B had a total of 45 full-time staff. The multidisciplinary team (MDT) consisted of one clinical nurse manager (CNM), three associate clinical nurse managers (ACNMs), one clinical nurse specialist (CNS), 28 registered nurses, three enrolled nurses, one psychologist, two consultant psychiatrists, one psychiatric registrar, one occupational therapist, two social workers and six healthcare assistants. The CNM provided leadership and management and had overall responsibility for the administration and quality of service delivery. The ACNMs were responsible for the unit's day-to-day operations. They oversaw the care of service users from admission to discharge, liaised between all staff and other relevant services, managed resources, and facilitated multidisciplinary meetings.

During the study period, the service had beds for 26 service users. The service provided in Unit B focused on specialist assessment and treatment for people experiencing moderate to severe acute episodes of mental illness, delivered in a safe environment. The nurse staff and middle management reported that the service had a clinical focus on ensuring safety, stabilisation, and clinical management of service users to return them to a least restrictive environment. Admission to Unit B was either voluntary or under the Mental Health Compulsory Assessment and Treatment Act 1992.

According to the unit's service specification, written in 2016, care was based on the philosophy of providing high-quality mental health services. The assessment and treatment processes focused on wellness and recovery of service users and were family- and community-oriented. The emphasis of treatment was through one-to-one interventions, rather than group programmes. A previous group based educational programme of anxiety management, assertiveness, self-esteem, along with community visits, guest speakers, physical activity groups, and creative arts had ceased as part of a change in service delivery prior to the start of the study. Treatment group programmes for service users were purchased in via day programme services provided by external facilitators.

As reported in its *Building and Property Services Report*, written in 2015, Unit B had an open and a locked side. The intensive care unit (ICU), seclusion rooms and de-escalation rooms were situated within the locked side of the unit. This side of the unit was designated as a low stimulus area in contrast to the open side of the unit, which was busy with facilities for daily living, including kitchen, laundry, toilets, lounges, individual rooms for service users, and a family room. Unit B also had an existing sensory modulation room within the open side of the unit. When leave was granted by staff, the outside areas of Unit B could be accessed by service users. The design and layout of the Unit B floor plan and sensory room are presented in Figure 5.1.



Figure 5.1. Unit B floor plan [figure was taken out to protect the confidentiality and anonymity of the unit]

5.2. Existing Organisational Seclusion and Restraint Reduction Strategies

Interviews with middle management and nurse staff about existing organisational seclusion and restraint reduction strategies indicated that three organisational approaches were being used to reduce the use of seclusion and restraint. Firstly, the DHB had a working committee on seclusion and restraint reduction that met two-monthly. The committee included the leaders of the various inpatient units and the upper management of the Mental Health Directorate, together with the CNM, CNS and consumer advisor of Unit B. The Quality Monitoring and Audit Department of the Mental Health Directorate collected data on seclusion and restraint for all inpatient units on a monthly basis. The organisation's mental health service and seclusion minimisation group monitored this data.

The second organisational approach evident in Unit B was the update of its seclusion policy in 2015. In 2014, the DHB reviewed the policy and examined the content of seclusion reduction strategies, updating standard requirements for seclusion. Other documents related to seclusion were examined, such as other DHBs' seclusion policies and updated documents from the MOH:

The policy was reviewed ...It looked at what other DHBs are doing around seclusion, it was looking at Ministry documents, updating the standards for

requirements for seclusion. It was linked to the official documentation and standards, looking at what other DHBs are doing for reviewing [seclusion use], for looking at reducing seclusion and, you know, starting to implement some of those strategies. (Nurse B1)

The updated policy outlined the use of seclusion as a clinical intervention for service users, but also stated the DHB's "commitment to reduce all forms of restraint and seclusion in line with current best practice" (DHB Seclusion Policy, 2015, p. 1). There was clear evidence that Unit B was articulating a commitment to seclusion and restraint reduction at an upper management and policy level.

The third organisational approach that was evident in Unit B at the time of the baseline review was the introduction of quality improvement projects aimed at developing new practices, as outlined below.

5.2.1. Attempts to embed sensory modulation into practice.

According to the nursing staff, implementing sensory modulation was a quality improvement project started in August 2013 and led by the nurse in the CNS role at that time. However, the embedding of sensory modulation became challenging because of limited time for leadership on the ward and the broad responsibilities of the nursing staff:

It would have been great to have much more [of a] leadership role from my perspective on the ward, but my role is too broad to be able to do that. I've just had a conversation with somebody else that it's official 10 MDTs a week that I am supposed to go to. (Middle management B2)

5.2.2. Post-seclusion debriefing and review.

According to the nurse staff, the Quality team become more involved in reviewing seclusion events with staff, describing the process as reviewing "What occurred? What did we miss? What was missed prior to somebody even winding up? What might have been done differently there that may prevent seclusion?" (Nurse B1).

The nursing staff also reported attempts to strengthen the approach to post-seclusion debriefing by involving the unit management in the review process. However, the implementation of this was inconsistent because of changes in management. "I've been in a senior roles with this DHB for five years and we're on our fourth manager for the

inpatient unit, so you get somebody that picks up the threads and starts to run with it” (Nurse B1).

5.2.3. Individualised support and behavioural management.

The nursing staff reported an increased emphasis being placed on careful assessment and ongoing reviews to identify individual support needs, triggers, and risk factors. Utilising insights from assessment and debriefing in care planning was seen as important in preventing future crises: “People respond better to individual staff, there are times of day issues, you look at the factors that are consistent around seclusion [and] you would take into account their [service user’s] history” (Nurse B1).

5.2.4. Using a consistent and skilled approach.

The intensive care unit was designed as a low-stimulus area that enabled management of not more than two service users at a time. However, the low-stimulus effect of the intensive care unit was lost because of the nature and high number of service users within this area of the unit. When discussing this issue, middle management identified a need for skilled staff who can use a consistent approach in this practice area.

I am looking at the advantages of [having] regular staff at the intensive care unit rather than staffing based on our roster availability. I’m looking at consistencies of skill mix. I’m looking at whether we need a dedicated lead clinician, a charge nurse solely for intensive care unit, because I think consistency of approach might establish how we implement or change our existing approach. (Nurse B1)

In summary, at the time of the baseline review Unit B had a seclusion policy and a working committee for seclusion and restraint reduction. Other specific strategies such as sensory modulation, management support, review of seclusion events, behaviour management and modification, along with staff mix and consistency within intensive care, were evident in Unit B. These organisational strategies suggested that Unit B had a commitment to reduce seclusion and restraint and had begun taking action towards this goal.

5.3. Existing Practices for Managing Service Users Distress and Agitation

Information related to the existing practices for managing service users distress and agitation came from one-to-one interviews with staff and middle management. The middle management and nursing staff described the main practices used to manage or de-escalate service users' agitation, distress, or aggressive behaviour. A range of strategies were described, with nurses most commonly involved with crisis management.

5.3.1. Distraction.

The nursing staff reported that they used distraction techniques, giving the example of using humour: "To even put a little humour in their life. They can be little things even like using tongue twisters, because tongue twisters often make people laugh" (Nurse B1).

5.3.2. One-to-one time.

Both middle management and nurse staff reported that one-to-one time offers an opportunity to know the service users and hear their stories, and allows service users to vent their emotions through talking. Examples given of conversations between staff and service users were about life goals, planning, and reasons for admission. The nurse staff stated that it was a matter of "... just engaging with them and just building the client up and looking at what little strategies they might use to distract themselves" (Nurse B1).

5.3.3. Use of a low-stimulus area or change of environment.

Nurse staff reported that this approach was referred to as "*... to take away or remove service users from a distressing area and giving them some therapeutic space or a quiet place*" (Nurse B1). Areas identified were the service user's room or the garden in the inpatient unit.

5.3.4. Use of the sensory room.

Middle management and nurse staff reported that staff trained in sensory modulation were able to offer service users the chance to use Unit B's existing sensory room and sensory tools, although it was not being utilised as much as it could be. They noted that the uptake amongst staff had been mixed, with some eager to implement the approach and others

reluctant. “There’s not many responses in the book in the sensory room, but the ones that have used it have said that it’s really nice and it’s ... been really positive” (Nurse B1).

5.3.5. Activity-based work.

Interviews indicated that engaging service users in structured activities was another strategy being utilised. According to middle management and nurse staff, the use of this strategy depended on individual clinical and behavioural presentations. “Some people would be more challenging in their behaviour... if they’re bored for example [it might be used] versus someone who is particularly disturbed, where it may be that activity in a structured sense may not be possible” (Nurse B1).

5.3.6. Use of seclusion and restraint.

Unit B staff reported that seclusion and restraint were used only in extreme circumstances. They also highlighted that strategies for seclusion reduction were being explored by management.

I think there’s managerial support wanting to reduce seclusion and there is a bit of a step to make seclusion a little bit harder. (Nurse B2)

I’m currently focused on some of the other aspects of seclusion which are probably more broadly described as looking at how I would see the ICU effectively running as a whole unit, because seclusion occurs within the ICU environment, not in any other part of the unit. There are a lot of established reasons, a lot of established factors, I believe, a number that are research based in terms of how do you reduce seclusion? (Middle management B1)

In summary, Unit B staff used a range of strategies to manage or de-escalate service users’ agitation, distress, or aggressive behaviour. These strategies were distraction, providing one-to-one staff time to service users, use of low-stimulus area or quiet time environments, use of the sensory room, activity-based work, and use of seclusion and restraint. Nonetheless, seclusion and restraint practices were still used, despite an awareness of the negative consequences of using seclusion and restraint for both staff and service users.

5.4. Organisational Readiness for Reducing Seclusion and Restraint

Six staff members from Unit B completed the same ORQ questionnaire, as with Unit A, to assess the organisation's readiness for reducing seclusion and restraint. The six staff were selected for their knowledge of Unit B's policy and practices related to reducing seclusion and restraint; and included upper and middle management, a nurse, and allied health staff.

The ratings on the ORQ are presented in Figure 5.2. Analysis of the data revealed four out of the nine items (environmental factors; programmatic structure; processing after the event (debriefing); and systems evaluation and quality improvement) were rated with median scores from 2 to 3. These findings suggest significant gaps in Unit B's readiness for change. The low median scores also suggest there had been some discussion and possibly some planning, but still no action. While some steps may have been taken, they were not necessarily as part of a well thought through strategy. Five items of readiness were rated with the median scores between 3.5 to 5, suggesting that some positive actions towards seclusion and restraint reduction had been taken in regards to leadership, orientation and training, staffing, timely and responsive assessment and treatment planning, and communication and consumer involvement. (Refer to Appendix B: Q1 for detailed description of each factor and the unit's corresponding actions for reducing seclusion and restraint.)

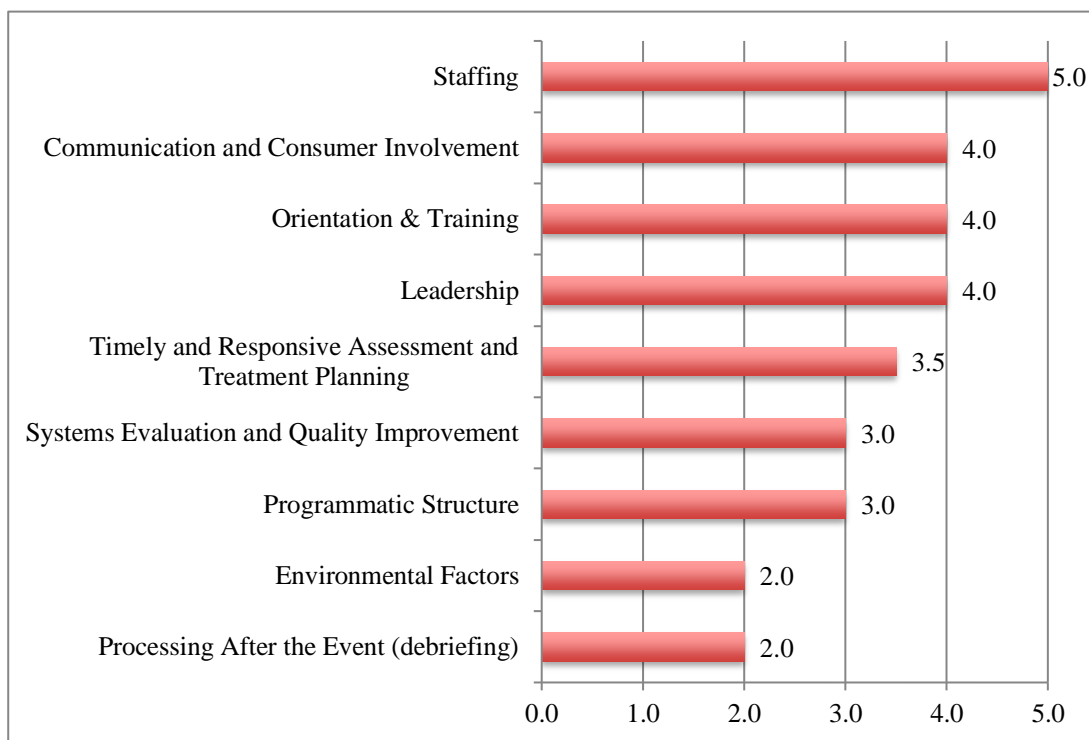


Figure 5.2. Median scores of Unit B participants on the ORQ (n=6)

Unit B's overall median score on the ORQ was 4 (action), suggesting that, overall, Unit B had consistent activities based on strategy in relation to organisational readiness for reducing seclusion and restraint, as described below.

5.4.1. Staffing.

The highest rated item on the ORQ was a median score of 5 (sustained) for staffing. This score suggests that Unit B has adequate staffing. Staff were considered to be available at critical times, such as during transitions, at change of shift, in the evening, and at times of high acuity. The high score on staffing may be related to the fact that Unit B has a process of staff scheduling that allows self-scheduling, where staff can request preferred days and work hours, alternative schedules (flexi-time), and takes into consideration the professional mix of staff in rostering.

The median scores on the ORQ items of leadership, orientation and training, and communication and consumer involvement were 4 (action), which indicates that Unit B had undertaken some positive actions towards seclusion and restraint reduction on these ORQ parameters.

5.4.2. Leadership.

Unit B's ORQ score on leadership suggests that the management and leadership team had put effort and commitment into the reduction of seclusion and restraint by ensuring support and clinical staff were involved in the developing of a seclusion and restraint reduction plan. For example, Unit B undertook a two-monthly review of seclusion and restraint via clinical governance of the DHB that included rigorous reporting of seclusion and restraint data. This governance group was the mechanism for Unit B leaders for raising matters about reducing restrictive interventions.

5.4.3. Orientation and training.

Orientation and training were also rated as consistent and based on strategic plans (median score of 4). This finding may reflect Unit B's comprehensive training in seclusion and its reduction, including initial and refresher training. The training sessions were mandatory for all inpatient staff and delivered in various styles, such as lectures, videos, live demonstrations, and role-playing to ensure optimum learning by staff. However, the ORQ median scores indicated two actions that needed further discussion and planning in terms of seclusion and restraint reduction training, as only full time permanent staff receive training. ORQ data indicated that identical training should be provided to part-time and contractual staff as well as the full-time permanent staff. Additionally, training should include the concept of counter-transference and its influence on staff implementation of interventions.

5.4.4. Communication and consumer involvement.

Communication and consumer involvement were rated as consistent with development and based on strategic plans (median score of 4 on the ORQ), suggesting effective interaction between service users and staff during seclusion or restraint events. For example, Unit B staff ensured that clients were not isolated during interventions, and staff communicated respectfully with service users. Also, service users' families were informed about the seclusion and restraint policy and contacted when seclusion was used with their family member. However, ORQ data indicated that action needed to be taken by Unit B management and leadership team regarding admission processes to ensure that, upon admission, service users and family were oriented to the unit, including its programmes and the use of seclusion and restraint. The unit also needed to ensure that an

advocacy or ombudsman programme was involved in the development and review of Unit B programmes and processes.

5.4.5. Timely and responsive assessment and treatment planning.

The median score on the ORQ item of timely and responsive assessment and treatment planning was 3.5, which indicated intermittent/inconsistent development (some steps taken, but not necessarily as part of a well thought strategy) and action (activities are consistent and based on strategy). This score indicated that Unit B assessment is client-centred and based on service user needs, but the assessment used by staff was lacking some important information. Unit B assessment needed to include identifying previous approaches in managing aggression and self-harmful behaviours that had either worked or failed, together with service users' preferred interventions. The score also indicated that Unit B has not established a behavioural management or clinical review committee to provide consultation in the development of treatment plans to manage aggression.

The median score on the ORQ item of programme structure, system evaluation, and quality improvement was 3, reflecting intermittent/inconsistent development in some steps taken, but not necessarily as part of a well thought out strategy on seclusion and restraint reduction.

5.4.6. Programme structure.

Unit B's programme structure required additional actions for improvement of the overall unit programme. These included providing programme structure information to service users and staff, provision of evidence-based interventions to service users, delivery of programmes that enhance service users' learning experience and normalisation of routine activities, and developing programmes based on service user needs. On other hand, there were some positive actions Unit B had taken in terms of the unit programme. For example, Unit B had an existing and consistent programme for rest, relaxation, recreation, and activities of daily living. The unit also provided scheduled and structured transitions for service users leaving hospitals. Reasonable and fair rules and expectations were explained to service users during unit orientation.

5.4.7. Evaluation and quality improvement.

Unit B's systems evaluation and quality improvement data in relation to seclusion and restraint needed to be available to treatment teams for review and analysis on a daily basis. The use of quality improvement tools was identified as requiring action from the management and leadership team, in particular statistical tools, a client satisfaction questionnaire, and quality improvement documents that can support efficient systems evaluation and quality improvement. On the other hand, Unit B had established policies, procedures, and systems for continuous evaluation of the need for and appropriate use of seclusion and restraint. This included systematic data management with information about both long- and short-term use of seclusion and restraint, and internal audit system, and qualitative data review to investigate incident reports, along with seclusion and restraint documentation.

The items on the ORQ that were rated low were the unit environment and debriefing process. The median score on the ORQ items of environmental factors and processing after the event (debriefing) were rated two (espoused), which indicates that Unit B has some discussion and possibly some planning, but still no action on these two factors in relation to seclusion and restraint reduction.

5.4.8. Environment.

Environmental factors were identified in Unit B that needed action by the management and leadership team to ensure service user safety. For example, major renovations of the seclusion room were needed to reduce the blind corners, noise, and service user isolation, and to increase visual stimulation. In addition, ORQ data indicated that the seclusion and time out approaches were closely associated in Unit B because the same room was used for both. These two functions need to be separated. Although Unit B's environment was overdue for renovation, staff were consistently and systematically evaluating the unit's environmental safety hazards.

5.4.9. Debriefing process.

Post seclusion debriefing was identified as a major concern for both staff and service users. Service user with staff and staff to staff debriefing required better discussion, planning, and action from the management and leadership team. ORQ data indicated that

the training curriculum for staff also needed to include a process of debriefing service users, including a mechanism for collecting and analysing debriefing information.

In summary, Unit B had many existing aspects of organisational readiness in place at the baseline review, which had the potential of positively influencing the sensory modulation implementation. However, the physical environment and programme structure were the ORQ items that needed significant attention, requiring upper management and leadership strategy development.

5.5. Existing Sensory Modulation Facilities and Past Implementation

Information about current and past sensory modulation facilities and implementation was collected through interviews, site visits, document review, and a resource inventory. Unit B's existing sensory room, situated in the open side (see Figure 5.1 Unit B floor plan) is depicted in Figure 5.3. A good range of sensory tools was available (see Table 5.1).

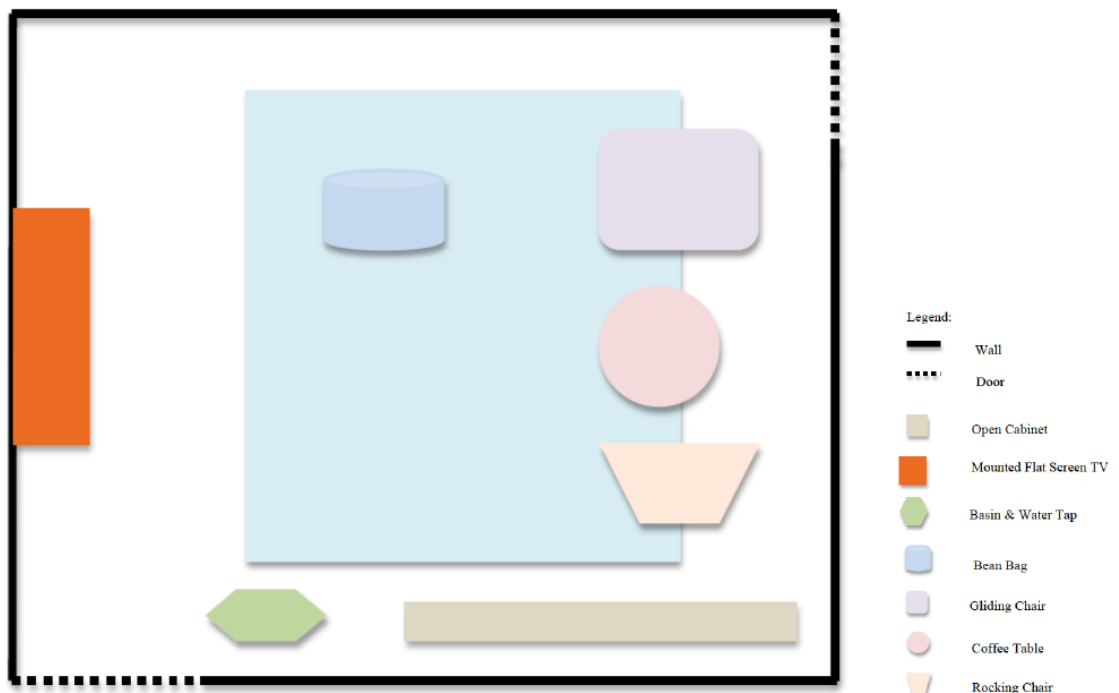


Figure 5.3. Unit B internal layout of existing sensory room

Table 5.1. Unit B existing sensory tools in the sensory room

Senses	Sensory Tools
Visual	Bubble wand, bag of 25 balloons, kaleidoscopes, lava toy, laminated images (New Zealand images, Māori cultural images, New Zealand art), DVDs (<i>Timatanga Hou: new land, new beginnings; Tihei Mauri Ora: I breathe therefore I am; Haere Mai, Welcome to the Marae, Tatau Ponanu – A greenstone doorway; The art of the poi; Tihei Wananga: Our History, New Zealand Wars</i>), book (<i>Inspiration New Zealand</i>), rock salt lamp, island tapa cloth, Pacific fan, Pacific bag, shell necklaces, New Zealand images on the wall, butterfly light, laminated quote corner on the wall, 3-directional spot lights on the wall, wall lights with dimmer, Kiwiana artwork, electric water fountain, paua shells, lava visual toy with penguins, kites, multi-colour pillowcases
Tactile	Weighted blankets (10, 7.5 & 5 kgs), weighted lap pads, weighted shoulder wrap, lycra wrap (blue & purple), weighted soft toys (labrador & husky), soft teddy bear, spikey ball, bubbles wraps (white and green), fidgety items/stress balls, beanbag tapping (square), bean toys (lizard and dog), slinky, pillows, variety of hand washes (milk honey, aloe vera, chamomile, antibacterial), sheets, serviettes
Olfactory	Fan for ventilation, aromatherapy oils fragrances (jasmine, lavender, orange, grapefruit, night vapor, sandalwood, rose, chamomile, lemon, vitalizing blend)
Gustatory	Pack of lollies (éclairs, fruitburst, Macintosh), teas (green, pepper mint, chamomile), mint gum
Auditory	CDs (calm guided relaxation, introduction to classical sampler, Mauri ora te pou, Mauri Ora waiata tua rua, Mauri Ora Kete, Mauri Ora Kete, Natalie Cole <i>Unforgettable</i> , The Moonlight)
Proprioception & Kinesthesia	Hot and light pink therabands, toning balls (2 pounds)
Vestibular	Lazy boy chair, wooden rocking chair with sheepskin and cushion
Others	Laminated instructions, laminated notice to staff, sensory tools record book, sensory intervention resource, staff information and recording sheets, flow chart from admission to introduce client to sensory tools, plastic plan, small coffee table, wooden trolley, metal trolley, surface disinfectant wipes, ajax spray and wipe, microshield antibacterial hand gel, bubble hoops, bubble mixtures, sudoku book, junior puzzle fun, pencil case with felt pens, pencil case with pencils, pack of HB pencils, packs of straws

In 2008, training in sensory modulation was provided to Unit B staff by an external trainer. At that time, the sensory room was initially set up in the intensive care unit, equipped with very few sensory tools, such as salt-water fountains and lamps. Only a small group of nursing staff had training in sensory modulation at this stage. A sensory modulation programme was never fully implemented because of limited understanding of the approach and a lack of leadership at that time. As a result, the staff lost the opportunity to embed sensory modulation into practice. The nursing staff reported: *There was no process, we didn't have an OT on the ward, there was no champion sorted out. Nobody actually led it...and it went, the only way I can describe is, it went feral in that sense.* (Nurse B2)

One nurse commented that she had had the opportunity to attend sensory modulation training in 2012 facilitated by Te Pou – Mental Health, Addiction and Disability Workforce. An initial discussion between the middle management and the nurse was held to discuss the logistics of introducing sensory modulation into practice. Though there was a commitment from management at that time, the DHB had a limited budget and the unit was not able to buy any equipment that year. This situation resulted in the delay of purchasing sensory tools needed for the unit. The nurse managed the situation by meeting with the unit’s clinical and support staff to talk about sensory modulation. This meeting resulted in staff donating different items that could be used as sensory tools. Then, when the funding came in 2013, further sensory tools were purchased:

I just collected... if anybody gave me anything and I thought it was useful I had it. There were one or two tools, we had a weighted blanket from the previous implementation. I made sure that those were kind of kept and not mistreated and didn't get lost. I tried to dig out everything that had been previously bought. Then once the release of money came, it became that we needed to actually find the room and we isolated the room and we had an OT on the ward by then. (Nurse B1)

Temporarily, Unit B had a sensory room situated at the end of the unit’s west wing. This room was accessible, with wide windows for natural lighting and an opportunity for service users to see trees outside. Shortly afterwards, increased admissions resulted in the need to use the room as a bedroom.

It was quite long-standing, people would say ‘we’ve got people coming in under the Mental Health Act, we need this room’ and a bed ended up in it. When a bed ended up in the room I knew that I had lost my battle and I had to start again. (Nurse B1)

Another room was identified that could not be used as a bedroom because it had no windows, which is also a disadvantage in a sensory room. Nonetheless, it was designated as the sensory modulation room and a project group was set up to establish the room, led by the occupational therapist: “Our OT, she did colour coordinate it and got it looking nice and did some nice work on it and we collected all the tools and got it going, pushed, pushed for that” (Nurse B1).

Experts from neighbouring DHBs developed and delivered a one-day introductory sensory modulation training to 15 staff in 2013. Prior to the training, the nursing staff completed an online pre-training in sensory modulation developed by the national mental

health workforce development agency, Te Pou. Three further planned training sessions did not progress because of other staff commitments and priorities, resulting in a delay and discontinuity of sensory modulation implementation in Unit B. The nurse leading the implementation reported experiencing multiple obstacles, as captured in Table 5.2.

Table 5.2. Summary of the challenges encountered in previous sensory modulation implementation

Previous Challenges	Nurse quotes
Staff were not recording their use of sensory room with service users, making uptake difficult to evaluate.	<i>There's [only] been one or two nurses particularly that have recorded the use in the book and what tools.</i>
Providing sensory modulation training without a sensory room, so learning could not be applied in a designated space.	<i>The biggest challenge was we were doing the training without the room, we didn't have the room and staff had done training.</i>
Issues with staff not following procedures for using the sensory room.	<i>Staff just opening door and leaving clients in there without understanding, without staff there.</i>
Inappropriate use of sensory tools.	<i>Staff would be sitting in the office and just to annoy somebody or another staff member, a staff member would come along and throw the weighted blanket over another staff.</i>
Lack of consistent managerial support for sensory modulation.	<i>The management level has been the rockiest with four different managers coming in and getting them to buy into it.</i>
Varied engagement from staff	<i>There has been staff that have really engaged. Staff that are really engaged are the ones that want to be therapeutic and engaging with clients, and the ones that are a bit burned out are the less engaged staff with it.</i>
Discontinuity of training	<i>It was end of 2013 when they did the initial training. Unless you keep revising stuff, it doesn't happen.</i>
Lack of multidisciplinary focus	<i>It is not just the nursing staff, we are a team of equals together and we need to look at, so that, for even doctors for them to understand sensory.</i>
Absence of a group programme led by occupational therapists and linked to sensory modulation	<i>It could be led a bit more by occupational therapists in a positive way.</i>

5.6. Staff Sensory Modulation Competency

At the baseline phase of the current study, staff sensory modulation competency were assessed. Of 46 staff, 29 (64%) completed the SMC-Q before participating in the sensory modulation training, to identify staff's baseline level of sensory modulation knowledge and other considerations for training. Table 5.3. shows that the 29 staff who completed the SMC-Q were predominantly female, from nursing backgrounds, with bachelors to post-graduate certificate degrees, mental health working experience, and aged 41-50 years old. Eighteen (62%) participants who did the training had previously attended sensory modulation training and 18 (62%) had previously attended training relevant to sensory modulation practice, such as calming and restraint, managing challenging behaviour, and trauma informed care.

Table 5.3. Demographic distribution of Unit B SMC-Q respondents (n=29)

Variables		Number (Percentage)
Gender	Male	4 (14%)
	Female	25 (86%)
Age	18-30 years old	6 (21%)
	31-40 years old	7 (24%)
	41-50 years old	9 (31%)
	51-60 years old	7 (24%)
Discipline	Nurse	24 (83%)
	Occupational Therapist	1 (3%)
	Others	4 (14%)
Highest Education Level	National Certificate	2 (7%)
	National Diploma	2 (7%)
	Bachelors Degree	4 (14%)
	Bachelors with Honours	3 (10%)
	Post-graduate Certificate	14 (48%)
	Masters	1 (3%)
	Others	4 (14%)
Years of Working Experience In Mental Health	Less than 1 year	9 (31%)
	1-2 years	4 (14%)
	3-4 years	4 (14%)
	5-6 years	2 (7%)
	7-8 years	3 (10%)
	9-10 years	1 (3%)
	11 years and above	6 (21%)
Previous Sensory Modulation Training	Yes	18 (62%)
	No	11(38%)
Previous Training with some Relevance to Sensory Modulation (eg. Trauma informed care)	Yes	18 (61%)
	No	11(38%)

Details of the SMQ-C instrument and analysis applied to the data are given in Chapter 4. Unit B results for each of the competency areas are presented in Table 5.4.

Table 5.4. Median, standard deviation and range scores of Unit B staff on the SMC-Q (n=29)

Sensory Modulation Competency Areas	Median	SD	Range
1 - Knowledge in Clinical Principles	3	0.98	1-4
2 – Therapeutic Use of Self	4	1.03	1-5
3 - Use of a Sensory Assessment	3	1.02	1-4
4 – Selection of a Sensory Modulation Therapeutic Activities	3	1.06	1-4
5 - Displaying Supportive Attitude when Using the Sensory Room	3	1.20	1-5
6 - Personal Safety Tools	4	1.20	1.5
Overall Sensory Modulation Competency	3	1.10	1-4.5

Staff knowledge of sensory modulation ranged from 1 to 4.5 across parameters, with an overall median score of 3 (SD=1.10), indicating that staff had some basic knowledge in sensory modulation. The highest median scores were associated with Therapeutic Use of Self and Personal Safety Tools. Therapeutic Use of Self refers to staff’s ability to purposely engage with service users in order to establish a therapeutic working relationship. The high median score on this competency is not surprising; therapeutic use of self is core to most approaches in mental health practice and is something the staff would have been well familiar with in building therapeutic alliance. Personal Safety Tools refers to staff’s ability to support service users in developing and using sensory modulation tools in managing their distress or agitation. The high median score on this competency may suggest that Unit B staff had the ability to recognise service users’ early warning signs for escalating distress and had knowledge on supporting them to use sensory modulation therapeutic activities for calming strategies. Overall, findings from the SMC-Q suggest that Unit B staff had some awareness of the concepts and basic principles of sensory modulation prior to the sensory modulation training; yet, at the same time, indicated a lack of confidence and experience in applying these with service users.

In summary, the majority of staff who completed the SMC-Q survey were nurses. A large number of participating staff had previously attended sensory modulation training. The areas of sensory modulation competency were rated from 3-4, which seems to suggest some basic knowledge in sensory modulation, but that staff sensory modulation competency might need further development.

5.7. Pre-audit Medical File Review

At the baseline phase of the current study, a review of clinical files was undertaken to determine the documented evidence of the approach being used in practice. The audit was conducted using the 'Review Template for Service Users' Clinical Record' (MOH, 2002).

Six mental health clinical records were randomly selected from all available records three months before programme implementation. Demographic and illness variables, admission data and sensory modulation information are presented in Table 5.5.

The average age of those service users whose file had been selected was 47.5; four were females and two males; two identified as New Zealand European, two Māori, and one each as Portuguese Indian and Fijian Indian; three were single, two married, and one in relationship. Primary diagnoses were, respectively, schizophrenia paranoid type, bipolar personality disorder, bipolar affective disorder, schizoaffective disorder, and major traumatic head injury. The clinical files reflected a range of admission dates within the past two years and the average length of current admission was seven weeks.

The audit did not find any recorded evidence of sensory modulation use, though sensory modulation may have been used but not recorded. A possible explanation for these results may be the use of random sampling, rather than purposive sampling of service users who might be suitable for sensory modulation.

Table 5.5. Unit B service users' demographics, admission and sensory modulation data pre-implementation (n=6)

Sections	Service Users Clinical Record					
	File 1	File 2	File 3	File 4	File 5	File 6
Age	28	46	37	39	68	67
Sex	Male	Female	Male	Female	Female	Female
Ethnicity	NZ Maori	NZ Maori	NZ European	NZ European	Portuguese Indian	Fijian Indian
Diagnosis (axis 1 and 2)	Major Head Injury; Suicidal	Schizophrenia	Schizophrenia Paranoid Type; History of alcohol and substance abuse	Schizophrenia	Schizoaffective disorder; Bipolar type; Erotomaniac delusions; strong willed personality	Bipolar affective disorder
Number of admissions within the past 2 years	11	Unknown	1	Unknown	Unknown	Unknown
Length of current admission	4 weeks	8 weeks	6 weeks	6 weeks	8 weeks	10 weeks
Was orientation to sensory modulation room and strategies provided?	No	No	No	No	No	No
Were sensory triggers and strategies for calming identified and incorporated into safety plan?	No	No	No	No	No	No
Number and types of escalation/ critical incidents	None	None	None	None	None	None
For each incident: Was sensory modulation offered?	No	No	No	No	No	No
What level of escalation was SU at when sensory modulation was offered?	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
What strategies (sensory or other) were used by staff or service user for de- escalation and managing distress or agitation	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

5.8. Summary

At the time of the baseline review, Unit B had a 26-bed capacity and 45 full-time staff including a range of health professionals and support staff working as a MDT. A seclusion policy and a working committee for seclusion and restraint reduction were key organisational strategies used in Unit B. In addition, Unit B had attempted to embed sensory modulation in practice, increase management support for debriefing and review seclusion events with the Quality team, review seclusion policy, use individualised behavioural management strategies, and have a consistent approach and staff skill mix in the intensive care unit. These data suggested that Unit B had a commitment to reduce seclusion and restraint.

Distraction, one-to-one time, a low stimulus area for quiet time, a sensory room, activity based work, and seclusion and restraint were used by staff as sensory strategies. However coercive practices were still used for managing critical situations.

The overall ORQ median score for reducing seclusion and restraint was 4, which suggested that Unit B has strategic plans and consistent activities in relation to organisational readiness for reducing seclusion and restraint. However, ORQ items on environmental factors and processing after the event (debriefing) were the items where Unit B required further planning, development, and implementation of specific strategies and actions. Unit B had existing sensory modulation facilities but had been unsuccessful in implementing a robust sensory modulation programme in the past. This was due to a lack of ongoing training and practical support in clinical practice, and the removal of a unit group programme. Therefore, while some organisational strengths were identified, there were also a number of contextual factors that could reduce the unit's readiness for change, and affect the implementation of sensory modulation.

Findings from the SMC-Q suggest that Unit B staff had some awareness of the concepts and basic principles of sensory modulation prior to the sensory modulation training; yet, at the same time, indicated a lack of confidence and experience in applying these with service users. The audit did not find any recorded evidence of sensory modulation use, though sensory modulation may have been used but not recorded.

Baseline data from Unit B identified the existing practices, norms, beliefs, and policies related to de-escalation and the reduction of seclusion and restraint, which could have affected Unit B past implementation of a sensory modulation programme.

CHAPTER SIX: IMPLEMENTATION AND IMPACT OF SENSORY MODULATION IN UNIT ‘A’

The preceding chapters presented the findings related to the first or ‘baseline’ phase of the study, highlighting relevant aspects of each unit’s context and previous practices. The following chapter presents the findings related to phase two and three of the study specifically, the data related to the implementation and impact of sensory modulation in Unit A. These findings provide insights relevant to the second and third research questions, namely: ‘How do organisational and staff factors, including policies and practices related to de-escalation and seclusion and restraint reduction, influence sensory modulation programme implementation?; and: ‘What is the impact of introducing a sensory modulation programme within acute mental health services? The chapter is divided into two main sections. A diagram (6.1) is provided below to show the link between the relevant study propositions, research questions, and data collected in the implementation phase.

Study Propositions →	Research Questions →	Related Measures and qualitative Data
<p>Services using multiple strategies for seclusion and restraint reduction, including developing policies, leadership, consumer involvement and staff training are more likely to successfully implement sensory modulation (Sutton & Nicholson, 2011).</p> <p>Environmental modifications as a sensory strategy are a significant factor in seclusion and restraint reduction (Borckardt et al., 2011).</p>	<p>Study Phase 2: How do organisational and staff factors including policies and practices related to de-escalation and seclusion and restraint reduction influence sensory modulation implementation?</p>	<ul style="list-style-type: none"> Organisational factors Incident/accident reports progress Management perspective (focus group or 1:1 interview) Document review Survey of the physical context Sensory Modulation Programme Implementation Fidelity
<p>Sensory modulation contributes to the reduction and management of distress and agitation (Sutton et al., 2013).</p> <p>Service users prefer sensory modulation as a strategy for de-escalation and management of distress over coercive and pharmaceutical methods (Lee et al., 2010).</p> <p>Sensory modulation programmes have a significant impact on the use of seclusion within inpatient mental health settings (Champagne & Stromberg, 2004).</p> <p>Sensory modulation programmes increase staff confidence in managing service user distress and agitation and alter staff attitudes away from toward coercive practices (Wale et al., 2011).</p>	<p>Study Phase 3: What is the impact of using a sensory modulation programme within acute mental health services?</p>	<ul style="list-style-type: none"> Impact for service users Service user focus group
		<ul style="list-style-type: none"> Impact for staff Sensory modulation Competency questionnaire (Azuela & Robertson, 2013, 2016) Staff focus groups Staff Survey Questionnaire: PATS-Q (Doeselaar et al., 2008), Confidence in Managing Inpatient Aggression (Martin & Daffern, 2006), & EssenCES (Schalast et al., 2008) Upper management survey

Diagram 6.1. Unit A - link between propositions, research questions, and related data

Firstly, in Part A the findings related to the implementation will be reviewed and factors affecting the implementation process explored. Then in Part B the impact of the programme will be examined from organisational, staff and service user perspectives.

6.1. Part A: Implementation of the Sensory Modulation Programme

The following section reviews aspects of the sensory modulation programme as implemented in Unit A. This includes the sensory equipment purchased, the sensory

modulation training process and outcomes, documented use of sensory modulation, and the factors influencing programme implementation.

6.1.1. Equipment.

Following the baseline review of existing sensory modulation practice and tools, the need for additional equipment to support sensory modulation practice was identified with unit staff. New sensory tools for visual, olfactory, tactile, and proprioceptive senses were provided using study funding (see Table 6.1). Additionally, a sensory cart was purchased to increase accessibility to sensory tools throughout the unit.

Table 6.1. Unit A additional sensory tools provided in the sensory room

Senses	Sensory Tools
Visual	iPad (for visual and auditory purpose; item mobility) Sound & light projector
Tactile	Weighted blanket 10kg Ice massager Lycra shoulder wrap
Olfactory	Essential oils – selection Bergamot, grapefruit, lavender, orange Headache gel Sniff box
Gustatory	Nil
Auditory	Calm guided relaxation CD
Proprioception Vestibular	Therasensory balls 65cm Therasensory balls 110cm
Other	Cart (for transporting sensory items)

6.1.2. Training process and outcomes.

A major component of the sensory modulation implementation phase (Research Phase 2) was the provision of training for staff. A sensory modulation training programme was developed in collaboration with key organisational stakeholders: the DHB’s Learning and Development Department, Unit A’s management team, and the existing sensory modulation leaders (which included identified ‘champions’). The sensory modulation training included modular group training sessions, catch-up sessions, and practice coaching. The training was delivered by existing sensory modulation leaders with support from the researcher. Programme development and delivery occurred as described in Chapter Three.

The scheduling of the training was a challenge due to staff shifts and the roster cycle. In a 24-hour cycle, there were three shifts: morning (7.30am-2.30pm), afternoon (2-10.30pm), and evening/overnight (10pm-7.30am); and a roster cycle where staff were rostered on four days working followed by two days off work. To address this challenge, a meeting was held between the upper and middle management and the researcher. The time between the end of morning shift and the beginning of afternoon shift was identified as the most suitable time for training, that is, between 2.30-3.00 pm. The outcome of the meeting was to provide a series of three short sensory modulation training modules to as many staff as possible. The series of three modules was to be repeated five times from 27th October to 2nd December 2016. The modules would cover: a) theoretical foundations of sensory processing, arousal, and emotions; b) sensory modulation assessment and planning; and c) sensory modulation intervention.

Unfortunately, during the training period, Unit A experienced high occupancy and increasing acuity of service users, affecting staff availability to attend the training. The reduced number of training sessions and intervals between modules may have affected the interest and engagement of staff in the training. The middle management did not follow the agreed training schedule and reduced the number of opportunities for staff to complete the modules from five rounds to two. Additionally, the training started at a later date, with long intervals between training dates, lasting from 3rd November 2016 to 2nd February 2017. The high service user acuity, reduced number of training sessions and intervals between modules may have affected the interest and engagement of staff in the training over time. Table 6.2 below shows the number of staff who attended the training for each module. The staff response rate to completing the training was 50 percent for module one, 15 percent for module two, and eight percent of the total staff for module three.

Table 6.2. Unit A staff attendance at sensory modulation training sessions

Module 1 Training Dates Number of Participants	03.11.16 26	10.11.16 4	Varied Dates for Catch up sessions 3	Total 33
Module 2 Training Dates Number of Participants	15.12.16 4	22.12.16 3	Varied Dates for Catch up sessions 3	Total 10
Module 3 Training Dates Number of Participants	26.12.16 0	02.02.17 2	Varied Dates for Catch up sessions 3	Total 5

To deal with training implementation issues, the unit’s champions provided catch-up sessions and practice coaching to staff. Trainers and champions provided direct support to staff in managing crisis incidents with service users. For example, they supported staff to customise de-escalation techniques with service users during critical events, and guided staff on what sensory modulation tools to use. Formal and informal sensory modulation education was promoted through discussion in meetings, including handover meetings, multidisciplinary meetings, complex case reviews, and residents’ meetings. The trainers and champions facilitated practice consultations with staff in terms of developing wellness plans and identification of sensory strategies for service users. The trainers and champions responded to the needs and requests of staff through interactive problem-solving related to specific service user presentations of distress and challenging behaviour.

In summary, the sensory modulation training content and a plan for delivery was co-developed with key stakeholders. However, high occupancy and increasing acuity of service users within the unit was evident during the training periods and the proposed training dates were not followed. These factors affected training attendance and, in response, catch-up sessions and practice coaching were provided to staff.

6.1.3. Documented sensory modulation implementation.

Another aspect of sensory modulation implementation that was assessed in the second phase of the study was the documented evidence of the approach being used in practice. This was assessed through reviewing a random sample of service users’ clinical records to determine if the principles learned in training were being applied.

The audit was conducted using the 'Review Template for Service Users' Clinical Record' (MOH, 2002).

6.1.3.1. Post-implementation clinical file review

Similar to the pre-implementation file review, six clinical records from Unit A were randomly picked from all available records six months following programme implementation (see Table 6.3). The six clinical records represented six service users with an average age of 32 years; three were males and three females. Their ethnicities were New Zealand European (3x), Māori (2x), and a Pacific Islander. Four were single, one in a relationship, and one widowed. Primary diagnoses were drug-induced psychosis, major depressive disorder and post-traumatic disorder, bipolar disorder (3x), and bipolar disorder with dementia. The range of admissions within the past two years was from one to six admissions. The average length of current admission was 12 days.

Table 6.3. Audit of service users' clinical records 6 months after implementation of sensory modulation programme (n=6)

Sections	Service Users Clinical Record					
	File 1	File 2	File 3	File 4	File 5	File 6
Age	18	37	24	24	31	63
Sex	Male	Female	Female	Male	Female	Male
Ethnicity	Māori	NZ European	NZ European	Pacific Islander	Māori	NZ European
Diagnosis (axis 1 and 2)	Drug Induced Psychosis	Major Depressive Disorder; Post- Traumatic Stress Disorder	Bipolar Mood Disorder	Bipolar Mood Disorder	Bipolar Mood Disorder	Bipolar Mood Disorder Dementia
No. of admissions in past 2 years	1	2	1	5	3	6
Length of current admission	4 days	17 days	6 days	8 days	2 days	37 days
Orientation to SM room and strategies provided?	Yes	Yes	Yes	No	Yes	Yes
Sensory triggers and strategies for calming incorporated into safety plan?	No	No	No	No	No	No
Number and types of escalation/ critical incidents	0	3	0	1	0	0
For each incident: Was sensory modulation offered?	No	Yes	No	Yes	No	No
What level of escalation was SU at when sensory modulation was offered?	Not Applicable	At very beginning	Not Applicable	At very beginning	Not Applicable	Not Applicable
Other strategies (sensory or other) used by staff or service user for managing distress?	None recorded	PRN and deep pressure	None recorded	PRN	None recorded	None recorded

Five of the six service users were given an orientation to the sensory modulation room and strategies provided. Two people has critical incidents and both were offered sensory modulation during escalation and critical incidents, with reports that the service user had used deep pressure to self-regulate. One person had three incidents and was offered sensory modulation three times. Sensory modulation was offered to the four clinical incidents every time and used three times which suggest that staff are using sensory modulation to manage service users' distress and agitation. However, none of the six records included notes to reflect

that sensory triggers and strategies for calming were identified, and neither was there evidence to suggest that these techniques were incorporated into service users' safety plans. Although one of the aims of staff training was to incorporate sensory modulation into service users' safety (treatment) plans, the files indicated that this was not being put into practice. This result could be a reflection of the poor attendance at the training in the sessions where this content was covered. Five out of six medical files had no record of sensory modulation use. However, there were no critical incidents or crises recorded in four of these files, indicating that sensory modulation may not have been necessary. It is possible that staff were applying strategies that had sensory components, such as walking, therapeutic talks or offering a cup of coffee or tea, with no explicit focus on the sensory components and without considering the strategies to be sensory modulation. In summary, the audit results indicated that service users were routinely being oriented to the sensory room and strategies. Additionally, sensory strategies were offered in the early stages of escalation for two service users who had a total of four separate critical incidents. However, the files lacked evidence of more detailed planning related to individual sensory triggers and strategies, and the use of strategies was limited to isolated critical incidents, rather than the routine maintenance of arousal levels. This lack of more detailed planning may reflect the poor attendance at the training sessions related to sensory modulation planning.

In summary, the audit results indicated that service users were routinely being-oriented to the sensory room and strategies. However, the files lacked evidence of more detailed planning related to individual sensory triggers and strategies, and the use of strategies was limited to isolated critical incidents, rather than the routine maintenance of arousal levels.

6.1.4. Factors influencing the implementation of sensory modulation.

One of the key aims of this study was to explore the factors influencing the implementation of sensory modulation. Multiple data were collected and analysed to identify barriers and facilitators related to the sensory modulation implementation. Data were collected via interviews with middle management (n=1) and an allied health leader, along with a staff focus group containing four allied health staff and four support workers. The interviews and focus group were conducted three months after the programme implementation began. Genuine attempts to recruit nurse representatives to the group were hindered by high occupancy and increasing acuity

of the service users at the time. The facilitators and barriers are presented in detail, as they were particularly significant in Unit A. Interview data were transcribed and analysed using thematic analysis.

6.1.4.1. Facilitators of implementation

Thematic analysis of the data identified a number of themes related to factors that facilitated sensory modulation implementation. This included the role of the occupational therapists as general advocates and supports for sensory modulation practice; specific strategies used by the occupational therapists; and the consultant psychiatrists as advocates for sensory modulation.

6.1.4.1.1. Occupational therapy leadership

The occupational therapy team was comprised of two registered occupational therapists (one senior, one junior) and two occupational therapy support workers, with an additional new graduate occupational therapist who was participating in an intern programme. The occupational therapists had existing knowledge and experience with sensory modulation and provided formal and informal sensory modulation training to nurses and support staff. This included coaching and clinical practice demonstrations, as well as supervision of the occupational therapy team. These activities helped to increase staff awareness of sensory modulation and had some influence on practice.

There's definitely an increased awareness of sensory modulation, that I think is a significant increase in awareness. I'd say maybe not a significant increase in the use of sensory modulation techniques and tools at this point, but I do see it increasing. (Allied health A2)

I do think that's something key nursing staff have done, they've made some changes in their kind of approach to service users. They're the minority, but I do think there has been a change around that, and that's from role modelling. Yeah. So I think I use it as one [approach] in combination with any number of any other approaches. (Allied health A2)

Following the training, sensory modulation was integrated into the unit activities programme, which was led by the occupational therapists.

We've established some groups within our activities programme on the ward. We've managed to kind of increase the potential of service users accessing sensory modulation by having the trolley on the locked side of the unit. [There were] barriers that were in place because of the geographical location of the sensory room and everything, all the equipment being in there alone. (Allied health A2)

The occupational therapy team in Unit A provided leadership related to sensory modulation practice. They facilitated increased staff awareness and knowledge of sensory modulation through training and coaching, as well as facilitating access to sensory resources through the activities programme and use of a trolley. The following section outlines these and other specific implementation strategies in further detail.

6.1.4.1.2. Specific implementation strategies

Several examples of strategies used by the occupational therapists to support the use of sensory modulation were highlighted in the interview and focus group data. One such strategy was the establishment of sensory exploration and sensory kit groups: *“I run a sensory exploration group and a sensory kit group, and then started doing some one-on-one work as well with people. More often than not in the sensory room”* (Support staff-01). The exploration group provided an informal sensory assessment and introduction to the approach for service users. The group helped service users to understand their senses and identify sensory tools for themselves that could potentially assist them in times of distress. This group also included one-to-one teaching with service users in how to utilise sensory tools for self-regulation of stress and anxiety. Each service user also had the opportunity to develop their own sensory kit in a separate group.

A second key strategy was the use of the sensory trolley, which the occupational therapists introduced in the locked side of the unit to increase access to the sensory tools for the most agitated and distressed service users. The interviewees indicated this portability and increased access helped and was more efficient than moving to the sensory room: *“I’m usually doing one on one stuff, that’s probably the main thing and I mean I’m so busy and time constraints but using the stuff out of the sensory trolley makes a difference”* (Allied health staff A2).

The occupational therapists also focused on developing systems for sensory assessment and planning. They explored different forms of sensory assessment to suit particular situations or service user needs:

For sensory modulation on the unit, we set up the style of what will hopefully be quite an extensive system ultimately. We’ve looked at what type of assessments

work in different circumstances and situations and we continue to kind of refine that. (Allied health A2)

Additionally, they identified preferred sensory modulation strategies to integrate into service users' wellness plans. *"I had a lot to do with working on the wellness plans and the groups supporting that etc, and more recently, we are continuing to look at how we accommodate for sensory modulation within wellness plans"* (Support staff A1).

Another specific strategy that the occupational therapists used was the introduction of music and musical instruments in ward activities and at the beginning of staff and service user meetings. Other staff did not necessarily identify the use of music as a sensory modulation strategy, but the therapists recognised the influence of hearing and playing music on arousal and ward atmosphere. One therapist stated: *"There's a lot of music and people really respond well to that, and I think that that's another thing we don't always identify as sensory modulation, but it's something that a lot of people do"* (Allied health A2). One therapist had a particular interest in the use of music and applied this in the group programme: *"I've got a music career group Monday afternoon that can be really astonishing what people bring to that, and they bring their own music, and so it can be very powerful"* (Allied health A3). He also increased the emphasis on using music in meetings:

An identifiable change, if I just think of the community meetings. I see people taking their time about those community meetings, pretty much everyday, and if I think of just the general atmosphere, the general energy in those meetings, before [Allied Health 03] arrival till now, I mean you just can't even compare. (Support staff A2)

A further strategy was the informal coaching and role modelling provided by the occupational therapists to staff:

The nurses ask for it [sensory modulation] and we go down and do it, and then the other nurses see it and they see how it works. I've seen that helps, particularly in getting the nurses' buy-in. It is just like the informal chats with the nurses, and then being there like, 'Oh hi, would you like to try the weighted blanket?' And then, they try and off they go. (Allied health staff A1)

The other day, nurses called me and asked for some sensory stuff for a service user, so it's a matter of when they come to you, it's a matter of making sure they get the stuff they want, to kind of support the nurses. (Support staff A1)

Interviewees also discussed modelling core interpersonal skills to highlight the impact of the sensory aspects of human interaction, such as vocal tone and use of body language: *“I rely heavily on the therapeutic use of self...”* (Support staff A1).

Championing sensory modulation and continually reminding the team that the approach was an option was another strategy: *“In a meeting a couple of days ago for a patient, they were talking about medication for anxiety, and I said, ‘well I can try and do some sensory stuff with this patient’, suggesting sensory modulation”* (Support staff A1). The therapists and assistants also highlighted the benefits of sensory modulation and communicated key messages including: a) sensory modulation is something that people are already using intuitively; b) the proper use of sensory modulation does not have negative effects; and c) the approach supports self-regulation of arousal and distress.

Overall, the interview and focus group data indicated that the occupational therapy department led the way in the implementation of sensory modulation in Unit A. In the absence of other staff taking the lead, the occupational therapists took ownership of the approach and supported other staff with embedding sensory modulation in practice through specific strategies.

6.1.4.1.3. Consultant psychiatrist as advocates

Another facilitator highlighted in the focus group was the support of Unit A’s psychiatrists. Two consultant psychiatrists regularly advocated for the implementation of sensory modulation within the unit, which influenced other members of the team. For example, an occupational therapist reported that one psychiatrist began to discuss the use of sensory modulation at multidisciplinary meetings and during complex case reviews.

We’re fortunate that we have one of our consultant psychiatrists who has had experience in the [United] States in an incredible unit that has 15 sensory modulation therapists, along with a full team. So he has seen the benefit of sensory modulation, and so he is incredibly supportive of that and has had a big, a big positive impact from a management kind of level.
(Allied health staff A2)

6.1.4.2. Barriers to implementation

Analysis of the interview and focus group data identified a number of themes related to potential barriers to the implementation of sensory modulation in Unit A. These included; minimal involvement of the inpatient manager, lack of confidence and negative attitudes of staff, lack of engagement of staff in training, absence of clinical nurse specialist, restrictive environment and practices.

6.1.4.2.1. Minimal involvement of the inpatient unit manager

During programme implementation, the involvement of the middle management was minimal. The unit manager did not attend meetings and was unresponsive in email and phone communications. According to the unit middle management, he perceived his role was solely in the approval of funding, if there was a need for additional sensory equipment during the implementation. Other respondents saw this response as a focus on management rather than helping to lead the implementation.

Sometimes sort of you know management levels, where there's been opportunity just to demonstrate that this is something that people are using anyway, that it, you know, hasn't got any negative side effects, and so we can only gain from it. (Support staff A2)

Pretty minimal [manager involvement] really, because it's mainly been senior OT who's been doing it. So she's [manager] more likely to come to me with things around need, we need this piece of equipment, it's going to cost this much and so on. So it's real essentially been the senior OT, who's led it. (Middle management A1)

6.1.4.2.2. Lack of confidence and negative attitudes of staff:

Data from the interviews also identified ongoing barriers in implementing sensory modulation related to the confidence and attitudes of staff. The following excerpts provide brief examples of staff views.

I would say I haven't had a huge lot to do with the communication of sensory modulation since I got here, just been trying to learn about it. (Allied health staff A1)

I think the biggest barrier I have to say to implementing sensory modulation care is actually amongst colleagues is attitudes. (Allied health staff A1)

Attitudes of different staff, and sometimes they will usually have quite a big influence or position. And if somebody's not on board and people are looking to them for direction, then it doesn't go so well. (Allied health staff A2)

There's some very key people within this unit that by virtue of their own attitudes and beliefs and choice that create barriers for this particular [approach]. (Support staff A2)

Negative attitudes of staff towards sensory modulation, and particularly staff with influence over others, was seen as a one of the key barriers to implementing the approach. These attitudinal barriers were perceived to influence engagement in training for some staff, as discussed below.

6.1.4.2.3. Lack of engagement of staff in training

Data from interviews identified that it was difficult to engage staff in training despite efforts to make the training flexible and manageable around shift work. The unit middle management suggested that while some staff working at the coalface are interested and willing to attend training, others were reluctant to engage in new practices. He added that, even for those willing to attend training, the capacity of the unit to release staff for training is problematic due to the unit's fast pace, the service users' high acuity, and the high occupancy level. According to middle management, staff have no time to leave the floor to do such training, and attending training during duty hours is not the top priority for staff. Scheduling of training was difficult to fit in with the staff roster, and providing training in the unit was not ideal because there were a limited number who could attend, as the ward operation needed to continue.

We have huge amounts of paper work and a certain understaffing that means that nurses, not only are they shifting their shifts and do a week of this, a week of that, they're also doing double shifts. You know, so you've got someone that's been on nights, it's their first week of mornings, and then they've just done a double shift and they've got five patients and they've got this new documentation they need to do. They are flat out. I would love to grow my professional development. . I would love to grow my professional development. You know, they're in a stress mode that doesn't enable them. It is easier to give PRN than it is to give of their therapeutic self (Middle management A1)

So often the pace of ward, the acuity of the patients and the occupancy means that most staff don't really have time to leave the floor to do that sort of work 1) one-to-one with patients or 2) to do the training in the first place. (Middle management A1)

The training was tricky because you just can't get staff off the floor to do the training, and then it's only if you roster them off to do x, like training away from the ward, you can do it. But there's a limit to how many people

you can have on the training as well, because you've still got to run a ward.
(Middle management A1)

6.1.4.2.4. Absence of clinical nurse specialist (CNS)

There was a lack of nursing leadership in the implementation of sensory modulation. At the time of implementation, the unit had no designated CNS to provide clinical leadership for the nurses. The nurse coordinator for each shift had no involvement or did not promote sensory modulation to other staff nurses.

We've got a reasonably new CNS and she's very keen on the sensory modulation. So, we're moving to having the nurses do a bit more around sensory modulation, and part of ensuring that on admission people with the sensory screen, or something like that. So having the new CNS on board will have much more involvement around sensory work we do because of her experience at West Auckland in the inpatient unit there.
(Middle management A1)

6.1.4.2.5. Restrictive environment and practices

According to the allied health staff, the unit was under huge external pressure to eliminate or reduce seclusion. The use of the medical model, such as use of medication as the first point of response rather than natural alternative approaches, was observed by allied health staff. The unit environment and current practices were restrictive to implementing sensory modulation.

I think one of the barriers that I've seen like with a client who we did have a plan for that involved sensory modulation and part of the plan was using the weighted blanket. I saw this client getting more worked up, stomping around the room, chattering away to themselves. It got to the point when I got up and talked to one of the nurses and said 'Sit him down and put the weighted blanket on him'. Two seconds later he got up, threw it on the ground and stormed off. I go, oh yeah, we'll give him PRN. And then his nurse actually said to me, perhaps two hours ago the weighted blanket could have worked, but it's too late now. And it was like, well, that was in his plan. (Allied health A1)

I think that the system as it exists, is a barrier. I guess a medically driven model, a medical model. (Allied health A2)

6.1.5. Staff surveys.

Another source of data to understand the implementation process of the sensory modulation programme came from survey with staff which was conducted to further identify factors influencing sensory modulation implementation. The staff survey questionnaire was presented as the Survey Questionnaire for Mental Health Clinical

and Support Staff (see Appendix 2:Q2). Of 66 Unit B staff, 19 (29%) staff completed the survey questionnaire's programme implementation. Table 6.4 presents the breakdown of participants' demographics. Staff who participated in the surveys were almost equally split, with 10 (53%) men and nine (47%) women. Eight (42%) participants had nursing backgrounds, followed by occupational therapists with three (16%) participants. The 31-40 and 41-50 years old ranges had similar number of participants. Eight (28%) of participants had a bachelor's degree. The most common ethnicity was New Zealand European with eight (27%) participants, with least representation from Māori and Pacific. Seven (37%) of the participants had worked in mental health for 11 years or more. Though all participants had worked in mental health, only a small majority of eight (28%) had used seclusion as part of their clinical care.

Table 6.4. Unit A: demographic variables of participants who completed the Survey Questionnaire for Mental Health Clinical and Support Staff (n=19)

Demographics		Number (Percentage)
Gender	Male	10 (53%)
	Female	9 (47%)
Age	18-30 years old	3 (16%)
	31-40 years old	6 (32%)
	41-50 years old	6 (32%)
	51-60 years old	4 (21%)
Discipline	Nurse	8 (28%)
	Occupational Therapist	3 (16%)
	Psychologist	1 (5%)
	Social Worker	3 (16%)
	Support Staff	3 (16%)
	Others	1 (5%)
Education Level	National Certificate	1 (5%)
	National Diploma	3 (16%)
	Bachelor's Degree	8 (28%)
	Bachelor's with Honours	2 (11%)
	Postgraduate Certificate	1 (5%)
	Postgraduate Diploma	1 (5%)
	Masters	3 (16%)
Years of Working Experience in Mental Health	Less than one year	5 (26%)
	1-2 years	2 (11%)
	3-4 years	1 (5%)
	5-6 years	2 (11%)
	9-10 years	2 (11%)
	11 years and above	7 (37%)
Ethnicity	NZ European	9 (47%)
	European	4 (14%)
	Maori	2 (11%)
	Pacific People	1 (5%)
	Not Elsewhere included	3 (16%)
Years of Work Experience with Seclusion Practice	None	6 (32%)
	Yes, less than 1 year	1 (5%)
	Yes, 1-2 years	1 (5%)
	Yes, 2-5 years	2 (11%)
	Yes, 5-10 years	2 (11%)
	Yes, more than 10 years	7 (37%)
Number of Times Participating in Seclusion Events	Never	8 (42%)
	Less than once a month	6 (32%)
	1-4 times a month	3 (16%)
	2-17 times a week	1 (5%)
	More than once a day	1 (5%)

Thematic analysis of the data identified a number of themes suggestive of facilitators and barriers to implementing sensory modulation and is presented in Table 6.5.

Table 6.5. Unit A perceived facilitators and barriers in implementing sensory modulation programme identified by staff who completed survey questionnaire

	Themes	Clinical & Support Staff Feedback
Facilitators	Calming physical environment	Calming, non seclusion environment (Allied health staff A1)
	Effective practice documentation	More, earlier communication, patient specific warning signs list in chart plan (Nurse A1) Documentation format that requires evidence of strategies attempted (Nurse A2) Get reporting accurate, increase confidence. (Nurse A4) Documentation format that requires evidence of strategies attempted. (Nurse A7)
	Proficient work culture	A change in culture sensory modulation organisational wide. (Nurse A3) Increase staff knowledge of sensory strategies that work for the clients, having sensory profiles done in community that come in during admissions to assist staff in knowing what could be useful (Support staff A1) To change culture, evidence of effectiveness shown to staff of sensory strategies. (Nurse A8) Good communication within staff, utilising sensory tools that are de-escalating for particular client. (Nurse A5)
	Access to sensory modulation training	Access to compulsory training through learning and development. (Nurse A1) If everyone was trained in sensory strategies, full team consistent approach. (Nurse A3) Educating staff on the efficacy of sensory strategies. Slowly introduce programmes, which will show the effectiveness of sensory strategies on the ward. (Nurse A4) More training. More staff on duty. Easy access to sensory modulation tools/equipment. Staff employed specifically as S.M Therapist. (Allied health staff A2)
	Sufficient staffing in every roster	Train staff to be aware in advance to provide staff back up, is available early. (Support staff A1) Time available to high-level players. (Nurse A1)
	Supportive management	Support from management. (Nurse A6) Support and buy in from senior management. (Nurse A8)
Barriers	Shifting from old to new practice	Change in practices that have been used for years, costs, and desire to change. (Nurse A4) People continuing to do what they've always done. It is not always easy to change ingrained cultures and attitudes. (Nurse A7) General culture of seclusion/restraint. Fear of change - especially in a high-risk environment. (Nurse A1) Changing attitudes, I have worked in areas that have been acute inpatient units in NZ and seclusion free for 11/12 and 4/12 periods. (Nurse A3)
	Tight funding	Adequate resources, equipment. (Nurse A3)

Limited and/or no training available for staff	Difficulty accessing training. (Nurse A5) Lack of education on effectiveness of sensory strategies etc. (Nurse A6) Lack of time for training. (Nurse A4)
Challenging work conditions	Other professions not understanding/seeing its therapeutic benefit, the strategies being used wrongly/trying to be implemented past the points of effectiveness. (Allied health staff A2) Insufficient flexibility in staffing. (Nurse A2) With good radar, insufficient too many human links in reporting chain, staff culture that accepts that seclusion is a necessary part of keeping everyone safe. (Nurse A3) Acuity of environment, fear amongst staff. (Nurse A6) Finding staff to have one-on-one with tangata whiora (mental health service user), finding support staff to give leave off ward. (Nurse A4)

6.1.6. Upper management post-implementation survey.

Another source of data to understand the implementation process of the sensory modulation programme came from a survey for upper management which was conducted to capture a leadership perspective on the implementation of the programme in Unit A. Five out of nine participants from upper management (56%) responded. The upper management participants' years of experience ranged from two to six in their current position. For confidentiality and anonymity of the participants, job titles are not given. Upper management perceptions of facilitators and barriers in implementing the programme are presented in Table 6.6.

Table 6.6. Facilitators and barriers in implementing sensory modulation programme identified by upper management

Themes	Upper Management Verbatim Feedback
Facilitators	
Training and coaching	Practical guidance on how to use the principles and equipment. (Upper management-01) Having staff to be trainers for teams in clinical areas (Upper management-03)
Policy & procedures	Process in place to support client assessment so that sensory modulation is tailored to the individual and their preference. (Upper management-03) Permission to do sensory modulation work. (Upper management-02)
Leadership	Strong operational and clinical leadership from the top down right through to team leaders and individual clinicians, particularly within the Intensive Recovery Sector, but also in the Community Sectors and [Inpatient Forensic Rehab]. (Upper management-05)
Commitment and interest of staff	I think the organisation must show its commitment to the sensory modulation programme implementation and promote it as an effective alternative to restraint and/or seclusion. (Upper management-03) Most critical, of course, is an interest and commitment from a significant proportion of the nursing staff, so that provision of sensory interventions becomes a well known, frequently offered and utilised ‘business as usual’ prophylactic that reduces the need for restraint. (Upper management-05)
Support	Strong support from Medical and Nursing Directors, the Professional Leaders and the relevant CNS. (Upper management-05)
Resources	Ensuring that there are enough resources (including staff) to continue to promote the use of sensory modulation in the ward. (Upper management-04)
Barriers	
Challenging and changing work conditions	The project ran during a long and continuing period of major change in the way service delivery teams were grouped and lead (both operationally and clinically). Over the same period, there was a dramatic spike in the occurrence of serious adverse events, including 5 alleged homicides. (Upper Management-05)
Busyness of the ward	Time to attend training on top of busy business as usual throughout the implementation. (Upper management-01) Increased acuity and referrals for services over the implementation time including several serious events. (Upper management-01)
Staffing resource	Staff shortages to relieve for training. (Upper management-01) Lack of resources and lack of access when OTs weren’t available. (Upper management-03)
Location of sensory resources	Resource not conveniently located. (Upper management-03)
Staff competency	Lack of understanding of principles and techniques by other staff. (Upper management-02) Lack of education re assessment and implementation. (Upper management-03)

Input from clinical and support staff and upper management was captured to identify staff involvement in programme implementation and the perceived barriers and facilitators in implementing the programme. Table 6.7 summarises the facilitators and barriers to implementation identified by staff in Unit A.

Table 6.7. Summary of Unit A identified facilitators and barriers in implementing sensory modulation programme

Factors	Facilitators	Barriers
Organisational	<ul style="list-style-type: none"> - Well equipped unit facilities - Sensory modulation programme is integrated into unit activities programme - Access to experts - Existing sensory room and tools - Engaged upper management in Learning and Development involvement - Structured training to fit staff work schedule - Availability of online learning tool - Easy access to sensory tools by provision of sensory cart 	<ul style="list-style-type: none"> - Non-commitment from middle management - Non existence of sensory modulation policy - Absence of CNS - Access to the existing sensory room located at second floor of the unit - High staff turnover - Unclear structure and inconsistent communication - Ingrained, entrenched and pre-existing work culture of seclusion, restraint and prior practice - Lack of funding - High acuity of service users - Challenging work conditions - Release of staff to attend training - Shortage of staff
Staff	<ul style="list-style-type: none"> - High functioning occupational therapy team - Presence of psychiatrists that are familiar with sensory modulation - Existing champions and/or trainers - Catch up training sessions - Actual clinical practice demonstration/education 	<ul style="list-style-type: none"> - Varied attitudes towards sensory modulation approach - Poor commitment and engagement to attend training - Competing work priorities - Different perspectives of other practice discipline on acceptability of sensory modulation approach - Fear of changing practice in a high risk environment

6.1.7. Fidelity in sensory modulation implementation.

The data presented in the preceding section provide some indication of the level of fidelity related to implementing the sensory modulation programme. A fidelity tool and a process for fidelity checks were developed and implemented to ensure the intended programme implementation, including a checklist of required implementation processes at an organisational level. The Sensory Modulation Programme Implementation Fidelity Guide (SMPIFG) was completed for each unit. The researcher used the SMPIFG to work with a member of each unit's leadership team in directing the implementation process. The four major domains of

implementation listed in the guide are the (1) programme design, with six indicators; (2) organisational milieu, with 12 indicators; (3) organisational workforce qualities, with five indicators; and (4) implementation process development, with 13 indicators. Each indicator was rated as a 'yes' if it had been met or 'no' if it had not (Refer to Appendix S to view the ratings for each indicator). Collectively, there are 36 programme implementation indicators. The unit garnered a total of 24 out of 36 'yes' indicators, which equated to a 67 percent implementation fidelity rate.

The programme design indicators were all met. Under implementation process development only two indicators were not met. These indicators refer to the pathway of communication for reporting progress and concerns, and the influence of management on their staff. The organisational milieu and workforce qualities were the two domains that had the most unmet indicators. These indicators pertain to the organisational policy, the stability of the team membership, communication within the team, culture and climate of the unit, investment in resources, and staff attitudes, confidence, skills, and commitment. These findings regarding unmet indicators aligned with the perceived barriers to successful implementation identified by the staff, as presented in previous sections of this chapter. Overall, in Unit A, the majority of the listed items in the fidelity tool were met (see Appendix T) indicating a degree of success in implementation. However, there also appeared to be significant gaps in key aspects of the implementation context, which may have reduced the effectiveness of the implementation process.

In summary, the findings in Part A of Chapter 6 indicate that the implementation of the sensory modulation programme posed challenges for both staff and management. Thematic analysis of qualitative data suggested that there were a number of facilitators and barriers to implementing sensory modulation. The provision of training was problematic because the busy environment of the inpatient unit impacted on the availability of staff. In response, the occupational therapy team facilitated implementation by providing catch-up sessions and demonstrations of sensory modulation with nursing and support staff during work duties. Other organisational and staff factors affecting implementation included limited leadership from management and nursing staff, difficulty accessing sensory resources, aspects of organisational culture and unit climate, staff's lack of confidence, and other staff

positive attitudes in managing service users' distress and agitation. Despite these barriers, there were indications that sensory modulation became more fully integrated into the activity programme of the ward and more service users had orientation and access to sensory modulation strategies and tools. The introduction of further sensory rooms, the mobile cart, and the sensory kits supported use of sensory strategies outside of the sensory room. The next part of this chapter describes the impact of sensory modulation on service users, staff and the overall unit practices and climate.

6.2. Part B: Impact of the Sensory Modulation Programme

Part A of this chapter has summarised the findings related to the organisational and staff factors that influence sensory modulation implementation. The next section of the chapter (Part B) will focus on the findings related to the third research phase in order to answer research question three on identifying what impacts of the sensory modulation programme are within acute mental health services; specifically, in this chapter, the focus of the impact on Unit A.

Findings related to the existing organisational context and the implementation of the sensory modulation programme, are discussed and describe the impact of the sensory modulation programme within the acute inpatient unit. The impact was investigated once the implementation phase had ended and incorporated both quantitative and qualitative data collection.

Impact was assessed in relation to a number of areas and these include service user distress and agitation, seclusion rates, PRN use, staff perception on unit climate, staff confidence in managing service users challenging behaviour, and staff attitudes towards the use of seclusion. These will be discussed next.

6.2.1. Impact on service user distress and agitation.

This section addresses the impact of sensory modulation on the reduction and management of service users' distress and agitation. Seven service users participated in a focus group following sensory modulation programme implementation to discuss the impact of having sensory modulation as an option for managing their distress and agitation. The participants included three service users currently in the inpatient unit and four service users recently been discharged from the unit. Three were male and

four female, with ages from early 20s to late 50s. All identified as New Zealand European. The focus group included open-ended questions (see Appendix B: Questionnaire 8) covering service users' experience in using the sensory room and equipment, preferred sensory strategies, process of using the sensory room and equipment, and physical characteristics of the inpatient unit. Focus group data revealed three main themes, namely: (1) preferred sensory tools, (2) identified sensory space, and (3) optimal timing for using sensory strategies.

6.2.1.1. Preferred sensory tools

Participants stated that the use of sensory modulation tools and strategies had a positive impact on them, as service users, increasing their insight and ability to manage distress, their awareness of emotions and their ability to identify and process emotions, and providing a sense of safety through positive associations with another time and place. This positive association has the potential of both calming the body and distracting attention from the immediate distress.

I had quite an insightful experience. I found it really amazing when I'm really distressed. You can use it even when you are really, like, highly, highly distressed. (Service user A1)

I found it to be quite an emotive experience, like it enabled me to process my emotions a lot easier and I was then able to talk about, like, what I was experiencing, and it kind of helped play that out a bit. (Service user A1)

The first time I ever had a weighted blanket on me I was just transported, like to immediately back to being tucked in, yeah, kicked in those memories straight away, like I could smell my dad and I could like smell the bed, I could like see my childhood bedroom. (Service user A2)

It triggered a whole series of really powerful but positive emotions for me. (Service user A2)

Service users reported using either single or multiple sensory tools at one time. For example, sitting on a gliding chair with a weighted blanket on the lap, while listening to music, promoted a positive, calming experience. Service users found combinations of different sensory tools to be effective in managing distress and panic attacks. They mentioned specific sensory tools that they found to be helpful, using them singly whenever they needed to self-soothe. Examples of service user feedback regarding preferred sensory tools are presented in Table 6.8.

Table 6.8. Unit A helpful sensory tools identified by service users in focus group

Sensory Tools	Service Users Verbatim Feedback
Weighted lap pads	<i>I find it quite helpful just to, keeping me because I'm always at work jumping up and down going to another thing but it helps relax in one place. Kind of like anchoring me, a bit so. (Service user A2)</i>
Bathing and/or showering	<i>One of the main symptoms of being distressed or of PTSD for me is radiating back pain. And the equipment that I use was the really long hot bath. (Service user A5)</i>
Contrast between cold and warm water	<i>The one I've found most useful is contrast pain with cold and hot. So best, best one be to have an ice cube and, and have my hand in it and I'll warm water or comfortably hot bowl of water. (Service user A5)</i>
Clay work, stress balls, and playing little ribbon on hands	<i>I use the sensory kit, those I find I use quite a bit... (Service user A1)</i> <i>The clay work and stuff that I did and talking through that as part of that you know with someone who was trained and knew they were talking about so that has been very helpful. (Service user A2)</i> <i>Creative work or creative stuff, physical stuff with your hand more making things collage and those types of things. (Service user A4)</i>
Smelling dried or potted lavender	<i>I find things are differently appropriate for different times, sometimes I find I have a little bottle of dried lavender that I carry around with me. (Service user A4)</i>
Using ear muffs, silicone earplugs, or ear bud headphones	<i>I put my ear bud headphones underneath so that the cord hangs down, it doesn't look like I'm just walking around wearing earmuffs. (Service user A3)</i>
Praying	<i>You stay calm when you get to a, like storm's coming, you remain calm no matter what happens. When I think anything in my mind, I ask the Lord where it's coming from, these thoughts. (Service user A6)</i>

6.2.1.2. Creating alternative sensory spaces other than the sensory room

Service users reported that the inpatient unit's sensory room was problematic to access because of its location on the second floor of the building, separating it from the unit's main areas. However, they described finding alternative spaces for sensory strategies within and outside of the unit. These alternative sensory spaces varied in location and function (see Table 6.9).

Table 6.9. Unit A: Applying sensory strategies in different environments

Sensory Tools Locations	Service Users' Verbatim Feedback
Using earmuffs when out in the street	<i>I have these earmuffs which I kind of just wear sort of constantly if I'm out and about, just to kind of reduce the level of input because I find I'm very sensitive person. (Service user A4)</i>
Bathroom or shower room at home or inpatient unit	<i>I stood in the shower for about three quarters of an hour, just the hot water running in the base of my back, and that's really good. (Service user A5)</i>
When at work using weighted lap pad	<i>I bought a smaller one for work that I use. It just goes across your lap and I find it quite helpful to relax. (Service user A2)</i>
Own bedroom at home or inpatient unit using weighted blanket	<i>When I was having panic attacks, I would just like to curl up underneath it, so I'd be like a turtle. And it would be like a protective shell and I'd just sort of slip under until I felt calmer, and that's sort of how I use it at home now as well. (Service user A1)</i>

6.2.1.3. *Optimal timing of sensory strategies*

Service users unanimously reported that optimising the timing of using sensory strategies was important in self-regulating their emotions. For example, one service user reported the need to access the strategies before arousal levels become too high:

You've got to catch yourself at a certain level. If you go past that I think it's, like anything it's next to useless, medication can be next to useless too, I think if you get past that point. You've got to wait for yourself to come back down again, aye, for something to be effective. (Service user A3)

6.2.1.4. *Unhelpful sensory aspects of the physical environment*

The present study set out to assess the impact of environmental modification as a sensory strategy, that is, that modifying an environment is one of the most significant factors in seclusion and restraint reduction. However, other than the sensory room being more available and some extra sensory equipment provided, there were no significant changes made in the inpatient unit environment because of limited budget for the research and the types of modifications that were needed. Despite this limitation, the focus group interview with service users identified some less appealing areas of the unit that affected their sensory experience and stress levels. The negative impact of the physical environment is presented in Table 6.10.

Table 6.10. Unit A less appealing areas of the unit

Areas of the Unit	Service Users' Verbatim Feedback
Noise echoing and amplified in the main open area	<p><i>On a corridor of the main open area which is high and all the noise travels so it's harder to sleep in those rooms. (Service user A1)</i></p> <p><i>This massive open area which is huge waste of space and it's really noisy. (Service user A2)</i></p> <p><i>And even when the staff are trying to be quiet it echoes, and if someone gets up at night and they want, you know, need some medication or something, and you can hear them. It's like your ear pressed to the glass. (Service user A4)</i></p>
Messy toilets	<p><i>Like every time I go to use the toilet, there's urine all over the floor or faeces and it's like you can't use the toilet without getting faeces or urine all over the place. Oh men's toilet are shocking, there's shit all over the place and they just clean it all the time. (Service user A5)</i></p> <p><i>Well I've had problems with medication, they gave me medication to help me to go to toilet and it absolutely made me go all over the toilet. (Service user A6)</i></p>
Colour of the walls	<p>Service users unanimously agreed that brighter lights and bright colour of the walls would lift their mood and help them to be more positive.</p>
Size and busyness of the communal area	<p><i>Service users used the words 'too big', 'too much', and 'intimidating' to describe the communal area. (Service user A1-A7)</i></p> <p><i>I was in the height of just like total distress. I kind of sit there and eat a meal and I'm trying to block out the things, and there's people shouting, and you know someone, one woman came and pushed her chair into a table and into me, you know, I'm just like sitting there trying to focus on one thing. (Service user A1)</i></p>
Bed size and hard mattresses	<p>Some service users found their bed size short for themselves and the mattresses very hard. (Service user A1-A7)</p>
Lack of privacy in interview room	<p><i>There's one with the windows all around no privacy. (Service user A1)</i></p> <p><i>No privacy at all. (Service user A2)</i></p> <p><i>I spend more time being worried about other people outside. (Service user A4)</i></p> <p><i>Who's looking in on you they know what's happening. (Service user A3)</i></p> <p><i>I know it's like called the fish bowl. (Service user A4)</i></p>
The sound of keys and swipe cards	<p>Service users found the sounds of jangling keys and opening doors using swipe cards unpleasant.</p> <p><i>The other thing, but I know they have it, is the bloody doors locking all the time. That just does my head in. (Service user A1)</i></p> <p><i>Keys jangling, cards swiping. (Service user A2)</i></p>

Open, you can't open, I understand to a point, but it's just seems that it's just in your face, reminding you all the time you're in a mental hospital. (Service user A3)

In summary, the focus group findings suggested that sensory modulation had a positive impact on service users' management of distress and agitation. The service users' utilised sensory tools based on their individual preferences and applied them in various environments. Moreover, the physical environment of Unit A was perceived to negatively impact on service users' distress levels and mental health recovery. However, service users identified some areas that positively impacted on their sensory experience, such as the interview rooms on the second floor of the building with a nice view of trees and plants outside, the outdoor garden that offers fresh air and a nature experience, and the women's lounge that offers a quiet environment.

6.2.2. Impact on seclusion use.

This section addresses the impact of sensory modulation on the reduction of seclusion use. The unit staff collected admission as well as seclusion data for Unit A over a two-year period from September 2014 to August 2016, including baseline data pre-implementation (September 2014 to August 2015) and data following implementation of sensory modulation programme (September 2015 to August 2016).

Admission data collected included number of admissions, discharges, and bed night; and the length of stay before and after the intervention period. Table 6.11 shows that between September 2014 and August 2016, Unit A had 1,120 admissions and 20,043 bed nights. Admissions increased from 497 in the pre-sensory modulation period to 623 in the post-intervention period, and number of bed nights declined steadily from pre-post implementation, with median length of stay from 14 days pre-implementation to seven days post-implementation.

Table 6.11. The total number, median, range and standard deviation of admissions, discharges, bed nights and length of stay in days over the two year period: pre September 2014 to August 2016 and post September 2015 to August 2016

	Number of Admission		Number of Discharge		Number of Bed nights		Length of stay in days	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Total	497.00	623.00	496.00	628.00	10369.00	9674.00	9790.00	280.00
Median	41.50	51.50	40.00	53.50	871.00	838.00	14.00	7.00
SD	5.16	13.45	6.27	13.90	48.96	96.51	24.74	9.50
Range	34-49	33-70	34-53	28-74	742-919	597-908	1-201	1-40

In order to investigate the potential impact of sensory modulation to seclusion reduction, the number of seclusion events, hours, and number of seclusion events by gender and ethnicity were graphed, revealing some potentially interesting patterns.

6.2.2.1. *Seclusion events*

Figure 6.1 shows the number of seclusion events by month pre- and post- programme implementation. A drop in seclusion events was seen in the first month of programme implementation (September 2015) and again in the last month of the post-implementation period (February 2016). It was noted that, following implementation, seclusion was seen to reduce and was sustained in three consecutive months (April, May and June 2016) during the post-implementation period.

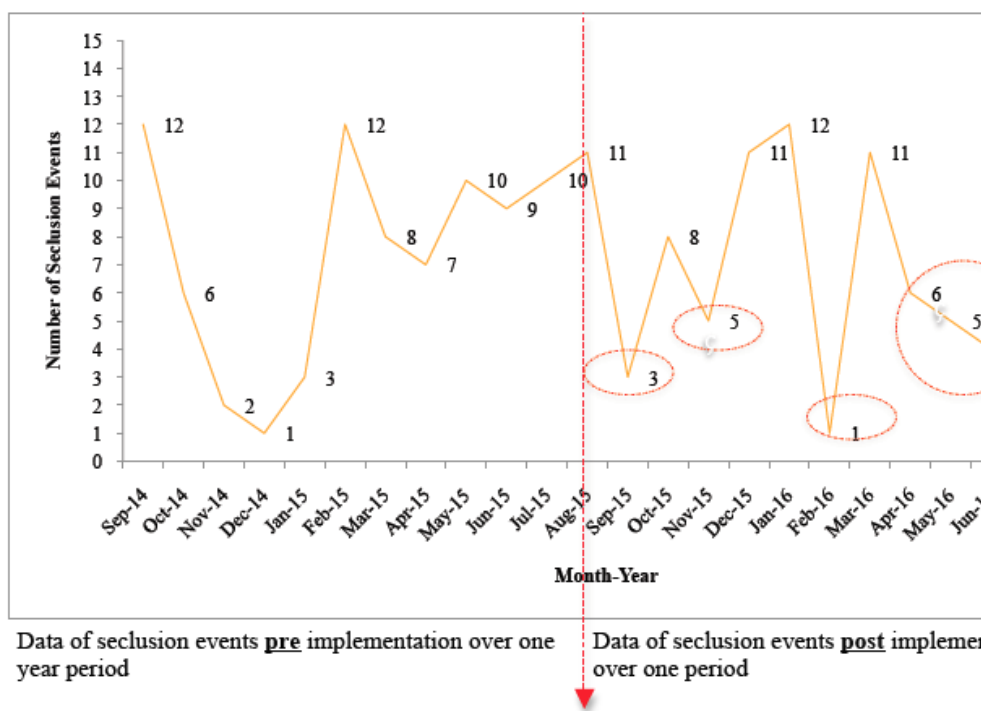
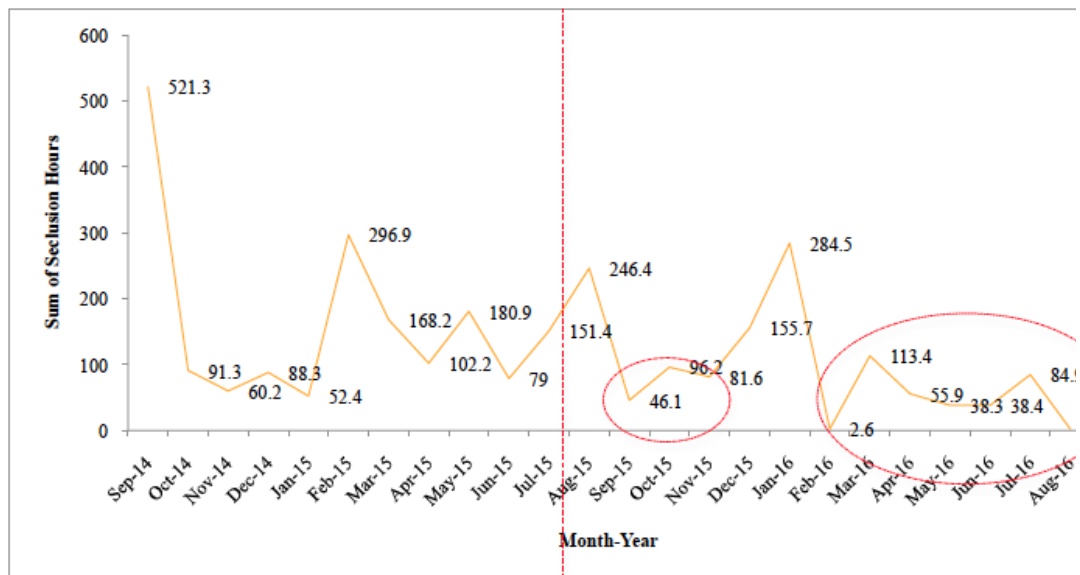


Figure 6.1. Number of seclusion events per month in Unit A from September 2014 to August 2016

6.2.2.2. Seclusion hours

Figure 6.2 displays the number of seclusion hours by month pre-post programme implementation. Data from this figure can be compared with the data in Figure 6.1 which show similar findings, where an initial drop in restraint hours was also seen in the first (September 2015) and last months (February 2016), and sustained reduction was observed post-implementation for the months of April, May, and June 2016. From these data, it can be seen that reduction of seclusion events and hours occurred at critical points in programme implementation. The first occurred at the very beginning of the programme where staff momentum was quite high to implement the sensory modulation programme, the second was at the completion of sensory modulation training to staff, and third was at completion of programme implementation.



Data of seclusion events pre implementation over one year period

Data of seclusion events post implementation over one year period

Figure 6.2. Number of seclusion hours per month in Unit A from September 2014 to August 2016

6.2.2.3. Seclusion events by gender and month

Figure 6.3 presents the number of seclusion events by gender and month pre- and post-programme implementation. The figure indicates that a greater proportion of male service users' occurrences were secluded than females.

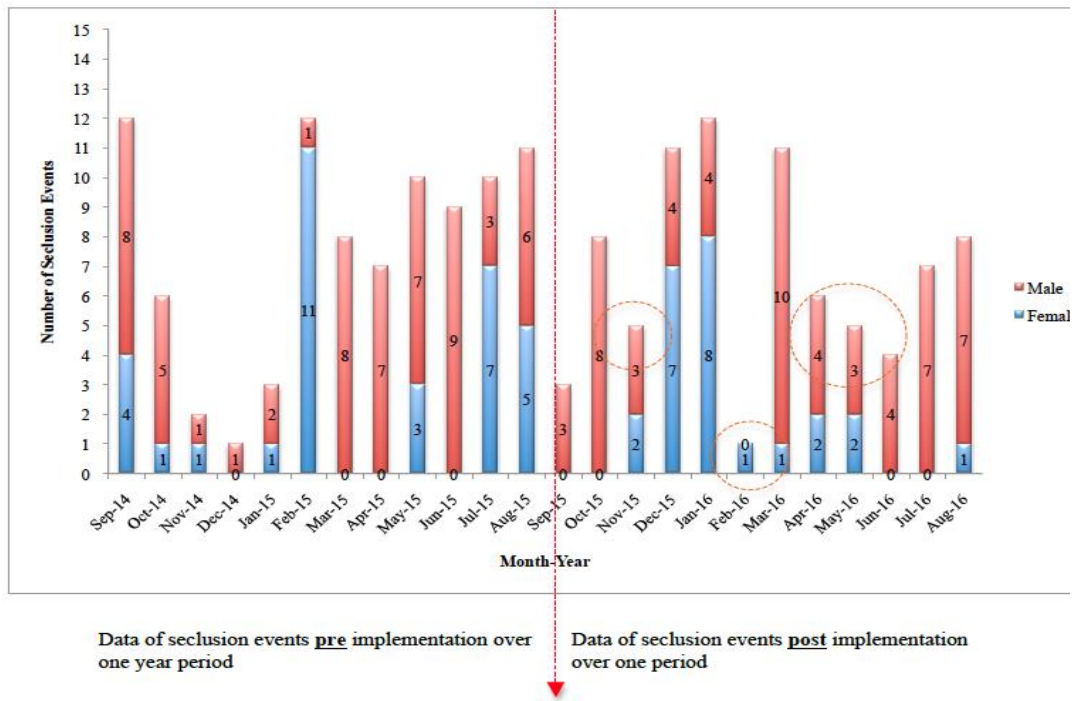


Figure 6.3. Number of seclusion events by gender per month in Unit A from September 2014 to August 2016

Figure 6.4 compares the number of seclusion events by ethnicity across the programme period. The figure indicates that a greater proportion of Māori service users' occurrences were secluded than Pacific and other ethnicities.

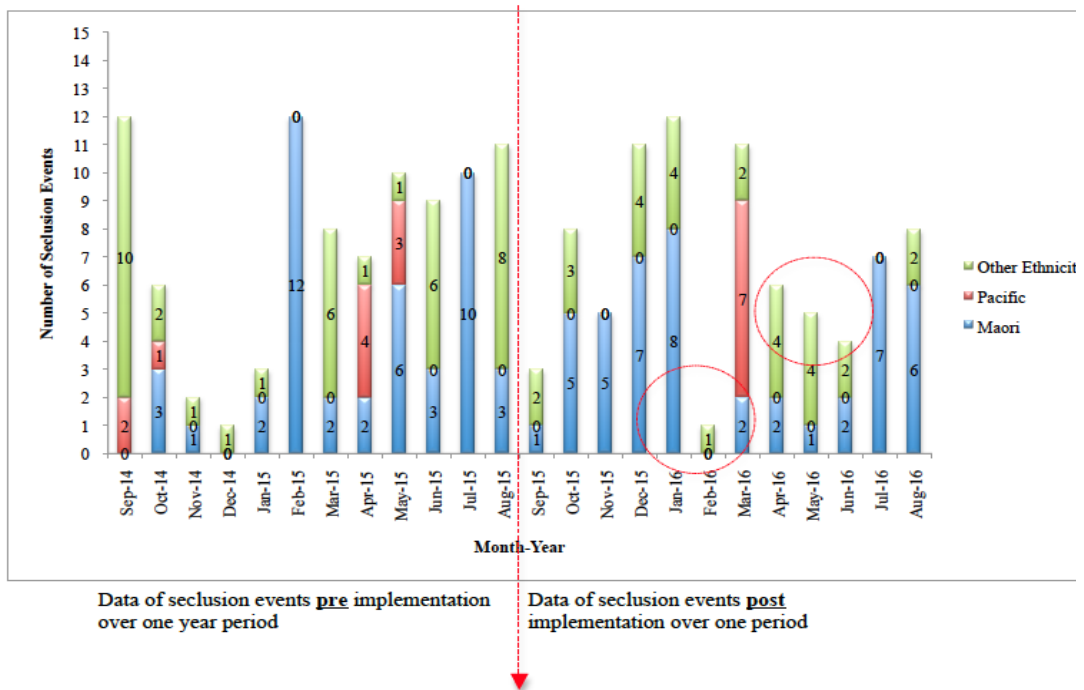


Figure 6.4. Number of seclusion events by ethnicity per month in Unit A from September 2014 to August 2016

In order to further investigate the impact of sensory modulation to seclusion reduction, the number of seclusion events and hours, and number of seclusion events by gender and ethnicity, are presented in Table 6.12. There were 172 seclusion events during the two-year period of the study (pre = 91 and post = 81). Table 6.12 displays seclusion variables pre-post sensory modulation implementation. This table is revealing in showing the reduction of seclusion variables post-implementation. A finding is that the number of seclusion events of Māori ethnicity increased from 44 to 46. A possible explanation to this could be that more Māori service users were admitted during the post-implementation period, but this could not be confirmed, with no overall admission data by ethnicity. In order to assess the impact of sensory modulation on seclusion reduction between pre- (12 months: September 2014 to August 2015) and post-implementation (12 months: September 2015 to August 2016), non-parametric Wilcoxon signed rank test analysis was used (Leard Statistics, 2015a, 2015b, 2015c). No statistically significant differences at the $p=0.05$ level were obtained on any of the variables, suggesting that sensory modulation had no significant impact in seclusion reduction. Note: The ratio between seclusion rates and number of bed nights and admission were measured as well to determine if there would be a difference in the statistical result. However, this analysis indicated no difference in the result.

Table 6.12. Total number of seclusion events, median, standard deviation, range scores, z value and p value of Unit A seclusion rates pre-post sensory modulation programme implementation

Seclusion Variables	Pre-SM Programme Implementation <i>September 2014- August 2015</i>	Median	SD	Range	Post-SM Programme Implementation <i>September 2015-August 2016</i>	Median	SD	Range	z value	p v	
Total Number of Seclusion events	91	8.50	3.85	1-12	81	6.5	3.41	1-12	-0.59	0	
Seclusion events by Gender	Male	58	1.50	3.47	0-11	57	1.17	2.70	0-8	-0.16	0
	Female	33	5.50	3.07	1-9	24	4.00	2.73	0-10	-0.45	0
Seclusion Events by Ethnicity	Maori	44	2.50	3.80	0-12	46	3.80	2.80	0-8	-0.46	0
	Pacific	10	0.44	1.40	0-4	7	0.58	2.02	0-7	-0.67	0
	Others	37	1.50	3.45	0-10	28	2.40	1.50	0-4	-0.63	0
Sum of Seclusion Hours	2038.50	126.80	133.97	52.40-521.30	999.70	68.75	77.51	2.10-284.50	-1.57	0	

^ap value \leq .05 significant result

In Figure 6.3 and Figure 6.4 there is a clear trend of reduction of secluded female and other ethnicity. This reduction may be a reflection of fewer admissions of females and other ethnicities during the post-implementation period, but this could not be confirmed, with no overall admission data by gender and other ethnicity. Taken

together, these overall results could suggest that there is an association between sensory modulation programme implementation and seclusion reduction variables. These data must be interpreted with caution because prior to the study the unit had existing strategies in place for reducing seclusion, such as a seclusion reduction policy and a working committee in reducing seclusion.

In summary, this section analysed seclusion data from Unit A collected over a two-year period including pre- (September 2014 to August 2015) and post- (September 2015 to August 2016) programme implementation. Quantitative analysis of data suggests that there may be a trend towards reduction on some seclusion-related variables following sensory modulation training. However, these data lack of statistical significance change. These findings need to be interpreted with caution because these were seclusion summary data. The study was unable to identify if there were any service users who were secluded multiple times, in particular in a single month. It was very likely that there were service users who were more prone to seclusion. Additional uncertainty arises from the situation where service users in the unit may be subject to change, for example, discharged or admitted. The ideal situation is to track the same service users over time, identifying their count of seclusions by month, and identifying their admissions and discharge dates or the beginning and end of the time period under investigation if admission and discharge is outside of the time period.

6.2.3. Impact on PRN medication use.

Another factor that was measured to assess the impact of sensory modulation was PRN medication use. This data was included because PRN medication use is often considered to be a form of chemical restraint (Standards New Zealand, 2007) and is used for de-escalating and managing service users' distress.

Interviews with service users identified that the use of sensory modulation can be seen as a positive alternative to PRN medication.

I mean there's a place for medication. But then, you know there's some medications, like lot of the PRN ones, that, you know, you sort of don't really want to be on them longer than you need to, like so if you can find alternative methods. (Service user A1)

Well you can only use them [medications] like 4 hours in between or whatever, so sensory you've got total freedom with, aye. You can use whenever, yeah. (Service user A2)

If you take medication it makes your eyes blurry. You want to stop taking medication because it doesn't have the [desired] impact. (Service user A6)

The service users saw the sensory strategies as being more flexible in that they could use them whenever they wanted. This suggests a sense of greater autonomy and fewer negative side effects with the sensory-based approach to managing distress.

In summary, the data appear to show that service users prefer sensory modulation over coercive and pharmaceutical methods as a strategy for de-escalation and management of distress.

6.2.4. Impact on ward climate and staff confidence and attitudes.

This section addresses the impact of sensory modulation to the ward climate and staff confidence and attitudes. Aside from analysing quantitative data on the number of seclusions and qualitative data on the use of PRN, three standardised questionnaires were used to assess ward climate, staff confidence in managing service users' aggression, and staff attitudes towards seclusion pre- and post- programme implementation. These three questionnaires were collectively presented as the Survey Questionnaire for Mental Health Clinical and Support Staff (see Appendix B: Q2). Results from each questionnaire are presented separately.

Of 66 staff, 19 (29%) completed the questionnaires pre- and post-implementation. Table 6.4 presents participants' demographics. In addition, qualitative data from the focus group interview were examined and information triangulated in order to determine the impact of sensory modulation on ward climate, and staff confidence and attitudes. A group interview was held with allied health staff and support workers (n=8).

6.2.4.1. EssenCES ward climate: staff perception of Unit A's climate

This section addresses the impact of sensory modulation on staff perception of ward climate. The Essen Climate Evaluation Schema (EssenCES) was used to determine

staff's and service users' perceptions of their inpatient unit's climate (Schalast, 2008) pre- and post- programme implementation. The organisational climate refers to the staff and service users' experience of the physical and social context and their experience of seclusion and restraint versus sensory modulation during the study period (Schalast et al., 2008). Staff were asked to rate 17 statements (15 valid items; two positively worded not scored items) on a five-point Likert scale, with response ratings ranging from: (1) not at all, (2) little, (3) somewhat, (4) quite a lot, to (5) very much. The measure consists of three climate dimensions, each with five items namely: *Experience of Safety* refers to the safety of the inpatient environment for staff and service users (e.g. level of threats, aggression); *Patient's Cohesion* relates to inter-relationships among service users within the inpatient unit in terms of care, peer support, and genuine concern; and *Therapeutic Hold* relates to inter-relationships between service users and staff, such as service users' openness to talk to staff regarding their problems. The EssenCES scoring key was followed to compute climate dimensions (see Appendix 2:Q2). Higher scores on the EssenCES are indicative of a more positive social climate. Results are presented in Table 6.13. Median scores were used because participants used an ordinal Likert rating scale and there was some skewedness in the data, including the small number of participants (Fisher Box, 1987; Leard Statistics, 2015a, 2015b, 2015c; Zar, 2009). The nonparametric Wilcoxon signed rank test analysis was used to determine statistically significant differences between pre- and post-implementation data (Leard Statistics, 2015 a, 2015b, 2015c).

Table 6.13. Median, standard deviation (SD), range scores, z value and p value on EssenCES Ward Climate for participants in Unit A pre-post sensory modulation programme implementation (n=19)

Climate Dimensions	Median Score Pre-SM Programme Implementation	SD	Range	Median Score Post-SM Programme Implementation	SD	Range	z value	p value ^a
Patients' Cohesion	3	0.78	2-5	3.21	0.75	2-5	-1.39	0.17
Experienced Safety	3.4	0.84	2-5	2.94	0.67	2-5	-1.59	0.11
Therapeutic Hold	3.33	0.83	2-5	3.29	0.65	2-4	-0.54	0.59
Overall Climate	3.31	0.76	2-5	3.18	0.60	2-4	-1.10	0.27

^ap value \leq .05 significant result

Staff perceptions of the inpatient ward climate before the sensory modulation training are reflected in median scores on the three climate dimensions and overall climate. Table 6.13 shows that there was a slight increase in Patients' Cohesion and Therapeutic Hold, compared with a slight decrease in Experience Safety and Overall Climate. The median scores on these three dimensions and overall climate were mostly similar to scores post-implementation. These scores suggest that Unit A climate has limited degree of positive social climate. A Wilcoxon signed rank test indicated that the overall climate from pre-median score 3.31 (SD=0.76) was not significantly higher than the post-implementation median score of 3.18 (SD=0.60) [$z = -1.10, p = 0.27$]. Median scores on the EssenCES before and after the sensory modulation programme implementation suggest that there was very little change on any of the variables, including Patients' Cohesion, Experienced Safety, and Therapeutic Hold. The non-significant results for Unit A's climate were not surprising considering the high occupancy and increasing acuity of the service users within the unit during and following implementation. In addition, staff had competing demands between finding time to attend training on top of the busy nature of the ward. Comparatively, staff who participated in the focus group interview were unsure to indicate change in the unit climate post-implementation because multiple approaches to clarify were utilised in practice aside from sensory modulation. According to staff, changing unit climate would require a good amount of time for change to happen.

It's hard to say specifically about sensory modulation, because you've got to remember that we've expanded the whole activity programme. The whole approach almost like a filter on everything we use, but everything's we can't separate that. (Support staff A1)

I think there is a change coming. I think the momentum is building and we're just at the start and it's going to take a long time. I think it is slow amount of change anyway and sensory modulation is part of it. (Allied health staff A1)

The pre-post median scores on the three unit climate dimensions and overall climate were mostly similar after programme implementation and found no statistically significant change. These data suggest that the programme did not necessarily positively impact inpatient unit climate at an individual and organisational level.

In terms of qualitative findings, opinions differed as to whether unit climate had changed after programme implementation. The majority of staff suggested that upcoming change in the unit could be part of organisational climate change. A recurrent theme in the focus group interview was a sense amongst staff that changing unit climate would require a considerable amount of time. The qualitative findings suggest that a substantial amount of time is essential to embed sensory modulation into practice to positively impact organisational climate.

For the purpose of mixed method analysis of the current study, quantitative and qualitative data were given equal weight to address the impact of sensory modulation to organisational climate. Based on these data it is suggested that a decent amount of time is essential to embed sensory modulation into practice to positively impact inpatient unit climate in an individual and organisational level.

6.2.4.2. Staff confidence in managing service users' aggression

This section addresses the impact of sensory modulation on staff confidence in managing service users' aggression. The staff confidence in managing service user distress and agitation was assessed by comparing pre- and post- scores using the Confidence on Managing Service Users' Aggression questionnaire (CMSUA-Q) (Martin & Daffern 2006), designed to assess staff confidence in managing inpatient aggression. The CMSUA-Q comprised seven questions related to staff confidence in managing service users' aggression (refer to Legend). Staff were asked to answer CMSUA-Q using a four-point Likert scale, with response ratings ranging from (1) not all confident to (4) very confident. Higher scores on the CMSUA-Q are indicative of a good level of staff confidence. The median, standard deviation, range scores, z value, and p value are presented in Table 6.14. Median scores were used because participants used an ordinal Likert rating scale and there was some skewedness in the data, including the small number of participants (Fisher Box, 1987; Leard Statistics, 2015 a, 2015b, 2015c; Zar, 2009). The nonparametric Wilcoxon signed rank test analysis was used to determine statistical significant differences in pre-post data (Leard Statistics, 2015 a, 2015b, 2015c).

Legend – Questions related to staff confidence in managing service users' aggression

Question 1: How confident are you in your working with hostile and aggressive service users?

Question 2: How confident are you in your colleagues' ability to maintain your safety and manage an aggressive service user?

Question 3: How safe do you feel around aggressive service users?

- Question 4: How safe is the environment at your unit?
 Question 5: How able are you to de-escalate an aggressive service user?
 Question 6: How able are you to contribute to the restraint of an aggressive service user?
 Question 7: How able are you to maintain your safety in the presence of an aggressive service user?

Table 6.14. Median, standard deviation (SD), range scores, z value and p value on CMSUA-Q for participants in Unit A pre-post sensory modulation programme implementation (n=19)

Confidence Questions	Median Score Pre-SM Programme Implementation	SD	Range	Median Score Post-SM Programme Implementation	SD	Range	z value	p value ^a
1	2.79	0.87	1-4	3.00	0.78	1-4	-0.73	0.47
2	3.20	0.88	1-4	3.42	0.51	3-4	-1.51	0.13
3	2.60	0.84	1-4	2.87	0.74	2-4	-1.05	0.30
4	3.06	0.62	1-4	3.42	0.51	3-4	-2.11	0.04
5	2.75	0.75	1-4	2.87	0.74	2-4	-0.97	0.33
6	2.22	1.13	1-4	2.12	1.18	1-4	-0.23	0.82
7	2.93	0.91	1-5	3.18	0.60	2-4	-0.94	0.34
Overall Confidence	2.80	0.81	1-4	3.17	0.50	2-4	-1.89	0.059

^ap value \leq .05 significant result

Six of the seven questions, including the overall staff confidence, showed slightly increased confidence post-training; however, question number 6: How able are you to contribute to the restraint of an aggressive service user?, revealed a slight decrease, suggesting less confident staff in managing service users' aggression. A Wilcoxon signed rank test indicated that the overall confidence from pre-median score 2.89 (SD=0.81) was not significantly higher than the post-median score of 3.17 (SD=0.50) [$z = -1.89, p = 0.059$] on any of the seven questions, except for question 4: How safe is the environment at your unit?, from pre-median 3.06 (SD=0.62) to post median score 3.42 (SD=0.51) [$z = -2.11, p = 0.04$]. The statistical result of question 4 can be related to the unit having been refurbished and renovated in 2011 and equipped with different facilities for daily living, including a sensory modulation room and modalities which made staff feel safe about Unit A's physical environment. Identically, staff in the focus group reported that the unit environment and availability of sensory modulation tools had contributed to staff confidence, though not in the overall confidence in managing agitated and distressed service users.

Definitely [change] environmentally from before the unit was modified.
 (Allied health A1)

There's been a massive change. Even the culture's shifted with the different environment and that was very palpable. I can say that because I worked in the unit before. (Support staff A2)

There was a moment I experienced last week and I didn't feel confident at all to bring any sensory modulation because it had got to the point where it wouldn't have been effective and you feel just defeated probably a little bit. (Allied health A3)

For the purpose of mixed method analysis of the current study, quantitative and qualitative data were given equal weight to address the impact of sensory modulation to staff confidence in managing service users' aggression. Together these results provide important insights into the impact of sensory modulation training on staff confidence in managing service user aggression. The data suggest that enhancement of environment through provision of sensory cart and modalities and setting up of sensory room, as part of sensory modulation programme implementation, can contribute to staff confidence in managing service users' aggression.

6.2.4.3. Staff professional attitudes towards seclusion questionnaire (PATS-Q)

This section addresses the impact of sensory modulation on staff professional attitudes towards seclusion use. In order to test staff attitudes toward coercive practices, staff pre- and post-implementation attitudes were surveyed using the Professional Attitude Towards Seclusion Questionnaire (PATS-Q). This scale was designed to provide insights into changes in staff attitudes towards seclusion and restraint (van Doeselaar et al., 2008; Mann-Poll & Smit, 2012). The PATS-Q has eight subscales which link to three main scales, namely: (1) *Nature & Function*, with sub-scales Confidence & Ethics, (2) *Reasons*, with sub-scales Threat, Treatment & Culture, and (3) *Care*, with sub-scales More Care, Other Care and Better Care, which are described below (Mann-Poll & Smit, 2012). The participants rated the main and sub-scales of *Reasons* (17 statements) and *Care* (12 statements) by using a four-point Likert scale, ranging from (1) not at all, (2) a bit, (3) pretty much, to (4) a lot. The main and sub-scales of *Nature & Function* (14 statements) were rated from (1) strongly disagree, (2) mostly disagree, (3) mostly agree, to (4) strongly agree. The PATS-Q syntax was followed to compute the scores of eight subscales and main scales (see Appendix 2:Q2). The higher scores on the PATS-Q are indicative of a more positive staff attitude toward reducing seclusion. The median, standard deviation, range scores, z value, and p value of Unit

A on the PATS-Q are presented in Table 6.15. Median scores were used because participants used an ordinal Likert rating scale and there was some skewedness of the data, including the small number of participants (Fisher Box, 1987; Leard Statistics, 2015a, 2015b, 2015c; Zar, 2009). The nonparametric Wilcoxon signed rank test analysis was used to determine statistical significant differences pre-post data (Leard Statistics, 2015a, 2015b, 2015c).

Table 6.15. Median, standard deviation, range scores, z value and p value of Unit A on PATS-Q for participants in Unit A pre-post sensory modulation programme implementation (n=19)

Staff Attitudes' scales and sub-scales	Median Score Pre- SM Programme Implementation	SD	Range	Median Score Post-SM Programme Implementation	SD	Range	z value	p value ^a
Care	2.80	0.87	1-4	3.13	0.77	2-4	-1.44	0.15
More Care	2.50	0.77	1-4	3.13	0.74	2-4	-2.39	0.02
Other Care	2.42	1.04	1-4	2.15	0.84	1-4	-0.47	0.64
Better Care	3.00	0.94	1-4	3.50	0.77	2-4	-2.14	0.03
Reason	2.71	0.84	1-4	2.77	0.42	2-3	0.00	1.00
Threat	3.05	0.81	1-4	3.05	0.52	2.5-4	-0.51	0.61
Treatment	2.44	0.76	1-3.5	2.50	0.63	1-3	-0.06	0.95
Culture	2.71	0.89	1-4	2.74	0.45	2-3	-0.17	0.82
Nature & Function	2.91	0.52	2-4	2.83	0.28	2.25-3	-0.99	0.32
Confidence	2.79	0.51	2-4	2.63	0.62	1-3	-0.07	0.94
Ethics	2.95	0.70	2-4	3.00	0.60	2-4	-1.51	0.13
Overall	2.89	0.61	2-4	2.87	0.36	2-3	-0.73	0.47

^ap value \leq .05 significant result

It can be seen from the data in Table 6.15 that the pre-post median scores were mostly similar post the sensory modulation programme implementation. These findings suggest that Unit A staff attitudes towards seclusion and restraint have some insight in coercive practices. The scores suggest that the use of coercive approaches like seclusion and restraint were present in Unit A mental health practice and staff were not supportive of not using these approaches. The most striking result to emerge from the data is that staff attitude subscales Better Care and More Care reveals that there has been a marked increase after sensory modulation programme implementation. Wilcoxon signed rank tests were used to assess if there were significant difference between the baseline scores and the scores following programme implementation. No significant differences were found for the majority of the main and subscales of PATS-Q, except on two of the subscales, More Care and Better Care. The subscale More Care showed a significant increase in median score, from 2.50 (SD=0.77) to 3.13 (SD=0.74)

post programme implementation [$z = -2.39, p = 0.02$]. This finding may suggest that staff attitudes have improved towards the non-use of seclusion in preference for using more caring approaches like the use of medication, early risk identification, and better staffing levels than using seclusion as an approach. The subscale 'Better Care' showed a significant increase in median score from 3 (SD=0.94) to 3.5 (SD=0.77) post sensory modulation programme implementation [$z = -2.14, p = 0.03$]. This data may suggest that staff attitudes have improved towards the use of seclusion and prefer to utilise better caring approaches like the use of more dialogue and paying more attention with the service users, and their family and friends by providing meaningful daytime activities and accentuating treatment plans, improving Unit A protocols toward seclusion and up skilling staff by engaging them to post graduate training. Comparatively, staff from the focus group interview noticed the positive impact of activities incorporated to the unit programme.

I think having the community meeting in the morning makes a difference to the whole attitude and set up for the day. You know if you look at the fact that people specifically say the guitar, the music at the end and what people get from that and watching people and if that sets them up for the day, then yes you could say that was sensory modulation having an impact you know. (Support staff A2)

No significant differences were found in the overall PATS-Q post-sensory modulation programme implementation [$z = -0.73, p = 0.47$]. Likewise, staff in the focus group interview reported that staff attitudes toward seclusion had not changed and would require a good amount of time for change to happen.

I think, I kind of feel that like a change in attitudes around seclusion and restraint would probably occur but over a longer time frame. I don't know how long it is, like 6 months, one year. I think it is because sensory modulation itself is still finding its feet in the unit, that it's going to be down the track before it makes a visible impact on restraint and seclusion. (Allied health A1)

In addition, staff reported that sensory modulation was aligned to seclusion and restraint reduction, which impacted on the full concept and therapeutic benefits of the approach. The impact of sensory modulation training on staff attitudes towards seclusion was unclear to staff.

I'm not sure that there's, that even if there has been a change of attitudes or awareness or whatever around restraint and seclusion, I'm not sure that there's an adequate kind of correlation with sensory modulation in that, or realistic correlation. (Allied health staff A2)

From the quantitative data, it can be seen that overall staff attitudes towards the use of seclusion reveal no statistically significant difference between pre- and post-implementation; suggesting that implementing a sensory modulation programme may not necessarily lead to a change in overall staff attitudes. However, the subscales Better Care and More Care showed a statistically significant change at the $p=0.05$ level post-implementation suggesting that sensory modulation training has a potential to positively change staff attitudes on those subscales.

The majority of staff suggested that staff attitudes towards seclusion had not changed in the unit and they were uncertain if sensory modulation had influenced the staff attitude. This was a recurrent theme in the focus group interviews. What emerges from the results reported here is that staff in the focus group reported their observations *within* the unit, and not necessarily their attitudes toward seclusion in principle. A possible explanation for this might be that not all staff in the focus group had been involved in seclusion and restraint, and nurses were missing. It seems possible that this result is due to the fact that they are allied health staff—occupational therapists, occupational therapy support workers, and a social worker. It could be argued that staff who participated in the focus group had existing positive attitudes towards seclusion avoidance, or that sensory modulation had influenced this. These qualitative findings suggest that sensory modulation has a potential to alter staff attitudes towards seclusion at an individual level, but not necessarily impact at an organisational level.

Two divergent discourses emerged: that staff who participated in the focus group voiced positive attitudes towards seclusion reduction, and it could be their attitude had a positive change post-training; whereas staff who participated in pre-post survey questionnaire did not alter their overall attitudes, but had nonetheless significantly changed their care approaches. According to these data, it can be inferred that sensory modulation training programme can potentially alter staff attitudes towards seclusion at an individual level and can positively change staff caring approaches at an organisational level.

In summary, this section (Part B) has described the impact of a sensory modulation programme within an acute inpatient on service user distress and agitation, seclusion

reduction, PRN medication use, staff perception on unit climate, staff confidence in managing service users challenging behaviour and staff attitudes towards the use of seclusion. Results on seclusion data indicated a reduction on some variables after programme implementation, though the change was not statistically significant. The physical infrastructure of the inpatient unit environment was not changed during the implementation of sensory modulation programme due to budget constraint. Results indicated that sensory modulation has positive impact on service users' management of distress, agitation, and de-escalation.

Service users reported that sensory modulation was their preferred strategy over PRN. The staff perception of change to overall unit climate was not statistically significant; however, qualitative data indicated upcoming change to the unit that could affect organisational climate. Staff confidence in managing service users' aggression was not statistically significant; however, qualitative data indicated increased staff confidence and use of the sensory modulation approach by the staff after training in sensory modulation. The subscales 'better care' and 'more care' on staff attitudes towards seclusion revealed statistically significant change following programme implementation; however, change in the overall staff attitude was not statistically significant. These quantitative results indicated that sensory modulation programme did alter staff attitudes towards seclusion and coercive practice, and positively impacted on staff's caring approaches. Nonetheless, qualitative data indicated changes in staff individual attitudes toward coercive practices.

6.3. Summary

This chapter provided a clear description of inpatient Unit A factors influencing sensory modulation programme implementation. This chapter was presented in two parts: Part A described the process and factors influencing sensory modulation programme implementation (research phase 2 and research question 2); and Part B presented the impact of the sensory modulation programme on the organisation, the staff and the service users (research phase 3 and research question 3).

Findings related to process and factors influencing implementation of sensory modulation in Unit A show that most competency survey respondents were nurses and many had previously attended training directly related or relevant to sensory

modulation practice. The data from the SMC-Q suggested that while staff had knowledge of the underlying principles their confidence and competence in applying sensory modulation needed development.

The audit results indicated that service users were routinely being-oriented to the sensory room and strategies. However, the files lacked evidence of more detailed planning related to individual sensory triggers and strategies, and the use of strategies was limited to isolated critical incidents, rather than the routine maintenance of arousal levels.

Sensory modulation training content was developed among stakeholders. However, high occupancy and increasing acuity of service users within the unit was evident during the training periods and the proposed training dates were not followed. These factors affected training attendance and, in response, catch-up sessions and practice coaching were provided to staff.

A focus group of staff showed that they were using multiple strategies to manage service users' distress and challenging behaviour, such as individual and group support from staff, medication, and utilisation of the unit environment.

Factors related to the impact of the sensory modulation programme in Unit A's organisation, the staff and service users, showed that sensory modulation had a positive impact on service users' management of distress and agitation. The service users' utilised sensory tools based on their individual preferences and applied them in various environments. Moreover, the physical environment of Unit A was perceived to negatively impact on service users' distress levels and mental health recovery. However, service users identified some areas that positively impacted on their sensory experience, such as the interview rooms on the second floor of the building with a nice view of trees and plants outside, the outdoor garden that offers fresh air and a nature experience, and the women's lounge that offers a quiet environment.

Quantitative analysis of seclusion data suggests that there may be a trend towards reduction on some seclusion-related variables following sensory modulation training.

However, these data lack of statistical significance change. These findings need to be interpreted with caution because these were seclusion summary data.

Service users' interviews indicated that they prefer sensory modulation over coercive and pharmaceutical methods as a strategy for de-escalation and management of distress.

The staff perception of change to overall unit climate was not statistically significant; however, qualitative data indicated upcoming change to the unit that could affect organisational climate. Staff confidence in managing service users' aggression was not statistically significant; however, qualitative data indicated increased staff confidence and use of the sensory modulation approach by the staff after training in sensory modulation. The subscales 'better care' and 'more care' on staff attitudes towards seclusion revealed statistically significant change following programme implementation; however, change in the overall staff attitude was not statistically significant. These quantitative results indicated that sensory modulation programme did alter staff attitudes towards seclusion and coercive practice, and positively impacted on staff's caring approaches. Nonetheless, qualitative data indicated changes in staff individual attitudes toward coercive practices.

Taken all together, despite provision of sensory modulation training and additional sensory tools, the implementation of a sensory modulation programme posed challenges for both staff and management. Factors affecting the implementation were issues in the provision of training due to the busy environment of the unit, limited leadership from management and nursing staff, difficulty accessing sensory resources, organisational culture and unit climate, and the staff lack of confidence and attitudes in managing service users' distress and agitation. However, despite these barriers, sensory modulation became fully integrated in the activity programme of the unit and service users had increased orientation and access to sensory modulation strategies and tools.

CHAPTER SEVEN: IMPLEMENTATION AND IMPACT OF SENSORY MODULATION IN UNIT ‘B’

The following chapter presents the findings regarding the implementation and impact of the sensory modulation programme in Unit B. As in the previous chapter, the aim is to provide insights related to the research questions two and three. Specifically, the questions are: ‘How do organisational and staff factors including policies and practices related to de-escalation and seclusion and restraint reduction influence sensory modulation implementation?’ and: ‘What is the impact of using a sensory modulation programme within acute mental health services?’ A diagram (7.1) is provided below to show the link between the relevant study propositions, research questions, and data collected in the implementation phase.

Study Propositions	Research Questions	Related Measures and qualitative Data
<p>Services using multiple strategies for seclusion and restraint reduction, including developing policies, leadership, consumer involvement and staff training are more likely to successfully implement sensory modulation (Sutton & Nicholson, 2011).</p> <p>Environmental modifications as a sensory strategy are a significant factor in seclusion and restraint reduction (Borckardt et al., 2011).</p>	<p>Study Phase 2: How do organisational and staff factors including policies and practices related to de-escalation and seclusion and restraint reduction influence sensory modulation implementation?</p>	<ul style="list-style-type: none"> Organisational factors Incident/accident reports progress Management perspective (focus group or 1:1 interview) Document review Survey of the physical context Sensory Modulation Programme Implementation Fidelity
<p>Sensory modulation contributes to the reduction and management of distress and agitation (Sutton et al., 2013).</p> <p>Service users prefer sensory modulation as a strategy for de-escalation and management of distress over coercive and pharmaceutical methods (Lee et al., 2010).</p> <p>Sensory modulation programmes have a significant impact on the use of seclusion within inpatient mental health settings (Champagne & Stromberg, 2004).</p> <p>Sensory modulation programmes increase staff confidence in managing service user distress and agitation and alter staff attitudes away from toward coercive practices (Wale et al., 2011).</p>	<p>Study Phase 3: What is the impact of using a sensory modulation programme within acute mental health services?</p>	<ul style="list-style-type: none"> Impact for service users Service user focus group
		<ul style="list-style-type: none"> Impact for staff Sensory modulation Competency questionnaire (Azuela & Robertson, 2013, 2016) Staff focus groups Staff Survey Questionnaire: PATS-Q (Doeseelaar et al., 2008), Confidence in Managing Inpatient Aggression (Martin & Daffern, 2006), & EssenCES (Schalast et al., 2008) Upper management survey

Diagram 7. 1. Unit B link between propositions, research questions, and related measures and qualitative data

This chapter follows a similar format to the preceding chapter, with the findings related to implementation in Part A and findings related to impact of the sensory modulation programme in Part B. Firstly, the sensory modulation implementation process will be presented, followed by a review of the organisational and staff factors affecting implementation. Then, qualitative and quantitative data related to the impact of the programme are presented, including impact on the organisation, the staff, and service users.

7.1. Part A: Implementation of the Sensory Modulation Programme

This section describes the sensory equipment purchased, the sensory modulation training process and outcomes, staff knowledge of sensory modulation before the training, documented sensory modulation implementation, and the factors influencing programme implementation.

7.1.1. Equipment.

Following the baseline review of existing sensory modulation practice and tools, the need for additional equipment to support sensory modulation practice was identified with unit staff. New sensory tools for visual, auditory, tactile, and vestibular senses were provided using study funding (see Table 7.1). Additionally, a sensory cart was purchased to increase accessibility to sensory tools throughout the unit.

Table 7.1. Unit B additional sensory tools in the sensory room

Senses	Sensory Tools
Visual Auditory	Flat screen TV (for visual and auditory purpose) and TV wall mount
Tactile	Floor textured rug/carpet
Olfactory	Nil
Gustatory	Nil
Proprioception & Kinesthesia	Nil
Vestibular Other	Gliding rocking chair (weight limit capacity of 125-150 kg) Cart (tailored to sensory items)

7.1.2. Training process and outcomes.

A major component of the sensory modulation implementation phase (Research Phase 2) was the provision of training for staff. As with Unit A, the sensory modulation training programme was developed in collaboration with key organisational stakeholders: the Learning and Development Department, Unit B's management team, and the existing sensory modulation leaders (or 'champions'). The training of sensory modulation included modular group training sessions, catch-up sessions, and practice coaching. The

programme development and delivery was discussed in Chapter 3. As reported by the team leader, the scheduling of sensory modulation training was a challenge due to staff shifts and the roster cycle. In a 24-hour cycle, there were three shifts: morning (7.30am-2.30pm), afternoon (2-10.30pm), and evening/overnight (10pm-7.30am); and a roster cycle where staff were rostered on four days working and two days off work. To address this challenge, a meeting was held between the unit team leader, the organisation's learning and development manager, and the researcher. The time between the end of morning shift and the beginning of afternoon shift was identified as the most suitable time for training, that is, between 2.30-3.00pm. The outcome of the meeting was to provide a series of three short sensory modulation training modules to as many staff as possible. The series of three modules was to be repeated five times from 27th October to 2nd December 2016. The modules would cover: a) theoretical foundation on sensory processing, arousal and emotions; b) sensory modulation assessment and planning; and c) sensory modulation intervention.

The middle management of Unit B followed these schedules. Table 7.2 below shows the number of staff who attended the training for each module. Of 45 Unit B staff, 37 (82%) attended module one, 11 (24%) attended module two and 11 (24%) attended module three attended the staff development training. These attendance figures show a large reduction in attendees over time.

Table 7.2. Unit B staff attendance at sensory modulation training sessions

Module 1 Training Dates	27.10.16	28.10.17	30.10.17	02.11.17	03.11.17	04.11.17	Varied Dates for Catch up sessions	Total
Number of Participants	2	4	9	4	2	5	11	37
Module 2 Training Dates	09.11.17	10.11.17	11.11.17	16.11.17	17.11.18	18.11.17	Varied Dates for Catch up sessions	Total
Number of Participants	0	0	2	2	3	3	1	11
Module 3 Training Dates	23.11.17	24.11.17	25.11.17	30.11.17	30.11.17	1&2/12/17	Varied Dates for Catch up sessions	Total
Number of Participants	0	0	0	0	0	0	11	11

During the training period, data from interviews showed that Unit B experienced high occupancy increasing the unit acuity, and the occurrence of a fire incident at the ICU impacted staff availability to attend the sensory modulation training. The fire incident also resulted in reduced bed capacity in Unit B. In order to deal with the implementation issues, catch-up sessions and practice coaching were provided by the unit's champions and trainers, who also provided direct technical support with staff in managing crisis incidents with service users. For example, they aided staff to customise de-escalation techniques by advising which sensory modulation tools might be effective with specific service users. Formal and informal sensory modulation education was provided and integrated into handover meetings, MDT meetings, complex case reviews, and residents' meetings. The trainers and champions fostered practice consultations with staff for developing wellness plans and identification of sensory strategies for service users, and through interactive problem-solving related to specific service user distress and challenging behaviour.

In summary, sensory modulation training content was developed among stakeholders and the proposed training dates were followed. However, high occupancy, increasing acuity of service users within the unit, and a fire incident at the ICU affected training attendance.

7.1.3. Documented sensory modulation implementation.

Another aspect of sensory modulation implementation that was re-assessed in the second research phase was the documented use of the approach. Service users' clinical records were reviewed to determine if sensory modulation was being used and documented in practice. The audit was conducted using the 'Review Template for Service Users' Clinical Record' (MOH, 2002).

7.1.3.1. *Post-audit medical file review*

Similar to the pre-implementation file review, in order to assess the possible impact of the sensory modulation training, six mental health clinical records from Unit B were randomly selected by the Research Assistant from all available records six months after programme implementation. Demographic and illness variables, admission, and sensory modulation data for each clinical record are summarised in Table 7.3. The six clinical

records represented six service users with an average age of 36.17 years; three were females and three were males; five identified as New Zealand Europeans and one as New Zealand Māori; four were single and two married. Primary diagnoses were, respectively, borderline personality disorder, psychosis (2x), schizophrenia (2x), and schizoaffective. Two of the files were for first admissions to a psychiatric hospital, and the number of admissions within the past two years ranged from 1 to 14. The average length of current admission was 12.17 days.

Table 7.3. Unit B service users' demographics, admission and sensory modulation data post-implementation (n=6)

Sections	Service Users Clinical Record					
	File 1	File 2	File 3	File 4	File 5	File 6
Age	43	28	29	34	52	31
Sex	Female	Male	Female	Male	Female	Male
Ethnicity	NZ European	NZ European	NZ European	Niuean Latin Hispanic NZ European	NZ European	NZ Maori
Diagnosis (axis 1 and 2)	Borderline Personality Disorder; Psychosis	Psychosis NOS	Psychosis	Schizophrenia	Schizophrenia	Schizoaffective
Number of admissions within the past 2 years	14	1	2	1	1	3
Length of current admission	9 days	19 days	16 days	4 days	10 days	15 days
Was orientation to sensory modulation room and strategies provided?	Yes	Partial	Not known	Yes	Not known	Yes but declined
Were sensory triggers and strategies for calming identified and incorporated into safety plan?	Yes	Yes – recovery plan	No	Yes – recovery plan	Yes – recovery plan	No
Number and types of escalation/ critical incidents	2	2	1	0	0	3
For each incident: Was sensory modulation offered?	Yes	Yes	Yes	Yes	Yes	Yes
What level of escalation was SU at when sensory modulation was offered?	Distressed by voices	Not Applicable	Used to help calm	Not Applicable	Not Applicable	Not Applicable
What strategies (sensory or other) were used by staff or service user for de-escalation and managing distress or agitation	Weighted items, water falls	Weighted items	Weighted items, quietness	Weighted items, chewing items, fidget items	Colouring and drawing	Not applicable

Records indicated that staff had provided an orientation to the sensory modulation room and strategies to four of these service users, recording the sensory strategies into the service user's recovery or safety plan. All six records showed sensory modulation was offered to service users during times of escalation or critical events. Four of the records indicated the use of sensory tools such as weighted blankets, listening and looking at waterfalls, chewing items, fidget items, and silence.

In summary, four out of six randomly selected clinical files showed explicit sensory modulation documentation post-implementation. While this was encouraging, caution must be applied with the small sample size, as the findings might not be a true representation of all Unit B service users' clinical records. Moreover, not all service users in Unit B might have needed sensory modulation during their stay in the inpatient unit.

7.1.4. Factors influencing the implementation of sensory modulation

One of the research questions related to this chapter focused on the factors influencing the implementation of sensory modulation. Multiple data were collected and analysed to identify barriers and facilitators related to the sensory modulation implementation. These factors were identified through interviews with middle management (n=1) and nurse staff (n=1), and a staff focus group (n=1) three months post-implementation with seven nurses and one social worker (n=8). The facilitators and barriers presented below are those identified as being particularly important in Unit B. Interview data were transcribed and analysed using thematic analysis.

7.1.4.1. Facilitators

Thematic analysis of the interview data identified a number of themes suggestive of facilitators to implementing sensory modulation. This included five key facilitators namely leadership involvement from one of the Unit B middle management; incorporating sensory modulation into care planning; establishment of a dedicated room and sensory equipment; nursing staff involvement and changed attitudes; and multiple training sessions available. These five facilitators are outlined as follows.

7.1.4.1.1. Leadership involvement from one of the Unit B middle management

The data suggested that the middle management was actively involved in the implementation through raising awareness and promoting the sensory modulation in relevant forums. This included discussion with key unit staff.

There's more of an overview, more of raising awareness of it in the relevant forums, promoting with the staff, discussing implementation with the relevant key clinicians such as the clinical nurse specialists, the ACNMs, the research assistant. And generally talking in ad hoc fashion with individual staff about their utilisation with their clients and the, the strengths, limitations, confidence engagement around those things. (Middle management B1)

7.1.4.1.2. Incorporating sensory modulation into care planning

Data suggested that discussion among the clinical team provided a way to identify service users who would therapeutically benefit from using sensory modulation and incorporated the approach in service users' care plans.

I'm very keen, I remain keen to incorporate sensory modulation as one more therapy type that is almost, if you like, prescribable, in the sense that you discuss it in MDTs, it's on the front of people's minds and available therapy that can be suggested and care planned for. (Middle management B1)

7.1.4.1.3. Establishment of a dedicated room and sensory equipment:

Data suggested that the establishment of the sensory room and setting up the room suitably helped in sensory modulation implementation, including the additional resources received through the research.

Having a proper room which has a very calming effect and is far more homely than the rest of the ward. (Nurse B1)

I think what helps initially is that somebody led the establishment of a room in the first place and some facilities, somebody led the setting up of that room. (Middle management B1)

7.1.4.1.4. Nursing staff involvement and changed attitudes:

Data also suggested that a number of nurses had begun using sensory modulation with service users to manage their distress and agitation and there appeared to be more acceptance of this as an effective strategy.

There's more acceptance of it [sensory modulation], and you feel supported if you say I'm going off with someone to the room, then there's just its

acceptance, that's part of the job, where it certainly wasn't before. (Nurse B2)

I found that after we had the fire and not having any PRN, that we just had to find other ways to use to de-escalate our patients. And that just happened to be a time where I think I started using it [sensory room] more because we had no other options really. (Nurse B3)

7.1.4.1.5. Multiple training sessions available

Data analysis indicated that a number of staff found the training helpful in supporting the implementation of sensory modulation to practice. Specifically, the schedule of trainings was tailored to the staff schedule, with flexible times offered by trainers and champions, including catch-up sessions to complete the training.

The training we've had in the use of sensory modulation in addition to training we might have had before. (Nurse B1)

I think it was for some staff that hadn't had any training initially, it was the not knowing, like not knowing exactly what sensory modulation was and how it can affect our clients. So once the training was implemented, then I think everyone was more on board. (Nurse B2)

7.1.4.2. Barriers

Thematic analysis of the data identified a number of themes suggestive of potential barriers to the implementation of sensory modulation in Unit B. Four main barriers included; perceived ownership of the approach, practice documentation, limited staffing, and sensory modulation in the context of seclusion reduction.

7.1.4.2.1. Perceived ownership of the approach

Data suggested that a degree of discipline ownership of using sensory modulation appeared to affect the engagement of nursing staff, with sensory modulation seen as 'owned' by the occupational therapy discipline.

I think to some degree the sensory modulation service on the unit has become about the ownership of particular clinician or clinicians rather than about promotion of it. (Middle management B1)

7.1.4.2.2. Practice documentation

Data suggested that a perceived weakness in the internal system of Unit B was that documentation of sensory modulation was not formalised in the service users' care plans and proper recording of service user contacts and engagement with staff was not well

established; “One of the conversations I had with the lead auditor was around sensory modulation. It was a shame we couldn’t evidence that it was being used more” (Middle management B1).

7.1.4.2.3. Limited staffing

Data suggested that perceived limited staffing on the floor and increased caseloads had affected staff use of sensory modulation.

Some of the barriers were a lack of staff on the floor. So if you go into the sensory room, you sit in there with them, you just don’t leave them in there and walk away. So you had to think about your other staff members on the floor, they’d have to cover the rest of your clients and all theirs. And so that, that can be awkward at times. (Nurse B1)

I have had that happen, sadly, about staffing issues and your client load, so if somebody comes to you and requires to use the sensory room, you have to take those, look out your other clients and the staff available, that you have the time to go and sit with them in the sensory room. (Nurse B3)

7.1.4.2.4. Sensory modulation in the context of seclusion reduction

Data suggested that there was some perception that sensory modulation was linked solely to seclusion reduction, potentially detracting from its wider usage. For instance, one quote suggested that using the approach in the intensive care unit, where people are in acute distress, is too often late and using sensory modulation early as a preventative tool would be more effective.

I think to tie it [sensory modulation] directly too much to seclusion reduction is a bridge too far in terms of an assumption, because I think it’s difficult to prove, but it’s also, I think it miss-sells the therapy and limits the focus... I think that to keep talking too much about sensory modulation in the context of seclusion reduction does sensory modulation a disservice. It narrows the focus of its potential usage. It can unintentionally send the message this is a tool for people in absolute acute distress in an ICU (intensive care unit) area. (Middle management B1)

In summary, thematic analysis of interviews indicated that involvement of middle management leadership, incorporating sensory modulation into care planning, establishment of a dedicated room and sensory equipment, nursing staff involvement and changed attitude, and multiple training sessions available were factors influencing implementation. Barriers to implementation were; perceived ownership of the approach,

practice documentation, limited staffing, and sensory modulation in the context of seclusion reduction.

7.1.5. Staff surveys.

Another source of data to understand the implementation process of the sensory modulation programme came from survey with staff, which was conducted to further identify factors influencing sensory modulation implementation. Eighteen of the 45 Unit B staff (40%) completed the Survey Questionnaire for Mental Health Clinical and Support Staff (see Appendix 2:Q2). Table 7.4 presents the breakdown of participants' demographics. Nine (50%) of the staff who participated in the pre-post survey were male and 14 (78%) came from a nursing background. Participants' ages were almost equally distributed across the various age groups indicating a mostly mature staff group. Six (33%) participants had bachelors' degrees. The ethnic majority of participants were seven (29%) New Zealand European and four (28%) European descent. All participants had experience working in mental health; five (28%) staff had 1-2 years experience and five (28%) staff had 11 years experience or more. Nine (50%) staff had participated in seclusion events less than once a month, and five (28%) staff had never participated in seclusion events as part of their clinical practice.

Table 7.4. Unit B: demographics variables of staff participants who completed the Survey Questionnaire for Mental Health Clinical and Support Staff (n=18)

Variables	Number (Percentage)		
Gender	Male	9 (50%)	
	Female	9 (50%)	
Age	18-30 years	3 (17%)	
	31-40 years	4 (22%)	
	41-50 years	5 (28%)	
	51-60 years	6 (33%)	
Discipline	Nurse	14 (78%)	
	Occupational Therapist	1 (5.5%)	
	Social Worker	2 (11%)	
	Support Worker	0 (0%)	
	Others	1 (5.5%)	
Highest Education Level	National Certificate	1 (5.5%)	
	National Diploma	0 (0%)	
	Bachelor's Degree	6 (33%)	
	Bachelor with Honours	4 (22%)	
	Post-graduate Certificate	3 (17%)	
	Post-graduate Diploma	1 (5.5%)	
	Masters	2 (11%)	
	Doctorate	1 (5.5%)	
	Others	0 (0%)	
Years of Working Experience In Mental Health	Less than 1 year	2 (11%)	
	1-2 years	5 (28%)	
	3-4 years	2 (11%)	
	5-6 years	1 (5.5%)	
	7-8 years	3 (17%)	
	9-10 years	0 (0%)	
	11 years and above	5 (28%)	
Ethnicity	NZ European	7 (39%)	
	European	4 (22%)	
	Maori	2 (11%)	
	Pacific People	3 (17%)	
	Latin America	0 (0%)	
	Asian	1 (5.5%)	
	African	0 (0%)	
	Not Elsewhere Included	1 (5.5%)	
Years of Working Experience In Seclusion Practice	No	4 (22%)	
	Yes, less than 1 year	2 (11%)	
	Yes, 1-2 years	1 (5.5%)	
	Yes, 2-5 years	4 (22%)	
	Yes, 5-10 years	4 (22%)	
	Yes, more than 10 years	3 (17%)	
Number of times Participation In Seclusion Events	Never	5 (28%)	
	Less than once a month	9 (50%)	
	1-4 times a month	3 (17%)	
	2-17 times a month	1 (5.5%)	

Written answers on the Survey Questionnaire for Mental Health Clinical and Support Staff were collated and this qualitative data was analysed using thematic analysis. The analysis revealed a number of themes related to facilitators and barriers in sensory modulation implementation, and these are presented in Table 7.5.

Table 7.5. Unit B perceived facilitators and barriers in implementing sensory modulation programme identified by mental health staff who completed pre-post survey questionnaire

Themes	Clinical & Support Staff Verbatim Feedback
Facilitators	
Sufficient staffing in every roster	Multiple participants wrote in their responses about increasing staffing, such as ‘more Mental health staff with staff’, ‘increase staff ratio/skill mix’, ‘more staff’ (2x), ‘sufficient staff’ (2x), ‘more mental health trained staff’.
Supportive management and team	Multiple participants commented on staff and management support, such as ‘teamwork’, ‘supportive staff & management’, ‘more one on one interaction from staff members’. <i>Team work, working as a team, being on the same page with other team members, good clinical leadership open and honest conversation as a team with intensive supervision that is confident and high quality, building a team culture that is solution focused, client focused, but also supporting a learning ethos where clinicians can reflect, develop their skills and abilities individually and as a team, mentoring excellent clinical practice to junior nursing staff etc. (Nurse B9)</i>
Barriers	
Difficulty shifting from old to new practice	<i>Difficulty changing old habits. (Nurse B1)</i>
	<i>Past MH staff approaches - Set thinking - old punitive and coercive methods. (Nurse B2)</i>
	<i>Resistance from pro-medical model proponents - could be highly threatened. (Nurse B3)</i>
	<i>Lack of insight and very unwell service users. (Nurse B4)</i>
	<i>Unpredictable nature of this setting, not implementing the strategies early enough. (Nurse B5)</i>
	<i>Staff attitudes and leadership attitudes and limitations in innovative thought. (Nurse B14)</i>
	<i>Giving over medical model to recovery models & principles and therapies. (Nurse B6)</i>
Tight funding	<i>Staff fear and lack of confidence. (Nurse B7)</i>
	<i>Financial strain to rebuild physical environment. (Nurse B11)</i>
	<i>Financial mostly. To properly implement alternative strategies will require significant upfront and ongoing investment. (Nurse B14)</i>
Limited and/or no training available for staff	Multiple other participants included responses related to funding such as ‘cost’, financial, resource, environment’ ‘lack of money to improved ward and employ staff’, ‘budget’.
	Multiple participants commented on limited training availability and access.

Challenging work conditions	<p>Multiple participants identified challenges working in Unit B, such as ‘staffing levels + ward overcrowding’, ‘only 2 FTE allied assistants’, ‘staff issues’, ‘lack of staff time’.</p> <p><i>Nursing & doctors driven service reflected in FTE. (Nurse B13)</i></p> <p><i>Not enough quality 1-1-consumer time available after systems requirements. (Nurse B1)</i></p>
Depth of sensory modulation training	<p><i>Understanding reduction strategies would need to be individualised for each service user & also consistent across all staff members. (Nurse B9)</i></p> <p><i>Comprehensive education for staff members on the relevant reduction strategies. (Nurse B10)</i></p>
Calming physical environment	<p><i>Sensory considerations in environment and available immediately on entry to unit.</i></p> <p><i>Adjustable modality levels & types of sensory input – including for talking therapist e.g. low stimulus versus stimulating. Consider personalised need, physical layout and limited spaces for individuals to avoid each other make the ward itself part of the problem. (Nurse B1)</i></p> <p><i>Sensory equipment in ICU. (Nurse B2)</i></p> <p><i>A well-designed ward environment providing for low intensive (i.e. not seclusion) where acutely unwell clients can be managed carefully with choices around spaces to be in away from over stimulating co-clients and others invasive stimuli. (Nurse B3)</i></p> <p>Multiple other participants commented on improving the Unit B environment, such as ‘better ward environment structurally’, ‘environment improvements’, ‘well-designed ward layout’, ‘create therapeutic PICU’, ‘changing the physical environment’, ‘well-designed ward layout’, ‘better environment’.</p>
Ward culture and practices	<p><i>Chemical restraint is not a good alternative. Seclusion is like a tiger in a cage, NZ should not use. (Nurse B3)</i></p> <p><i>Change in entry & orientation process to unit. (Nurse B4)</i></p> <p><i>More opportunities for physical activities. (Nurse B6)</i></p> <p><i>Development of staff in emotional intelligence e.g. de-institutionalising the staff. (Nurse B7)</i></p> <p><i>Management plan incorporate these considerations: inclusion of significant others, family and supporters and encourage self-determinations and self-efficacy in management plan. (Nurse B8)</i></p> <p><i>Talking with service users, evaluating each event looking for opportunities to reduce seclusion or avoid it. (Nurse B10)</i></p> <p><i>Ask client what would help to relax, using weighted blanket, sensory room and what calms them down, rocking chairs. (Nurse B11)</i></p>

Unit B staff identified further facilitators and barriers to implementation through the survey. Sufficient staffing and supportive management and team were seen as helpful. While the barriers related to staff attitudes, the inpatient work culture and environment, and difficulties accessing in-depth training.

7.1.6. Upper management post-implementation questionnaire.

Another source of data came from a survey from upper management, which was conducted to capture a leadership perspective on the implementation of sensory modulation in Unit B. Five out of nine participants from upper management (56%) responded to the survey. The five upper management participants had 2-6 years experience in their current position. As these managers also oversaw Unit A, the data related to their perceptions of facilitators and barriers in implementing the programme are presented in the previous chapter (Table 6.6).

To summarise, Unit B's staff and management identified a range of facilitators and barriers to sensory modulation implementation through interviews and a survey. The main findings are summarised in Table 7.6, and suggest that implementation facilitators and barriers can be categorised into staff and organisational factors.

Table 7.6. Summary of Unit B identified facilitators and barriers in implementing sensory modulation programme

Factors	Facilitators	Barriers
Organisational	<ul style="list-style-type: none"> - Commitment from middle management - Commitment of the CNS - Access to experts - Existing sensory room & tools - Engaged upper management - Learning and Development involvement - Structured training to fit staff work schedule - Availability of online learning tools - Easy access to sensory tools by provision of sensory cart 	<ul style="list-style-type: none"> - Sensory modulation use limited to crisis response rather than prevention - Lack of sign-off of the sensory modulation policy - Absence of Unit B ward programme - Old design of the Unit B building - Only one full-time occupational therapist employed - Access to the sensory room located at open side of the unit; intensive care unit has no sensory room B - High staff turnover - Unclear structure and inconsistent communication - Ingrained, entrenched and pre-existing work culture on seclusion, restraint and old practice - Lack of funding - High acuity of Unit B - Challenging work conditions - Releasing of staff to attend training - Shortage of staff
Staff	<ul style="list-style-type: none"> - Number of nurses involved and engaged - Existing champions and/or trainers - Catch-up training sessions - Actual clinical practice demonstration/education 	<ul style="list-style-type: none"> - Conflicting perceptions of ownership of the approach between occupational therapist and nurses - Staff who had not had training - Practice documentation - Varied attitudes towards sensory modulation approach - Poor commitment and engagement to attend training - Competing work priorities - Different perspectives of other practice disciplines on acceptability of sensory modulation approach - Fear of changing practice working in a high risk environment

7.1.7. Fidelity of sensory modulation implementation.

The data presented in the preceding section provide some indication of the level of fidelity related to implementing the sensory modulation programme. This included the percentage of staff attending training, which reduced over time, and the indication from the file review that service users were consistently being oriented to the sensory room and tools and these were offered to people in distress.

In addition, a fidelity tool and a process for fidelity checks was developed and implemented to ensure the intended sensory modulation programme implementation, including a checklist of required implementation processes at an organisational level. The Sensory Modulation Programme Implementation Fidelity Guide (SMPIFG) was piloted in the current research study piloted the fidelity tool to guide the sensory modulation programme implementation. The SMPIFG was completed at end of research phase 2, and Chapter Three presented detailed information about the tool. The researcher used the SMPIFG to work with the member of each unit's leadership team responsible for directing the implementation process. Information about the scale is provided in Chapter Six. Unit B garnered a total of 27 out of 36 'yes' indicators on the SMPIFG, giving a 75% implementation fidelity rate.

The SMPIFG scores (see Appendix U) suggested that the programme design indicators were all met. Under implementation process development only one indicator was not met. This indicator refers to the pathway of communication for reporting progress and concerns. The organisational milieu and workforce qualities were the two domains that had the most unmet indicators for sensory modulation programme implementation. These indicators pertained to organisational policy, the stability of team membership, culture and climate of the unit, investment in resources, and staff attitudes, skills, and commitment. These findings regarding unmet indicators aligned with the perceived barriers to successful implementation identified by the staff, as discussed earlier in this chapter. Overall, in Unit B, the majority of the aspects of the fidelity tool met the implementation criteria, so it is reasonable to conclude that while there were issues with training attendance, the implementation was relatively successful (see Appendix U).

In summary, the focus in Part A was on identifying factors influencing the sensory modulation implementation process. Findings suggest that programme implementation in Unit B created challenges for both staff and management. Thematic analysis of qualitative data revealed that there were a number of facilitators and barriers to implementing sensory modulation. The provision of training was problematic because of the busy inpatient unit environment and a fire on the ward, which affected the availability of staff. In addition, there was a perception that sensory modulation was owned by the occupational therapy discipline and that its use was often linked to seclusion reduction rather than a broader management of distress across the ward. Despite these barriers, there were indications

that there was good middle management and nursing engagement. Sensory modulation became more integrated in staff practice, with more service users having orientation and access to the approach. The mobile cart and sensory kits supported the use of sensory strategies outside of the sensory room. The next part of this chapter describes the impact of sensory modulation in unit B.

7.2. Part B: Organisational Impact of Sensory Modulation Programme

Part A of this chapter has summarised the findings related to the organisational and staff factors that influenced sensory modulation implementation. Part B will focus on the findings related to the third research phase in order to answer research question three, which focused on identifying the impact of the sensory modulation programme. Impact was assessed in relation to a number of areas, including the data on the service users' management of distress and agitation, seclusion, and restraint reduction, PRN medication use, staff perception on unit climate, staff confidence in managing service users' distress and agitation, and staff attitudes towards the use of seclusion.

7.2.1. Impact on service user distress and agitation

This section addresses the impact of sensory modulation on service users' distress and agitation. Three service users participated in interviews to discuss the impact of having sensory modulation as an option for managing their distress and agitation. The service users were interviewed on two occasions with support from Unit B's Consumer Advisor; two service users in the first interview and one service user in the second interview. The first two interviewees included a previous inpatient in his mid-40s and a current inpatient service user in his mid-20s. The second interview was with a female previous inpatient service user in her mid-50s and under the care of the local community mental health team. Open-ended questions focused on their experience of using the sensory room and equipment, preferred sensory strategies, process of the strategies, and physical characteristics of Unit B. Analysis resulted in three main themes, namely (1) the use of sensory tools inside the sensory modulation room, (2) limited access to the sensory room, and (3) service users' desired changes to Unit B's environment and facilities.

7.2.1.1. The use sensory tools inside the sensory modulation room

Service users described the sensory room as homely, calming, quiet, and relaxing. They described the room as a place for privacy that offers a safe place when feeling distressed and agitated. For example, one stated: “I used the sensory room. I liked it because it’s calming, it’s got water, I enjoyed it, and it was quiet. I used to rock in the chair and the soft animals” (Service user-02). The approach was seen as a preferable alternative to PRN medication:

For me the sensory room, I need an alternative from just taking PRN all the time. You use like the comfortable seats and weighted blanket, the weighted dog, and the aromatherapy, there’s a good stash of sweets in there too which was good as well. (Service user B1)

It also provided safe time and space for talking through issues:

They had my favourite lollies banana fruitburst so I had some of those, and so I enjoyed that, and I turned the water fountain on too. I had that going. I found it was quite good then I could get away from everyone and have a talk with my nurse in confidence about few things. (Service user B3)

The time spent using the sensory room ranged from a minimum of 15 minutes to maximum of 45 minutes. The service users reported using multiple sensory tools to manage symptoms of distress and anxiety such as jittering of the legs, feeling of being in a dark headspace, and thinking too much (see Table 7.7).

7.2.1.2. Limited access to the sensory room and equipment for service users

The Unit B procedure for accessing the sensory modulation room was always with staff. This procedure was designed to ensure safety of service users and that staff provided appropriate support when service users were in distress. In the interviews with service users, it became apparent that this procedure became a barrier to service users accessing the room and using it in the way in which they wanted. Staff had multiple service users to attend to, which limited their time to spend in the sensory room:

The only problem is that if there’s no staff to do it, you can’t go, and the staff are so busy, there’s not enough staff on, if they’re busy or they’ve got a crisis, you can’t go in there, because you need to have a staff member with you. (Service user B1)

I would rather have gone on my own, but because of it being the sensory room you couldn’t go on your own. (Service user B2)

I was limited in what I could actually do in there because I wanted to spend time by myself and not have someone else in there. If I could have done it by myself I would have used it a lot more. (Service user B3)

Table 7.7. Unit B specific sensory tools preferred by service users to manage symptoms of distress and anxiety identified during the interviews

Sensory Tools	Service Users' Feedback
Weighted blanket and weighted dog	<i>I use the weighted blanket and there was a weighted dog in there and that was used to just used for anxiety, the weight on me it was quite nice, and that sort of stopped the legs from jittering. (Service user B1)</i>
Aromatherapy	<i>The aromatherapy was just like with the Labrador was kind of a distraction, it was really good. (Service user B2)</i>
Rocking chair	<i>When I was a kid growing up spent a lot of time at my nana's place and she had like a lazyboy rocking chair kind of things. I used to like make the old rocking, so it was like going back to my childhood, I feel just relaxed, concentrating on actually rocking and it's like distraction to me. (Service user B3)</i> <i>Well the rocking chair, it's a good thing because the rocking chairs make me think of home. (Service user B1)</i>
Bubble bath with different scents	<i>I put smellies in my bath, they're good keeping you calm, and that was a good thing. I'd have a bath because I like the bath and put I'd put the salts in, and they were really calming because they had all the different one. (Service user B2)</i>

7.2.1.3. Service users' desired changes in Unit B's environment and facilities

Service users described Unit B's environment and facilities as outdated and clinical. For example, one stated: "The ward in general I think it needs a bit of revamp. Well it's just, it's a little bit outdated" (Service user B1). Service users believed areas of the unit that needed revamping included the toilets and bathrooms, carpets, courtyard, dining areas, washing/laundry areas, private areas for visitors, colour of walls, beds (mattress and linen), hospital food, hygiene, and the smell of the hospital. They also wanted improvements in the Unit B programme and staff attitudes towards service users, in particular the rudeness of some staff towards people using the service.

In summary, analysis of qualitative data from the service user participants suggested that sensory modulation had a positive impact on these service users' management of distress and agitation. Similar to Unit A, multiple sensory tools were used and applied across diverse environments. Unit B's facilities and environment were identified as critical

concerns for service users, including access to the sensory room and staff attitudes towards service users. The findings suggest that using sensory modulation contributes to the reduction and management of service users' distress and agitation and that the physical environment is potentially a factor in service user distress.

7.2.2. Impact on seclusion use.

This section addresses the impact of sensory modulation programmes on the reduction of seclusion use within inpatient mental health settings. Admission and seclusion data were collected over a two-year period from September 2014 to August 2016. This period included baseline pre-implementation (September 2014 to August 2015) and post-implementation of sensory modulation programme (September 2015 to August 2016).

Admission data included the number of admissions, discharges, and bed nights; and length of stay during the pre- and post-intervention period. Table 7.8 shows that over the two years Unit B had 1,125 admissions and a total of 17,246 bed nights. The number of admissions increased from 511 in the pre-intervention period to 614 in the post-intervention period, and total number of bed nights had steady declined from pre- to post-implementation, with a median length of stay of 12 days pre-implementation to 11 days post-implementation.

Table 7.8. The total number, median, range and standard deviation of admissions, discharges, bed nights and length of stay in days over the two-year period: pre September 2014 to August 2015 and post September 2015 to August 2016

	Number of Admission		Number of Discharge		Number of Bed nights		Length of Stay in days	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Sum	511.00	614.00	507.00	619.00	8960.00	8286.00	9220.00	8583.00
Median	42.00	48.00	41.50	52.00	773.00	703.00	12.00	11.00
SD	6.855	7.52	8.19	8.15	83.81	86.31	23.89	22.35
Range	35-58	42-65	28-57	41-65	600-833	514-830	1-237	1-398

Data on the number of seclusion events per month pre implementation and post implementation is shown in Figure 7.1. Visual inspection of the data suggests that an initial reduction of seclusion events occurred in the second (October 2015) and fifth month (January 2016) of sensory modulation programme implementation. Post-

implementation seclusion events appear to have reduced for six consecutive months from January to June 2016.

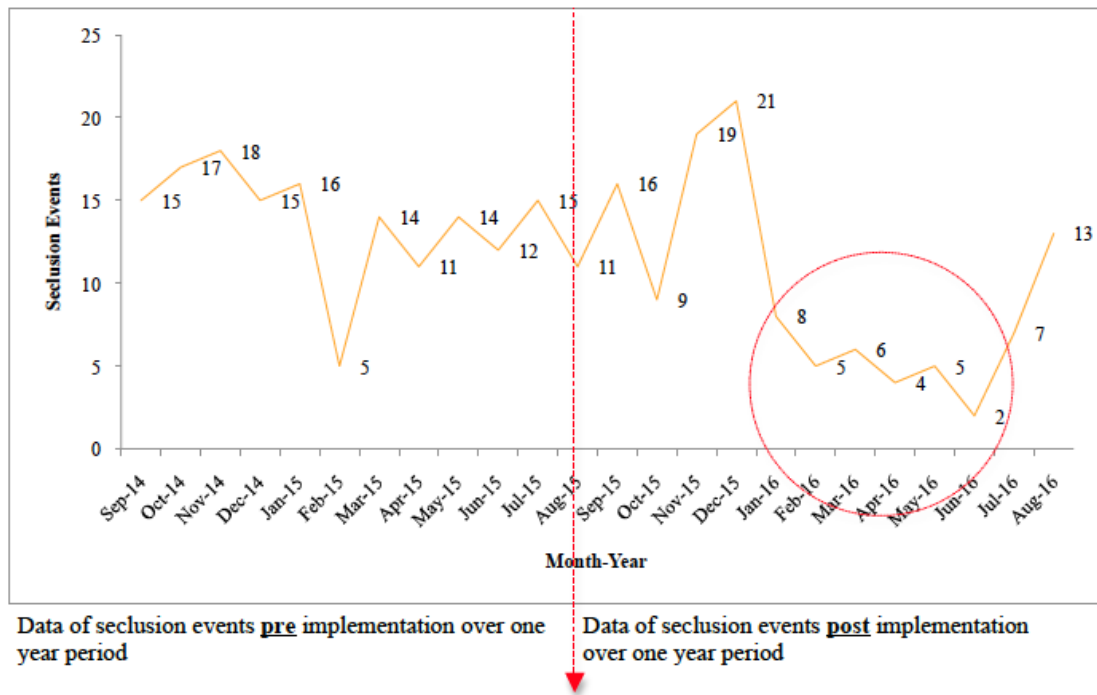


Figure 7.1. Number of seclusion events per month in Unit B, September 2014 to August 2016

Figure 7.2 displays the number of seclusion hours pre- and post-implementation. Compared with the baseline data in Figure 7.1, which shows a similar trend to seclusion events, visual inspection of the data suggests an initial drop of seclusion hours was also seen in the second (October 2015) and fifth month (January 2016) and sustained reduction was observed post-implementation for six months.

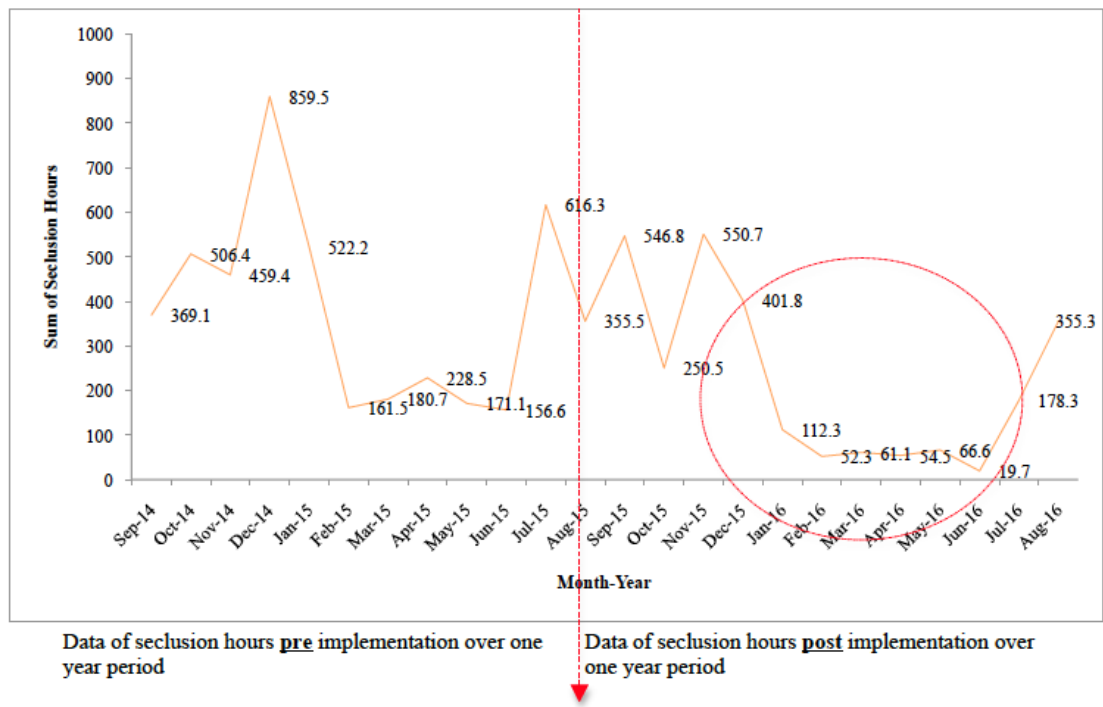
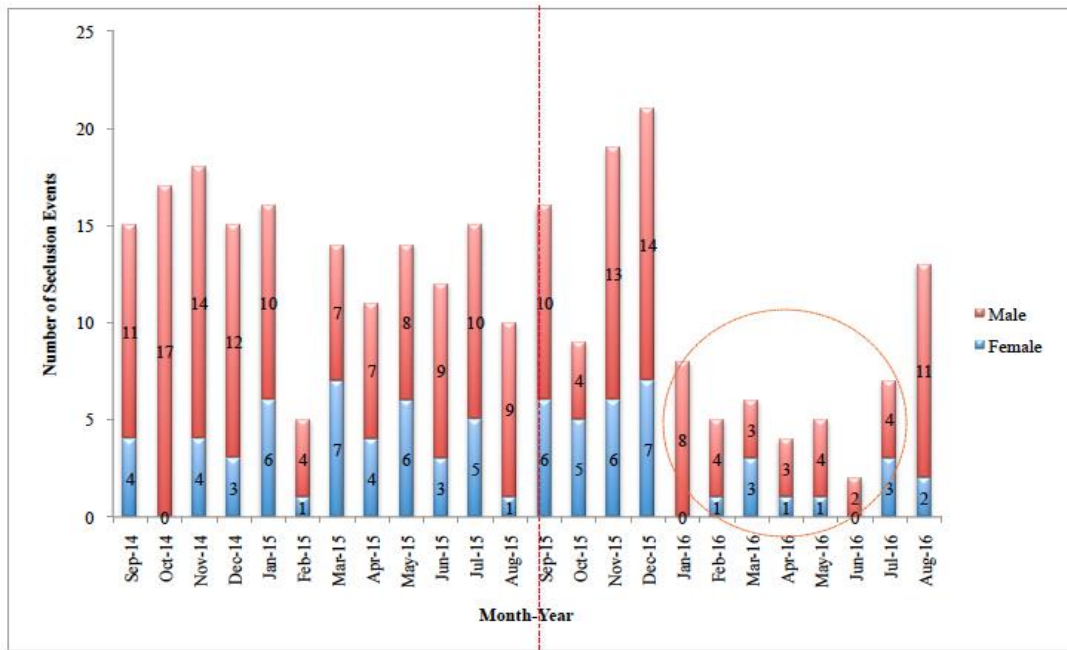


Figure 7.2. Number of seclusion hours per month in Unit B, September 2014 to August 2016

Figure 7.1 and Figure 7.2 show that reduction of seclusion events and hours occurred in critical points of programme implementation. Qualitative data has shown that at the outset of the programme staff motivation to implement the sensory modulation programme was quite high, and that continued with a six-month reduction after completion of sensory modulation training to Unit B staff and after completion of the full programme implementation.

Seclusion data was also assessed based on gender and ethnicity, since previous literature has suggested these may be factors related to sensory modulation impact.

Figure 7.3 presents the number of seclusion events by gender pre- and post-implementation. The figure indicates that a greater proportion of numbers of events of male service users were secluded than female service users.

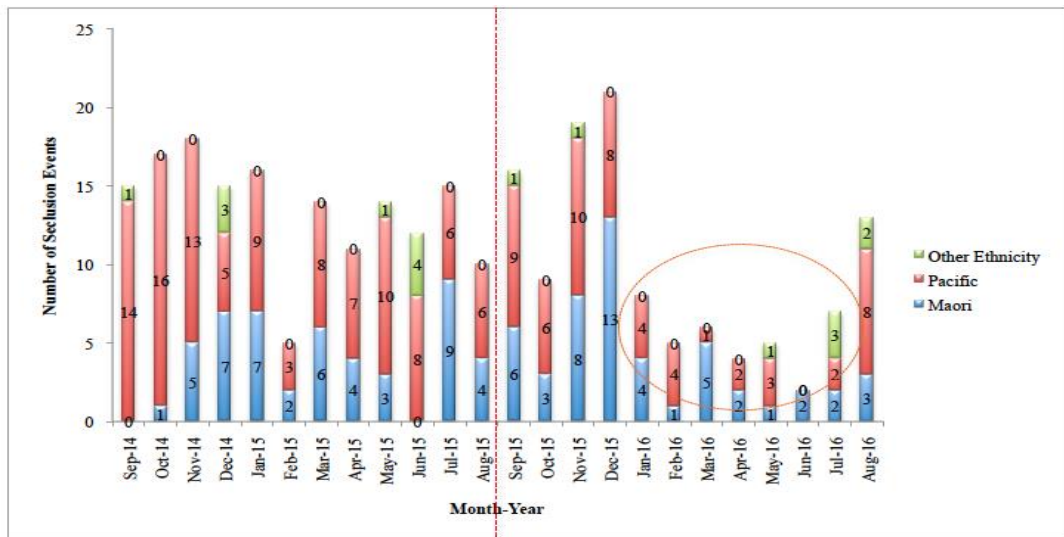


Data of seclusion events **pre** implementation over one year period

Data of seclusion events **post** implementation over one year period

Figure 7.3. Number of seclusion events by gender per month in Unit B, September 2014 to August 2016

Figure 7.4 compares the number of seclusion events by ethnicity pre- and post-implementation, showing that greater proportion of Māori and Pacific were secluded than other ethnicities but drop in seclusion events for these group was significant.



Data of seclusion events **post** implementation over one year period

Data of seclusion events **post** implementation over one year period

Figure 7.4. Number of seclusion events by ethnicity per month in Unit B, September 2014 to August 2016

To investigate whether there was a statistically significant difference in seclusion events between pre- (12 months: September 2014 to August 2015) and post-implementation (12 months: September 2015 to August 2016), non-parametric Wilcoxon signed rank test analysis were used (Leard Statistics, 2015a, 2015b, 2015c). The results are shown in Table 7.9, and indicate statistically significant differences at the $p=0.05$ level were obtained on the total number of seclusion events, seclusion events by female, seclusion events by Pacific, and total number of seclusion hours. Note: The ratio between seclusion rates and number of bed nights and admission was measured as well, to determine if there would be a difference in the statistical result. However, this style of analysis made no difference to the result.

Table 7.9. Total number of seclusion events, median, standard deviation, range scores, z value and p value of Unit B seclusion rates pre-post sensory modulation programme implementation

Seclusion Variables	Pre-SM Programme Implementation <i>September 2014-August 2015</i>	Median	SD	Range	Post-SM Programme Implementation <i>September 2015-August 2016</i>	Median	SD	Range	z value	p value ^a	
Total Number of Seclusion events	162	14.5	3.55	5-18	115	7.5	6.22	5-21	-2.06	0.04	
Seclusion events by Gender	Male	44	9.5	3.43	4-17	35	4	4.29	2-14	-0.80	0.42
	Female	118	4	2.19	0-7	80	2.5	2.50	0-7	-2.23	0.03
Seclusion Events by Ethnicity	Maori	48	4	3.49	0-9	50	3	3.89	1-13	-0.12	0.91
	Pacific	9	0	1.36	0-4	8	0	0.98	0-3	-2.56	0.01
	Others	105	8	3.89	3-16	57	4	3.36	0-10	-0.27	0.79
Sum of Seclusion Hours	4582.80	360.30	220.12	156.60 - 859.50	2649.90	145.30	196.84	19.70-550.70	-2.28	0.02	

^ap value $\leq .05$ significant result

Figure 7.3 and Figure 7.4 show a clear reduction in the number of men and women who were secluded and other than Māori and Pacific ethnicities during the post-implementation period, but this could not be confirmed, with no overall admission data by gender and other ethnicity.

Taken together, the visual inspection and the statistical analyses suggest that the implementation of sensory modulation may be associated with a reduction in seclusion events in Unit B. However, findings must be interpreted with caution, because prior to sensory modulation programme implementation, Unit B already had some existing strategies in place for reducing seclusion. These included a seclusion reduction policy

and a working committee on reducing seclusion and specific strategies, such as some sensory modulation use, management support, review of seclusion policy, review of seclusion events, behaviour management and modification, and staff mix and consistency to intensive care unit. Therefore, any differences between pre and post implementation cannot be attributed solely to the implementation of sensory modulation, but suggest that sensory modulation may have been a contributing factor.

In summary, this section analysed seclusion data from Unit B collected over the two-year programme implementation period including pre- (September 2014 to August 2015) and post- implementation (September 2015 to August 2016). Data were analysed to assess the potential the impact of sensory modulation programmes on the use of seclusion within inpatient mental health settings. Visual inspection of the data suggests that there were reductions in all seclusion-related variables following sensory modulation training. Moreover, statistical testing revealed significant differences in the pre and post scores. The findings need to be interpreted with caution because these were seclusion summary data. The current study was unable to identify if there were any service users who were secluded multiple times, in particular in a single month. It is also possible that there were service users who were more prone to seclusion. Additional uncertainty arises as records of the discharge or admission of individual service users was not available. The ideal situation is to track individual service users over time, identifying their count of seclusions by month and identifying their admissions and discharge dates. If admission or discharge is outside of the study timeframe, the beginning and end of the period under investigation could be recorded instead.

7.2.3. Impact on PRN medication use.

Another factor that was measured to assess the impact of sensory modulation was PRN medication use. This data was included because PRN medication use is often considered to be a form of chemical restraint (Standards New Zealand, 2007) and is used for de-escalating and managing service users' distress.

Interviews with service users commented that the use of sensory modulation can be seen as a positive alternative to PRN medication.

I think for me the sensory room, I need an alternative from just taking PRN all the time, because I was getting a bit tired of it. I use that ah actually quite a lot, whether it was anxiety or being in a dark headspace. And even though

it was on the ward it felt like you were away from the ward, it was just a change, the colour is nice, grey and blue instead of yellow and green. And you use like the comfortable seats and weighted blankets and the, the weighted dog and the aromatherapy, there's a good stash of sweets in there too which was, which was good as well. But yeah, used it a lot. Use it a lot.
(Service user B1)

It was good too especially like, making the sensory room the first option before PRN. You know because sometimes you think shit, oh sorry. I don't, I don't, I need, I need a top-up so to speak. And you go to the sensory room and you might spent 20, 25 minutes and you come in and you kind of like, actually I don't need that medication now. And it's even things like having a hot bath with the Epsom salts, you know it's, it was just, you just felt so much better. And it's more the natural way of dealing with it instead of that [PRN].
(Service user B2)

Service users indicated that sensory modulation had given them an alternative over PRN medication to manage their distress and agitation. They identified that the use of sensory tools is a natural strategy against anxiety and distress.

In summary, the data appeared to show that service users prefer sensory modulation as a strategy for de-escalation and management of distress over coercive and pharmaceutical methods.

7.2.4. Impact on ward climate and staff confidence and attitudes

This section addresses the impact of sensory modulation to the ward climate and staff confidence and attitudes. This section relates to the proposition that sensory modulation programmes change staff confidence in managing service user distress and agitation and alter staff attitudes toward coercive practices (Wale et al., 2011). Three standardised questionnaires were used pre and post sensory modulation programme implementation. These included: (1) EssenCES Ward Climate questionnaire (Schalast et al., 2008) (2) Confidence on Managing Service Users' Aggression questionnaire (CMSUA-Q) (Martin & Daffern, 2006), and (3) Professional Attitudes Towards Seclusion Questionnaire (PATS-Q) (Doeselaar et al., 2008). These three questionnaires were collectively presented as the Survey Questionnaire for Mental Health Clinical and Support Staff (see Appendix B:Q2). Results of each questionnaire are presented separately.

Of 45 Unit B staff, 18 staff members (40%) completed the questionnaires pre- and post-implementation. Table 7.4 presents the breakdown of participants' demographics. In

addition qualitative data from a focus group interview with nurse and allied health staff (n=8) added to the findings on ward climate, staff confidence and attitudes.

7.2.4.1. *EssenCES ward climate: staff perceptions of Unit B climate*

The EssenCES ward climate questionnaire was administered with Unit B staff before and after SM programme implementation to assess changes in ward climate, using the same approach as with Unit A staff. Data are presented in Table 7.10. Staff perceptions of the inpatient ward climate before the sensory modulation training were reflected in median scores on the three climate dimensions and overall climate. Table 7.10 shows a slight increase from pre- to post- median scores on three climate dimensions. However, overall climate reveals a slight decrease from pre- to post- median scores. The median scores on these three dimensions and overall climate were mostly similar following programme implementation. These scores suggest that Unit B's climate has problems with social climate.

Table 7.10. Median, standard deviation (SD), range scores, z value and p value on EssenCES Ward Climate for participants in Unit B pre-post sensory modulation programme implementation (n=18)

Climate Dimensions	Median Score Pre-SM Programme Implementation	SD	Range	Median Score Post-SM Programme Implementation	SD	Range	z value	p value ^a
Patients' Cohesion	3.07	0.64	2-4	3.20	0.75	2-5	-0.97	0.33
Experienced Safety	3.33	0.49	3-4	3.31	0.69	2-5	0.00	1.00
Therapeutic Hold	3.41	0.61	2-4	3.73	0.73	3-5	-2.33	0.02
Overall Climate	2.80	0.71	1-4	2.63	0.90	1-4	-1.67	0.10

^ap value \leq .05 significant result

A Wilcoxon signed rank test indicated that the overall climate from pre-median score 2.80 (SD=0.71) was not statistically significantly higher than the post-median score of 2.63 (SD=0.90) [$z = -1.67, p = 0.10$]. This finding was not surprising considering the high occupancy and high increasing acuity of service users within the unit during and post-implementation that could have easily affected staff perceptions of the unit's climate. In addition, during the study, a fire incident in the ICU impacted hugely on the overall operation of the ward and sensory modulation implementation. However, despite these

challenges, a statistically significant difference between pre- 3.41 (SD= 0.61) and post-implementation 3.73 (SD=0.73) median scores was obtained for the climate dimension 'Therapeutic Hold' [$z = -2.33, p = 0.02$]; that is, the inter-relationship between service users and staff, such as service users' openness to talk to staff about their problems.

Overall, only one of the three ward climate dimensions changed significantly from pre to post implementation. This suggests that overall the climate may not have changed significantly, yet sensory modulation training could have an effect on organisational climate in terms of the relationship between service users and staff. For example, where staff spend time with service users to know their personal histories and develop person-centred care. This finding is consistent with focus group data from Unit B staff with participants commenting on the ward becoming more peaceful, relaxed, and homely following the use of sensory modulation tools and availability of the sensory room.

I think it's quieter on the open side than what it used to be and that's because people are going to the sensory room first, so it's bringing them down, whereas before it can be quite full on, could be quite manic. Staff would be running around like idiots because they might have 5, 6, 7 clients that are all elevated. Definitely helped with staff as well, staff are a lot more relaxed. (Nurse B1)

On the shifts that sensory modulation is used more, you notice it being a lot more a nice peaceful environment to be working in. (Nurse B2)

Since the sensory modulation room was introduced, the whole ward has become a much more pleasant place and it's simply because we now have a nice room where we can take clients, even if you just want to do a one-to-one with them in a more homely atmosphere. Because the whole ward is very, very stark otherwise. (Nurse B3)

The qualitative findings indicated the use of sensory modulation modalities and room served as a tool for staff to use to engaging service users in therapeutic activities and have given staff an opportunity to engage in a person-centred way. A recurrent theme in the interviews was a sense amongst staff that sensory modulation impacted positively on staff relationships with service users.

Based on collated quantitative and qualitative data, the impact of sensory modulation to organisational climate can be partially accepted. A rival proposition is that sensory modulation positively impact ward climate at an individual level, with particular influence on improving the therapeutic relationship between staff and service users.

7.2.4.2. Staff confidence in managing service users' aggression

The Confidence on Managing Service Users' Aggression questionnaire (CMSUA-Q) was administered with Unit B staff, using the same approach as with Unit A staff. Data are presented in Table 7.11.

Table 7.11 summarise the data and analyses of the CMSUA-Q for Unit B staff participants pre- and post-implementation. Median scores at the pre-training suggest staff lacked confidence in managing service users' aggression.

Table 7.11. Median, standard deviation (SD), range scores, z value and p value on CMSUA-Q for Unit B staff participants pre- and post-implementation (n=18)

Questions	Median Score Pre-SM Programme Implementation	SD	Range	Median Score Post-SM Programme Implementation	SD	Range	z value	p value ^a
1	2.83	0.90	2-4	3.07	0.77	1-4	-0.52	0.61
2	2.81	0.62	2-4	3.06	0.54	2-4	-1.27	0.21
3	2.50	0.71	1-4	2.64	0.85	1-4	-0.44	0.66
4	2.29	0.83	1-4	2.59	0.61	2-4	-1.35	0.18
5	2.75	0.96	1-4	3.13	0.68	2-4	-1.33	0.19
6	2.25	0.96	1-4	2.44	1.14	1-4	-0.41	0.68
7	2.73	0.73	2-4	3.13	0.76	2-4	-1.47	0.14
Overall Confidence	2.59	0.61	2-4	2.88	0.58	2-4	-1.31	0.19

^ap value \leq .05 significant result.

All of the seven indicators, including overall staff confidence, had slightly increased ratings post-training, though these increases were not statistically significantly [$z = -1.31$, $p = 0.19$] for any of the questions, suggesting that the introduction of the sensory modulation programme may not necessarily have improved Unit B's confidence in managing service user aggression. Nonetheless, staff interviewed reported that their confidence in managing service users' aggression had improved, including their observation of other staff managing service users' aggression, and there were more staff using sensory modulation following the training. Staff reported that sensory modulation influenced their clinical judgment of when to use seclusion and restraint, giving them an alternative approach to manage service users challenging behaviour and preventing escalation.

I think when we've got our regular staff on shift, it's definitely made a huge difference as well, because sort of we're having to work a bit more, we're able to overtime at the moment as well, but we've had that training, we sort of know how to de-escalate, because we've been mentally health trained. Beforehand we were getting a lot of casuals, and they work at the main hospital and may have only been medically trained. So that also had a massive impact before, and before we got more staff on board. So we have more people that have got those skills behind them, which has made a dramatic effect as well. (Nurse B1)

The staff aren't as quick to restrain and seclude. They're more willing to try other methods first. (Nurse B2)

I feel that staff are more confident to give our clients the option of sensory modulation, if the sensory room is available. And clients are more aware of it, and they've found that it is therapeutic for them at the same time, so they're using it more and approaching nurses to take them there. (Nurse B3)

Staff also described examples where they observed the therapeutic impact of sensory modulation on service users who were distressed or agitated.

I've noticed that there's been a lot more clients, once you've taken them down there for the first time, they've realised what impact it does have on them and how much grounding it can do for them. So they, when they're starting to feel themselves distressed, they're coming to us to use the sensory room rather than asking for PRN, and with some of our long-term clients as well, that would used to ask to go down to de-escalation or ask for PRN straight away and go to de-esc, they're not asking for that, they're actually asking to go to the sensory room instead before taking any PRN. (Nurse B1)

I had a client the other night asked to go [to the sensory room]. And, then he decided to bring a whole pile of others along as well and it was great. I think there was about 4 people in there and all lying on the floor with various smooching up against the dogs and it was really, I wasn't expecting it. I honestly wasn't expecting it, because these were all the young men between 28 and about 40, and I really didn't think that they would find that, I thought they might think it a bit sissy. But they didn't you know, and they were blowing the bubbles and smooching with the dogs and rolling on the mat, and all four of them really just came right down. It was amazing. (Nurse B2)

Sometimes it's offered to them just to go into a low stim area to get away from all the noise and the yelling of the ward. Sometimes their room just doesn't cut it. And others can just bowl into their room, so it's somewhere we can just take them away, just that nice, low dim light and the water running in the background and it just, sometimes you can just see their whole body just relax (Nurse B2)

... I usually take things out of it [sensory room]. Particularly the blankets and the dogs. When people don't want to come out their rooms but they need that. Ah particularly the blanket's great, fabulous. (Nurse B5)

Staff reported on limitations of the sensory room capacity.

I've had a client in there twice today and while we were just sitting and talking and rocking and stroking the dogs etc, two of the young boys opened the door and tried to come in. And I just said to them look you can maybe have your turn a bit later, because it was just a female and myself and I didn't think it was probably appropriate to these young males coming in. Plus she just wanted that smooth, that low stimulus, you know, just a one-on-one time. But no, there, there were two young guys that wanted to come in and I said your turn will come, so no, it was good. (Nurse B3)

While the quantitative data did not support that sensory modulation can increase staff confidence in managing distressed and agitated service users, nonetheless staff comments suggested that sensory modulation contributed to the confidence of individual staff, but not necessarily at a team or organisational level.

Two divergent findings emerged, where individual staff in the focus group reported increased confidence after training; whereas staff responding to the questionnaire did not. Therefore the data indicated that sensory modulation can increase staff confidence in managing service users' aggression at an individual level but not necessarily impact at an organisational level.

7.2.4.3. Staff attitudes towards seclusion

This section addresses the impact of sensory modulation on staff professional attitudes towards seclusion use. As for Unit A, staff pre- and post-implementation attitudes were surveyed using the Professional Attitudes Towards Seclusion Questionnaire (PATS-Q). The median, standard deviation, range scores, z values, and p values of Unit B on the PATS-Q are presented in Table 7.12. Pre- and post-implementation median scores of staff attitudes towards seclusion and restraint suggests that the use of coercive approaches like seclusion and restraint were present to Unit B mental health practice and staff were less than positive towards using these approaches.

Table 7.12. Median, standard deviation, range scores, z values and p values on PATS-Q for participants in Unit B pre- and post-implementation implementation (n=18)

Staff Attitudes	Median Score Pre-SM Programme Implementation	SD	Range	Median Score Post-SM Programme Implementation	SD	Range	Z value	P value ^a
Care	2.70	0.59	2-4	2.91	0.64	2-4	-1.00	0.32
More Care	2.59	0.61	2-4	3.00	0.80	1-4	-1.46	0.15
Other Care	2.39	0.75	1-4	1.83	0.84	1-4	-1.71	0.09
Better Care	3.00	0.77	2-4	3.21	0.79	2-4	-0.71	0.48
Reason	2.80	0.71	1-4	2.63	0.90	1-4	-0.53	0.60
Threat	3.44	0.81	1-4	3.35	0.65	2-4	-0.03	0.98
Treatment	2.50	0.78	1-4	2.61	0.87	1-4	-0.16	0.87
Culture	2.63	0.70	1-4	2.33	0.98	1-4	-0.89	0.38
Nature & Function	2.64	0.33	2-3.25	2.65	0.47	2-4	-0.66	0.51
Confidence	2.35	0.59	1-3	2.71	0.66	1-4	-1.63	0.10
Ethics	2.92	0.52	2-4	2.81	0.80	1.5-4	-0.20	0.84
Overall Attitudes	2.75	0.39	2-3.5	2.85	0.56	2-4	-0.39	0.70

^ap value \leq .05 significant result

A Wilcoxon signed rank test indicated that the overall attitudes from pre-median score 2.75 (SD=0.39) were not statistically significantly higher than the post-median score of 2.85 (SD=0.56) [$z = -0.39, p = 0.70$]. Similar non-significant results were obtained for any of the other main and sub-scales of PATS-Q. These findings suggest that the sensory modulation training did not necessarily alter or positively change Unit B staff attitudes away from the use of seclusion. In contrast, staff in the focus group reported they had become more cautious about using seclusion and restraint and were open to using sensory modulation modalities and the sensory room as an alternative strategy. Some commented that a change of attitude towards seclusion was evident among other staff. Staff had observed a greater acceptance and use of talking to service users at times of crisis.

The staff aren't as quick to restrain and seclude. They're more willing to try other methods first. Part of the reason was because we didn't have a proper, properly equipped sensory room that was as pleasant as the one we now have. It was a very dull looking room and it wasn't a de-stimulating area. It was a very depressing room. With very little in it. (Nurse B1)

I think there's been, in the 7 years that I've been here, a complete change in attitude of staff. There's a completely different milieu. There's more acceptance of it and you feel supported if you say I'm going off to be with someone to the room. Then, there's just it's acceptance that's part of our job. Where it certainly wasn't before. (Nurse B3)

There's much more of an acceptance that this is part of our job, and I feel supported to do that, and I think the knock on effect from that has come from

the sensory modulation training, and consequently our restraints have literally dived through the floor. Now that we've got a new [TRM] or it's been remodelled, our seclusions have dived through the floor as well, because of that. Not just, not just the demographic, the design of it, it's the change isn't it? It's the change in attitude. There's a couple of new staff come in and it's just great. (Nurse B4)

Collectively, the findings suggest that sensory modulation may have contributed to altering staff attitudes toward seclusion and restraint at an individual level, but not necessarily at an organisational level. Some staff were using sensory modulation modalities and room as the first line of intervention rather than seclusion and restraint. The use of more dialogue with distressed service users was accepted, supported, and utilised by particular staff.

In summary, Part B described the results related to assessing the potential impact of using a sensory modulation programme within Unit B. Impact was investigated by assessing service user management of distress and agitation, PRN use, seclusion use, environmental modifications, unit climate, staff confidence in managing service users' aggression, and staff attitude towards seclusion. Findings indicated that sensory modulation had a positive impact on service users' management of distress, agitation and de-escalation, and that sensory modulation was a preferred strategy for service users in the de-escalation and management of distress over coercive and pharmaceutical methods.

Impact was also assessed by measuring seclusion use. Findings indicated a reduction in some variables post-implementation, and these changes were statistically significant. There were no changes made to the unit environment due to budget constraints. No statistically significant changes were observed pre to post implementation in terms of unit climate, staff confidence and staff attitudes towards seclusion. However, qualitative findings suggested positive changes in individual staff's confidence in managing service users' aggression and attitudes of staff towards the use of seclusion.

7.3. Summary

This chapter provided a description of Unit B's context and factors influencing the sensory modulation programme implementation. Part A of the chapter described the process and factors influencing sensory modulation programme implementation (research phase 2 and research question 2); and Part B presented the impact of the sensory

modulation programme on the organisation, the staff, and the service users (research phase 3 and research question 3).

In terms of the process and factors influencing sensory modulation programme implementation analysis of data showed that additional sensory equipment was provided as part of the introduction of the sensory modulation programme. Sensory modulation training content was developed among stakeholders and the proposed training dates were followed. However, high occupancy, increasing acuity of service users within the unit, and a fire incident at the ICU affected training attendance. Assessment of sensory modulation documentation following sensory modulation implementation found some evidence of documentation within a small randomly selected sample of files. However, with a small sample size, caution must be applied, as the findings might not be a representation of the whole group of Unit B service users' clinical records. Moreover, not all service users in Unit B may have needed sensory modulation during their stay in the inpatient unit.

The other focus of chapter seven was on identifying factors influencing the implementation of sensory modulation. Five key facilitators were identified: leadership involvement from the Unit B middle management; incorporating sensory modulation into care planning; establishment of a dedicated room and sensory equipment; nursing staff involvement and changed attitudes; and multiple training sessions available. Four main barriers were; perceived ownership of the approach, practice documentation, limited staffing, and using sensory modulation only in the context of seclusion reduction.

Findings suggested that programme implementation created challenges for both staff and management. The provision of training was problematic for the trainers because of the busy inpatient unit environment, which affected the availability of staff. In addition, there was a perception that sensory modulation was 'owned' by the occupational therapy discipline and that its use was often linked to seclusion reduction rather than a broader management of distress across the ward. Despite these barriers, there were indications that sensory modulation became more integrated in staff practice and more service users had increased orientation and access to sensory modulation strategies and tools. In addition to the introduction of sensory rooms, the mobile cart and sensory kits supported the use of sensory strategies outside of the sensory room.

Analysis of qualitative data from the service user participants suggested that sensory modulation had a positive impact on these service users' management of distress and agitation. Similar to Unit A, multiple sensory tools were used and applied across diverse environments. Unit B's facilities and environment were identified as critical concerns for service users, including access to the sensory room and staff attitudes towards service users. The findings suggest that using sensory modulation contributed to the reduction and management of service users' distress and agitation and that the physical environment is potentially a factor in service user distress. The qualitative data also suggested that Unit B service users preferred sensory modulation as a strategy for de-escalation and management of distress to coercive and pharmaceutical methods.

Seclusion data from Unit B collected over the two-year programme implementation period including pre- and post- implementation were analysed to address the impact of sensory modulation programmes on the use of seclusion within inpatient mental health settings. There were reductions on all seclusion-related variables following sensory modulation training and statistical testing revealed significant differences in the rates of change median scores. These results suggest that the introduction of sensory modulation programmes may be associated with a reduction in seclusion events in Unit B. However, the lack of an experimental design and control group mean that cause and effect cannot be established.

Quantitative data related to changes in unit climate, increased staff confidence in managing service users' aggression and altered staff attitudes towards seclusion indicated no statistical significance. However, qualitative findings suggested that individual staff members did perceive a change in unit climate, and to their own confidence and attitudes.

The next chapter provides a cross-case analysis of programme implementation and outcomes in the two units.

CHAPTER EIGHT: CROSS-CASE ANALYSIS

This chapter examines the factors associated with programme implementation and impact through cross-case analysis. Cross-case analysis was used to compare and contrast the findings of the two cases, highlighting contextual differences between the two units and strengthening conclusions where the findings align (Yin, 2014). The implementation of the same programme within the two sites increased rigour in testing the propositions, allowing comparisons to be made and more robust conclusions drawn (Yin, 2014). In this chapter, the data within and across case studies is synthesised using tables and figures to highlight similarities and differences and illustrate ‘*patterns of findings*’ across the inpatient units (Yin, 2014). The triangulation of data types and sources provides a representative understanding of each organisation’s culture, enables an analysis of the values, attitudes, and behaviours within each organisation, and supports the evaluation of outcomes for service users (Yauch & Steudel, 2003). The chapter starts with a section on determining the strength of theoretical propositions and is then structured around the seven propositions outlined in the methodology chapter.

8.1. Determining the Strength of Theoretical Propositions

A proposition refers to a theoretical statement about a significant hypothetical issue, giving direction to the researcher regarding what to investigate for relevant evidence, what data to collect, and what should be the focus of analysis (Yin, 2003, 2014). As outlined in the methodology chapter, the *theoretical propositions* were developed based on existing literature. The comparison of the evolving relationship between theoretical propositions and collected data is an essential aspect of the exploratory case study or theory building method (Eisenhardt, 1989).

Each proposition in this study’s theory formation (Eisenhardt, 1989; Eisenhardt & Graebner, 2007; Yin, 1994) addresses a specific aspect potentially affecting the implementation and impact of the sensory modulation programme. The seven theoretical propositions were compared systematically with the data captured from each acute inpatient unit to determine how strongly the data supported the proposition. This process is highly repetitive and was carried out to critically evaluate the fit between the data and the propositions. Constant comparison between the propositions and the data enabled theory to be built through confirmation or contradiction of each proposition (Eisenhardt,

1989). Statistically significant findings for quantitative data and the themes within qualitative data were utilised to explore the evolving relationship between propositions and data within and across the two acute inpatient units. Qualitative data also provided potential contextual insights to explain the relationships between the propositions and the quantitative data. The seven propositions developed for this study are presented below (see Table 8.1), and each one is then considered in relation to relevant data.

Table 8.1. Summary of the seven propositions

Propositions
1. Organisational culture, climate, policies, and procedures significantly affect the implementation of a sensory modulation programme.
2. Services using multiple strategies for seclusion and restraint reduction, including developing policies, leadership, consumer involvement and staff training, are more likely to implement sensory modulation successfully.
3. Environmental modification, as a sensory strategy, is a significant factor in seclusion and restraint reduction.
4. Sensory modulation programmes have a significant impact on the use of seclusion within inpatient mental health settings.
5. Sensory modulation contributes to the reduction and management of service users' distress and agitation.
6. Service users prefer sensory modulation as a strategy for de-escalation and management of distress over coercive and pharmaceutical methods.
7. Sensory modulation programmes change staff confidence in managing service user distress and agitation and alter staff attitudes away from coercive practices.

Firstly, the qualitative and quantitative data related to implementation factors were cross-analysed and integrated in discussion of: **Propositions One, Two, and Three.**

8.2. Proposition One

Proposition one stipulates that the organisational culture, climate, policies, and procedures will significantly affect the implementation of a sensory modulation programme. A cross-case summary of findings related to organisational factors influencing the sensory modulation implementation is presented in Table 8.2, where similarities in and differences between the units are shown.

Table 8.2. Cross-case summary of organisational factors affecting the implementation of a sensory modulation programme

Organisational Factors	Unit A	Unit B
1. Culture and Climate		
Unit culture and staff attitudes	Entrenched culture related to seclusion and restraint use. Fear of changing practice in a high-risk environment. Varied attitudes towards sensory modulation, seen by many as an occupational therapy approach.	
Unit climate	Challenging work conditions due to high numbers and acuity of service users and limited staffing.	
Upper management programme involvement	Strong commitment from upper management	
Middle management programme involvement	Limited commitment or leadership for sensory modulation from middle management. Unclear structure and inconsistent communication re: implementation.	Strong commitment from middle management. Unclear structure and inconsistent communication re: implementation.
Clinical leadership	Occupational therapy team led the implementation of sensory modulation. Support of psychiatrists familiar with sensory modulation. Limited involvement of consumer consultant/advisor. Limited integration amongst nursing staff.	Nurses significantly involved in sensory modulation use and leadership. Limited involvement of consumer consultant/advisor. Limited integration amongst allied staff or doctors.
2. Policies and Procedures		
Seclusion and restraint policy	Present and up to date.	
Sensory modulation policy	No sensory modulation policy developed.	Sensory modulation policy developed but not signed off.
Funding	Limited funding for extra staff or sensory modulation resources.	Limited funding for extra staff or sensory modulation resources. Only one full-time occupational therapist employed.
Training development	Learning and Development department involvement and access to sensory modulation experts in the development of training.	
Staff access to training	Accessing training sessions was difficult due to other work priorities. Availability of online learning tool and catch up training sessions.	
Training implementation	Sensory modulation champions provided clinical practice demonstration and coaching.	
Application across service	Sensory modulation used in the context of wider service user distress and integrated into the unit group activities programme.	Sensory modulation use limited to the context of seclusion reduction. Sensory modulation was not integrated into the unit programme.

Note. Perceived organisational strengths are in bold font

Overall, the organisational factors influencing the sensory modulation implementation can be summarised into four major themes: (1) overall ward culture and climate; (2) leadership and management; (3) policies and procedures; and (4) training. These will be reviewed next.

8.2.1. Overall ward culture and climate.

The data suggested that both units had entrenched, pre-existing work cultures where seclusion and restraint were part of staff practice, even though they were described as practices of last resort. Staff in both units perceived the introduction of sensory modulation to be a shift away from conventional towards contemporary mental health practice. However, interviews revealed varying attitudes towards sensory modulation, and several described a fear of changing practice while working in a high-risk environment. There was also a perception that the occupational therapy discipline 'owned' the sensory modulation approach in both sites. This perception could have created a significant barrier to the widespread adoption of the approach amongst nursing staff. However, it appeared to be less of a barrier in Unit B, where the CNS led programme implementation, which facilitated the engagement of more nurses. The greater nursing involvement in Unit B was associated with greater application of sensory modulation in acute situations and linked to seclusion reduction, rather than the broader management of distress across the ward. There were times both units had high service user acuity and competing work demands, which made staff work conditions challenging. In summary, the climate in both units could be described as stressful and as having a ward culture reluctant to change (Aarons et al., 2012). The data indicated that it is likely that these factors negatively impacted on the implementation of sensory modulation, as competing staff priorities and high stress levels led to poor attendance at training and appeared to reduce the staff's ability to alter attitudes and behaviours and apply learning in practice.

8.2.2. Leadership and management.

Staff reported varied involvement of leadership in sensory modulation implementation across the two units. A strength in both units was the commitment of upper management to implementing sensory modulation. The units shared the same upper management and their commitment was driven by the government-mandated focus on reducing seclusion and restraint use. Upper management was highly involved in facilitating operational processes related to the implementation within the units. For example, upper management met with the research team to discuss methodology and the implementation plan and supported the research team by endorsing the project to service leaders. In addition, they provided input in the development of the training package.

Interview and organisational readiness (ORQ) data highlighted that the two services had differing leadership input from middle management, with ORQ ratings for leadership being medium for Unit B, and low for Unit A (refer to Table 8.3). Staff reported that Unit B's manager was more engaged in communication and planning related to seclusion and restraint reduction, including sensory modulation implementation. Cross-case analysis highlighted that Unit B's middle management were more involved than Unit A's in raising awareness and promoting sensory modulation in relevant forums. For example, the implementation of sensory modulation was set as a specific agenda item in Unit B's team meetings. The active involvement of middle management was also important in encouraging staff to attend training and develop their practice through direct line-management and organising relevant human and sensory resources. As a result, Unit B was able to implement the training for their staff and completed the implementation within the agreed timeline, as planned between the management and research team.

In contrast, Unit A's middle management was involved only in the approval of funding for additional sensory tools. Unit A's training started two months late due to a lack of engagement and communication from middle management relating to planning the training schedule and encouraging staff to attend. As a result, the implementation period in Unit A was extended, and there was limited staff attendance at training sessions.

Staff interviews also suggested that there was greater involvement of clinical nursing leadership within Unit B than Unit A. The presence of the CNS who promoted sensory modulation, was seen as a key influence on the nurses' engagement with the approach in Unit B. Training records showed that more nurses attended Unit B's training and records from the sensory rooms indicated that more nurses supported highly distressed service users in Unit B's room than in Unit A. With the lack of management support and the absence of a CNS in Unit A, the sensory modulation leadership was left to the occupational therapists, with the support of psychiatrists. This resulted in a stronger perception of occupational therapy ownership of the sensory interventions and appeared to influence the engagement of nurses in the training and application of the approach.

As indicated previously, the different disciplines' involvement in leadership appeared to shape both beliefs about 'ownership' of the sensory approach, and norms about sensory modulation use. Occupational therapists tended to have a greater level of training in

sensory modulation and more dedicated time to focus on increasing service user self-management than the nursing staff. Therefore, the occupational therapy leadership in Unit A resulted in a broad focus on prevention of crisis and service user self-management, and the approach was integrated into the unit's group programme and wellness planning. Whereas, the nursing leadership in Unit B was associated with a narrower implementation focus, with sensory modulation mainly used for managing crisis within the unit. This focus was associated with seclusion and restraint reduction, rather than developing service-user self-management skills within and beyond the unit. Therefore, the occupational therapy leadership added greater depth and breadth to the sensory modulation practice. However, along with limited middle management support, it appeared to reduce the engagement of nursing staff in implementation sensory modulation.

8.2.3. Policies and procedures.

Another aspect related to proposition one focused on organisational, policies and procedures. According to the ORQ data, the seclusion and restraint policies and procedures were due for review in both units, including policy about alternative strategies for seclusion and restraint reduction. Interviews with upper and middle management staff suggested that, to be successfully implemented, sensory modulation would need to be considered a core competency for all staff working directly with service users. However, no organisational policy related to sensory modulation as a core practice existed in either of the units. Unit B did have a written sensory modulation policy, but this policy had not been signed off or implemented. Staff in both units reported a lack of clarity in how the sensory modulation approach should be used. The lack of sensory modulation policy could have contributed to this uncertainty, as there was not a clear written expectation that staff should use the approach or guidance on how the approach should be applied.

The lack of clear policy and procedure appeared to affect the resources available for sensory modulation. Both units held sensory tools prior to the implementation of the sensory modulation programme; yet, interviews suggested these tools had been underutilised by the staff and funding for updating sensory modulation resources was limited in both units. Funding to employ extra allied staff was limited in Unit B. For example, there was a sharp contrast between occupational therapy staffing across the units. Unit A had two full-time occupational therapists and two full-time occupational

therapy assistants who strongly influenced the varied sensory modulation activities in the unit. In contrast, Unit B had only one full-time occupational therapist employed. Sensory modulation activities were limited and not integrated into the Unit B programme, which may have affected the range of ways the approach was applied. Overall, the review of documents and staff interviews suggested that the organisational policy and resourcing related to sensory modulation was not well established in either unit. The development of these factors may have clarified expectations and increased commitment of staff to sensory modulation implementation.

8.2.4. Training.

Another aspect related to proposition one focused on staff training. For both units, the implementation of the sensory modulation training posed challenges for staff and management. In particular, the provision of training was problematic because of the busy nature of the units and no extra staffing to cover those in training.

However, a facilitator of the implementation process was the flexible approach taken to delivering the training content. Both units had an online learning tool, which was utilised by staff to access the training enrolment form and learning tools such as pre-reading materials. The timetable of training was tailored to the schedule of staff in both units. The two units had existing sensory modulation trainers and champions, with Unit B having a mixture of nurse and occupational therapy champions, while Unit A had occupational therapists only. Trainers and champions offered flexible times for catch-up sessions to complete the modular training in both units. They also provided clinical practice demonstration to their work colleagues during shifts. Staff from both units who received training identified it as helpful in the implementation of sensory modulation.

However, despite the efforts to provide flexible training options, a significant number of staff in Unit A did not receive training, which was reportedly due to the high occupancy and increasing acuity of service users. Even though similar barriers were experienced in Unit B, there were significantly more staff trained in sensory modulation. This difference appeared to be due to the training being nurse-led, which may have increased the number of nurses willing to engage. The greater support and involvement of middle management in Unit B may also have influenced the staff prioritisation of training over other tasks. The greater level of training success in Unit B aligned with its high readiness (ORQ)

score for the orientation and training of staff (refer to Table 8.3). This included training in sensory modulation and other areas of practice related to seclusion and restraint reduction, such as trauma-informed care and de-escalation practices. Before the current study, staff from Unit B received some training in sensory modulation provided by the CNS. This training had increased staff awareness and provided basic knowledge on the use of sensory modulation. In contrast, Unit A had no CNS at the time of the implementation, the existing sensory modulation trainer (an occupational therapist) had left unit A, and the new occupational therapist had just started work.

Overall, the provision of flexible training in the two units was seen as critically important for embedding sensory modulation in practice. The involvement of nurses in training delivery and visible leadership related to training attendance was also important in securing the engagement of nursing staff. The greater number of staff trained in Unit B resulted in wider sensory modulation implementation across the ward's nursing staff.

In summary, in relation to Proposition One, the cross-case analysis suggests that organisational factors such as culture, climate, policies, and procedures significantly affected the implementation of the sensory modulation programme. There was an acknowledgement from staff that the ward climate can be very stressful at times and worsened when there were staff shortages and increasing acuity of service users. Some staff in both units appeared risk averse and resistant to sensory modulation as a new approach. Both units lacked sensory modulation related policies and procedures to guide the implementation and embedding of sensory modulation into practice. However, a key difference in the implementation of sensory modulation in the two units was the discipline leading it. The occupational therapy-led implementation focused on developing self-management skills for prevention of crisis within and beyond the unit, while nurse-led implementation focused on acute crisis management within the unit. Though occupational therapy-led implementation showed broader scope than a nurse-led approach, the cross-case analysis suggests that involvement of nurses in the implementation was critical in embedding sensory modulation practice within the unit culture because nurses make up the majority of staff within inpatient services. In addition, nurses appear to spend more direct time with individual service users within inpatient wards than do occupational therapists. The cross-case analysis also showed that more Unit B staff attended the

sensory modulation training and this was associated with more widespread implementation of the approach for service users in crisis.

8.3. Proposition Two

Proposition two stipulates that services using multiple strategies for seclusion and restraint reduction, including developing policies, leadership, consumer involvement and staff training, are more likely to implement sensory modulation successfully. This proposition is based on the belief that using multiple avenues to support seclusion and restraint reduction also facilitates implementation of sensory modulation, as changes in the broader system will encourage staff culture and behaviour change towards the use of alternative practices. Table 8.3 summarises the findings from the ORQ in both units. These findings are relevant to proposition two because the ORQ pertains to the strategies known to be most relevant for seclusion and restraint reduction. Therefore, higher ORQ ratings should be associated with more successful sensory modulation implementation (NB: Organisational factors discussed under proposition two are in bold text).

Table 8.3. Cross-case summary of the ORQ (Colton, 2004) in seclusion and restraint reduction

Variables	Unit	
	A	B
Organisational Readiness for Reducing Seclusion and Restraint Leadership (as <i>discussed under Proposition One</i>)	Low	Medium
Staff Orientation and Training (<i>discussed under Proposition One</i>)	Low	High
Programmatic Structure	Low	
Processing After the Event (debriefing)	Low	
Systems Evaluation and Quality Improvement	Low	
Staffing Levels and Fit	Low	High
Timely and Responsive Assessment and Treatment Planning	Low	Medium
Communication and Consumer Involvement	Low	High
Environmental Factors (<i>discussed under Proposition Three</i>)	Low	
Overall Organisational Readiness	Low	Medium

Cross-case analysis of the ORQ and interviews with staff showed that the units had similar existing organisational strategies for seclusion and restraint reduction. These organisational strategies were seclusion policy and its review, a working committee for seclusion and restraint reduction, attempt to implement sensory modulation, review of incidents, and the use of behaviour management and modification plan including skill mix of staff in a shift. In relation to proposition two, the cross-case analysis of organisational readiness for seclusion and reduction as measured by the ORQ showed that both units were rated low regarding their programmatic structure, processing after

the event (debriefing), and systems evaluation and quality improvement. These factors are discussed first, followed by other factors, where the two units had differing levels of readiness.

8.3.1. Programmatic structure.

The programmatic structure item of the ORQ measures the design and structure of the unit programme and this was rated as low for both units, reflecting that both programmes needed improvement. However, the low score in both units may have been due to different factors. Unit B's low score was due to the absence of an activities programme, including a lack of groups related to sensory modulation. This limited the range of activities based sensory input and sensory modulation applications. Whereas Unit A had integrated sensory modulation into the wider unit programme, which was led by the occupational therapy team. This resulted in a lack of perceived ownership or involvement from other disciplines. An apparent disconnect between the programme and the wider nursing team is a potential reason why Unit A was rated low in programme structure. This lack of a multidisciplinary involvement in the ward programme, in turn affected the wider application of sensory modulation strategies beyond the structured programme.

8.3.2. Processing after the event (Debriefing).

The cross-case analysis of ORQ findings showed that both units were rated low on processing events post-seclusion, through debriefing. Debriefing is utilised following seclusion for staff and service users to explore the antecedents and responses to agitated or challenging behaviours and determine useful de-escalating strategies, including sensory modulation modalities and tools. The limited debriefing in both units will have reduced the opportunities to develop and refine the use of sensory modulation strategies. Reflecting on and learning from attempts to apply sensory strategies could be a significant factor in embedding the approach for both staff and service users.

8.3.3. System evaluation and quality improvement

The ORQ ratings for system evaluation and quality improvement were rated as low in both units, indicating a lack of strategic planning and consultation on organisational strategy in reducing seclusion and restraint. The two units had a joint single committee responsible for analysis of seclusion and restraint data for both units. Representatives from each unit attended this seclusion reduction committee, which developed a strategic

plan for minimising restrictive interventions. However, feedback from staff indicated that the strategy for seclusion and restraint, and data on seclusion use was not shared with them for discussion and analysis. Although the committee had endorsed the implementation of sensory modulation as part of their strategy, this endorsement had not been translated into clear policy, procedure, or leadership support, which may have affected the implementation of sensory modulation. The limited use of seclusion and restraint data to inform practice and provide motivation for practice change may have affected staff willingness to attempt or persist with new ways of working, including the application of sensory modulation.

The cross-case analysis of the ORQ showed that, along with some common gaps in organisational readiness across the two units, there were other factors where they differed. Along, with higher levels of leadership and staff training (as discussed previously), Unit B had higher ratings in ‘staffing levels and fit’, ‘timely and responsive assessment and treatment’, and ‘communication and consumer involvement’. These factors are discussed next.

8.3.4. Staffing levels and fit.

Both units assessed their staffing patterns to ensure the correct number of staff were available at critical times. Staffing patterns were assessed at the change of shift, in the evening, and at times of high acuity. Despite assessing staff patterns regularly, the staffing levels were rated differently in the ORQ, with a high rating for Unit B and low in Unit A. This difference could be explained by the training schedule of the units. Unit B’s scheduling ensured that staff had more capacity to attend training, which was reflected in greater training attendance.

Another factor captured in the staffing variable on the ORQ is the ‘fit’ between staff and service users. Fit refers to staff compatibility with service users. For example, according to Unit B’s manager, consideration was given to staff factors such as age, gender, academic preparation, experience, and the ability to relate to particular service users. This information from the ORQ was validated through positive feedback from Unit B staff who reported that there was a good fit when service users were allocated to their caseload each shift. This alignment of staff and service users may have aided the use of sensory

modulation in Unit B, if it enhanced engagement when introducing or applying the sensory strategies.

8.3.5. Timely and responsive assessment and treatment planning

Compared to Unit A's low rating, Unit B was rated medium in timely and responsive assessment and treatment planning. The two units reported using client-centred practice in assessment and intervention. However, during the evaluation of documentation related to sensory modulation, Unit B's service user files showed clearer evidence of sensory modulation assessment and treatment in progress notes. This was in contrast to Unit A, where evidence of sensory modulation use was difficult to establish in service users' files. According to the sensory room logbooks in the units, Unit A's sensory room appeared to be used less than Unit B's. This finding may also have been a reflection of better record keeping in Unit B or the fact that more nurses were involved in using sensory modulation in Unit B, and therefore more likely to access the room in times of crisis and record its use in relation to critical incidents.

8.3.6. Communication and consumer involvement.

The cross-case analysis of communication and consumer involvement highlighted a contrast between Unit A's low rating and Unit B's high level of organisational readiness. Though the units had different ratings, Unit A and B both provided a platform for service users and family members to have input into intervention and programme development. The difference in rating was due to Unit A having no clear process for ensuring service user and family input in planning and reviewing interventions, including providing explanations as to why coercive interventions were necessary. There were service user consultants and advisors for each unit. However, during the period of sensory modulation implementation, the role of service user consultants and advisors was under review for both units, which may have created other priorities and led to their limited involvement in programme implementation. For example, the service user consultants and advisors were unable to participate in most stakeholder meetings, such as meetings on developing the training package, discussion meetings on issues of implementation, and a possible co-facilitating of the training. Greater input of service user consultants and advisors may have influenced the implementation of sensory modulation by informing the use of strategies, supporting debriefing, and promoting the benefits of the approach to the staff from a service user perspective.

In summary, the higher ratings in staffing levels and fit, timely and responsive assessment and treatment, and communication and consumer involvement appeared to have some influence over the implementation of sensory modulation in Unit B as compared to Unit A.

8.3.7. De-escalation strategies used by staff.

Further data relevant to proposition two and the use of multiple strategies for seclusion and restraint reduction related to the individual strategies staff used for managing service user distress and agitation. The staff de-escalation practices in both Units A and B were similar and included: (1) use of self, (2) use of activity, (3) use of medication, and (4) use of coercion. These existing practices had relevance to sensory modulation implementation and are described below.

1. Use of self – Therapeutic use of self in supporting distressed service users and managing challenging behaviour was a well-established practice in both units. This involved one-on-one work by nurses, allied health, occupational therapists, and support staff, providing time to talk and listen to service users and the use of distraction. The analysis of data from both units reinforces that the use of self and involvement of a range of disciplines are important factors in implementing sensory modulation.

2. Use of activity – Occupational therapists in both units engaged service users in meaningful activities and self-help strategies, such as the use of distraction techniques. Staff from both units provided active work as an outlet and opportunities for service users to self-manage distress. The use of a range of activities with strong calming or alerting sensory input can be an important element in integrating a sensory modulation approach more broadly within a ward. Qualitative data indicated that recognising and applying the sensory characteristics of particular activities (eg. walking, having a cup of tea, singing etc.) can be a powerful strategy in managing arousal levels.

3. Use of medication – The use of PRN medication was a standard practice in both units utilised by nurses. Administering PRN medication appeared to be a more natural response for nurses to distressed service users than using a non-medical approach such as sensory

modulation. Reliance on PRN medication as a ‘quick fix’ for critical incidents could be a consequence of the high service user acuity, large caseloads, and competing demands of the nursing staff. A default response of using medication to manage distress and agitation may have prevented the nurses from considering other options including sensory modulation.

4. Use of coercion – Though both units were committed to seclusion and restraint reduction, it was evident that staff were still using these approaches and both services continued to provide formal training in restraint use, while not providing regular sensory modulation training. This sent a conflicting message to staff about the importance and use of coercive versus non-coercive approaches and may have diluted the drive to implement sensory modulation.

Overall, the cross-case analysis lends support to proposition two. Although the units had similar organisational policy related to seclusion and restraint reduction and similar staff practices in managing service user distress and challenging behaviour, they had different levels of readiness for reducing seclusion and restraint. At the time, Unit B had clearly progressed further in the development of particular areas including leadership, staff training, staffing levels and fit, as well as timely assessment and planning. The findings suggest that these factors were associated with more successful implementation in Unit B. This was evidenced by higher numbers attending the training, greater application of sensory modulation in crisis situations (as documented in service user files and sensory room log book), and a higher score for Unit B on SMPIFG. In reference to the SMPIFG, Unit B demonstrated 75% fidelity, while Unit A’s score equalled a 67% fidelity rate (see Appendices S and T for comparison the SMPIFG scores). While both units had gaps in several areas of organisational readiness and had issues in the implementation of sensory modulation, looking across the data revealed a discernible difference between the capacities of each unit for implementing the change in practice. It appears as though greater leadership from middle management, the rostering of staff to support training attendance, the support for training in general, and involvement of nurses in championing the approach seemed to be significant factors affecting the relative implementation success in Unit B.

8.4. **Proposition Three**

Proposition three focuses on the impact of the physical environment on service user distress and reduction of coercive practices. The proposition stipulates that the sensory strategy of environmental modification, which includes changes to the physical space within the unit as well as resources, is a significant factor in seclusion reduction. Observational and qualitative data highlighted that a sensory modulation room and some tools were present on both units before the start of the current study. The environmental modifications, introduced as part of the sensory modulation programme, included the provision of additional sensory tools, funded by the study. No significant changes were made to the broader physical environment of the units, such as the creation of a new purpose-built sensory room or the renovation of other ward spaces due to the lack of availability of alternative spaces and limited research budget and time frame.

While the presence of sensory rooms and sensory tools were similar across units, the differences in existing refurbishments of the physical space offered an opportunity for some comparison. Unit A had been refurbished and renovated in 2011 and was equipped with facilities for daily living, including a purpose-built sensory modulation room and modalities. The unit had more modern and aesthetically pleasing facilities, with spaces for different types of activity and socialising. In contrast, the physical design in Unit B was considered outdated and run down and had limited space or facilities for activities or socialising.

Interestingly, despite the refurbishment in Unit A, there were still significant problems with the location of the sensory room and with several aspects of the broader environment. These issues were reflected in the ORQ ratings for environmental factors which were low in both units (refer to Table 8.3). In times of crisis, service users in the intensive care areas of both units could not easily be moved to where the sensory rooms were (open area in Unit B or upstairs in Unit A) when the need for sensory modulation was high. Only service users in the open part of Unit B had easy access to a sensory room. Feedback from staff and service users suggested that the location of the sensory room had an impact on the frequency of sensory room use. However, the addition of the portable sensory modulation cart made a difference to sensory tool access in both units. Despite this increased access to sensory tools, improving access to the sensory room was still seen

as important because of the added safety and control of the environment for staff and service users.

In summary, while both units had a sensory modulation room and similar sensory tools, they differed significantly in the broader physical environment, with Unit A more recently refurbished. However, the refurbishment, which included more modern facilities and spaces for socialising and activities, did not appear to make any difference to the staff and service users in the management of distress and in implementing sensory modulation. Service user feedback suggested that there were still issues with the design of the broader spaces, in addition to the issue of accessing the sensory room. Therefore, the data did not support the proposition that environmental modifications are one of the most significant factors in managing service user distress and reducing seclusion. While there were clearly issues with the design process in the refurbishment of Unit A, the findings may also suggest two rival propositions. These propositions would be that: (1) Modifying the physical environment within inpatient mental health units does not affect the reduction of seclusion and restraint rates if key aspects of the social and cultural environment remain unchanged, such as staff attitudes and unit culture; and (2) The accessibility of sensory modulation areas when modifying an environment is important in the reduction of seclusion and restraint.

8.5. Proposition Four

Proposition four stipulates that sensory modulation programmes have a significant impact on the use of seclusion in inpatient mental health settings. The cross-case analysis focused on changes in pre and post-implementation seclusion rates to assess the potential impact of the sensory modulation programme. A brief summary of the differences between units is presented in Table 8.4, as detailed statistical analyses of the findings have already been presented in Chapters 6 and 7.

Table 8.4. Cross-case summary of statistically significant changes between pre and post seclusion data

Seclusion Variables		Statistically significant change	
		Unit A	Unit B
Seclusion Events pre/post		No	Yes
Seclusion Hours pre/post		No	Yes
Seclusion events by Gender	Male	No	
	Female	No	Yes
Seclusion events by Ethnicity	Māori	No	
	Pacific	No	Yes
	Other	No	

To address proposition four, seclusion rates were analysed from both units over the two year-programme implementation periods including pre- (September 2014 to August 2015) and post-implementation (September 2015 to August 2016). Table 8.4 shows that there was no statistically significant change in any of the seclusion variables in Unit A. However, in Unit B the number of seclusion events, sum of seclusion hours, seclusion events by female gender, and seclusion events by Pacific ethnicity improved significantly from pre- to post-implementation.

The cross-case analysis highlights an interesting difference between the units in terms of the possible impact of the sensory modulation programme on seclusion. As discussed previously, data suggested that Unit B had some key organisational factors in place for supporting sensory modulation implementation and achieved a discernible difference in implementation success. These factors included more active middle management support, nursing leadership, higher attendance in training, and greater nursing engagement in general. Therefore, the greater change in seclusion and restraint reduction within Unit B aligns with this pattern of implementation success and the nurses' focus on using sensory modulation in the context of de-escalation and avoiding restrictive practices. While no causal relationships can be drawn from the data, and there are multiple factors influencing the use of seclusion and restraint, it could be said that the findings partially support proposition four. It is possible that the sensory modulation implementation may have been influenced the statistically significant change in Unit B's seclusion use, but the influence of other factors in reducing seclusion rates cannot be ruled out. The fact that Unit B had some existing organisational practices and strategies for seclusion reduction before the

implementation of sensory modulation means that any conclusions need to be drawn with caution. Unit A had also taken steps for seclusion reduction and had some success in implementing sensory modulation for self-management through the ward programme. However, the findings indicate some key elements were missing in the unit for affecting seclusion use significantly. Therefore, a rival proposition might be that: Sensory modulation is a significant factor in seclusion reduction if key factors for successful implementation are in place (including nursing leadership, focus on using the sensory strategies for de-escalation, and engagement of nursing staff in training).

8.6. Proposition Five

Proposition five stipulates that the use of sensory modulation tools and strategies contribute to the reduction and management of service user distress and agitation. Detailed qualitative data relevant to this proposition were presented in Chapters Six and Seven. The data showed that participants across both units (staff, service users, and management) reported the use of sensory modulation had a positive impact on reducing distress and agitation. A prevailing view among service users in both units was that the use of a single sensory tool or a combination of different sensory tools promoted a calming and soothing experience. Having these sensory tools available at any time of the day for crises, or where there was a need to self-soothe was seen as beneficial. Staff also described how the use of sensory modulation tools and strategies helped in the management of intense emotions before and during times of crisis. Overall, the cross-case analysis findings support the proposition that the use of sensory modulation tools and strategies contributed to the reduction and management of service user distress and agitation.

8.7. Proposition Six

Proposition six stipulates that service users prefer sensory modulation as a strategy for de-escalation and management of distress, over coercive and pharmaceutical methods. Qualitative data relevant to this proposition was presented in Chapters Six and Seven. In both units, staff and service users identified the use of sensory tools and strategies as a preferred first option before PRN medication or other coercive practices. Service users disclosed a dislike of the medication's side effects and wanted to avoid long-term use of medication for managing their distress and agitation. They reported a greater sense of control and no side effects when using the sensory strategies. Overall, the combined data

from the two units supports the proposition that service users preferred sensory modulation as a strategy for de-escalation and management of distress, over coercive and pharmaceutical methods.

8.8. Proposition Seven

Proposition seven stipulates that the introduction of a sensory modulation programme changes staff confidence in managing service user distress and agitation and alters staff attitudes away from coercive practices. The cross-case summary of findings is presented in Table 8.5 where similarities and differences between staff perceptions of the ward climate, confidence in managing service users' aggression and attitudes towards the use of seclusion are shown. These quantitative findings were drawn from the following questionnaires: Essen Climate Evaluation Schema (EssenCES) (Schalast et al., 2008), Confidence in Managing Inpatient Aggression (Martin & Daffern, 2006), and Professional Attitudes Towards Seclusion Questionnaire (PATS-Q) (Doeselaar et al., 2008). For more details of the statistical data from each unit see Chapters Six and Seven.

Table 8.5 shows that, overall, there were no statistically significant changes in staff scores from pre to post-implementation on any of the questionnaires. These findings suggest that the introduction of sensory modulation training and practice did not affect the overall staff perceptions of the units' climates, or staff confidence in managing service users' aggression and attitudes towards seclusion use.

Table 8.5. Cross-case summary of significant changes pre/post in staff scores of ward climate, staff confidence in managing service user aggression and attitudes towards the use of seclusion.

		Statistical Significance change between pre and post scores	
		Unit A	Unit B
Essen Climate Evaluation Schema (EssenCES) (Schalast et al., 2008)			
Climate Dimension	Patient's Cohesion	No	
	Experience Safety	No	
	Therapeutic Hold	No	Yes
Overall Climate		No	
Confidence in Managing Inpatient Aggression (Martin & Daffern, 2006)			
Confidence Questions	Q1: working with hostile & aggressive service user?	No	
	Q2: colleague's ability to maintain your safety?	No	
	Q3: feel around aggressive service user?	No	
	Q4: environment at your unit?	Yes	No
	Q5: de-escalate an aggressive service user?	No	
	Q6: contribute to the restraint of an aggressive service user?	No	
	Q7: maintain your safety in the present of an aggressive service user?	No	
Overall Confidence		No	
Professional Attitudes Towards Seclusion Questionnaire (PATS-Q) (Doeselaar et al., 2008)			
Attitude scale	Care	No	
	More Care	Yes	No
Attitude subscales	Other Care	No	
	Better Care	Yes	No
Attitude scale	Reason	No	
	Threat	No	
Attitude subscales	Treatment	No	
	Culture	No	
Attitude scale	Nature and Function	No	
	Confidence	No	
Attitude subscales	Ethics	No	
Overall Attitudes		No	

The cross case analysis highlighted that there was a different finding on three variables, where a significant change was obtained in Unit A but not in Unit B. This included an increase in the ward climate dimension of 'Therapeutic Hold'. This suggests that staff in unit A increased their focus on spending time engaging with service users and developing person-centred care. This aligns with a change in the attitude subscales 'More Care' and 'Better Care' from PATS-Q, which indicated that Unit A's staff attitudes changed towards the reduction of seclusion use and demonstrated an increase in utilising more person-centered approaches. It is possible that sensory modulation had some influence in these changes, through the focus on finding alternatives to seclusion, therapeutic use of self, and understanding service users' sensory experiences.

The third aspect of change in Unit A was the staff's response to question number four from the CMSUA-Q: 'How safe is the environment at your unit?' It was not clear why the rating in this item would have changed, as there were no changes to the physical environment, other than the addition of the sensory cart and some further sensory tools. In that case, aspects of the social environment may have changed.

Alongside the cross case analysis of quantitative data, qualitative data related to ward climate, staff confidence and attitudes were also compared. Overall, the participants in Unit A's staff focus group felt that a change in ward climate was coming. However, they believed it would take more time to embed the new ways of working and change the practice culture at an organisational level. Data from Unit B's staff had a recurrent theme where there was a sense that the whole environment and staff had changed positively following the implementation of sensory modulation. The staff perception in Unit B was more positive than Unit A regarding broader cultural change.

Amongst those staff that participated in the interviews and focus groups, in both units there was a reported increased confidence in managing service users' aggression. In all cases, participants stated that sensory modulation practice was being used more to support service users at times of distress. However, opinions differed as to whether changes in attitudes towards seclusion occurred post-implementation. Some participants in Unit A felt that a change in staff attitudes towards seclusion use would require further time. However, the majority of participants in both units emphasised that the use of sensory modulation as the first line of intervention with service users in crisis was now more common compared to pre-implementation. Findings suggest that the enhancement of the environment through the provision of the sensory cart and modalities and refinement of the set up within the existing sensory room as part of sensory modulation programme implementation can contribute to staff confidence in managing service users' aggression. In addition, the qualitative data suggested that sensory modulation training and coaching can alter staff attitudes towards seclusion on an individual level and can positively influence staff practices at an organisational level.

In summary, the cross case analysis indicates that the introduction of sensory modulation training and practice did not appear to affect overall staff perceptions of the ward climate, or the staff's confidence in managing service users aggression or attitudes toward

seclusion. However, the introduction of sensory modulation did affect the confidence and attitudes of individual staff in both units, as reported in the focus groups. Impact at a broader team and organisational level may require a larger percentage of the total staff to attend the training and engage actively in the new practice. The findings offer very little support for proposition seven; that sensory modulation programmes change staff confidence in managing service user distress and agitation and alter staff attitudes away from coercive practices. The cross case analysis findings may suggest a rival proposition that a sensory modulation programme can impact staff perceptions, confidence in managing service users' distress and attitudes away from toward coercive practices at an individual level, but on its own will not necessarily impact on ward climate and culture and staff confidence and attitudes at an organisational level.

8.9. Summary

This chapter presented a cross-case analysis to highlight the similarities and differences between the two units. It also illustrated the triangulation and patterns within the organisational data in order to examine the factors and impact associated with sensory modulation programme implementation. Table 8.6 summarises the findings of the cross-case analysis in relation to the study propositions.

Evidence derived from multiple data sources and across two sites showed strong support for four of the seven propositions. The data suggests that both units appeared to have a stressful climate, worsened by staff shortages, increasing acuity of service users and risk averse ward culture. This stressful climate was an impediment to staff engaging in training and focusing on attitudinal and practice change. Leadership was another important factor, with the discipline leading the implementation affecting the focus of sensory modulation practice, with the nurses focusing on crisis management within Unit B, and the occupational therapists focused on developing service user self-management in Unit A. The active leadership of middle management, rostering of staff for training, the number of staff trained, the location of the sensory room, and engagement of nursing staff also seemed to be significant factors affecting the sensory modulation implementation. The findings suggested that unit refurbishment alone does not guarantee significant change in seclusion reduction, and needs to be accompanied by relevant changes in ward culture and practices.

Table 8.6. Summary of cross-case analysis findings in relation to propositions

Propositions	Supported	Rival Proposition
1. The organisational culture, climate, policies, and procedures significantly affect the implementation of a sensory modulation programme.	Yes	Not applicable.
2. Services using multiple strategies for seclusion and restraint reduction, including developing policies, leadership, consumer involvement and staff training are more likely to implement sensory modulation successfully.	Yes	Not applicable.
3. Environmental modifications as a sensory strategy are a significant factor in seclusion reduction.	No	<p>Modifying the physical environment within inpatient mental health units does not affect the reduction of seclusion and restraint rates if key aspects of the social and cultural environment remain unchanged such as staff attitudes and unit culture.</p> <p>The accessibility of sensory modulation areas when modifying an environment is important in the reduction of seclusion and restraint.</p>
4. Sensory modulation programmes have a significant impact on the use of seclusion within inpatient mental health settings	Partial	Sensory modulation is a significant factor in seclusion reduction in mental health settings, if key factors for successful implementation are in place (including nursing leadership, focus on using the sensory strategies for de-escalation and engagement of the majority of frontline staff in training).
5. Sensory modulation contributes to the reduction and management of distress and agitation.	Yes	Not applicable.
6. Service users prefer sensory modulation as a strategy for de-escalation and management of distress over coercive and pharmaceutical methods.	Yes	Not applicable.
7. Sensory modulation programmes change staff confidence in managing service user distress and agitation and alter staff attitudes away from toward coercive practices.	No	A sensory modulation programme can impact staff perceptions, confidence in managing service users' distress and attitudes away from coercive practices at an individual level, but on its own will not necessarily impact ward climate and culture at an organisational level.

In terms of impact, the findings indicated a possible association between more successful sensory modulation implementation and reductions in seclusion use within Unit B. The greater engagement of nursing staff appeared to be a key factor in determining the impact on coercion. However, service users and staff in both units reported the positive impact of sensory modulation in the management and reduction of service user distress and agitation. The use of sensory interventions over coercive and pharmaceutical methods was a clear preference for service users. There were mixed findings related to the contribution of sensory modulation to staff perceptions of ward climate, staff confidence and attitudes. While there was limited impact at the organisational and team culture levels, interviewees reported impact on confidence and attitudes at an individual staff level. Overall, the cross-case analysis indicated that specific organisational factors and the use of multiple strategies influence successful sensory modulation programme implementation. The analysis has revealed potential benefits of sensory modulation for both staff and service users. The discussion in the following chapter will highlight the significant findings, including the implications, strengths, limitations, and overall conclusions of the study.

CHAPTER NINE: DISCUSSION

This study set out to investigate the factors influencing the implementation as well as the impact of a sensory modulation programme in two acute inpatient mental health services. Study participants included service users, mental health clinicians and support staff, as well as middle and upper management of the two participating organisations. Multiple methods were used to gather quantitative and qualitative data; namely, questionnaires, interviews, focus groups, and a review of organisational documents. The data were analysed for each case individually, as presented in Chapters Four to Seven, and cross-analysed in Chapter Eight. The cross-analysis involved pattern matching, an analytic technique used to link the case study variables, research questions and propositions (Yin, 2014).

The present chapter starts with a discussion of the study's main findings compared to existing knowledge of sensory modulation implementation. This includes contextual factors influencing sensory modulation implementation, strategies supporting implementation, and the impact of sensory modulation. The discussion chapter also reviews propositions and rival propositions. The clinical and organisational relevance of the findings are outlined, drawing on implementation science literature. Then recommendations and implications for sensory modulation implementation and future related research are discussed, and the strengths and limitations of the study are outlined.

9.1. Existing Contextual Factors Influencing Sensory Modulation Implementation

This section of the discussion refers to the findings from phase 1 of the study and relates to the research question 'What are the existing practices, norms, beliefs, and policies related to de-escalation and the reduction of seclusion and restraint, and what factors have shaped these?'

In New Zealand, a non-coercive, person-centred approach to preventing challenging and aggressive behaviour has become the expected standard for practice (MOH, 2011). The American NASMHPD (2006) has advocated that the combination of six core strategies increases the success of seclusion and restraint reduction within inpatient units. The strategies include strong leadership, using data to inform practice, staff development, the

use of seclusion and restraint prevention tools, consumer roles, and post event debriefing. The sensory modulation approach fits under the fourth strategy as a tool to assist clinicians in facilitating seclusion and restraint reduction. Research into the six core strategies, has shown that attempting to implement any one of the strategies without a focus on wider organisational factors reduces the likelihood of success (Azeem, Aujla, Rammerth, Binsfield, & Jones, 2011; Caldwell, et al., 2014; Perkins, Prosser, Riley, Whittington, 2012; Riahi, Dawe, Stuckey & Klassen, 2016). Overall, the current study findings align with previous research and indicate that multiple existing contextual factors influenced the implementation of sensory modulation. These included practices, norms, beliefs, and policies related to de-escalation as well as other organisational and staff factors. Some of these were challenges whilst others were facilitators to the implementation. Figure 9.1 presents the key challenges and facilitators affecting sensory modulation implementation at different levels of the organisation (Shortell, 2004), from the external context to individual staff factors (Damschroder et al., 2009).

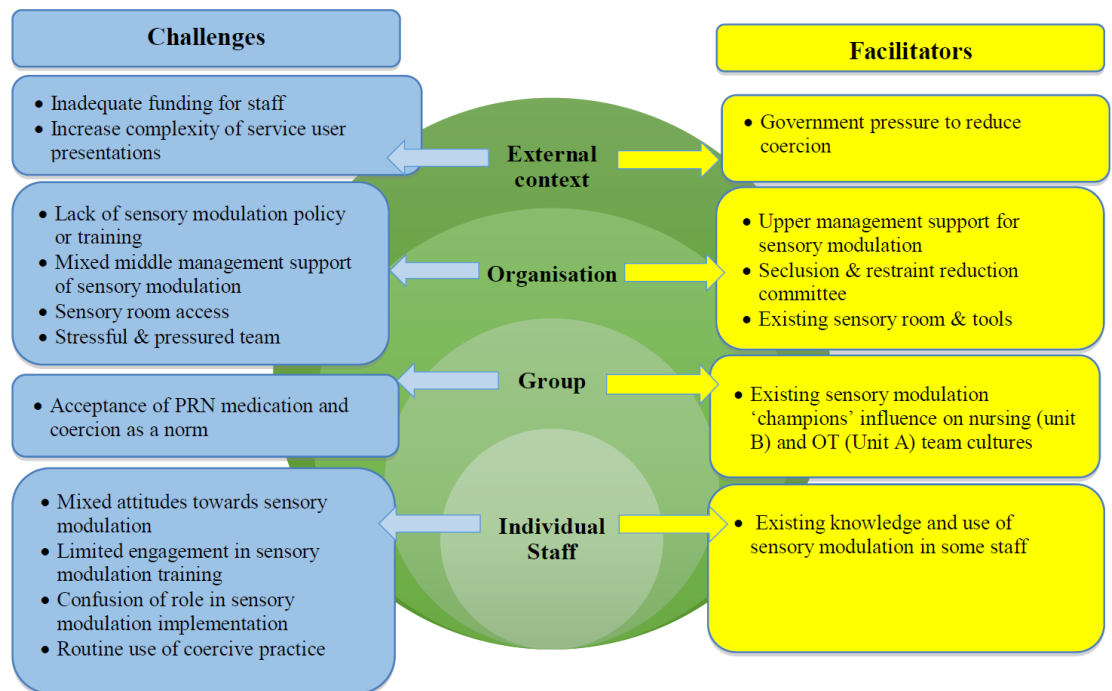


Figure 9.1. Contextual challenges and facilitators affecting sensory modulation implementation

9.1.1. External context.

The findings suggested that existing contextual factors outside of the organisation influenced de-escalation and seclusion and restraint procedures, as well as the implementation of sensory modulation. The current study was conducted at a time of an

external drive from the New Zealand MOH to improve mental health services across New Zealand, with a particular focus on reducing seclusion and restraint use (MOH, 2011, 2012b, 2016b, 2017). The MOH and the National Mental Health, Addiction and Disability Workforce Development agency, Te Pou (O'Hagan et al., 2008; Te Pou, 2008), have promoted sensory modulation as part of the six core strategies for seclusion and restraint reduction (NASMHPD, 2006). This context may have influenced the adoption of specific seclusion and restraint reduction strategies, such as establishing a committee within DHBs to review and develop strategic approaches to reducing restrictive practices. This committee had endorsed the use of sensory modulation and had attempted implementation of the approach previously, which made introducing sensory modulation to the organisation's staff less challenging. The importance of existing external influences has been highlighted in other implementation research and theory (e.g. Mendel et al., 2008), where government priorities and funding incentives can drive organisational change.

An external influence that negatively affected the uptake of sensory modulation was the limited funding for mental health staffing nationwide. After the study data were collected, the issue of inadequate staffing and quality of services became prominent within the media and government priorities, leading to a national inquiry into mental health services (Johnston, 2016a, 2016b, 2016c, 2016d; Shaley, 2017; Smalley, 2016). Mental health staffing levels have not kept up with a growing population, which was lead to stressful conditions for front-line workers who are dealing with greater demand for services and increasingly complex presentations in service users (Johnson et al., 2017; Totman, Hundt, Wearn, Paul & Johnson, 2011). An increase in agitated service users under the influence of methamphetamine and synthetic cannabinoids was a particular issue noted during the study period (Global Drug Survey, 2018; Matua Raki, 2010; New Zealand Drug Foundation, 2017; Wilkins, Prasad, Barnes, Parker, & Asiasiga, 2017). This context made the introduction of new ways of working challenging, as staff were stretched and feeling overwhelmed with their existing workload. Organisational change processes require adequate resourcing (Powell et al., 2011), including caseloads that allow staff leeway for learning and development.

9.1.2. Organisational factors.

The link between organisational policies, procedures, and practice seems to be an essential element in sensory modulation programme implementation (Wale et al., 2011). The current study showed that some existing organisational factors acted as facilitators in the units. These factors included the explicit mandate for sensory modulation from the Directorate under which both units sat, and the seclusion reduction committee. Members of the upper management verbalised support for the implementation of sensory modulation and the expectation that clinical staff would be trained in sensory modulation as part of their competency requirements.

However, upper management support was not reflected in the organisational policy or procedures, which had no specific guidance on the use of sensory modulation. In turn, middle management support was mixed and there was uncertainty about whether to encourage staff to attend sensory modulation training or make it compulsory. This lack of clarity in a shared vision and relevant organisational policy appeared to affect the leadership and consistency of staff training attendance and, therefore, the application of sensory modulation. The DHBs did have an existing policy on seclusion and restraint use. However, this focused on ‘how’ and ‘when’ to use restrictive practices, rather than promoting reduction and elimination of their use. This situation affected staff readiness for moving away from restrictive practices and, in turn, resulted in challenges with the consistent application of alternative methods such as sensory modulation. These findings highlight the need for a coherent and consistent approach to implementation at an organisational level (Powell et al., 2011). This should be guided by a shared vision, which is communicated through all levels of management and service policies.

The Directorate, under which both units worked, also had a strong commitment to client-centred practice, as outlined in the organisational values and stipulated in the service description. A commitment to person-centred practice is an important factor in terms of responding to service users’ unique characteristics and needs (Institute of Medicine, 2001). This commitment was reflected in past attempts to implement sensory modulation within both units, in order to provide non-coercive person-centred de-escalation strategies. Staff, too, demonstrated this commitment, as they reported a focus on meeting individual needs through person-driven assessment and planning of sensory strategies. The presence of existing sensory rooms and a range of sensory tools in both units also

showed the intent to provide non-coercive and individualised options for service users. However, the location of the sensory modulation rooms was highlighted as a barrier to accessibility, particularly for the most distressed service users in ICU. This highlights the need for careful design in setting up sensory rooms to ensure suitable spaces are available and accessible from all parts of the unit. This may necessitate more than one sensory room within each service.

9.1.3. Group facilitators.

A number of existing group factors appeared to influence the implementation of sensory modulation. These included acceptance of coercion as a norm and the influence of existing sensory modulation champions in the units. Both units had entrenched, pre-existing work cultures where the use of seclusion and restraint was part of staff practice. Both units had high service user acuity and competing work demands which made staff work conditions challenging. Interviews revealed varying attitudes towards sensory modulation ranging from different expectations and perceptions about sensory modulation. Several staff described a fear of changing clinical practice while working in a high-risk environment. Staff in both units perceived that the introduction of sensory modulation veered away from conventional to contemporary mental health practice. The climate in both wards could be described as stressful and as having a reluctant ward culture. The overwhelmed staff and reactive culture appeared to influence the implementation of sensory modulation. These findings are similar to previous studies of staff culture and climate as predictor of implementation outcomes within organisational settings (Glisson, Dukes, & Green 2006; Glisson et al., 2012). Another study also found implementation within an acute inpatient setting challenging because of staff risk aversion and medical approach (Chen, Krupa, Lysaght, McCay, & Piat, 2013). The findings highlight the importance of addressing barriers in team climate and culture. This might involve altering staff attitudes and beliefs about PRN and coercion use through training. Developing staff confidence and providing adequate support for applying alternative approaches would also be essential.

The present study also revealed there was an existing discipline-specific perception of ownership related to the use of sensory modulation in both units, which appeared to affect implementation. Many of the staff, namely nurses, support workers, psychologists, social workers, and psychiatrists perceived that sensory modulation 'belonged' to the

occupational therapy discipline. While much of the theory development and research related to sensory modulation has been led by occupational therapists (Scanlan & Novack, 2015), there have been attempts to share this with a wider audience and to engage other professions in using the approach. For example, Scanlan and Novack (2015) noted that the vast majority of sensory modulation research had been published in the journals of other disciplines, including nursing.

The findings of the present study show the importance of having cross-discipline leadership to overcome the perception of discipline ‘ownership’ of the approach. The perception of ownership was less of an issue where there was a nurse leader passionate about implementing sensory modulation. This appeared to affect the views of other nursing staff in terms of acceptability of the approach and their confidence to use it in practice. It also affected how the sensory approach was applied, with the nursing focus being on de-escalation in critical incidents. However, this focus may have limited the potential for service users to use the sensory strategies in self-management within and beyond the unit, which is something the occupational therapists supported. Overall, clarity around the ownership and application of the sensory approach seems to be important and this can be influenced by cross-disciplinary leadership and training. Clear staff perception of the use of an intervention plays an important role in the engagement of staff as well as the effective and efficient implementation of the intervention (Aaron & Palinkas, 2007; Glisson, 2002; Nelson & Steele, 2007; Nelson et al., 2007).

9.1.4. Individual staff factors.

A number of existing individual staff factors appear to have influenced the implementation of sensory modulation. These factors included the mixed attitudes of staff towards sensory modulation, confusion of role in the implementation, routine use of coercive practices, and staff existing knowledge and use of sensory modulation. Interviews with the unit staff revealed diverse attitudes and beliefs related to the use of sensory modulation. This is significant, as other studies have shown that staff attitudes are associated with the sustainability of new programmes, service quality, and service outcomes (Glisson & James, 2002; Klein et al., 2001; Teal et al., 2012). Some staff viewed sensory modulation as an alternative to seclusion and restraint, while others saw it as more of a therapeutic and preventative intervention. Those that saw it as an alternative to coercion tended to have concerns about the risk of using the sensory

strategies when service users were highly agitated. The attitudes appeared to be influenced by their existing knowledge and experience with the approach, resulting in varied confidence and interest in engaging in the training and implementation. The staff who had significant existing experience and knowledge showed a strong interest in the approach, and were able to role model and champion the approach for others. Post-implementation interviews also revealed that individual staff had become more accepting of using sensory modulation as they experienced its application and witnessed the therapeutic effect for service users.

Overall, the staff's level of acceptance of sensory modulation appeared to influence their engagement and involvement in implementing the approach. Furthermore, levels of acceptance appeared to be affected by beliefs about application and risk and previous experience, which were varied amongst staff. This indicates that training needs to provide clarification of expected roles in implementation and relevant knowledge and skill for individual experience levels. Furthermore, effective leadership from management and clinical leaders is important in alleviating staff concerns about risk and highlighting the benefit of using sensory modulation early to reduce escalation and increase safety for service users and staff (Sutton & Nicholson, 2011; Te Pou, 2017).

In summary, this section has addressed the findings related to the research question 'What are the existing practices, norms, beliefs, and policies related to de-escalation and the reduction of seclusion and restraint, and what factors have shaped these?' Challenges and facilitators were highlighted at external, organisational, group, and individual staff levels. Collectively, these pre-existing contextual factors seemed to affect the implementation of sensory modulation and, as discussed in the previous chapter, support the first study proposition that; 'The organisational culture, climate, policies, and procedures significantly affect the implementation of a sensory modulation programme.'

9.2. Strategies Supporting Sensory Modulation

Implementation

This section provides a discussion of the findings from the second phase of the study and offers insights into strategies for supporting sensory modulation implementation. The discussion is relevant to the question: 'How do organisational and staff factors, including policies and practices related to de-escalation and seclusion and restraint reduction

influence sensory modulation implementation?’ While several facilitating factors were found in the pre-existing context of the units, other facilitators were provided or developed as part of the implementation process. These facilitators are presented in Figure 9.2, and include the provision of sensory modulation tools and training materials, active leadership in the change, use of fidelity checklist, professional linkages, collaboration, designated roles, and flexible training. These strategies will now be discussed in relation to the environmental, organisational, group, and individual staff levels of the units (Shortell, 2004; Proctor et al., 2009).

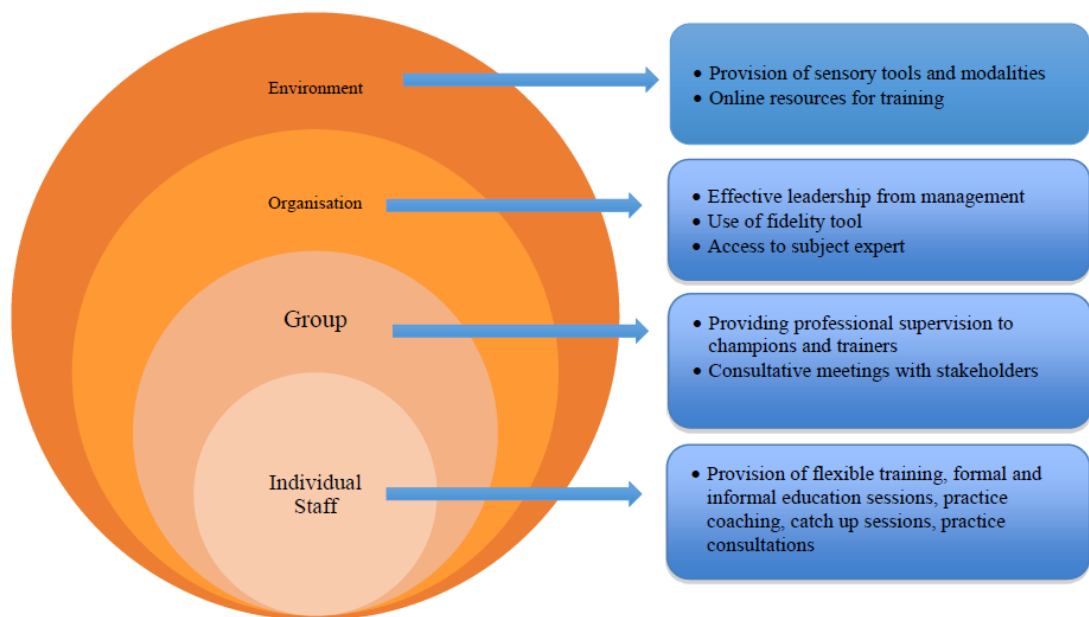


Figure 9.2. Strategies to support sensory modulation implementation

9.2.1. Environmental facilitators.

Environmental factors refer to the physical infrastructure and practice resources of the inpatient units that influenced the implementation of sensory modulation, including changes to the physical environment on the ward and increasing access of staff to sensory modulation tools and modalities. Educational tools and resources such as sensory modulation assessment, forms, tools, and modalities were supplied to both units to support the application of sensory modulation. Mobile sensory carts were also provided to improve the accessibility of sensory tools for both service users and staff. The qualitative findings indicated that these additional resources ensured that sensory modulation was fully integrated into the unit activities programme. This aligns with the

literature, which indicates that the development of new practices in mental health requires ensuring staff have access to relevant resources (Edmonson et al., 2001).

Modification of the wider environment is considered to be a significant factor in seclusion and restraint reduction (Borckardt et al., 2011) and is a focus of sensory modulation application within inpatient settings (Champagne & Stromberg, 2004). An inviting and calming environment may set the tone of people's behaviour (Borckardt et al., 2011), can help service users and staff self-regulate (Champagne & Stromberg, 2004), and encourage positive experiences and engagement where service users feel safe, aware, and in control (Linehan, 1993; Moore & Henry, 2002). The limited budget for making significant changes in the environment of the units affected the ability to test if modification of the wider environment would have a significant impact on seclusion and restraint reduction. Despite this limitation, it was noted that significant refurbishment in Unit A, which had taken place prior to the study, did not appear to make a significant difference to staff practice or service user experience. Therefore, the findings did not support the third proposition that 'Environmental modifications as a sensory strategy are one of the most significant factors in seclusion and restraint reduction.' However, consideration of other data related to the organisational readiness for change and ward culture of the units led to a rival proposition. Specifically, that 'Modifying the physical environment within inpatient mental health units does not affect the reduction of seclusion and restraint rates, if key aspects of the social and cultural environment, such as staff attitudes and unit culture, remain unchanged.' Qualitative feedback from service users also highlighted the issues that still existed in the physical environment despite the refurbishment in Unit A. This suggests that a thorough process of co-design with service users and staff is required to address sensory room access issues, as well as giving consideration to the range of sights, sounds, and smells that can increase distress or agitation in a ward environment.

9.2.2. Organisational facilitators.

A combination of existing strategies at the organisational level appeared to support sensory modulation implementation. These included securing active leadership and key stakeholder engagement, developing professional linkages, and the use of the fidelity tool. Securing the commitment of leaders and stakeholders from upper management through to clinical staff champions was essential in the sensory modulation implementation. Obtaining the approval and buy-in of most key stakeholders was

achieved by taking a collaborative approach to implementation planning. The lead researcher facilitated planning meetings with the Learning and Development Manager, Operations Manager, Inpatient Unit Managers, Professional Leader Mental Health Nursing, and Director of Mental Health Nursing. Meetings and consultations were also conducted with consumer and cultural advisors. Creating opportunities to discuss and resolve implementation challenges, such as training schedules and non-commitment of middle management, was also essential. All stakeholders endorsed the implementation of sensory modulation, assisted in resolving issues on the uptake of training attendance, and the organisation provided two clinical staff to act as research assistants. The engagement of leaders at the organisational level had a significant effect at the team level, which will be discussed later. The findings are consistent with other research that suggests that ensuring there is effective leadership and engagement of key stakeholders are key strategies for successful implementation (Sutton & Nicholson, 2011).

While upper management, in the current study, provided the mandate and oversight for implementation, it was apparent that the level of involvement from middle management particularly influenced staff practices. Findings from the second phase of the study highlighted that when the middle management was more actively engaged, the uptake of sensory modulation training and its application in practice appeared to be greater. This may have been due to the influence of middle management on frontline staff and the control of work rosters and resources. Findings also suggested that the middle management influenced whether sensory modulation was seen as a priority in meetings and in practice, staff attitudes towards its use, and how and when the training was delivered (Powell et al., 2012).

Another facilitator at an organisational level was the practice of promoting the link between each unit and external agencies that had expertise in sensory modulation. Both the management and clinical leaders described how they valued this strategy and had a common practice of encouraging staff to link with other professionals who had experience implementing sensory modulation in neighbouring DHBs, NGOs, polytechnics and universities. The findings suggest that professional networking by staff with external organisations may have contributed to the implementation of sensory modulation through the sharing of good practice and resources. This aligns with other

implementation research that found working across organisation or 'external boundary-spanning' facilitates organisational change (Greenhalgh, 2004).

There is an absence in the literature on ways to assess and guide implementation of sensory modulation. In response, the researcher developed a checklist tool called the Sensory Modulation Programme Implementation Fidelity Guide (SMPIFG), drawing on existing implementation literature, practice experience, and sensory modulation research. The two inpatient units had attempted to implement sensory modulation in the past with little success, so the checklist offered a structured approach to implementation with the aim of increasing the likelihood of success. The tool captured the percentage of staff completing the training; the inclusion of sensory strategies in service user safety/crisis plans; the use of sensory assessments and tools in practice; engagement of 'champions' in supervision; and staff sensory modulation competency level. Findings indicated that SMPIFG was a useful tool to support stakeholders implementing the programme and assisted the researcher with analysing and identifying factors affecting implementation. These findings align with previous studies, which have highlighted the usefulness of fidelity tools or checklists to support programme implementation (Arthur & Blitz, 2000; Dunst et al., 2008; Gottfredson et al., 2000; Kellam & Langevin, 2003; Trivette & Dunst, 2011).

In summary, the findings indicate that multiple organisational strategies are required in the implementation of sensory modulation. Effective leadership from management seemed to be a key facilitator, in particular, the direct involvement of middle management. Professional linkages appeared to be a contributing factor in implementation by providing a mandate for the approach and the sharing of good practice and resources. The use of the fidelity tool contributed by guiding the implementation of sensory modulation in the units.

9.2.3. Group facilitators.

Another existing strategy that may have influenced sensory modulation implementation was related to group factors. Group factors refer to the team and ward culture that may have influenced the implementation of sensory modulation in the units. Group factors identified as facilitators in the findings included ensuring strong collaboration, engaging clinical leadership, and clarifying designated roles in relation to the intervention.

Collaboration refers to active participation and engagement of staff in the implementation. Staff at all levels were encouraged to participate in the implementation of the sensory modulation programme, from clinical and support staff to upper management, including the Quality Department that supplied organisational data related to seclusion and restraint and incident reports. Collaboration amongst team members has been found to be a key facilitator of organisational change and learning (Block, 1993; Collins et al., 2013; Kates et al., 2011; Lord, 1994; MacGillivray, 1996; Pyke & Lowe, 1996). Findings from the present study showed that the majority of the sensory modulation programme stakeholders were cooperative and committed to the programme implementation. The partnerships, collaboration, and active participation of a critical mass of staff were important in facilitating organisational change, and this was particularly so in Unit B.

Staff collaboration is significantly shaped by the active involvement and accountability from leaders and managers at all levels of the organisation (Klein et al., 2001; VanDeusen Lukas et al., 2007). A key factor for strengthening collaboration within the two units was the clinical leads who set the tone by example and helped engage the staff in the training and practice. This factor appeared to facilitate successful programme implementation and promote positive relationships among staff. The clinical leads also played an important role influencing *how* sensory modulation was applied in practice amongst the team. As discussed previously, the nurse-led implementation focused on managing crises and resulted in greater uptake of the approach amongst the nurses. The occupational therapy-led implementation focused on using sensory modulation as self-management for the prevention of crises within and beyond the unit. This self-management approach appeared to result in greater depth of application but reduced the uptake of the approach amongst nursing staff. These findings highlight the significance of clinical leadership in shaping team norms and practices and the need for an inter-professional approach in clinical leadership. Coordinated leadership from nurses and occupational therapists, as well as consumer leaders, would strengthen the implementation of sensory modulation and influence the practice culture across the whole team.

Another strategy that appeared to support sensory modulation implementation at a group level was the designation of specific roles relevant to the implementation process. These

roles included a project manager, in the form of the researcher, as well as sensory modulation champions, trainers, and subject experts. Champions helped significantly in leading sensory modulation implementation by acting as the key contact person in the inpatient units to report on successes and challenges during the implementation period. Champions also provided practice coaching during work hours to reinforce learning. The trainers for each unit provided formal and informal education on sensory modulation. The project leader and subject experts provided supervisory support to the champions and trainers and assisted them in troubleshooting during the implementation phase. Designated roles have been shown to help stabilise programme implementation in health professional teams through allocation of responsibilities and increasing active participation in the implementation (Edmondson et al., 2001). The findings from the current study suggest that the establishment of designated roles assisted in providing structure and shared ownership to the implementation process. This was evident in the lines of support and knowledge dissemination from the project leader to the champions and clinical staff.

However, issues with role responsibility and accountability did arise when staff were unclear of how they needed to contribute to the implementation process. For example, problems arose when middle management in one unit perceived their role to be approving resources rather than actively encouraging staff to use sensory modulation. Additionally, some nurses were not clear of their role due to the issue of perceived ownership, as discussed previously. This lack of clarity de-stabilised the sensory modulation implementation. Perceptions about the ownership of the sensory modulation approach may have affected nurses' views on what they could and could not do in applying sensory modulation.

In summary, strong collaboration and designated roles appear to be important aspects of sensory modulation implementation. Cooperation was evident among the majority of staff within the inpatient units, and it was strengthened through consistent and purposeful communications within structured meetings. Clarity around how staff can use sensory modulation within their specific roles supports staff engagement. Designated roles such as project leader, champions, trainers, and subject expert helped significantly in problem-solving and addressing implementation challenges.

9.2.4. Individual staff facilitators.

The final level of influence considered in the implementation of sensory modulation related to strategies that affected individual staff factors. Staff factors refer to the staff characteristics and attributes such as knowledge, skills, and attitudes related to sensory modulation. As discussed previously, most staff had an existing basic knowledge of sensory modulation practice. They reported some awareness of the basic principles of sensory modulation but lacked confidence and experience in applying sensory modulation with service users. The literature suggests that the provision of training is an essential sensory modulation implementation strategy (Herschell et al., 2010; Powell et al., 2012). The significance of the flexible sensory modulation training was reflected in the findings of the present study. The collated survey and interview data from mental health support staff, clinicians, and management all highlighted how essential the provision of training and coaching was to staff capacity and confidence. This seemed to be borne out in the cross case analysis which revealed an apparent association between greater numbers attending training, more successful implementation and greater impact on seclusion reduction in one unit.

However, the current study also identified significant challenges to supporting staff development within the inpatient units due to constant changes in service user acuity and the shortage in staffing. High levels of service user distress resulted in an increasing demand for one-to-one support, which affected the availability of staff to attend sensory modulation training. In response, training schedules were increased, including formal and informal education sessions with staff. Sensory modulation trainers and ‘champions’ in each unit provided face-to-face coaching with staff during duty hours, and staff accessed supervision and consultation with the ‘subject expert’. Despite these flexible training provisions, the uptake of training continued to be a challenge due to the competing demands of clinical practice and, in one unit, the limited support of middle management.

Despite the challenges, the provision of flexible training options allowed a percentage of the staff to develop their knowledge and skills and this appeared to be critical in implementing sensory modulation.

In conclusion, this section of the chapter has reviewed a number of factors that influenced the implementation of sensory modulation programme at an environmental,

organisational, group, and individual staff level. Environmental factors were provision of educational tools and resources such as sensory modulation assessment, forms, tools and modalities, and mobile sensory carts that supported the implementation. Organisational factors included securing leadership and key stakeholder engagement, developing professional linkages, and the use of the fidelity tool. The group factors included ensuring strong collaboration, clinical leadership, and clarifying designated roles in relation to the intervention. Lastly, the individual factors pertained to the provision of flexible training. Findings suggest that the combination or ‘blending’ of these factors may have been critical to the implementation of sensory modulation. As highlighted in the previous chapter, the findings support the second study proposition that: ‘Services using multiple strategies for seclusion and restraint reduction, including developing policies, leadership, consumer involvement and staff training are more likely to implement sensory modulation successfully.’ Overall, the active leadership of middle management and clinical leads, rostering of staff to support training attendance, the location of sensory modulation room and inter-disciplinary engagement and focus, particularly from nurses, seem to be the most significant factors affecting the relative success of the implementation.

9.3. Impact of the Sensory Modulation Programme

This section of the chapter relates to the data from the third phase of the study and focuses on the third study aim, which was to identify the impact of sensory modulation within all levels of the organisation. The impact of introducing the sensory modulation approach will be reviewed and discussed using Kirkpatrick’s (1996, 2006) framework of programme evaluation, which is a well-established framework for programme outcome evaluation (Carpenter et al., 2007). It is considered an industry standard across practice communities (Azuela & Robertson, 2016; Carpenter et al., 2007; Kirkpatrick, 2006). The impact of the sensory modulation programme was considered from the organisational level to the individual level, as suggested by Shortell (2004) in his work on assessing programme performance. Figure 9.3 presents the impact of the sensory modulation programme at the various levels of the units.

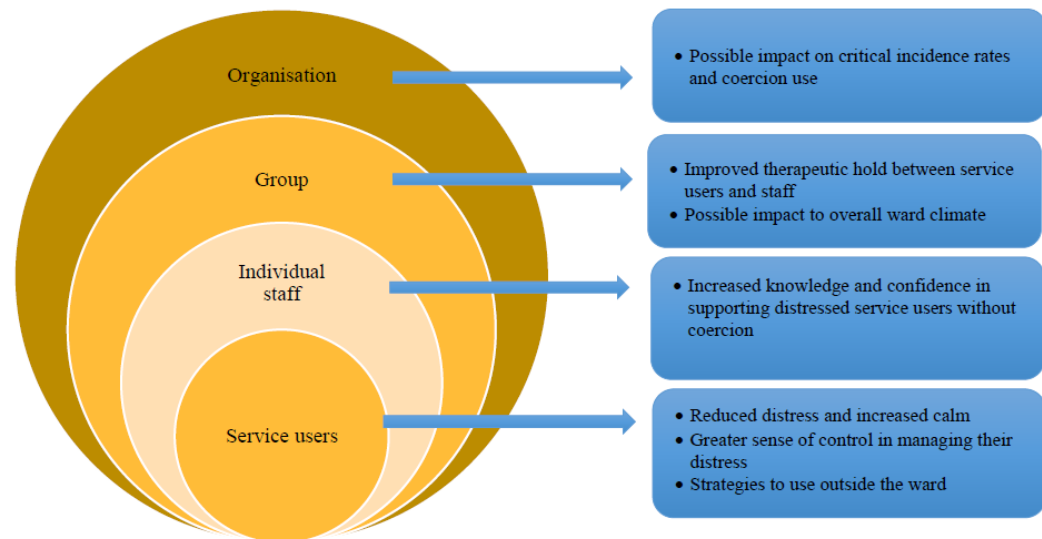


Figure 9.3. Impact of sensory modulation programme

9.3.1. Impact on organisation.

According to Kirkpatrick’s framework (1996; 2006), the impact on the organisation relates to the overall influence of the sensory modulation programme at the level of service processes and outcomes. The organisational process focused on in this study was the use of seclusion, as seclusion reduction is a key priority in New Zealand mental health services and an aspect of service delivery that has been found to be impacted by sensory modulation. Previous studies, including those by Barton, Johnson, & Price (2009), Champagne and Stromberg (2004), Lloyd, King, & Machingura (2014), Maguire, Young, & Martin (2012) and Sivak (2012), have all reported decreased seclusion rates after the introduction of sensory modulation. The results of these previous studies are consistent with the findings in the present study for one of the units, where a statistically significant change in the total number of seclusion events and the seclusion hours for female and Pacific service users was achieved. However, in the other unit, the change in seclusion rates was not statistically significant, reducing the strength of any conclusions drawn about impact at an organisational level. As discussed in the previous chapters, the greater level of seclusion reduction appeared to be associated with more successful implementation in Unit B. Factors such as active middle management and nursing leadership, a focus of de-escalation in sensory modulation application, and a greater number of nursing staff trained in sensory modulation could have affected the reduced levels of seclusion use. The qualitative data collected from both units support the idea

that sensory modulation could have contributed to seclusion reductions through helping people manage their distress.

However, these results need careful interpretation, because there were other organisational strategies already in place in both units prior to, during and after programme implementation. For example, the existing practices for managing service users distress and agitation such as one to one work by nurses and allied health and support staff may have affected rates of seclusion use in both units. While general patterns across the units seem to support the idea that effective implementation of sensory modulation supports seclusion reduction, no firm conclusions about the direct relationship between sensory modulation and reduced rates of seclusion can be drawn. Therefore, the findings partially support the fourth theoretical proposition of the study that ‘Sensory modulation programmes have a significant impact on the use of seclusion within inpatient mental health settings’. They also suggest a rival proposition, that ‘Sensory modulation could be a significant factor in seclusion reduction in mental health settings, if key factors for successful implementation are in place (including nursing leadership, focus on de-escalation using the sensory strategies and engagement of the majority of frontline staff in training)’.

Aside from focusing on the potential impact of sensory modulation on seclusion rates, the findings from this study clearly showed that seclusion was still used in both units. This highlights that coercive strategies continue to be a regular aspect of New Zealand’s acute mental health service delivery, despite the known negative impact of seclusion and restraint for both mental health staff and service users. The use of coercive practices is incongruent with trauma informed and mental health recovery approaches (Champagne & Tewfik, 2010; Cusack et al., 2003). It would be interesting to see the outcome if equal or even greater emphasis was placed on training staff in alternative de-escalation and prevention methods, such as sensory modulation, as is placed on training in using coercive methods. Though this notion is somewhat provocative in a risk averse system, this shift in priorities may bring a more humane approach for service users and mental health staff alike.

9.3.2. Impact on the group and individual staff levels.

A second area that was reviewed in terms of the potential impact of the sensory modulation programme focused on the staff group as well as individual staff. This relates to staff participants' reactions, learning and new behaviour as a result of receiving training and support for sensory modulation implementation. Findings suggested no statistically significant changes at a group level in terms of overall unit climate, staff confidence, and staff attitudes in either unit. In one of the units a few specific items did show significant change, including the ward climate dimension of 'therapeutic hold', staff confidence in the inpatient environment and staff attitude subscales of 'more care' and 'better care' in relation to seclusion use. The increased ratings in these items suggested that relationships between staff and service users had improved post-implementation. Reports from staff suggested that service users were more open to talking to staff regarding their needs. Similarly, service users reported that staff were more approachable and offered sensory modulation strategies in managing service users' distress and agitation. However, looking across the different data from the two units did not indicate why these items in particular may have been affected within Unit A by sensory modulation. It is possible that the sensory modulation training and practice brought renewed attention to a person-centred approach and the need to provide non-coercive options for de-escalation.

The lack of significant change in overall ward climate, staff confidence and staff attitudes may reflect the length of time it takes to change organisational culture (Aarons, & Sawitzky, 2006a, 2006b; Glisson et al., 2006; Glisson et al., 2008; Hofstede, 1998). Qualitative data provided another perspective in regards to the impact of sensory modulation on groups and staff. Staff interviewed in both units identified a positive change in unit climate, evidence of sensory modulation added to practice, which may indicate staff confidence in managing service user aggression, and altered staff attitudes towards seclusion. That is, sensory modulation training may have changed staff attitudes towards their reasoning on the use of seclusion and increased staff confidence in managing service users' challenging behaviour. The current study aligns with research evidence (Björkdahl, Perseius, Samuelsson, & Lindberg, 2016; Te Pou, 2012, 2017) that sensory modulation can have a positive influence towards staff confidence in managing service users' challenging behaviour.

Another aspect of the impact on individual staff was the acquisition of knowledge and skills. Staff reported gaining additional knowledge related to the use of sensory modulation as a de-escalation technique and increased skills and confidence in supporting distressed service users without coercion. These findings are consistent with previous studies on knowledge transfer for mental health staff following sensory modulation training (Azuela & Robertson, 2016; Meredith et al., 2016). The present study demonstrated that staff confidence in managing service users' challenging behaviour improved following sensory modulation training, and staff attitudes had changed, offering alternative strategies to seclusion and restraint use. Furthermore, feedback from service users was that staff had taught them to use calming techniques such as deep breathing and use of sensory tools as alternative strategies to manage their distress and regulate their emotions, in preference to using a pharmaceutical intervention. Despite these positive changes, the two inpatient units did not improve in terms of 'organisational climate' following implementation, except that Unit B showed a statistically significant change in 'therapeutic hold',

One of the main findings from the present study, reported by both service users and staff, was the importance of staff provision of one-to-one support to service users who are distressed and agitated. Though this finding was not surprising and was to some extent already known, the importance of the staff's ability to engage with service users is essential in building a therapeutic relationship necessary in developing a treatment plan. Staff should be working actively with service users in seclusion reduction interventions. This collaborative work between service users and staff can be achieved through planning with service users to identify preferred interventions to be used in times of their aggression (Champagne, 2008; Champagne & Stromberg, 2004; Linehan, 1993; Moore & Henry, 2002; Sutton & Nicholson, 2011). In the present study, one-to-one time with the staff was highly valued. However, values, attitudes and confidence are not often or naturally embedded in staff practice (Aarons et al., 2012; Aarons & Sawitzky, 2006a, 2006b; Glisson & James, 2002; Klein et al., 2001; Klein et al., 2001; Teal et al., 2012). The use of therapeutic self is based on knowledge and skill that cannot be learned overnight or only by attending training. Such changes would require culture change to achieve a more in-depth understanding of mental health practice, in particular changing staff attitudes and values towards seclusion and managing challenging behaviour (Glisson & James, 2002; Klein et al., 2001; Klein et al., 2001; Teal et al., 2012).

In addition, by looking at organisational workforce capacity, a one-to-one approach would require adequate staffing in the inpatient unit to attend to service users who are at risk of self-harming behaviour. The ratio of staffing between mental health staff and service users revealed a critical factor to facilitate a therapeutic intervention. This information was captured and highlighted in a staff pre-and-post survey and staff focus groups. An adequate number of staff should be available at critical times such as during service users transitions, at the change of shift, in the evening, and at times of high acuity (Colton, 2004). The limited resources in staffing identified in the present study are consistent with the reports on mental health practice in New Zealand, where nurses are placed under pressure because of the high acuity of the service users (Ministry of Health, 2016a). It is important to note that staff using themselves as a therapeutic tool to engage with service users is central in establishing trust as the foundation of a good relationship between staff and service users (Champagne, 2008; Hubble et al., 1999; Hughes, 2004). According to polyvagal theory, human contact is the most advanced and efficient type of response to distress. The use of the therapeutic self takes less energy and has less cost than either 'fight and flight' or the most primitive response, which is to freeze. Therefore, the social environment is even more important than the physical environment in providing calming sensory stimuli.

In summary, the sensory modulation post-training was associated with increased staff knowledge on sensory modulation, increased therapeutic hold between staff and service users, increased confidence in managing service users' challenging behaviour and improved caring attitude. Overall, the inconsistent findings related to potential impact of sensory modulation on group and staff factors did not support the seventh proposition of the present study that: 'Sensory modulation programmes change staff confidence in managing service user distress and agitation and alter staff attitudes toward coercive practices'. Rather, the findings suggested the following rival proposition that 'A sensory modulation programme can impact on staff perceptions and confidence in managing service users' distress and attitudes toward coercive practices at an individual level, but on its own will not necessarily impact on the ward climate and culture at an organisational level'.

9.3.3. Impact on service users.

A third area that was reviewed in terms of the impact of the sensory modulation programme relates to the impact on service users. Based on the Kirkpatrick's (1996; 2006) model for programme evaluation, the impact for service users relates to the therapeutic results of the sensory modulation programme. Findings from the current study suggest the impact of the sensory modulation programme for service users related to having an alternative option to deal with their distress, agitation or intense emotions. This included identifying specific sensory modulation tools as a preferred option over pharmaceutical intervention (PRN) and coercion. These findings are similar to other published studies (Chalmers, Harrison, Mollison, Molloy, & Gray, 2012; Champagne & Stromberg, 2004; Cummings et al., 2010; Lloyd, King, & Machingura, 2014; Novak, Scanlan, McCaul, MacDonald, & Clarke, 2012; Sivak, 2012; Te Pou, 2017), where both service users and staff consistently reported distress reduction and better management of disturbed behaviour after the use of a sensory room. The present study also revealed some generalisation of sensory modulation use beyond the units' sensory rooms to other spaces identified by individual service users, a result that has not previously been described in other sensory modulation studies. Examples of these preferred places were in the service user's room at home, their allocated hospital room, a bathroom, or the kitchen area, giving service users the flexibility to self-soothe whenever or wherever they needed to. The findings in the current study are inconsistent with previous work on sensory modulation by Sutton and Nicholson (2011) where the use of sensory modulation tools was incorporated into service users' treatment plan, as mutually agreed and supported by the clinical team.

Findings of the current study indicated sensory modulation also involves engagement in sensory rich activities. The engagement of service users in meaningful activities is essential in mental health recovery practice (Champagne, 2008). Likewise, the availability of and access to activity programmes are important for inpatient service users (Colton, 2004). In the present study, clear differences in activity programmes were observed between the two units. One unit had a full activity programme, while the other unit had none available for their service users. Interestingly, although there was a clear contrast between the two units in programmatic structure, both units had low scores regarding their readiness to change in reducing seclusion and restraint specifically around programme structure. According to Colton (2004), programmatic design and structure

should empower service users and normalise routine activities, with reward systems that are based on service users' needs and are developmentally appropriate. The primary focus should be on motivational change and providing ample time for rest, relaxation, recreation and other activities of daily living (Colton, 2004). Unit programmes require serious attention to target the needs and expectations of the service users, to increase service users' self-awareness of sensory sensitivities and preferences, to promote self-regulation regarding both skill development and habit stabilisation (Champagne, 2003b, 2004, 2006, 2008, 2011).. The lack of a structured programme reduces the opportunities for service users to access a range of sensory input through meaningful activities and limits staff and service users in developing regular sensory-based routines or diets within the inpatient setting.

In summary, the findings on the impact of sensory modulation programme on service users showed that sensory modulation helped to reduce service users' distress and increased their sense of calm. In addition, sensory modulation offered service users a greater sense of control of their emotions and given them practical strategies to use outside the ward in managing their distress. These findings support two theoretical propositions of the present study, namely, Proposition 5: 'Sensory modulation contributes to the reduction and management of distress and agitation', and Proposition 6: 'Service users prefer sensory modulation as a strategy for de-escalation and management of distress over coercive and pharmaceutical methods'.

This section focused on the third aim of the present study, which was to identify the impact of the sensory modulation on organisation, seclusion, staff, and service users. The impact was discussed using the Kirkpatrick's (1996; 2006) framework of programme evaluation and the findings suggest that overall the approach had a positive impact on the service users, staff and organisational processes. Service users and staff of both units reported consistently that sensory modulation contributed to the reduction and management of service users' distress and agitation and was preferred by service users over coercive and pharmaceutical methods. The findings related to impact on unit climate, staff confidence and attitudes as well as seclusion reduction were mixed across the units. This led to the conclusion that there was *potential* impact on improvement of service users and staff relationships (therapeutic hold), alternative management of service users' distress, and increased knowledge and skills of staff related to sensory modulation, with

a possible influence on seclusion reduction. Despite the apparent lack of significant change to team culture, individual staff reported increased confidence in managing service users' challenging behaviour using the sensory strategies, supporting the notion that the approach can have a positive impact for staff as well as service users.

9.4. Study Implications

This case study has revealed important findings regarding the implementation and impact of a sensory modulation programme in two inpatient units. The insights into how contextual factors and strategies affect the application of sensory modulation at different organisational levels have implications for future programme implementation. These implications will now be discussed in relation to mental health service delivery, practice and training, and research.

9.4.1. Implications for mental health service delivery.

Some general principles and strategies identified in this study can be adopted in the design and implementation of future sensory modulation programmes. One key principle is that the success of programme implementation depends on first adjusting the organisational culture and staff attitudes and beliefs to support the programme. All staff within the organisation need to work together towards a shared vision and goal, using shared decision making in the implementation of sensory modulation (Sutton & Nicholson, 2011; Te Pou, 2017; Wale et al., 2011). Having organisational leaders who can articulate the overall vision of reducing restraint and seclusion and support quality implementation of sensory modulation is essential. Operationalising the vision involves developing organisational policies and procedures to guide the implementation of sensory modulation. Policies and procedures need to be spearheaded by the organisational leaders working collaboratively with stakeholders at multiple levels of the system (Damschroder et al., 2009; Mendel et al., 2008; O'Hagan et al., 2008; Te Pou, 2008), such as consultation with support and clinical staff, middle management and service users.

It is also suggested that leaders from upper and middle management ensure resources such as educational tools, sensory modalities and mobile cart are in place and problem solve implementation issues as they arise. For example, staff difficulties in attending training requires creative rostering and increased staff resourcing to address the issue. The interface between support and clinical staff and middle and upper management are

important processes identified in this study. Active leadership from middle management is particularly important in influencing staff to participate in implementation and to ensure staff availability to attend training. Additionally, the study highlighted the importance of having an inter-professional approach to leadership and implementation. The active engagement of nursing clinical leaders increases the likelihood that nurses, who are at the forefront of managing critical incidents, take up the use of sensory modulation in practice.

The use of organisational data is important to sustain and improve practice (NASMHPD, 2006). Implementing sensory modulation should include a mechanism to collect and analyse data relevant to the programme (Te Pou, 2017). The mechanism includes outcome evaluation and performance measures consistent with the organisational target goals (NASMHPD, 2006; Te Pou, 2017). Process related data includes information on the key operational aspects of the programme, such as the number of staff who completed training, the number of service users who received sensory modulation, and qualitative information from staff about their perceptions of the acceptability of the approach. Outcome data include information from participants such as perceived impact for service users, staff, service delivery, and the larger system of the organisation.

Mental health inpatient services have varied capacities to promote best practice and innovation. In this study, the fidelity tool Sensory Modulation Programme Implementation Fidelity Guide (SMPIFG) was developed and trialled to assist each organisation to determine its capacity and guide the implementation of programme. The fidelity tool assisted by providing a checklist of designated roles and responsibilities for organisational stakeholders to establish accountability for implementation tasks and to check adherence to the programme development as planned. It is recommended that organisations utilise a tool such as the SMPIFG in both planning and reviewing future implementation. The SMPIFG appeared to be useful and have face validity in the present study, but could be further refined through future implementation research. The scores on SMPIFG aligned with those in the readiness for organisational change measure (Colton, 2004) for each unit and reflected key differences in unit contexts, which in turn influenced the relative success of implementation and impact in the units. The use of these evaluation tools reinforced that the application of multiple strategies for reducing coercion alongside sensory modulation is important, but also that services can benefit from assessing their

capacity for implementation and readiness for change. The readiness and fidelity tools allow organisations to identify and address significant deficiencies before investing in the roll out of major practice changes.

Overall, organisations setting out to implement sensory modulation should consider the key contextual factors and implementation strategies highlighted in this study. Although each organisational context will be different, there appear to be some common issues faced by inpatient services, as well as some key strategies to overcome these issues. An understanding of the challenges and potential solutions would benefit other inpatient mental health services in their planning and implementation processes.

9.4.2. Implications for practice and training.

The findings of this study reinforce the value of focusing on sensory modulation as a tool or strategy to manage service users' distress, agitation and intense emotions in acute inpatient settings. The findings also indicate that the use of sensory modulation should not be limited to de-escalation within inpatient units. The apparent effectiveness of sensory modulation in reducing distress suggests that practice should also focus on self-management and strategies for use after discharge. Integrating sensory modulation into the unit group programme and ensuring community mental health teams are trained in sensory modulation practice would also assist in the continued use of the approach following discharge.

A practical implication is the importance of prioritising sensory modulation training and resource access. Mental health organisations would benefit from providing their workforce with flexible training in sensory modulation, including online resources, self-help manuals, workshops, and individually catered practice coaching for staff. Blending these training packages is necessary to reinforce effective implementation (Azuela & Robertson, 2016; Meredith et al., 2016; Te Pou, 2017). Continued efforts are needed to make ongoing sensory modulation training accessible to staff and ensure that relevant organisational policy, procedure and guidelines are developed to support the approach to become embedded effectively in practice.

The existing staff capacity of the inpatient unit contributes to the success of mental health service delivery. Therefore, determining the ratio of staff to service users and staff ability

is critical in designing and providing an evidence-based programme intervention (NASMHPD, 2006). Utilising organisational resources is key to sustainability for facilitating implementation change (Edmondson et al., 2001; Fitzgerald et al., 2002; Greenhalgh et al., 2004; Gustafson et al., 2003; Simpson & Dansereau, 2007; Te Pou, 2017; Weiner et al., 2004). Other than adequate staffing, the organisational resources related to applying sensory modulation in an inpatient unit include:

- a. Building and utilising the capacity of experts or champions in the organisation;
- b. Providing a flexible training schedule adapted to the busy and constantly changing operational climate of the inpatient unit;
- c. A blended platform of sensory modulation training methods – online material, printed guidelines, training sessions and practice coaching.
- d. Establishing an inter-professional organisational committee or ‘special interest group’, with clear terms of reference focused on embedding sensory modulation in practice.

Ensuring there is an ongoing budget for securing and updating the range of sensory tools and activities available to meet the varied needs of service users.

9.4.3. Implications for research.

The current study has provided a unique approach to evaluating the implementation process and impact of sensory modulation. It has also identified a number of other areas that warrant further research. Future studies could assess the utility and impact of sensory modulation in relation to seclusion and restraint reduction by capturing information from debriefings following clinical incidents or seclusion and restraint events. This would be a rich source of data in terms of evaluating what works and does not work before, during and after clinical incidents. In addition, the study design did not allow clear assessment of sensory modulation’s impact on seclusion. This gap may be of interest for future researchers, who might consider the use of an experimental design to evaluate the effectiveness of sensory modulation. However, the range of variables at play and the ethical issues related to including a control group of distressed service users, who do not have access to sensory-based strategies, make conducting experimental research in an acute mental health unit challenging. Another option is to track individual service users over time, identifying their critical incidents, PRN use and seclusion and restraint incidents by week, and identifying their admissions and discharge dates, or the beginning

and end of the period under investigation if admission and discharge fall outside of the study timeframe. Key measures could be taken prior to and post individual training in sensory modulation for each service user. However, once again the influence of other factors over time, such as medication use and other supports make any reduction in distress and critical incidences difficult to attribute to sensory modulation alone.

One way of establishing the effectiveness of sensory modulation would be to do so in a non-inpatient setting. Settings such as primary health care and community clinics provide the opportunity to evaluate the effectiveness of sensory modulation as a self-management strategy with people whose contexts and treatments are more stabilised. Additionally, the use of sensory strategies for crisis and acute care within home-based treatment would be a worthwhile avenue of research. Finally, more research to advance the development of the Sensory Modulation Programme Implementation Fidelity Guide (SMPIFG) would help other practitioners and researchers to establish a greater degree of accuracy in programme fidelity.

9.5. Study Strengths and Limitations

This section provides a critical reflection on the strengths and limitations of the current study, which included the challenges and successes during the research process.

9.5.1. Strengths.

This study is unique in that it was an organisational case study in sensory modulation with a strong focus on understanding the implementation and determining the impact of the approach in New Zealand mental health units. No other prospective case studies focused on implementing a sensory modulation programme within inpatient settings have been conducted in depth within New Zealand or internationally. One of the strengths of the case study approach was that the perspectives of service users, staff and management, as well as consumer and cultural advisors were all considered in developing and evaluating the programme. Additionally, the inclusion of existing and validated measures intended to reflect specific research variables provided quantitative data to consider alongside the subjective experiences of the participants. The triangulation of the various data sources added rigour to the conclusions drawn (Boyton & Greenhalgh, 2004). The inclusion of standardised questionnaires also allows comparison of this case study's outcomes to other studies using the same measures.

The study replicated the sensory modulation programme across two adult acute inpatient units, which also increased rigour in testing the research questions and the propositions. The design allowed for the comparison of implementation processes and contextual conditions affecting sensory modulation application in the two services. The use of pattern matching and cross-case analysis techniques supported the systematic and critical evaluation of a large amount of data. Using these techniques strengthened the construct validity of the findings by linking the theoretical propositions, research questions and the various research data.

Previous studies have focused on the impact of sensory modulation on service users' distress and on seclusion and restraint rates (Barton et al., 2009; Champagne & Stromberg, 2004; Costa, Mora, Solomon, Sabino & Call, 2004; Cummings et al., 2010; Lloyd et al., 2014; Maguire et al., 2012; Novak et al., 2012, Reddon, Hoang, Sehgal, & Marjanovic., 2004; Sivak, 2012; Smith & Jones, 2014; Sutton et al., 2013). However, a particular strength of the current study was that it unpacked the contextual factors in programme implementation and strategies to support implementation, and focused on assessing the impact of sensory modulation on all levels of the organisations. In this way, the study provides an original contribution to the evidence base and can inform other mental health services as they strive to reduce the use of seclusion and restraint and eventually eliminate coercive practices using person-centred de-escalation (Ministry of Health, 2017).

In addition, the present study also revealed the generalisation of sensory modulation use beyond the units' allocated sensory rooms to preferred spaces identified by individual service users. This included the service user's room at home, their allocated hospital room, a bathroom, or the kitchen area. Previous research within inpatient settings has tended to focus largely on sensory room use, so this focus on using tools and strategies to self-soothe whenever or wherever they are needed, is a strength in broadening the research and practice focus.

Furthermore, the current study would be an added contribution in the field of implementation science particularly in sensory modulation programme design, implementation, and outcome evaluation. Seven theoretical propositions relevant to

sensory modulation implementation were tested and most were supported by the gathered data to varying degrees. In addition, a sensory modulation training package (Appendix M), practice checklist (Appendix N), and implementation fidelity guide (Appendix S) were developed as part of the current study. New Zealand mental health services planning to implement sensory modulation could use or further develop these resources.

Overall, the current study was able to investigate the existing practices, norms, beliefs and policies related to de-escalation and the reduction of seclusion and restraint (research question 1), factors influencing sensory modulation implementation process (research question 2) and its impact in two adult acute inpatient units (research question 3). The analysis of rich data from various sources provided useful insights into the implementation process and tested relevant propositions to contribute to theory development in relation to sensory modulation implementation.

9.5.2. Limitations.

Whilst the current study has demonstrated a number of strengths in terms of its chosen methodology and findings, undertaking a case study design also presented some limitations. One limitation was in regards to evaluating the impact of sensory modulation (research question 3). Whilst the case study design provided rich data and associations between contextual factors, the intervention and outcomes were explored, direct cause and effect relationships could not be identified. Therefore, the data related to the impact, including seclusion reduction needs to be interpreted with caution. Although the findings showed some reduction in seclusion rates in one of the units, other organisational factors and strategies may have influenced this outcome. The available seclusion data also limited the interpretation. For example, it was not possible to access seclusion data for individuals and therefore it could not be identified if service users were secluded multiple times within a single month. This was likely to have occurred, particularly for service users using methamphetamine or synthetic cannabis, and could have skewed the seclusion rates in any given month. Additional uncertainty arose in the data as individual admissions and discharges were not available across the study timeframe, so while number of bed nights were recorded, changes in individual service users were not. As discussed earlier, future studies may be able to reduce these limitations by tracking specific service users over time, including seclusion and restraint rates and admission and discharge dates.

The key contextual factors identified in the current research included mixed leadership and engagement from middle management, high acuity of the ward, and low staffing numbers, all of which may have affected the implementation of sensory modulation. As a result, uptake of training and completion of surveys were relatively low. The low uptake of training affected the implementation as it limited the staff using sensory modulation, particularly in Unit B. The relatively low rates of survey completion resulted in limited representation of the staff at the group level. Therefore, the data related to impact on unit climate and attitudes post-implementation needs to be interpreted with this in mind and considered alongside the qualitative data from those staff that did engage in the training and implementation.

The inpatient units involved in the study had had little success in using sensory modulation previously, with known contextual challenges. The inclusion of additional sites with contrasting exposure to sensory modulation and more favourable conditions, such as better resourcing and opportunities for staff to attend training, could have allowed for a greater contrast and comparison in testing the propositions. Despite the limited number of sites, small number of study participants in the pre-post staff survey, no staff from Unit B attended the module three training, the findings still suggest key barriers and useful implementation strategies that could apply in future programme implementation.

The researcher was known to the participants that posed a potential conflict of interest in recruitment and data gathering. This conflict of interest was addressed by utilising two research assistants in the recruitment of participants and data gathering. Detailed job description was developed to specify the roles and responsibilities of the research assistant in the current project (see Appendix P).

Another limitation of the current study was that budget and time constraints prohibited any significant changes made to the broader environment of the inpatient units. Therefore, this study could not confirm proposition three stating that 'environmental modifications as a sensory strategy are one of the most significant factors in seclusion and restraint reduction'. However, it could be argued that this limitation was also a strength, given the current study worked with the realities of a mental health inpatient setting, where there is limited resources and physical environments are not always ideal. The challenges of

sensory room location and issues with the institutional environment are common to many acute settings, increasing the face validity of the findings.

One of the aims of the research was to determine if sensory modulation was being used and documented. In order to eliminate bias and produce balanced findings, a random sampling technique of service user medical files was applied (Laerd Statistics, 2015a, 2015b, 2015c). However, this limited the analysis of the service users' clinical files because a large number of the randomly selected clinical files were of service users that had not required de-escalation and so were not necessarily needing sensory modulation. Future research would still benefit from random sampling in order to audit if orientation to the sensory room and safety planning had occurred. However, purposive sampling could also be used to identify files of all service users who had experienced critical incidents within a particular timeframe, to identify what strategies had been offered and used for de-escalation purposes.

In summary, this study has provided rich data to explore the context of the programme implementation and has highlighted some important considerations for future sensory modulation implementation. However, there were also challenges in collecting the data and implementing the sensory approach, which potentially reduced the strength of the findings. Therefore, ways of managing these issues could be considered in the design of future studies of sensory modulation implementation.

9.6. Conclusion

The current study set out to investigate the impact of sensory modulation in two adult acute mental health services, together with the factors influencing the implementation process. A mixed-method organisational case study of each unit was developed with the aim of answering the following research questions:

1. What are the existing practices, norms, beliefs and policies related to de-escalation and the reduction of seclusion and restraint, and what factors have shaped the existing practices?
2. How do organisational and staff factors, including policies and practices related to de-escalation and seclusion and restraint reduction, influence sensory modulation implementation?

3. What is the impact of using a sensory modulation programme within acute mental health services?

This study used pattern matching and cross-case analysis techniques to examine the findings in relation to theoretical propositions and the research questions. The findings of the current study contribute to the knowledge base by strengthening existing sensory modulation implementation theory. Specifically, the findings support four of the study propositions as follows:

Proposition 1: The organisational culture, climate, policies and procedures significantly affect the implementation of a sensory modulation programme.

Proposition 2: Services using multiple strategies for seclusion and restraint reduction, including developing policies, leadership, consumer involvement and staff training are more likely to implement sensory modulation successfully.

Proposition 5: Sensory modulation contributes to the reduction and management of distress and agitation.

Proposition 6: Service users prefer sensory modulation as a strategy for de-escalation and management of distress over coercive and pharmaceutical methods.

Taken together these findings are consistent with previous research related to sensory modulation and its impact on service users (Lee et al., 2010; Sutton & Nicholson, 2011; Sutton et al., 2011; Wale et al., 2011)

The application of Yin's (2014) case study design provided insightful information on the complexity of the context and influencing factors within inpatient mental health units. Organisational factors such as culture, climate, policies and procedures significantly affected the implementation of the sensory modulation programme. The inpatient ward climate can be very stressful and worsened when there were staff shortages and increasing acuity of service users. This climate affected the unit culture, where some staff appeared risk-averse and resistant to taking on sensory modulation as a new approach. Furthermore, the lack of sensory modulation related policies and procedures to guide the implementation also appeared to affect the uptake of the new practice.

Various other aspects of organisational readiness for seclusion and restraint reduction as well as the implementation of sensory modulation were noted as being significant. These included the practice of post-crisis debriefing with staff and service users, innovation in service delivery, staffing levels and fit, timely and responsive assessment and treatment, communication and consumer involvement. These factors required planning, development and action steps for successful programme implementation.

A key difference in the implementation of sensory modulation in the two units was the discipline leading it. The occupational therapy-led implementation focused on developing self-management skills for the prevention of crisis within and beyond the unit, while nurse-led implementation focused on crisis management within the unit. Though occupational therapy-led implementation showed a broader scope than a nurse-led approach, the cross-case analysis suggests that the involvement of nurses in the implementation is critical in embedding sensory modulation practice within a unit culture. Nurses spend more time with distressed service users within inpatient wards than do occupational therapists or other clinical staff.

Vital components for sensory modulation implementation identified in the study include taking an inter-professional approach in leadership and training, rostering flexibility as well as leeway in staffing levels to support training attendance and crisis responsiveness. These points highlight the need for active leadership from middle management and training opportunities that the majority of staff can attend.

In relation to the impact on service users, the qualitative data from staff and service users highlighted the therapeutic impact of sensory modulation in managing distress, agitation and intense emotion. This adds to the growing evidence that sensory modulation can be used as a tool to support service users to achieve their optimum level of arousal in crisis as well as in daily life. The approach appears to be an essential addition for staff and mental health services that are aiming to facilitate person-focused de-escalation. However, mental health services planning to implement sensory modulation require a genuine, multilevel commitment to embed this approach satisfactorily.

The findings partially supported Proposition 4, which stipulated that sensory modulation programmes have a significant impact on the use of seclusion and restraint within

inpatient mental health settings. The data related to the reduction of seclusion were mixed and seemed to be related to the relative success of the implementation and in particular, the number of nurses trained and engaged in using the approach. Therefore, this finding suggested a rival proposition that sensory modulation could be a significant factor in seclusion reduction in mental health settings if key factors for successful implementation are in place (including nursing leadership, focus on de-escalation using the sensory strategies and engagement of the majority of frontline staff in training).

Propositions 3 and 7 were not supported by the study findings. Proposition 3 stipulated that environmental modifications are one of the most significant factors in seclusion reduction. However, the recent refurbishment of Unit A did not appear to make any difference in seclusion use or the implementation of sensory strategies. Furthermore, the limited research budget did not allow larger modifications of the ward environment to test the proposition further. Therefore, the data did not support the proposition, but did lead to a rival proposition that modifying the physical environment within inpatient mental health units does not affect the reduction of seclusion and restraint rates if key aspects of the social and cultural environment remain unchanged, such as staff attitudes and unit culture.

Finally, Proposition 7 stipulated that sensory modulation programmes change ward climate, staff confidence in managing service user distress and agitation and alter staff attitudes toward coercive practices. The data indicated that a critical mass of staff were not sufficiently engaged in the training and practice of sensory modulation to change the group norms and confidence in using non-coercive approaches across the team. However, the staff interviewees who were using the approach did report an increase in confidence and a change in attitudes at an individual level. Therefore this finding suggested a rival proposition that a sensory modulation programme can impact staff confidence in managing service users' distress as well as attitudes toward coercive practices at an individual level, but on its own will not necessarily impact on ward climate and culture at an organisational level.

In conclusion, the present study used an 'exploratory mixed method case study design' to identify factors that influence the implementation and impact of sensory modulation within inpatient settings. The complexity of factors that influence implementation within

acute services make determining the effectiveness of sensory modulation challenging. However, the approach had a positive impact on service user distress and on the practice of individual staff. The current study contributes a unique perspective and new knowledge to the existing sensory modulation literature in the field of programme design, implementation and evaluation; and is the first of its kind in New Zealand. The general principles and strategies identified can be adopted in the design and implementation of future sensory modulation programmes in New Zealand and internationally.

REFERENCES

- Aarons, G. A., Glisson, C., Green, P. D., Hoagwood, K., Kelleher, K. J., & Landsverk, J. A. (2012). The organizational social context of mental health services and clinician attitudes toward evidence-based practice: a United States national study. *Implementation Science*, 7(1), 56.
- Aarons, G. A., & Palinkas, L. (2007). Implementation of evidence-based practice in child welfare: Service provider perspectives. *Administration and Policy in Mental Health Services Research*, 34(4), 411-419.
- Aarons, G. A., & Sawitzky, A. C. (2006a). Organisational climate partially mediates the effect of culture on work attitudes and staff turnover in mental health services. *Administration and Policy in Mental Health and Mental Health Services Research*, 33, 289-301.
- Aarons, G. A., & Sawitzky, A. C. (2006b). Organisational culture and climate and mental health provider attitudes toward evidence-based practice. *Psychological Services*, 3, 61-72.
- Allen, C. K. (1982). Independence through activity: The practice of occupational therapy (psychiatry). *American Journal of Occupational Therapy*, 36(11), 731-739.
- Allen, C. K. (1985). *Occupational therapy for psychiatric diseases: Measurement and management of cognitive disabilities*. Little Brown & Company.
- Andersen, C., Kolmos, A., Andersen, K., Sippel, V., & Stenager, E. (2017). Applying sensory modulation to mental health inpatient care to reduce seclusion and restraint: a case control study. *Nordic journal of psychiatry*, 71(7), 525-528.
- Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual review of psychology*, 53.
- Arthur, D. H., & Blitz, C. (2000). Bridging the gap between science and practice in drug abuse prevention through needs assessment and strategic community planning. *Journal of Community Psychology*, 28(3), 241-255.
- Ayres, A. J. (1968). *Effect of sensorimotor activity on perception and learning in the neurologically handicapped child*. Children's Bureau, Department of Health, Education, and Welfare.
- Ayres, A. J. (1979). *Lernstörungen. Sensorisch-integrative Dysfunktionen* [Learning disorders: Sensory-integrative dysfunctions]. Berlin: Springer.

- Azeem, M. W., Aujla, A., Rammerth, M., Binsfeld, G., & Jones, R. B. (2011). Effectiveness of six core strategies based on trauma informed care in reducing seclusions and restraints at a child and adolescent psychiatric hospital. *Journal of Child and Adolescent Psychiatric Nursing, 24*(1), 11-15.
- Azuela, G., & Robertson, L. (2013). *An investigation of a sensory modulation workshop: A pre-post survey design*. Paper presented at the New Zealand Association of Occupational Therapists (NZAOT) Clinical Workshops 2013: Reflection on Practice. Masterton, New Zealand.
- Azuela, G., & Robertson, L. (2016). The effectiveness of a sensory modulation workshop on health professional learning. *The Journal of Mental Health Training, Education and Practice, 11*(5), 317-331. doi:10.1108/JMHTEP-08-2015-0037
- Barton, S. A., Johnson, M. R., & Price, L. V. (2009). Achieving restraint-free on an inpatient behavioural health unit. *Journal of Psychosocial Nursing and Mental Health Services, 47*(1), 34-40.
- Benbasat, I., Goldstein, D. K., & Mead, M. (1987). The case research strategy in studies of information systems. *MIS quarterly, 369-386*.
- Blase, K. A., Fixsen, D. L., Naoom, S. F., & Wallace, F. (2005). *Operationalizing implementation: Strategies and methods*. Retrieved from Tampa, FL:
- Block, P. (1993). *Stewardship: Choosing service over self-interest*. San Francisco, CA: Berrett-Koehler.
- Bluebird, G. (2005). Comfort rooms: Reducing the need for seclusion and restraint. *Residential Group Care Quarterly: Child Welfare League of America, 4*(5), 5-6.
- Bonner, G., Lowe, T., Rawcliffe, D., & Wellman, N. (2002). Trauma for all: A pilot study of the subjective experience of physical restraint for mental health inpatients and staff in the UK. *Journal of Psychiatric and Mental Health Nursing, 9*(4), 465-473. doi:10.1046/j.1365-2850.2002.00504.x
- Boynton, P. M., & Greenhalgh, T. (2004). Selecting, designing, and developing your questionnaire. *Bmj, 328*(7451), 1312-1315.
- Boynton, P.M. & Greenhalgh, T. (2004). Selecting, designing, and developing your questionnaire, *British Medical journal, 328*, 1312-1315.

- Björkdahl, A., Perseus, K.-I., Samuelsson, M., & Lindberg, M. H. (2016). Sensory rooms in psychiatric inpatient care: Staff experiences. *International Journal of Mental Health Nursing*, 25(5), 472-479. doi: 10.1111/inm.12205
- Borckardt, J., Madan, A., Grubaugh, A., Danielson, C., Pelic, C., Hardesty, S., ... Frueh, B. (2011). Systematic investigation of initiatives to reduce seclusion and restraint in a state psychiatric hospital. *Psychiatric Services*, 62(5), 477-483.
- Bowers, L., Stewart, D., Papadopoulos, C., Dack, C., Ross, J., Khanom, H., & Jeffrey, D. (2011). *Inpatient violence and aggression: A literature review – report from the Conflict and Containment Reduction Research Programme*. London, UK: Institute of Psychiatry, Kings College London.
- Brehm, J. and W. Rahn (1997). Individual-level evidence for the causes and consequences of social capital, *American Journal of Political Science*, 41, 999-1023.
- Brunton, W. (2011). *Mental health services*. Te Ara - the Encyclopedia of New Zealand. Retrieved from <http://www.TeAra.govt.nz/en/mental-health-services>
- Bryson, J. M. (1988). A strategic planning process for public and non-profit organizations. *Long range planning*, 21(1), 73-81.
- Buckle, J. (2007). Literature review: Should nursing take aromatherapy more seriously? *British Journal of Nursing*, 16(2), 116-120.
- Bullock, R. (1983). Participation and pay. *Group Organisational Studies*, 8, 127-136.
- Caldwell, B., Albert, C., Azeem, M. W., Beck, S., Cocoros, D., Cocoros, T., ... & Reddy, B. (2014). Successful seclusion and restraint prevention efforts in child and adolescent programs. *Journal of psychosocial nursing and mental health services*, 52(11), 30-38.
- Campbell, D. T. (1966). 1966 Experimental and quasi-experimental designs for research. *Experimental and Quasi-experimental Designs for Research*, 1-79.
- Campbell, D. T. (1975). III. "Degrees of freedom" and the case study. *Comparative political studies*, 8(2), 178-193.
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological bulletin*, 56(2), 81.
- Carling, P. (1995). *Return to community: Building support systems for people with psychiatric disabilities*. New York, NY: Guilford Press.
- Carpenter, J., Milne, D., Lombardo, C., & Dickinson, C. (2007). Process and

- outcomes of training in psychosocial interventions in mental health: A stepwise approach. *Journal of Mental Health*, 16(4), 505-520.
- Chalmers, A., Harrison, S., Mollison, K., Molloy, N., & Gray, K. (2012). Establishing sensory-based approaches in mental health inpatient care: a multidisciplinary approach. *Australasian Psychiatry*, 20(1), 35–39.
<https://doi.org/10.1177/1039856211430146>
- Champagne, T. (2003). *Sensory modulation and environment: Essential elements of occupation*. Southampton, MA: Champagne Conferences & Consultations.
- Champagne, T. (2006). Creating sensory rooms: Environmental enhancements for acute inpatient mental health settings. *Mental Health Special Health Interest Section Quarterly*, 29, 1-4.
- Champagne, T. (2008). *Sensory modulation & environment: Essential elements of occupation* (3rd ed.). Southampton, MA: Champagne Conferences & Consultation.
- Champagne, T., & Kroomar, J. (2012). Evaluating sensory processing in mental health occupational therapy practice. *OT Practice*, 17(5), 1-CE.
doi:10.5014/ajot.62.6.625
- Champagne, T., & Tewfik, D. (2010). Trauma, mental health care & occupational therapy practice. In M. Scheinholtz (Ed.), *Occupational therapy in mental health: Considerations for advanced practice* (pp. 215-230). Bethesda, MA: American Occupational Therapy Association.
- Champagne, T., & Sayer, E. (2003). The effects of the use of the sensory room in psychiatry. *Copyright by Tina Champagne*.
- Champagne, T., & Stromberg, N. (2004). Sensory approaches in inpatient psychiatric settings: Innovative alternatives to seclusion and restraint. *Journal of Psychosocial Nursing*, 42, 35-44.
- Champagne, T. (2011). The influence of posttraumatic stress disorder, depression, and sensory processing patterns on occupational engagement: A case study. *Work*, 38(1), 67-75.
- Champagne, T., & Tewfik, D. (2010). Trauma, mental health care & occupational therapy practice. *Occupational therapy in mental health: Considerations for advanced practice*, 215-230.
- Chaplin, R., & Peters, S. (2003). Executives have taken over the asylum: The fate of 71 psychiatric hospitals. *Psychiatric Bulletin*, 27, 227-229.

- Chen, C. P. (2001). On exploring meanings: Combining humanistic and career psychology theories in counselling. *Counselling Psychology Quarterly*, 14(4), 317-331.
- Chen, S. P., Krupa, T., Lysaght, R., McCay, E., & Piat, M. (2013). The development of recovery competencies for in-patient mental health providers working with people with serious mental illness. *Administration and Policy in Mental Health and Mental Health Services Research*, 40(2), 96-116. doi: [10.1007/s10488-011-0380-x](https://doi.org/10.1007/s10488-011-0380-x)
- Cheyne, C., O'Brien, M., & Belgrave, M. (2005). Theory: Social policy, the individual and the state. *Social policy in Aotearoa New Zealand; A critical introduction*, 2, 65-92.
- Clarke, A. M., O'Sullivan, M., & Barry, M. M. (2010). Context matters in programme implementation. *Health Education*, 110(4), 273-293.
doi:10.1108/09654281011052637
- Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education* (6th ed.). London, UK: Routledge.
- Collins, P. Y., Insel, T. R., Chockalingam A., Daar A., & Maddox, Y. T. (2013). Grand challenges in global mental health: Integration in research, policy, and practice. *PLoS Med*, 10(4), e1001434. <https://doi.org/10.1371/journal.pmed.1001434>
- Colton, D. (2004). *Checklist for assessing your organisation's readiness for reducing seclusion and restraint*. Commonwealth Center for Children and Adolescent. Retrieved from <http://www.livesinthebalance.org/sites/default/files/S%26R%20Checklist%20-%202010.pdf>
- Costa, D.M., Mora, J., Solomon, D., Sabino, M., & Call, K. (2006). Snoezelen and sensory based treatment for adults with psychiatric disorders. *OT Practice*, 11(4), 19-23.
- Creswell, J. W. (2009). *Research design: Qualitative and mixed methods approaches*. London, UK: Sage.
- Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five traditions* (2nd ed.). Thousand Oaks, CA: Sage.
- Creswell, J. W., & Clark, P. VL (2011). *Designing and conducting mixed methods research*, 2.
- Crotty, M. (1998). *The foundations of social research*. London, UK: Sage.

- Cusack, K. J., Frueh, B. C., Hiers, T. G., Keane, T. M., & Mueser, K. T. (2003). *The impact of trauma and posttraumatic stress disorder upon American society*. Report to the President's New Freedom Commission on Mental Health. Unpublished subcommittee report, Washington, DC, WA.
- Cummings, K. S., Grandfield, S. A., & Coldwell, C. M. (2010). Caring with comfort rooms: Reducing seclusion and restraint use in psychiatric facilities. *Journal of Psychosocial Nursing and Mental Health Services*, 48(6), 26-30.
- Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R. Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science. *Implementation Science*, 4, 50. doi: 10.1186/1748-5908-4-50.
- Davis, D. A., & Davis, N. (2009). Educational interventions. In S. Straus, J. Tetroe, & I. D. Graham (Eds.), *Knowledge translation in health care: Moving from evidence to practice* (pp. 113-123). Oxford, UK: Wiley-Blackwell.
- De Bellis, M. D., Keshavan, M. S., Clark, D. B., Casey, B. J., Giedd, J. N., Boring, A. M., ... & Ryan, N. D. (1999). Developmental traumatology part II: brain development*. *Biological psychiatry*, 45(10), 1271-1284.
- Denzin, N. K., & Lincoln, Y. S. (2008). *Strategies of qualitative inquiry* (Vol. 2). Sage
- Denzin, N. K., & Lincoln, Y. S. (2005a). Introduction: The discipline and practice of qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (3rd ed., pp. 1-32). Thousand Oaks, CA: Sage.
- Denzin, N. K., & Lincoln, Y. S. (2005b). *Handbook of qualitative research* (3rd ed.). Thousand Oaks, CA: Sage.
- Department of Internal Affairs. (2007). *Te Aiotanga: Report of the confidential forum for former in-patients of psychiatric hospitals*. Wellington, New Zealand: Department of Internal Affairs.
- DHB Seclusion Policy. (2015). Seclusion policy. p. 1
- Dewey, J. (1933). *How we think*. New York, NY: Heath Books.
- Duff, E., Redhead A., Paxton, R., Icton, J., & Rochester, J. (2006). Challenging behaviour in mental health services: Combining psychological perspectives. *Journal of Mental Health*, 15(4), 475-490. doi: 10.1080/09638230600801496
- Dul, J., & Hak, T. (2008). *Case study research methodology in business research*. Oxford, UK: Butterworth-Heinemann.
- Dunn, W. (1997). The impact of sensory processing abilities on the daily lives of young

- children and their families: A conceptual model. *Infants and Young Children*, 9(4), 23-35.
- Dunn, W. (2001). The sensations of everyday life: empirical, theoretical, and pragmatic considerations. *The American Journal of Occupational Therapy*, 55(6), 608-620, doi:10.5014/ajot.55.6.608
- Dunst, C. J., Trivette, C. M., McInerney, M., Holland-Coviello, R., Masiello, T., Helsel, F., & Robyak, A. (2008). Measuring training and practice fidelity in capacity-building scaling-up initiatives. *CELLpapers*, 3(1), 1-11. Retrieved from http://www.earlyliteracylearning.org/cellpapers/cellpapers_v3_n1.pdf
- Edmondson, A. C., Bohmer, R. M., & Pisana, G. P. (2001). Disrupted routines: Team learning and new technology implementation in hospitals. *Administrative Science Quarterly*, 46, 685-716.
- Eisenhardt, K. (1989). Building theories from case study research. *The Academy of Management Review*, 14, 532-550. Retrieved from <http://www.jstor.org/stable/258557>
- Eisenhardt, K., & Graebner M. (2007). Theory building from cases: Opportunities and challenges. *The Academy of Management Review*, 50, 25-32. doi:10.5465/AMJ.2007.24160888
- El-Badri, S., & Mellsop, G. (2008). Patient and staff perspectives on the use of seclusion. *Australasian Psychiatry*, 16(4), 248-252.
- Elnaga, A., & Imran, A. (2013). The effect of training on employee performance. *European Journal of Business and Management*, 5(4), 137-147.
- Feldstein, A. C., & Glasgow, R. E. (2008). A practical, robust implementation and sustainability model (PRISM) for integrating research findings into practice. *The Joint Commission Journal on Quality and Patient Safety*, 34(4), 228-243.
- Fisher Box, J. (1987). Guinness, gosset, fisher, and small samples. *Statistical Science* 2(1), 45-52. doi:10.1214/ss/1177013437
- Fitzgerald, L. E., Wood, F. M., & Hawkins, C. (2002). Interlocking interactions: The diffusion of innovations in health care. *Human Relations*, 55, 429-1449.
- Folger, R., & Konovsky, M. (1989). Effects of procedure on distributive justice on the actions to pay raise decisions. *Academy of Management Journal*, 32, 115-130.
- Forlag, H. R. (2012). *Qualitative research methods in organisations studies*. Copenhagen, Denmark: Danish Ministry of Education.

- Fourie, W. J., McDonald, S., Connor, J., & Bartlett, S. (2005). The role of the registered nurse in an acute mental health inpatient setting in New Zealand: Perceptions versus reality. *International Journal of Mental Health Nursing, 14*(2), 134-141.
- Gaskin, C. J., Elsom, S. J., & Happell, B. (2007). Interventions for reducing the use of seclusion in psychiatric facilities: Review of the literature. *British Journal of Psychiatry, 191*, 298-303.
- Given, L.M. (Ed.). (2008). *The Sage encyclopaedia of qualitative research method: Volumes 1 & 2*. Newbury Park, CA: Sage Publications.
- Glisson, C. A. (2002). The organisational context of children's mental health services. *Clinical Child Family Psychology Review, 5*, 233-253.
- Glisson, C., & Durick, M. (1988). Predictors of job satisfaction and organizational commitment in human service organizations. *Administrative science quarterly, 61*-81.
- Glisson, C., Dukes, D., & Green, P. (2006). The effects of the ARC organizational intervention on caseworker turnover, climate, and culture in children's service systems. *Child Abuse and Neglect, 30*(8), 855-880.
- Glisson, C., & James, L. R. (2002). The cross-level effects of culture and climate in human service teams. *Journal of Organisational Behaviour, 23*, 767-794.
- Glisson, C., Schoenwald, S. K., Kelleher, K., Landsverk, J., Hoagwood, K. E., Mayberg, S., ... & Research Network on Youth Mental Health. (2008). Therapist turnover and new program sustainability in mental health clinics as a function of organizational culture, climate, and service structure. *Administration and Policy in Mental Health and Mental Health Services Research, 35*(1-2), 124-133.
- Global Drug Survey. (2018). *GDS key findings report 2018*. Retrieved from <http://www.globaldrugsurvey.com/gds-2018/>
- Goldner, E. M., Jeffries, V., Bilsker, D., Jenkins, E., Meneer, M., & Petermann, L. (2011). Knowledge translation in mental health: A scoping review. *Healthcare Policy, 7*, 83-98.
- Gouze, K. R., Hopkins, J., LeBailly, S. A., & Lavigne, J. V. (2009). Re-examining the epidemiology of sensory regulation dysfunction and comorbid psychopathology. *Journal of Abnormal Child Psychology, 37*(8), 1077-1087.
- Gravetter, F.J., Wallnau, L.B., 1992. *Statistics for the Behavioural Sciences. A First Course for Students of Psychology and Education*. 3rd edition, West Publishing Company, St. Paul, MN.

- Greenhalgh, T. (2005). *Diffusion of innovations in health service organizations: A systematic review*. Malden, MA: Blackwell.
- Green, S. A., & Ben-Sasson, A. (2010). Anxiety disorders and sensory over-responsivity in children with autism spectrum disorders: is there a causal relationship?. *Journal of autism and developmental disorders*, 40(12), 1495-1504.
- Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., & Kyriakidou, O. (2004). Diffusion of innovations in service organizations: Systematic review and recommendations. *Milbank Quarterly*, 82, 581-629.
- Gross, J. J. (2008). Emotion regulation. *Handbook of emotions*, 3(3), 497-513.
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin, & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105-117). London, UK: Sage.
- Guba, E. G., & Lincoln, Y. S. (2005). Paradigmatic controversies, contradictions, and emerging influences. In N. K. Denzin, & Y. S. Lincoln (Eds), *The Sage handbook of qualitative research* (3rd ed., pp. 191-216). London, UK: Sage.
- Gustafson, D. H., Sainfort, F., Eichler, M., Adams, L., Bisognano, M., & Steudel, H. (2003). Developing and testing a model to predict outcomes of organisational change. *Health Services Research*, 38, 751-776.
- Habib, M., Labruna, V., & Newman, J. (2013). Complex histories and complex presentations: Implementation of a manually-guided group treatment for traumatized adolescents. *Journal of Family Violence*, 27(8), 717-728. doi:10.1007/s10896-013-9532-y.
- Hallebone, E., & Priest, J. (2009). *Business and management research: Paradigms and practices*. New York, NY: Palgrave Macmillan.
- Hammer, J. H., Springer, J., Beck, N. C., Menditto, A. & Coleman, J. (2011). The relationship between seclusion and restraint use and childhood abuse among psychiatric inpatients. *Journal of Interpersonal Violence*, 26, 567-579.
- Handy, C. (1995). *The age of paradox*. Boston, MA: Harvard Business School Press.
- Harris, F. M., Maxwell, M., O'Connor, R. C., Coyne, J., Arensman, E., Szekeley, A., ... Hegerl, U. (2013). Developing social capital in implementing a complex intervention: A process evaluation of the early implementation of a suicide

- prevention intervention in four European countries. *BioMed Central Public Health*, 13, 158.
- Heard, C., Tetzlaff, A., Fryer, P., DeHoog, L., Johnson, A., Wyburd, J., & Holmes, J. (2012). Mechanical chair massage and stress reduction in the seriously mentally ill consumer: A preliminary investigation. *Occupational Therapy in Mental Health*, 28(2), 111-117. doi:10.1080/0164212x.2012.679912
- Hedlund Lindberg, M., Samuelsson, M., Perseius, K. I., & Björkdahl, A. (2019). The experiences of patients in using sensory rooms in psychiatric inpatient care. *International journal of mental health nursing*.
- Herschell, A. D., Kolko, D. J., Baumann, B. L., & Davis, A. C. (2010). The role of therapist training in implementation of psychosocial treatments; A review and critique with recommendations. *Clinical Psychology Review*, 30, 448-466.
- Hofstede, G. (1998). Attitudes, values and organisational culture: Disentangling the concepts. *Organisation Studies*, 19, 477-492.
- Hubble, M., Duncan, B., & Miller, S. (1999). *The heart and soul of change: What works in therapy*. Washington D.C.: American Psychological Association.
- Hughes, D. (2004). An attachment-based treatment of maltreated children and young people. *Attachment & Human Development*, 6, 263-278.
- IBM®. (2015). SPSS® Statistics.
- Institute of Medicine. (2006). *Improving quality of health care for mental and substance use conditions*. Washington, DC: National Academy Press.
- Ito, Y., Teicher, M. H., Glod, C. A., & Ackerman, E. (1998). Preliminary evidence for aberrant cortical development in abused children: A quantitative EEG study. *Journal of Neuropsychiatry*, 10(3), 298-307.
- Jackson, S., & Stevenson, C. (2000). What do people need psychiatric and mental health nurses for? *Journal of Advanced Nursing*, 31, 378-388.
- James, L. A., & James, L. R. (1989). Integrating work environment perceptions: Explorations into the measurement of meaning. *Journal of Applied Psychology*, 75, 306-309.
- Jespersen, J. (2004). *Introduction to Macroeconomic Theory* (2nd edition). Deaf / Jurist and the Economics Association.
- Johnson, J., Hall, L., Berzins, K., Baker, J., Melling, K., & Thompson, C. (2017). Mental healthcare staff well-being and burnout: A narrative review of trends, causes, implications, and recommendations for future interventions.

- International Journal of Mental Health Nursing*, 27(1), 20-32. Retrieved from <https://doi.org/10.1111/inm.12416>
- Johnston, K. (2016a, June 8). Locked in isolation: Lack of clarity around patient *seclusion*. *The New Zealand Herald*. Retrieved from http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11652421
- Johnston, K. (2016b, June 7). Autistic man locked in isolation for five years: 'He's had everything stripped from him'. *The New Zealand Herald*. Retrieved from http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11648771
- Johnston, K. (2016c, June 7). Autistic man locked in isolation for five years: 'You wouldn't do it to a dog'. *The New Zealand Herald*. Retrieved from http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11650165
- Johnston, K. (2016d, June 7). Ashley's treatment is against human rights. *The New Zealand Herald*. Retrieved from http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11651932
- Joseph, A. E., & Kearns, R. A. (1996). Deinstitutionalisation meets restructuring: The closure of a psychiatric hospital in New Zealand. *Health and Place*, 2, 79-85.
- Justesen, L. N., & Mik-Meyer, N. (2012). *Qualitative research methods in organisation studies*. Gyldendal.
- Kaplan, B., & Maxwell, J. A. (1994). Qualitative research methods for evaluating computer information systems. In J. G. Anderson, C. E. Aydin, & S. J. Jay (Eds.), *Evaluating health care information systems, methods and applications* (pp. 67-94). Thousand Oaks, CA: Sage.
- Kaplan, H. I., & Sadock, B. J. (1991). *Comprehensive glossary of psychiatry and psychology*. Williams & Wilkins.
- Kates, N., Mazowita, G., Lemire, F., Jayabarathan, A., Bland, R., Selby, P., ... & Audet, D. (2011). The evolution of collaborative mental health care in Canada: A shared vision for the future. *Canadian Journal of Psychiatry*, 56(5), 1-10.
- Kearns, R. A., & Joseph, A. E. (2000). Contracting opportunities: Interpreting post-asylum geographies of mental health care in Auckland, New Zealand. *Health and Place*, 6, 159-169.
- Kellam, S. G., & Langevin, D. (2003). A framework for understanding "evidence" in prevention research and programs. *Prevention Science*, 4, 137-153.
- Kelsey, J. (1997). *The New Zealand experiment: A world model for structural*

- adjustment*. Auckland, New Zealand: Auckland University Press/Bridget Williams Books.
- Kirkpatrick, D. (1996). Great ideas revisited. *Training & Development*, 50(1), 54-60.
- Kirkpatrick, D. (2006). Seven keys to unlock the four levels of evaluation. *Performance Improvement*, 45(7), 5-8.
- Klein, K. J., Conn, A. B., & Sorra, J. S. (2001). Implementing computerised technology: An organisational analysis. *Journal of Applied Psychology*, 86, 811-824.
- Klein, K. J., Conn, A. B., Smith, D. B., & Sorra, J. S. (2001). Is everyone in agreement? An exploration of within-group agreement in employee perceptions of the work environment. *Journal of Applied Psychology*, 86, 3-16.
- Knight, M., Adkison, L., & Kovach, J. S. (2010). A comparison of multisensory and traditional interventions on inpatient psychiatric and geriatric neuropsychiatric units. *Journal of Psychosocial Nursing*, 48(1), 24-31.
- Kontio, R., Joffe, G., Putkonen, H., Kuosmanen, L., Hane, K., Holi, M. & Valimaki, M. (2012). Seclusion and restraint in psychiatry: Patients' experiences and practical suggestions on how to improve practices and use alternatives. *Perspectives in Psychiatric Care*, 48, 16-24.
- Krauss, S. E. (2005). Research paradigms and meaning making: A primer. *The Qualitative Report*, 10(4), 758-770. Retrieved from <https://nsuworks.nova.edu/tqr/vol10/iss4/7>
- Laerd Statistics. (2015a). *Wilcoxon signed-rank test using SPSS Statistics. Statistical tutorials and software guides*. Retrieved from <https://statistics.laerd.com/>
- Laerd Statistics. (2015b). *Measures of central tendency. Statistical tutorials and software guides*. Retrieved from <https://statistics.laerd.com/>
- Laerd Statistics. (2015c). *Types of variables. Statistical tutorials and software guides*. Retrieved from <https://statistics.laerd.com/>
- Landsverk, J., Brown, C. H., Rolls Reutz, J., Palinkas, L. A., & Horwitz, S. M. (2011). Design elements in implementation research: A structured review of child welfare and child mental health studies. *Administration and Policy in Mental Health*, 38, 54-63. doi:10.1007/s10488-010-0315-y
- Lauer, R. H. (1991). *Perspectives on social change*. Boston: Allyn & Bacon.

- Le Bel, J., Champagne, T., Stromberg, N. & Coyle, R. (2010). Integrating sensory and trauma-informed interventions: A Massachusetts state initiative, part 1. *Mental Health Special Interest Section Quarterly*, 33(1), 1-4.
- Lee, A. S. (1989). A scientific methodology for MIS case studies. *MIS Quarterly*, 31, 33-52.
- Lee, S., Cox, A., Whitecross, F., Williams, P., & Hollander, Y. (2010). Sensory assessment and therapy to help reduce seclusion use with service users needing psychiatric intensive care. *Journal of Psychiatric Intensive Care*, 6(2), 83-90. doi: 10.1017/S1742646410000014
- Le Deist, F. D., & Winterton, J. (2005). What is competence?. *Human resource development international*, 8(1), 27-46.
- Lin, H. F. (2007). Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions. *Journal of information science*, 33(2), 135-149.
- Lincoln, Y. S. (1985). *Organisational theory and inquiry: The paradigm revolution*. Newbury Park, CA: Sage Publications.
- Lin, S., Yang, P., Lai, C. Su, Y., Yeh, Y., Huang, M., & Chen, C. (2011). Mental health implications of music: Insight from neuroscientific and clinical studies. *Harvard Review of Psychiatry*, 19(1), 34-46. doi: 10.3109/10673229.2011.549769
- Linehan, M. (1993). *Skills training manual for treating borderline personality disorder*. New York, NY: Guilford Press.
- Liss, M., Mailloux, J., & Erchull, M. (2008). The relationship between sensory processing sensitivity, alexithymia, autism, depression and anxiety. *Personality and Individual Differences*, 45, 255-259.
- Lloyd, C., King, R., & Machingura, T. (2014). An investigation into the effectiveness of sensory modulation in reducing seclusion within an acute mental health unit. *Advances in Mental Health*, 12(2), 93-100.
- Locke, E. A. (1976). The nature and causes of job satisfaction. *Handbook of industrial and organizational psychology*.
- Lofland, J., & Lofland, L. (1996). *Analysing social settings* (3rd ed.). Belmont, CA: Wadsworth.
- Lord, J. (1994). *Genuine partnerships: Challenges and opportunities*. Keynote address to National Conference on Independent Living, Winnipeg, Manitoba.

- Machingura, T., & Lloyd, C. (2017). A reflection on success factors in implementing sensory modulation in an acute mental health setting. *International Journal of Therapy and Rehabilitation*, 24(1), 35-39.
<https://doi.org/10.12968/ijtr.2017.24.1.35>
- MacGillivray, H. (1996). *A case study of partnership in practice*. Unpublished master's thesis, Wilfrid Laurier University, Waterloo, Ontario, Canada.
- Maguire, T., Young, R., & Martin, T. (2012). Seclusion reduction in a forensic mental health setting. *Journal of Psychiatric and Mental Health Nursing*, 19(2), 97-106.
- Mann-Poll, P. S., Smit, A., Van Doeselaar, M., & Hutschemaekers, G. J. M. (2013). Professionals' attitudes after a seclusion reduction program: anything changed?. *Psychiatric Quarterly*, 84(1), 1-10.
- Martin, T., & Daffern, M. (2006). Clinician perceptions of personal safety and confidence to manage inpatient aggression in a forensic psychiatric setting. *Journal of Psychiatric and Mental Health Nursing*, 13, 90-99.
- Martin, B. A., & Suane, S. N. (2012). Effect of training on sensory room and cart usage. *Occupational Therapy in Mental Health*, 28(2), 118-128.
- Matua Raki. (2010). *Interventions and treatment for problematic use of methamphetamine and other amphetamine-type stimulants*. Wellington, New Zealand: Ministry of Health. Retrieved from <https://www.health.govt.nz/system/files/documents/publications/meth-interventions-treatment-nov2010.pdf>
- Mauss, I. B., Levenson, R. W., McCarter, L., Wilhelm, F. H., & Gross, J. J. (2005). The tie that binds? Coherence among emotion experience, behaviour, and physiology. *Emotion*, 5(2), 175.
- Mayers, P., Keet, N., Winkler, G., & Flisher, A. J. (2010). Mental health service users' perceptions and experiences of sedation, seclusion and restraint. *International Journal of Social Psychiatry*, 56, 60-73.
- Mays, M. & Pope, C. (1995). Rigours and qualitative research, *British Medical Journal*, 311, 109-112.
- Mendel, P., Meredith, L. S., Schoenbaum, M., Sherbourne, C. D., & Wells, K. B. (2008). Interventions in organizational and community context: a framework for building evidence on dissemination and implementation in health services

- research. *Administration and Policy in Mental Health and Mental Health Services Research*, 35(1-2), 21-37.
- Mental Health Commission. (2002). *Review of the continuum of mental health services funded by the District Health Boards in the Auckland region*. Wellington, New Zealand: Author.
- Mental Health Commission. (2004). *Seclusion in New Zealand mental health services*. Wellington, New Zealand: Author.
- Mental Health Commission. (2012). *Blueprint II: How things need to be*. Wellington, New Zealand: Author.
- Mental Health Foundation of New Zealand. (2986). *The future of mental health services in New Zealand: proceedings of the mental health foundation of New Zealand conference*, Wellington, Auckland: Mental Health Foundation of New Zealand.
- Meredith, P., Yeates, H., Greaves, A., Taylor, M., Slattery, M., Charters, M., & Hill, M. (2016). Preparing mental health professionals for new directions in mental health practice: Evaluating the sensory approaches e- learning training package. *International Journal of Mental Health Nursing*, 27(1), 106-111. doi: 10.1111/inm.12299
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded source book* (2nd ed.). Thousand Oaks, CA: Sage.
- Miller, L. J., Lane, S., Cermak, S., Osten, E., & Anzalone, M. (2005). Section I— Primary diagnosis: Axis I: Regulatory- Sensory Processing Disorders. In S. I. Greenspan & S. Wieder (Eds.), *Diagnostic manual for infancy and early childhood: Mental health, developmental, regulatory-sensory processing and language disorders and learning challenges (ICDL–DMIC)* (pp. 73–112). Bethesda, MD: Interdisciplinary Council on Developmental and Learning Disabilities.
- Miller, L., Reisman, J., McIntosh, D., & Simon, J. (2001). An ecological model of sensory modulation. In S. Smith Roley, E. Blanche, & R. Scaaf (Eds.), *Understanding the nature of sensory integration with diverse populations* (pp. 57-58). San Antonio, TX: Therapy Skill Builders.
- Ministry of Health. (2002). *Guideline for District Health Boards: Mental health quality monitoring and audit*. Wellington, New Zealand: Author.
- Ministry of Health. (2006). *Office of the Director of Mental Health: Annual report 2006*. Wellington, New Zealand: Author.

- Ministry of Health. (2011). *Office of the Director of Mental Health: Annual report 2010*. Wellington, New Zealand: Author.
- Ministry of Health. (2012a). *Guidelines to the mental health (Compulsory Assessment and Treatment) Act 1992*. Wellington, New Zealand: Author.
- Ministry of Health. (2012b). *Office of the Director of Mental Health: Annual report 2012*. Wellington, New Zealand: Author.
- Ministry of Health. (2012c). *Rising to the challenge: The mental health and addiction service development plan 2012–2017*. Wellington, New Zealand: Author.
- Ministry of Health. (2013). *Mental health and addiction: Service use 2009/10*. Wellington, New Zealand: Author.
- Ministry of Health. (2016a). *Mental health nursing and its future: A discussion framework*. Wellington, New Zealand: Author.
- Ministry of Health. (2016b). *Office of the Director of Mental Health Annual Report 2015*. Wellington, New Zealand: Author.
- Ministry of Health. (2017). *Office of the Director of Mental Health Annual Report 2016*. Wellington, New Zealand: Author.
- Mintzberg, H. (1973). *The rise and fall of strategic planning*. New York, NY: The Free Press.
- Mintzberg, H. (1994). The fall and rise of strategic planning. *Harvard business review*, 72(1), 107-114.
- Moore, K., & Henry, A. (2002). Treatment of adult psychiatric patients using the Wilbarger protocol. *Occupational Therapy in Mental Health*, 18(1), 43-63.
- Moses, D. J., Reed, B. G., Mazelis, R., & D'Ambrosio, B. (2003). *Creating trauma services for women with co-occurring disorders: Experiences from the SAMHSA women with alcohol, drug abuse and mental health disorders who have histories of violence study*. Delmar, NY: Policy Research Associates.
- Mowday, R. T., Porter, L. W., & Steers, R. (1982). Organizational linkage: the psychology of commitment, absenteeism and turnover. *Organizational and Occupational Psychology*, 10(3), 2008.
- Mueser, K. T., Goodman, L. B., Trumbetta, S. L., Rosenberg, S. D., Osher, C., Vidaver, R., ... Foy, D.W. (1998). Trauma and posttraumatic stress disorder in severe mental illness. *Journal of Consulting and Clinical Psychology*, 66, 493-499.
- NASMHPD – National Association of State Mental Health Program Directors. (2006).

- Training curriculum for the direction of seclusion and restraint.* Alexandria, Virginia: National Association of State Mental Health Program Directors.
- Neal, J. A., Edelmann, R. J., & Glachan, M. (2002). Behavioural inhibition and symptoms of anxiety and depression: Is there a specific relationship with social phobia?. *British Journal of Clinical Psychology*, *41*(4), 361-374.
- Nelson, M. E., Rejeski, W. J., Blair, S. N., Duncan, P. W., Judge, J. O., King, A. C., ... & Castaneda-Sceppa, C. (2007). Physical activity and public health in older adults: recommendation from the American College of Sports Medicine and the American Heart Association. *Circulation*, *116*(9), 1094.
- Nelson, T. D., & Steele, R. F. (2007). Predictors of practitioner self-reported use of evidence-based practices: Practitioner training, clinical setting, and attitudes toward research. *Administration and Policy in Mental Health and Mental Health Services Research*, *34*, 319-330.
- Neuman, W. L. (2011). *Social research methods: Qualitative and quantitative approaches* (7th ed.). Boston, MA: Pearson/Allyn and Bacon.
- New Zealand Crimes of Torture Act. (1989). *Crimes of Torture Act*. Wellington. New Zealand: Author
- New Zealand Drug Foundation. (2017). *Clearing the air on 'synthetic cannabis': A primer*. Retrieved from <https://www.drugfoundation.org.nz/news-media-and-events/synthetic-cannabis-primer/>
- Novak, T., Scanlan, J., McCaul, D., MacDonald, N., & Clarke, T. (2012). Pilot study of a sensory room in an acute inpatient psychiatric unit. *Australasian Psychiatry*, *20*(5), 401-406.
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, *16*(1), 1-13. <https://doi.org/10.1177/1609406917733847>
- O'Hagan, M. (2006). *The acute crisis, towards a recovery plan for acute mental health services in New Zealand*. Wellington, New Zealand: Mental Health Commission.
- O'Hagan, M., Divis, M., & Long, J. (2008). *Best practice in the reduction and elimination of seclusion and restraint: Time for change*. Auckland, New Zealand: Te Pou Te Whakaaro Nui: the National Centre of Mental Health Research, Information and Workforce Development.

- Palinkas, L. A., Aarons, G. A., Horwitz, S., Chamberlain, P., Hurlburt, M., & Landsverk, J. (2011). Mixed method designs in implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, 38(1), 44-53.
- Papadopoulos, C., Ross, J., Stewart, D., Dack, C., James, K., & Bowers, L. (2012). The antecedents of violence and aggression within psychiatric in-patient settings. *Acta Psychiatrica Scandinavica*, 125, 425-439.
- Parahoo, K. (2006). *Nursing research. Principles, process and issues* (2nd ed.). Basingstoke, UK: Palgrave MacMillan.
- Peil, K. T. (2014). Emotion: The self-regulatory sense. *Global Advances in Health and Medicine*, 3(2), 80-108, doi:10.7453/gahmj.2013.058
- Perkins E., Prosser H., Riley D., & Whittington R. (2011). Physical restraint in a therapeutic setting: A necessary evil? *International Journal of Law and Psychiatry*, 35(1), 43-49, <https://doi.org/10.1016/j.ijlp.2011.11.008>
- Perry, B. D. (1997, August). *Altered brain development following global neglect in early childhood*. Paper presented at the Society for Neuroscience Annual Meeting, New Orleans, LA.
- Perry, B. D., & Marcellus, J. E. (1997). The impact of abuse and neglect on the developing brain. *Colleagues for Children*, 7, 1-4.
- Persell, S. D., Kaiser, D., Dolan, N. C., Andrews, B., Levi, S., Khandekar, J., ... & Baker, D. W. (2011). Changes in performance after implementation of a multifaceted electronic-health-record-based quality improvement system. *Medical care*, 117-125.
- Porges, S. W. (2001). The polyvagal theory: phylogenetic substrates of a social nervous system. *International Journal of Psychophysiology*, 42(2), 123-146.
- Porges, S. W. (2004). Neuroception: A subconscious system for detecting threats and safety. *Zero to Three (J)*, 24(5), 19-24.
- Porges, S. W. (2009). The polyvagal theory: new insights into adaptive reactions of the autonomic nervous system. *Cleveland Clinic journal of medicine*, 76(2), S86.
- Powell, B. J., McMillen, J. C., Proctor, E. K., Carpenter, C. R., Griffey, R. T., Bunger, A. C., ... York, J. L. (2012). A compilation of strategies for implementing clinical innovations in health and mental health. *Medical Care Research and Review*, 69, 123-157. doi: 10.1177/1077558711430690
- Powell, B. J., Proctor, E. K., & Glass, J. E. (2013). A systematic review of strategies for

- implementing empirically supported mental health interventions. *Research on Social Work Practice*, 24(2), 192-212. doi:10.1177/1049731513505778
- Pratt, J. (2003). A Popperian approach to policy research. In J. Swann & J. Pratt (Eds.), *Educational research in practice: Making sense of methodology* (pp. 11-34). London, UK: Continuum.
- Prescott, L. (2000). Veterans of abuse and daughters of the dark: The politics of naming and risk of transformation in building partnerships for change. *Perspectives in Psychiatric Care*, 34, 95-100.
- Price, O., & Baker, J. (2012). Key components of de-escalation techniques: A thematic synthesis. *International Journal of Mental Health Nursing*, 21, 310-319.
- Proctor, E. K., Landsverk, J., Aarons, G. A., Chambers, D. A., Glisson, C., & Mittman, B. S. (2009). Implementation research in mental health services: An emerging science with conceptual, methodological, and training challenges. *Administration and Policy in Mental Health*, 36, 24-34. doi:10.1007/s10488-008-0197-4
- Pyke, J., & Lowe, J. (1996). Supporting people, not structures: Changes in the provision of housing support. *Psychiatric Rehabilitation Journal*, 19(3), 5.
- Reddon, J. R., Hoang, T., Sehgal, S., & Marjanovic, Z. (2004). Immediate effects of Snoezelen® treatment on adult psychiatric patients and community controls. *Current Psychology*, 23(3), 225-237.
- Riahi S., Dawe I., Stuckey M., & Klassen P. (2016). Implementation of the six core strategies for restraint minimization in a specialized mental health organization. *Journal of Psychosocial Nursing and Mental Health Services*, 54(10), 32-39. doi: 10.3928/02793695-20160920-06
- Richmond, J. S., Berlin, J. S., Fishkind, A. B., Zeller, S. L., Wilson, M. P., Rifai, M. A. & Ng, A. T. (2012). Verbal de-escalation of the agitated patient: Consensus statement of the American Association for Emergency Psychiatry Project BETA De-escalation Workgroup. *Western Journal of Emergency Medicine*, 13, 17-25
- Roberts, D., Crompton, D., Milligan, E., & Groves, A. (2009). Reflections on the use of seclusion in an acute mental health facility. *Journal of Psychosocial Nursing and Mental Health Services*, 47, 25-31.
- Roberson, P. K., Shema, S. J., Mundfrom, D. J., & Holmes, T. M. (1995). Analysis of

- paired Likert data: How to evaluate change and preference questions. *Family Medicine*, 27(10), 671-675.
- Rosenberg, S. D., Mueser, K. T., Friedman, M. J., Gorman, P. G., Drake, R. E., Vidaver, R.M., ... Jankowski, M.K. (2001). Developing effective treatments for posttraumatic disorders among people with severe mental illness. *Psychiatric Services*, 52, 1453-1461.
- Rousseau, D. M. (1990). Assessing organisational culture: The case for multiple methods. In B. Schneider (Ed.), *Organisational climate and culture* (pp. 153-192). San Francisco, CA: Jossey Bass.
- Sarri, R., & Sarri, C. (1992). Organisational and community change through participatory action research. *Administration and Social Work*, 16, 99-122.
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students*. London, UK: Pearson Education.
- Scanlan, J. N., & Novak, T. (2015). Sensory approaches in mental health: A scoping review. *Australian Occupational Therapy Journal*, 62(5), 277-285, doi: <https://doi.org/10.1111/1440-1630.12224>
- Schalast, N., Redies, M., Collins, M., Stacey, J., & Howells, K. (2008). EssenCES, a short questionnaire for assessing the social climate of forensic psychiatric wards. *Criminal Behaviour and Mental Health: CBMH*, 18(1), 49-58. doi:10.1002/cbm.677
- Scherer, K. R. (1984). On the nature and function of emotion: A component process approach. *Approaches to emotion*, 2293, 317.
- Schore, A. (2001). The effects of early relational trauma on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal*, 22, 201-269.
- Senge, P. (1990). *The fifth discipline: The art and the practice of the learning organisation*. New York, NY: Doubleday.
- Shalev, S. (2017). *Thinking outside the box? A review of seclusion and restraint practices in New Zealand*. Wellington, New Zealand: Human Rights Commission.
- Shortell, S. M. (2004). Increasing value: A research agenda for addressing the managerial and organisational challenges facing health care delivery in the United States. *Medical Care Research Review*, 61, 12-30.
- Simon, R., & Tardiff, K. (2008). *Violence assessment and management*. Arlington,

VA: American Psychiatric Publishing.

- Simpson, D. D., & Dansereau, D. F. (2007). Assessing organisational functioning as a step toward innovation. *National Institute on Drug Abuse (NIDA) Science and Practice Perspectives*, 3, 20-28.
- Sivak, K. (2012). Implementation of comfort rooms to reduce seclusion, restraint use, and acting-out behaviours. *Journal of psychosocial nursing and mental health services*, 50(2), 24-34.
- Smalley, R. (2016, June 7). *Rachel Smalley: Moral shame of mental health unit isolation*. The New Zealand Herald. Retrieved from http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11651893
- Smith, S., & Jones, J. (2014). Use of a sensory room on an intensive care unit. *Journal of Psychosocial Nursing*, 52, 22-30.
- Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, CA: Sage.
- Standards New Zealand. (2007). Health & disability services (Restraint minimisation and safe practice) standards NZS 8134.2.2008. Wellington: Ministry of Health.
- Steele, H., & Steele, M. (2005). Understanding and resolving emotional conflict: The London parent-child project. In K. Grossman, K. Grossman, & E. Waters (Eds.), *Attachment from infancy to adulthood: The major longitudinal studies* (pp. 137-164). New York, NY: Guildford Press.
- Sutton, D., & Nicholson, E. (2011). *Sensory modulation in acute mental health wards: A qualitative study of staff and service users' perspectives*. Auckland, New Zealand: Te Pou o Te Whakaaro Nui.
- Sutton, D, Wilson, M., Van Kessel, K., & Vanderpyl, J. (2013). Optimizing arousal to manage aggression: A pilot study of sensory modulation. *International Journal of Mental Health Nursing*, 22, 500-511. doi: 10.1111/inm.12010
- Tashakkori, A., & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches*. Thousand Oaks, CA: Sage.
- Teicher, M. (2002). Scars that won't heal: The neurobiology of child abuse. *Scientific American*, 286(3), 68-77.
- Te Pou o te Whakaaro Nui. (2008). Survey of seclusion and restraint reduction

- initiatives in New Zealand acute mental health services. Auckland, New Zealand: Author.
- Te Pou o te Whakaaro Nui. (2017). *Developing your workforce: An overview of a systems approach to workforce development*. Auckland, New Zealand: Author.
- Te Pou o te Whakaaro Nui. (2017). *Implementation of sensory modulation within DHB mental health services 2017 stocktake*. Auckland, New Zealand: Author.
- Teal, R., Bergmire, D. M., Johnston, M., & Weiner, B. J. (2012). Implementing community-based provider participation in research: An empirical study. *Implementation Science*, 7, 41.
- Totman, J., Hundt, G. L., Wearn, E., Paul, M., & Johnson, S. (2011). Factors affecting staff morale on inpatient mental health wards in England: A qualitative investigation. *BioMed Central Psychiatry*, 11, 68. Retrieved from <https://doi.org/10.1186/1471-244X-11-68>
- Trivette, C. M., & Dunst, C. J. (2011). Implementation with fidelity: How to get changes in *early childhood classroom practices*. Paper presented at the Global Implementation Conference, Washington, DC.
- Trochim, W. M. (1985). Pattern matching, validity, and conceptualization in program evaluation. *Evaluation Review*, 9(5), 575-604.
- Trochim, W. (1989). Outcome pattern matching and program theory. *Evaluation and Program Planning*, 12, 355-378.
- VanDeusen Lukas, C. V., Holmes, S. K., Cohen, A. B., Restuccia, J., Cramer, I. E., Shwartz, M., & Charns, M. P. (2007). Transformational change in health care systems: An organisational model. *Health Care Management Review*, 32, 309-320.
- Van Doeselaar, M., Slegers, P., & Hutschemaekers, G. (2008). Professionals' attitudes toward reducing restraint: The case of seclusion in the Netherlands. *Psychiatry Q*, 79, 97-109.
- Wahyuni, D. (2012). The research design maze: Understanding paradigms, cases, methods and methodologies. *Journal of Applied Management Accounting Research*, 10(1), 69-80. doi:<http://hdl.handle.net/10536/DRO/DU:30057483>
- Wale, J., Belkin, G., & Moon, R. (2011). Reducing the use of seclusion and restraint in psychiatric emergency and adult inpatient services – improving patient-centred care. *The Permanente Journal*, 15(2), 57-62.

- Walston, S. L., Kimberly, J. R., & Burns, L. R. (2001). Institutional and economic influences on the adoption and extensiveness of managerial innovation in hospitals: The case of reengineering. *Medical Care Research and Review*, 58(2), 194-228.
- Watson, N. M., Wells, T. J., & Cox, C. (1998). Rocking chair therapy for dementia patients: Its effect on physiological well-being and balance. *American Journal of Alzheimer's Disease and Other Dementias*. 13(6), 296-308. doi: 10.1177/153331759801300605
- Weaver, K., & Olson, J. K. (2006). Understanding paradigms used for nursing research. *Journal of Advanced Nursing*, 53, 459-469.
- Weiner, B. J., Savitz, L. A, Bernard, S., & Pucci, L. G. (2004). How do integrated delivery systems adopt and implement clinical information systems? *Health Care Management Review*, 16, 29-51.
- Wheatley, M. (1992). *Leadership and the new science*. San Francisco: Brett-Koehler.
- Whittington, D. M., & McLaughlin, C. (2000). Finding time for patients: An exploration of nurses' time allocation in an acute psychiatric setting. *Journal of Psychiatric and Mental Health Nursing*, 7, 259-268.
- Wilkins, C., Prasad, J., Barnes, H. M., Parker, K., & Asiasiga, L. (2017). *New Zealand arrestee drug use monitoring (nz-adum) 2016 report*. Social and Health Outcomes Research and Evaluation, Massey University: Wellington, New Zealand. Retrieved from: <http://www.police.govt.nz/sites/default/files/publications/nz-adum-report-2016.pdf>
- Williams, L. J., & Hazer, J. T. (1986). Antecedents and consequences of satisfaction and commitment in turnover models: A reanalysis using latent variable structural equation methods. *Journal of applied psychology*, 71(2), 219.
- World Health Organization. (2013). *Mental health action plan 2013–2020*. Retrieved from http://apps.who.int/iris/bitstream/handle/10665/89966/9789241506021_eng.pdf;jsessionid=D02EA2B8EF5097AA49980E37C71111D7?sequence=1
- Wright, T. (2016, October 31). *What's behind New Zealand's mental health funding*

crisis? NewsHub. Retrieved from

<http://www.newshub.co.nz/home/health/2016/11/whats-behind-new-zealands-mental-health-funding-crisis.html>

- Yauch, C., & Steudel, H. (2003). Complimentary use of qualitative and quantitative cultural assessment methods. *Organisational Research Methods*, 6, 465-481.
- Yin, R. (1994). *Case study research: Design and methods* (2nd ed). Thousand Oaks, CA: Sage.
- Yin, R. (2003). *Case study research: Design and methods* (3rd ed). Thousand Oaks, CA: Sage.
- Yin, R. (2004). *Case study research: Design and methods* (4th ed). Thousand Oaks, CA: Sage.
- Yin, R. K. (2009). Case study research: Design and methods (applied social research methods). *London and Singapore: Sage*.
- Yin, R. K. (2013). Validity and generalization in future case study evaluations. *Evaluation*, 19(3), 321-332.
- Yin, R. (2014). *Case study research: Design and methods* (5th ed). London, UK : Sage.
- Yin, R. K. (2015). *Qualitative research from start to finish*. Guilford Publications.
- Zar, J. H. 2009. *Biostatistical analysis* (5th ed.). Saddle River, NJ: Prentice-Hall.
- Zelechowski, A. D., Sharma, R., Beserra, K., Miguel, J., DeMarco, M., & Spinazzola, J. (2013). Traumatized youth in residential treatment settings: prevalence, clinical presentation, treatment, and policy implications. *Journal of Family Violence*, 27(8), 639-652. doi:10.1007/s10896-013-9534-9.
- Zimmerman, B. (1996). *The art and science of managing changeability: Lessons from chaos and complexity theories*. Keynote presentation given at the "Order and Chaos" Conference, May 23 1996, Grenfell College, Memorial University, Newfoundland, Canada.

APPENDICES

Appendix A: Ethics Forms

F1_Participant Information Sheet for Mental Health Staff General Participation

Date Information Sheet Produced:

01 June 2015

Project Title

Organisational case studies of sensory modulation in adult mental health services

An Invitation

I would like to invite you to participate in a research study exploring the process and impact of implementing a sensory modulation programme within adult acute mental health services. This research is a part of my degree in Doctor of Philosophy.

What is the purpose of this research?

The aim of the study is to explore the impact of sensory modulation programme within adult acute mental health service. It is anticipated that the study findings will inform the use of sensory modulation in acute mental health services, highlighting specific facilitators and barriers to implementation and the impact and acceptability of the approach.

How was I identified and why am I being invited to participate in this research?

Your organisation has agreed to participate in this study and expressed an interest in developing the use of sensory modulation. All staff are being invited to participate in the study because each of you will bring a particular viewpoint on sensory modulation and its implementation.

What will happen in this research?

All staff participants will be asked to complete a one day sensory modulation workshop, utilise the sensory modulation training in practice, and answer two surveys containing questions about managing aggression, using seclusion and restraint, ward climate and sensory modulation.

What are the discomforts and risks?

There is no potential discomfort for the participants.

How will these discomforts and risks be alleviated?

Not applicable.

What are the benefits?

Participating in this research may enhance your sense of personal and professional development. This study provides additional training to enhance your competencies in using sensory modulation. You would also be contributing to an improved understanding of what supports or hinders sensory modulation practice and what the impact of using sensory modulation is.

How will my privacy be protected?

The lead researcher will be aware of the participants' identity in the focus groups and interviews, therefore this process is not anonymous. However, full confidentiality of all information used is guaranteed throughout the research process. Participants have every right to share with people that they participated in this research study.

What are the costs of participating in this research?

There is no cost involve participating in the study aside from your time to attending interview approximately one and a half to two hours of your time. You need to allocate time to review interviews transcripts for approving or changing statements as needed.

What opportunity do I have to consider this invitation?

You have up to two weeks after receiving this information sheet to decide if you would like to participate.

How do I agree to participate in this research?

You will be given consent form to sign prior to engaging to the research study. The consent form states the specifics on confidentiality, anonymity, and agreement for audio taping necessary when you participate in an interview (focus group).

Will I receive feedback on the results of this research?

Yes – you will receive results of this research once it is completed. Your contact details in the consent form will be used for all correspondence.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Daniel Sutton - AUT University – School of Clinical Science, Email: dsutton@aut.ac.nz, Phone: 09-921-9999 ext. 7732

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEK, Kate O'Connor, ethics@aut.ac.nz, 921 9999 ext 6038.

Whom do I contact for further information about this research?

Researcher Contact Details:

Gilbert Azuela

Email: gilazot@yahoo.com

Project Supervisor Contact Details:

Dr Daniel Sutton

AUT University – School of Clinical Science

Email: dsutton@aut.ac.nz; Phone: 09-921-9999 ext. 7732

Approved by the Auckland University of Technology Ethics Committee on **03 June 2015** AUTEK Reference number **15/161**.

Approved by the Health & Disability Ethics Committee on **24 June 2015** AUTEK Reference number **15/STH/84**.

F2_Participant Information Sheet for Mental Health Staff Focus Group

Date Information Sheet Produced:

01 June 2015

Project Title

Organisational case studies of sensory modulation in adult mental health services

An Invitation

I would like to invite you to participate in a research study exploring the process and impact of implementing a sensory modulation programme within adult acute mental health services. This research is a part of my degree in Doctor of Philosophy.

What is the purpose of this research?

The aim of the study is to explore the impact of sensory modulation programme within adult acute mental health service. It is anticipated that the study findings will inform the use of sensory modulation in acute mental health services, highlighting specific facilitators and barriers to implementation and the impact and acceptability of the approach.

How was I identified and why am I being invited to participate in this research?

Your organisation has agreed to participate in this study and expressed an interest in developing the use of sensory modulation. All staff are being invited to participate in the study because each of you will bring a particular viewpoint on sensory modulation and its implementation.

What will happen in this research?

You will be invited for an interview (focus group or 1:1) about your experience of implementing sensory modulation in the unit. This interview would be audio recorded, transcribed and analysed for themes.

What are the discomforts and risks?

There is only a low level of potential discomfort for the participants. If you participate in a focus group or interview there is a risk that co-staff may identify your viewpoints

from the interview data, because the number of participants in the study is limited and focused within your service.

How will these discomforts and risks be alleviated?

If you choose to participate in any interviews, all identifying information will be removed or altered within interview data to protect your confidentiality. You will be invited to view the transcripts from interviews. You will be given an opportunity to approve, remove, and/or alter any of your own statements to ensure your views are accurately presented. Survey data will be de-identified and aggregated.

What are the benefits?

Participating in this research may enhance your sense of personal and professional development. This study provides additional training to enhance your competencies in using sensory modulation. You would also be contributing to an improved understanding of what supports or hinders sensory modulation practice and what the impact of using sensory modulation is.

How will my privacy be protected?

The lead researcher will be aware of the participants' identity in the focus groups and interviews, therefore this process is not anonymous. However, full confidentiality of all information used is guaranteed throughout the research process. Participants have every right to share with people that they participated in this research study.

What are the costs of participating in this research?

There is no cost involve participating in the study aside from your time to attending interview approximately one and a half to two hours of your time. You need to allocate time to review interviews transcripts for approving or changing statements as needed.

What opportunity do I have to consider this invitation?

You have up to two weeks after receiving this information sheet to decide if you would like to participate.

How do I agree to participate in this research?

You will be given consent form to sign prior to engaging to the research study. The consent form states the specifics on confidentiality, anonymity, and agreement for audio taping necessary when you participate in an interview (focus group).

Will I receive feedback on the results of this research?

Yes – you will receive results of this research once it is completed. Your contact details in the consent form will be used for all correspondence.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Daniel Sutton - AUT University – School of Clinical Science, Email: dsutton@aut.ac.nz, Phone: 09-921-9999 ext. 7732

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEK, Kate O'Connor, ethics@aut.ac.nz, 921 9999 ext 6038.

Whom do I contact for further information about this research?

Researcher Contact Details:

Gilbert Azuela

Email: gilazot@yahoo.com

Project Supervisor Contact Details:

Dr Daniel Sutton

AUT University – School of Clinical Science

Email: dsutton@aut.ac.nz; Phone: 09-921-9999 ext. 7732

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F3_Participant Information Sheet for Service User Focus Groups

Date Information Sheet Produced:

01 June 2015

Project Title

Organisational case studies of sensory modulation in adult mental health services

An Invitation

I would like to invite you to participate in a research study exploring the process and impact of implementing a sensory modulation programme within adult acute mental health services. This research is a part of my degree in Doctor of Philosophy.

What is the purpose of this research?

The aim of the study is to explore the impact of sensory modulation programme within adult acute mental health services. The study findings have the potential to support staff to better understand service users' needs in crisis and support person-focused de-escalation.

How was I identified and why am I being invited to participate in this research?

You were invited to participate in this study because you have experience of using sensory modulation during your admission.

What will happen in this research?

I wish to access your medical records and I would like to know your experiences on using sensory modulation as part of your treatment programme. You will be interviewed together with other service users who have use sensory modulation. The interview will take about an hour. The interview will be audio recorded and transcribed.

What are the discomforts and risks?

You will be talking about your experiences during your admission and you might feel uncomfortable discussing some of these experiences because they were distressing.

How will these discomforts and risks be alleviated?

The interview can be stopped at any time, if you experience any discomfort. If you feel upset after the interview, you can contact your key worker who can talk with you to determine appropriate steps to take to ensure you feel safe and supported. You can withdraw from the study at any time prior to the completion of data collection

What are the benefits?

Some people find that discussing their experiences is beneficial as it helps in making sense of them. Additionally, sharing your experiences will assist mental health staff to develop a better understanding of what helps people when they are distressed and how to use sensory modulation effectively.

How will my privacy be protected?

Full confidentiality of all information gathered is guaranteed throughout the research process. You have every right to share with people that you participated in this research study.

What are the costs of participating in this research?

There is no cost involve participating in the study aside from your time to attending interview approximately one and a half to two hours of your time. You need to allocate time to review interviews transcripts for approving or changing statements as needed.

What opportunity do I have to consider this invitation?

You have up to two weeks after receiving this information sheet to decide if you would like to participate. Your key worker may remind you of the invitation during or at the end of two weeks.

How do I agree to participate in this research?

You will be given a consent form to sign prior to engaging to the study. The consent form contains statements about confidentiality, anonymity, and agreement for audio taping if you choose to participate in an interview or focus group.

Will I receive feedback on the results of this research?

If you would like feedback, you will be sent results of this research once it is completed. Your contact details in the consent form will be used for all correspondence.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Daniel Sutton - AUT University – School of Occupational Science and Rehabilitation, Email: dsutton@aut.ac.nz, Phone: 09-921-9999 ext. 7732
Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEK, Kate O'Connor, ethics@aut.ac.nz, 921 9999 ext 6038.

Whom do I contact for further information about this research?

Researcher Contact Details:

Gilbert Azuela

Email: gilazot@yahoo.com

Project Supervisor Contact Details:

Dr Daniel Sutton

AUT University – School of Clinical Science

Email: dsutton@aut.ac.nz

Phone: 09-921-9999 ext. 7732

Approved by the Auckland University of Technology Ethics Committee on **03 June 2015** AUTEK Reference number **15/161**.

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F4_ Consent Form for General Participation

Project title: Organisational case studies of sensory modulation in adult acute mental health service

Project Supervisor: Dr Daniel Sutton

Researcher: Gilbert Azuela

- I have read and understood the information provided about this research project in the Information Sheet dated 01 June 2015.
- I have had an opportunity to ask questions and to have them answered.
- I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
- If I withdraw, I understand that all relevant information will be destroyed.
- I agree to take part in this research.
- I wish to receive a copy of the report from the research (please tick one):
Yes No

Participant’s signature:.....

Participant’s name:.....

Participant’s Contact Details (if appropriate):

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.....
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Date:

Approved by the Auckland University of Technology Ethics Committee on 03 June 2015 AUTEK Reference number 15/161.

Approved by the Health & Disability Ethics Committee on 24 June 2015 AUTEK Reference number 15/STH/84.

Note: The participant should retain a copy of this form.

F5_ Consent Form for One to One Interview

Project title: Organisational case studies of sensory modulation in adult acute mental health service

Project Supervisor: Dr Daniel Sutton

Researcher: Gilbert Azuela

- I have read and understood the information provided about this research project in the Information Sheet dated 01 June 2015.
- I have had an opportunity to ask questions and to have them answered.
- I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed.
- I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
- If I withdraw, I understand that all relevant information including tapes and transcripts, or parts thereof, will be destroyed.
- I agree to take part in this research.
- I wish to receive a copy of the report from the research (please tick one):
Yes No

Participant’s signature:.....

Participant’s name:.....

Participant’s Contact Details (if appropriate):

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Date:

Approved by the Auckland University of Technology Ethics Committee on 03 June 2015 AUTEK Reference number 15/161.

Approved by the Health & Disability Ethics Committee on 24 June 2015 AUTEK Reference number 15/STH/84.

Note: The participant should retain a copy of this form.

F6_Consent Form for Focus Group Interview

Project title: Organisational case studies of sensory modulation in adult acute mental health service

Project Supervisor: Dr Daniel Sutton

Researcher: Gilbert Azuela

- I have read and understood the information provided about this research project in the Information Sheet dated 01 June 2015.
- I have had an opportunity to ask questions and to have them answered.
- I understand that identity of my fellow participants and our discussions in the focus group is confidential to the group and I agree to keep this information confidential.
- I understand that notes will be taken during the focus group and that it will also be audio-taped and transcribed.
- I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
- If I withdraw, I understand that while it may not be possible to destroy all records of the focus group discussion of which I was part, the relevant information about myself including tapes and transcripts, or parts thereof, will not be used.
- I agree to take part in this research.
- I wish to receive a copy of the report from the research (please tick one):
Yes No
- I agree for my medical records to be accessed (please tick one):
Yes No

Participant’s signature:.....

Participant’s name:.....

Participant’s Contact Details (if appropriate):

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.....
.....

Date:

Approved by the Auckland University of Technology Ethics Committee on 03 June 2015 AUTEK Reference number 15/161.

Approved by the Health & Disability Ethics Committee on 24 June 2015 AUTEK Reference number 15/STH/84.

Note: The participant should retain a copy of this form.

F7_Confidentiality Agreement for Research Assistant

For an intermediary or research assistant.

Project title: Organisational case studies of sensory modulation in adult mental health service

Project Supervisor: Dr Daniel Sutton

Researcher: Gilbert Azuela

- I understand that all the material I will be asked to record is confidential.
- I understand that the contents of the Consent Forms, tapes, or interview notes can only be discussed with the researchers.
- I will not keep any copies of the information nor allow third parties access to them.

Intermediary's signature:

.....

Intermediary's name:

.....

Intermediary's Contact Details (if appropriate):

.....
.....
.....
.....

Date:

Project Supervisor's Contact Details (if appropriate):

.....
.....
.....

Approved by the Auckland University of Technology Ethics Committee on 03 June 2015 AUTEK Reference number 15/161.

Approved by the Health & Disability Ethics Committee on 24 June 2015 AUTECH
Reference number 15/STH/84.

Note: The Intermediary should retain a copy of this form.

F8_Confidentiality Agreement for Transcriber

For someone transcribing data, e.g. audio-tapes of interviews.

Project title: Organisational case studies of sensory modulation in adult mental health service

Project Supervisor: Dr Daniel Sutton

Researcher: Gilbert Azuela

- I understand that all the material I will be asked to transcribe is confidential.
- I understand that the contents of the tapes or recordings can only be discussed with the researchers.
- I will not keep any copies of the transcripts nor allow third parties access to them.

Transcriber’s signature:

.....

Transcriber’s name:

.....

Transcriber’s Contact Details (if appropriate):

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Date:

Project Supervisor’s Contact Details (if appropriate):

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Approved by the Auckland University of Technology Ethics Committee on 03 June 2015 AUTEK Reference number 15/161.

Approved by the Health & Disability Ethics Committee on 24 June 2015 AUTEK Reference number 15/STH/84.

Note: The Transcriber should retain a copy of this form

F9_Focus Group Interview Protocol

Tasks	Tick
Pre-Interview	
Arranging date, time, and venue with the Recruiter/Research Administrator 4-weeks prior to date	
Calling the Recruiter/Research Administrator to check in the availability of participants 24-hours prior to date	
Organising refreshments for the research participant/s 2-weeks prior to date	
Preparing and testing digital audio recorder; and ensuring has batteries and spares 24-hours prior to date	
Arriving at the venue 1 hour prior to interviews	
Setting interview rooms including refreshments, ventilation, and digital audio recording	
Checking information sheets and consent forms are brought	
During Interview	
Providing welcoming, introduction about self, briefly explaining the research study, and housekeeping.	
Checking each participant/s has information sheet and consent form	
Explaining the research study by going through the information sheet	
Ensuring confidentiality of participants by using only first name or pseudo name	
Reminding participant/s that they can withdraw at any stage of the interview with no penalty and that audiotapes will be kept safe throughout time of the research study and it will be destroyed after ten years.	
Inviting participant/s to ask about the research process	
Asking participant/s to sign the consent form – one copy for the lead researcher and one for them to keep	
Explaining the process for the interview, what to expect, and time allocation	
Discussing guidelines for the interviews such as ground rules, confidentiality, only first name or pseudo name	
Reminding participant/s that there is no right or wrong answers or responses and the researcher is interested in participants have to say	
Reminding participant/s not to criticise or disagree with other participants have to say (applies for focus group)	
Reminding participant/s that unexpected issues may arise and this issues can be discussed and action with the lead researcher after the interviews	
Turning on the digital audio recording	
Facilitating the interview by starting for participant/s to introduce themselves	
Facilitate discussion of the research topic.	
Taking relevant notes (if appropriate) as interview occurs	
Monitoring signs of discomfort from participants; checking it with participant/s and providing option of leaving the group if required	
Allowing natural and spontaneous flow of discussion. Prompting participant/s may occur to covered missed topic	
Thanking and affirming participant/s for their participation to the research study	
Post Interview	
Reflecting on the interviews such as overall impressions, key themes or ideas, and insightful thinking (keep on recording)	
Checking if recording is successful	
Ensuring back up copy by copying data to laptop hard drive	
Notifying Recruiter/Research Administrator upon completion of interview	
Debriefing with primary supervisor if needed	
After care of the venue before leaving	

F10_PROTOCOL: Feedback Survey Questionnaire

Tools	<ol style="list-style-type: none"> 1. Feedback Survey Questionnaire 2. General Information Sheet 3. General Consent Form
Participants	Upper management of the organisation
Time required	Approximately 30 minutes (depends on length of your responses)
Purpose of the survey	<p>This survey is designed for the upper management of the organisation of the [REDACTED] to capture a leadership perspective on the implementation of the sensory modulation research project implemented to the two adult inpatient acute units namely [REDACTED]</p>
Procedure	<ol style="list-style-type: none"> 1. General Information Sheet, Consent Form, and Feedback Survey Questionnaire will be sent via email by the principal investigator including instruction. The blind carbon copy (bcc) email will be used to protect the confidentiality and anonymity of the participants receiving the email. 2. Participants have the option to type or write their responses to the feedback survey questionnaire. 3. There is couple of weeks allocated to complete the questionnaire. Principal investigator will send an email reminder near the closing date. 4. The participants place completed feedback survey questionnaire in a sealed envelope then to be collected by the principal investigator. 5. Participants to notify principal investigator when questionnaire is ready to be collected by the principal investigator.
Email Communication Details	<p>To: bcc</p> <p>From: gilazot@yahoo.com</p> <p>Subject: Sensory Modulation Project Implementation Post-Survey Questionnaire</p> <p>Message Content:</p> <p>Dear Participants,</p> <p>I would like to invite you to participate in a post-survey on the sensory modulation project implementation at the two in-patient units.</p>

Included in this email are:

1. General Information Sheet;
2. General Consent Form; and
3. Feedback Survey Questionnaire.

If you would like to participate in the survey please sign the Consent Form and complete the Feedback Survey Questionnaire. You can type or write your responses to the questionnaire. When completed, please place your paper copy questionnaire to a sealed envelope for collection. Please let me know via email if your questionnaire is ready for collection.

You can contact me if you have any questions, please see my details below.

Kind Regards,

Gilbert Azuela
Doctoral Candidate
School of Clinical Sciences
Auckland University of Technology
Mobile: 0211971211
E-mail: gilazot@yahoo.com

Appendix B: Data Collection Tools

Q1_Organisational readiness Questionnaire (Management and Leadership Staff Only)

Checklist for Assessing Your Organisation's
Readiness for Reducing Seclusion and Restraint

Purpose: To provide behavioural healthcare organisations with a systematic approach for identifying factors that influence the reduction of seclusion and restraint and for assessing the level of progress the organisation is making toward implementing and addressing each of these factors.

Instructions:

- This instrument should be used to complete an organisational wide assessment of the efforts to reduce the use of restrictive interventions. The process will typically administrators, programme managers, clinicians, trainers/educators, and other service providers including nurses and behavioural technicians.
- In addition to an organisational assessment, sections of this instrument may be completed by a specific work unit or committee. For example, the section on training might be completed by the facility training committee and the section on programme structure might be completed by the staff on a unit or ward.
- Place a check in the box that best corresponds to your agency's current level of progress. Use this information to determine which areas need the most attention.
- To ensure a comprehensive assessment the checklist should be completed by more than one individual. They should then discuss their ratings and through a process of consensus building, reach a level of agreement regarding the rating which reflects the progress your organisation is making on each of the factors.
- The checklist should be completed at regular intervals to assess ongoing progress.

Legend:

0	Insufficient information and/or additional information needed to make this assessment
1	No action / No discussion (Little if any recognition that there is a problem)
2	(Some discussion and possibly some planning, but still no action)
3	Intermittent / Inconsistent Action (Some steps taken, but not necessarily as part of a well thought out strategy)
4	Action (Activities are consistent and based on strategic plans)
5	Sustained Action (Strategically focused activities are maintained over time)

Organisational Readiness Factors	0	1	2	3	4	5
Leadership						
Through his/her action, the CEO (administrator/director) demonstrates commitment to the goal and process of reducing seclusion and restraint.						
Management has articulated (verbally and in writing) a vision regarding the facility's safe and appropriate use of seclusion and restraint.						
Management has articulated (verbally and in writing) that it values a "learning environment" where non-punitive approaches are used to correct and improve employee performance. (With the exception of violations of patient abuse policy.)						
Management has articulated (verbally and in writing) its intention of reducing the use of seclusion and restraint and/or to eliminate their use entirely.						
A strategic plan has been developed outlining the goals and actions that will be taken to reduce the use of seclusion and restraint.						
The organization's goals and plans to reduce seclusion and restraint are documented and articulated to staff through a number of mechanisms such as newsletters, memos, staff meetings, and through the orientation and training process.						
Clinical leadership has articulated a philosophy of treatment based on emphasizing positive behaviour and de-emphasizing the use of restrictive interventions as an approach to behaviour support and intervention.						
The organization's policy and procedure on the use of seclusion and restraint has been revised to reflect the organization's vision, mission, and philosophy of treatment.						
Policies ensure that physicians and nurses are involved in the process of initiating seclusion and restraint.						
The infrastructure and resources (such as committees, data sources, crisis intervention teams, etc.) needed to implement the plan to reduce seclusion and restraint has been put into place.						
Staff at all levels of the organization are encouraged and invited to participate in the change process.						
A mechanism has been created (typically a committee or individual) to ensure that all seclusions and restraints are reviewed for appropriate implementation.						
A mechanism has been created (e.g. a committee or individual) that ensures the organization is making progress in achieving its goals and strategic plan to reduce use of these interventions.						
Orientation and Training of Caregiver Staff						
There is a comprehensive training curriculum that addresses behaviour support and intervention.						
Attendance at initial and refresher courses is mandatory for all treatment staff.						
The training program combines classroom instruction with coaching and supervision to ensure that transfer of learning occurs.						

Varied training modalities are used, including the use of lectures, videos, live demonstrations, and role-playing.						
Training is used to orient new employees to the organization's philosophy of treatment.						
The organization's policies and procedures on the use of seclusion and restraint are presented during training.						
As appropriate, training is competency based (employees demonstrate the expected level of competency before being allowed to implement an intervention/work with clients).						
Training provides a repertoire of approaches that can be used to de-escalate clients.						
Training sensitizes staff to client needs.						
Training sensitizes staff as to how clients experience the restrictive interventions (for example, training explains how a client's history can influence their experience and reaction to seclusion and restraint).						
Training describes the concept of counter transference and how it may influence the manner in which staff implements the intervention.						
Training sensitizes staff to the power differential that exists when seclusion and restraint are applied.						
Staff are taught how to recognize and respect interpersonal boundaries.						
All employees with client contact receive the same training, including part-time and contractual employees.						
Retraining and refresher courses to keep staff current in their knowledge, skills, and abilities are regularly scheduled and delivered consistently.						
Training is supported through mentoring, coaching, and supervision.						
Staffing						
Staffing patterns are assessed to ensure that adequate numbers of employees are available at critical times, such as during transitions, at change of shift, in the evening, and at times of high acuity.						
Scheduling ensures that staff have time for needed training.						
Work schedules and staffing levels support opportunities for relief time to reduce burnout.						
Consideration is given to the mix of employees who implement interventions (e.g., age, academic preparation, experience, and ability to relate to the client).						
The organization has developed a process that ensures staff are assigned where and when needed across shifts and units/wards, such as an agency-wide master schedule.						
To enhance staff improvement, direct care and nursing employees are provided opportunities for self-scheduling and alternative schedules (such as flex-time).						
Environmental Factors						
The environment is consistently and systematically evaluated for safety hazards. For example, furniture is selected that cannot be easily thrown.						
To ensure client safety, steps are taken to reduce blind corners in seclusion rooms, such as through the use of security cameras.						
Seclusion rooms are renovated to reduce isolation and increase visual stimulation. For example rooms are painted warm colours or where regulations permit, have windows with views to the outdoors.						
As appropriate, sound reducing materials, such as carpeting and special ceiling, are used to reduce noise in patient living areas.						
To reduce the association between seclusion and time out, as resources permit, separate rooms are designated for time out/calming rooms.						

Programmatic Structure						
To provide structure for clients and staff, there is a written program description that clearly outlines expectations, routines and rules.						
The program and/or program components are grounded in theory and to the extent possible are evidence-based.						
The programmatic structure, such as rules, routines, and expectations, is designed to empower clients to make effective choices that do not harm themselves or others (mentally, emotionally, or physically).						
Program rules and expectations are based on enhancing internal/self-control and decreasing the need for external controls to behaviours.						
The program makes use of natural consequences, which are used to enhance the process of "learning by experience". (For example, consequences make sense in the context of the milieu, social interactions, and the client's stage of development.)						
The program is designed to reduce downtime by engaging clients in constructive activities, related to treatment goals.						
The program also provides ample time for rest, relaxation, recreation, and activities of daily living.						
Level systems and token economies are based on the needs of the population served, rather than as a standard approach to providing programmatic structure.						
When used, level systems and token economies are developmentally appropriate and focused on the use of positive reinforcement as the primary motivation to change.						
Transitions are scheduled and structured to reduce difficulties clients may have coping with changes in their routines.						
Rules and expectations are reasonable and fair, so that clients can readily comply with them rather than attempting to circumvent them in engaging in power struggles over them.						
Unit/ward rules are explained during orientation period and an effort is made to obtain agreement from the client to abide by these expectations.						
The program provides for the normalization of routine activities, such as telephone privacy, access to snacks, etc.						
The program is designed to empower clients and thereby reduce conflict (such as making it easier to have access to the telephone or their own money during the day).						
Staff receive training and supervision to ensure that the program is delivered on a consistent basis.						
Timely and Responsive Assessment and Treatment Planning						
Assessment is case specific and client centred.						
Assessment includes information describing the antecedents to aggression and/or self-harmful behaviours.						
Assessment identifies approaches that have been tried, worked or failed in managing aggression and/or self-harmful behaviours.						
Assessment and treatment planning identify strengths and deficits in coping skills.						
Assessment identifies preferred treatment interventions.						
Treatment plans prescribe individualized behavioural interventions, so that staff are not constantly reacting to a specific client's aggression/self-harm.						
Treatment planning involves the client and family to the fullest extent possible. (Every effort is made to engage the client and family, so that they do not perceive it as just a process where others do something to/for them.)						
Assessment and treatment planning is timely and responsive.						

Caregiver staff (i.e., aides/technicians), are involved in treatment decisions, such as decisions about passes, transfers, and readiness for discharge.						
Treatment plans are revised to meet a client's ongoing needs, response to treatment efforts, and use of seclusion and restraint.						
The organization identifies thresholds that are used to signal the need for external review of the client's treatment plan, particularly where there is high use of seclusion or restraint.						
The organization has a behavioural management/clinical review committee to provide consultation in the development of treatment plans to manage aggression.						
Processing After the Event (debriefing)						
The process for conducting client - staff debriefing (i.e., meeting with the client to process the event) is outlined in a written policy.						
The process for debriefing is a component of the organization's training curriculum.						
Client -staff debriefings take into consideration the client's level of functioning. For example, staff recognise that a client may lack the analytical and verbal skills needed to assess their own behaviours.						
Client - staff debriefings attempt to explain why the intervention was necessary, with the opportunity for the client to respond when appropriate and safe.						
The client - staff debriefing is used to identify triggers and antecedents to behaviours that led to the need for staff to intervene and assist.						
The client - staff debriefing is used to identify alternative de-escalation strategies that can be made a part of the client's treatment plan.						
The timing of the client debriefing is considered. (The client may not be calm enough to reflect on his/her behaviours and alternatives immediately after the intervention. Conversely, there may be too much of a 'disconnect' if the timing of the debriefing is prolonged.						
The client –staff debriefing is used as a time to reconnect with staff.						
Staff-to-staff debriefing address issues related to counter transference.						
Opportunities are provided/scheduled to process the event with staff about their feelings, reactions, and safety.						
The organization considers the use of staff support groups, counselling, or other systematic approaches to health staff work through their feelings.						
Staff-to-staff debriefings focus on what worked, didn't work and different approaches that might be tried in the future.						
Staff are involved in assessing and monitoring to ensure interventions are implemented correctly and that restrictive intervention accomplished the purpose for which it was intended.						
The facility has a mechanism for collecting information about and analysing the results of debriefings to improve organizational performance, such as revising policies and procedures, adjusting training, and adjusting schedules.						
Communication and Consumer Involvement						
Clients are not isolated from contact during the intervention - staff interact with the client during seclusion or restraint.						
Staff are responsive to the client's needs to interact and reintegrate back into the milieu after the intervention.						
Families are informed of the organization's S/R policies and are informed when these interventions are used, including an explanation as to why the intervention was necessary.						
Communications with clients and their families is respectful of their needs and situations.						

The organization's treatment philosophy emphasizes a consumer orientation such as including patients and families in the treatment planning process.						
Upon admission, clients and their families are oriented to the unit and program, including the use of seclusion and restraint.						
Clients and their families are involved in treatment and discharge planning.						
There is a process in place to inform family members of significant changes in the client's condition and/or response to treatment.						
The organization makes use of client and family satisfaction surveys to inform decision-making.						
Management provides opportunities for consumers and/or consumer groups to have input and/or provide feedback into the development and review of programs, processes, policies, and procedures.						
Management ensures that the client advocacy/ombudsman program is involved in the development and review of programs and processes that support the empowerment of clients and the reduction of restrictive interventions.						
Systems Evaluation and Quality Improvement						
The organization has established policies, procedures, and systems for continuous evaluation of the need for the appropriate use of seclusion and restraint.						
There is a systematic data management process in place relevant to seclusion and restraint use.						
The data management process ensures for the accuracy of seclusion and restraint data.						
Data is made available to treatment teams so that they can measure the effects of their efforts to reduce the use of seclusion and restraint.						
Data about the frequency and duration of restrictive interventions is made available for review and analysis on a daily basis.						
Data provides information about both long-term (months/years) and short-term (weeks/months) utilization of seclusion and restraint.						
Data is used to examine the relationship between the use of seclusion and restraint and other factors, such as patient injuries; staff injuries; use of medications; patient and staff demographics; and the like.						
There is an internal audit system to investigate incidents and provide information that can be used to correct problems and improve the quality of care.						
The organization makes use of quality improvement tools, such as cause and effect analysis, Pareto analysis, scattergrams, statistical process control, and the 'repetitive why' approach analyse the data.						
Qualitative data is reviewed, including incident reports and seclusion and restraint documentation, to assess opportunities for improvement.						
Data is used to measure the extent that seclusion and restraint reduction goals and plans are being achieved.						
There is a written evidence of action taken to reduce the use of seclusion and restraint in response to data analysis, such as meeting minutes and/or quality improvement documents.						

Q2_Survey Questionnaire for Mental Health Clinical & Support Staff

Instruction: Please tick the following boxes that correspond to your answers.

Gender	Age	Discipline	Highest Education Level	Mental Health Years of Experience	Ethnicity
<input type="checkbox"/> Male	<input type="checkbox"/> 18-30 years	<input type="checkbox"/> Nurse	<input type="checkbox"/> National Certificate	<input type="checkbox"/> Less than 1 year	<input type="checkbox"/> NZ European
<input type="checkbox"/> Female	<input type="checkbox"/> 31-40 years	<input type="checkbox"/> Occupational Therapist	<input type="checkbox"/> National Diploma	<input type="checkbox"/> 1-2 years	<input type="checkbox"/> European
	<input type="checkbox"/> 41-50 years	<input type="checkbox"/> Psychologist	<input type="checkbox"/> Bachelor's Degree	<input type="checkbox"/> 3-4 years	<input type="checkbox"/> Maori – Iwi: _____
	<input type="checkbox"/> 51-60 years	<input type="checkbox"/> Social Worker	<input type="checkbox"/> Bachelor with Honours	<input type="checkbox"/> 5-6 years	<input type="checkbox"/> Pacific People
	<input type="checkbox"/> 61+ years	<input type="checkbox"/> Support Staff	<input type="checkbox"/> Post-graduate Certificate	<input type="checkbox"/> 7-8 years	<input type="checkbox"/> Asian
		<input type="checkbox"/> Others: _____	<input type="checkbox"/> Post-graduate Diploma	<input type="checkbox"/> 9-10 years	<input type="checkbox"/> Middle Eastern
			<input type="checkbox"/> Masters	<input type="checkbox"/> 11 years above	<input type="checkbox"/> Latin American
			<input type="checkbox"/> Doctorate		<input type="checkbox"/> African
			<input type="checkbox"/> Others: _____		<input type="checkbox"/> Not Elsewhere Included

Section 1: Essen Climate Evaluation Schema (EssenCES)

		I agree				
		No at all	Little	Somewhat	Quite a lot	Very much
1	This ward has a homely atmosphere					
2	The service users care for each other					
3	Really threatening situations can occur here					
4	On this ward, service users can openly talk to staff about all their problems					
5	Even the weakest service user finds support from his fellow service users					
6	There are some really aggressive service users on this ward					
7	Staff take a personal interest in the progress of service users					
8	Most service users don't care about their fellow service users' problems					
9	Some service users are afraid of other service users					
10	Staff members take a lot of time to deal with service users					
11	When a service user has a genuine concern, he service user finds support from his fellow service users					
12	Staff members are afraid of some of the service users					

13	Often, staff seem not to care if service users succeed or fail in treatment					
14	There is good peer support among service users					
15	Some service users are so excitable that one deals very cautiously with them					
16	Staff know service users and their personal histories very well					
17	Both service users and staff are comfortable on this ward					

Section 2: Confidence in Managing Service User Aggression

		1 Not at all confident	2	3	4 Very confident
1	How confident are you in your working with hostile and aggressive service users?				
2	How confident are you in your colleagues' ability to maintain your safety and manage an aggressive service user?				
3	How safe do you feel around aggressive service users?				
4	How safe is the environment at your unit?				
5	How able are you to deescalate an aggressive service user?				
6	How able are you to contribute to the restraint of an aggressive service user?				
7	How able are you to maintain your own safety in the presence of an aggressive service user?				

Section 3: Professional Attitude Towards Seclusion Questionnaire (PATS-Q)

In your work do or did you not have experience with seclusion?

- No (continue with question 2)
- Yes, less than 1 year
- Yes, 1 – 2 years
- Yes, 2 – 5 years
- Yes, 5 - 10 years
- Yes, more than 10 years

How often do you participate in the seclusion of a service user?

- Never
- Less than once a month
- 1 - 4 times a month
- 2 - 17 times a week
- More than once a day

1. To what extent are you involved in the following aspects of care in the practice surrounding seclusion?

	Not at all	A bit	Pretty much	A lot
Prevention				
Decision making				
Preparation				
Care during seclusion				

Care after seclusion				
Reporting				
Evaluation				
Communication with the service user				
Communication with family/ friends of service user				

2. The following questions are focused on potential reasons for seclusion. In your opinion, to what extent do the following factors play a role in the practice of seclusion in general?

	Not at all	A bit	Pretty much	A lot
Behaviour towards the service user				
Ward rules				
Medical Diagnosis				
Treatment Plan				
Service user restrictions				
Future prospect of the service user				
Confidence in colleague				
Reactions of other service users				
Unsafely feelings of mental health staff				
Threatening behaviour of the service user				
Physical violence of the service user				
Communication with the service user				
Expertise of mental health staff				
Containment and Control of the situation				
Earlier experiences with the service user				
Number of available mental health staff				
Daytime activities of the service user				
Other, namely _____				

3. The following questions concern your opinion on seclusion. Please mark the extent to which you agree with each statement.

	Totally disagree	Mostly disagree	Mostly agree	Totally agree
Seclusion is the most drastic form of coercion in psychiatry.				
Seclusion has a therapeutic effect.				
The seclusion room serves as a low-stimulus environment.				
Protocols will not lead to a decreased use of seclusion.				
Service users who are afraid of seclusion should not be secluded.				
Seclusions lasting longer than 24 hours surpass all goals.				

The care surrounding seclusion will improve if mental health staff share their experiences with each other.				
During the shift of female mental health staff, seclusion is used the least.				
Seclusion disrupts the confidence of service users in mental health staff.				
Evaluating each seclusion with the service user will result in a reduction in the frequency and duration of seclusion.				
The higher the number of mental health staff involved in seclusion, the more threatened the service user will feel.				
Recording seclusion does not affect the number of seclusions.				
In New Zealand, seclusion is used too much and too often.				
Psychiatry will never be able to function without seclusion.				

4. According to you, to what extent are activities described below an alternative for the use of seclusion?

	Not at all	A bit	Pretty much	A lot
More medication				
Early risk taxation				
More mental health staff				
More dialogue with the service user				
Improving protocols				
Postgraduate training of mental health staff				
Accentuate treatment plans				
Paying more attention to the service user				
Meaningful daytime activities				
More dialogue with family/ friends of the service user				
Closing seclusion rooms				
Making ward rules more flexible				
Others: _____				

What do you think could help in implementing seclusion and restraint reduction strategies including sensory strategies?

What do you think could be the challenges in implementing seclusion and restraint reduction strategies including sensory strategies?

Thank you for participating answering this survey questionnaire!

Q3_One on One Interview Indicative Questions for Staff Representative

Phase 1

<p>What are the existing practices, norms, beliefs and policies related to de-escalation and the use of seclusion and restraint and what factors have shaped these?</p>	<ul style="list-style-type: none">• The existing organisational culture, policies, procedures and readiness for change will significantly affect the implementation and impact of a sensory modulation programme (Wale, Belkin, & Moon, 2011);
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1. What are the main practices currently used to manage or de-escalate service user agitation, distress or aggressive behaviour on the ward?
 - 1a. How successful and satisfactory do you think these strategies are from a service provider and service user perspective?

2. Have any strategies other than sensory modulation been implemented on the ward to support the reduction of seclusion and restraint use?
 - 2a. If so, what are these strategies and how were they introduced?
 - 2b. How well have they worked?

3. When was sensory modulation implemented into the unit? Who lead the implementation? How it was implemented? Describe it to me.

4. What training programme was involved? Tell me about it.

5. What were the responses from the unit – from the service users, clinicians, support staff and management?

6. Were there challenges when the training programme and sensory modulation practice was implemented and if so, what were they? What were the successes?

7. What were the outcomes or the differences you observed when the unit implemented the training programme?

8. How is it now? What is happening at the moment?

9. How can we improve the implementation of sensory modulation?

10. How confident are you that sensory modulation can be successfully implemented and maintained on the ward?

11. What is most likely to affect the implementation (positively or negatively) in the current context?

Q4_Pre Training - Sensory Modulation Competency Questionnaire (Staff)

Instruction: Please circle the appropriate number or fill in where requested.

Name (optional): _____

Sex:

1. Male
2. Female

Age:

1. 18-30 years old
2. 31-40 years old
3. 41-50 years old
4. 51-60 years old
5. 61 years and above

Highest Education Level:

1. National Certificate
2. National Diploma
3. Bachelor's Degree
4. Bachelors with Honours
5. Post-graduate Certificate
6. Post-graduate Diploma
7. Masters
8. Others: _____

Practice Discipline:

1. Nurse
2. Occupational Therapist
3. Psychologist
4. Social Worker
5. Support Worker
6. Other: _____

Years of Experience in Mental Health:

1. less than 1 year
2. 1-2 years
3. 3-4 years
4. 5-6 years
5. 7-8 years
6. 9-10 years
7. 11 years and above

Previous work experience: _____

Have you attended sensory modulation workshop before?

1. Yes
2. No

If yes, When: _____ Where: _____

Have you attended similar trainings in relation to managing challenging behaviours and/or reducing the use of seclusion and restraint?

1. Yes
2. No

If yes, When: _____ Where: _____

Sensory Modulation Core Competency Questionnaire

Instruction: Please circle the appropriate number by answering the question: WHICH OF THE FOLLOWING CATEGORIES “NOT AT ALL” TO “VERY WELL” BEST DESCRIBE YOUR KNOWLEDGE OF EACH OF THE LISTED COMPETENCIES?

Legend:

1 – Not at all 2 – Barely 3 – Slightly Well 4 – Fairly Well 5 – Very Well

Competencies	Specifications	Rating				
		1	2	3	4	5
Knowledge of Clinical Principles	Classifying different body senses					
	Charting the four basic patterns of responding to sensory event in everyday life					
	Interpreting characteristics of sensory stimulation					
Therapeutic Use of Self	Understanding that sensation is part of human condition					
	Demonstrating therapeutic use of self to clients					
	Accepting that establishing trust is fundamental in the evolution and strengthening of the therapeutic alliance to clients					
Use of a Sensory Assessment	Selecting appropriate type of sensory assessment					
	Performing basic sensory assessment					
	Justifying sensory assessment result					
Selection of a Sensory Modulation Therapeutic Activities	Selecting appropriate sensory modulation therapeutic activities					
	Facilitating selected activities safely					
	Judging the effectiveness of the activities					
Displaying Supportive Attitude when Using the Sensory Room	Explaining the therapeutic use of sensory room to clients					
	Managing a safe environment while using the sensory room					
	Displaying supportive attitude towards clients					
Personal Safety Tools	Itemizing clients’ preferences on sensory modulation therapeutic activities for calming strategies					
	Recognising clients’ early warning signs for escalating distress					
	Helping clients’ avoiding and/or minimizing stress triggers					

Q6_Indicative Questions for Clinical Mental Health Staff Focus Group (Phase3)

Related Propositions

- Services using multiple strategies for seclusion and restraint reduction, including developing policies, leadership, consumer involvement and staff training are more likely to successfully implement sensory modulation (Sutton & Nicholson, 2011).
- Environmental modifications as a sensory strategy are one of the most significant factors in seclusion and restraint reduction (Borckardt et al., 2011).
- Sensory modulation contributes to the reduction and management of distress and agitation (Sutton et al., 2013).
- Service users prefer sensory modulation as a strategy for de-escalation and management of distress over coercive and pharmaceutical methods (Lee et al., 2010).
- Sensory modulation programmes have a significant impact on the use of seclusion and restraint within inpatient mental health settings (Champagne & Stromberg, 2004).
- Sensory modulation programmes change staff confidence in managing service user distress and agitation and alter staff attitudes toward coercive practices (Wale, Belkin, & Moon, 2011).

Questions for Focus Group

1. Describe your involvement in implementing sensory modulation. How have you used the approach in your practice?
2. What has helped to facilitate the implementation of sensory modulation in the unit? What has been most useful in supporting you and other staff to use the approach?
3. What were the barriers to implementing sensory modulation for staff? How were these problems/barriers dealt with?

4. Could you describe the changes in the unit following the implementation of sensory modulation? Specifically, do you think there has been any impact in terms of:
- Staff awareness and use of sensory approaches to managing distress?
 - Staff confidence in managing aggression and distress?
 - Staff attitudes to seclusion and restraint use?
 - Satisfaction and outcomes for service users?
 - The overall climate of the ward?

Demographics:

Job Title: _____

Age: _____

Gender: _____

Ethnicity: _____

How long have you been employed in your current post?:

Length of time in mental health practice: _____

What are your responsibilities?

Q7_1:1 Post Interview Indicative Questions for Management Staff (Phase 3)

Related Propositions

- Services using multiple strategies for seclusion and restraint reduction, including developing policies, leadership, consumer involvement and staff training are more likely to successfully implement sensory modulation (Sutton & Nicholson, 2011).
- Environmental modifications as a sensory strategy are one of the most significant factors in seclusion and restraint reduction (Borckardt et al., 2011).
- Sensory modulation contributes to the reduction and management of distress and agitation (Sutton et al., 2013).
- Service users prefer sensory modulation as a strategy for de-escalation and management of distress over coercive and pharmaceutical methods (Lee et al., 2010).
- Sensory modulation programmes have a significant impact on the use of seclusion and restraint within inpatient mental health settings (Champagne & Stromberg, 2004).
- Sensory modulation programmes change staff confidence in managing service user distress and agitation and alter staff attitudes toward coercive practices (Wale, Belkin, & Moon, 2011).

Questions for 1:1 Post-Interview

1. How was the sensory modulation programme implemented into the unit?
Describe your involvement in the sensory modulation implementation?
2. What has helped facilitate the sensory modulation implementation? What have you found important in the implementation of sensory modulation? (if necessary prompt consideration of systems, policies, training, leadership, staffing, resources)
3. What have been the barriers or challenges in implementing sensory modulation?
Were these challenges/barriers addressed, and if so, how? (if necessary prompt consideration of systems, policies, training, leadership, staffing, resources as barriers)

4. Describe the changes in the unit after implementation of sensory modulation.
Have there been any changes in terms of:
Seclusion and restraint use, PRN use, staff attitudes to seclusion and restraint,
and staff confidence in managing aggression, general ward climate and
experience or outcomes for service users?

Q8_Indicative Questions for Service Users Focus Group (Phase 3)

Related Propositions

- Environmental modifications as a sensory strategy are one of the most significant factors in seclusion and restraint reduction (Borckardt et al., 2011).
- Sensory modulation contributes to the reduction and management of distress and agitation (Sutton et al., 2013).
- Service users prefer sensory modulation as a strategy for de-escalation and management of distress over coercive and pharmaceutical methods (Lee et al., 2010).
- Sensory modulation programmes have a significant impact on the use of seclusion and restraint within inpatient mental health settings (Champagne & Stromberg, 2004).

Questions for Focus Group

1. Tell me about your experience of using the sensory room and sensory equipment at the unit? What sorts of situations lead to you needing to use the sensory room and equipment? How did you use the room and equipment? Did anyone help you to use the sensory strategies?
2. What sensory tools or strategies worked best for you? How did they help?
3. How did staff help you to use the sensory room and equipment? What did they do that was not helpful?
4. Generally, how do you like staff to respond to you when you are feeling distressed or agitated?
5. How do you feel about the ward or unit environment? What do you think about the physical characteristics of the ward or unit like furniture, colour of the walls, meeting rooms?

6. How does using sensory modulation compare to other options for managing distress or agitation, such as extra medication, talking to a staff member and being restrained or secluded?

Q9_ Review Template for Service Users' Clinical Record

New Zealand Guidelines for District Health Boards: Mental Health Quality Monitoring and Audit (MOH, 2002).

Sections	Service Users Clinical Record					
	File 1	File 2	File 3	File 4	File 5	File 6
Age						
Sex						
Ethnicity						
Diagnosis (axis 1 and 2)						
Number of admissions within the past 2 years						
Length of current admission						
Was orientation to sensory modulation room and strategies provided?						
Were sensory triggers and strategies for calming identified and incorporated into safety plan?						
Number and types of escalation/ critical incidents						
For each incident: Was sensory modulation offered? What level of escalation was SU at when sensory modulation was offered?						
What strategies (sensory or other) were used by staff or service user for de-escalation and managing distress or agitation						

Q11_Upper Management Post-survey Questionnaire

Related Propositions

Services using multiple strategies for seclusion and restraint reduction, including developing policies, leadership, consumer involvement and staff training are more likely to successfully implement sensory modulation (Sutton & Nicholson, 2011).

Sensory Modulation Project Implementation Post-Survey Questions

Introduction: This survey is designed for the upper management of the organisation of the [redacted]-DHBs Mental Health, Addiction and Intellectual Disability ([redacted]) to capture a leadership perspective on the implementation of the sensory modulation research project implemented to the two adult inpatient acute units namely [redacted] ([redacted]) and [redacted] ([redacted]).

Instruction: Please answer the following questions. If a question is not applicable to you, please leave it blank.

Job Title:

Years employed with your current post: _____

Major Responsibilities:

Describe your involvement in the implementation of the sensory modulation programme.

From a leadership point of view, what do you think is important in sensory modulation programme implementation?

What has helped the organisation in implementing sensory modulation?

What were the barriers in the implementation of sensory modulation?

How did you or others deal with these problems?

Looking back, is there anything that could have been done differently to improve the implementation of sensory modulation in the unit/s?

What do you think the benefits of implementing sensory modulation within acute mental health care services are?

Many Thanks!

End of Survey.

NB: Appendices C to L were not included in this thesis for confidentiality and anonymity of the participating DHBs. These documents are saved on a disc.

Appendix C: Maori Cultural Consultation Supporting Letter:

Appendix D: AUT Ethics Committee: Approval Letter 1

Appendix E: AUT Ethics Committee: Approval Letter 2

Appendix F: AUT Ethics Committee: Approval Letter 3

Appendix G: AUT Ethics Committee: Approval Letter 4

Appendix H: Health & Disability Ethics Committee: Approval Letter 1

Appendix I: Health & Disability Ethics Committee: Approval Letter 2

Appendix J: Health & Disability Ethics Committee: Approval Letter 3

**Appendix K: UNIT A District Board Ethics Committee: Approval
Letter**

**Appendix L: UNIT B District Health Board Ethics Committee:
Approval Letter**

Appendix M: Overview of Sensory Modulation Training Content

Module 1: Theoretical Foundations – Sensory processing, arousal and emotions			
Learning Objectives	Slide	Key points/content	Readings
1. Define sensory modulation	3	<ul style="list-style-type: none"> Highlight that sensory modulation is the aspect of sensory processing related to <u>regulating input</u>. This happens constantly at a neurological level, where our brains filter out most of the sensory input we receive, but we also regulate sensation through our behaviour (we seek or avoid sensory input) The regulation of sensory input allows us to respond to our social and physical environment in an <u>adaptive manner</u>. 	Dunn (2001). The sensations of everyday life.
2. Describe the 7 different sensory systems & their function	4	<ul style="list-style-type: none"> Categorise sense organs either general or special – Special are taste, smell, vision and hearing. General are tactile, thermal, pain, and proprioception. Discuss the structure and function of sense organs. <u>Familiarisation with the location and function of general receptors</u>. 	Paterson (2012). Anatomy & physiology of senses (pp. 35-40).
3. Discuss the relationship between sensory processing, physiological arousal (sympathetic and parasympathetic systems), and emotions	5-7	<ul style="list-style-type: none"> Discuss the relationship between sensory input and the autonomic nervous system (ANS) – differentiate the sympathetic and parasympathetic responses and explain that when managing distress we are largely using sensory input to stimulate the parasympathetic or rest, digest and bond system. A key element in this system is the action of the vagal nerve which has branches relaying information between the gut, heart, brain and facial muscles (including ms. used in eating and emotional expression). According to Steven Porges’s polyvagal theory stimulation of this nerve acts as a brake on the fight and flight response and supports the rest, digest and bond response - including slowing heart rate and lowering blood pressure. Activities such as diaphragmatic breathing (with a focus on the out breath), eating, humming, singing and yoga stimulate vagal tone. 	Porges (2009). The polyvagal theory.
4. Discuss the relationship between sensory processing & behavioural responses (Dunn’s Model)	8	<ul style="list-style-type: none"> Charting the four basic patterns of responding to sensory event in everyday life: seekers, bystanders, avoiders, and sensors. Brains operates based on <u>neurological threshold</u>. When thresholds are <u>low</u>, the brain notices sensory input very quickly (like pouring liquid into a small cup – it reaches the top quickly). When thresholds are <u>high</u>, the brain takes longer time to accumulate enough input for it to register (like pouring into a big cup – takes longer to fill). Regulating behavioural responses are <u>active</u> and <u>passive</u>. Could use example of behavioural responses of a seeker, bystander, avoider and sensor in a supermarket. 	Engel-Yeger, B., & Dunn, W. (2011) Exploring the relationship between affect and sensory processing patterns in adults.

5. Explore sensory processing issues in people with mental illness	9-10	<ul style="list-style-type: none"> • Mental health consumers often experience Issues with sensory modulation. • <u>Hypersensitivity</u> relates to hyper-vigilance to threats in the environment and is associated with a defensive mode and a constant state of parasympathetic activation. Sensory input may be detected and responded to at a subconscious level. • <u>Hyposensitive</u> individuals may miss information or cues in the environment and may appear to ‘under react’ to seemingly alerting sensations. • Discuss examples on slide and some from practice. 	<p>Brown et al. (2002). Sensory processing in schizophrenia</p> <p>Brown, Shanker, & Smith (year). Bipolar, PD & sensory processing impairment.</p> <p>Schopmann et al. (2007). Bodily sensations and self harm.</p> <p>Warner et al. (2013). Trauma & SM</p>
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Module 2: Sensory Modulation Assessment and Planning			
Learning Objectives	Slide	Key points/content	Readings
1. Discuss therapeutic use of self in sensory modulation	12	<ul style="list-style-type: none"> • The sensory input from other human beings is what people will be most attentive to. • Importance of communicating trust and safety through verbal and nonverbal communication (voice tone, posture, body language, speed and range of movement). • We need to be aware of how peoples’ trauma history and cultural needs affects their interpersonal responses and sense of threat and safety. • Essential to strive for an understanding of the person’s lived experience of distress and what helps while using the sensory strategies. 	
2. Develop familiarity with a basic sensory assessment	13-15	<ul style="list-style-type: none"> • Provide copy of the assessment – <u>Self-Rating Tool Level of Alertness</u> and talk through content and process. • Ask staff to practice using the assessment with each other, then once they are familiar with it, with service users. 	<p>Lee et al. (2010). Sensory assessment and therapy .</p> <p>Champagne (2011). Self-rating tool level of alertness</p>
3. Develop knowledge of strategies for calming and alerting in different sensory modalities	16-23	<ul style="list-style-type: none"> • Discuss the principle of finding the ‘just right’ arousal – optimum <u>calm</u> and <u>alert</u> arousal. • Provide real practice stories in various situations when to adjust arousal levels ie. calm state when sleeping; calm but alert state when attending doctor’s appointment. 	<p>Champagne & Stromberg (2004). Sensory approaches in psychiatric settings.</p>

		<ul style="list-style-type: none"> Briefly highlight the handout with the key principles for calming and alerting in each of the sensory systems. Present examples of calming and alerting strategies through different sensory systems using sensory items available at the unit. 	
4. Discuss process of selection of strategies and incorporating these into crisis and self-management plans	24-25	<ul style="list-style-type: none"> Sensations can be used mindfully to help feel more calm and/or alert. Can be used for your own benefit. Provide copy of sensory diet crisis intervention worksheet and talk through content and process. Ask staff to practice using the worksheet with each other, then with service users. Introduce the use of a sensory kit as a personalised kit created by the individual who intends to use it. Sensory kit is a self-created box, bag, or bin to keep meaningful items that each person finds specifically important and helpful – both for preventative purposes and during times of crisis. 	<p>O'Hagan et al. (2008). Best practice S&R reduction</p> <p>Champagne (2011). Sensory diet crisis intervention worksheet.</p>

Module 3: Sensory Modulation Intervention			
Learning Objectives	Slide	Key points/content	Readings
1. Identify clients' early warning signs and stages of escalating distress	27-28	<ul style="list-style-type: none"> Discuss the arousal window and describe each stages of arousal. Discuss the warning signs of arousal. 	<p>Brown et al. (2002). Sensory processing in schizophrenia</p> <p>Knight et al. (2010). Multisensory interventions</p>
2. Discuss how to facilitate the use of sensory strategies within the sensory room and on the ward	29-31	<ul style="list-style-type: none"> Explain the sensory tools available within the sensory room and demonstrate their safe use. Invite staff to try using the sensory tools and discuss their experience. Facilitate questions and answers about using the sensory room and tools. Highlight that it is ideal to orientate the service user to the room and equipment as early in their stay as possible, so that they know their preferences before they become distressed. It is best if staff stay in the room and support the use of strategies when clients are distressed. Introduce the use of sensory cart and tools – it is one example of physical environment modifications or environmental enrichment. This cart facilitates mobility of sensory tools within the unit.. 	<p>Champagne (2006). Creating sensory rooms</p> <p>Sutton et al. (2013). Optimising arousal</p> <p>Sutton & Nicholson (2011). Sensory modulation in acute mental health wards</p> <p>Chalmers et al. (2012). Establishing sensory-based approaches in mental health</p>

3. Identify health and safety considerations in the use of the sensory room and tools	32	<ul style="list-style-type: none"> • Discuss the safety considerations when using sensory room and tools. • Discuss and demonstrate weighted blanket use guidelines and considerations. 	Champagne (2011). Chapter 3: Sensory modulation and intervention (pp. 137-138).
4. Discuss evaluation of sensory modulation sessions and information to be recorded	33	<ul style="list-style-type: none"> • Discuss after session process namely client's reflections, returning of sensory tools, and documentation. • Ensure staff has completed documentation ie. guest book when using sensory room, medical file (progress note), <u>Self-Rating Tool Level of Alertness</u> and safety and/or crisis plan. • Document effects of sensory modulation on client's medical file (progress notes) using the <u>Self-Rating Tool Level of Alertness</u>. • Report on client's behaviour, mental state, time spent inside the sensory room, sensory tools used, pre-post intervention rating. • Consider whether safety and/or crisis plans need updating. 	

Appendix N: Sensory Modulation Practice Checklist for Staff

Sensory Modulation Practice Checklist for Staff

This checklist provides a guideline of the steps and processes for implementing a sensory modulation approach with service users following admission to the acute inpatient mental health unit.

Service user Orientation and Planning	Completed?
<input type="radio"/> Inform service users about the sensory modulation approach. Do this as early as possible following admission as part of their orientation to the ward.	
<input type="radio"/> Introduce the different sensory modalities / tools available in the sensory room and cart. Do this when the service user is not acutely distressed. <input type="radio"/> Demonstrate appropriate use of sensory modalities / tools <ul style="list-style-type: none"> ▪ Visual (Sight) ▪ Audio (Hearing) ▪ Olfactory (Smell) ▪ Gustatory (Taste) ▪ Tactile (Deep and Light Touch, Temperature, and Pain) ▪ Proprioceptive (Movement in Joints and Muscles) ▪ Vestibular (Position and Acceleration) 	
<input type="radio"/> Explore service users' experiences in using sensory modalities and help them to identify their sensory preferences <ul style="list-style-type: none"> ○ What helps them to feel calm? ○ What helps them to feel alert? ○ Are any of the tools or strategies distressing or uncomfortable, or contraindicated due to health conditions (eg. allergies, musculoskeletal issues)? 	
<input type="radio"/> Assist service users to identify and record preferred strategies. These can be captured in a sensory preferences assessment tool and added to the service users' prevention & crisis/safety plans. Contraindicated sensations should also be recorded.	
Supporting De-escalation and Self-management of Arousal	Completed?
<input type="radio"/> Identify signs of agitation or distress in service users as early as possible (see arousal level chart). Encourage service users to identify their own early warning signs and seek assistance to use the sensory strategies early.	
<input type="radio"/> Invite service user to use the sensory room or cart. Ask them which strategies or tools they think would help. Remind them of their safety/crisis plan, and which tools had been helpful in the past.	
<input type="radio"/> Be aware of potential safety issues for the service user or staff involved. Follow ward guidelines for managing risk including communicating plan to use sensory room/strategies with other staff.	
<input type="radio"/> Support service user to use the sensory room and/or tools. Focus on building trust and a sense of safety by being a calming and grounding influence. Ask them what they would like you to do (ie. Sit quietly, use tools alongside them, talk through their distressing situation?). Check in with	

service user during and at the end of the session to ensure the strategies are helping and watch for signs of discomfort or escalation.	
<input type="radio"/> Assist service user to reflect on their use of sensory tools to manage their own distress. Discuss what worked well and what was not so effective, and whether anything needs to be altered in their crisis/safety plan. Complete documentation as described below.	
<input type="radio"/> Support service user to use their sensory strategies to maintain a calm and alert state. Encourage use of strategies on a daily basis to maintain wellbeing and prevent crisis. This might involve identifying possible triggers, planning to use sensory strategies to avoid or reduce impact of stressful situations, developing an individualized sensory kit and building sensory strategies into everyday routines.	
Documentation	Completed?
<input type="radio"/> Fill in the relevant log book (for the sensory room or sensory cart) Including: Service User Name, Staff Name & Signature, Date, Start & Finish time, Feedback	
<input type="radio"/> Record service user experiences by using the Self-Rating Tool. File the Self-Rating Tool in service user's medical record	
<input type="radio"/> Update service user's progress notes <ul style="list-style-type: none"> <input type="radio"/> Behaviour <input type="radio"/> Mental state <input type="radio"/> Time spent in using sensory room and/or sensory cart, <input type="radio"/> Sensory modalities used <input type="radio"/> Pre-post intervention ratings 	
<input type="radio"/> Update service user's safety and/or crisis plan if necessary	
Health & Safety Considerations	Completed?
<input type="radio"/> Check service user's precautions or contraindications <ul style="list-style-type: none"> <input type="radio"/> Hypersensitivity to particular input (this may be trauma related) <input type="radio"/> Musculoskeletal issues <input type="radio"/> Allergies <input type="radio"/> Seizures <input type="radio"/> Respiratory ailments <input type="radio"/> Cardiac condition 	
<input type="radio"/> Ensure hygiene is followed before and after use of sensory modalities. Use antibacterial wipes to clean items.	
<input type="radio"/> Be mindful of service user's level of arousal. Check in and watch for signs of escalation or discomfort regularly.	
<input type="radio"/> Check sensory spaces and tools are in a tidy and working condition after use	
<input type="radio"/> Return and secure items after use <ul style="list-style-type: none"> <input type="radio"/> Return sensory items and cart to designated locations <input type="radio"/> Lock sensory room or cabinet (dependent on the unit policy and procedures) 	

Appendix O: Detailed Research Implementation Plan

Detailed Research Implementation Plan

Key stakeholder Roles / responsibilities

	Stakeholder	Role	Responsibilities of Stakeholder	Responsibilities of Lead researcher to Stakeholders
1	Gilbert Azuela	Lead Researcher	Coordinating study, collating and analysing data, writing up findings.	Provide monthly updates on sensory modulation implementation, lead coordination of sensory modulation staff training, provision of monthly consultation/supervision to unit champions/trainers
2	Daniel Sutton, Kirstin van Kessel, Paula Kersten	Supervisors	Provide supervision at least monthly. Provide methodological support via email or phone calls. Provide timely feedback on written work.	Engage in monthly supervision, respond to feedback, request help as needed
3	Te Pou & AUT	Scholarship provider	Provide scholarship payments	Provide project updates, manage research budget, produce final report

██████████ District Health Board – ██████████

Unit 1: Staff					
	Stakeholder	Role	Contact Details	Responsibilities of Stakeholder	Responsibilities of Lead researcher to Stakeholder
1	██████████	Research Assistant	██████████	Recruitment of participants, collecting and de-identified data, liaise with Lead Researcher on progress of research implementation	Contact regularly to ensure support provision and implementation process on recruiting participants and collecting of data
2	██████████ ██████████	Unit Champions/ Trainer	██████████ ██████████	Provide sensory modulation training workshop. Lead embedding sensory modulation to practice	Lead the coordination of training and provide consultation when needed; provision of monthly

					consultation/supervision to unit champions/trainers
3	██████████	██████████ Middle Management	████████████████████	Support implementation of sensory modulation to the unit by endorsing it to staff.	Seek support to ensure involvement of staff for the programme. Provide monthly updates on sensory modulation implementation
4	██████████	██████████ Middle Management	████████████████████	Support implementation of sensory modulation by endorsing it to staff.	Seek support to ensure involvement of staff for the programme. Provide monthly updates on sensory modulation implementation
5	██████████ ██████████	██████████ ██████████	████████████████████ ████████████████████	Provide cultural input and consultation throughout the research process.	Access cultural consultation when needed. Provide monthly updates on sensory modulation implementation
6	██████████ ██████████	Service User Advisors	████████████████████	Provide input from service users' perspective and consultation the research process.	Access consultation when needed. Provide monthly updates on sensory modulation implementation
7	██████████	Learning & Development Unit	████████████████████	Support training of staff on sensory modulation by provision of learning resources.	Coordinate and collaborate on progress of training provision. Provide monthly updates on sensory modulation implementation
8	██████████ ██████████ ██████████	██████████ ██████████ ██████████ Upper Management	████████████████████ ████████████████████ ████████████████████	Provide professional practice input and consultation when needed.	Access consultation when needed. Provide monthly updates on sensory modulation implementation
9	██████████ ██████████	██████████ ██████████	████████████████████ ████████████████████	Provide organisational and operational input on research implementation to mental health units.	Access consultation when needed. Provide monthly updates on sensory modulation implementation

Upper Management

District Health Board –

Unit 2: Staff					
	Stakeholder	Role	Contact Details	Responsibilities of Stakeholder	Responsibilities of Lead researcher to stakeholders
1		Unit Champions/ Trainer		Recruitment of participants, collecting and de-identified data, liaise with Lead Researcher on progress of research implementation.	Contact regularly to ensure support provision, and implementation process on recruiting participants and collecting of data
2		Unit Champions/ Trainer		Provide sensory modulation training workshop. Lead embedding sensory modulation to practice.	Lead the coordination of training and provide consultation when needed; provision of monthly consultation/supervision to unit champions/trainers
3		Middle Management		Support implementation of sensory modulation to the unit by endorsing it to staff.	Seek support to ensure involvement of staff for the programme. Provide monthly updates on sensory modulation implementation
4		Middle Management		Support implementation of sensory modulation by endorsing it to staff.	Seek support to ensure involvement of staff for the programme. Provide monthly updates on sensory modulation implementation
5		Kaumatua Whaea		Provide cultural input and consultation the research process.	Access cultural consultation when needed. Provide monthly updates on sensory modulation implementation
6		Service User Advisors		Provide input from service users' perspective and consultation the research process.	Access consultation when needed. Provide monthly updates on sensory modulation implementation

7		Learning & Development Unit		Support training of staff on sensory modulation by provision of learning resources.	Coordinate and collaborate on progress of training provision. Provide monthly updates on sensory modulation implementation
8		Upper Management		Provide professional practice input and consultation when needed.	Access consultation when needed. Provide monthly updates on sensory modulation implementation
9		Upper Management		Provide organisational and operational input on research implementation to mental health units.	Access consultation when needed. Provide monthly updates on sensory modulation implementation

Proposed research phases to stakeholders

PHASE 1 - Exploratory

Date	Tasks	Resources	Approximate Hours	Responsible Person
July 2015 – week 1	Distributing the Organisational Readiness Questionnaire to the Management team includes recruitment of participants.	Organisational Readiness Questionnaire	2 hours	Research Assistant
July 2015 – week 1	Distributing the Staff Survey Questionnaire to unit's clinical and support staff includes recruitment of participants.	Staff Survey Questionnaire	2 hours	Research Assistant
July 2015 – week 2	Collecting the Organizational Readiness Questionnaire	n/a	2 hours	Research Assistant
July 2015 – week 2	Collecting the Staff Survey Questionnaire	n/a	2 hours	Research Assistant

July 2015 – week 3	Reviewing service user's clinical records (n=6)	Template for Reviewing Service User's Clinical record	12 hours spread	Research Assistant
July 2015 – week 4	Sourcing organisation records on seclusion, restraint, and PRN use	n/a		Lead Researcher
July 2015 – week 4	Sourcing and reviewing organisational policy related to de-escalation of aggressive behaviour, agitated and distressed service users and seclusion and restraint	n/a		Lead Researcher
July 2015 – week 4	1:1 Interview with staff – 1 clinical and 1 management	Audio Recorder, Interview room, Pen and Paper	3 hours	Lead Researcher

PHASE 2 – IMPLEMENTATION

Date	Tasks	Resources	Approximate Hours	Responsible Person
August 2015 – week 1	Sensory Modulation Training Workshop	Workshop Resources, Unit's Champions	8 hours	Lead Researcher
August 2015 – week 1	Distributing and collecting of Sensory Modulation Competency Questionnaire at the training workshop includes recruitment of participants.	Sensory Modulation Competency Questionnaire	30 minutes	Research Assistant
August 2015 – week 2 to 4	Setting of Mental Health Unit Environment	Sensory Items	2 hours per week	Lead Researcher and Unit's Champions
August 2015 to January 2016 –	This period is the implementation of the sensory modulation programme. Provision of professional support to key staff of the unit through regular monthly supervision	Meeting room	2 hours per month	Lead Researcher
August 2015 to January 2016	This period is the implementation of the sensory modulation programme. Collecting of Service Users outcome rating scale form. Collecting of sensory room logbook records.	Outcome Rating Scale and Sensory Room Logbook	1 hour per week	Research Assistant
January 2016 – week 4	Programme wrap-up with the organization. Meeting with stakeholder	Meeting room	1 hour	Lead Researcher and Research Supervisor

PHASE 3 – EVALUATION

Date	Tasks	Resources	Approximate Hours	Responsible Person
February 2016 – week 1	Focus group interview with clinical and support staff	Interview room, Audio Recorder, pen and paper	2 hours	Lead Researcher
February 2016 – week 1	Distributing the Staff Survey Questionnaire to unit’s clinical and support staff includes recruitment of participants.	Staff Survey Questionnaire	2 hours	Research Assistant
February 2016 – week 2	Focus group interview with managers	Interview room, Audio Recorder, pen and paper	2 hours	Lead Researcher
February 2016 – week 2	Collecting the Staff Survey Questionnaire includes recruitment of participants.	n/a	2 hours	Research Assistant
February 2016 – week 3	Recruitment of participants for the focus group interview with service users	Interview room, Audio Recorder, pen and paper	2 hours	Research Assistant
February 2016 – week 3	Focus group interview with service users	Interview room, Audio Recorder, pen and paper	2 hours	Lead Researcher
February 2016 – week 3	Reviewing service user’s clinical records (n=6)	Template for Reviewing Service User’s Clinical record	12 hours spread	Research Assistant
February 2016 – week 4	Sourcing organisation records on seclusion, restraint, and PRN use	n/a		Lead Researcher
February 2016 – week 4	Sourcing and reviewing organisational policy related to de-escalation of aggressive behaviour, agitated and distressed service users and seclusion and restraint	n/a		Lead Researcher
February 2016 – week 4	1:1 Interview with staff – 1 clinical and 1 management	Audio Recorder, Interview room, Pen and Paper	3 hours	Lead Researcher

Appendix P: Research Assistant Job Description

Research Assistant Job Description

General Tasks

1. Recruitment of participants
2. Distributing of survey questionnaires
3. Collecting of survey questionnaires
4. De-identifying of survey questionnaires before handing it to the Lead Researcher
5. Liaising with the Lead Researcher on progress of data collection on survey questionnaires and recruitment of participants

Recruitment

Initial contact with potential participants

Management staff will first be contacted through a stakeholder consultation meeting initiated and hosted by the lead researcher. Each unit's management team will be involved in developing an MOU between the organisations and AUT.

Clinical and support staff will be recruited through intermediaries within the units (likely to be the units' nurse specialist and lead occupational therapist). Initial information about the study will be provided verbally within staff meetings.

Service users will also be recruited through intermediaries within the units (likely to be their key worker, occupational therapist or service user representative), who will provide initial verbal information about the study.

Collection of contact details of potential participants

Management staff information will be collected by the lead researcher during the initial stakeholder meeting. These contact details will be collected for communication and liaison related to their participation in the study.

Clinical and support staff details will not need to be collected by the lead researcher. The invitation to participate in the study will occur through staff meetings. Communication about the study can be emailed to all staff via the unit's Administrator.

Service user contact details will be collected by the key workers and recorded on the consent form.

Invitation to potential participants

Clinical and support staff will be invited to participate by the intermediaries who will provide verbal and written information about the study. Written information is provided in a study information sheet (*see F1 - Participant Information Sheet for Mental Health Staff General Participation*). In the final phase of the study up to 8 staff participants will be invited (purposively) to participate in a focus group or 1:1 interview. They will be provided with a separate information sheet and consent form for this process (*see F2 – Participant Information Sheet for Mental Health Staff Focus Group*).

Service users will be invited to participate by an intermediary (eg. key worker) and those who express interest in participating will be provided with a copy of the study information sheet and consent form by their key worker or other intermediary.

Time to consider the invitation for potential participants

There will be up to two weeks for the participants to consider the invitation. This time applies for the mental health staff and service users.

Responding to the invitation for potential participants

All staff and service users who are interested in participating will respond by expressing their interest verbally to the intermediaries, who will then offer them a consent form.

Giving consent for potential participants

The intermediaries will provide staff and service user participants with a consent form (see F4 – Consent Form for General Participation, F5 – Consent Form for One to One Interview, F6 - Consent Form for Focus Group Interview). The intermediaries will ensure that participants understand the points listed in the consent form and once it is signed will return it to the unit’s administrator.

Follow up invitations for potential participants

There will be a follow up invitation to the mental health staff and service users, two weeks after the initial invitation.

Below is the table indicating the number of participants for each individual unit.

Participants	Total	Phase 1	Phase 2	Phase 3
Management	Up to 6	2 to 4 for Organisational Readiness Questionnaire 1 for 1:1 interview	n/a	4 to 6 for focus group
Clinical & Support Staff	Up to 30	25 to 30 for Staff Survey 1 for 1:1 interview	25 to 30 for pre Sensory Modulation Competency Questionnaire	4 to 8 for focus group 25 to 30 Staff Survey
Service Users	Up to 8 for focus group	n/a	For self-rating scale of arousal pre-post intervention is dependent on the frequency of sensory modulation use	4 to 8 for focus group

Appendix Q: Research Assistant Implementation Plan Guide

General Tasks

1. Recruitment of participants
2. Distributing of survey questionnaires
3. Collecting of survey questionnaires
4. De-identifying of survey questionnaires before handing it to the Lead Researcher
5. Liaising with the Lead Researcher on progress of data collection on survey questionnaires and recruitment of participants

Tasks Specifics

PHASE 1 - Exploratory

Date	Tasks	Resources	Approximate Hours	Responsible Person
July 2015 – week 1	Distributing the Organisational Readiness Questionnaire to the Management team includes recruitment of participants.	Organisational Readiness Questionnaire	2 hours	Research Assistant
July 2015 – week 1	Distributing the Staff Survey Questionnaire to unit's clinical and support staff includes recruitment of participants.	Staff Survey Questionnaire	2 hours	Research Assistant
July 2015 – week 2	Collecting the Organizational Readiness Questionnaire	n/a	2 hours	Research Assistant
July 2015 – week 2	Collecting the Staff Survey Questionnaire	n/a	2 hours	Research Assistant
July 2015 – week 3	Reviewing service user's clinical records (n=6)	Template for Reviewing Service User's Clinical record	12 hours spread	Research Assistant

PHASE 2 – IMPLEMENTATION

Date	Tasks	Resources	Approximate Hours	Responsible Person
August 2015 – week 1	Distributing and collecting of Sensory Modulation Competency Questionnaire at the training workshop includes recruitment of participants.	Sensory Modulation Competency Questionnaire	30 minutes	Research Assistant
August 2015 to January 2016	This period is the implementation of the sensory modulation programme. Collecting of Service Users outcome rating scale form. Collecting of sensory room logbook records.	Outcome Rating Scale and Sensory Room Logbook	1 hour per week	Research Assistant

PHASE 3 – EVALUATION

Date	Tasks	Resources	Approximate Hours	Responsible Person
February 2016 – week 1	Distributing the Staff Survey Questionnaire to unit’s clinical and support staff includes recruitment of participants.	Staff Survey Questionnaire	2 hours	Research Assistant
February 2016 – week 2	Collecting the Staff Survey Questionnaire includes recruitment of participants.	n/a	2 hours	Research Assistant
February 2016 – week 3	Recruitment of participants for the focus group interview with service users	Interview room, Audio Recorder, pen and paper	2 hours	Research Assistant
February 2016 – week 3	Reviewing service user’s clinical records (n=6)	Template for Reviewing Service User’s Clinical record	12 hours spread	Research Assistant

Appendix R: Compilation of Stakeholders Meeting Minutes

Meeting 1

MINUTES OF MEETING

Sensory Modulation research meeting

Date: 02 July 2015

Venue: [REDACTED]

Present:

Daniel Sutton, Gilbert Azuela, [REDACTED]
[REDACTED]
[REDACTED]

Apologies: [REDACTED]
[REDACTED]
[REDACTED]

No	Discussion	Planned Actions
1	<p>Overview 3 Phases The aim of the research – Organisational Case study, 2 Units [REDACTED]</p> <p>a. Exploratory Phase [July 2015] – Baseline data [1 Month] - Organisational readiness – 9 areas to review - Staff Survey – ward climate/attitudes/confidence - Policy and procedure review - Review of Service user. File – template – Demographics – Strategies – Random sample</p> <p>b. Implementation [Aug 2015 - 6 months] - Training – existing training programme [REDACTED] - Environmental review. - Set up room and equipment. - Supervision and Consultation. - Staff implementation of SM [Training tools, Tina Champagne tools, Safety plan, Recording effectiveness. - Training needs to be facilitated by unit. Champion with Gilbert overseeing the training.</p> <p>Evaluation</p>	
2	<p>Budget up to \$3,000. To provide extra equipment as necessary during the setup of Phase 2. Interested in organisational Change and implementation of SM rather than whether it works or not.</p>	
3	<p>a. Research JD – Attached Detailed research implementation plan – Attached</p>	

Action	Person Responsible	Deadline for Completion
Confirm Research Assistant Role for both units by contacting Team Leaders [REDACTED]	Gilbert	
Planning meeting to organise with DHBs Champions and with [REDACTED] re: sensory modulation workshop – proposed meeting date is on 31 July Friday TBC ; possible training date sometime in August ie. 28 Aug.; Query if Gilbert can provide training? DHBs Champions namely: [REDACTED]	Gilbert	
Memorandum of Understanding between DHBs and AUT Research Offices. MoU copy to be cc'd to [REDACTED]	Gilbert & Daniel	
CNS for [REDACTED] to identify	Gilbert to contact [REDACTED]	
Locality agreement from [REDACTED] DHB Research Office to get confirmation	Gilbert to contact [REDACTED]	
Identify sensory modulation committee for each unit with composition of representatives from nurse (1x), OT (1x), support worker (1x), service user advisor (1x), and management (1x) (Team leader or CNS)	Gilbert to liaise with Unit's Team Leaders	

Meeting 2

Sensory Modulation Trainers' Meeting

[REDACTED]

31 July 2015, 3-4:30pm

Attendees

- Gilbert Azuela, Lead Researcher - AUT/Te Pou
- [REDACTED] DHB
- [REDACTED] DHB
- [REDACTED] DHB

- [REDACTED] DHB

Apologies

[REDACTED]
[REDACTED]
[REDACTED]

General Agenda

- Sensory Modulation Workshop Planning

Points of Discussion

- There are two options for training proposal:

Options	Name	Description																				
1	Full day training workshop	<ul style="list-style-type: none"> - Proposed location is [REDACTED]'s training room and simulated sensory room; if not [REDACTED] would be the location (second floor). - 2 champions to facilitate plus Gilbert - 6 training days based from the number of staff of both units, if there is approximately 120 staff divide this by 6 days, there will be 20 staff per training day. Staff can choose which day suits them. It will be open also for other DHB mental health staff but the priority will be the staff from two units. The spaces available for other DHBs mental health staff are 4 to 6. These spaces are to be decided by L&D. - Limited champion was raised as barrier to facilitate training ie. TWOM has 1 OT Champion at this stage. - [REDACTED] is open to extend her capacity for additional training day. - Proposed training date is September 2015 <table border="1"> <thead> <tr> <th>Week</th> <th># of Training</th> <th>Date</th> <th>Champions</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>TBC</td> <td>TBC</td> </tr> <tr> <td>2</td> <td>2</td> <td>TBC</td> <td>TBC</td> </tr> <tr> <td>3</td> <td>2</td> <td>TBC</td> <td>TBC</td> </tr> <tr> <td>4</td> <td>1</td> <td>TBC</td> <td>TBC</td> </tr> </tbody> </table> <ul style="list-style-type: none"> - Full day training is preferred to give staff good focus on learning. 	Week	# of Training	Date	Champions	1	1	TBC	TBC	2	2	TBC	TBC	3	2	TBC	TBC	4	1	TBC	TBC
Week	# of Training	Date	Champions																			
1	1	TBC	TBC																			
2	2	TBC	TBC																			
3	2	TBC	TBC																			
4	1	TBC	TBC																			
2	4-hour training (split)	<ul style="list-style-type: none"> - Staff to attend 4-hour training in the morning before attending their afternoon regular shift. Common consensus from trainers is that it is not ideal for learning because of long hours of work ie. 4-hour training + 8 hour shift. - Proposal for an on-line module for staff to complete before attending practical training on sensory modulation. Time and 																				

		planning required developing an online module and integrating it to DHB online learning tool. This idea is to propose to [REDACTED] to check the feasibility.
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Action Points

Tasks	Who
Contact [REDACTED] for the training proposal to seek approval which option is preferred and realistic on releasing staff on training day.	Gilbert
Contact [REDACTED] from [REDACTED] on how to access their training room and simulated sensory room.	[REDACTED]
Minutes to share with Nurse Educators [REDACTED] (DHB) [REDACTED] (new educator for DHB and [REDACTED] DHB).	Gilbert
Meeting to be held in a fortnight possibly Mondays, Tuesdays, or Wednesdays 3-4pm to accommodate [REDACTED] as she works part-time.	Gilbert

Meeting 3

Sensory Modulation Trainers' Meeting

[REDACTED]

31 July 2015, 3-4:30pm

Attendees

- Gilbert Azuela, Lead Researcher - AUT/Te Pou
- [REDACTED] DHB
- [REDACTED] DHB
- [REDACTED] DHB
- [REDACTED] DHB
- [REDACTED] DHB
- [REDACTED] DHB L & D Representative

Apologies

- [REDACTED] DHB

General Agenda

- Sensory Modulation Workshop Planning

Points of Discussion

Topic	Discussion	Action Points
Updates from units' manager	<p>█████ indicated that maximum of 5 staff can be released from █████ per training day.</p> <p>Awaiting indication from █████ for number staff to be released per training day.</p>	Gilbert to follow up with █████ and █████
Training dates	<p>█████'s training room and sensory room are available on these dates: 29 & 30 September, 1, 5, 7, & 9 October.</p> <p>█████, Clinical Lab Manager from █████ will get back to Gilbert by Friday 14 August to provide information on costing of using █████ facilities.</p>	It needs a confirmation from █████ and █████ for the feasibility of releasing staff on these dates.
Trainers' availability	<p>DHBs SM trainers to indicate their availability on the above training dates for training facilitation.</p> <p>█████ indicated 29 September and 5 October.</p>	DHBs SM Trainers will email their preferred/available date/s for the training session to Gilbert.
Viewing of sensory room at █████	DHBs SM trainers and █████ would like to visit sensory room at █████	Gilbert to arrange a day & time with █████
Printing of resources	<p>Printing of facilitators and participants' training manual will be carried out by L & D.</p> <p>Sourcing refreshments/food for the workshop is still to be explored. Query if tea/coffee is available at training site.</p>	█████ and Gilbert to coordinate.
SM Trainers' practice	To standardised training delivery, practice meetings for all trainers are to be scheduled prior to workshop days.	<p>█████ and █████ to arrange date and time with Gilbert.</p> <p>Gilbert to provide training with █████ and █████.</p>

- [REDACTED] DHB
- [REDACTED] DHB
- [REDACTED] DHB L & D Representative

Apologies

- [REDACTED] DHB
- [REDACTED] DHB
- [REDACTED] DHB

General Agenda

- Sensory Modulation Workshop Planning

Points of Discussion

Topic	Discussion	Action Points
Trainers	<p>[REDACTED] unable to continue due prior commitments.</p> <p>[REDACTED] is willing to provide training in case there are no enough trainers.</p>	<p>[REDACTED] to approach other OTs that is interested to participate in training.</p>
Release of staff for training	<p>Still waiting on this from Unit Managers. Once information is received, training dates will be scheduled. Release of staff and training dates need to synchronise.</p> <p>Trainers are all in principle that unit(s) is training venue for quick access and cost efficiency. [REDACTED] facility in [REDACTED] is one of the identified venues.</p> <p>[REDACTED] explained how the roster works in [REDACTED]. Release of staff depends on the roster of the week. It looks that 3 or 4 staff can be released but this still need to be check with [REDACTED] and [REDACTED]s.</p> <p>[REDACTED] has SM workshop schedule from [REDACTED] calendar on 11th November Wednesday. This date can also be one of the training dates for staff that are</p>	<p>Gilbert to organise meeting with [REDACTED], [REDACTED] & [REDACTED].</p> <p>Post-script 28 August: Gilbert had meeting with Daniel over the phone discussed training provision structure.</p> <p>Gilbert sent email [REDACTED], [REDACTED] & [REDACTED] for scheduling of teleconferencing re: training provision structure and releasing of staff. AUT will host teleconferencing facility.</p>

	<ul style="list-style-type: none"> - The existing barrier is the reality of practice. Taking out people a day is common challenge across units with same encounter in the pilot study in 2010. It would be great opportunity to identify other solutions and come up with workable plan for both units. - [REDACTED] is in principle that the suggestions were far more workable. This is a mixture of online learning and unit based training presented in brief stand alone session for half-hour session in a couple or three sessions in a week or two. This is a workable solution by providing introduction via online resources from research perspective and extended resources. 80% of staff training can be achieved. However, staff on night shift and on leave of absence is very unlikely to capture. - [REDACTED] suggested using “[REDACTED]” to upload reading resources and developing lesson plan on the platform. Could use knowledge checking by answering basic principles i.e. 5 basic questions on basic principle; with 20-minute maximum. - Records of training can be tracked online via “[REDACTED]” system for staff completing supplemental training via online. Also attendance sheet can be done at during hand over for the staff whose attending unit training based sessions. - Time period 3 sessions to run. Approaches are: <ul style="list-style-type: none"> (1) Random - anyone can attend in the roster but unable to catch 12 or 13 staff and there will be six of the same staff; requires little planning; a day notice will do. (2) Systematic – this can increase the number of attendance and can look at skill mix; this requires advance notice (1 month) where roster is not yet completed. - Both approaches can get good outcome. Smart move is a day in advance and factor in rostering. - Champions of the units are involved in the training. - Start of training is on end October or early November as 4 weeks notice. - Developing resources and materials to repackage would take at least 1 month. This is realistic for Gilbert to do. - The training structure is seen as: <ul style="list-style-type: none"> (1) 3 half-hour session. This 3 half-hour sessions are spread over 2 to 3 months commencing on end of October 2015. Attendance tracking sheet will be used to track those have done sessions 1, 2, and 3. There will be 9 sessions for each unit. Particular time of the day is 3-3:30pm. Unit 	<ul style="list-style-type: none"> - [REDACTED] to give access to Gilbert & Daniel to “[REDACTED]”. - Gilbert to look on content of existing resources of sensory modulation from “[REDACTED]”. New Folder will be developed on sensory modulation tagged with Research. Sensory Modulation reading resources will be uploaded. - Gilbert to prepare training calendar for the two units and send it to both unit managers. - [REDACTED] & [REDACTED] to ensure staff to access training based from their unit rostering and training calendar. - Gilbert to re-design the existing sensory modulation training. Daniel to support. - [REDACTED] to check the training structure if it is workable to his unit.
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	<p>champions and trainers to facilitate with support from Gilbert.</p> <p>(2) Online reading resources plus knowledge checking. Tracking is via '██████'.</p>	
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Meeting 6

Sensory Modulation Trainers' Meeting

27 November 2015

██████████

Attendees:

██████████ DHB
 ██████████ DHB
 ██████████ DHB
 ██████████ DHB

Gilbert Azuela – AUT & Te Pou

Agenda:

- Feedback Module 1 Training Facilitation
- Facilitators and Barriers to Training Provision
- Setting up of sensory room and sensory cart

Discussion:

- ████████ - Performing over 100 percentage and is over capacity impacting staff availability to attend training.
- ████████ - half an hour on their shift. Everyone there in hand over,

nurses use it fully; nurse protected time every Tuesday.

- ████████ has no protective nurses' time.
- ████████ has started to use it, for example young person use of gym
- ████████ – girl use of music and dance.
- ████████ has most clinicians aware
- ████████ – may not be aware most clinicians; environment need to sensory modulate; looking champions. Building changes to happen dues to health and safety, it would take 3 years to complete doing
- ████████ – allied health poorly attended because they are working casual but not expressed interest
- Everyone agreed to provide 1:1 training, catch up sessions

- Questions on core competency but there is no training available. They need to formalise.
- It is seen that cost effective training is block the days for 3 hours training
- Community staff needs to have training too
- Discuss about the window of arousal. Level 4 is too late to provide sensory modulation.
- [REDACTED] Consumer consultant/advisor good interest; proactive live experience
- [REDACTED] consumer consultant to invite attending training
- Staff would like to expand knowledge on sensory modulation
- Reinstating sensory modulation is core competency comprise of different discipline
- Multimodel but therapeutic use of self – demonstrating staff whether nursing
- Human resources is one of the major barriers
- Building units committee of Sensory modulation champions
- SM Champion Group – members to established; terms of reference
- [REDACTED] to offer catch-up session early January to [REDACTED].
- OT Students to work with [REDACTED].
- [REDACTED] – maintenance work with [REDACTED]

Appendix S: Sensory Modulation Programme Implementation Fidelity Guide (SMPIFG)

Fidelity Domains	Response	
	Yes	No
1. Sensory Modulation Programme Design		
1. Sensory modulation programme is jointly developed by an external entity (ie. topic expert) and by organisational stakeholders.		
2. Management are communicating the validity of the sensory modulation programme to the staff.		
3. Sensory modulation programme is tailored to meet the needs of service users and staff.		
4. Sensory modulation programme is piloted to increase suitability for the mental health unit and to facilitate learning and development for staff.		
5. Sensory modulation programme has a detailed implementation plan.		
6. Sensory modulation programme has particular change targets for identified teams or groups in the organisation.		
2. Organisational Milieu		
1. The organisation has a commitment to improving service users' wellbeing and person-centred practice.		
2. The organisation is committed to on-going innovation in service delivery.		
3. The organisation has established professional networks within and outside the organisation by encouraging and supporting professional linkages.		
4. The organisation has excellent staff in implementing the sensory modulation programme.		
5. The organisation has existing policy on implementing intervention programmes in general.		
6. The organisation has stable team membership, including low staff turnover, the correct ratio of managers to total staff, and a majority of experienced staff.		
7. The organisation has a clear and stable structure for communications between management, staff and service users using formal and informal methods.		
8. The organisation has a clear perception that a sensory modulation programme will bring benefits to service users and staff.		
9. The organisation has a supportive culture and is open to changing practices.		
10. The organisation has an engaged and functional working environment (climate).		
11. The organisation has the resources needed for the implementation of the sensory modulation programme, namely provision of training, sensory tools and equipment, allocation of designated sensory space/s and release of staff to attend training.		
12. The organisation has access to sensory modulation experts and information on sensory modulation theory and practice (including online access).		
3. Organisational Workforce Qualities		
1. The management and clinical staff have a positive attitude toward sensory modulation programme implementation.		
2. The management and clinical staff are clear about their roles in implementing the sensory modulation programme and confident that they can fulfil these roles.		
3. The management and clinical staff are familiar with the organisational change and skilled to facilitate progress towards positive change.		
4. The management and clinical staff are committed and prepared to take responsibility for sensory modulation programme implementation.		
5. The organisational leaders (upper & middle management) are engaged in the implementation of the sensory modulation programme.		
4. Sensory Modulation Programme Implementation Process of Development		
1. Organisational stakeholders are consulted and considered as to their perspectives on the development of the sensory modulation programme.		
2. The organisation has sought expert advice on the development of the sensory modulation programme.		

3.	The organisation has strategies for implementing the sensory modulation programme tailored to specific target groups (eg. Maori, Pacific, Males, Females)		
4.	The organisational stakeholders (management and clinical leads) agreed to a detailed plan for implementation.		
5.	The organisation has identified the information content and the delivery methods needed to provide effective sensory modulation training.		
6.	The organisation has established a clear pathway of communication for reporting progress and concerns related to sensory modulation implementation.		
7.	Management actively influences staff to engage in the sensory modulation programme.		
8.	Sensory modulation trainers facilitate embedding of sensory modulation into practice through training sessions and practice coaching.		
9.	Designated or formally appointed staff 'champions' are present to role model and lead the implementation of the sensory modulation programme.		
10.	The organisation has an external change agent (topic expert) to facilitate decisions and favourable outcomes related to the sensory modulation programme.		
11.	The organisation has formed a multidisciplinary 'sensory modulation committee' for each specific team or unit.		
12.	The sensory modulation committees have access to professional supervision and/or expert consultation for troubleshooting of implementation challenges.		
13.	The organisation collects and uses feedback from staff, service users and management to improve sensory modulation application (through debriefing, reflection and evaluation tools).		

Appendix T: Unit A Fidelity to Implementation of Sensory Modulation Programme

Sensory Modulation Programme Implementation Fidelity Guide (SMPIFG)

Fidelity Domains	Response	
	Yes	No
1. Sensory Modulation Programme Design		
1. Sensory modulation programme is jointly developed by an external entity (ie. topic expert) and by organisational stakeholders.	√	
2. Management are communicating the validity of the sensory modulation programme to the staff.	√	
3. Sensory modulation programme is tailored to meet the needs of service users and staff.	√	
4. Sensory modulation programme is piloted to increase suitability for the mental health unit and to facilitate learning and development for staff.	√	
5. Sensory modulation programme has a detailed implementation plan.	√	
6. Sensory modulation programme has particular change targets for identified teams or groups in the organisation.	√	
2. Organisational Milieu		
1. The organisation has a commitment to improving service users' wellbeing and person-centred practice.	√	
2. The organisation is committed to on-going innovation in service delivery.	√	
3. The organisation has established professional networks within and outside the organisation by encouraging and supporting professional linkages.	√	
4. The organisation has excellent staff in implementing the sensory modulation programme.	√	
5. The organisation has existing policy on implementing intervention programmes in general.		√
6. The organisation has stable team membership, including low staff turnover, the correct ratio of managers to total staff, and a majority of experienced staff.		√
7. The organisation has a clear and stable structure for communications between management, staff and service users using formal and informal methods.		√
8. The organisation has a clear perception that a sensory modulation programme will bring benefits to service users and staff.	√	
9. The organisation has a supportive culture and is open to changing practices.		√
10. The organisation has an engaged and functional working environment (climate).		√
11. The organisation has the resources needed for the implementation of the sensory modulation programme, namely provision of training, sensory tools and equipment, allocation of designated sensory space/s and release of staff to attend training.		√
12. The organisation has access to sensory modulation experts and information on sensory modulation theory and practice (including online access).	√	
3. Organisational Workforce Qualities		
1. The management and clinical staff have a positive attitude toward sensory modulation programme implementation.		√
2. The management and clinical staff are clear about their roles in implementing the sensory modulation programme and confident that they can fulfil these roles.		√
3. The management and clinical staff are familiar with the organisational change and skilled to facilitate progress towards positive change.		√
4. The management and clinical staff are committed and prepared to take responsibility for sensory modulation programme implementation.		√
5. The organisational leaders (upper & middle management) are engaged in the implementation of the sensory modulation programme.	√	
4. Sensory Modulation Programme Implementation Process		
1. Organisational stakeholders are consulted and considered as to their perspectives on the development of the sensory modulation programme.	√	

2.	The organisation has sought expert advice on the development of the sensory modulation programme.	√	
3.	The organisation has strategies for implementing the sensory modulation programme tailored to specific target groups (eg. Maori, Pacific, Males, Females)	√	
4.	The organisational stakeholders (management and clinical leads) agreed to a detailed plan for implementation.	√	
5.	The organisation has identified the information content and the delivery methods needed to provide effective sensory modulation training.	√	
6.	The organisation has established a clear pathway of communication for reporting progress and concerns related to sensory modulation implementation.		√
7.	Management actively influences staff to engage in the sensory modulation programme.		√
8.	Sensory modulation trainers facilitate embedding of sensory modulation into practice through training sessions and practice coaching.	√	
9.	Designated or formally appointed staff 'champions' are present to role model and lead the implementation of the sensory modulation programme.	√	
10.	The organisation has an external change agent (topic expert) to facilitate decisions and favourable outcomes related to the sensory modulation programme.	√	
11.	The organisation has formed a multidisciplinary 'sensory modulation committee' for each specific team or unit.	√	
12.	The sensory modulation committees have access to professional supervision and/or expert consultation for troubleshooting of implementation challenges.	√	
13.	The organisation collects and uses feedback from staff, service users and management to improve sensory modulation application (through debriefing, reflection and evaluation tools).	√	

Appendix U: Unit B Fidelity to Implementation of Sensory Modulation Programme

Sensory Modulation Programme Implementation Fidelity Guide (SMPIFG)

Fidelity Domains	Response	
	Yes	No
1. Sensory Modulation Programme Design		
1. Sensory modulation programme is jointly developed by an external entity (ie. topic expert) and by organisational stakeholders.	√	
2. Management are communicating the validity of the sensory modulation programme to the staff.	√	
3. Sensory modulation programme is tailored to meet the needs of service users and staff.	√	
4. Sensory modulation programme is piloted to increase suitability for the mental health unit and to facilitate learning and development for staff.	√	
5. Sensory modulation programme has a detailed implementation plan.	√	
6. Sensory modulation programme has particular change targets for identified teams or groups in the organisation.	√	
2. Organisational Milieu		
1. The organisation has a commitment to improving service users' wellbeing and person-centred practice.	√	
2. The organisation is committed to on-going innovation in service delivery.	√	
3. The organisation has established professional networks within and outside the organisation by encouraging and supporting professional linkages.	√	
4. The organisation has excellent staff in implementing the sensory modulation programme.	√	
5. The organisation has existing policy on implementing intervention programmes in general.		√
6. The organisation has stable team membership, including low staff turnover, the correct ratio of managers to total staff, and a majority of experienced staff.		√
7. The organisation has a clear and stable structure for communications between management, staff and service users using formal and informal methods.	√	
8. The organisation has a clear perception that a sensory modulation programme will bring benefits to service users and staff.	√	
9. The organisation has a supportive culture and is open to changing practices.		√
10. The organisation has an engaged and functional working environment (climate).		√
11. The organisation has the resources needed for the implementation of the sensory modulation programme, namely provision of training, sensory tools and equipment, allocation of designated sensory space/s and release of staff to attend training.		√
12. The organisation has access to sensory modulation experts and information on sensory modulation theory and practice (including online access).	√	
3. Organisational Workforce Qualities		
1. The management and clinical staff have a positive attitude toward sensory modulation programme implementation.		√
2. The management and clinical staff are clear about their roles in implementing the sensory modulation programme and confident that they can fulfil these roles.	√	
3. The management and clinical staff are familiar with the organisational change and skilled to facilitate progress towards positive change.		√
4. The management and clinical staff are committed and prepared to take responsibility for sensory modulation programme implementation.		√
5. The organisational leaders (upper & middle management) are engaged in the implementation of the sensory modulation programme.	√	
4. Sensory Modulation Programme Implementation Process of Development		
1. Organisational stakeholders are consulted and considered as to their perspectives on the development of the sensory modulation programme.	√	

2.	The organisation has sought expert advice on the development of the sensory modulation programme.	√	
3.	The organisation has strategies for implementing the sensory modulation programme tailored to specific target groups (eg. Maori, Pacific, Males, Females)	√	
4.	The organisational stakeholders (management and clinical leads) agreed to a detailed plan for implementation.	√	
5.	The organisation has identified the information content and the delivery methods needed to provide effective sensory modulation training.	√	
6.	The organisation has established a clear pathway of communication for reporting progress and concerns related to sensory modulation implementation.		√
7.	Management actively influences staff to engage in the sensory modulation programme.	√	
8.	Sensory modulation trainers facilitate embedding of sensory modulation into practice through training sessions and practice coaching.	√	
9.	Designated or formally appointed staff 'champions' are present to role model and lead the implementation of the sensory modulation programme.	√	
10.	The organisation has an external change agent (topic expert) to facilitate decisions and favourable outcomes related to the sensory modulation programme.	√	
11.	The organisation has formed a multidisciplinary 'sensory modulation committee' for each specific team or unit.	√	
12.	The sensory modulation committees have access to professional supervision and/or expert consultation for troubleshooting of implementation challenges.	√	
13.	The organisation collects and uses feedback from staff, service users and management to improve sensory modulation application (through debriefing, reflection and evaluation tools).	√	

Appendix V: Research Expenses

Date	Details	Amount NZ\$
9-May-2014	Books	\$149.56
9-Aug-2014	Books	\$49.25
11-Nov-2014	Books	\$67.87
24-Apr-2015	Parking	\$3.50
24-Apr-2015	Parking	\$2.50
1-Jun-2015	Sensory Tools	\$3,174.48
1-Jul-2015	train tickets	\$9.00
1-Jul-2015	Copying	\$72.80
2-Jul-2015	Parking	\$19.60
3-Jul-2015	train tickets	\$18.00
14-Aug-2015	Petrol	\$40.00
14-Aug-2015	Meeting	\$5.20
14-Aug-2015	Meeting	\$5.20
14-Aug-2015	Meeting	\$4.20
24-Aug-2015	Parking	\$5.00
26-Aug-2015	Petrol	\$40.00
4-Sep-2015	Printing	\$29.50
9-Sep-2015	Petrol	\$40.00
9-Sep-2015	Printing	\$29.50
15-Oct-2015	Petrol voucher	\$305.50
19-Oct-2015	Administration	\$240.00
20-Oct-2015	Transcription	\$306.67
3-Nov-2015	Parking	\$10.00
1-Mar-2016	Parking fee attending Meeting in Te Pou	\$6.00
8-Mar-2016	Airfare	\$126.00
8-Mar-2016	Train ticket attending meeting in [REDACTED]	\$4.50
8-Mar-2016	Train ticket attending meeting in [REDACTED]	\$4.50
18-Apr-2016	Parking	\$2.25
18-Apr-2016	Parking	\$8.25
21-Apr-2016	Parking	\$17.00
27-Apr-2016	Car rental	\$194.90
28-Apr-2016	Tea focus group	\$181.49
2-May-2016	Tea focus group	\$24.98
8-May-2016	Transcription	\$270.00
25-May-2016	Parking attending meeting [REDACTED] DHB	\$5.00
25-May-2016	Parking attending meeting in [REDACTED]	\$4.25
14-Jun-2016	Train ticket attending meeting in [REDACTED]	\$3.00
14-Jun-2016	Train ticket attending meeting in [REDACTED]	\$6.00
16-Jun-2016	Parking attending meeting in [REDACTED]	\$4.00
17-Jun-2016	Auckland return flight - TheMHS conference presentation	\$128.00
21-Jun-2016	Staff focus group tea [REDACTED] DHB	\$25.43
27-Jun-2016	Service users focus group tea & koha [REDACTED] DHB	\$94.79
29-Jun-2016	Service users focus group tea [REDACTED] DHB	\$9.85
30-Jun-2016	Transcription	\$160.00
13-Jul-2016	Meeting in [REDACTED]	\$18.00
14-Jul-2016	Transport taxi attending meeting in [REDACTED]	\$13.60
14-Jul-2016	Transport taxi attending meeting in [REDACTED]	\$15.10
14-Jul-2016	Gold Coast return flight, accommodation and shuttle -	\$1,172.00
17-Jul-2016	Office supply DVD-R	\$10.00
17-Jul-2016	Petrol reimbursement for transport from previous meetings	\$64.63

18-Jul-2016	Office supply paper bag	\$2.00
20-Jul-2016	Afternoon tea for consumer consultant [REDACTED] DHB	\$10.40
3-Aug-2016	Petrol for attending meeting in [REDACTED]	\$58.69
4-Aug-2016	Meeting with the [REDACTED] Consumer Advisor	\$10.90
13-Aug-2016	Parking fee	\$8.00
26-Aug-2016	Parking fee attending TheMHS Conference	\$17.00
28-Aug-2016	Petrol top up in Auckland	\$28.23
28-Aug-2016	Car rental fee attending TheMHS Conference	\$404.31
16-Sep-2016	Office supplies	\$6.50
25-Sep-2017	6-months enrolment September 2017 to February 2018 after the 3-year programme funding	\$3,593.00
11-Mar-2018	6-months enrolment March to August 2018 - Student Loan after the 3-year programme funding	\$3,724.85
11-Nov-2018	Professional Proofreading	\$2,000.00
1-Dec-2018	Thesis printing and book binding	\$500.00
		\$17,564.73

NB: Expenses paid by the researcher's own money are in *italics*. This is due to that scholarship funding was run out.

Appendix W: Gantt Chart

Year	14												15												16												17 & 18												19					
Tasks / Months	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
Scholarship Applications																																																						
PGR2																																																						
Supervision																																																						
Planning and Consultations																																																						
PGR9																																																						
Ethics Application																																																						
Implementation																																																						
Stakeholders' Meetings																																																						
Phase 1: Development																																																						
Capturing Initial Data																																																						
Instruments Administration																																																						
Documents Reviews																																																						
Phase 2: Implementation																																																						
Workshop Provisions																																																						
Environmental Setting																																																						
Support Provisions																																																						
Programme Wrap-up																																																						
Phase 3: Evaluation																																																						
Instruments Administration																																																						
Documents Reviews																																																						
Analysis & Writing																																																						
Submission for Examination																																																						
Thesis Defence																																																						
Publication																																																						