Research – Dialectical Behavioural Therapy

Brief	The AAB have requested further information Dialectical Behavioural Therapy (DBT). The Applicant is a 23yo female with Asperger's Syndrome, ASD and/or Dissociative Identity Disorder. In preparation for hearing of the matter, the AAB have requested a high level review of DBT, in particular in application and effectiveness. They would also like information to assist in determining whether DBT constitutes a treatment for mental health and who would be responsible for funding treatment under APTOS. Further to above, please provide information on the treatment DBT, e.g. : • What is DBT? • What is the evidence base for DBT? • What is the effectiveness of DBT? • What is the general application of DBT? • What conditions is DBT recommended for? (Particularly interested in any application/ evidence for Asperger's Syndrome, ASD and/or Dissociative Identity Disorder) • Is DBT a recommended for mental health conditions? • What funding options are available for treatment of DBT? E.g. under Health or Mental Health services • Please provide a list of possible experts in DBT in Australia.
Date	23/06/21
Requester(s)	Michelle s22(1)(a)(ii) - irrelevant material - Senior Technical Advisor (TAB/AAT)
Researcher	Jane s22(1)(a)(ii) - irrelev - Research Team Leader (TAB)
Cleared	

Please note:

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The contents of this document are OFFICIAL

1 Contents

2 Summary

- Dialectical Behaviour Therapy (DBT) is the gold standard psychological treatment for borderline personality disorder (BPD).
- The use of DBT has been suggested as an effective treatment option for the treatment of Dissociative Identity Disorder (DID). Although no randomised controlled trials exist, expert consensus and empirical research have found that DBT can be adapted without significant changes to treat DID given the many similarities to BPD such as self-harm, suicidal behaviour, emotion dysregulation, identity disturbance, and dissociation.
- There are no studies to suggest DBT is useful for autism spectrum disorders.
- DBT can be funded through public and private mental health clinics.
- Treatment consists of one on one sessions, group skills training and telephone coaching sessions.

3 What is dialectical behavioural therapy?

DBT is a type of psychotherapy/talk therapy and a form of cognitive behavioural therapy (CBT). It was originally designed to treat the problems of chronically suicidal individuals with BPD. People with this BPD feel intense, uncontrollable emotions, have troubled relationships and have a disturbed sense of self.

The approach is called "dialectical" because it involves the interaction of two conflicting ideas, which are that improving the symptoms of BPD involves both acceptance and change [1].

It is designed to help people change unhelpful ways of thinking and behaving while also accepting who they are. It helps patients learn to manage emotions by letting them recognise, experience and accept themselves. DBT can also help patients understand why they might harm themselves, so they are more likely to change their harmful behaviour.

DBT usually includes [2]:

- individual sessions with a therapist
- skills training in groups
- telephone coaching sessions with a therapist if you are experiencing a crisis

DBT therapists often work in teams and help each other, so they can provide the best treatment possible.

A typical course of DBT involves weekly individual therapy sessions (approximately 1 hour), a weekly group skills training session (approximately 1.5–2.5 hours), and a therapist consultation team meeting (approximately 1–2 hours) [2].

4 Evidence base and effectiveness of dialectical behaviour therapy

DBT is currently the gold standard treatment for borderline personality disorder (BPD) and an effective treatment for associated problems such as repeated self-harming, attempting suicide, alcohol or drug problems, eat disorders, unstable relationships, depression, feelings of hopelessness and post-traumatic stress disorder in this population [3]. It has been shown to reduce the need for medical care and medications by as much as 90% [1].

A Cochrane Review which assessed the beneficial and harmful effects of psychological therapies for people with BPD was conducted in 2020 [4]. Twenty-four randomised controlled trials (RCTs) were included that investigated DBT or modified DBT related treatments.

Compared to treatment as usual (TAU), which includes various forms of psychotherapy, DBT:

- Reduced BPD symptom severity, self-harm, anger, impulsivity, dissociation and psychotic-like symptom and improved psychosocial functioning at end of treatment.
  - These treatment effects are small to moderate in size, however, the evidence was graded as low which means there is some uncertainty around the results.

- Did not reduce suicide related outcomes, affective instability, interpersonal problems, depression or chronic feelings of emptiness compared to TAU.

No adverse effects were found.

Earlier systematic reviews and meta-analyses have come to similar conclusions in relation to DBT for stabilising self-destructive behaviour, reducing suicide attempts and self-injurious behaviours in people diagnosed with BPD [5-7].

4.1 Other conditions where evidence of effectiveness exists

- Post-traumatic stress disorder (PTSD) [8, 9]
- Substance abuse and addiction disorders [10, 11]
- Depression [12, 13]
- Eating disorders [14]

4.2 Dialectical behaviour therapy for the treatment of dissociative identity disorder

Dissociative identity disorder (DID) is a complex post-traumatic disorder which is highly comorbid with BPD. About two-thirds of people with BPD meet the criteria for a dissociative disorder, and display features of BPD such as a high degree of suicidality [15-17].

There are no published randomized controlled trials investigating treatments for DID [15]. Empirical data and expert consensus developed by the International Society for the Study of Trauma and Dissociation suggests that carefully staged trauma-focused psychotherapy can result in a significant reduction in DID symptomology [18-20].

It has been argued by Foote and Van Orden [15] that DBT can be usefully adapted without significant changes to treat DID given the many similarities to BPD such as self-harm, suicidal behaviour, emotion dysregulation, identity disturbance, and dissociation [15].

4.3 Dialectical behaviour therapy for the treatment of autism spectrum disorder

Simular to DID, autism spectrum disorder (ASD) has overlapping traits with BPD such as emotional dysregulation, self-harm and social difficulties [21].

Adapting DBT for the treatment of ASD has been suggested by various authors [22, 23]. However, only one non-randomised trial could be located that investigates DBT for ASD [24]. This included delivering radically open dialectical behaviour therapy (RO DBT) which has been developed as an adapted form of DBT to directly target over control. The study showed the intervention was effective, with a medium effect size of 0.53 for improvement in global distress. Participants with a diagnosis of ASD who completed the therapy had significantly better outcomes than completing participants without an ASD diagnosis.

A study into the effect of DBT in ASD patients with suicidality and/ or self-destructive behaviour is currently underway, however, no results have been published [25].

As of 2013, **Asperger's** is now considered part of the autism spectrum and is no longer diagnosed as a separate condition [26].

5 What is the general application of DBT?

DBT is composed of four elements that the individual and therapist usually work on over a year or more [1, 27]:

- Individual DBT therapy, which uses techniques like cognitive restructure and exposure to change behaviour and improve quality of life.
- Group therapy, which uses skills training to teach patients how to respond well to difficult problems or situations.
- Phone calls, which focus on applying learned skills to life outside of therapy.
- Weekly consultation meetings among the DBT therapists, which offer a means of support for the therapists and to ensure they are following the DBT treatment model.

Some of the strategies and techniques that are used in DBT include:

Core Mindfulness

One important benefit of DBT is the development of mindfulness skills [28]. Mindfulness helps to focus on the present or “live in the moment.” Mindfulness skills help you slow down and focus on using healthy coping skills when you are in the midst of emotional pain. The strategy can also help you stay calm and avoid engaging in automatic negative thought patterns and impulsive behaviour [27, 28].

Distress Tolerance

Distress tolerance skills help patients to accept oneself and their current situation. There are four techniques for handling a crisis [27]:

- Distraction
- Improving the moment
- Self-soothing
- Thinking of the pros and cons of not tolerating distress

Distress tolerance techniques help prepare patients for intense emotions and empower them to cope with a more positive long-term outlook [1].

Interpersonal Effectiveness

Interpersonal effectiveness, at its most basic, refers to the ability to interact with others [27]. It helps patients to become more assertive in a relationship (for example, expressing your needs and be able to say "no") while still keeping a relationship positive and healthy. Principles include learning to listen and communicate more effectively, deal with challenging people, and respect yourself and others [27, 29].

Emotion Regulation

Emotion regulation lets an individual navigate powerful feelings in a more effective way. The skills learnt will help to identify, name, and change emotions [30].

When an individual is able to recognize and cope with intense negative emotions (for example, anger), it reduces emotional vulnerability and helps to enable more positive emotional experiences.

Over the course of treatment, individuals will learn [1, 27]:

- **Acceptance and change**: Learn strategies to accept and tolerate life circumstances, emotions, and yourself. Develop skills that can help you make positive changes in your behaviours and interactions with others.
- **Behavioural**: Learn to analyse problems or destructive behaviour patterns and replace them with more healthy and effective ones.
- **Cognitive**: Focus on changing thoughts, beliefs, behaviours, and actions that are not effective or helpful.

- **Collaboration**: Learn to communicate effectively and work together as a team (therapist, group therapist, and psychiatrist).
- **Skill sets**: Learn new skills to enhance your capabilities.
- **Support**: Be encouraged to recognize your positive strengths and attributes and develop and use them.

6 Available funding options

In most Australian states, DBT programs can be accessed through both the public and private mental health system [31, 32].

6.1 Public services

Public DBT programs are free to people living in the catchment area of a hospital that offers a program. A case manager, mental health professional or GP can assist with referral options.

Depending on the hospital, there may be a waiting time to access the program. Some DBT programs run continuously across the year, while others operate on a more specific schedule.

6.2 Private services

Private DBT programs require payment. Prices will vary depending on the specific service chosen. If you have private health insurance, check that it covers psychiatric admissions.

To join a private DBT program, a psychiatrist from the specific hospital or clinic can provide a referral.

7 Please provide a list of possible experts in DBT in Australia

Dr Amanda Johnson (Clinical Psychologist)

Dr Johnson have been trained at Monash University and in the United States at the University of Denver. Her doctoral thesis evaluated a standard DBT program in a community health setting over a three year period. She has been involved in the development of several DBT programs in the public and private sectors in Victoria and providing specialist DBT supervision, consultation and training.

Email info@melbournedbtcentre.com.au

Ph 03 9530 9777

Dr. Julie King (Clinical Psychologist)

Dr Julie King is a clinical psychologist who offers a range of psychological services. Her doctorate examined the experience of intellectual giftedness as asynchrony. She has worked with the development of youth and antidepressant protocols in general practice. With a passion for increasing resiliency and coping, Julie is intensively trained in DBT for Borderline Personality Disorder.

Mob: 0414 432 623

Email: juliepsych@gmail.com

Dr. Lillian Nejad (Clinical Psychologist)

Lillian Nejad, PhD, is a registered and endorsed clinical psychologist with over 20 years of experience in the assessment and treatment of adults with mild to severe psychological issues and disorders. She has applied her extensive knowledge and experience in a variety of settings as a Monash University Lecturer and Clinical Supervisor, as a Senior Psychologist in public mental health settings, in private practice, and within community and corporate organisations.

Contact can be made through her website. https://www.drlilliannejad.com/letstalk

Dr. Peter King (Mental Health Nurse; Individual Psychotherapist)

Peter provides education and program development in specialty areas that include Borderline Personality Disorder, Dialectical Behaviour Therapy, Crisis Intervention, Psychiatric Emergencies, Somatic Trauma Therapy and Mindfulness-based approaches in mental health care. Peter has specialist training in CBT, DBT, Somatic Trauma Therapy, Mindfulness and his Ph.D. explores treatments for individuals with Borderline Personality Disorder and clinicians' training needs

peter@cmhe.org

Australian DBT Institute: 07 56473438

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1. Research – Exposure Therapy for PTSD

Brief	Exposure Therapy - Data on its efficacy in treating PTSD. Is it the optimal treatment? Comparative data on the efficacy of other evidence based treatments for PTSD, specifically trauma-focussed cognitive behavioural therapy (CBT) and eye movement desensitisation and reprocessing (EMDR).
Date	16/08/21
Requester(s)	Jenni [redacted] - Senior Technical Advisor (TAB/AAT)
Researcher	Maddie [redacted] (and Aaron [redacted])
Cleared	

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1 Contents

2 Summary

Post-Traumatic Stress Disorder (PTSD) is a mental health condition that can develop in response to exposure to an event that threatens or is perceived to threaten a person's life or safety [1, 13]. This can include a serious accident, natural disaster or sexual assault.

People with PTSD can have intense intrusive thoughts such as flashbacks or distressing dreams related to their traumatic experience lasting for months or years. PTSD is associated with significant impacts to functioning and quality of life.

Trauma Focused Cognitive Behavioural Therapy (TF-CBT) is well-establish as an acute treatment for PTSD. Several variants of TF-CBT are strongly recommended treatment options. These include prolonged exposure therapy, cognitive therapy, cognitive processing therapy and Eye Movement Desensitisation Reprocessing (EMDR) therapy.

Prolonged Exposure therapy or variants of TF-CBT that have a component of exposure are preferred on slight weight of evidence for long term symptom reduction. Prolonged Exposure therapy has been shown to be a highly effective method for reducing PTSD symptoms in both the short-term and long-term.

3 What is Post-Traumatic Stress Disorder?

PTSD is a mental health condition that can develop in response to exposure to an event that threatens or is perceived to threaten a person's life or safety [1, 13].

PTSD can present in different ways but often involves intense intrusive thoughts and feelings related to the traumatic experience. This can include vivid flashbacks, distressing dreams, or repeated involuntary memories of the trauma. People with PTSD often avoid people, places or situations which remind them of the traumatic event. PTSD also results in alterations to cognition and mood such as memory loss or a persistent negative emotional state. It can also cause other symptoms such as irritable behaviour, hypervigilance and issues with concentration [1].

Symptoms usually appear within the first 3 months from exposure to trauma, however a person may not experience symptoms until years after the traumatic event occurred. Duration of the symptoms varies, with half of adults recovering within 3 months of developing symptoms, but some experiencing symptoms for more than 50 years. The severity of symptoms can vary over time. Many people experience more symptoms during stressful periods or when they are exposed to reminders of their trauma [1].

PTSD is associated with significant impacts to functioning and quality of life. It can affect relationships with friends and family, performance at work and can result in a reduction in engagement in activities a person previously found rewarding [2].

PTSD has an estimated lifetime prevalence of 1.3% - 12.2% depending on social background and country of residence [3]. Higher rates of PTSD have been documented among women, younger people, and people who are socially disadvantaged [4]. People in occupations that are more likely to expose them to traumatic events (for example, emergency services, healthcare works and military personnel) are more likely to develop PTSD [3, 5].

More than 50% of people with PTSD also have other mental health disorders, most commonly depression, bipolar disorder, anxiety, or substance use disorders [6].

4 Clinical Presentation

The first characteristic of PTSD is that the person has witnessed or experienced a major traumatic event [1]. This includes:

- directly experiencing the traumatic event(s)
- witnessing the traumatic event(s) in person
- learning about the traumatic event(s) which occurred to a close family member or friend
- experiencing repeated exposure to details of traumatic event(s) (for example police officers repeatedly exposed to details of child abuse).

Secondly, the person will have symptoms from each of the four PTSD symptom categories, with the symptoms lasting for at least one month [1].

1. **Intrusion**: at least one of the following symptoms
    - Intrusive distressing memories
    - Recurrent distressing dreams
    - Flashbacks of the traumatic event
    - Intense or prolonged psychological distress at exposure to reminders of the trauma
    - Physiological reactions to cues resembling an aspect of the traumatic event
2. **Avoidance**: at least one of the following symptoms
    - Avoiding places, people, objects and situations that may trigger distressing memories
    - Avoiding remembering or thinking about the traumatic event
3. **Alterations in cognition and mood**: at least two of the following symptoms
    - Inability to remember important aspects of the traumatic event
    - Persistent negative thoughts about themselves or the world
    - Distorted thoughts about the cause or consequences of the traumatic event
    - Persistent negative emotional state
    - Loss of interest in activities
    - Persistent inability to experience positive emotions
    - Feeling detached or estranged from other people
4. **Alterations in arousal and reactivity**: at least two of the following symptoms
    - Irritable behaviour and angry outbursts
    - Reckless/self-destructive behaviour
    - Hypervigilance
    - Exaggerated startle response
    - Issues with concentration
    - Sleep disturbance

Individuals with PTSD can exhibit any combination of these symptoms.

Symptoms usually appear within the first 3 months from exposure to trauma, however a person may not experience these symptoms until years after the traumatic event occurred.

5 Therapeutic treatment options

TF-CBT is the generally recommended therapeutic treatment option for PTSD [4, 10]. Cognitive behavioural therapy (CBT) is a broad category of therapies used to treat mental health disorders based on principles of learning and cognition. For people with PTSD, TF-CBT is commonly used, which specifically addresses the impact of a traumatic event.

There are several variants of TF-CBT. However, there is a lack of consensus about what therapies count as components or variants. TF-CBT can include development of coping strategies, prolonged exposure therapy, narrative exposure therapy, cognitive processing therapy, cognitive restructuring and EMDR [4, 7, 8, 14]. There is considerable overlap between different variants of cognitive behavioural therapy and they may be used together [14]. While the variants of TF-CBT are often treated separately for research purposes, "they all essentially comprise emotional processing of the traumatic memory and integration of new corrective information" [4].

5.1 Use of exposure in TF-CBT

Exposure is a therapeutic technique used in varieties of cognitive behavioural therapy. It is used for many different mental health disorders, including PTSD. Prolonged exposure therapy is a form of cognitive behavioural therapy which requires the patient to repeatedly confront distressing stimuli associated with their trauma under the guidance of a mental health professional, with the aim of extinguishing the conditioned emotional response to the traumatic stimuli [7]. This can include exposure through imagination, by describing to the patient scenes or mental imagery related to the traumatic event, or exposure to real-life stimuli associated with the traumatic event. Prolonged exposure therapy is typically conducted once or twice per week for 8-12 weeks in 60-90 minute sessions [7]. Some trials show effectiveness of the treatment at 40-60 minute sessions or even 10-20 minute sessions [4].

Other forms of TF-CBT such as Cognitive Processing Therapy and Cognitive Therapy focus more on changing problematic beliefs and cognitive patterns [10].

Narrative exposure therapy is based on exposure therapy and testimony therapy. It involves the patient developing a chronological narrative of their entire life under the guidance of a mental health professional with a focus on retelling their traumatic experience(s). Narrative exposure therapy is tailored to experiences of war and torture [7].

There is some reason to also treat EMDR as a variant of exposure therapy [15], though it is also often treated separately [7]. EDMR is a treatment for a variety of mental health disorders including PTSD. In EDMR a patient is encouraged to momentarily think about their trauma while the practitioner stimulates eye movements with the aim of desensitising the patient to their trauma. In EDMR the patient may not have to return to the traumatic experience for prolonged periods of time [9].

6 Efficacy of PTSD therapies

TF-CBT is well-establish as an acute treatment for PTSD. There is also evidence of long term efficacy of TF-CBT. However, there is no unequivocal evidence for the preference of any particular variant of TF-CBT as a frontline treatment option. Klein et al. find that exposure therapies have considerably larger effect sizes in the long term [10]. They conclude:

> Exposure-focused therapies, with the principal ingredient often being imaginal exposure, demonstrated the most robust continued improvement following treatment, yet it is meaningful that all of the broad range of trauma-focused treatments included in the meta-analysis produced lasting gains. [10 §4]

Prolonged Exposure Therapy, Cognitive Therapy, and Cognitive Processing Therapy are all strongly recommended by the Australian Guidelines for the Prevention and Treatment of Acute Stress Disorder, Posttraumatic Stress Disorder and Complex PTSD [8] and by the American Psychological Association [16]. EMDR is strongly recommended by the Australian Guidelines for the Prevention and Treatment of Acute Stress Disorder, Posttraumatic Stress Disorder and Complex PTSD [8] and conditionally recommended by the American Psychological Association [16]. Exposure is a recommended component in most treatment guidelines [4, 8, 16].

A meta-analysis of psychological treatments for adults with PTSD from 64 randomised control trials determined that prolonged exposure therapy had the highest strength of evidence for reducing PTSD symptoms [7]. The high efficacy of prolonged exposure therapy has also been supported by further meta-analyses, with exposure-based treatments showing stronger long-term improvement in PTSD symptoms relative to TF-CBT without exposure [10].

There is stronger evidence supporting the efficacy of prolonged exposure therapy than narrative exposure therapy [7]. Narrative exposure therapy is generally only recommended for adults whose trauma is related to genocide, civil conflict, political detention, or displacement [8].

Narrative exposure therapy and CBT-mixed therapies (therapies that used many components of CBT) were found to have moderate evidence for reducing PTSD symptoms [7].

A 2015 meta-analysis found then current research into EMDR to have low strength of evidence for reducing PTSD symptoms but moderate strength of evidence for loss of PTSD diagnosis and improving depression symptoms [7]. A 2018 meta-analysis found efficacy of EMDR at the acute stage does not significantly differ from other variants of TF-CBT [10].

Despite the evidence supporting prolonged exposure therapy, there has been some question as to whether exposure therapy in isolation is an effective treatment for PTSD. Some argue that exposure therapy alone does not address all of the symptoms of PTSD and should be used alongside other treatments [11]. Additionally, practitioners often fear high drop-out rates due to the distressing nature of exposure-based therapies, however evidence suggests that the drop-out rate for exposure therapies are no different from other therapies used to treat PTSD [12].

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Ratios of support

The content of this document is OFFICIAL.

Please note:

The research and literature reviews collated by our TAB Research Team are not to be shared external to the Branch. These are for internal TAB use only and are intended to assist our advisors with their reasonable and necessary decision-making.

Delegates have access to a wide variety of comprehensive guidance material. If Delegates require further information on access or planning matters they are to call the TAPS line for advice.

The Research Team are unable to ensure that the information listed below provides an accurate & up-to-date snapshot of these matters.

Research question: Is there research (national and international) available that can inform best practice in applying Ratios of Support to participant care in group programs and supported employment? Are there guidelines available in other insurance type schemes (national and international)?

Date: 14/12/2021

Requestor: Tiffany [redacted]

Request endorsed by (EL1): Jane [redacted]

Cleared by: Illya [redacted]

1. Contents

2. Summary

Occupational Therapists (OT) use clinical judgement in determining ratios of support required by clients for employment, community and social activities. OTs appeal to a wide variety of considerations covering personal, environmental and institutional factors. No guidelines have been developed by any organisation that offer clear guidance or rules for determining ratios of support. Different assessment tools are used to inform clinical decision making depending on the individual circumstances of the person requiring support.

3. Assessment Tools

Members of Occupational Therapy Australia (OTA) advised that the types of assessments they use to assist with determining support ratios varies between participants. OTs employ their clinical reasoning in determining which assessment tool will provide the best information. Some tools and strategies that were mentioned include:

- informal interview and history taking
- observing and analysing skills of formal and informal supports
- Overt Behaviour Scale
- manual handling plans
- observing rosters and scheduling
- Care and Needs Scale
- Community Integration Questionnaire s22(1)(a)(ii) - irrelevant material.

Previous research completed by the TAB Research Team in March 2021 identifies one systematic review noting that only two assessment tools have been used for both individualised support planning and resource allocation. They are the **Support Intensity Scale**

(SIS) and the **Instrument for the Classification and Assessment of Support Needs** (I-CAN) [1,2,3,4]. These two scales are the most widely researched support needs assessment scales [2]. Both are in use in Australia [2,5]. I-CANS is based on the World Health Organisation's International Classification of Functioning, Disability, and Health. SIS uses the American Association on Intellectual and Developmental Disabilities functioning model [2].

The SIS records frequency, duration and type of support required for specific activities. The assessor rates activities according to the following scales:

FREQUENCY – How frequently is support needed for this activity?

0 = none or less than monthly

1 = at least once a month, but not once a week

2 = at least once a week, but not once a day

3 = at least once a day, but not once an hour

4 = hourly or more frequently

DAILY SUPPORT TIME – On a typical day when support in this area is needed, how much time should be devoted?

0 = none

1 = less than 30 minutes

2 = 30 minutes to less than 2 hours

3 = 2 hours to less than 4 hours

4 = 4 hours or more

TYPES OF SUPPORT: What kind of support should be provided?

0 = none

1 = monitoring

2 = verbal/gestural prompting

3 = partial physical assistance

4 = full physical assistance [6].

The I-CAN records frequency and type of support required on a scale of 0 – 5 to then calculate intensity of supports required:

FREQUENCY – how often support is needed

5 = Continuously

4 = Frequently

3 = Daily

2 = Weekly

1 = Occasionally

0 = Never

TYPE – how much support is needed

5 = Pervasive

4 = Extensive

3 = Moderate

2 = Minor

1 = Managed

0 = Independent

COMBINED SUPPORT INTENSITY – sum of **Frequency** and **Type** scores

10 = Continuous / Pervasive

8 = Frequent/ Extensive

6 = Daily / Moderate

4 = Weekly / Minor

2 = Occasionally / Managed

0 = No support [7].

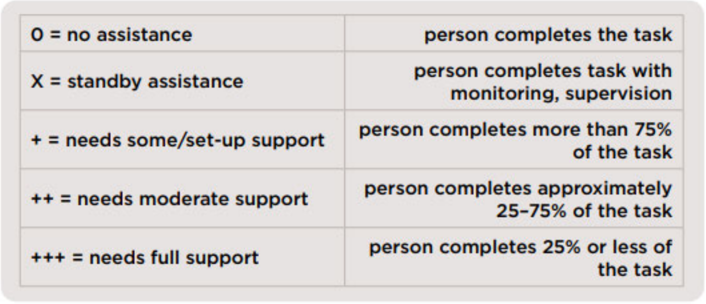
Paying particular attention to the **Type** scores in both assessment scales, a suitably qualified clinician may be able to interpret these scores in such a way as to suggest ratios of support or at least suggest something about possible ratios of support. For example, a person with a SIS Type score of 1 or 2 (monitoring, verbal/gestural prompting) for community access or employment activities may thrive with a higher ratio environment compared to a person with a SIS score of 4 (full physical assistance). Similarly, a person with an I-CAN **Type** score of 1 or 2 (managed, minor) may benefit from group social activities with a shared support worker while a person with a score of 4 or 5 (extensive, pervasive) may require direct individual support at a 1:1 or 2:1 ratio. However, the assessment tools do not specifically recommend ratios of support and any conclusions about ratios would be significantly based on clinician's expertise or judgement.

It is also worth noting that these assessment tools do not determine support needs but are based on the assessor's observations of support needs. Both tools record support needs based on the assessor's understanding and then quantify and aggregate scores to indicate overall support needs. In that sense, the contribution of these assessment tools to determining ratios of support may be limited.

4. Guidelines

Previous research completed by the TAB Research Team in March 2021 states that there are no available professional or governmental guidelines that can be used to support determining personal care hours required for a range of tasks, disabilities and severity levels [1].

ICARE NSW has produced guidance relevant to people with Spinal Cord Injury. This document estimates support needs for different levels of spinal cord injury. Considerable clinical judgement is required to determine appropriate support hours. Ratios of support are not explicitly mentioned. However, the estimates do appeal to the following scale:



0 = no assistance	person completes the task
X = standby assistance	person completes task with monitoring, supervision
+ = needs some/set-up support	person completes more than 75% of the task
++ = needs moderate support	person completes approximately 25-75% of the task
+++ = needs full support	person completes 25% or less of the task

[8]

As reasoned in 3. Assessment Tools, it may be possible to interpret this scale as implying something about support ratios, however this would need to be done carefully and with individual clinical justification.

I have not found any professional or governmental guidelines that could assist with determining appropriate ratios of support for community access or group social activities. I reached out to 13 professional Occupational Therapy organisations. I received replies from 6. All 6 of the groups (s22(1)(a)(ii) - irrelevant material) confirmed that there were no overall guidelines and that determination of support ratios occurs at a local or individual level [7. Appendix – Correspondence].

Members of the s22(1)(a)(ii) - irrelevant material reference group have advised:

> Guidelines could be useful. However, information must be triangulated including person's own statement of performance, with observation, other clinical and care information, client environment, and other relevant contextual factors. Any inconsistencies need to be sorted out. Each client's social and community participation levels are different. What is reasonable and ordinary for their age, relationships, skill set and social needs should be considered [s22(1)(a)(ii) - irrelevant material].

s22(1)(a)(ii) - irrelevant material, the Professional Practice Advisor from s22(1)(a)(ii) - i, also referred me to a member of their NDIS Reference group for further advice. s22(1)(a)(ii) - irrelevant material, OT and founder/director of s22(1)(a)(ii) - irrelevant material, is in the process of developing and trialling a support measure aimed at informing NDIS planning decisions. **Discussions regarding this project are pending** s22(1)(a)(ii) [redacted]].

5. Factors that can influence ratios of support

s22(1)(a)(ii) - i [redacted] members advised the following factors can influence decisions about determining support ratio:

- level of risk to self, others and property damage
- past incident reports
- manual handling risk plans
- self-report around comfort, confidence
- cognition
- safety risks
- vulnerability within the community
- public transport confidence/ability/ability to be trained
- level of supervision required
- maximum benefit – do they participate/benefit with number of people around
- compatibility with others, e.g. issues participating with other genders precluding group ratios
- opportunities/abilities to learn from others and form natural relationships
- unpredictable or ad hoc support needs such as behavioural support or toileting support [s22(1)(a)(ii) - irrelevant material].

Relevant considerations can include personal, environmental and institutional factors. Personal factors can include:

- goals and lifestyle
- physical features of the person (height, weight etc.)
- functional capacity of the person (e.g. capacity to assist with transfers or to self-mobilise)
- the behaviour and personality of the person (e.g. presence of behaviours of concern, how well they get on with the staff)
- the person’s capacity to engage in social activities (need for prompting, active inclusion etc.)
- need for assistive technology / availability of assistive technology

Environmental factors can include:

- risk of the activity (e.g. swimming, operating tools/equipment)
- complexity of the activity (e.g. complex employment tasks, navigating crowded event)
- duration of the activity (e.g. travel time, short trip to the shops, day trip out of town)
- risk in the environment (e.g. beach, busy urban streets, crowded events)

Institutional factors can include:

- consideration of the needs of all individuals in a group
- manual handling policy of the organisation
- availability of assistive technology, accessible vehicles etc.
- availability of trained staff
- other staffing needs (e.g. scheduled breaks, support for staff with a disability)
- legislative requirements, codes of practice, professional guidelines

This list is not exhaustive. The complexity and interdisciplinarity of determining support ratios may provide a clue as to why there is very little research directly focussing on the topic.

5.1 Manual Handling

Safe Work Australia and state-based work safety organisations have codes of practice relating to manual handling tasks [9,10,11]. The Safe Work Australia *Code of Practice for Hazardous Manual Tasks* suggests that, to maximise worker safety, transfer equipment should be preferred to team handling. In other words, where possible a single person should assist a patient or client using suitable assistive technology rather than two or more people assisting a patient or client manually. There are of course exceptions for equipment that is designed to be operated by two people [9]. A 2011 Work Safe Victoria guideline suggests that two people may be required to operate an electric hoist where the patient or client is not able to assist [10]. A 2006 manual handling guideline from the NSW Department of Ageing, Disability and Home Care (now the Department of Community and Justice) states that clients with uncontrolled movement may require two carers for personal care tasks. The guideline also recommends the development of a Client Manual Handling plan for risk management and support planning [12].

Phillips, Mellson and Richards emphasise the importance of individual risk assessments rather than just assuming that one or two carers are appropriate for transfers [13]. Thornton observes that two carers are often required for floor hoists, while a single carer is required for ceiling hoists. The latter is safer and generally more cost effective [14]. Determining whether 1:1 or 2:1 is required for transfers depends on the suitability of available equipment with implications for funding of ceiling hoists or floor hoists.

5.2 Behaviours of concern

Behaviours of concern are a frequent reason for requesting higher staff ratios. I could not find any research directly investigating the relationship between staff ratios and behaviours of concern. A 2021 Cochrane review completed by researchers at the NDIS Quality and Safeguard Commission investigated organisational interventions for reducing use of restrictive practices. They listed 11 potential interventions but did not explicitly consider staffing numbers or staff-client ratios as a factor in use of restrictive practices [15]. Correspondence with the author of this review suggested other potential sources (refer to s22(1)(a)(ii) - irrelevant material). A 2009 report from the Victorian government summarises the relationship between staffing levels and restrictive practices:

> Staffing factors have been identified as critical, though there is a lack of consensus in the literature as to how best to determine optimum staffing numbers. Higher staffing ratios have been suggested as a means of enabling early intervention and prevention of escalation. However, the availability of higher levels of staff have also been associated with a greater likelihood of staff using physical interventions, if for no other reason than they have the person power available to do so. Similarly, while lower staffing ratios make it practically more difficult to use restraint, lower staffing levels can also contribute to staff feeling anxious and consequently more likely to deploy restrictive practices earlier than they might otherwise do so had they the support (reassurance and security) of other staff close by who could offer assistance if required. Further research into these issues is necessary [16].

Relating specifically to staff-client ratios, the report refers to a study in which the researchers found higher staff to patient ratios resulted in increased use of restrictive practice when the staff in question were nursing assistants. However, there was a decreased use of restrictive practices when the staff in question were registered nurses [16]. This finding could not be corroborated as the reference appears to be incorrect, however it does coincide with other research that suggests training has a greater effect than staff numbers. Singh et al found that training staff with mindfulness techniques reduced staff interventions for aggression and this was true at low, moderate and high staff-client ratios [17].

6. Social service analogues

I looked into the literature related to ratios of support in aged care and childcare. Unfortunately, the literature did not add much to the considerations already raised above.

There is inconsistent evidence that ratios of support affect children’s learning and developments in early learning environments. A 2016 study by Iluz, Adi-Japha and Klein found some association between ratios of support and positive peer interactions [18]. A later systematic review found “child-staff ratios for pre-school aged children classrooms have small, if any, associations with concurrent or subsequent child outcomes” [19]. Though ultimately the standard of evidence in the reviewed papers was low.

In the context of aged care, a study by Baker et al found that abuse is more likely to occur in situations where there is not sufficient staff to complete all the work [20]. A study by Karimi-Shahanjarini et al found that insufficient staff in a hospital setting leads to lack of organisation and 'ad hoc' shifting of tasks [21]. In both these cases, it is not clear what counts as 'insufficient staff'. While the findings might be relevant to determining the importance of proper ratios, they do not support planning for what those ratios might be.

7. Appendix – Correspondence

I sent an initial inquiry to 13 professional occupational therapy organisations via email on 30th September 2021 (refer to table below). With minor variations for individual organisations, the message read:

> I am completing some research for the National Disability Insurance Agency, the organisation that administers Australia's National Disability Insurance Scheme (NDIS). The NDIS provides support to eligible people with intellectual, physical, sensory, cognitive and psychosocial disability.
>
> I am currently compiling existing research on how occupational therapists determine ratios of support for community access and group social activities. I am interested in how this is achieved internationally.
>
> It is common practice for Occupational Therapists to recommend support ratios required by their clients. For example, while one person may require 2:1 direct assistance for certain tasks, another person might thrive with 1:7 supervision for the same task. My questions are:
>
> - What considerations go into determining the appropriate ratio of individual support (i.e. 1:1 or 2:1)?
> - What considerations go into determining a safe and effective ratio of group support (i.e. 1:3 versus 1:7)?
>
> I'm hoping you might be able to provide some information on how your members determine the appropriate ratio of support. If possible can you please provide any:
>
> - recommendations you make to your members regarding ratios of support
> - best practice guidelines you may have developed or refer to in order to determine appropriate ratios of support
> - existing research you appeal to in making recommendations / developing guidelines for ratios of support
> - contacts you believe may be able to assist with my inquiry.
>
> Thank you very much for your time and all the best

Organisation	Email	Replied (Y/N)

s22(1)(a)(ii) - irrelevant material

Organisation	Email	Replied (Y/N)

s22(1)(a)(ii) - irrelevant material

s22(1)(a)(ii) - irrelevant material

s22(1)(a)(ii) - irrelevant material

s22(1)(a)(ii) - irrelevant material

s22(1)(a)(ii) - irrelevant material

s22(1)(a)(ii) - irrelevant material

s22(1)(a)(ii) - irrelevant material

s22(1)(a)(ii) - irrelevant material

s22(1)(a)(ii) - irrelevant material

[redacted]

s22(1)(a)(ii) - irrelevant material

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9. Version control

Version	Amended by	Brief Description of Change	Status	Date
1.0	AHR908	Research paper to investigate evidence base for determining ratios of support.	Approved	21-12-2021

Technical Advisory Branch (TAB)

Guide to Restrictive Practice Processes by Australian state and territory

Seclusion
Chemical
Mechanical
Physical
Environmental

April 2022

Contents

Purpose

This document is a guide concerning the entities responsible for the authorisation for each of the regulated restrictive practices (RRP) (seclusion, chemical, mechanical, physical, and environmental) in each of the Australian states and territories.

The guide has been developed to assist TAB Advisors who provide advice on behaviour supports and restrictive practices, and should be read in conjunction with:

- National Disability Insurance Scheme Act 2013
- NDIS Quality and Safeguards Commission Positive Behaviour Support Capability Framework
- NDIS Quality and Safeguards Commission Regulated Restrictive Practices Guide
- NDIS Quality and Safeguards Commission Regulated Restrictive Practices with Children and Young People with Disability
- National Disability Insurance Scheme (Restrictive Practices and Behaviour Support) Rules 2018
- National Disability Insurance Scheme (Provider Registration and Practice Standard) Rules 2018

Restrictive Practices

Restrictive practices are ‘any practice or intervention that restricts the rights or freedom of movement of a person with a disability’ (NDIS QSC, 2020). The NDIS (Restrictive Practices and Behaviour Support) Rules 2018) state that regulated restrictive practices (RRP) involve any of the following:

- ***seclusion***: sole confinement of a person with a disability in a room or physical space, any hour of day or night, where voluntary exit is prevented, not facilitated or implied it is not permitted (Australian Government, 2018a). Seclusion does not include a person who chooses to have quiet time on their own in their room where they are able to come out at any time. It also does not include someone choosing to lock their door for privacy, where they are able to unlock the door and exit whenever they choose to (NDIS QSC, 2020).
- ***chemical restraint***: use of medication or chemical substance for the primary purpose of influencing behaviour (Australian Government, 2018a). It does not include medication prescribed by a medical practitioner for the treatment of diagnosed mental disorder, physical illness or physical condition (Australian Government, 2018a). Chemical restraint does include use of medication to achieve menstrual suppression without informed consent of the person (NDIS QSC, 2020).
- ***mechanical restraint***: use of a device to prevent, restrict or subdue movement for the primary purpose of influencing behaviour. It does not include use of devices for therapeutic or non-behavioural purposes (Australian Government, 2018a). A device used for safe transportation is not a mechanical restraint, however any device used during transport to prevent a behaviour of concern for safety reasons is considered a mechanical restraint (NDIS QSC, 2022).
- ***physical restraint***: use or action of physical force to prevent, restrict or subdue movement of a person’s body, or part of their body, for the primary purpose of influencing their behaviour (Australian Government, 2018a). It does not include if a person needs assistance in daily living activities to complete a task safely and accepts this support. For example, if the person needs physical help with dressing or brushing their teeth; it also does not include hand-on reflexive responses to guide or redirect a person from harm or injury (NDIS QSC, 2020).
- ***environmental restraint***: restriction of a person’s free access to all parts of their environment, including items or activities (Australian Government, 2018a).

New South Wales

Entity Responsible: NSW Government, Family and Children Services (Central Restrictive Practices Team (CRPT), 2019)

Authorisation process (CRPT, 2019a; CRPT 2019b)

1. Behaviour support plan is developed,
2. Informed consent is obtained by the participant or their guardian,
3. Authorisation is approved by a Restrictive Practices Authorisation (RPA) Panel managed through internal policy and procedures of the registered NDIS provider.

An RPA Panel must include a minimum of three roles:

1. A senior manager familiar with the operational considerations around the use of a restrictive practice in the intended service setting, who chairs the RPA Panel,
2. A specialist with expertise in Behaviour Support, can be provided by FACS or sourced by other means,
3. And a person who is independent of the service provider.

Where behaviour support expertise comes from a person external to the provider who is also not connected to the person with disability, they may serve both behaviour support and independent roles on the panel. In this scenario, the panel is made up of two people:

1. A senior manager familiar with the operational considerations around the use of a restrictive practice in the intended service setting, who chairs the RPA panel,
2. A specialist with expertise in behaviour support, can be provided by FACS or sourced by other means, and who is independent of the service provider.

The Behaviour Support Practitioner, delivering behaviour support, must participate in the RPA meeting to answer questions from the panel.

Interim Authorisations (CRPT, 2019a)
When there is a clear and immediate risk a restrictive practice may need to be used in the absence of a Behaviour Support Plan (BSP). In these circumstances an Interim BSP must be developed within one month of the use of regulated restrictive practice. Interim authorisation can be provided by a senior manager of the NDIS provider who specifies the length of time for which the interim authorisation applies, not exceeding five months.

Management of non-intentional risks (CRPT, 2019a)

Strategies to manage 'non-intentional risk behaviours' do not require authorisation. An appropriate allied health assessment must be used to identify whether behaviours are intentional or non-intentional. If the assessment determines that the behaviour is non-intentional, the response to this behaviour does not require authorisation under the RPA Policy. However, providers should be guided by the NDIS Commission as to whether the circumstance requires a BSP and should comply with reporting and other requirements in line with the NDIS (Restrictive Practices and Behaviour Support) Rules 2018.

These include:

- Behaviours that create physical risk related to mobility, transitioning or accidental movement
- Resistance to support for activities of daily living – behaviours that demonstrate discomfort associated with daily activities (i.e. shaving or brushing teeth)

Unsafe actions that unintentionally place the person at risk (i.e. no knife safety, reaching for a hot kettle, wandering out the front door without awareness of road safety) (CRPT, 2019a)

Lawful Orders

In New South Wales lawful orders, such as an extended supervision order, can direct legally binding restrictions on a person. Lawful orders are considered an authorised restrictive practice (CRPT, 2019a). The practice should still be referred to an RPA panel within 6 months for the purpose of evaluating how the order requirements are integrated into the BSP and its implementation (CRPT, 2019b). The RPA should be provided with a BSP developed after functional behaviour analysis by a registered behaviour support practitioner (CRPT, 2019a). The BSP must include details and limits of the restrictions allowed under the lawful order. Restrictive practices used beyond those permitted by the order must be authorised in the usual manner (CRPT, 2019b). Lawful orders can be placed for up to 5 years, and the Supreme Court can extend the order (CRPT, 2019a).

Environmental Restraint	***Consent****:* **Under 18:** Parent/Guardian OR the person with parental responsibility (e.g. the Minister for Family and Community Services) (CRPT, 2019a). **Over 16**: Consent from the person if they have capacity OR a guardian OR a person responsible (if previously agreed), OR as directed by an RPA Panel in limited circumstances (CRPT, 2019a). **Others impacted by environmental restraint**, for example, using a physical barrier like a locked door. A practice authorised as an

	environmental restraint for a person using behaviours of concern is not, however, automatically authorised for use with any other person. In these cases, an RPA Panel must determine whether it is appropriate to authorise the use of the restrictive practice for all members of the household (NSW Family and Community Services (NSW FCS, 2020a).
Mechanical Restraint	***Consent:*** **Under 18:** Parent/Guardian OR the person with parental responsibility (e.g. the Minister for Family and Community Services) (CRPT, 2019a) **Over 16:** Consent from the person if they have capacity OR a guardian with a restrictive practices function, including a person appointed by the Guardianship Division of the NSW Civil and Administrative Tribunal (CRPT, 2019a). Applying a mechanical restraint may also require physically restraining the person temporarily (NSW FCS, 2020b). **Transportation**- interventions to enable safe transportation are not considered mechanical restraint, and do not need to be authorised. e.g. buckle guard for a seat belt, 'child lock' on a door, adjustable vest to prevent unsafe unintentional movement in the vehicle. However it may be considered mechanical restraint if the primary purpose is to manage behaviour. Devices used for safe transportation, like seatbelt guards, or to prevent injury, like bed rails, may still be prohibited if they are used for inappropriate purposes, such as for punishment (NSW FCS, 2020b).
Chemical Restraint	***Consent:*** **Under 18:** Parent/Guardian OR the person with parental responsibility (e.g. the Minister for Family and Community Services) (CRPT, 2019a) **Over 16**: The person if they have capacity OR other people, such as an advocate, solicitor, carer, or next of kin OR a person appointed by the Guardianship Division of the NSW Civil and Administrative Tribunal (CRPT, 2019a). Using medication to manage behaviours of concern should not be the only behaviour support strategy. BSP should include positive behaviour management strategies (NSW FCS, 2020c).
Physical Restraint	***Consent:*** **Under 18:** Parent/Guardian OR the person with parental responsibility (e.g. the Minister for Family and Community Services) (CRPT, 2019a) **Over 16**: The person if they have capacity OR other people, such as a guardian with a restrictive practices function, including a person appointed

	by the Guardianship Division of the NSW Civil and Administrative Tribunal (CRPT, 2019a). **Section 158 of the *Children and Young Persons (Care and Protection) Act 1998* –** physical restraint can only be used on a temporary basis and only to the extent necessary to prevent injury to any person, or seize and take from the child or young person: a weapon or object being used in dangerous manner, alcohol, illegal substance or other thing necessary to prevent injury to any person (NSW FCS, 2020d). **Section 45 of the *Children and Young Persons (Care and Protection) Regulation 2012*-** Evidence that the child or young person has received support and/or counselling in relation to each instance must be included with an application for authorisation to use physical restraint with a child or young person (NSW FCS, 2020d).
Seclusion Restraint	***Consent***: **Under 18**: Seclusion is prohibited for any person under the age of 18, e.g. sending a child to their room and preventing them from leaving the room (CRPT, 2019a). **Over 18**: The person if they have capacity OR other people, such as a guardian with a restrictive practices function, including a person appointed by the Guardianship Division of the NSW Civil and Administrative Tribunal (CRPT, 2019a). Seclusion is prohibited where it results in denial of key needs, such as access to bedding, water, climate controls or toilet facilities (NSW FCS, 2020e).

Further information
Restrictive Practice Resources Environmental Restraint Guidance
Restrictive Practice Resources Mechanical Restraint Guidance
Restrictive Practice Resources Chemical Restraint Guidance
Restrictive Practice Resources Physical Restraint Guidance
Restrictive Practice Resources Seclusion Guidance
Restrictive Practice Authorisation Policy
Restrictive Practices Authorisation Procedural Guide

Victoria

Entity Responsible: State Government of Victoria, Victorian Senior Practitioner (Department of Health and Human Services (DHHS), 2020a)

Authorisation process (DHHS, 2019a)

- Registered NDIS providers are to appoint an Authorised Program Officer (APO) and are to obtain approval from the Victorian Senior Practitioner for the appointment. Registered NDIS providers must comply with this as a condition of registration before using RRP on NDIS participants.
- If the APO considers the requirements in the Victorian Disability Act 2006 Section 132ZR(1) (State Government of Victoria, 2006) are met, the APO must first ensure that an independent person is made available to the NDIS participant before authorising the use of RRP.
- The independent person must not be: a disability service provider or representative of a disability service provider, or have any interest in a disability service provider which is providing, or has provided, disability services to the person with a disability.
- In addition to the APO authorising the use of the RRP the Victorian Senior Practitioner must provide approval for the use of RRP on NDIS participants if the practice is in the form of seclusion, physical restraint or mechanical restraint.
- After authorising the use of a RRP, the APO must provide the Victorian Senior Practitioner with required information within two working days, including a copy of the NDIS participant's NDIS BSP, name and details of the independent person who assisted the NDIS participant, any information relating to RRP that is not included in the BSP and any other information required by the Victorian Senior Practitioner.
- After this information is provided to the Victorian Senior Practitioner, the Victorian Senior Practitioner will provide written evidence of authorisation of RRP in the NDIS BSP to the registered provider/behaviour support practitioner.
- The registered provider/behaviour support practitioner must lodge evidence of authorisation to the NDIS Commission.

Use of regulated restrictive practice in an emergency (DHHS, 2019a)

- Use of regulated restrictive practice can be authorised by the person in charge of a registered NDIS provider if there is an imminent risk of serious physical harm to self or others and it is necessary to use a regulated restrictive practice to prevent that risk.

- The least restrictive option must be used
- The APO must be notified as soon as practicable.
- If the regulated restrictive practice will be used again, Part 6A and Part 6B of the Disability Act 2006 must be complied with.

Lawful Orders (DHHS, 2019b)
For an NDIS participant that is subject to a supervised treatment order or interim supervised treatment order, the Victorian Senior Practitioner may give written notice to the NDIS commissioner if:

- VCAT makes an interim supervised order or supervised treatment order
- The Victorian Senior Practitioner approves a material change to a treatment plan
- The supervised treatment order is varied, revoked or expires

The Victorian Senior Practitioner must provide written notice to the NDIS commissioner if an assessment order is made or revoked. An assessment order is made when it is necessary to detain a person with an intellectual disability to prevent a significant and imminent risk of harm to others, allowing a treatment plan to be developed for an application for a supervised treatment order.

An NDIS participant can be subject to a supervised treatment order granted by VCAT and can only be detained in accordance with the compulsory treatment provisions in Div 5 of Part 8 of the Disability Act 2006. For a supervised treatment order the NDIS participant must:

- have an intellectual disability
- be residing in an SDA enrolled dwelling under an SDA residency agreement
- have a treatment plan attaching an NDIS behaviour support plan approved by the Victorian Senior Practitioner, and
- pose a significant risk of harm to others that cannot be reasonably reduced by less restrictive means

A person with an intellectual disability can only be detained under the Disability Act 2006 if a supervised treatment order has been made by VCAT under Part 8 of the Disability Act 2006.

Environmental Restraint	Authorisation process as outlined above. **Detain**- a form of restrictive practice used on a person for the purpose of reducing the risk of violence or the significant risk of serious harm the person presents to another person and includes physically locking a person in any premises and/or constantly supervising or escorting a person to prevent the person from exercising freedom of movement. This is considered an environmental restraint (DHHS, 2019a).
Mechanical Restraint	Authorisation process as outlined above. In addition to the APO authorising the use of the RRP the Victorian Senior Practitioner must provide approval for the use of regulated restrictive practices on NDIS participants if: the practice is in the form of mechanical restraint (DHHS, 2019a). **Transportation**: Devices used to allow safe transportation of people with a disability are not considered mechanical restraint. If additional restraints are used within a vehicle in response to behaviour and not for a medical condition or physical disability (such as a lap belt on a wheelchair for postural support), this is considered mechanical restraint (DHHS, 2020b).
Chemical Restraint	Authorisation process as outlined above.
Physical Restraint	Authorisation process as outlined above. In addition to the APO authorising the use of the regulated restrictive practice the Victorian Senior Practitioner must provide approval for the use of regulated RRP on NDIS participants if the practice is in the form of physical restraint (DHHS, 2019a).
Seclusion Restraint	Authorisation process as outlined above. In addition to the APO authorising the use of the RRP the Victorian Senior Practitioner must provide approval for the use of RRP on NDIS participants if the practice is in the form of seclusion. If seclusion is being used, appropriate bedding, clothing, food and drink is supplied, and the NDIS participant has access to adequate heating, cooling and toilet arrangements (DHHS, 2019a).

Detailed information
Authorisation process for the use of regulated restrictive practices Victorian Disability Act 2006 Section 132ZR(1) V

Northern Territory

Entity Responsible: Northern Territory Government, Northern Territory Senior Practitioner (Northern Territory Government (NT Government), 2019)

The NDIS (authorisations) Act 2019 (NT Government, 2019) outlines the functions of the Senior Practitioner who is responsible for the Restrictive Practices Authorisation Framework (NT Government, 2021), and who will:

I. Authorise the use of restrictive practices;
II. Disallow inappropriate requests for restrictive practices;
III. Produce and disseminate policies, standards and guidelines to promote best practice, lead sector capacity building and improve awareness to minimise the use of restrictive practices; and
IV. Capture and record the authorisation of restrictive practices that are deemed to be necessary.

Authorisation process (NT Government, 2021)

An NDIS provider may apply to the Senior Practitioner for an authorisation or interim authorisation. An application for an authorisation or interim authorisation must be made in the approved form and include:

- particulars of the restrictive practice proposed to be applied to the participant
- a copy of the BSP or interim BSP that specifies the proposed restrictive practice
- information that shows the provider has engaged in consultation about the proposed use of a restrictive practice with: (a) the participant; and (a) the participant's family, carers, guardian or other relevant person
- particulars of the NDIS provider who will apply the restrictive practice to the participant
- details of restrictive practice applied to the participant over the 12-month period before the date of the application (authorised and unauthorised)
- any other information the NDIS provider considers relevant to the application
- any other information as prescribed by regulation

The Senior Practitioner must consider the application and decide whether to:

- grant the authorisation or interim authorisation; or
- refuse to grant the authorisation or interim authorisation – NDIS provider will be notified of the reasons for the decision; or

- request further information or propose an alternative restrictive practice for the authorisation or interim authorisation. Responses to a request for further information is required within 28 days or the application will lapse.

Authorisations only apply to the jurisdiction they are made in. If a participant relocates to the NT a new authorisation application will need to be made to the NT Restrictive Practices Authorisation Unit (NT Government, 2021).

Period of authorisation (NT Government, 2021)

- An authorisation is effective for 12 months from the date the authorisation is made, unless otherwise specified by the Senior Practitioner in the authorisation.
- An interim authorisation is effective for 6 months from the date the authorisation is made, unless otherwise specified by the Senior Practitioner in the authorisation.

Unauthorised use of RRP (NT Government, 2021)

- Unauthorised use of RRP relating to an NDIS participant is a reportable incident
- Unauthorised restrictive practices must be reported to the NDIS Quality and Safeguards Commission as a reportable incident until the BSP is activated in the NDIS Commission portal

Change of circumstances (NT Government, 2021)

- If there is a change in circumstances meaning the NT Restrictive Practices Authorisation Unit is no longer required, the service provider must notify the Restrictive Practice Authorisation Unit via email as soon as possible after the change
- Change of circumstance includes: elimination of restrictive practice, interstate move, exiting the NDIS or notification of deceased participant.

Lawful Orders (information received by email from NT behaviour support)
Reporting obligations for the NDIS Commission are via the reportable incident function prior to a BSP lodgement as ‘unauthorised restrictive practice’. Once a practitioner has been engaged and develops a BSP, lodges it on the BS portal the forensic order becomes the authorisation and the plan includes reference to the order and how the provider can best support or facilitate the conditions of the order.

Environmental Restraint	Authorisation process as outlined above.
Mechanical Restraint	Authorisation process as outlined above.
Chemical Restraint	Authorisation process as outlined above.
Physical Restraint	Authorisation process as outlined above. In the NT, authorisation will not be granted for the use of supine (face up position) or prone (face down) restraint (NT Government, 2021).
Seclusion Restraint	Authorisation process as outlined above. Prohibited: In relation to a person under the age of 18 years. NB. Seclusion includes isolation of a child or young person (under 18 years of age) in a setting from which they are unable to leave (NT Government, 2021).

Detailed information
National Disability Insurance Scheme (Authorisation) Act 2019 Restrictive Practices Authorisation Framework. Guidelines for NDIS Service Providers.

Queensland

Entity Responsible: Queensland Civil and Administrative Tribunal (QCAT) (QCAT, 2021)

The Disability Services Act 2006 (the Act) (Queensland Government, 2006) regulates the use of restrictive practices in adults with an intellectual or cognitive disability by services provided by Disability Services, or services prescribed by regulation and funded under a NDIS participant plan by specifying certain conditions under which they may be considered for use (Department of Communities, Disability Services and Seniors (DCDSS), 2019a).

Authorisation process (DCDSS, 2019a)

Regardless of how many service providers or number of restrictive practices, an adult should only have one BSP developed. Authorisation must be sought by each relevant disability service provider who intends to implement restrictive practice and for each type of restrictive practice. Who authorises a restrictive practice depends on:

- Whether the use of the restrictive practice is planned or unplanned
- Type of restrictive practice (containment and seclusion, chemical/mechanical/physical restraint or restricted access to objects)
- Type of disability service the adult is receiving (respite and/or community access only, or accommodation and community support alone, together, or in conjunction with respite and/or community access)

A matrix outlining authorisation of restrictive practice requirements can be found in the document '*Authorising restrictive practices*' (DCDSS, 2019a).

Short Term Approval

A short term approval can be made for a maximum of six months where (DCDSS, 2020a):

- There is an immediate and serious risk of harm to the adult or others; and
- The restrictive practice is the least restrictive way of ensuring the safety of the adult or others

There are two decision makers that can give a short term approval (DCDSS, 2020a):

- The Public Guardian; or
- A delegate of the Chief Executive of the Department of Communities, Disability Services and Seniors. These delegates are the Principal Clinician in each region. For

containment and seclusion a short term approval can only be given by the Public Guardian.
- For all other types of restrictive practice a short term approval must be sought from a Principal Clinician

After short term approval is provided, the service provider should seek full approval and commence development of the positive BSP (DCDSS, 2020a).

Children

As of December 2020, there is no state based authorisation available for the use of regulated restrictive practices for participants under 18 years old (NDIS QSC, 2021).

Children under protection

The Department of Child Safety, Youth and Women (Child Safety) promotes the use of positive behaviour support to all children and young people in care (Department of Child Safety, Youth Justice and Multicultural Affairs, (DCSYJMA), 2020a), in accordance with the legislated standards of care outlined in, the Child Protection Act 1999 (the Act), sections 74 and 122 and the Charter of Rights for a child in care which is set out in Schedule 1 of the Act (Queensland Government, 2020).

The Child Safety Policy: Managing high risk behaviour (DCSYJMA, 2020a), refers to:

- children and young people subject to a care agreement, an assessment order, or an order granting custody or guardianship to the chief executive under the Act, including a temporary custody or transition order, and who are placed in a care arrangement under section 82(1) of the Act, and
- approved foster carers, kinship carers and staff employed by Child Safety and non-government organisations to provide direct care to a child or young person placed under the authority of section 82(1) of the Act

The policy acknowledges that restrictive practices can present risk and contribute to trauma to the child and those using the restrictive practices (Queensland Government, 2021). The Child Safety Policy: Managing high risk behaviour should be read in conjunction with the Positive Behaviour Support (604) policy (DCSYJMA, 2020b).

Principles for emergency use of restrictive practices (DCSYJMA, 2020a):

- the child or young person is behaving in a way that poses immediate risk of harm to themselves or others
- the practice is reasonable in all the circumstances of the behaviour
- there is no less restrictive measure available to respond to the behaviour
- paramount consideration must be given to the best interests of the child

Where restrictive practice has been used to manage high risk behaviour, including physical restraint, details of the incident must be reported by the carer or direct care staff member to Child Safety within 24 hours of the incident (DCSYJMA, 2020a).

Lawful Orders (information received by email from Qld behaviour support)
Restrictive practices should be proportionate to the risk and least restrictive option available. The restrictive practice needs to be outlined in a BSP, lodged with the NDIS commission, authorised in accordance with state requirements and lodged with the NDIS commission, and implementing providers need to complete monthly reporting to the NDIS Commission on the use of restrictive practices

Table note: Where the adult in is receipt of a funded accommodation support package and has additional respite/community access services, the general rule applies (DCDSS, 2019a).

Environmental Restraint	**Referred to as Restricted access to objects.** ***Authorisation*** **General:** Guardian for restrictive practice (general) appointed by QCAT or if no appointment, an informal decision maker (DCDSS, 2019b). **When only receiving respite or community access:** Guardian for restrictive practice (respite) appointed by QCAT or if no appointment, an informal decision maker (DCDSS, 2019b). The locking of gates, doors or windows where the only reason is to prevent physical harm being caused to the adult with a skills deficit, is not considered a restrictive practice as defined under the Act (DCDSS, 2019d). The relevant service provider must confirm that the person for whom the strategy of locking gates, doors and windows is being considered:

	• is an adult (18 years or older), • has an intellectual or cognitive disability as defined under Section 144 the Act. The relevant service provider must establish that the practice is not containment, seclusion, or restricting access as defined under the Act (DCDSS, 2019c; DCDSS, 2019d).
Mechanical Restraint	***Authorisation*** **General:** Authorisation from the Guardian for restrictive practice (general) appointed by QCAT- Queensland Civil and Administrative Tribunal (DCDSS, 2019e). **When only receiving respite and/or community access:** Guardian for restrictive practice (respite) appointed by QCAT or if no guardian appointed, an informal decision maker (DCDSS, 2019e).
Chemical Restraint	***Authorisation*** **General:** Guardian for restrictive practice (general) appointed by QCAT **When only receiving respite and/or community access:** *For PRN medication-* Guardian for restrictive practice (respite) appointed by QCAT If no PRN medication- *Fixed does for adult in respite-* Informal decision maker or guardian for restrictive practices (respite) appointed by QCAT (QCAT, 2021; DCDSS, 2020b) *Fixed doses for adults when on community access-* Guardian for restrictive practice (respite) appointed by QCAT (QCAT, 2021) *In all cases where chemical restraint is used or proposed, the adult's treating doctor must be involved at all stages of the decision-making process (DCDSS, 2020b). **Note:** The use of medication such as a sedative, prescribed by a medical practitioner to facilitate or enable the adult to receive a single instance of health care is not considered chemical restraint under the Guardianship and Administration Act 2000. For example, providing a sedative to an adult before attending a dentist appointment (DCDSS, 2020b).
Physical Restraint	***Authorisation*** **General:** Guardian for restrictive practice (general) appointed by QCAT (DCDSS, 2020c).

	When only receiving respite and/or community access: Guardian for restrictive practice (respite) appointed by QCAT or if no guardian appointed, an informal decision maker (QCAT, 2021, DCDSS, 2020c). Practices used to assist the adult with daily living or therapeutic activities, or to keep the adult safe where the adult has a skills deficit and as a consequence is unable to perform a task safely are not intended to be restrictive practices (DCDSS, 2020c).
Seclusion Restraint	***Authorisation*** **General:** Authorisation from QCAT (QCAT, 2021) **When only receiving respite and/or community access:** Guardian for restrictive practice (respite) appointed by QCAT (QCAT, 2021). Providers must work with Department of Communities, Disability Services and Seniors (DCDSS) in the assessment for, and development of, all positive BSP which include containment and seclusion (DCDSS, 2019a) NOTE: For all participants over the age of 18 that have containment and seclusion as a restrictive practice must have their plan developed jointly with the DCDSS (DCDSS, 2019a).

Detailed information
Authorising Restrictive Practices
Restricting Access
Mechanical Restraint
Chemical restraint
Physical restraint
Containment and seclusion
Queensland Civil and Administrative Tribunal (QCAT): Guardian for restrictive practices
Locking of gates, doors, and windows
Child Safety Policy, Managing High Risk Behaviour (Policy No 646-2)
Child Safety Policy, Positive Behaviour Support (Policy No 604-5)

Tasmania

Entity Responsible: Department of Communities, Office of The Senior Practitioner (DCT, 2020a)

Restricted Interventions

The Tasmanian Disability Services Act 2011 (section 34) (Tasmanian Government, 2021) describes two categories of restrictive intervention:

- Environmental restriction, in relation to a person with disability, means a restrictive intervention in relation to the person that consists of the modification of an object, or the environment of the person, so as to enable the behavioural control of the person, but does not include personal restriction (DCT, 2020b).
- Personal restriction, in relation to a person with disability, means a restrictive intervention in relation to the person that consists wholly or partially of (DCT, 2020c):
  (a) Physical contact with the person to enable the behavioural control of the person or
  (b) Taking an action that restricts the liberty of movement of the person

Approval process (DCT, 2021a)

- Restrictive interventions must be part of a positive BSP that promotes positive outcomes for the adult and supports the reduction or elimination of restrictive practices
- An environmental restriction can be approved by the Secretary of the Department of Communities Tasmania for up to 90 days (section 38), or by the Guardianship & Administration Board for up to 2 years after a hearing (section 42)
- A personal restriction can be approved by the Guardianship & Administration Board for up to 90 days without a hearing or for up to 2 years after a hearing (section 42)

Unauthorised restrictive practice is prohibited unless (DCT, 2021a):

- The action is used to prevent serious harm to a person with disability or others
- The action is the least restrictive option
- The Senior Practitioner is notified as soon as possible using the form “Reporting Unauthorised Restriction”

Prohibited restrictive practices (DCT, 2021a).

- Prone or supine restraint
- Pin downs

- ‘Basket’ holds and ‘take downs’
- Punitive approaches such as aversive practice, denial of key needs, over correction

Lawful Orders

Restrictive practices authorised under other enactments relating to mental health services or guardianship do not require approval through the Disability Services Act 2011 (DCT, 2019a) Examples of this include (but are not limited to) (DCT, 2019a):

(a) Restriction and Supervision Orders under the Criminal Justice (Mental Impairment) Act 1999. These orders might require meeting specific conditions such as confinement in a secure mental health unit, or taking of a particular medication.

(b) Involuntary admission to an approved facility for treatment (e.g. Treatment Orders Mental Health Act 2013.)

(c) Treatment approved by 'person responsible', appointed guardian or the Guardianship and Administration Board (Guardianship and Administration Act 1995). For example – medication to control behaviour (Guardianship and Administration Regulations 2017; Section 12)

Environmental Restraint	**Approval for the use of an environmental restriction** is obtained from the Secretary of the Department of Communities Tasmania, following a recommendation from the Senior Practitioner. The approval period is 90 days and may be subject to a number of conditions (DCT, 2021b). **Surveillance and monitoring** can include the process of capturing audio, visual or positional information about a person using electronic methods: • Audio monitors record and monitor speech, e.g. baby monitors, intercoms; • Visual monitors record and monitor visual images, e.g. closed circuit cameras, still image cameras, portable video devices; • Positional monitors record the whereabouts of a person with global positioning system (GPS) devices which are the most commonly available method of monitoring a person’s location; • Surveillance and monitoring can also include ‘line of sight’ supervision in ‘real time’ by support workers to prevent a person with disability from pursing a certain course of action (DCT, 2021b).

Mechanical Restraint	Restrictive interventions that are for the sole purpose of enabling transport do not require approval i.e. seat belt buckle guard, universal harness and adjustable vest (DCT, 2019a). However, if a restraint is used for convenience of staff the practice is considered a form of abuse (DCT, 2019b). The use of the below restrictive practices for behaviour purposes need to be reported to the Office of the Senior Practitioner (DCT, 2019d): • Buckle guard (if the client regularly undoes his/her belt). • Harness (if the client tries to interfere with the driver or other passengers). • Dedicated harness that requires modification to the vehicle.
Chemical Restraint	Under the Disability Services Act, the use of chemical restraint does not need to be authorised. However under regulation 12(a) of the Guardianship and Administration Regulations 2017, there is a legal requirement for the 'person responsible' to consent to the 'administration of a restricted substance primarily to control the conduct of a person to whom it is given' (Tasmanian Civil and Administrative Tribunal, 2021).
Physical Restraint	Approval to use personal restriction needs to be granted by the Guardianship and Administration Board, following a recommendation from the Senior Practitioner. The approval period can be either 90 days, 6 months or up to 2 years and may be subject to a number of conditions (DCT, 2020c). The use of a bed rail to restrict a person's voluntary movement is a form of physical restraint and the use of a bed rail for this purpose would need approval from the Guardianship and Administration Board (GAB) via an application to the Senior Practitioner (DCT, 2019c). The use of a bed rail may not be deemed a personal restriction if: • The person has decision making capacity and has requested bed rails • The person has involuntary movements during the night (e.g. seizures or 'restless' sleep) • The person does not have the skills to get out of bed without support (DCT, 2019c) If a bed rail is being considered it is essential to consult with an OT and the Senior Practitioner (DCT, 2019c). If a bed rail is approved for

	use then staff must increase their monitoring of the person at risk (DCT, 2019c).
Seclusion Restraint	Seclusion is a form of personal restriction. It can only be used if it is to prevent harm, used in the least restrictive way possible, as a last resort and authorised (DCT, 2019b). The use of seclusion should be reported to the Tasmanian Senior Practitioner to obtain authorisation for its use under provisions of the Disability Services Act (Use of a Personal Restriction) (DCT, 2019b). Where an adult with disability has a guardian appointed by the Guardianship and Administration Board (GAB), the guardian can consent to the use of seclusion if it meets the conditions above (DCT, 2019b). A parent's request for the use of sole confinement does not stop the action from being seclusion. Family members may advise a service provider that they want the person with the disability to be secluded however the service provider will still need to seek authorisation from the Tasmanian Senior Practitioner and report to the Commission (DCT, 2019b). If 'sole confinement', a 'time out', 'time away' or similar practices are used that don't meet the conditions above they will most likely be considered a form of abuse and not as RRP (DCT, 2019b).

Detailed information
Disability Services Act 2011 Restrictive Interventions in Service for People with Disability Procedure Surveillance and monitoring of people with a Disability Environmental restrictions Personal restrictions Locking of Fridges and Pantries Use of Bed Rails Seclusion Restrictive Interventions not Requiring Authorisations

South Australia

Entity Responsible: South Australian Civil and Administrative Tribunal (SACAT)
(Department for Communities and Social Inclusion (DCSI), 2015)

Authorisation– Adults

- If a person can provide their own consent for the use of restrictive practices (including sedative medication) then there is no need for substituted consent (SACAT, 2020).
- SACAT can appoint a substitute decision-maker under the Advance Care Directives Act 2013 (Government of South Australia, 2013); substitute decision makers have the roles, functions and responsibilities set out in Section 23 of that Act and can give consent to certain types of health care (SACAT, 2020). Chemical, environmental and mechanical restraints implemented without force can be consented to by a substitute decision-maker (SACAT, 2020).
    - Where there is no substitute decision-maker, consent can be provided by a 'person responsible'. If substituted consent is needed to the administration of medication for any purpose (including chemical restraint) or to any other type of health care (including environmental and mechanical restraint) a medical practitioner or health practitioner may seek the consent of a substitute decision maker under an advance care directive OR a 'person responsible' under the Consent to Medical Treatment and Palliative Care Act 1995 (SACAT, 2020).
    - A 'person responsible' is defined by the Consent to Medical Treatment and Palliative Care Act 1995 as a person who has the legal authority to provide or refuse consent for a person with impaired decision-making capacity. The legal order is as follows: a guardian with health-care decision making power, relative with close and continuing relationship, adult friend with close and continuing relationship, finally SACAT (SACAT, 2020).
    - A Guardian appointed by SACAT can make decisions on health care and certain restrictive practices to control behaviours (health care function) (SACAT, 2020).
- Some types of restrictive practices require SACAT specific authorisation under section 32 of the Act (called special power orders) (DCSI, 2015; SACAT, 2020):
    - Direct the person where to reside (directed residence/enforceable restraint)
    - Authorise detention in the place they will reside

  - Authorise people responsible for daily care to use such force as may be reasonably necessary for the purpose of medical and dental treatment, day to day care and general well-being.
- An application for these restrictive practices must be made by the guardian or substitute decision maker and be authorised by SACAT under Section 32 of the Guardianship and Administration Act 1993 (DCSI, 2015). SACAT will only make the orders if they are satisfied the health and safety of the person, or safety of others, would be at risk if the order was not granted. The restrictive practice can only be to the extent authorised by SACAT (DCSI, 2015).

Authorisation – Children

- Consent required from parents/legal guardian (DCSI, 2015).

Informal Arrangements (Public Advocacy) (Office of the Public Advocate, 2018)

- SACAT can grant special powers that authorise detention and the use of force/restrictive practices, under section 32 of the Guardianship and Administration Act 1993
- If a restrictive practice is approved (e.g. locked fridge) by a guardian under a lifestyle decision, it requires a PBSP
- Public Advocate delegated guardians should only approve restrictive practices when a positive BSP exists

Lawful Orders

- SACAT is responsible for Detention and Treatment Orders and Community Treatment Orders (Legal Services Commission, 2022)
- The *Safeguarding People with Disability Restrictive Practices Policy* currently does not cover community treatment orders made under the Mental Health Act 2009 (DCSI, 2015).

Environmental Restraint	A substitute decision maker or personal responsible can consent to environment restraints that do not use force, such as restricting a person's access to parts of their environment, items and activities. **Special powers order under s32 (1) (a)** – directed residence/enforceable environmental restraint – SACAT can make an order to direct that a person reside in a specified place, or in such place as the guardian or substitute decision maker from time to time

	thinks fit. A directed residence order will authorise the subject person's residence in the specified place and will enable the guardian or substitute decision-maker to ensure the person can be brought back if they leave that place (with police assistance if necessary) (SACAT, 2020).
Mechanical Restraint	A substitute decision maker or personal responsible can consent to the use of a device to prevent, restrict or subdue movement for the purpose of influencing behaviour where no force is used. **Special powers order under s32 (1) (c) - physical restraint/use of force in care or treatment -** SACAT can make an order to authorise persons involved in the care of a person to use such force as may be reasonably necessary for the purpose of ensuring the proper medical or dental treatment or day to day care and wellbeing of the person. This order will authorise care providers to use physical force/restraint as necessary to prevent or restrict a person's movements when administering medical treatment or health care including in the use of any type of chemical, environmental or mechanical restraint (SACAT, 2020).
Chemical Restraint	A substitute decision maker or personal responsible can consent to the use of chemical restraint where no force is used. a device to prevent, restrict or subdue movement for the purpose of influencing behaviour where no force is used and the person is not resisting the chemical restraint. **Special powers order under s 32(1) (c) - physical restraint/use of force in care or treatment** - SACAT can make an order to authorise persons involved in the care of a person to use such force as may be reasonably necessary for the purpose of ensuring the proper medical or dental treatment or day to day care and wellbeing of the person. This order will authorise care providers to use physical force/restraint as necessary to prevent or restrict a person's movements when administering medical treatment or health care including in the use of any type of chemical, environmental or mechanical restraint (SACAT, 2020).
Physical Restraint	**Special powers order under s 32(1) (c) - physical restraint/use of force in care or treatment -** SACAT can make an order to authorise persons involved in the care of a person to use such force as may be reasonably necessary for the purpose of ensuring the proper medical or dental treatment or day to day care and wellbeing of the person. This order will authorise care providers to use physical force/restraint as necessary to prevent or restrict a person's movements when administering medical treatment or health care including in the use of

	any type of chemical, environmental or mechanical restraint (SACAT, 2020).
Seclusion Restraint	**Special powers order under s32 (1) (b) – detention or seclusion of the person in the place in which he or she is directed to reside under s 32 (1) (a)** – SACAT can make an order to authorise detention, namely, that direct or indirect restrictions are placed on the person's liberty or freedom of movement so that they may not freely come and go from a place, or any part of the place. The order will authorise restraints on the person leaving and will enable the person to be brought back if they leave or are removed from that place (with police assistance if necessary) (SACAT, 2020).

Detailed information
Restrictive Practices and Special Powers Safeguarding People with Disability Restrictive Practices Policy SA Office of the Public Advocate: Restrictive Practices

Western Australia

Entity Responsible: The Department of Communities (DoC, 2020a)

Authorisation process (DoC, 2020b)

- Authorisation must be obtained by an Implementing Provider for each RRP that is proposed to be implemented for a person with disability.
- From 1 May 2021, authorisation requires restrictive practices to be included in a BSP and introduces a mandatory Quality Assurance Panel which allows for independent review of the BSP and the proposed restrictive practices.
- The Authorisation Panel must include at least two members with a decision-making role:
    1. A senior manager (or their delegate) with the Implementing Provider with operational knowledge and relevant experience in behaviour support,
    2. An NDIS Behaviour Support Practitioner who is not the BSP author and not employed by the Implementing Provider.

  Additional members may be included in the panel.

  NOTE: The Panel's recommendation to use a regulated restrictive practice must be supported by **all** panel members, specify the length of time for which the authorisation applies, which must not exceed 12 months, detail conditions they decide to impose as part of the approval of the restrictive practice, and be recorded in the Quality Assurance Outcome Summary Report (Appendix 3 of the guidelines)

- BSPs developed by Behaviour Support Practitioners that include a restrictive practice, should involve consultation with the person with disability and if appropriate, their guardian, family and carers.
- The NDIS Behaviour Support Practitioner will consult with the person with disability to identify their needs and preferences in a calm and supportive environment
- The BSP must include strategies that are evidence-based and person centred and take account of the functions of the behaviour being considered, as well as any unmet needs that may be contributing to the behaviour
- It is recognised that some forms of restrictive practice pose an unacceptable risk of harm to people. These are termed 'prohibited practices' within the Authorisation of Restrictive Practices in Funded Disability Services Policy (DoC, 2020c) and must never be used. These include the following physical restraints, which can lead to harm or death:
    - the use of prone or supine restraint
    - pin downs
    - basket holds
    - takedown techniques
    - any physical restraint that has the purpose or effect of restraining or inhibiting a person's respiratory or digestive functioning
    - any physical restraint that has the effect of pushing the person's head forward onto their chest
    - any physical restraint that has the purpose or effect of compelling a person's compliance through the infliction of pain, hyperextension of joints, or by applying pressure to the chest or joints.

The following punitive approaches are also prohibited:

- aversive practices
- overcorrection
- denial of key needs
- practices related to degradation or vilification
- practices that limit or deny access to culture
- response cost punishment strategies.

Lawful Orders (DoC, 2020c)

- where a practice that would otherwise be a regulated restrictive practice is in place due to a court order, authorisation is not required under the 'Authorisation of Restrictive Practices in Funded Disability Services' Policy
- Implementing providers may request advice from the NDIS Commission or appropriate department regarding whether the circumstances require a behaviour support plan and compliance with NDIS (Restrictive Practices and Behaviour Support) Rules 2018

Environmental Restraint	Authorisation process as outlined above (DoC, 2020b) Surveillance is the tracking of a person's behaviour or movement by audio, visual or location data (DoC, 2020c). It also includes accompanying a person or keeping them in line of sight at all times (DoC, 2020c).
Mechanical Restraint	Authorisation process as outlined above (DoC, 2020b)
Chemical Restraint	Authorisation process as outlined above (DoC, 2020b) The BSP must record the prescribing doctor's contact details, medication brand and chemical name, dosage and frequency, conditions and limitations of use, route, side effects, circumstances when the restraint is to be used, anticipated positive and negative effects of the medication, and why the medication is considered the least restrictive method of ensuring safety of the person and others. (DoC, 2020e)
Physical Restraint	Authorisation process as outlined above (DoC, 2020b)
Seclusion Restraint	Authorisation process as outlined above (DoC, 2020b)

Detailed information
Procedural Guidelines for Authorisation of Restrictive Practices in Funded Disability Services Stage Two Authorisation of Restrictive Practices in Funded Disability Services Policy Authorisation of restrictive practices Chemical restraint Surveillance

Australian Capital Territory

Entity Responsible: ACT Government, Community Services, Office of the Senior Practitioner (Community Services, 2021)

Authorisation process

A restrictive practice by a service provider is only permissible if used in a way that is consistent with a positive BSP for the person. The positive BSP must be approved by a registered positive behaviour support panel and registered by the Senior Practitioner (Community Services, 2018). The process is as follows:

- The provider must submit a positive BSP to a positive behaviour support panel for approval. Submission must occur one month prior to the Central Panel meeting, and the application must include the completed positive BSP approval panel template, copy of positive BSP and supporting documentation for the restrictive practice (e.g. reports from medical team, risk assessment) (Office of the Senior Practitioner (OSP), 2020b)
- The Central Panel will give the applicant/service provider written reasons for its decision to approve or not approve a positive BSP within one week of meeting (OSP, 2020b)
- If approved, the Central Panel will forward the positive BSP to the Senior Practitioner for registration within 28 days (OSP, 2020b). The Senior Practitioner may request further information from the Central Panel or applicant. When satisfied, the Senior Practitioner will send the provider, public advocate (if the person is under 18) and plan author: a copy of the approved plan and plan registration number (OSP, 2020b).
- The use of any restrictive practice within an approved plan is only authorised once registration has been confirmed by the Senior Practitioner (OSP, 2020b)
- Providers are required to monitor and record use of restrictive practices and forward reports to the Senior Practitioner (Community Services, 2018). For routine and 'as needed' restrictive practices identified within a positive BSP the report should be forwarded by the 5th day after the end of the month.
- The approved positive BSP must be reviewed monthly by the provider to determine whether restrictive practice is still required (Community Services, 2018).

Use of regulate restrictive practice in an emergency:

- Under Section 10 of the Senior Practitioner Act, a restrictive practice must not be used outside of a registered PBS Plan unless (Community Services, 2021; OSP, 2020a):
    - Provider or relevant person for the provider believes on reasonable grounds that it is necessary to use the restrictive practice to avoid imminent harm to the person or others
    - Restrictive practice is the least restrictive of the person as is possible in the circumstances having regard to the kinds of restrictive practice that may be used, how it is applied, and how long it is applied for
    - If practicable – the use of the restrictive practice is authorised by the person in charge of the provider.
- Emergency restrictive practices not identified within a positive BSP must be reported to the Senior Practitioner within 24 hours of the event (Community Services, 2018)

Lawful Orders (ACT Government, 2021)

Under the Senior Practitioner Act 2018, a person acting under the Corrections Management Act 2007, Children and Young People Act 2008 (Chapters 4 to 9), Mental Health Act 2015 and Mental Health (Secure Facilities) Act 2016 are exempt from provider obligations with respect to restrictive practices.

Environmental Restraint	Authorisation process as outlined above
Mechanical Restraint	Authorisation process as outlined above
Chemical Restraint	Authorisation process as outlined above
Physical Restraint	Authorisation process as outlined above
Seclusion Restraint	Authorisation process as outlined above

Detailed information
ACT Senior Practitioner for the elimination and reduction of restrictive practices Senior Practitioner Act 2018 Positive Behaviour Support Plans Factsheet Positive Behaviour Support Plan Guideline Positive Behaviour Support Panel Guideline

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Consultation

Entity	Summary of Consultation
C. [redacted] (TAB research)	Document creation, Research on WA, SA and ACT
R. [redacted] (TAB Advisor)	Preliminary research on NSW, QLD, NT, TAS, and VIC
J. [redacted] (TAB research)	Review
SJP131 (TAB research)	Review

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Note: Document uncontrolled in hardcopy

Home automation as an everyday living cost

The content of this document is OFFICIAL.

Please note:

The research and literature reviews collated by our TAB Research Team are not to be shared external to the Branch. These are for internal TAB use only and are intended to assist our advisors with their reasonable and necessary decision-making.

Delegates have access to a wide variety of comprehensive guidance material. If Delegates require further information on access or planning matters, they are to call the TAPS line for advice.

The Research Team are unable to ensure that the information listed below provides an accurate & up-to-date snapshot of these matters

Research question: How common is home automation/”smart homes” in Australia?

What is the typical ‘scope of works’ for a standard ‘smart home’ vs disability-specific home automation features?

What is the typical cost or price range to setup a ‘smart home’?

Are existing homes able to accommodate home automation without needing to upgrade electrical features (e.g. switchboard, wiring)?

Is there a significant difference in outcomes between low cost solutions (e.g. Google Home) and high cost solutions (e.g. Control 4)?

What is the current evidence base regarding home automation and people with disability? Is there evidence home automation is linked to increased independence, or other positive outcomes (e.g. improved quality of life, wellbeing)? Are there any best practice guidelines?

What is the Agency’s risk appetite for home automation requests? Do mitigation strategies need to be put in place (e.g. TAB mandatory referral for requests above $20,000)?

Date: 09/05/2022

Requestor: Claire s22(1)(a)(ii) - irrele

Endorsed by (EL1 or above): Sandi s22(1)(a)(ii) - irrelevant material

Researcher: Aaron s22(1)(a)(ii) - irrelevant ma

Cleared by: Stephanie s22(1)(a)(ii) - irrelevant mate

1. Contents

2. Summary

Smart home technology is growing in popularity in Australia. Most people having at least one smart home device in their home. While common, only certain types of automations (eg. entertainment) are ubiquitous in Australian homes. Whether a particular home automation support is more likely an everyday living cost will depend on the type and function of the technology.

With the technology growing and changing, there is inconsistent and outdated information online. Much of the research is still in very early stages and so the evidence base is minimal. There is more research focussing on maintaining independence of older people compared to other disability cohorts.

There is a body of research focussed on using sensors and the Internet of Things (IoT) in the home to monitor and assess people at risk of various harms (for example, trips or falls, burns when cooking etc.). Although home automations are often integrated with IoT, this paper will only discuss IoT technology when it relates to automating processes in the home. Similarly, there is a strong research focus on use of robotics to automate processes in the home (for example, a robot vacuum to clean the floor). There may not be distinct boundaries between home automations and robotics, but this paper will focus on the automation of processes related to structure or fixtures of the house and environment (for example, automated lights, doors or heating/cooling systems).

From the available information it appears that for most common home automations, off-the-shelf control units like Google Home, Apple Home kit or Amazon dot may be sufficient with installation of automated appliances or fixtures. If these mainstream options are not accessible for a user, or if they require a more customised solution, then specialised home automation systems may be required.

Currently, we do not have accurate information about how often home automations are funded and what the average costs that quotes are implemented for. Without this information we cannot accurately determine financial risk to the scheme.

3. What is home automation?

Anything that moves or turns on and off can be automated. In a house, this can include lights, electricity outlets, doors, windows, drawers, blinds, locks, showers, baths, sinks, toilets, air-conditioning, ceiling fans, platform or stair lifts, cameras, intercoms, alarms or other security features, watering or reticulation systems. Any home appliance can be automated including TVs, sound systems, vacuums, fridges, kettles and coffee makers etc.

Home automations, sometimes called domotics, can be linked or integrated via home internet or wireless technology and operated via phones, tablets, computers or dedicated control interfaces, allowing users to control structural or environmental features of their home. A home in which automation is integrated with the Internet of Things is often called a smart home (Choi et al, 2021; Katre & Rojatkar, 2017). The Internet of Things refers to a network of computing devices which can communicate with each other via a system of sensors (Choi et al, 2021). For example, a bedroom light turns on when the bedroom door is opened thanks to a sensor in the door, or a wearable temperature sensor can send information to an air-conditioner to regulate the room temperature. This is an example of an automated system with a passive input. It's called passive because the user does not have to intentionally turn the light on, it is turned on by doing another activity the user would have done anyway (opening the door). This contrasts with active input, in which the user speaks or operates controls on a tablet or phone (Hampton, 2019). Figure 1 illustrates the relationship between inputs and outputs in a home automation system.

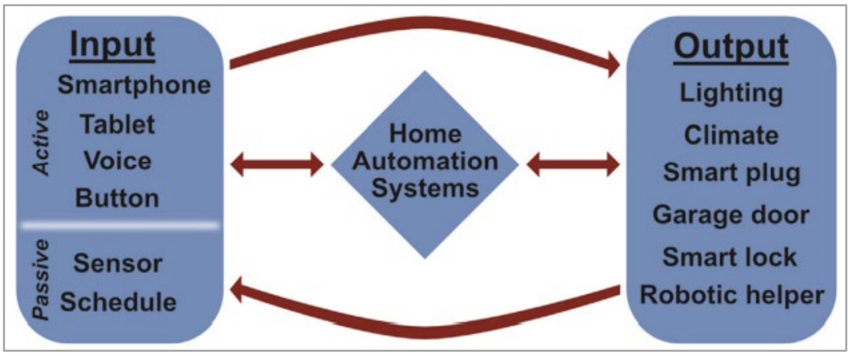

Figure 1: Home automation systems. Source: Hampton, 2019.

4. Home automation in Australia

There is little reliable data on the prevalence of home automations in Australian households. The information that is available was gathered for commercial purposes and may have inherent bias. Data from the Statista Global Consumer survey of 2049 people found 85% had some smart home device in their house. Entertainment devices are the most common (79%), followed by:

- devices for monitoring and automating electricity and lighting (30%)
- safety and security (29%)
- smart appliances (26%)
- smart speakers with virtual assistant (22%)
- energy management (22%) (Statista 2022).

A 2022 Savvy survey of 1000 people found 48% aged over 55 have at least one smart home device and 41% have 5-10 devices. 58% of people 18-44 have at least one smart home device in their home (Chavda, 2022). Due to barriers accessing the full datasets or reports for these surveys, the definitions of ‘smart device’ or ‘smart home device’ are not clear. They may include devices as common as Bluetooth speakers or motion sensor lights. Also, information substantiating the representativeness of the survey group is not available.

5. Home automation as a disability support

There is no standard home automation scope of works in either a mainstream or disability support context. However, based on a review of 20 TAB advice requests from 2021/2022, common automation requests include:

- doors and locks
- windows and blinds
- lighting (ceiling lights or lamps)
- heating/cooling (air-conditioner, ceiling fans)
- intercom / video doorbell
- entertainment (TV, sound systems).

In a mainstream context, the goals of home automation include safety and security, comfort, convenience and energy efficiency (Statista, 2022). Features designed for comfort or convenience in a mainstream context can have significant implications for independent living for people who live with a disability (Hampton, 2019). A 2021 survey of allied health practitioners found commercially available home automation technology has been used to assist people with traumatic brain injury, spinal cord injury, cerebral palsy, amyotrophic lateral sclerosis, multiple sclerosis, stroke, dementia, Alzheimer’s, mild cognitive impairments, autism, Parkinson’s disease, low vision or blindness, and Down syndrome (Ding et al, 2021). Home automation can be useful to:

- remove physical barriers to the use of fixtures or appliances

  For example, the automation of doors, windows, and blinds can be used to change the usual physical input (pushing, lifting, reaching, pulling) which a user might have difficulty with to a different input within the user’s ability (speaking a voice command, using a touch screen).

- prompt a user to complete daily activities

  For example, a user might require prompting to brush their teeth in the morning, so they install a sensor on the bedroom door which triggers a voice prompt when the user first leaves their bedroom in the morning.

- simplify complex process

  For example, if a user has difficulty remembering everything they need to do to secure their house when they leave, multiple processes (lock doors, close windows and blinds, turn off all lights and appliances), could be activated via a single input (press a single button on their smartphone).

5.1 Benefits

Research focussing on the use of home automation in a disability, health or ageing context is only a small portion of the research literature on home automation (Li et al, 2022; Choi et al, 2021). Despite this, healthcare was one of the first applications of smart home research represented in the literature. This body of research looks at technology for monitoring health of patients, improving service delivery and promoting ageing in place.

Much of the literature on the effectiveness of home automation or Smart home technology focusses on home care for older people (Lee & Kim, 2020; Tural et al, 2021; Astasio-Picado et al, 2022). This literature has shown that smart home technology including sensors, automated lighting, locks and fire detection devices can reduce hospitalisation among older adults, improve feelings of safety and security and promote ageing in place. However, since the focus is on older people, the results may not generalise across disability cohorts.

Research into the use of home automation in a disability context is still developing. As late as 2008, a Cochrane review found no randomised controlled trials, quasi-experimental studies, controlled before and after studies or interrupted time series analyses looking into home automation as a treatment for people with physical disability, cognitive impairment or learning disability. Noting that these technologies are in use, the authors recognise that technology often finds its way into the healthcare industry “without comprehensive evaluation of the health impact or a true understanding of the added value of ICT to health services” (Martin et al, 2008, p.5). Research also often develops slower than technology, so that by the time research is completed, a technology may be obsolete (TAC, n.d).

The evidence base is still minimal though preliminary studies show a positive effect of home automation. A 2021 review into the use of home automation and smart home technology for people with Parkinson's found benefit in improving autonomy and safety, but this is primarily using sensors and data-collection to inform health care providers of risks (Simonet & Noyce, 2021). Two pilot studies into the use of home automation found improvements in social adaptation, activities of daily living and quality of life for people with Parkinson's disease (Latella et al, 2021) and improvements in social and cognitive functioning and autonomy in people with chronic stroke (Maggio et al, 2020). However, both pilot studies measure use of home automation in short sessions rather than as a ubiquitous living environment.

Victoria's Transport Accident Commission has funded a research project looking at smart home technology for supporting memory, planning and organisation. The research is scheduled to be completed in 2022 (TAC, n.d.).

Removing physical barriers. There is some evidence on the usability and accessibility of control systems for operating common home automations (Masina et al, 2020; Conado et al, 2022). For example, Masina et al (2020) found accessibility issues in the use of voice assistants (Siri, Alexa, Cortana etc) for people with cognitive and linguistic impairments. I have found no evidence relating to the effectiveness of common home automations to remove physical barriers. This may be due to the early stages of the evidence base or the typical heterogeneity of new technologies. It may also relate to the fact that home automations straight-forwardly allow people to perform these basic activities (turn lights on and off, open doors and windows) provided the controls are accessible.

Prompting. A 2015 study into prompting technology found an effective prompting system:

> can improve the efficacy of cognitive interventions, minimize the necessity for human assistance, and allow users to feel more independent. Research has shown that prompting technologies can enhance medication adherence, improve the use of external compensatory strategies, reduce caregiver burden, and increase functional independence in those with cognitive impairment (Robertson et al, 2015, p.9).

The authors note prompting is most effective during points of transition (when finishing or starting a different activity) and less effective when the prompt occurs at a specific time of day regardless of what the user is doing (for example, a reminder set for 8:30am every day). Smart home technology can facilitate prompting triggered by certain activities (leaving or entering a room, getting out of bed, turning an appliance on or off) and so may be more targeted than simple time-of-day prompts.

Simplifying complex processes. In a 2019 introduction to home automation, Hampton suggested there was no significant evidence base for the effectiveness of home automation for people with disability. However, he does acknowledge the usefulness of automated lights, temperature control, video doorbells, locks and other security features for assisting users to simplify complex processes (Hampton, 2019).

6. Risk

6.1 Safety and security

Privacy and data security are major concerns noted in the research (Hampton, 2019; Li & Borycki, 2019; Kang et al, 2021; Ding et al, 2021; Simonet & Noyce, 2021; Luo et al, 2021). Smart home technology often collects usage data and in the context of disability or health related technology would collect personal information about a person's health and capabilities (Kang et al, 2021). In cases where the sensors are intended to monitor the user around the clock, measures to balance privacy and safety may be needed. Eavesdropping is also possible where there are voice activated devices or video cameras (Li & Borycki, 2019). Simonet and Noyce (2021, p.59) offer the following as possibilities for addressing concerns around privacy and data security:

Risk	Mitigation
Intrusive surveillance sensors, unwanted image data, third parties' involvement	• Data encryption (blur, pixelating, silhouettes, skeleton, 3D avatar) to protect identity
Feeling of lack of data control involving private life content	• Written consent after detailed information disclosure • To inform about rights: to view and delete unwanted images, temporarily pause image recording whenever they wish • Cognitively impaired individuals: consent given by people with decision-making authority anticipating benefits and risks • Participants to ask third parties for consent
Security issues: full reliance on technology, sensor failure to detect a dangerous situation, software hacking	• Technology demystification • Glitches detection • Trained investigators
Data ownership: right of self-management of personal data	• Support regulatory bodies. Testable quality standards certification

Other risks relate to networking and remote operation of basic household processes. If a device is connected to a user's Wi-Fi and there is a network failure this may cause be safety issues such as the inability to open or unlock doors. This might be mitigated by systems which connect via Bluetooth or Z-Wave and do not depend on Wi-Fi network. If a smart home system is hacked, all the automated systems may be vulnerable to remote operation. This may be mitigated by appropriate digital security measures. In addition, remote operation of doors and locks raises concerns of restrictive practice. This risk could be mitigated by limiting number of users with access to the systems and identifying if a behaviour support plan involving restrictive practice is required.

6.2 Cost effectiveness

I have not found any research on the cost effectiveness of home automations compared to personal assistance. There is a suggestion in the literature that home automation can increase independence and reduce carer burden, but this is not quantified into reduced hours of support. In theory, a person who only requires monitoring over the day could reduce the amount of on-site care they require. However, for both on and off-site care, reduced hours would depend on the support arrangement in place. There is some evidence that a person only requiring prompting to complete daily activities could rely less on personal assistants and therefore reduce care hours (5.1 Benefits). However, I have not seen any evidence showing that home automations designed for prompting do reduce support hours.

As such, we cannot say that home automations have a track record of reducing support hours and we cannot say in general that home automations are likely to be value for money. Individual requests for funding may be able to demonstrate a likely reduction in support hours or some comparable benefit that would make the request value for money. For example, if a participant can sometimes navigate the community independently and an automated door will enable them to enter or exit their home independently, then the request may increase their independence to an extent that funding would be justified, even if it does not reduce support hours.

There is inconsistent information available when comparing mainstream smart home hubs (Google Home, Amazon Dot, Samsung SmartThings, Apple HomeKit etc) with more specialised control units (C-Bus, Crestron, Mobotix, Control 4). This may be due to the commercial nature of the reviews and the rapid progress of the technology. Most online reviews compare mainstream hubs with each other or specialised control units with each other, but do not compare mainstream with specialised.

Specialised units require more set-up and are more costly but allow for greater customisation. Mainstream hubs are cheaper, fulfill most basic automation needs but their interface is less customisable and may be less accessible. I have not found a home automation technology designed specifically for people with disabilities, though with some specification both mainstream hubs and specialised units can accommodate some accessibility measures. The most cost-effective system will depend on the needs of the individual.

For example, Apple Home is a free app which works with various accessories. It advertises the ability to automate or work with air conditioners, air purifiers, bridges, cameras, doorbells, fans, garage doors, humidifiers, lights, locks, power points, receivers, routers, security, sensors, speakers, sprinklers, switches, taps, thermostats, TVs, and windows. It is compatible with hundreds of products of various brands (Apple Home).

Google Home setups are currently selling for $99 and can automate several processes independently (email, phone, entertain systems) and can link to additional modules (for example, Samsung's SmartThings) to:

> lock and unlock doors, regulate air-con settings, open and close windows blinds, water plants, start robotic vacuum cleaners, and arm and disarm alarm systems, [operate] plug and power outlet, motion sensor, security camera, Honeywell thermostat, garage door opener, washing machine, door bell and garden irrigation controller (Noda, 2018, p.675).

Mainstream smart home hubs are inexpensive but require compatibility with devices or fixtures in the home. This can involve buying new appliances or separately automating household processes, which can sometimes involve substantial costs.

An additional consideration is re-wiring of a home. Mainstream accessories (lights and appliances) and accessories or systems that run on batteries will often not need re-wiring. Many home automation systems or devices need neutral wires and so some older homes may require re-wiring. Some people choose to install deep junction boxes, wiring closets or higher grade ethernet cables (Fritz, 2021; SmartHome, n.d., Tholen, 2021).

6.2.1 Reducing financial risk

When a request for home automation is determined to be reasonable and necessary a plan developer includes the line item:

> Environmental Control (ECU)/ Safety-Related Products 05_241303121_0123_1_2.

This is a quotable item in the Assistive Technology category with a benchmark of $17,474. The line item for repair and maintenance is:

> Repairs and Maintenance - Communication Cognitive or ECU AT
> 05_502200312_0124_1_2

and has a notional value of $500. Home automations are not a mandatory referral to TAB and do not have any mandatory referral rules associated with them.

We do not currently have data on how frequently this line item is included in the plan and whether the benchmark represents to average cost quotes are implemented for. However, this information may be obtained from the Office of the Scheme Actuary. Without this information we don't have a good idea of the financial risk associated with these requests and we don't know if further risk mitigation strategies are required.

However, without an idea of scale, some concerns and strategies are still apparent. It is also possible home automations are being included in plans without the line item or with a different line item, contributing to the lack of clarity about how often this support is being funded. There could be a few reasons for this. Home automations are funded through the Assistive Technology category, though they sometimes blur the line between AT and Home Modifications, requiring rewiring efforts or installation of built-in features like doors and cabinetry. Plan developers may be looking to fund the support through the Home Modifications budget. Environmental control unit is a technical term which may not be widely known. This term may or may not be used in the request, assessment or quote and may not signal to the plan developer to include the correct line item.

Either changing the name of the line-item to include a reference to home automation or publicising the current line item and what it's for could reduce the potential for home automation funding being included via a different route.

Some risk reduction measures are introduced for supports costing above $15,000 such as a full assessments and quotes. Risk of supports being funded that are not value for money could be further reduced by creating a mandatory TAB referral rule (eg. mandatory referral to home automations over $20,000).

Further support for decision makers might include adding a home automation example to the Would We Fund It guide or adding a home automation advice request to the TAB digest.

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8. Version control

Version	Amended by	Brief Description of Change	Status	Date
1.0	AHR908	Research paper addressing ubiquity and function of home automations	Cleared	09/05/2022

Gym membership in Australia

The content of this document is OFFICIAL.

Please note:

The research and literature reviews collated by our TAB Research Team are not to be shared external to the Branch. These are for internal TAB use only and are intended to assist our advisors with their reasonable and necessary decision-making.

Delegates have access to a wide variety of comprehensive guidance material. If Delegates require further information on access or planning matters, they are to call the TAPS line for advice.

The Research Team are unable to ensure that the information listed below provides an accurate & up-to-date snapshot of these matters

Research question: How many Australians have gym memberships? What are their ages? How many Australians with disabilities have gym memberships?

Date: 11/08/2022

Requestor: Andrea [redacted]

Endorsed by: n/a

Researcher: Aaron [redacted]

Cleared by: Aaron [redacted]

Review date:

1. Contents

2. Summary

Methodologically reliable but dated information from ABS indicates 17% of Australians had gym memberships in 2015. Lower quality sources indicate 2020-2021 membership rates are around 14%-15%. Very low quality sources indicate current gym membership in 2021 was between 32% and 39%.

Very low quality sources indicate gym membership is most common in the 25 – 45 year age bracket.

I was unable to find data on the number of gym members with disability. However, Australian government sources show people with disability are more likely to have chronic health conditions, more likely to be under financial stress and less likely to get enough exercise. This suggests gym membership rates would be lower for Australians with disability.

3. Gym membership in Australia

Two sources from 2015 found less than one in five Australian's have gym memberships. The Australian Bureau of Statistics Participation in Sport and Physical Recreation, Australia survey found 17% of Australians exercised at the gym (ABS, 2015). SunCorp Bank's Cost of Being Fit report finds 18% of Australians have gym memberships (Elsworth, 2015).

While this survey data is significantly dated, more recent information corroborates this rough estimate. IHRSA, an international health and fitness industry peak body, published Australian gym membership data in their 2020 global report. They found 15.3% of Australians have gym memberships (Rizzo, 2021).

Another rough estimate is found in Rothwell's account of the impact of COVID-19 on the fitness industry. He states that COVID-19 related restrictions affected 3.7 million consumers of gym and fitness centres in Australia (Rothwell, 2023). This is roughly 14.4% of the Australian population. While not necessarily an accurate estimate of gym memberships, it is corresponds to the ABS, SunCorp and IHRSA estimates.

In contrast, the subscription data website Statista found 47% of Australians used gyms, fitness, sports or leisure centres in 2020 (Share of people visiting gyms, fitness clubs, sports centers Australia 2020, by age, n.d.). Their 2021 survey found 39.6% of Australians participated in fitness and gym activities (Gym membership in Australia by age 2021, n.d.). This may indicate a drop in memberships or may indicate ambiguity in the survey questions. Also, the for-profit consumer advice website Finder determined 32% of Australians have a gym membership (Lloyd, 2021).

Methodology of research from SunCorp, IHRSA, Statista and Finder are unclear and the quality cannot be determined.

4. Age and gym membership

Statista report:

> In 2021, Australians aged between 25 and 34 years dominated the fitness and gym industry in Australia, with over 1.7 million Australians from the age group participating in fitness or gym activities during the year. That year, gym and fitness participation was least popular among survey respondents aged 15 to 17 and 55 to 64 years (Gym membership in Australia by age 2021, n.d.).

Fitness Australia (2016) states that while 18-34 year olds are more likely to engage in exercise, gym goers are more likely to be in the 26-45 age range.

5. Disability and gym membership

I was unable to find data on gym membership among people with disability.

The following is relevant contextual information. People experiencing socio-economic disadvantage and people with long term health conditions are less likely to get enough exercise (ABS, 2022). Australians with disability are six times more likely to have chronic health problems and twice as likely to be under financial stress compared with the general population. Three quarters of Australians with disability do not get enough exercise compared to half of the general population (AIHW, 2022).

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Eating out habits of Australians

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The Research Team are unable to ensure that the information listed below provides an accurate & up-to-date snapshot of these matters

Research question: How many meals on average Australians eat out or get take away per week or month?

Date: 23/8/2022

Requestor: Kim s22(1)(a)(ii) - irr

Endorsed by: Andrea s22(1)(a)(ii) - ir

Researcher: Stephanie s22(1)(a)(ii) - irrelevant mate

Cleared by: Stephanie s22(1)(a)(ii) - irrelevant mat

Review date: n/a

1. Contents

2. Eating habits of Australians for food prepared outside the home

There is limited quality, peer reviewed literature addressing the question of how often Australians eat food prepared outside the home and the method of procurement. One peer reviewed paper was sourced, Cameron et al (2022), which reports data from the Australian arm of the 2018 International Food Policy Study. This study is conducted annually in five countries: Australia, Canada, Mexico, the United Kingdom and the United States. In 2018 there were 3963 Australian participants; data is collected through self-report methods.

Table 1 shows the source and frequency over one week of meals prepared outside the home. Highlights from this table:

- An average of 2.73 (95% CI 2.61 – 2.86) meals per week were prepared outside the home, this included fast food/take away an average of 1.35 times, sit down restaurant or pub meal 0.73 times, sandwich or prepared food from supermarket 0.2 times.
- On average, males tend to source more food prepared outside the home at 3.08 times per week (fast food 1.49 times per week; restaurant meals 0.78 times) than females at 2.40 times per week (fast food 1.21 times; restaurant 0.68 times).
- By age group, 18-29 year-olds source more prepared food from outside the home, averaging 4.29 times per week (fast food most frequently 2.00 times per week, followed by restaurants or pubs 0.95 times per week), with 30-44 year-olds second highest (fast food 1.71 times per week, restaurants or pubs 0.76 times per week)

Table 2 reports how meals prepared outside the home were procured. Highlights from this table:

- Food sourced from an outlet more than 5 minutes from home was procured most often (1.13 times per week), followed by a food outlet less than 5 minutes from home (0.77 times), food delivery service (0.35 times) and restaurant delivery (0.33 times)

Table 1

Source and frequency (over one week) of meals prepared outside the home, Australian data

		Mean number of meals from each source (95% CI)									
		Fast food/take away	Sit-down restaurant or pub	Work, School, University	Sandwich from sup’market	Food truck, market	Petrol station, milk bar	Leisure centre, entertainment venue	Vending machine	Other	Total average of all sources
Total average		1.35 (1.29-1.41)	0.73 (0.67-0.78)	0.15 (0.12-0.18)	0.20 (0.17-0.24)	0.10 (0.08-0.13)	0.10 (0.08-0.13)	0.07 (0.05-0.08)	0.05 (0.04-0.07)	0.11 (0.08-0.13)	2.73 (2.61-2.86)
Sex	M	1.49	0.78	0.20	0.26	0.14	0.14	0.08	0.08	0.11	3.08
	F	1.21	0.68	0.10	0.15	0.07	0.07	0.05	0.03	0.11	2.40
Age	18-29	2.00	0.95	0.34	0.43	0.26	0.22	0.16	0.16	0.13	4.29
	30-44	1.71	0.76	0.20	0.30	0.13	0.16	0.10	0.07	0.07	3.28
	45-59	1.22	0.55	0.06	0.09	0.01	0.04	0.01	0.01	0.14	2.20
	≥60	0.61	0.67	0.02	0.04	0.02	0.02	0.03	0	0.10	1.47

Cameron et al (2022)

Table 2

Procurement of meals prepared outside the home, Australian data

		Mean number of meals from each procurement method per week (95% CI)			
		Food delivery service	Restaurant delivery service	Food outlet < 5 mins from home	Food outlet > 5 mins from home
Total		0.35 (0.31-0.40)	0.33 (0.29-0.38)	0.77 (0.71-0.82)	1.13 (1.06-1.19)
Sex	M	0.46	0.42	0.84	1.19
	F	0.25	0.25	0.69	1.07
Age	18-29	0.79	0.65	1.22	1.36
	30-44	0.53	0.48	0.87	1.26
	45-59	0.12	0.16	0.68	1.08
	≥ 60	0.04	0.09	0.39	0.86

Cameron et al (2022)

3. References

Cameron, A. J., Oostenbach, L. H., Dean, S., Robinson, E., White, C. M., Vanderlee, L., Hammond, D., & Sacks, G. (2022). Consumption frequency and purchase locations of foods prepared outside the home in Australia: 2018 International food policy study. Journal of Nutrition, 152, 76S-84S. doi: https://doi.org/10.1093/jn/nxab437

Efficacy of Equine Therapy

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Research question: What is the efficacy of equine therapy?

Date: 13/9/22

Requestor: Adam s22(1)(a)(ii) - irre [redacted]

Endorsed by: Andrea s22(1)(a)(ii) - ir [redacted]

Researcher: Stephanie s22(1)(a)(ii) - irrelevant mate [redacted]

Cleared by: Stephanie s22(1)(a)(ii) - irrelevant mat [redacted]

Recommended review date: September 2023

1. Contents

2. Summary

Equine therapy is defined as therapy completed in the presence of a horse, horse trainer and health professional/therapist, and includes hippotherapy, therapeutic riding, and riding for rehabilitation, as well as non-mounted tasks such as grooming and caring for the horse (Srinivasan et al, 2018).

It is proposed that hippotherapy and therapeutic horse riding promote neuromuscular and sensory system development through rhythmic movements of the horse that mimic natural pelvis movement during walking, and stimulate proprioceptive and balance reactions (Guindos-Sanchez et al, 2020; Koca and Ataseven, 2015; Portaro et al, 2020; Zhao et al, 2021).

Improvement in social communication for children with ASD is the most commonly reported finding in studies of equine therapy, postulated to be a response to verbal and non-verbal communication skills developed during equine therapy. However an umbrella review by Stern and Chur-Hansen (2019) found that out of positive effects described in the literature for the social communication, behavioural and motor domains, only effects in the behavioural domain were statistically significant.

In general, findings for equine therapy across a range of conditions is equivocal due to methodological weaknesses in the current literature (Stern and Chur-Hansen, 2019).

3. Equine Therapy

3.1 Background

Examination of the literature shows a range of terminology for the use of horses for therapeutic purposes. Equine therapy is an overarching term for activities that are completed in the presence of a horse, horse trainer and health professional/therapist, and includes hippotherapy, therapeutic riding, and riding for rehabilitation, as well as non-mounted tasks such as grooming and caring for the horse (Srinivasan et al, 2018). Health professionals involved in equine therapy may include a physiotherapist, occupational therapist, speech therapist and/or psychotherapist depending on the patient's goals and therapeutic needs (Koca and Ataseven, 2015; McDaniel Peters and Wood, 2017). Equine assisted activities may involve the same tasks however are not implemented by a health care professional (Tan and Simmonds, 2018). This current paper only considers research involving equine therapy programs that are implemented by a therapist with has specific goals and objectives for the participants.

Hippotherapy is defined as equine assisted therapy that uses the gait and movement of a horse to provide motor and sensory input for physical, occupational or speech therapy goals (Koca and Ataseven, 2015). This may involve a mechanical device mimicking horse motion or actual horse riding (Silva et al, 2020). During hippotherapy, the horse or device lead the rider to stimulate anterior and posterior swinging movements that mimic normal movements of the pelvis while walking. It is suggested that horse riding provides up to 110 postural deviations in one minute (Portaro et al, 2020), which may stimulate proprioceptive and balance reactions (De Guindos-Sanchez et al, 2020). Additionally, it is proposed the warmth and feel of the horse, along with rhythmic movements, provides the rider with motor and sensory input to develop neuromuscular and sensory systems (Guindos-Sanchez et al, 2020; Koca and Ataseven, 2015; Zhao et al, 2021).

Therapeutic riding builds on hippotherapy and may encompass additional functional domains, to include cognitive, physical, emotional and social wellbeing goals (Lee et al, 2016). Importantly, during therapeutic riding the rider has active control of the horse which may foster further development of functional domains (Stern and Chur-Hansen, 2019). Other therapeutic options described in the literature are equine assisted psychotherapy, which is implemented in conjunction with a mental health practitioner, to focus on emotional growth and learning (Lee et al, 2016), and therapeutic carriage driving, which may be a suitable option for individuals who cannot mount a horse (Stern and Chur-Hansen, 2019).

3.2 State of the literature

There are many individual studies and reviews in the literature describing favourable effects of equine therapy, despite heterogeneity in the data, on communication and language skills, motor coordination, muscle tone, postural balance, flexibility, gait and strength for a diverse range of conditions such as cerebral palsy, Down syndrome, autistic spectrum disorder, stroke and multiple sclerosis (Koca and Ataseven, 2015). Interestingly, an umbrella review (review of previous systematic reviews) published in the Australian Journal of Psychology, found that evidence for equine assisted therapy for many conditions is equivocal due to methodological weaknesses in the research (Stern and Chur-Hansen, 2019). In their opinion, this makes interpretation of the efficacy of equine therapy difficult to determine for some conditions based on the current state of the literature (Stern and Chur-Hansen, 2019). It is important to note, however, that despite weaknesses in methodology limiting interpretation of group effects of the intervention, there may still be benefit to some individuals who undergo equine therapy, therefore findings from the literature will be discussed with respect to different disabilities below.

4. Specific findings for different disabilities

4.1 Autism Spectrum Disorder

There is a large body of research evaluating the efficacy of equine therapy for minors with autism spectrum disorder. Improvement in social functioning, including interaction, engagement and communication, is the most commonly reported finding in the research (Srinivasan et al, 2018; Tzmiel et al, 2019).

In a review by Srinivasan et al (2018) it was found 9 out of 11 studies reported improvement in social skills following equine intervention, 5 out of 7 studies demonstrated improvement in behavioural skills (e.g., stereotypical behaviours, affective responses, irritability, hyperactivity and self-regulation), promising evidence for improvement in sensory skills and only weak evidence for a positive effect on motor skills post equine therapy. This review was examined statistically by Stern and Chur-Hansen (2019), who found there was only evidence of a positive significant effect for the behavioural domain and the remainder were statistically non-significant.

Another review, undertaken by Tzmiel et al (2019), collated findings from 15 studies and found that equine therapy may support psychosocial functioning for children and adolescents with ASD, however they stated further research was warranted due to methodological differences between studies. In particular, this review highlighted studies that found there was a decrease in maladaptive behaviour, reduced hyperactivity and irritability, and lower levels of aggression and violent behaviour after completing a therapeutic riding program (Anderson and Meints, 2016; Gabriels et al, 2012; Gomez et al, 2017).

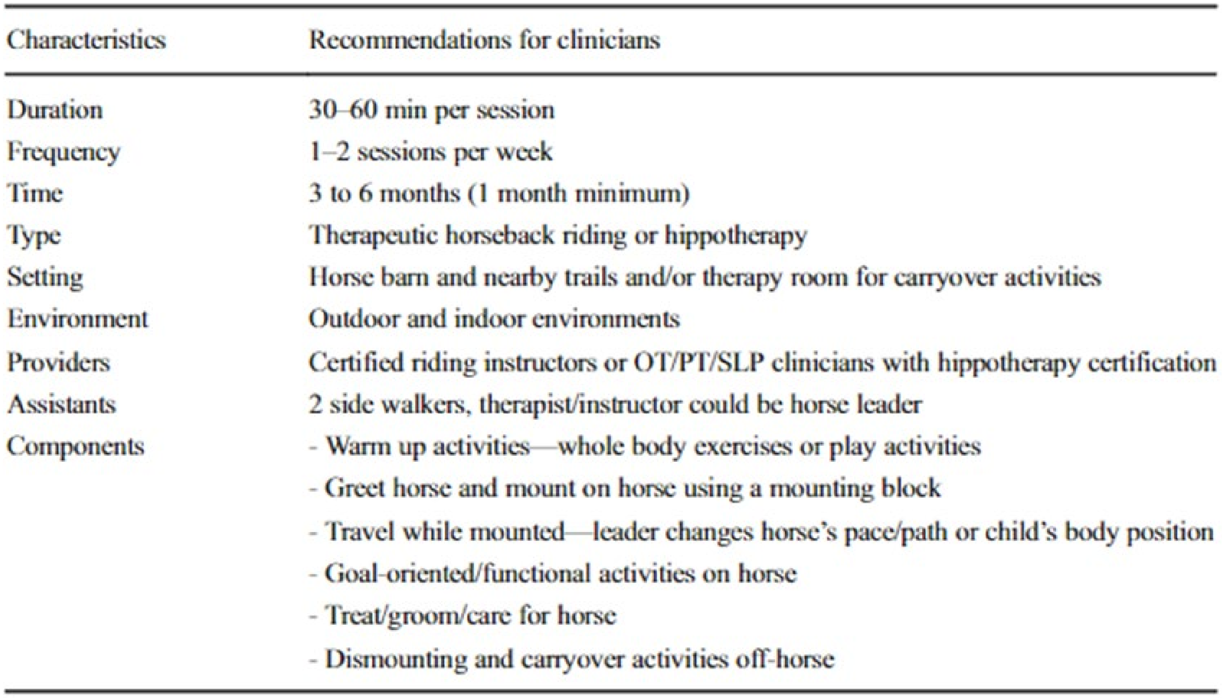
Individual findings by Holm et al (2014) suggested, after equine psychotherapy, that some challenging or stereotypical behaviours may worsen during equine therapy sessions but demonstrated positive effects afterwards in the home and community. They also found there was an increase in verbalisation after equine therapy and an increased ability to follow directions, potentially as a result of needing to follow directions successfully during equine therapy.

Only one study appeared to directly examine improvement in cognitive function. Borgi et al (2015) demonstrated improved reaction time during problem solving activities after a therapeutic riding program, and concluded this may reflect improved executive function abilities. Tan and Simmonds (2018) also argued improvement in self-regulatory skills may be linked to improved executive functioning, sensory processing and emotional regulation, with these resulting in increased alertness, focus, compliance and reduced emotional reactivity.

Srinivasan et al (2018) determined there was conflicting evidence regarding the long-term maintenance of functional gains made after equine therapy had ceased, and Ward et al (2013) noted that consistent therapeutic riding lessons were important to sustain functional gains. Despite this, Srinivasan et al (2018) developed a protocol for equine therapy treatment based on the data from their review that they proposed would generate the most positive outcomes (see Table 1).

Table 1

Proposed program for equine therapy for children with ASD (Srinivasan et al, 2018)



Characteristics	Recommendations for clinicians
Duration	30–60 min per session
Frequency	1–2 sessions per week
Time	3 to 6 months (1 month minimum)
Type	Therapeutic horseback riding or hippotherapy
Setting	Horse barn and nearby trails and/or therapy room for carryover activities
Environment	Outdoor and indoor environments
Providers	Certified riding instructors or OT/PT/SLP clinicians with hippotherapy certification
Assistants	2 side walkers, therapist/instructor could be horse leader
Components	- Warm up activities—whole body exercises or play activities
	- Greet horse and mount on horse using a mounting block
	- Travel while mounted—leader changes horse's pace/path or child's body position
	- Goal-oriented/functional activities on horse
	- Treat/groom/care for horse
	- Dismounting and carryover activities off-horse

4.2 Cerebral palsy

Literature describing equine therapy outcomes for children with cerebral palsy show a variety of outcome measures and many different measurement tools used (Stern and Chur-Hansen, 2019). The most frequently used tools to measure gross movement function – GMFM-88 and GMFM-66 – show mixed results. Guindos-Sanchez et al (2020) undertook systematic review and meta-analysis of 10 studies evaluating the efficacy of equine therapy on improvement in gross motor function for children with cerebral palsy. Findings showed a favourable effect size for the subscales of 'laying and rolling', 'sitting', and 'walking, running and jumping' (Guindos-Sanchez et al, 2020). Studies that were included typically had equine therapy programs of 30-45mins; it was proposed that longer durations may be associated with fatigue that counter the development of functional gains. Results of the Guindos-Sanchez et al (2020) review concurred with Whalen and Case-Smith (2012) that also found equine therapy was associated with improvements in gross motor function for children with cerebral palsy. On the other hand, Stern and Chur-Hansen (2019) cite meta-analysis conducted by Stergiou et al (2017) and Tseng et al (2013) that found no significant differences in gross motor function after equine therapy for children with cerebral palsy.

4.3 Multiple Sclerosis

A small study conducted by Munoz-Lasa et al (2011) compared therapeutic riding with traditional physiotherapy for adults with multiple sclerosis found that therapeutic riding group experienced improvement in balance, decreased stride time and increased gait speed and cadence. The control group did not demonstrate increased balance, and did not undergo gait analysis for comparison.

The umbrella review by Stern and Chur-Hansen (2019) identified three systematic reviews comprised of a total of 8 studies investigating the role of therapeutic riding for people with multiple sclerosis. All but one study that measured gait showed improvement following equine therapy. Results were the same for balance. Of the other outcomes measured, including global severity, health status, depression, speed/stride, postural stability/control, spasticity, mobility, muscle tension, ground reaction force, fatigue, pain, disability, somatisation, quality of life, and sway did not show improvement (Stern and Chur-Hansen, 2019).

4.4 Stroke

Stern and Chur-Hansen (2019) identified three systematic reviews (Stergiou et al, 2017; White-Lewis et al, 2017; Wonsetler & Bowen, 2017) investigating the effect of therapeutic riding for adults post-stroke, however this only included three unique studies. Analysis of these reviews showed that after an equine therapy program, motor impairment in the lower limbs, gait velocity, step length asymmetry and quality of life measures improved, while balance, ambulance and cadence showed no change.

4.5 Down Syndrome

Two individual studies examining the efficacy of equine therapy for individuals with Down Syndrome were sourced. Espindula et al (2016) used photogrammetry to demonstrate that after hippotherapy, there was evidence of improvement in static posture, better alignment of shoulders, head, hip, lower limbs, decreased kyphosis and head protrusion, reflecting improvement in motor behaviour. Additionally, Portaro et al (2020) found that after 6 months of equine therapy, participants had better bilateral forefoot to hindfoot pressure distribution, meaning greater stability during stance. They also identified a decrease in centre of pressure and lower centre of pressure sway, indicating improved neuromotor systems relating to stabilisation. Finally, they also found an increase in step length, velocity and width, to conclude overall that hippotherapy resulted in functional improvement and increased stability for individuals with Down Syndrome.

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Sensory-based therapy

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Research question: Is sensory integration, modulation, processing all talking about the same thing? Any other important terms to define?

Who might benefit from sensory support?

What is the evidence sensory support reduces the need for RRP?

What is the evidence for other more general outcomes?

Who might implement/qualifications for sensory support?

Date: 29/09/2022

Requestor: Karyn [redacted]

Endorsed by:

Researcher: Stephanie [redacted] and Aaron [redacted]

Cleared by: Stephanie [redacted]

Review date:

1. Contents

2. Summary

The terminology used in the literature on sensory disorder and sensory-based interventions (SBIs) is inconsistent. The terms sensory integration, sensory processing and sensory modulation are sometimes used interchangeably in the literature and sometimes given distinct definitions. General features of these key terms can be described.

Researchers and clinicians have employed SBIs for a variety of conditions. Most of the research available relates to interventions for Autism Spectrum Disorder (ASD) or other neurodevelopmental disorders such as intellectual disabilities or attention deficit/hyperactivity disorder, schizophrenia or other mental health conditions such a bipolar, depression or obsessive-compulsive disorder. There is also research relating to interventions for cerebral palsy, Huntington’s disease and dementia.

There is some evidence that SBIs can contribute to a reduction in restrictive practice. The evidence is predominantly in the domain of mental health and is predominantly related to restrictive practice in a clinical or institutional setting. However, systematic reviews show inconsistent results. Based on the evidence collected it is not possible to say with confidence that SBIs reduce the use of restrictive practice. There are many factors which contribute to an institution’s use of restrictive practice that are not addressed by the introduction of SBIs.

SBIs do likely have some positive effects. There is consistent evidence that SBIs reduce distress of people with mental health conditions and lower quality evidence that distress is reduced for people with Huntington’s disease and dementia. There is low to moderate quality evidence of positive effect for young people with ASD relating to some core autistic characteristics, life outcomes and cognitive, motor and social-emotional skills. There is weak evidence showing improvement in functional outcomes for children with intellectual disability and development delay.

SBIs are usually implemented by an occupational therapist. However, other professionals can be trained to implement SBIs including nurses, psychologists and speech therapists.

3. Terminology

The literature on sensory therapies is not well organised and key terminology is not used consistently (Ouellet et al, 2021). However, rough definitions of the major concepts are possible.

3.1 Theoretical terminology

Underlying theoretical terms are often used in different ways. Brown et al (2019) provide an overview of the use of the terms **sensory integration**, **sensory processing, sensory modulation** and **sensory perception**, showing that despite considerable variation, these terms have also been used interchangeably in the literature. Based on their review, the authors propose the following definition of sensory modulation:

> Sensory modulation is considered a twofold process. It originates in the central nervous system as the neurological ability to regulate and process sensory stimuli; this subsequently offers the individual an opportunity to respond behaviourally to the stimulus (Brown et al, 2019, p.521).

They characterise sensory modulation as a combined neurophysiological and behavioural process within the larger category of sensory processing. Sensory processing also includes: receiving, organisation, perception, interpretation, registration and discrimination. They suggest sensory integration is the framework which encompasses the sensory processing sub-processes and the disorders associated with those subtypes (Brown et al, 2019).

However, we should also recognise that the process of proposing consistent definitions of these terms is largely revisionary considering the disagreement in the literature. For instance, sensory integration can refer to a neurological process, a theory or a practice depending on the researcher. Sensory processing might be used interchangeably with sensory integration (Camarat et al, 2020; Brown et al, 2019). Sensory processing is more often used in the literature related to autism, but sensory modulation is often used in the literature on mental health to refer to the same types of interventions (Brown et al, 2019; Hitch et al, 2020).

There is inconsistency in the definitions of sensory disorders as well. Diagnosis is made based on the presence of i) difficulties translating sensory information into appropriate behavioural responses and; ii) a demonstrable effect on activities of daily living (Ouellet, 2021). There is some controversy about whether sensory disorders are genuinely separate conditions or whether they are collections of symptoms associated with other conditions. The category of sensory disorders is not included in either the DSM-5 or the ICD-11 (American Psychiatric Association, 2013; World Health Organisation, 2019).

3.2 Types of sensory based interventions

Terms for therapeutic practices are also used in incompatible ways (Ouellet et al, 2021). In particular, there is an ambiguity in the use of the term **sensory based interventions**.

SBI can refer to a category of therapeutic techniques that include sensory integration therapy (SIT), auditory integration therapy (AIT), use of multi-sensory environments (MSE) and other techniques that target sensory processing difficulties. Preis and McKenna (2014) and Whitehouse et al (2020) use SBI in this way.

However, SBI can also refer to specific practices that are distinguished from SIT, AIT or MSE. Ouellet et al (2021), Basic et al (2021) and Wans Yunus et al (2015) draw the distinction between SIT and SBI based on the number of therapeutic modalities or stimuli. SBI is used to refer to techniques that use singular discrete stimuli to achieve the desired result (e.g., massage, a weighted vest). SIT on the other hand, uses multiple integrated stimuli and must include more than one sensory modality (Parham et al, 2007).

McGill and Breen (2019) note a further complication: SBI-type strategies are emerging in the context of positive behaviour support and multi-element behavioural interventions without being labelled as SBIs.

There does seem to be agreement that SBIs are based on the theoretical premise that sensory processing differences affect skill acquisition and behavioural development. By targeting sensory processing, the interventions aim to improve behavioural problems, emotional regulation, cognitive, language and social skills (Whitehouse et al, 2020).

Discrete SBIs, SIT, MSE and AIT are considered in further detail below. There are other therapeutic practices that can be included under the label SBI. Whitehouse et al also consider environmental enrichment, sensory diet and the following:

> alternative seating; blanket or “body sock”; brushing with a bristle or a feather; chewing on a rubber tube; developmental speech and language training through music; family-centered music therapy; joint compression or stretching; jumping or bouncing; music therapy; playing with a water and sand sensory table; playing with specially textured toys; Qigong Sensory Treatment (QST); Rhythm Intervention Sensorimotor Enrichment; sensory enrichment; swinging or rocking stimulation; Thai traditional massage; Tomatis Sound Therapy; and weighted vests (Whitehouse et al, 2020, p.70).

SBIs are usually implemented by occupational therapists, although speech therapists, nurses, psychologists and other professionals can be trained to implement programs (McGill & Breen, 2019).

3.2.1 Sensory-based interventions

SBI provides sensory stimuli that are specific or discrete to address behavioural problems causes by difficulties in sensory processing (Wan Yunus, 2015; Ouellet et al, 2021). The distinction between sensory-based and sensorimotor-based approaches is drawn differently in the literature. Ouellet et al (2021) says that sensory-based approaches involve a stimulus of constant intensity, such as a weighted vest, whereas sensorimotor-based approaches include the use of movements, allowing the person to control the quantity and intensity of stimulation. In contrast, Wan Yunus et al (2015) distinguish between tactile (eg. massage, touch therapy, brushing), proprioceptive (eg. weighted vests) and vestibular (eg. therapy ball, cushions, horse riding) based interventions. Vestibular interventions involve patient movements and variation in the constancy of intensity of stimulus was not noted as a distinguishing feature of different techniques.

3.2.2 Sensory integration therapy

Sensory integration therapy (sometimes sensory processing therapy) is defined as any intervention that targets someone's "ability to integrate sensory information (visual, auditory, tactile, proprioceptive, and vestibular) from their body and environment in order to respond using organized and adaptive behaviour" (Steinbrenner et al, 2020, p.29). Steinbrenner et al (2020) regard SIT as synonymous with Ayers Sensory Integration (Ayers). Whereas Omairi et al (2022) treat Ayers as just one frequently used type of SIT.

Ayers can include equipment such as mats, swings, scooter boards and bolsters in "individually tailored sensorimotor activities that are contextualized in play at the just-right challenge to facilitate adaptive behaviours for participation in tasks and activities" (Omairi et al, 2022, p.4; Whitehouse et al, 2020). There are 10 core elements of Ayers:

- Provide sensory opportunities – intervention includes various sensory experiences (tactile, proprioceptive, vestibular) involving more than one sensory modality.
- Provide just-right challenges – sensory challenges are neither too difficult nor too easy for the individual
- Collaborate on activity choice – the participant is an active contributor to the intervention including choice of activity
- Guide self-organisation – participant is encouraged to initiate, plan and organise their own activities
- Support optimal arousal – the context should allow the child to maintain their optimal level of arousal
- Create play context – the context builds on the participants intrinsic motivation and enjoyment of activities
- Maximise child's success – activities are tailored so that the child can experience success
- Ensure physical safety – activities are tailored so that the child is safe and properly supervised

- Arrange room for engagement – the environment is organised to motivate the participant to participate in activities
- Foster therapeutic alliance – the participant is treated with respect and allowed to have their own emotional reactions to experiences (Parham et al, 2007; Wans Yunus et al, 2015; Whitehouse et al, 2020).

3.2.3 Multi-sensory environment

MSEs (also called comfort rooms, sensory rooms or Snoezelen rooms) are rooms that contain equipment used to modify the environment primarily with the aim to create sensory experiences. This includes equipment used to create lights, sounds, smells or proprioceptive and tactile sensations. The goal of an MSE is to soothe or stimulate a person with sensory needs (Unwin et al, 2022; Cameron et al, 2020).

Figure 1 Multi-sensory room

MSEs are often windowless or have covered walls. They commonly include:

> (1) projection equipment to provide changing light colours and patterns, (2) sound (music) equipment, (3) bubble tubes offering visual, audible and tactile stimulation, (4) waterbed, (5) fibre optic lighting, (6) tactile objects, (7) user-controlled switching for changing lighting and other equipment, (8) weighted blankets, (9) self-massagers, (10) rocking chair(s), (11) exercise balls, and (12) squeeze balls (Cameron et al, 2020, p.631).

Rooms might also include essential oils, scented candles, sweet or salty foods (Cameron et al, 2020). Participants can control aspects of the environment thereby reducing the unpredictability or the environment and allowing the participant to regulate their own sensory stimulation (Unwin et al, 2022).

3.2.4 Auditory integration training

AIT aims to 're-educate' the auditory processing system of the patient's brain with 2 half hour electronic music listening sessions over 10 days. This re-education process is intended to target behaviour and learning problems in people with autism (Sinha et al, 2011).

Wans Yunus et al (2015) suggest auditory integration training (AIT) is a based on the same theory of sensory integration as SIT. However, because SIT involves multiple sensory modalities (Parham et al, 2007), AIT can only be considered a related therapy rather than a kind of SIT. Other related techniques include Tomatis sound therapy and Samonas sound therapy (Sinha et al, 2011).

3.2.5 Music therapy

Music therapy is considered a type of SBI by some (Whitehouse et al, 2020; Cheung et al, 2022) and not others (Steinbrenner et al, 2020). The mechanism by which music therapy is supposed to work does involve active listening and auditory sensory experiences, though it also includes social and cognitive processes (Geretsegger et al, 2014).

4. Efficacy

Researchers and clinicians have suggested that sensory based interventions could benefit people with autism spectrum disorder, ADHD, developmental coordination disorder, cerebral palsy, down syndrome, intellectual disability, dementia, depression, schizophrenia, mood disorders, obsessive compulsive disorder (Wan Yunus et al, 2015; Sinha et al, 2011; Hitch et al, 2020; Ouellet et al, 2021).

4.1 Autism Spectrum Disorder

Steinbrenner et al (2020) and Whitehouse et al (2020) consider sensory-based interventions in their reviews of evidence-based treatments for young people with ASD.

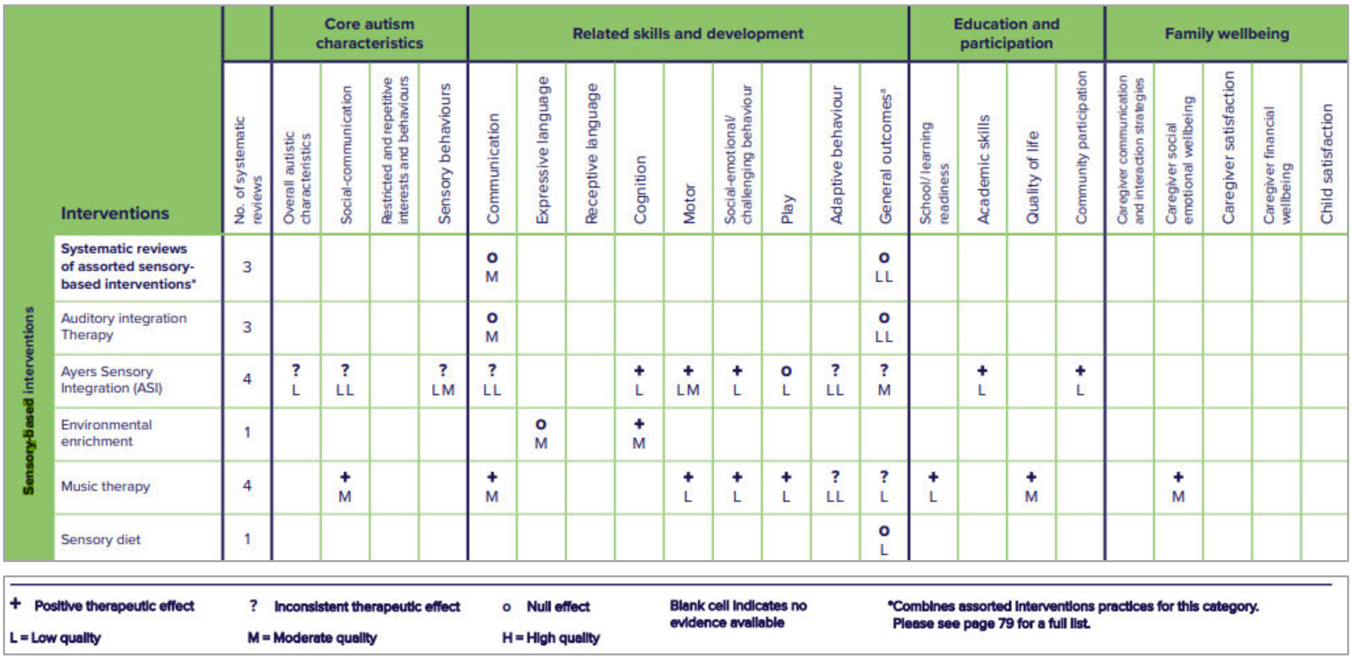
Steinbrenner et al added Ayers to their 2020 review of evidence-based practices for children and young people with autism spectrum disorder. They note evidence of effect on communication, social skills, cognitive and academic outcomes, adaptive coping skills, challenging behaviour, and motor skills (Steinbrenner et al, 2020). However, Steinbrenner et al did not assess the evidence for efficacy in detail, but only show that Ayers meet their criteria for being considered an evidence-based practice:

> To be identified as evidence-based, a category of practice had to contain (a) two high quality group design studies conducted by two different research groups, or (b) five high quality single case design studies conducted by three different research groups and involving a total of 20 participants across studies, or (c) a combination of one high quality group design study and three high quality single case design studies with the combination being conducted by two independent research groups (Steinbrenner et al, 2020, p.24).

Whitehouse et al (2020) considered 9 systematic reviews. No evidence was found of a positive effect for assorted SBIs, AIT or sensory diet. Environmental enrichment showed a positive effect on motor skills based on moderate quality evidence.

Ayers was considered in 4 reviews which showed low quality evidence of improvement to cognition, motor skills, challenging behaviours, academic skills and community participation. Reviewers also found moderate quality evidence of a benefit to motor skills. Low or moderate quality evidence showed inconsistent or null effect on autistic characteristics such as social-communication and sensory behaviours, communication skills, play, adaptive behaviour skills, and general outcomes. 1 review found evidence that SIT may contribute to increase in stereotypical and problem behaviours (Whitehouse et al, 2020).

Music therapy demonstrated the most consistent positive effect. Reviewers found moderate quality evidence showing positive effect on social-communication symptoms, communication skills, and quality of life. Reviewers found low quality evidence showing positive effect on play, motor skills, challenging behaviours, and school readiness (Whitehouse et al, 2020).



			Core autism characteristics				Related skills and development								Education and participation				Family wellbeing				
	Interventions	No. of systematic reviews	Overall autistic characteristics	Social-communication	Restricted and repetitive interests and behaviours	Sensory behaviours	Communication	Expressive language	Receptive language	Cognition	Motor	Social-emotional/ challenging behaviour	Play	Adaptive behaviour	General outcomes*	School/ learning readiness	Academic skills	Quality of life	Community participation	Caregiver communication and interaction strategies	Caregiver social emotional wellbeing	Caregiver satisfaction	Caregiver financial wellbeing	Child satisfaction
Sensory-based interventions	**Systematic reviews of assorted sensory-based interventions***	3					o M								o LL									
	Auditory integration Therapy	3					o M								o LL									
	Ayers Sensory Integration (ASI)	4	? L	? LL		? LM	? LL			+ L	+ LM	+ L	o L	? LL	? M		+ L		+ L					
	Environmental enrichment	1						o M		+ M														
	Music therapy	4		+ M			+ M				+ L	+ L	+ L	? LL	? L	+ L		+ M			+ M			
	Sensory diet	1													o L									

+ Positive therapeutic effect **? Inconsistent therapeutic effect** **o Null effect** **Blank cell indicates no evidence available** ***Combines assorted interventions practices for this category. Please see page 79 for a full list.**

L = Low quality **M = Moderate quality** **H = High quality**

Figure 2 Summary of evidence for sensory-based interventions. From Whitehouse et al, 2020, p.75

Wan Yunus et al (2015) argue that there is sufficient evidence that tactile stimulation (such as massage therapy) positively affects challenging behaviours such that it can be included in clinical practice. This contrasts with both Whitehouse et al (2020) and Steinbrenner et al (2020) who note evidence that Ayers and music therapy can improve challenging behaviours, but who do not recognise evidence that discrete tactile stimulation can improve challenging behaviours.

4.2 Mental Health

Sensory profiles of people with mental health conditions differ from the norm. Brown et al (2020) found a general pattern of greater sensory sensitivity, sensation avoiding, and low registration and less sensation seeking in a group of patients with either schizophrenia, high risk for psychosis, bipolar disorder, major depressive disorder, posttraumatic stress and obsessive-compulsive. Machingura et al (2022) confirmed higher rates of low registration and sensory avoiding in a group of 41 people with schizophrenia.

SBIs are currently in use in mental health settings in Australia, including discrete SBIs and MSEs. While the evidence base is still emerging, existing studies consistently find an effect of SBIs on distress. Multiple systematic reviews over the past 10 years have concluded that SBIs are likely to contribute to a reduction in distress for patients with mental health issues in clinical settings (Scanlon & Novak, 2015; Hitch et al, 2020; McGreevy & Boland, 2020; Ma et al, 2021; Hain & Hallet, 2022). In a recent controlled trial, Machingura et al (2022) found a reduction in distress for patients with schizophrenia when comparing pre- and post-test scores. However, the effect was no longer statistically significant when compared with the control group.

SBIs are hypothesised to reduce the use of restrictive practice. State and national policies aiming to reduce the use of restrictive practice are driving adoption of and research into SBIs (Machingura et al, 2022; Baker et al, 2022; Baker et al, 2021; Hitch et al, 2020). The suggestion is that if SBIs can reduce distress and level of arousal, then fewer episodes requiring restrictive practice would occur. However, this assumption is questionable considering the effect of workplace culture and institutional/state policy on rates of restrictive practices (Scanlon & Novak, 2015). The evidence for an actual reduction in use of restrictive practice is mixed.

Scanlon and Novak (2015) reviewed 17 papers and found that of the 9 studies reporting only rates of restrictive practice use, all were using MSE type interventions. Of those studies 5 reported a reduction in rates of restraint or seclusion, 3 reported no change and 1 reported an increase.

Other systematic reviews also show inconsistent evidence that MSEs used in clinical or institutional settings can reduce restrictive practice. Haig and Hallett (2022) reviewed 6 studies which reported rates or seclusion, restraint or violence. 4 of the 6 reported any positive results: one out 6 studies found a reduction in seclusion episodes, 2 out of 6 found reductions in restraint and 1 out of 6 found a reduction in aggression. One study also found an increase in rates of seclusion. Haig and Hallett also note that all the studies reviewed had moderate to high risk of bias.

Oostermeijer et al (2021) completed a rapid review including 14 studies on the effect of MSEs on restrictive practices and found more positive results: 6 of the 14 studies found reduction in restraint; 10 of the 14 found reduction in seclusion; 3 of the 14 reported no statistically significant results; and 3 of the 14 reported an increase in restraint or seclusion.

None of the systematic reviews were able to complete a meta-analysis. The inconsistency of the evidence regarding MSEs effect on restrictive practice may relate to the unstructured and heterogeneous nature of the intervention. There may be effective MSE-based practices or protocols but existing studies have not identified them (Oostermeijer et al, 2021; Haig & Hallett, 2022).

Most research on SBIs for people with mental health conditions occurs in a clinical or institutional setting. Lack of research in community use of SBIs is a significant limitation of the existing research (Hitch et al, 2020).

Hitch et al (2020) argue that despite minimal evidence, there is at least sufficient evidence to support wider use in clinical settings due to minimal cost of implementation of many sensory based interventions (for example, the discrete SBIs described in 3.2.1 Sensory-based interventions).

4.3 Other conditions

There is some evidence that SBIs (especially MSEs, massage and music therapy) can contribute to reduction in distress and agitation for people with dementia (Livingston et al, 2014; Pinto et al, 2020; Cheung et al, 2022).

Fisher et al (2014; 2017) show minimal evidence that SBI can reduce aggression in people with Huntington’s disease.

Kantor et al (2022) found positive effects of Ayers on motor skills of children with cerebral palsy. However, better quality evidence is required to draw reliable conclusions.

A 2015 meta-analysis found only weak evidence for the efficacy of SIT in improving functional outcomes for children with intellectual disability and development delay (Leong et al, 2015). Subsequent studies have shown that SIT can assist children with developmental delay when combined with a more comprehensive early intervention program (Wang et al, 2020).

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Pet ownership and mental health

The content of this document is OFFICIAL.

Please note:

The research and literature reviews collated by our TAB Research Team are not to be shared external to the Branch. These are for internal TAB use only and are intended to assist our advisors with their reasonable and necessary decision-making.

Delegates have access to a wide variety of comprehensive guidance material. If Delegates require further information on access or planning matters, they are to call the TAPS line for advice.

The Research Team are unable to ensure that the information listed below provides an accurate & up-to-date snapshot of these matters

Research question: What evidence is there that pet ownership can support mental health and wellbeing of people with psychosocial disability diagnoses or symptoms of anxiety, depression or trauma?

Date: 28/10/2022

Requestor: Olivia s22(1)(a)(ii) - irrele [redacted]

Endorsed by: n/a

Researcher: Aaron s22(1)(a)(ii) - irrelevant ma [redacted]

Cleared by: Stephanie s22(1)(a)(ii) - irrelevant mat [redacted]

1. Contents

2. Summary

Physiological, demographic and personality characteristics of both the human and the pet, as well as the duration and quality of the hauuman-pet relationship, may affect how pet ownership influences the health and well-being of the human. Currently, the evidence-base for human-pet interaction is not sufficient to determine how these different variables affect the health and well-being of the human.

Researchers consistently point out limitations with the current literature on human-pet interaction, including problems with study design such as low sample sizes and failure to control for confounding variables. The heterogeneity of study designs, inconsistent or vague definitions of key concepts and outcome measures also prevents the establishment of a reliable evidence base.

For these reasons it is not possible to say whether, when or how a pet will benefit someone with mental health challenges.

Note: This paper has focussed on the literature describing mental health benefits of pets or companion animals, rather than literature regarding emotional support animals. Emotional support animals are recognised by a health professional to provide a benefit to a person with mental health difficulties. It is possible that different results may be obtained by studies looking at confirmed emotional support animals. As emotional support animals don’t require special training, they may ultimately be a family pet with whom the owner has the right kind of positive relationship. This area will need to be researched further before any conclusions can be drawn.

This paper relates primarily to pet or companion animal ownership. The TAB Tactical Research team has completed three other papers related more specifically to assistance animals:

- RES 183 Therapy Animals: Models of practice for ending involvement in therapy programs
- RES 238 Accreditation of assistance animals
- RES 239 Animal assisted therapy.

3. Definitions

There is no widely agreed upon definition of ‘pet’ or ‘companion animal’. Explicit definitions are rarely provided in the literature (Miklosi et al, 2021; Rodriguez et al, 2021; Barroso et al, 2021). None of the four available Animal Medicines Australia reports define a pet (refer to 4. Pet ownership). Where the terms companion animal and pet are defined, the definitions can be idiosyncratic. Kretzler et al use the Oxford English Dictionary definition, “an animal (typically one which is domestic or tame) kept for pleasure or companionship” (Kretzler et al, 2022, p.1935). RSPCA uses the terms pet and companion animal interchangeably and distinguishes the companion animal from an animal used for farming, research, sport or entertainment (RSPCA, 2018). Sandoe et al (2015) consider pets to be domesticated non-human animals living inside the home, while they consider companion animals to be a specific kind of pet. Companionship is said to involve reciprocal social interaction between human and pet. Miklosi et al (2021) take this further, removing any other consideration (domestication, living inside the home) and arguing that any animal can be a companion animal so long as the right kind of relationship exists between it and a human. In contrast, the NSW state legislation treats all dogs and cats as companion animals, regardless of the relationship with their owner:

> The fact that an animal is not strictly a “companion” does not prevent it being a companion animal for the purposes of this Act. All dogs are treated as companion animals, even working dogs on rural properties, guard dogs, police dogs and corrective services dogs (*Companion Animals Act 1988 (NSW)*, s. 5.1).

Farrell and Crowley (2021) provide a discussion in the US context. Their focus is emotional support animals, but their discussion is instructive for our purposes as well. Emotional support animals, they say, are a kind of assistance animal, a category that includes service animals and therapy animals. An emotional support animal is distinguished from the other two as it does not have any special training and is not used in any specific therapy. An animal is an emotional support animal when it is needed by a person with a mental health condition to alleviate a symptom or effect of disability. This means a pet could be an emotional support animal if it is needed to provide this function.

These differences can be important, especially since researchers generally don’t make their definition explicit. For example, for Sandoe et al (2015) horses can’t be pets if they live in a stable and spiders, insects and fish can be pets but not companion animals because they are unlikely to meet the threshold for a significant degree of social interaction. The NSW state legislation includes all dogs regardless of their relationship to the owner. However, as noted in 5. Health and well-being of pet owners, it is likely exactly this relationship which mediates effects of human-animal interaction on mental health and well-being.

Throughout this paper I will use the terms ‘pet’ and ‘pet owner’ and specify where results pertain to one species or another.

For further discussion of the definition of Assistance Animal in the Australian context, please refer to RES 238 Accreditation of Assistance Animals.

4. Pet ownership

The Australian Bureau of Statistics (ABS) collected pet ownership data in 1994. At this time, 59.2% of Australian households owned pets, with dogs comprising 37.5%. There is no indication the ABS have tracked pet ownership since this 1994 survey (ABS, 1995).

The Household, Income and Labour Dynamics in Australia (HILDA) Survey, funded by the Department of Social Services, is a yearly survey of 17,000 Australians that collects information on "household and family relationships, child-care, employment, education, income, expenditure, health and wellbeing, attitudes and values on a variety of subjects, and various life events and experiences" (Wilkins et al, 2020, p.4). This survey collected data on pet ownership for their 2018 survey, published in their 2020 report. However, they do not appear to have collected pet ownership data for any other years. The HILDA survey shows for 2018, 62% of Australians had at least one pet. Of these pet owners, 72% (or 48% of the population) reported having at least one dog (Wilkins et al, 2020).

The most current and comprehensive Australian pet ownership statistics are drawn from a series of reports from the Animal Medicines Association (AMA). Every 3 years since 2013, AMA has published pet ownership rates through the following reports:

- Pet ownership in Australia 2013
- Pet ownership in Australia 2016
- Pets in Australia: a national survey of pets and people (2019)
- Pets and the Pandemic: a social research snapshot of pets and people in the COVID-19 era (2021 supplement).

Between 2013 and 2019, pet ownership was slowly declining. In 2013, 63% of households had at least one pet (Animal Health Alliance, 2013). In 2016 this decreased to 62% (AMA, 2016) and in 2019 to 61% (AMA, 2019). During the pandemic, this estimate increased considerably to 69% in 2021 (AMA, 2021). USA experienced a similar jump in ownership during the pandemic (Kretzler et al, 2022).

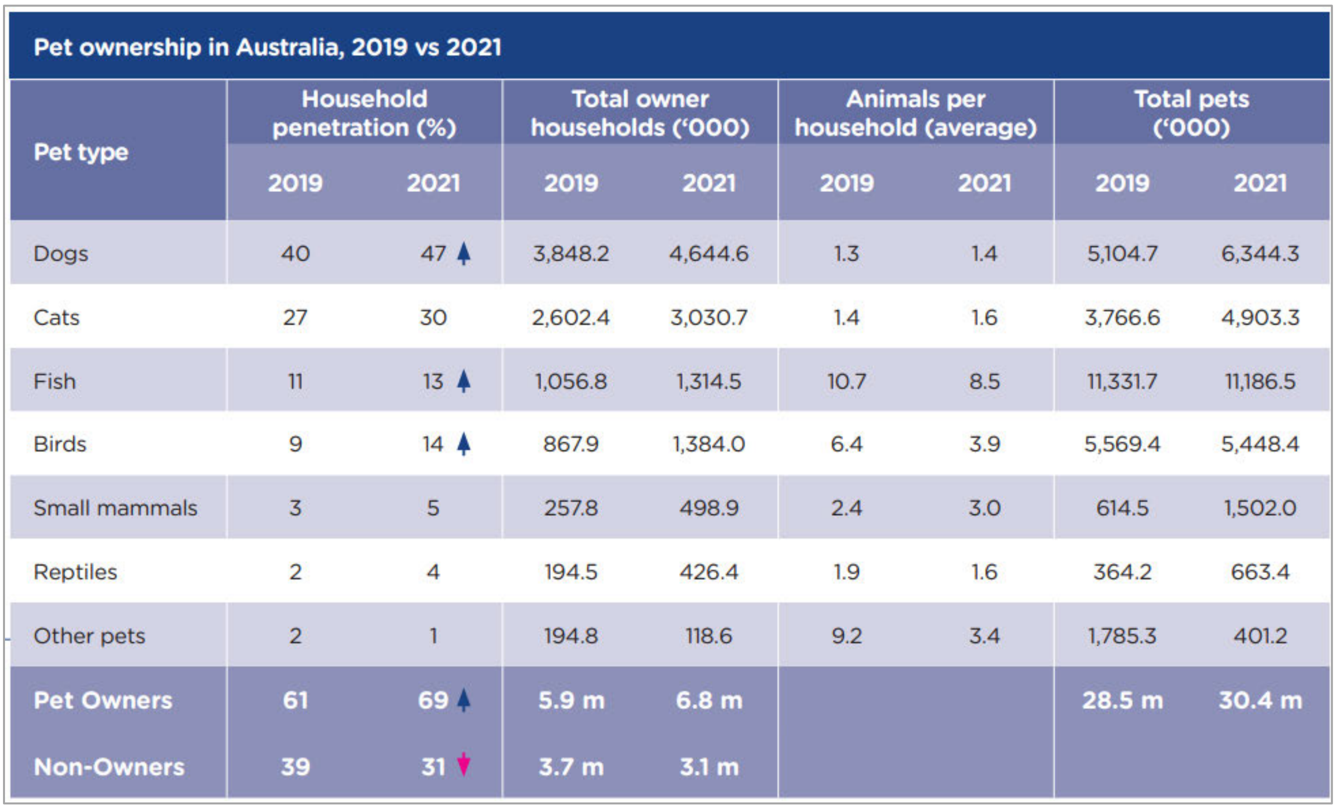
AMA's 2021 supplement report estimated that almost half (47%) of all Australian households, approximately 4.6 million households, had at least one dog. This was an increase from the 2019 report where approximately 40% of households reported having at least one dog. This represents the largest increase of any animal category between the 2019 and 2021 surveys. Cat ownership also increased over this time – 27% of households in 2019 compared to 30% in 2021. Half of all dogs and cats acquired during the pandemic were acquired by existing pet owners (AMA, 2021; refer to Table 1 – Pet ownership in Australia).

In giving reasons for acquiring a dog, 54% of households reported companionship and 23% reported mental health reasons. When examining living arrangements, 37% of dog owners living alone said they got their dog to improve their mental health compared to 22% for other households (AMA, 2021). The 2019 report did not appear to ask survey participants if mental health was a contributing reason for acquiring their animal. However, the report does note that 18% of pet owners say that the animals has had a positive impact on their mental health (AMA, 2019).

While the AMA reports are widely cited for their ownership estimates, there are some methodological issues to consider. Firstly, although steps were taken to make the surveys representative, small sample sizes mean some results may not be statistically reliable. The overall increase in ownership percentage between 2019 and 2021 was statistically significant, however data on reasons for acquiring a pet and perceived benefits of animal ownership do not appear to have been tested for statistical significance.

Additionally, there is risk of bias considering the role of the AMA in preparing the report due to their position as a peak body for animal health companies in Australia. The AMA funded the research from social research companies Galaxy Research (for the 2013 report) and Newgate Research (for the 2016, 2019 and 2021 reports). The role of AMA in preparing the publication (for example, summarising data or drawing conclusions) is not clear from the report itself. This lack of clarity about authorship is of concern as emphasising beneficial aspects of the human-pet bond is a marketing tool used by the pet industry (Scoresby et al, 2021).

Table 1 – Pet ownership in Australia



Pet ownership in Australia, 2019 vs 2021

Pet type	Household penetration (%)		Total owner households ('000)		Animals per household (average)		Total pets ('000)	
	2019	2021	2019	2021	2019	2021	2019	2021
Dogs	40	47 ▲	3,848.2	4,644.6	1.3	1.4	5,104.7	6,344.3
Cats	27	30	2,602.4	3,030.7	1.4	1.6	3,766.6	4,903.3
Fish	11	13 ▲	1,056.8	1,314.5	10.7	8.5	11,331.7	11,186.5
Birds	9	14 ▲	867.9	1,384.0	6.4	3.9	5,569.4	5,448.4
Small mammals	3	5	257.8	498.9	2.4	3.0	614.5	1,502.0
Reptiles	2	4	194.5	426.4	1.9	1.6	364.2	663.4
Other pets	2	1	194.8	118.6	9.2	3.4	1,785.3	401.2
Pet Owners	**61**	**69 ▲**	**5.9 m**	**6.8 m**			**28.5 m**	**30.4 m**
Non-Owners	**39**	**31 ▼**	**3.7 m**	**3.1 m**				

5. Health and well-being of pet owners

The literature connecting pet ownership with health and well-being is largely inconsistent. The systematic reviews considered below support the assessment of many researchers that issues with methodology and quality in the literature prevent reliable meta-analysis and therefore prevent the building of a consistent evidence base for judging the effects of animal interaction on human health (Rodriguez et al, 2021; Barroso et al, 2021; Clements et al, 2019). Almost all reviews considered below mention the following problems:

- small sample sizes
- variability in study design including lack of controls or masking
- inconsistent use of standardised measures
- lack of standardised definitions.

There is also a need for researchers to control for confounding variables and to better describe characteristics of the pet owner, the pet and the quality and duration of their relationship. Several features can potentially mediate the benefits or harms of pet ownership, such as:

- gender, attachment style, ethnicity and cultural or religious differences of the owner
- temperament, training, breed of the pet
- living arrangements, family dynamics, type of dwelling
- activities that pet and owner usually do together
- duration of the relationship
- strength of attachment bond (Rodriguez et al, 2021; Scoresby et al, 2021; Brooks et al, 2018; Carlisle et al, 2018;).

If awareness of these features is included in the study design it may allow researchers to establish a more reliable association between pet ownership and health and well-being.

5.1 Perception of benefit

There is evidence of a public perception that pet ownership improves health and well-being (Scoresby et al, 2021; Carlisle et al, 2020). Surveys indicate that improvements to health and well-being can be a reason people acquire a pet (AMA 2021; AMA 2019).

5.2 Social interaction

Christian et al (2020) found more positive social interactions in young children with a pet at home compared to those without. The correlation was strongest for single-child families.

A 2022 systematic review into the relationship between pet ownership, loneliness and social isolation found most studies reported insignificant results relating to loneliness. Of the studies that showed significant results, some reflected increased loneliness and others decreased loneliness. Only 2 of the 24 studies reviewed considered social isolation but both found pet ownership correlates with lower social isolation. Some studies show a decrease in loneliness with pet ownership, some show no significant relationship and some show an increase in loneliness (Kretzler et al, 2022).

Williams et al (2021) investigated interventions that might reduce loneliness during the COVID-19 pandemic. They reviewed 3 animal studies. One study involving a pet budgie showed no significant results. The other two studies included both living and robotic dogs and showed a positive reduction in loneliness. However, the study quality of both was poor/fair.

Clements et al (2019) found no evidence that keeping fish is associated with a reduction in loneliness. One studied they reviewed showed very few participants acquire fish for the purpose of companionship.

5.3 Mental health

Carlisle et al (2020) found parents of children with autism spectrum disorder (ASD) who owned both a dog and a cat reported less stress and more benefit compared with parents who owned only a dog or a cat. Christian et al (2020) found having a household pet was associated with fewer social-emotional problems in young children. These findings contrast with the HILDA survey. Wilkins et al (2020) compare their pet ownership data with participant’s answers to the SF-36, a measure of general health and mental health, to determine if there is a correlation between pet ownership and health or well-being. They found a slight reduction in mental health scores for pet owners. In addition, people who own a cat are more likely to report lower life satisfaction compared to dog owners. People who have both a dog and a cat are more likely to report worse general and mental health compared to people with only a dog. Importantly, none of these 3 studies found consistent evidence supporting a relationship between pet ownership and positive well-being.

Clements et al (2019) found inconsistent evidence for the relationship between interaction with fish and psychological outcomes. Of the 24 studies reviewed, 4 found positive outcomes, 6 found partial support for positive outcomes and 5 found no support for positive outcomes.

Of the 54 articles reviewed in Scoresby et al (2021), 17 showed a positive impact of pet ownership on mental health. However, 19 studies showed a mixed impact, 13 showed no impact and 5 showed a negative impact. These inconsistent results are similar in other studies (Rodriguez et al, 2021; Brooks et al, 2018). Little weight can be placed on the positive results due to the quality and methodological issues identified in other studies. Some studies reviewed in Scoresby et al (2021) showed that dog or cat ownership can reduce depression and anxiety in children and adolescents. However, these studies did not control for confounding variables such as family dynamics, which may contribute to children’s mental health. Also, the authors note that the 54 studies reviewed used 75 different outcome measures, making comparison between studies difficult.

Overall, these studies show the relationship between pet ownership and mental health is complex and requires more nuanced studies to demonstrate where the benefits of pet ownership lie. Scoresby et al (2021, p.7) argue:

> Developing clear guidelines about the benefits and liabilities of pet ownership and mental health is important to mitigate the public halo effect that suggests that simply acquiring a pet will improve your mental health.

5.4 Physical health

Clements et al (2019) found some evidence that interaction with fish could reduce pain and benefit nutritional intake and body mass. However, study designs were not sufficient to attribute this effect to the animal interaction rather than to a confounding variable.

In their systematic review, Barroso et al (2021) found 6 out of 10 studies showed some positive effect of pet ownership on cardiovascular disease. Of the remaining 4 studies, 2 found mixed results, 1 found no effect and 1 found a negative effect. Of 4 studies that investigated pet ownership and obesity, no effect was found. Considering the inconsistent results, quality and design issues, no conclusions were possible regarding effects of pet ownership on cardiovascular disease or obesity.

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Home Modifications and behaviours of concern

The content of this document is OFFICIAL.

Please note:

The research and literature reviews collated by our TAB Tactical Research Team (TRT) are not to be shared external to the Branch. These are for internal TAB use only and are intended to assist our advisors with their reasonable and necessary advice provision.

Delegates have access to a wide variety of comprehensive guidance material. If Delegates require further information on access or planning matters, they are to call the TAPS line for advice.

TRT are unable to ensure that the information listed below provides an accurate & up-to-date snapshot of these matters.

Research question: What is the research evidence to support the effectiveness of home modifications for both adults and children with behaviours of concern?

Is there any research that relates to sensory processing/ leisure/interest activities to decrease BoC / increase independence (e.g., bathtubs, playgrounds, secure backyards)?

Date: 10/03/2023

Requestor: Helen s22(1)(a)(ii) - irrelevant material

Endorsed by: Melinda s22(1)(a)(ii) - irrelevant ma

Researcher: Aaron s22(1)(a)(ii) - irrelevant ma

Cleared by: Aaron s22(1)(a)(ii) - irrelevant ma

1. Contents

2. Summary

Most reviews of the literature suggest some positive association between rates of behaviours of concern and features of the built environment while acknowledging the low quality of the evidence. There is low- to moderate- quality evidence of the association between fewer behaviours and improved air quality, accessibility, access to nature, and homeliness of the environment. Design features of a home may contribute to a reduction in stress and negative emotions, and to a reduction in resulting behaviours. To the extent that a home modification improves one of these design features, it is possible that a home modification may contribute to a reduction in behaviours of concern. However, it is difficult to draw causal conclusions due to the quality and study designs of the reviewed papers.

Guidelines regarding managing behaviours of concern generally recommend a personalised approach. This should involve analysing an individual's environment to isolate what factors are contributing to behaviours of concern. This often depends on the resident's preferences and sensory needs. If certain features of the built environment are found to contribute to behaviours of a particular person, removing or changing those features should be a part of the relevant behaviour support plan. This is required by *National Disability Insurance Scheme (Restrictive Practices and Behaviour Support) Rules 2018*. In some cases, changing features of a home which trigger behaviours of concern may involve home modifications.

Generalising about the effectiveness of particular modifications is not possible due to the current quality of the evidence and to the essentially individual nature of causes of behaviours of concern.

3. Quality of research

Features of the physical environment can affect our health and functioning in daily activities. Poor classroom acoustics can interrupt learning and academic performance (Murgia et al, 2023). Optimal temperature and ventilation can improve patient's health outcomes in hospitals (Shajaran et al, 2019). Researchers have tried to establish the link between built environment and mood. For example, neighbourhoods which encourage walkability may lead to improved health and mood of residents due to higher rates of physical activity (Han et al, 2022; Nuñez-Gonzalez et al, 2020). There is some evidence that heat and humidity increase arousal, while natural and green spaces decrease arousal (Baird et al, 2023).

It has been difficult to establish high quality evidence for direct association between specific features of the built environment and incidence of behaviours of concern. Of particular note, poor quality living environments are associated with low socio-economic conditions, which are independently associated with poor mental health (Tibber et al, 2022). Background economic conditions may often be the causal factor when studies do show a link between the built environment and poor mental health outcomes or high rates of behaviours of concern.

The available evidence is often of low quality and there are several gaps in the literature. Nine of the 11 systematic reviews reviewed by Nuñez-Gonzalez et al (2020) were found to be of critically low quality. Bridge and Vasilacopolou (2019) noted expert opinion was the highest frequency type of study appearing in the literature. Also, much of their evidence based is over 20 years old.

Baird et al (2023) note there is a particular lack of research on the impact of the physical environment on children with developmental disabilities. This is echoed by Roos et al (2022) who reviewed 276 studies but found little research on the effect of the built environment on people with intellectual disabilities in long-term care. They identified 26 components of the built environment that may affect health, behaviour and quality of life of people with intellectual disability but found research on only seven components. Two studies from Bridge and Vasilacopolou (2019) and Aljunaidy et al (2021) both note that there is an over-representation of research focussed on people with dementia and Alzheimer's disease compared to other developmental or psychiatric diagnoses. Almost 60% of the studies reviewed by Bridge and Vasilacopolou (2019) concerned dementia or Alzheimer's disease. The next most prevalent cohort in their study was intellectual disability at 18%.

4. Built environment and mental health

Qualitative studies show people associate features of the built environment with fluctuations in their mental health, including location, personal space, homeliness and security (Tekin et al, 2023; Rollings & Bollo, 2021):

> Behaviours of concern can be the result of interaction between a person and the environment, wherein factors such as noise levels, stimulation or lack of stimulation,

> unmet needs, or unpredictable environments can increase the risk of, and can be the motivation behind, such behaviours (Iffland et al, 2021, p.4).

There is a consensus that environmental features affect behaviours even if experimental and quantitative evidence cannot establish a direct causal link between particular environmental features and the rate of behaviours of concern in general.

Nuñez-Gonzalez et al (2020) found two high quality systematic reviews investigating the effects of the built environment on mental health. Neither study found sufficient evidence to draw conclusions on the association between the built environment and mental health and neither discussed the presence of behaviours of concern (Moore et al, 2018; Turley et al, 2013). The only low risk of bias randomised controlled trial identified by Moore et al (2018) showed no effect between the built environment changes and mental health.

Some large-scale primary studies have showed an association between indoor environment and mental health. However, due to their study designs it is not possible to establish a causal link between indoor environments and mental health. A 2020 cohort study of 2290 children found poor indoor air quality caused by smoking leads to increased stress in younger adolescents (Franklin et al, 2020). The higher stress levels may be partially reduced by availability of green spaces. Exposure to second-hand smoke is also associated with more stressful living conditions for children and so it is not clear whether poor indoor air quality is the primary driver for increased stress levels. A survey of 8,177 people during COVID related lockdowns found a strong association between self-reported symptoms of depression and anxiety and lack of natural lighting, temperature control, air quality privacy, adequate space, good views, access to nature, quality acoustics, and homeliness (Amerio et al, 2020). This survey was based on self-reported measures and so it’s not clear whether poor environmental features lead to poor mental health or whether people with poor mental health are more likely to feel negatively towards their living environment.

5. Built environment and behaviours of concern

Murgia et al (2023) suggests that poor classroom acoustics can lead to increased negative behaviours in children, including lack of attention and disruptive behaviour. However, the evidence for this link is assumed rather than directly established.

In their rapid review, Oostermeijer et al (2021) found evidence that restrictive practices could be reduced in psychiatric facilities with the introduction of access to private spaces, gardens, pools, and other amenities. This is supported in a later study from Harpøth et al (2022). The authors report reduction in restrictive practices after moving a psychiatric ward to a purpose-built facility prioritising privacy, outdoor spaces, airflow and access to amenities and activities. However, both studies note the difficulty of making causal inferences based on naturalistic experiments.

Baird et al (2023) found evidence connecting interior design and architectural features to aggressive behaviours and conduct problems in children. Low-moderate quality evidence showed higher rates of behaviours of concern in children are associated with red painted rooms in the home, overcrowding and damp. In addition, they found inconsistent evidence that environmental noise such as air and road traffic and construction noise contribute to an increase in aggression. The authors hypothesis that noise may not cause aggressive behaviours but may exacerbate behaviours in those more sensitive to noise. Five of the six studies reviewed showed high or unclear risk of bias. The only study rated as low risk of bias was also authored by Baird et al.

Baird et al (2023) found some low-quality evidence connecting design and architectural features of playrooms with aggressive behaviours and conduct problems in children. An open playroom reportedly reduced aggressive behaviours but there were inconsistent results regarding the density of playrooms and no effect was observed for space per child or room size.

There is some inconsistent evidence for the benefit of greenspace and access to nature for young people, with the evidence broadly coalescing around positive effects on mood and behaviour (Baird et al, 2023; Tekin et al, 2023; Han et al, 2022; McIntosh et al, 2022).

5.1 Built environment and positive behaviour support

Recent studies which address environmental antecedents of behaviours of concern from a positive behaviour support perspective often focus on social and situational contexts (e.g., routine, activities, staff training, etc.) rather than physical features of the built environment (Konstantinidou et al, 2023; Mahon et al, 2022; Deb et al, 2022; Beqiraj et al, 2022; Bruisma et al, 2020). According to Caspar et al (2018), there is only minimal evidence that addressing physical features of the environment alone is sufficient to reduce behaviours of concern. They note that the evidence is more robust for interventions which treat physical and social environments and other psychological factors. However, due to the combined nature of these interventions it is often difficult to determine the causal factor.

Guidelines for developing individualised positive behaviour support plans suggest plans should include an analysis of possible environmental triggers for behaviours of concern with the aim of removing triggers to prevent behaviours. Significant environmental features related to the built environment can include:

- location (room, own or other’s home, medical facility, school, new or unfamiliar locations, recent changes to the house or care setting)
- dimensions of the room (crowded, cramped, open, empty etc.)
- furniture (size, texture, materials, colour, too much/too little)
- walls and surfaces (material, density, fragility, angle, texture, colour)
- air temperature and quality, airflow, smells
- nature, plants and outdoor spaces (accessible, open, healthy etc.)
- acoustics and noise (creaking doors, rapping pipes, flapping blinds)

- light (brightness, colour, natural or artificial lighting)
- doors, windows, fences or other barriers (locks, latches, easily opened or closed)
- fixtures (access to taps, water temperature)
- homeliness or personalisation
- other features which may have specific associations for the person showing behaviours of concern (Roos et al, 2022; Limbu et al, 2021; DHHS, 2020; DHHS, 2019; Bridge and Vasilacopolou, 2019; DHHS, 2018; NICE, 2015).

The Victorian State Government's Department of Health and Human Services (now Department of Families, Fairness and Housing) recommends behaviour support practitioners consider the following questions about the physical environment:

- Does the physical environment allow the person to move around freely and gain assistance from others when needed?
- Does the physical environment reflect the person's likes and sensory preferences?
- Does the physical environment encourage independence and choice in daily activities? (DHHS, 2019, p.6)

Positive behaviour support plans should also include recommendations for environmental changes that may prevent behaviours of concern from developing. The *National Disability Insurance Scheme (Restrictive Practices and Behaviour Support) Rules 2018* describe the conditions under which a behaviour support plan containing restrictive practice must be developed. Section 20.3(c) states that a specialised behaviour support practitioner must take reasonable steps to, "make changes within the environment of the person with disability that may reduce or remove the need for the use of regulated restrictive practices".

In cases where restrictive practice is unavoidable, the practice can be made possible or constituted by features of the home or physical environment. Time-outs, seclusion and secure spaces for staff require adequate space, fixtures and security features to enact. Restrictive practices can also include locks on doors or cupboards, surveillance technology or other structural features which prevent a person from accessing activities or areas in their home (NDIS Quality and Safeguards Commission, 2022; NDIS Quality and Safeguards Commission, 2020; Bridge and Vasilacopolou, 2019).

Table 1 below shows some examples of housing design features which may help to prevent or manage behaviours of concern. The list is adapted from Bridge and Vasilacopolou (2019). These suggestions are derived from a small sample of recommendations in the literature and are not exhaustive.

Feature	Example
Light	• Assess visual and light sensitivities and personalise type and level of light where possible. • Avoid shiny floors and polished furniture. • Install curtains to reduce glare. • Install adjustable lighting (e.g., dimmer switches) and maintain consistency. • Avoid flickering lights. • Reduce light level at night.
Temperature	• Maintain comfortable temperature and humidity. • Ensure temperature is adjustable.
Air Quality	• Remove unpleasant smells. • Ensure adequate ventilation or air flow.
Use of space	• Make spaces as accessible as possible. • Install features that are removable, adjustable or able to be de-activated easily. • Install lockable doors and windows. • Consider whether automatic or remote-controlled fixtures are appropriate. • Create spaces that allow the resident to control sensory stimulation.
Appearance	• Safety and protective features should be subtle to avoid an institutional feel. • Install appropriate signs and other visual information. • Ensure spaces are personalisable and homely. • Remove elements which may be overstimulating (clutter, alarms). • Use materials that are durable and easily washable.
Noise	• Select quiet appliances or place noisy appliances away from bedrooms and main living areas. • Hang art or other aesthetically pleasing wall coverings to reduce reverberation.

Table 1 Housing design features to address behaviours of concern (Bridge and Vasilacopolou, 2019)

5.2 Autonomy and homeliness

There is a theme throughout the literature that a person’s feeling of control over their environment mediates incidence of behaviours of concern. Deb et al (2022) quotes care staff describing triggers in the physical environment such as the colour of a room or the position of curtains. To address environmental triggers, many studies recommend strategies centred around resident's choice and control, such as access, privacy, predictability, personalisation, adjustability, customisability and homeliness (Baird et al, 2023; Haig and Hallet, 2022; Oostermeijer et al, 2021; Iffland et al, 2021; Bridge and Vasilacopolou, 2019).

Roos et al (2022) found evidence of association of behaviours of concern with the type of residential facility, its size and homeliness, available views and sound quality/acoustics. The authors suggest that most variables show effects based on their contribution to the homeliness of the environment and access to appropriately stimulating activities and environments. Homeliness has a positive association with behaviours including less lethargy, less hyperactivity and less aggression, increased participation in social, domestic and individual activities. Homeliness can be achieved in an institutional setting with:

> smaller wards, rooms of different sizes with windows of different sizes and in different places, public (common) spaces closer to the front door, unique bedrooms, wooden doors, wallpaper, carpet, art, less reverberation, more light points in the living room, and personal objects in the room (Roos et al, 2022, p.308).

These environments are likely to be more appropriately stimulating as well. In contrast, a place is felt to be more institutional when it has:

> more office, less public space, the same bedrooms, wide hallways, large rooms, high ceilings, more passageways, rough (stone) walls, vinyl floors, little lighting, fixed ceiling lights, more fire alarm systems, bare walls, different chairs, rows of toilets and sinks, paper towel dispensers, grab bars, and more adaptations to disabilities … the roof is less visible from the street, the driveway is longer, there are more windows in the facade, and there is less greenery around the building (Roos et al, 2022, p.308).

However, as the authors did not perform a meta-analysis or investigate the quality, level of evidence or risk of bias of the included studies, the evidence they present should be treated as of very low quality.

5.3 Multi-sensory environments

Multi-sensory environments (MSEs; also called comfort rooms, sensory rooms or Snoezelen rooms) are rooms designed to provide an ideal sensory environment with the aim of soothing or stimulating a person with specific sensory needs (Unwin et al, 2022; Cameron et al, 2020). MSEs have been used in nursing homes, schools, hospitals and psychiatric facilities. Little research on MSEs have looked into their use in home environments (Unwin et al, 2022; Backman et al, 2021; Cameron et al, 2020; Bridge and Vasilacopolou, 2019).

TRT's RES 276 Sensory-based therapies provides more detail on MSEs and their effect on the use of restrictive practice.

Evidence for the effectiveness of MSEs is generally of low quality due to study designs, risk of bias, differences in how rooms are structured and used. Many studies also combine MSE use with other interventions such as staff training in behaviour support (Unwin et al, 2022; Haig and Hallet, 2022; Oostermeijer et al, 2021).

In their 2022 review, Haig and Hallet did not find convincing evidence for a reduction in aggressive behaviours of concern, though evidence does suggest that MSEs can provide comfort to users in psychiatric facilities. The reviewed studies unanimously showed a reduction in subjective measures of distress and a few studies also showed a reduction in arousal, anxiety, irritability, hostility and withdrawal. Reduction in negative emotional states may lead to a reduction in associated behaviours of concern, though the evidence for this connection is less established (Oostermeijer et al, 2021; Cameron et al, 2020). Backman et al (2021) reviewed three studies using MSEs in residential facilities for older people and found more equivocal evidence for benefit to emotional well-being and mental health.

There is some evidence that the way the room is used can mediate its effectiveness. Haig and Halett (2022) note that distress increased for a small number of patients, which may relate to the different ways in which MSEs are set up and used and different sensory needs of individuals. Unwin et al (2022) found that children with autism who were able to control features of the room’s equipment (active condition) showed increase in attention and reduction in repetitive motor and sensory behaviours. It is important to note that these behaviours are not necessarily concerning and a decrease in sensory and repetitive behaviours may not have any relation to the person’s health or well-being. The authors also found no significant difference in social behaviours, anxiety, positive affect or arousal between the active and passive conditions.

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