Implementing Personalised Cognition-Oriented Treatments for Older People with Mild Cognitive Impairment: Translating Evidence into Practice

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[Redaction]

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

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2026

Table of Contents

Abstract

Older adults with Mild Cognitive Impairment (MCI) are at increased risk of progressing to dementia, positioning them as a key target population for secondary prevention. Cognition-oriented treatments (COTs), grounded in neuropsychological principles, have shown efficacy in improving cognitive and functional outcomes in older adults with and without cognitive impairment. Although international clinical practice guidelines recommend their use, COTs remain underutilised in routine clinical and community settings, limiting access for Australians living with MCI.

This thesis addresses this translational gap by examining the implementation of COTs through a series of interrelated studies. Guided by implementation science and the Reach, Effectiveness, Adoption, Implementation and Maintenance (RE-AIM) framework, the research investigated the multilevel processes required to embed evidence-based COTs into standard care pathways. Findings highlighted a persistent disconnect between evidence and practice, where Australian clinical neuropsychologists strongly support and express interest in delivering COTs, but their implementation is constrained by limited training opportunities and organisational barriers within health services. Targeted capacity-building among neuropsychologists working in memory clinics emerged as a critical enabler of COT delivery in clinical settings. In collaboration with the Australian Dementia Network's (ADNeT) national training and implementation initiative, this research evaluated the long-term sustainability of COT integration across five memory clinics. Using mixed-methods data from clinical neuropsychologists and service managers, the study identified key facilitators and barriers to sustained implementation. In parallel, to address workforce and system-level constrains, a second stream of work was undertaken with Dementia

Australia (DA), a national community organisation. DA Dementia Support Specialists were trained to deliver a tailored COT program, with feasibility and acceptability evaluated after a nine-month implementation period. Outcomes were assessed in the context of the program's successful transition as a sustained service offering.

Together, this body of work advances understanding of the practical and systemic conditions that shape the implementation of COTs in diverse real-world settings. The findings provide actionable insights for embedding COTs into both memory clinic services and community-based models of care, with the overarching aim of improving equitable access to evidence-based interventions for people with MCI.

Statement of Originality

This is to certify that, to the best of my knowledge, the content of this thesis is my own work. I certify that the intellectual content of this thesis is the product of my own work, and that all assistance received in preparing this thesis and all sources have been acknowledged. This thesis has not been submitted for any other degree or purpose.

Alessandra Sophie Lee

Date: 22/09/2025

Co-Author Declaration

We, the undersigned, acknowledge the following statement:

This thesis primarily represents the original work of Ms Alessandra Sophie Lee. Professor Sharon Naismith and Dr Loren Mowszowski made substantial contributions to the empirical studies and to the preparation of this thesis. Their support was particularly significant in study design, oversight of data analyses and interpretation, and editorial input into written work.

As members of the Australian Dementia Network – Memory Clinics (ADNeT-MC) Cognitive Intervention Working Party and adjunct supervisors, Professor Kerryn Pike and Associate Professor Alex Bahar-Fuchs contributed significantly to the design of the studies reported in this thesis, particularly Chapters III and IV. They also provided detailed feedback on the written work. In addition, they served as first authors on two publication outputs arising from the ADNeT implementation project, which are included as appendices to this thesis and referenced throughout. Dr Simone Simonetti played a key role in the qualitative analyses presented in Chapters III and IV and contributed to the review of the written work. Dr Leasha Lillywhite assisted with data analysis and interpretation with a particular focus on Chapter IV.

All co-authors contributed to the chapters comprising this thesis by reviewing drafts of the written work and providing comments prior to submission.

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Acknowledgements

It is with immense gratitude that I look back on the many people who have supported and encouraged me throughout this PhD journey.

First and foremost, I owe my deepest thanks to Professor Sharon Naismith. Sharon has been a constant source of guidance, mentorship, and encouragement, shaping my development as both a researcher and a clinician since my Honours year. Her unwavering belief in my potential, her generosity in creating opportunities for growth, and her commitment to my learning have been truly transformative. I have benefitted immeasurably from her wisdom, her trust, and her support over the years. My experience simply would not have been the same without Sharon.

I am equally grateful to Dr Loren Mowszowski. Loren's expertise, generosity, and unwavering support have been invaluable, not only in research but also in the way I approach my clinical work. Her mentorship has been grounding and enriching, and her patience, kindness, and steady encouragement have carried me through the toughest moments. Loren has always created a safe and supportive space in which I could learn and grow, and I feel incredibly fortunate to have had her as a mentor.

I would also like to acknowledge my associate supervisors and the ADNeT Cognitive Intervention Working Party members, Professor Kerryn Pike and Associate Professor Alex Bahar-Fuchs. Their thoughtful insights and expertise have directly shaped the work presented in this thesis and encouraged me to think critically about the bigger picture. I am especially thankful for their generous feedback and encouragement throughout this process.

My heartfelt thanks also go to the wider Healthy Brain Ageing team at the Brain and Mind Centre. Being part of such a collaborative and supportive group has been a continual source of joy

throughout this journey. I have cherished the many conversations, shared ideas, and words of encouragement from colleagues who have contributed in both big and small ways. A special thank you to Dr Simone Simonetti, whose generosity and guidance have been instrumental. Working alongside Simone has been a privilege, and her insights have strengthened this thesis in countless ways.

Beyond academia, I could not have completed this journey without the love and support of my friends and wonderful housemates. Thank you for bringing laughter into my days, reminding me to step back and find joy in the little things, and lifting me up when I felt overwhelmed. You kept me grounded and helped me keep perspective when it was most needed.

Finally, and most importantly, I dedicate this thesis to my family. To my parents, Stuart and Cristina Lee, your love, sacrifices, and unwavering belief in me have been the foundation of everything I have achieved. And to my sister, Gabriella Lee, thank you for being my anchor, cheerleader, and my confidante. Your faith in me, especially during the hardest times, has meant more than words can ever express. My gratitude and love for you are beyond measure.

Declaration of Scientific Work

This thesis includes three empirical studies conducted in collaboration with the co-authors acknowledged throughout. These co-authors played an essential role in study design, analysis, interpretation, and manuscript review. However, I declare that I played the primary and central role in conducting each study contained in this thesis.

My contributions extended across all aspects of the scientific work, from conceptualisation through to dissemination. I assisted in the development of study protocols, including the creation of all questionnaires and focus group interview guides, and contributed to the design of each study. I was responsible for preparing ethics applications to the University of Sydney Human Research Ethics Committee and contributed to subsequent amendments.

I managed the collection of data for all studies included in this thesis, and I was solely responsible for the organisation, management, and processing of all datasets. I conducted all statistical analyses and qualitative analyses reported in this thesis. With the support of my supervisors and co-authors, I also led the drafting, preparation and writing of all chapters and manuscripts included in this thesis.

In addition to the empirical studies, I contributed to two collaborative projects included in the appendices of this thesis.

In summary, I declare that I made substantial contributions to the design, data collection, analysis and interpretation of all studies included in this thesis. I was responsible for the primary preparation and authorship of all written work, with support and guidance from my supervisors and co-authors.

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Date: 22/09/2025

Publications and Conference Presentations

Publications arising from this thesis:

In Revision

Lee, A., Pike, K., Bahar-Fuchs, A., Michaelian, J., Naismith, S., & Mowszowski, L. (2025). A national survey of clinical neuropsychologists and students on current cognition-oriented treatment practice, training, and service needs in Australian memory clinics. *Australian Psychologist* (under revision)

Other publications that emerged during my PhD candidature:

Pike, K. E., Li, L., Naismith, S. L., Bahar-Fuchs, A., **Lee, A**., Mehrani, I., Bentvelzen, A., Lautenschlager, N. T., O'Connell, M. E., Blackberry, I., & Mowszowski, L. (2024). Implementation of cognitive (neuropsychological) interventions for older adults in clinical or community settings: A scoping review. Neuropsychology Review. Advance online publication. https://doi.org/10.1007/s11065-024-09647-0 (Appendix A)

Bahar-Fuchs, A., Chesser, C., Mowszowski, L., Pike, K. E., **Lee, A**., & Mehrani, I. (2025). Implementation of cognition-oriented treatments (COTs) for older adults in Australian memory and cognition clinics: Development and pilot evaluation of a clinician training toolkit. Neuropsychological Rehabilitation. Advance online publication. https://doi.org/10.1080/09602011.2025.2526661 (Appendix B)

Pike, K. E., Bahar-Fuchs, A., Mowszowski, L., Lillywhite, L., **Lee, A**., Mehrani, I., Hutchinson, A., Downes, M., & Naismith, S. L. (2025). Increasing availability of neuropsychological

interventions for people with mild cognitive impairment through memory clinics: A pilot implementation study (in preparation)

Conference oral and abstract presentations arising from this thesis:

Pike, K. E., **Lee, A**., & Mowszowski, L., (2022). *Implementing personalised cognitive intervention for older people with mild cognitive impairment in Australian memory clinics* [Conference presentation]. APS College of Clinical Neuropsychologists Conference, Sydney, Australia.

Lee, A. (2023) *A national survey on current cognitive intervention practice, training, and service needs in Australian memory clinics* [Conference poster]. Australian Dementia Research Forum 2023, Brisbane, Australia.

Lye, T., & **Lee, A.** (2023). *Cognitive interventions for older adults with mild cognitive impairment: A post-diagnostic care initiative at Concord Hospital as part of the ADNeT pilot implementation study* [Conference presentation]. Sydney Local Health District Innovations Symposium, Sydney, Australia.

Lee, A. (2024) *Community implementation and national scale-up of a healthy brain ageing cognitive intervention program: A partnership with Dementia Australia* [Conference poster]. Australian Dementia Research Forum 2024, Brisbane, Australia.

Lee, A. (2025) *Are cognitive interventions in memory clinics feasible and sustainable? A national implementation study* [Conference poster]. Australian Dementia Research Forum 2025, Perth, Australia.

Author Attribution Statement

I, Alessandra Sophie Lee, confirm that the following submitted work represents original research conducted during my candidature:

- **Lee, A**., Pike, K., Bahar-Fuchs, A., Michaelian, J., Naismith, S., & Mowszowski, L. (2025). A national survey of clinical neuropsychologists and students on current cognition-oriented treatment practice, training, and service needs in Australian memory clinics. *Australian Psychologist* (under revision) (Chapter III)

  I contributed to the study design, data collection, interpretation of results and took a lead role in drafting and revising the manuscript.

- Pike, K. E., Li, L., Naismith, S. L., Bahar-Fuchs, A., **Lee, A**., Mehrani, I., Bentvelzen, A., Lautenschlager, N. T., O'Connell, M. E., Blackberry, I., & Mowszowski, L. (2024). Implementation of cognitive (neuropsychological) interventions for older adults in clinical or community settings: A scoping review. Neuropsychology Review. Advance online publication. https://doi.org/10.1007/s11065-024-09647-0 (Appendix A)

  I contributed to the analyses of this publication and assisted with the visualisation of results.

- Bahar-Fuchs, A., Chesser, C., Mowszowski, L., Pike, K. E., **Lee, A**., & Mehrani, I. (2025). Implementation of cognition-oriented treatments (COTs) for older adults in Australian memory and cognition clinics: Development and pilot evaluation of a clinician training toolkit. Neuropsychological Rehabilitation. Advance online publication. https://doi.org/10.1080/09602011.2025.2526661 (Appendix B)

  I contributed to the study design, data collection, assisted with interpretation of results and assisted by reviewing the manuscript drafts.

- Pike, K. E., Bahar-Fuchs, A., Mowszowski, L., Lillywhite, L., **Lee, A**., Mehrani, I., Hutchinson, A., Downes, M., & Naismith, S. L. (2025). Increasing availability of neuropsychological interventions for people with mild cognitive impairment through memory clinics: A pilot implementation study (in preparation)

  I contributed to the study design, data collection, assisted with the interpretation of results and assisted with reviewing the manuscript drafts

In addition to the authorship statements above, in cases where I am not the corresponding or lead author, permission to include the published material has been granted by the corresponding author.

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Date: 22/09/2025

Supervisor Endorsement

I, Professor Sharon Naismith, as supervisor for the candidature upon which this thesis is based, can confirm that the authorship attribution statements above are correct.

Prof Sharon Naismith, Primary Supervisor

Date: 25/09/2025

Artificial Intelligence Statement

ChatGPT, Grammarly and Copilot were used during the preparation of this thesis for the purposes of text enhancement. The use of this generative AI tool includes spelling corrections, minor sentence restructuring, and clarity enhancement. The author confirms that where text was modified by generative AI, the content was reviewed for possible errors, inaccuracies, and bias. The author takes full responsibility for the submitted thesis, confirms that the work is her own, and has used generative AI in accordance with the University's guidelines and policies.

Alessandra Sophie Lee

Date: 22/09/2025

Scholarship Support

The research reported in this thesis was supported by the USYD-UNSW ADNeT-Memory Clinics Postgraduate Research Scholarship from 2021 until 2022 and by an Australian Government Research Training Program (RTP) Scholarship from 2022 until 2025.

Alessandra Sophie Lee

Date: 22/09/2025

List of Commonly Used Abbreviations

AD	Alzheimer's disease
ADNeT	Australian Dementia Network
ADNeT-MC	Australian Dementia Network – Memory Clinics
ANOVA	Analysis of variance
CDAMS	Cognitive Dementia or Memory Services
COT	Cognition-oriented treatment
CR	Cognitive rehabilitation
CST	Cognitive stimulation therapy
CT	Cognitive training
DA	Dementia Australia
FINGER	Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability
FTE	Full-time equivalent
HBA	Healthy Brain Ageing
LaTCH	La Trobe and Caulfield Hospital
MCI	Mild cognitive impairment
ORIC	Organisational Readiness for Implementing Change
RCT	Randomised controlled trial
RE-AIM	Reach, Effectiveness, Adoption, Implementation and Maintenance

List of Tables

List of Figures

CHAPTER I. General Introduction

1.1 Dementia, Alzheimer's Disease, and Mild Cognitive Impairment

Dementia is a growing global health challenge, currently affecting an estimated 57 million people worldwide (World Health Organisation, 2021). In Australia, dementia has profound implications for public health, representing the leading cause of death and affecting more women than men (Australian Institute of Health and Welfare, 2025). By 2065, it is predicted that the number of Australians living with dementia will increase to over 1 million (Australian Institute of Health and Welfare, 2025), underscoring the urgency of developing strategies to lessen the profound consequences for individuals, families, and healthcare systems.

Alzheimer's disease (AD) is the most common form of dementia, accounting for 60-80% of cases (Alzheimer's Association Report, 2025). Pathologically, AD is characterised by the accumulation of amyloid plaques and neurofibrillary tangles in the brain, and potentially also facilitated by comorbid inflammatory mechanisms, with these changes emerging up to two decades before the onset of clinical symptoms (Barthélemy et al., 2020; Braak et al., 2011; Gordon et al., 2018; Quiroz et al., 2020). Notably, the *2024 Lancet Commission* estimated that up to 45% of dementia cases could be prevented by addressing 14 modifiable risk factors, many of which are present well before symptom onset (Livingston et al., 2024). These findings highlight the critical importance of early risk identification and proactive intervention to delay or prevent progression, thereby reducing the global burden of AD.

Cognitive impairment is a defining feature of dementia, but it also emerges in earlier stages of disease progression, including Mild Cognitive Impairment (MCI). MCI is widely regarded as an intermediate stage between normal cognitive ageing and dementia (Petersen, 2016). It is characterised by a decline that exceeds what is expected for age and education level, yet does not significantly interfere with independence in everyday activities (Petersen, 2004; Winblad et al.,

2004). These cognitive changes are typically identified through objective neuropsychological assessment, which can detect even subtle deficits in domains such as memory, executive function, attention, processing speed, language, and visuospatial skills (Rodakowski et al., 2015). Although individuals with MCI maintain functional independence, they may experience subtle difficulties with complex or demanding tasks (Petersen, 2016; Rodakowski et al., 2015), which can, in turn, impact their psychosocial wellbeing (Lin et al., 2021).

MCI is a clinically heterogenous condition that can involve deficits in either a single cognitive domain or multiple domains, with outcomes that vary considerably across individuals (Petersen, 2016). A central distinction lies between amnestic MCI and non-amnestic MCI. The amnestic subtype is primarily characterised by memory impairment and is frequently considered a prodromal stage of AD (Petersen, 2016), particularly when biomarkers of AD pathology are detectable (Dubois et al., 2024). In contrast, non-amnestic forms involve deficits in domains such as executive function, attention, or visuospatial abilities, and are more often associated with non-Alzheimer's dementias, including frontotemporal dementia and dementia with Lewy bodies (Gauthier et al., 2006).

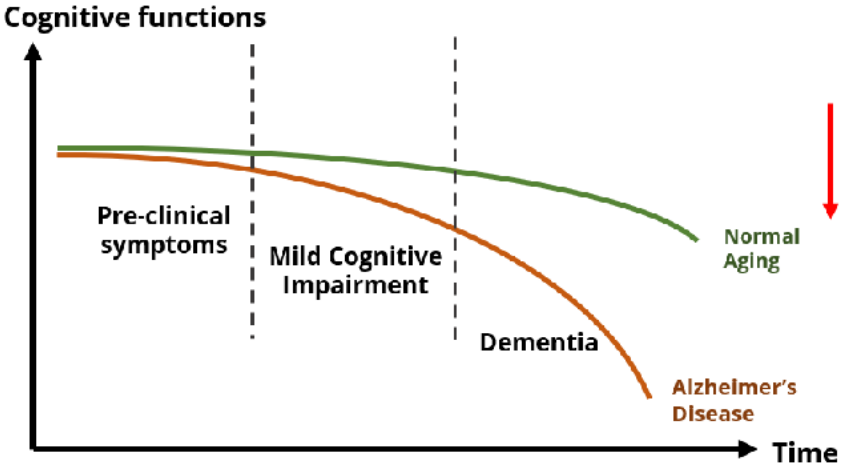
Longitudinal research has shown that MCI represents a high-risk state for further decline, with approximately 42% of individuals progressing to dementia within five years (Roberts et al., 2014). Risk is especially elevated among individuals with amnestic MCI, who demonstrate a higher likelihood of developing AD (Geslani et al., 2005). However, not all cases follow this trajectory. Some individuals remain stable for many years, while approximately 16% revert to normal or near-normal cognitive functioning within one year (Koepsell & Monsell, 2012). Reversion has been linked to several factors, including the natural variability of cognitive performance and transient influences present during the initial assessment. Nevertheless, this

variability highlights that MCI is not a fixed or inevitably progressive state, but rather an 'at risk' stage along a continuum of cognitive ageing and decline.

For this reason, MCI is often described as a "prodromal phase" in the progression toward dementia (see Figure 1.1). Early identification and ongoing monitoring are therefore essential for enabling timely intervention and offering opportunities to alter the trajectory of decline. Current research efforts increasingly focus on clarifying the mechanisms underlying MCI, refining risk stratification, and identifying which individuals are most likely to benefit from targeted interventions.

Figure 1.1

The Continuum of Alzheimer's Disease. Adapted from (Sperling et al., 2011).



1.2 Cognitive Function and Ageing

Cognitive function encompasses a broad set of mental processes that are essential for daily living. These processes are typically grouped into domains, including processing speed, working and long-term memory, language, visuospatial and visuoconstructional skills, executive functions (e.g., planning, problem-solving, and decision-making), fine motor coordination, and social

cognition. Disruptions in these domains can compromise independence, reduce quality of life, and diminish overall wellbeing (Jenkins et al., 2019).

Age-related changes in cognition and brain function are well documented (e.g., Murman, 2015). As people age, certain abilities, such as processing speed, working memory, and executive functioning, tend to decline. Others – including vocabulary, semantic memory, and general knowledge – may remain stable or even improve, reflecting the dynamic and heterogenous nature of cognitive ageing (Murman, 2015). Among these processes, memory impairment is one of the most reported concerns in later life, accounting for up to 60% of cognitive complaints among older adults (Rabin et al., 2015). Such concerns are also a significant reason why individuals seek clinical assessment.

Understanding the profile of typical age-related changes provides an essential context for distinguishing between normal cognitive ageing, MCI, and early dementia. While some decline can be expected with age, the onset of disproportionate or domain-specific deficits may signal the emergence of pathological processes and underscores the need for timely identification and support.

1.3 Cognitive Decline in AD and MCI

Although some decline in episodic memory is common with ageing, these changes are typically more pronounced and seen as a 'hallmark' feature of AD and of amnestic forms of MCI (Dubois et al., 2010; Galton et al., 2000; Weintraub et al., 2012). In AD, memory difficulties are often functionally disruptive, interfering with essential tasks such as managing medications, finances, or appointments. Individuals may also struggle with learning new information, navigating unfamiliar environments, or maintaining attention during conversations and complex activities (Bradfield & Ames, 2020; Dubois et al., 2010). While MCI is not associated with

widespread functional decline, even subtle impairments can negatively affect quality of life, increase caregiver burden, and elevate risks for accidents or adverse health outcomes (Bradfield & Ames, 2020; Jicha & Carr, 2010).

These cognitive and functional changes are closely tied to structural alterations in the brain. Neuroimaging studies consistently implicate the medial temporal lobe, particularly the hippocampus and entorhinal cortex, as key regions underlying the memory deficits observed in AD and amnestic MCI (Braak et al., 2011; Devanand et al., 2007; Dickerson et al., 2001; Duara et al., 2008; Whitwell et al., 2007). These areas are among the earliest affected by AD pathology, with changes detectable well before overt symptoms emerge (Braak et al., 2011; Scharre, 2019). Episodic memory impairment closely corresponds to the accumulation of neurofibrillary tangles in the medial temporal lobe (Guillozet et al., 2003) and hippocampal atrophy, as observed on magnetic resonance imaging (Deweer et al., 1995).

As AD progresses, pathological changes extend to broader cortical regions, leading to the emergence of multi-domain impairments over time. Language and visuospatial functions are commonly disrupted, along with declines in processing speed and executive functions (Weintraub et al., 2012). These widespread deficits underscore the complexity of AD and highlight the importance of recognising early signs of decline, when opportunities for intervention are greatest.

1.4 Interventions for Dementia and MCI

For many years, approved therapies for AD were limited to providing symptomatic relief without altering the underlying disease process (Cummings et al., 2019). Recent advances in amyloid-targeting monoclonal antibody therapies, such as *lecanemab* and *donanemab*, mark a significant shift toward disease-modifying treatment for individuals with MCI due to AD and

early-stage AD (Cummings, 2023; Wu & Fuh, 2025). These therapies harness the immune system to clear neurotoxic amyloid-beta, and clinical trials have demonstrated modest but statistically significant slowing of cognitive decline alongside biomarker improvements (Sims et al., 2023; van Dyck et al., 2023). International approvals have already been granted in several countries, including the United States, the European Union, and the United Kingdom. In Australia, however, uptake has been slower. As of September 2025, *lecanemab* is not approved by the Therapeutic Goods Administration, while *donanemab* has been approved for early AD but is only available privately at considerable cost and is not subsidised by the Pharmaceutical Benefits Scheme. Importantly, even when approved for clinical use, these treatments involve complex regimens for administration as well as monitoring of side effects, including increased risk of brain bleeds, which may be prohibitive or intolerable for some individuals (Brodtmann et al., 2023).

Despite their promise, these therapies therefore face significant challenges to real-world implementation. Effective delivery will require major expansions in healthcare infrastructure and workforce capability (Michaelian et al., 2025). Moreover, population-level studies suggest that up to 92% of individuals with MCI or early AD may be ineligible for treatment due to comorbidities or exclusionary neuroimaging findings (Pittock et al., 2023). These limitations underscore the ongoing importance of non-pharmacological strategies that are safe, accessible, and adaptable to diverse patient needs.

A wide range of such interventions have been explored, including cognition-oriented (i.e., neuropsychological) therapies, lifestyle modification (e.g., physical activity, diet, sleep hygiene), psychosocial support, and environmental adaptations (Rodakowski et al., 2015). Evidence increasingly suggests that multimodal, personalised approaches, particularly those that combine cognitive and physical activity, offer the greatest benefit (Livingston et al., 2024; Ngandu et al.,

2015). Reflecting this, several guidelines recommend considering cognition-oriented treatments (COTs) as part of best practice for individuals with MCI (Petersen et al., 2018; Woodward et al., 2022). Non-pharmacological interventions, therefore, remain a promising avenue for reducing cognitive symptoms and improving quality of life in individuals with MCI and early AD.

1.5 Cognition-Oriented Treatments (COTs)

COTs represent a diverse class of non-pharmacological interventions designed to enhance or maintain cognitive function in individuals experiencing decline. Drawing on evidence-based neuropsychological principles, these approaches aim to strengthen cognitive processes, promote neural plasticity, and support compensatory strategies that reduce the impact of impairment on daily life (Bahar-Fuchs et al., 2019; Clare & Woods, 2004; Mowszowski et al., 2010). Throughout the literature, such interventions are described using various terms, including *cognitive interventions* and *cognitive remediation*. For consistency, this thesis will use the umbrella term *cognition-oriented treatments (COTs).*

Chapter II of this thesis will provide a review of the efficacy of COTs for older adults across the spectrum of cognitive ageing and the barriers to their translation, with a particular focus on the need for structured implementation frameworks to bridge this research-to-practice gap. For the purpose of this introduction, only a brief overview of these approaches and their relevance to the thesis is provided.

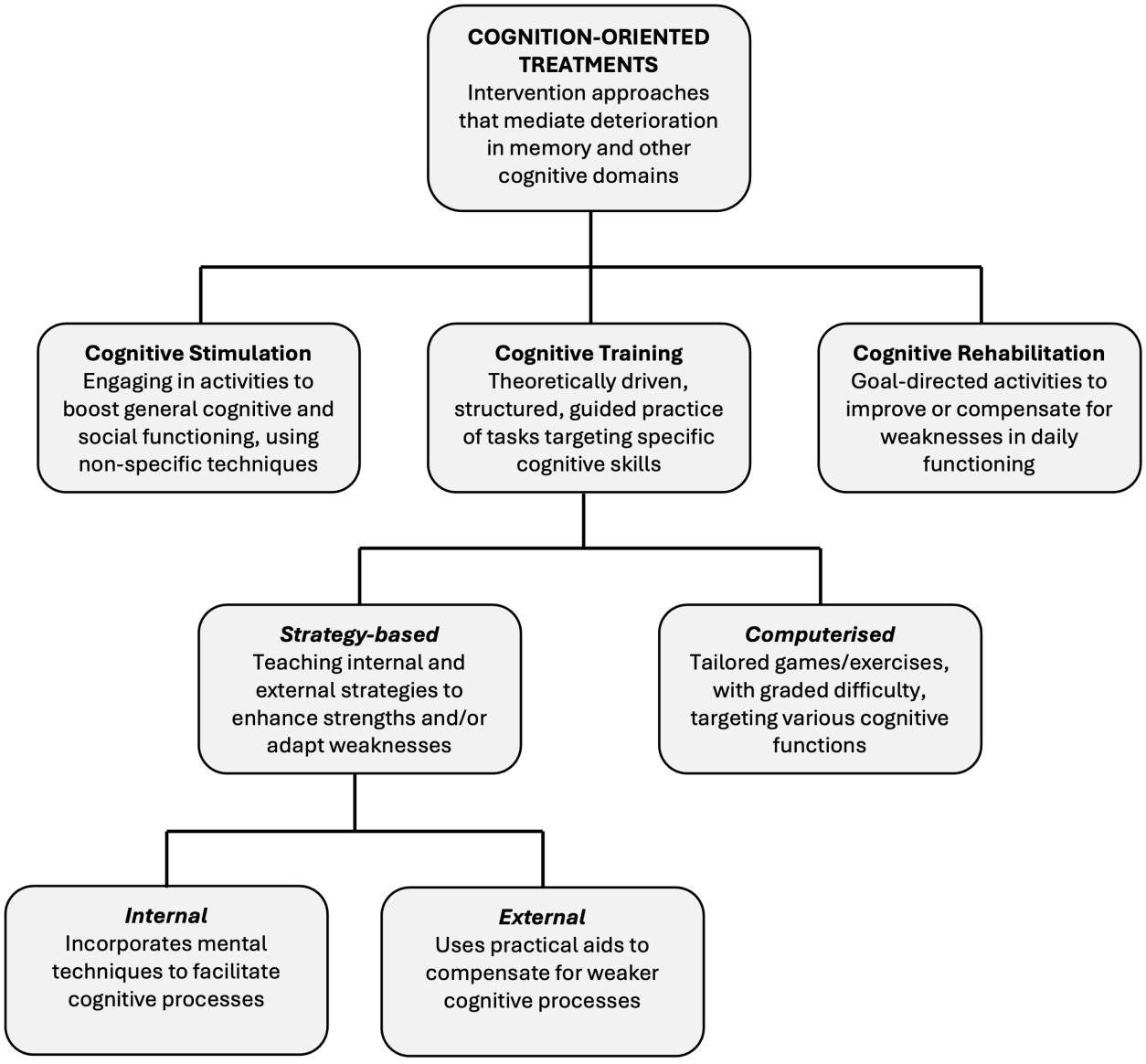
1.5.1 Types of COTs

Three primary forms of COTs are described in the ageing literature: cognitive stimulation therapy (CST), cognitive training (CT), and cognitive rehabilitation (CR) (Bahar-Fuchs et al.,

2019; Clare & Woods, 2004; Mowszowski et al., 2010). Although these approaches differ in theoretical foundations, delivery formats, and goals, they share an emphasis on structured activities that foster cognitive engagement and resilience (see Figure 1.2).

Figure 1.2

Conceptual Framework of Cognition-Oriented Treatment (COT) Approaches. Adapted from Mowszowski et al. (2010).



CST adopts a generalised approach, typically delivered in group settings through multi-sensory activities such as discussions, puzzles, music, orientation prompts, and reminiscence exercises. It aims to enhance broad cognitive and social functioning within a supportive, interactive environment (Woods et al., 2023).

CT, often colloquially referred to as “brain training”, targets specific domains through structured, theory-driven practice. Exercises are designed to activate and strengthen abilities such as memory or attention, typically through “guided practice” (Bahar-Fuchs et al., 2019; Mowszowski et al., 2010). CT approaches can be broadly classified into two categories: compensatory and restorative (Sitzer et al., 2006). Compensatory approaches focus on developing alternative strategies to work around cognitive deficits using internal techniques (e.g., categorisation, imagery, or paraphrasing) and external aids (e.g., calendars, notes, environmental cues). In contrast, restorative approaches are designed to improve performance in specific cognitive domains to recover diminished functions. Techniques used in restorative CT may focus on repeated practice and skill development. CT can be delivered in a strategy-based format or through computerised programs that allow for graded difficulty and adaptive learning opportunities.

CR is the most individually tailored of the three approaches. Rather than focusing solely on cognitive processes, CR is goal-directed and functionally oriented, helping individuals maintain or regain independence in their everyday activities (Bahar-Fuchs et al., 2019; Clare & Woods, 2004). Strategies may include external memory aids, structured routines, and environmental modifications, developed collaboratively with the individual and their caregivers to address personally meaningful goals (Clare et al., 2019).

Together, these approaches illustrate the breadth of COTs, ranging from structured practice to socially engaging group activities and personalised functional support. Their diversity allows adaptation to individual needs, preferences and clinical settings, making them highly relevant to the challenges of supporting older adults with MCI. In this thesis, the primary focus will be on cognitive training and rehabilitation approaches, given their growing evidence base and relevance to implementation in both clinical and community contexts (see *Chapter II*).

1.5.2 Evidence to Practice Gap for COTs

Despite a strong evidence base, COTs remain underused in routine care for older adults with MCI. Meta-reviews indicate small to moderate cognitive benefits across the spectrum of cognitive ageing, with additional gains for everyday function most clearly demonstrated when goals are individually targeted (e.g., using rehabilitation techniques) or when training is sustained and engaging (see *Chapter II*). These findings are reflected in international guidance (e.g., Petersen et al., 2018; World Health Organisation, 2019) and Australian memory clinic recommendations that endorse COTs as part of best practice for early cognitive decline (Australian Dementia Network, 2024). Yet, national service data show a persistent shortfall in delivery, underscoring a gap between "what works" and "what happens" in practice (Naismith et al., 2022).

Implementation studies identify multi-level barriers, including: limited staffing and funding, competing service priorities, and a lack of standardised protocols at the organisational level; variable clinician training, supervision, and role clarity at the workforce level; and feasibility constraints for clients (Pike et al., 2024) (see Appendix A). Compounding these issues, many translation efforts have not explicitly used implementation frameworks or standard outcome definitions, hindering replication and scale-up (Pike et al., 2024). Bridging this gap will require

structured implementation strategies (e.g., framework-guided planning and evaluation), targeted workforce development for neuropsychologists and other appropriate staff, and service models that embed COTs alongside diagnostic pathways. *Chapter II* elaborates on these points, synthesising the evidence and mapping barriers and enablers to inform the translational studies that follow.

1.6 The Role of Clinical Neuropsychologists in Intervention Delivery

Clinical neuropsychology is a specialised field within psychology dedicated to understanding, assessing, and treating the cognitive, emotional, and behavioural consequences of brain impairment (Lezak et al., 2012). With expertise in neuropsychological syndromes and underlying neuropathology, neuropsychologists are uniquely positioned to develop and deliver interventions that address the complex challenges arising from cognitive decline (Wong, Pike, et al., 2023). Their work spans not only assessment and diagnosis but also intervention, with the ultimate goal of supporting independence, well-being, and quality of life (Wong, Pike, et al., 2023).

Delivering neuropsychological interventions, including COTs, is considered a core professional competency (Wong, Pestell, et al., 2023). Yet, despite this recognised expertise, the role of neuropsychologists in implementing these interventions remains under-recognised among medical specialists, allied health professionals, policymakers, and the public in Australia (Wong, Pike, et al., 2023). One contributing factor is the limited training and supervised practice currently available, which has led to reduced clinician confidence in providing COTs (Wong et al., 2014). This restricts patient access to such interventions that could otherwise be integrated into routine care, an issue explored further in *Chapter II.*

Ensuring clinicians are adequately trained is therefore critical. COTs require specialised skills, and without targeted education and supervision, their implementation risks being inconsistent or unsustainable (Pike et al., 2024). Addressing these gaps through workforce development initiatives has the potential to expand access to effective interventions for older adults with MCI, while also embedding neuropsychologists more firmly within multidisciplinary models of dementia care.

1.7 Providers of Post-Diagnostic Support

Providing integrated, evidence-based support after a diagnosis of dementia is a critical but often overlooked aspect of care in Australia. Post-diagnostic support encompasses a spectrum of interventions, including both pharmacological and non-pharmacological approaches, as well as educational and psychosocial programs, that assist individuals and their care partners in adjusting to a diagnosis and planning for the future (Dodd et al., 2018; Kelly & Innes, 2016; O'Shea et al., 2018).

Traditionally, post-diagnostic support has focused on individuals with dementia. However, as awareness of the benefits of early intervention has grown, these services have increasingly expanded to include people with MCI. For this group, timely and targeted support is particularly crucial, as it may slow cognitive decline, alleviate distress, and help individuals and families adapt to emerging challenges while maintaining independence for as long as possible.

Despite recognition of its importance, access to structured post-diagnostic support remains inconsistent across Australia. Strengthening the availability of tailored interventions for people with dementia and MCI will be essential to delivering a more proactive, person-centred model of care. In considering how early-stage interventions can be delivered in practice, it is essential to

identify the key service contexts through which individuals with MCI or dementia are most likely to access support. Within Australia, memory clinics and community organisations, such as Dementia Australia (DA), represent two of the most prominent avenues for accessing post-diagnostic support, each offering unique opportunities and distinct challenges.

1.7.1 Australian Memory Clinics

Memory clinics, often referred to as Memory and Cognition Clinics, are widely regarded as the gold standard for achieving timely and accurate diagnoses of dementia and MCI (Verhey et al., 2011). Operating as specialised multidisciplinary services, they typically bring together expertise from neurology, psychiatry, geriatrics, psychology, and allied health to deliver comprehensive assessments and coordinated care (Mehrani et al., 2021; Verhey et al., 2011). Their integrated model enables not only diagnostic clarity but also continuity through treatment planning and referral pathways (Prince et al., 2016; Verhey et al., 2011).

In Australia, the number of memory clinics has expanded in response to the growing prevalence of dementia and recognition of the importance of early detection. However, while diagnostic services are well established, most clinics are not funded or resourced to provide structured post-diagnostic interventions. (Mehrani et al., 2021; Naismith et al., 2022). Recent findings from a national survey highlight this shortfall, where only 20% of surveyed clinics offered memory strategy training, fewer than 4% provided computerised CT, and just 14.5% delivered more than one session of COT (Naismith et al., 2022). These figures stand in stark contrast to the demonstrated need for such interventions (Gauthier et al., 2022; Steiner et al., 2020).

Expanding the remit of memory clinics beyond diagnosis to include structured cognitive and psychosocial interventions would better align with the needs of patients and their families.

Doing so could improve quality of life, reduce caregiver burden, and lessen the long-term societal and economic costs associated with dementia.

1.7.2 Dementia Australia (DA)

While memory clinics represent the primary specialist clinical context for delivering COTs, they are not the only avenue for implementation. Community organisations also play a crucial role in providing accessible and scalable support to people living with cognitive changes. In the Australian context, DA is particularly important given its national reach, infrastructure, and established role in service provision (Dementia Australia, 2024). Its services include counselling, education programs, peer support groups, and tailored resources designed to meet the needs of people across the dementia continuum. In 2023-2024 alone, DA supported more than 44,000 Australians through such programs, which also include innovative interventions such as technology-based tools and structured activity programs to promote cognitive engagement and emotional wellbeing.

Unlike memory clinics, DA is not a specialist clinical service and does not routinely employ neuropsychologists. Instead, it operates through a workforce of Dementia Support Specialists who are trained to deliver practical, accessible support in community settings. While this model may lack the specialist expertise of clinic-based neuropsychologists, it offers significant advantages in terms of scalability and reach. Importantly, DA has more recently broadened its remit to include individuals with MCI, as reflected in the development of MCI-specific resources and programs (Dementia Australia, 2024) (see also DA website: https://www.dementia.org.au/brain-health/mild-cognitive-impairment-mci). These initiatives signify a paradigm shift in the public and policy

discourse around cognitive ageing, one that increasingly values community-based care and early-stage intervention as central pillars of support.

Together, memory clinics and DA are two complementary pathways for implementing COTs. Clinic-based delivery provides specialist expertise and integration with diagnostic services. In contrast, community-based delivery offers scalability and broader reach to individuals who may not otherwise have access to clinical interventions. Considering both pathways is therefore critical to understanding how COTs can be implemented sustainably within the Australian healthcare and community support landscape.

1.8 Summary, Aims, and Objectives

Cognitive impairment is a defining feature of dementia and is also evident in its earlier stages, including MCI. In recent years, there has been growing recognition of the value of non-pharmacological strategies such as COTs to support individuals with or at risk of dementia. While evidence increasingly supports the efficacy of COTs, their integration into routine healthcare and community settings remains limited. This gap between evidence and practice highlights the need for translational research that can inform sustainable models of care.

To address this gap in the Australian context, this thesis presents a series of synergistic translational studies designed to facilitate the implementation of COTs for older adults with MCI across memory clinic and community settings. Collectively, these studies aim to generate evidence that can inform scalable, sustainable, and accessible models of intervention delivery. The specific objectives of this research are to:

1. Conduct a comprehensive literature review on the efficacy of COTs and the challenges of translating them into practice, with a focus on the need for structured implementation frameworks *(Chapter II).*
2. Investigate national practices, training needs, and service gaps through a survey of memory clinic neuropsychologists and neuropsychology students, providing foundational data to inform the development of a clinician training support package *(Chapter III).*
3. Evaluate the sustainability of implementing COTs in memory clinic settings, assessing barriers and facilitators to long-term integration *(Chapter IV).* This represents the final phase of a 12-month, national, multi-site, pilot feasibility study conducted by the Australian Dementia Network – Memory Clinics (ADNeT-MC) *Cognitive Intervention Working Party* (see ADNeT website: https://www.australiandementianetwork.org.au/initiatives/memory-clinics-network/cognitive-intervention-working-group/).
4. Examine large-scale community implementation in partnership with DA, including workforce training of Dementia Support Specialists to implement a tailored version of the Healthy Brain Ageing (HBA) Program, with evaluation of feasibility, process outcomes, and clinician impact *(Chapter V).*
5. Synthesise findings across studies in a final discussion, drawing together lessons learned, relating this to international examples of COT translation, and identifying priorities and directions for future research, training, and policy to support the broader implementation of COTs for MCI in Australia *(Chapter VI).*

Overall, this thesis seeks to bridge the gap between research and practice, providing a pathway for embedding COTs into both clinical and community contexts. Ultimately, the aim is to enhance the accessibility and sustainability of COTs for older adults living with MCI.

CHAPTER II. A Review of Cognition-Oriented Treatments for Older Adults with Mild Cognitive Impairment

2.1 Introduction

COTs have emerged as a promising class of non-pharmacological interventions designed to enhance or maintain cognitive function in later life. While *Chapter I* introduced these approaches within the broader context of dementia prevention and care, the present chapter synthesises the evidence for their efficacy and the challenges of translating them into clinical and community practice. Specifically, it evaluates three principal approaches – CST, CT, and CR – and critically examines the barriers and enablers that have limited their uptake in real-world settings.

The review is structured in three parts. First, it evaluates the evidence base for each approach, tracing their application across ageing populations ranging from healthy older adults to those with MCI and dementia. Second, it considers the extent to which these interventions have been incorporated into national and international guidelines for clinical practice. Finally, it explores their limited translation into practice, drawing on Pike et al. (2024)'s scoping review findings (see Appendix A) to map barriers and enablers at the organisational, clinician and client levels. In doing so, the chapter highlights the persistent gap between research and practice, as well as the importance of structured implementation strategies to support the sustainable integration of COTs into clinical and community health services.

2.2 Reviewing the Efficacy of COTs Across the Cognitive Spectrum

A systematic overview of systematic reviews by Gavelin et al. (2020) synthesised findings from 46 reviews across COT approaches spanning CST, CT and CR and reported small-to-medium effect sizes of 0.3-0.4 for cognitive outcomes in healthy older adults, MCI and dementia. While they found that non-cognitive outcomes were sparsely reported and recommended further research in this space, individual reviews (e.g., Chandler et al., 2016) have reported positive effects on

activities of daily living, mood, and self-efficacy. The following sections provide a more detailed examination of the evidence for each approach.

2.2.1 The Evidence for Cognitive Stimulation Therapy (CST)

CST represents the broadest form of COT. Typically delivered in small groups, it is designed to support both cognitive and psychosocial functioning through structured, multisensory activities such as discussions, puzzles, music or reminiscence (Spector et al., 2003). Unlike CT, CST does not aim to restore specific cognitive skills; instead, it fosters engagement, communication, and social interaction within a supportive environment (Woods et al., 2023).

The most robust evidence for CST comes from people with dementia. A Cochrane review of 36 randomised controlled trials (RCTs) reported moderate improvements in global cognition, alongside benefits for communication, quality of life, and, to a lesser extent, behavioural and psychosocial symptoms (Woods et al., 2023). Qualitative findings further highlight meaningful impact on social outcomes, including enhanced confidence, valued social connections, and improved relationships (Gibbor et al., 2021). Replication across diverse contexts and delivery formats supports the adaptability and scalability of CST (e.g., Desai et al., 2024; Paggetti et al., 2025). On this basis, CST as conceptualised by Spector et al. (2003) is widely recommended as best practice for improving cognition and wellbeing in people with mild-to-moderate dementia (Gauthier et al., 2022).

By contrast, the evidence base for CST in healthy older adults and those with MCI is more limited and heterogeneous. Few studies explicitly test standardised CST protocols in these populations, and meta-analytic conclusions remain tentative. Systematic reviews suggest modest cognitive benefits, but effects are typically smaller than those observed in dementia and often less

robust than those achieved through training-based approaches (Gómez-Soria et al., 2023; Velloso et al., 2025; Yun & Ryu, 2022). Nonetheless, a large-scale meta-analysis of 283 non-pharmacological interventions found that CST, alongside physical exercise and multi-domain approaches, was among the few interventions associated with reduced risk of nursing home placement in older adults (Gaugler et al., 2023).

Taken together, these findings suggest that CST has the strongest and most consistent evidence in dementia, where it appears to outperform other forms of COT in cognitive and psychosocial outcomes. Its utility in healthy older adults and MCI is less well established, reflecting fewer trials, smaller effect sizes, and substantial heterogeneity. These findings support a differential model of intervention, whereby CST is best prioritised in dementia care, while training-based approaches may offer greater promise in earlier stages.

2.2.2 The Evidence for Cognitive Training (CT)

CT adopts a structured, domain-focused approach to enhance specific abilities such as memory, attention, and executive functions through guided and repeated practice (Bahar-Fuchs et al., 2019; Mowszowski et al., 2010). Programs can adopt restorative approaches (i.e., strengthening underlying abilities through practice) or compensatory approaches (e.g., training strategies such as imagery, categorisation, or use of external aids) (Sitzer et al., 2006).

A substantial body of meta-analytic evidence supports the use of CT for both healthy older adults and those with MCI. Computerised CT, in which adaptive tasks are delivered via digital platforms, is particularly well-studied. Consistent benefits are reported for global cognition, memory, working memory, processing speed, and visuospatial abilities (Hill et al., 2017; Lampit et al., 2014; Mewborn et al., 2017; Raimo et al., 2023; Velloso et al., 2025). These effects extend

across both group and individual formats. Some evidence also suggests that combining CT with physical exercise may yield additional gains, particularly for executive functions (Rieker et al., 2022). However, evidence for transfer into everyday functional outcomes remains mixed (Lampit et al., 2014; Mewborn et al., 2017; Velloso et al., 2025). Strategy-based CT programs may help to address this limitation. Systematic reviews highlight that therapist-led, strategy-oriented approaches – often involving psychoeducation, compensatory techniques, and opportunities to apply skills in everyday contexts – are more effective than computerised CT in promoting functional improvements, with modest gains in activities of daily living and self-management among people with MCI (Chandler et al., 2016; Mowszowski et al., 2016). Such approaches also appear to enhance executive functioning and support transfer to untrained everyday skills, particularly when training is interactive and tailored (Mowszowski et al., 2016). Individual studies have similarly shown that group-based, multicomponent interventions combining strategy training with lifestyle and psychosocial support can lead to broader benefits, including improvements in mood and sleep, which in turn facilitate engagement (Diamond et al., 2015). Taken together, these findings suggest that while computerised CT yields cognitive gains, strategy-based interventions may offer greater generalisation to everyday outcomes and potential for enhancing wellbeing in healthy older adults as well as those experiencing cognitive changes.

For dementia populations, effects are more variable. Moderate benefits are observed, particularly in mild dementia, but efficacy appears to diminish with increasing disease severity (Bahar-Fuchs et al., 2019; Huntley et al., 2015; Paggetti et al., 2025). This likely reflects the greater cognitive demands of CT compared to broader, nonspecific interventions, such as CST.

Overall, the evidence positions CT as a promising approach, particularly in healthy older adults and MCI, where it demonstrates robust efficacy. Its impact in dementia appears more

constrained, but CT remains valuable in the earlier stages of the cognitive spectrum and has been endorsed internationally as a means of reducing risk of decline (Petersen et al., 2018; World Health Organisation, 2019).

2.2.3 The Evidence for Cognitive Rehabilitation (CR)

CR differs from CST and CT by adopting a highly individualised, goal-oriented approach that emphasises functional outcomes. Rather than attempting to restore impaired processes, CR aims to support independence through compensatory and adaptive strategies such as external memory aids, structured routines, and environmental modifications (Clare & Woods, 2004). Central to this approach is the identification of personally meaningful goals, with intervention strategies tailored to the individual's abilities, priorities, and contexts.

The most substantial evidence in ageing cohorts comes from dementia populations. A meta-analysis of six RCTs found large improvements in accomplishing personally targeted daily activities in mild-to-moderate dementia, with benefits sustained for up to 12 months (Kudlicka et al., 2023). Smaller, short-term gains have also been noted for self-efficacy (Kudlicka et al., 2023). Similarly, Ren et al. (2024) 14 trials in AD were reviewed, reporting moderate to large improvements in occupational performance and quality of life. In contrast, there has been relatively little evidence to suggest that CR produces improvements in cognitive functioning. These findings suggest that CR is most effective when evaluated against functional outcomes rather than traditional test performance (Paggetti et al., 2025).

By comparison, evidence for CR in healthy older adults and MCI is more limited, reflecting both conceptual and methodological challenges. As outlined in *Chapter I*, inconsistent terminology has historically complicated the literature, with *"cognitive rehabilitation"* often applied broadly

to interventions that also incorporate elements of stimulation and training. This lack of definitional clarity, combined with the frequent integration of multiple approaches within a single program, makes it difficult to isolate the unique effects of rehabilitation-focused techniques in these groups. Furthermore, the focus of CR on functional change makes dementia populations especially suitable for study. In these groups, everyday difficulties are more prominent and interventions can be more readily directed toward tangible challenges in daily living (Alzheimer's Association Report, 2025).

Taken together, current findings suggest that CR offers distinct benefits within the broader context of the COT framework. By directly targeting functional outcomes and meaningful goals, CR addresses domains that CST and CT are less equipped to influence. Although its impact on specific cognitive processes appears limited, CR seems to support autonomy and quality of life in dementia, underscoring its value as part of comprehensive care. Future research is needed to clarify its role in earlier stages of decline, where functional difficulties are more subtle and less apparent.

2.3 Recognition of COTs in Clinical and Practice Guidelines

In line with the evidence reviewed above, COTs have been formally incorporated into several clinical and practice guidelines in ageing cohorts, underscoring their relevance to routine care. The World Health Organisation (2019) recommends that CT be offered to older adults both with and without objective impairment as a means of reducing the risk of cognitive decline and dementia. Similarly, the *American Academy of Neurology* advises that CT may be considered as part of best practice for individuals with MCI (Petersen et al., 2018). CST has also been endorsed internationally, with guidelines supporting its use in people with mild-to-moderate dementia (Jeon et al., 2023), and further reinforced in broader recommendations for older adult populations (Wong, Pike, et al., 2023). In Australia, the ADNeT-MC guidelines explicitly recommend the delivery of

evidence-based COTs as part of best practice frameworks for memory clinics (Australian Dementia Network, 2024), as have other past national guidelines (Woodward et al., 2022).

These endorsements reflect a growing international consensus that COTs are an essential adjunct to care across the spectrum of cognitive ageing. Yet integration into practice remains inconsistent, with guideline recognition alone insufficient to drive widespread delivery. Older adults with MCI are increasingly recognised as an ideal target for COTs, given their preserved insight and greater residual cognitive resources (Gates & Sachdev, 2014; Mowszowski et al., 2010; Pike & Kinsella, 2019). This clinical rationale is further supported by epidemiological evidence showing that a substantial share of dementia risk is attributable to modifiable exposures across the life course. Successive *Lancet Commissions* estimate that addressing vascular, sensory and lifestyle risks could prevent or delay a large proportion of cases (12 factors in 2020; expanded to 14 factors in 2024) (Livingston et al., 2024; Livingston et al., 2020). While midlife represents a critical window, late-life risk reduction remains essential, particularly for individuals who are already showing subtle cognitive decline. In line with this, multidomain trials in "at-risk" older cohorts demonstrate that structured programs combining lifestyle management with CT can preserve or improve cognition and daily functioning (e.g., the Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability [FINGER]) (Ngandu et al., 2015). Collectively, these insights reinforce that MCI is a clinically actionable stage for selective prevention, where integrating targeted COTs with risk-factor management may optimise wellbeing and preserve independence. This growing recognition strengthens the case for targeted implementation efforts in MCI, while also highlighting the need to address persistent barriers to uptake.

2.4 Translation and Implementation into Clinical Practice

Despite strong evidence supporting the efficacy of COTs, their integration into routine clinical practice remains limited. In Australia, a national survey of 100 health professionals representing 60 separate memory clinics found that while 74% of respondents viewed COTs as a key component of post-diagnostic support, only 20% of clinics actually offered structured memory strategy training (Naismith et al., 2022). This gap exemplifies the broader challenge of translating research into practice. Although COTs have been widely shown to improve health and wellbeing outcomes for older adults across the cognitive spectrum, fewer studies have examined their delivery in real-world care, and those that do vary considerably in scope and methodology. Recognising this, the ADNeT-MC *Cognitive Intervention Working Party* conducted a scoping review of implementation studies in clinical and community contexts, highlighting both the potential and the shortcomings of current translation efforts (see Pike et al., 2024) (Appendix A).

A central difficulty lies in the lack of standardisation across intervention models. CST, CT and CR differ markedly in format, duration, and intended outcomes (Clare & Woods, 2004). This heterogeneity enhances contextual flexibility but complicates consistent implementation and limits the accumulation of best-practice evidence. Implementation science offers a potential solution by providing theoretical frameworks to guide, evaluate, and optimise the translation of interventions into practice (Nilsen, 2015). Nevertheless, of the 29 implementation studies identified in Pike et al. (2024)'s review, only four employed such frameworks. Inconsistent use of frameworks, terminology, and outcome measures undermines comparability, replication, and evaluation of results. To advance the field, research must adopt established frameworks, clearly define implementation outcomes, and incorporate standardised evaluation measures. Beyond these methodological issues, barriers and facilitators also operate at multiple levels, including

organisational, clinician, and client domains (see Pike et al., 2024; Wong, Pike, et al., 2023). These will be discussed in greater detail below.

2.4.1 Organisational Context

At the organisational level, implementation has often been constrained by the realities of service delivery. Public health systems, in particular, tend to prioritise acute medical care over cognitive support, leaving limited staff, clinical space, and structured protocols for COTs (Pike et al., 2024). Workforce shortages further reduced capacity, especially among neuropsychologists and allied health professionals who may be trained in intervention delivery (Pike et al., 2024). Moreover, the multi-session nature of many COTs places sustained demands on services and patients alike. These challenges are likely to be amplified in rural and under-resourced settings, where access to specialists and infrastructure is already limited. Financial pressures present another layer of complexity. While early findings suggest that COTs may be cost-effective by delaying decline and reducing dementia-related care costs, economic evidence remains insufficient to inform large-scale policy decisions (Pike et al., 2024).

Nonetheless, organisational culture can also act as an enabler. Strong leadership, the embedding of COTs into service protocols, and convincing demonstrations of economic value have been shown to support the adoption of COTs (Pike et al., 2024).

2.4.2 Clinician Capacity

Clinician-related factors play an equally influential role. Although the delivery of neuropsychological interventions was recognised as a core competency, intervention work is often overshadowed by the profession's historical emphasis on diagnostic assessment (Wong, Pestell, et

al., 2023). This legacy has been reflected in training pathways, which have traditionally prioritised assessment skills and continue to provide limited opportunities for supervised practice in COTs (Wong et al., 2014). As a result, many clinicians report a lack of confidence in their ability to deliver interventions, restricting the breadth of services offered (Wong et al., 2014). In line with this, Pike et al. (2024) identified the absence of trained facilitators as a significant barrier to successful implementation. Expanding workforce capacity through structured training, supervision, and continuing professional development is therefore essential (Wong, Pike, et al., 2023).

Importantly, clinician motivation to deliver COTs can act as a powerful facilitator. Training opportunities, role clarity, and multidisciplinary collaboration have all been cited as factors that promote successful adoption of COTs (Pike et al., 2024). Embedding COT-focused content into postgraduate curricula and professional development programs could help shift neuropsychology practice toward a more balanced model that integrates both assessment and intervention. In turn, this would strengthen consumer access to evidence-based care across a range of professional settings (i.e. public health, private practice, etc.).

2.4.3 Client Engagement

From the client perspective, barriers often relate to feasibility and accessibility (Pike et al., 2024). Challenges include travel demands, treatment fatigue, and difficulties with digital literacy for online formats. Socioeconomic constraints may also limit long-term adherence, particularly where interventions are not publicly funded. Conversely, facilitators include the personalisation of treatment, active caregiver involvement, and clients' perception of tangible benefits. Interventions that are tailored to individual preferences and contexts, and supported by a collaborative environment, are more likely to be effective and sustained (Pike et al., 2024).

2.5 Conclusion

COTs offer an evidence-based avenue for enhancing cognition, wellbeing, and everyday functioning in older adults. However, their translation into routine clinical practice remains limited, with barriers spanning organisational, clinician and client levels. Overcoming these challenges will require the application of structured implementation science frameworks and investment in service models that support long-term delivery.

Within this thesis, particular emphasis is placed on MCI as a critical window for early intervention. At this stage, individuals generally retain the cognitive capacity, motivation, and insight necessary to engage meaningfully with COTs, making them especially well-positioned to benefit from training- and rehabilitation-focused approaches. Addressing this evidence-to-practice gap will require carefully contextualised implementation strategies, underpinned by an understanding of the perspectives of clinicians who are best placed to deliver these interventions. Clinical neuropsychologists are central to this process; yet, their role has often been under-recognised, with limited opportunities for training and professional development in this area.

Chapter III directly addresses these issues by presenting findings from a national survey of Australian neuropsychologists and trainees. This study examined current practice, perceived barriers, and training needs, offering critical insights into how workforce development can support the sustainable implementation of COTs for older adults with MCI.

BRIDGING CHAPTER I. An Introduction to Implementation Science Methodology

One of the most significant challenges in improving health outcomes lies in bridging the gap between scientific discoveries and their consistent application in clinical and community settings. The multidisciplinary field of implementation science has emerged to address this challenge by systematically guiding and evaluating the integration of research findings and evidence-based practices into routine care, with the ultimate aim of improving patient outcomes and population health (Eccles & Mittman, 2006).

Unlike traditional clinical research, which typically focuses on the efficacy of interventions under controlled conditions, implementation science examines the factors, processes, and outcomes involved in integrating these interventions into real-world contexts (Peters et al., 2013). Its purpose is to understand the *what, why* and *how* of implementation and to maximise the reach, adoption, and long-term sustainability of interventions. In contrast to clinical research, which seeks to minimise the contextual influences, implementation research acknowledges and actively engages with the environment in which a clinical innovation is introduced (Bauer & Kirchner, 2020). As such, social, cultural, economic, organisational, and policy-level factors – as well as the perspectives of key stakeholders – can act as either barriers or facilitators to successful implementation (Peters et al., 2013).

Implementation strategies, therefore, extend their focus beyond the patient to include clinicians, health services, community organisations, and policy environments (Bauer & Kirchner, 2020). Outcomes of implementation are evaluated not only in terms of health benefit, but also through markers of implementation success, such as acceptability, adoption, appropriateness, feasibility, fidelity, cost, and sustainability (Proctor et al., 2011). Given this complexity, frameworks are essential for structuring and evaluating implementation processes (Crable et al.,

2018). Yet, as Nilsen (2015) highlighted, there is an abundance of theoretical approaches and frameworks, with little consensus on which to use or how to apply them.

To clarify this issue within the field of COTs, Pike et al. (2024), as part of the ADNeT-MC *Cognitive Intervention Working Party*, conducted a scoping review to examine the methods and frameworks used in translating COTs for older adults into clinical and community practice (see Appendix A). They found that fewer than 15% of studies employed a formal implementation framework. Of those that did, the RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance) framework (Glasgow et al., 2019) was the most commonly applied, providing clear guidance for both methodology and outcome measurement. However, only one study operationalised the whole framework. Pike et al. (2024) suggested that the limited use of frameworks likely reflected unfamiliarity with implementation science methodology more broadly, potentially constraining translational efforts in this field.

Given these findings, this thesis explicitly adopts an implementation science perspective, with particular emphasis on the RE-AIM framework. Initially developed by Glasgow et al. (1999) and updated over subsequent decades (e.g., Glasgow et al., 2019; Holtrop et al., 2021), RE-AIM is a pragmatic framework designed to evaluate public health interventions across five interrelated dimensions:

- *Reach*: The number, proportion, and representativeness of individuals who choose to participate in an intervention, program or initiative, along with the reasons for their participation or non-participation.
- *Effectiveness*: The influence of an intervention on key individual outcomes, including potential adverse effects, as well as broader impacts such as quality of life and economic

outcomes, while also considering variability across subgroups (i.e., generalisability or heterogeneity of effects).

- *Adoption*: The number, proportion, and representativeness of settings and intervention agents (i.e., those delivering the program) that are willing to initiate a program, along with the reasons for their decisions. Adoption may occur at multiple, nested levels (e.g., staff within a team, within a clinic, within a broader system or community).
- *Implementation*: The degree to which an intervention's core components are delivered as intended, including fidelity, consistency, and the associated time and cost of delivery. This domain also encompasses adaptations made to the intervention or its implementation strategies, along with the rationale for these modifications.
- *Maintenance*: At the organisational level, the extent to which a program or policy becomes embedded within routine practices and policies. At the individual level, maintenance refers to the long-term effects of a program on implementation outcomes. The timeframe used to assess maintenance or sustainment may vary depending on the project.

By considering these domains at both the individual and organisational level, RE-AIM provides a structured yet flexible approach for evaluating both short- and long-term implementation outcomes. This thesis applies the RE-AIM framework as a guiding framework for examining the feasibility, adoption, and sustainability of COTs in clinical and community settings.

CHAPTER III. A National Survey of Clinical Neuropsychologists and Students on Current Cognition-Oriented Practice, Training, and Service Needs in Australian Memory Clinics

3.1 Chapter Overview

This chapter presents findings from a national survey of clinical neuropsychologists and students on current COT practices, training, and service needs in Australian memory clinics. The following section reproduces the current version of the manuscript, which is currently under revision with the *Australian Psychologist*. The study examined how COTs are being delivered in practice, the adequacy of postgraduate training, and the barriers influencing their uptake. By capturing both clinician and student perspectives, the survey highlights a clear appetite for broader implementation of COTs alongside substantial unmet needs in training, resources, and service infrastructure.

This work represents a key component of the implementation project led by the ADNeT-MC *Cognitive Intervention Working Party*. Specifically, this survey, together with Pike et al. (2024)'s scoping review (see Appendix A) of COT implementation, comprised *Phase I (Mapping)* of the larger program of work investigating the sustainable integration of COTs in memory clinics across Australia. Insights from these early mapping activities directly informed the design of clinician training support package (Bahar-Fuchs et al., 2025, see Appendix X) and implementations strategies used in later phases of the study (Pike et al., 2025, in preparation).

A national survey of clinical neuropsychologists and students on current cognition-oriented treatment practice, training, and service needs in Australian memory clinics

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3.2 Abstract

Objective: Cognition-oriented treatments (COTs) are effective for older adults with mild cognitive impairment (MCI) yet are under-utilised in clinical practice. Adequate clinician training is considered a key factor in successful implementation, however, preferences and unmet needs around the delivery of COTs in memory clinics are not well understood. This study surveyed memory clinic neuropsychologists and neuropsychology students in Australia to address this gap.

Method: An online survey was distributed via nationwide email lists to assess (a) frequency and confidence in delivering COTs, (b) barriers and facilitators to delivering COTs in clinical practice, (c) quantity of postgraduate COT training, and (d) preferences and unmet needs for upskilling.

Results: 22 memory clinic neuropsychologists and 12 students from 4 Australian states participated. While most endorsed integrating COTs into practice, 32% of clinicians did not receive formal COT training during their degree, and 54% lacked training specific to older adults. Additionally, 69% of students wanted more comprehensive COT training. Barriers such as limited time, resources, funding, and training were identified.

Conclusions: These findings highlight the need to address gaps in training and support, emphasising the necessity to enhance training programs, allocate resources, and address systemic barriers to effectively integrate COTs into clinical practice.

Keywords: cognition-oriented treatments; neuropsychologists; training; memory clinic; mild cognitive impairment

3.2.1 Key Points

What is already known about this topic?

1. Mild cognitive impairment (MCI) is a critical target for early intervention efforts to reduce the risk of progression to dementia.
2. Cognition-oriented treatments (COTs) are a promising form of post-diagnostic support for older adults with MCI, with benefits across cognitive and non-cognitive domains.
3. Despite this evidence, COTs remain underutilised in the routine practice of Australian memory clinics.

What this study adds?

1. Memory clinic neuropsychologists and neuropsychology students view the delivery of COTs as a core part of their clinical role and are motivated to offer these interventions more routinely.
2. Key barriers to implementation include limited time, funding, service resources, and insufficient staff training.
3. Memory clinic neuropsychologists and neuropsychology students reported that current training in COTs, as part of postgraduate training programs, is inadequate and expressed a strong desire for more comprehensive and practical training opportunities.

3.3 Introduction

Dementia is a leading cause of disability among older adults, affecting an estimated 55 million people worldwide (World Health Organisation, 2021). Mild cognitive impairment (MCI) is increasingly recognised as a key stage for early intervention in the trajectory of cognitive decline that may lead to dementia. Although MCI does not substantially interfere with daily functioning, it is often viewed as a transitional phase between normal ageing and dementia, particularly Alzheimer's disease (AD), the most common form of dementia (Gauthier et al., 2006; Petersen, 2004; Winblad et al., 2004). Cognitive decline, a core feature of AD, is already evident in MCI, making it a valuable target for preventative strategies (Petersen, 2016). As such, addressing cognitive decline at the MCI stage may offer a meaningful opportunity to reduce dementia risk or delay progression to more severe impairment.

3.3.1 Non-Pharmacological Treatment Approaches for Older Adults with Cognitive Decline

There has been a growing body of evidence demonstrating the effectiveness of non-pharmacological alternatives in enhancing or preserving cognition, psychosocial functioning, and functional independence among individuals with cognitive decline (Livingston et al., 2020; Luo et al., 2023). Notably, there is a compelling rationale for the use of cognition-oriented treatments (COTs), an umbrella term describing a range of intervention approaches aimed at maintaining or improving cognitive and daily functioning in individuals experiencing cognitive decline. These interventions draw on evidence-based neuropsychological techniques to reduce the impact of cognitive impairments on daily functioning (Bahar-Fuchs et al., 2019; Clare & Woods, 2004; Mowszowski et al., 2010).

Three core types of COTs have been highlighted in the literature: cognitive training (CT), cognitive stimulation therapy (CST), and cognitive rehabilitation (CR). CT involves structured, theoretically grounded exercises – often strategy-based or computerised – that target specific cognitive domains to improve or adapt areas of cognitive impairment (Bahar-Fuchs et al., 2019; Mowszowski et al., 2010). These approaches are typically classified as either compensatory or restorative (Sitzer et al., 2006). Compensatory strategies help individuals work around cognitive deficits using internal techniques (e.g., visual memory, categorisation) and external aids (e.g., calendars, notes), while restorative strategies aim to improve impaired cognitive functions through repeated practice and retraining of specific skills. CST is a more generalised, often group-based intervention that incorporates socially and cognitively engaging activities to enhance overall functioning (Woods et al., 2023). In contrast, CR is highly individualised and goal-directed, focusing on supporting functional independence through the collaborative development and implementation of personalised compensatory strategies (Bahar-Fuchs et al., 2019; Clare & Woods, 2004).

In addition to these core intervention types, psychoeducation and feedback of neuropsychological results are important, COT-aligned approaches that can enhance therapeutic outcomes. While not necessarily interventions in isolation, these supportive elements play a key role in strengthening engagement with COTs by promoting understanding, motivation, and informed strategy use (Wong, Pike, et al., 2023). Psychoeducation involves the structured provision of information to individuals and their families about the nature, causes, course, and management of cognitive impairment. Feedback refers to the personalised communication of neuropsychological assessment results, including both cognitive strengths and areas of difficulty. Together, these approaches support meaningful participation in therapy and inform the

collaborative development of goals and strategies, particularly within CR (Bahar-Fuchs et al., 2013; Gruters et al., 2022). Key considerations for the effective delivery of COTs, including clinical competencies, intervention delivery, and implementation of evidence-based practices, have been discussed in greater depth in previous research (e.g., Wong, Pike, et al., 2023).

Multiple studies have showcased the promise of these interventions in improving cognition in older adults with and without objective cognitive decline (Gavelin et al., 2020; Hill et al., 2017; Matthews, Wells, et al., 2020; Mewborn et al., 2017). Moreover, the benefits have been shown to generalise to non-cognitive outcomes, including enhanced confidence, self-efficacy, goal attainment, mood, and greater independence in instrumental activities of daily living (Bahar-Fuchs et al., 2019; Chandler et al., 2016; Diamond et al., 2015; Gavelin et al., 2020; Kinsella et al., 2016; Matthews, Pike, et al., 2020; Pike et al., 2023). Indeed, recent recommendations from the World Health Organisation and the American Academy of Neurology (AAN) advocate for the use of CT to mitigate the risk of cognitive decline in healthy older adults and those with MCI (Ismail et al., 2020; Petersen et al., 2018; World Health Organisation, 2019).

3.3.2 The Research to Practice Gap

Despite this evidence, a substantial research-to-practice gap remains, limiting the widespread adoption of COTs in clinical settings. In Australia, memory clinics (i.e. specialist services for the assessment and management of MCI and dementia) are often the first specialist point of contact for older adults presenting with cognitive concerns (Mehrani et al., 2021; Naismith et al., 2022; Verhey et al., 2011). These clinics are also well placed to deliver post-diagnostic support, a broad framework of care encompassing interventions, as well as other supportive programs, following a neurodegenerative or related diagnosis (Dodd et al., 2018; Kelly & Innes,

2016; O'Shea et al., 2018). Post-diagnostic support aims to assist people with MCI or dementia, as well as their care partners, to live well and optimise quality of life following a diagnosis (Aldridge et al., 2019; Cations et al., 2019). The importance of this support is emphasised in the *National Dementia Action Plan 2024-2034* (Australian Government Department of Health and Aged Care, 2024) and forms a central focus of the Australian Dementia Network Memory Clinics (ADNeT-MC) initiative which aims to standardise and enhance diagnostic processes and post-diagnostic care pathways across memory clinics in Australia (Naismith et al., 2022; Pavković et al., 2024).

COTs represent a key component of post-diagnostic support, as recognised by 74% of respondents in a recent national survey of Australian Memory Clinics (Naismith et al., 2022). Nevertheless, only 14% of these clinics reported offering any form of memory strategy training. A lack of clinician training and limited service resources were cited as major barriers to implementing cognitive and other non-pharmacological interventions in practice (Naismith et al., 2022). Although multiple reviews have highlighted the importance of post-diagnostic support for individuals with MCI or dementia (e.g., Foxe et al., 2024), memory clinics in Australia continue to prioritise diagnostic assessment, often lacking the necessary infrastructure (e.g., funding, time, materials) to deliver ongoing intervention.

Within the memory clinic setting, clinical neuropsychologists are well-suited to administer COTs due to their expertise in neuropsychological syndromes and associated neuropathology (Wong, Pestell, et al., 2023). While theoretical knowledge in these interventions is typically acquired through postgraduate coursework, practical skills are ideally fostered during supervised clinical placements (Wong et al., 2014). However, a survey of Australian clinical neuropsychologists across all settings revealed that clinical placements offered limited opportunity to deliver COTs and, instead, prioritised diagnostic assessments (Wong et al., 2014). The majority

of respondents expressed a desire to increase their involvement in COTs, citing resource constraints and inadequate training as major barriers to implementation (Wong et al., 2014).

Effective training of clinicians in COTs is key to their translation into routine, clinical practice. Nevertheless, a detailed understanding of effective training methods and the specific needs, preferences, and priorities of clinicians within the specialised memory clinic context remains lacking. Moreover, existing research has not thoroughly investigated clinician confidence levels, training adequacy, or the barriers that may hinder effective implementation in this setting. Addressing these gaps is essential to optimise training strategies and enhance clinical practice.

3.3.3 The Current Study

To address this gap in the implementation of COTs for older adults with MCI, we conducted a survey of Australian neuropsychology clinicians and students within the memory clinic setting. This study aimed to investigate whether and how COTs are currently being used in clinical practice, explore the nature and extent of training in delivering COTs to older adults, and identify service-level needs to support their routine integration into care. Specifically, the study sought to:

1. Assess the attitudes of memory clinic neuropsychologists and neuropsychology students toward the use of COTs;
2. Examine the frequency and confidence with which COTs are delivered to older adults with MCI in current clinical practice;
3. Identify perceived barriers to implementing COTs in memory clinic settings;
4. Evaluate the extent and quality of COT-specific training received during postgraduate neuropsychology education; and

5. Explore interest in further training, including preferences for the content, format, and delivery of future COT training programs for neuropsychologists.

This study represents the foundational phase of a larger national, multi-site, 12-month pilot implementation project led by the ADNeT-MC Cognitive Intervention Working Party. The Working Party was established to investigate the implementation of COTs within routine memory clinic practice. Insights from this initial clinical survey directly informed the development and refinement of a targeted training and support package for neuropsychologists, designed to build their knowledge, skills, and confidence in delivering COTs to older adults with MCI (Bahar-Fuchs et al., 2025). Subsequent evaluation of the roll-out of these interventions in Australian memory clinics will be conducted.

3.4 Method

This study received approval from the University of Sydney Human Research Ethics Committee (HREC: 2022/019), and all participants provided informed consent. Participants were not reimbursed for their involvement in the study.

3.4.1 Sample and Setting

Memory Clinic Neuropsychology Clinicians

Participants included clinical neuropsychologists currently or recently (within the last 5 years) working in Australian memory clinics, defined as specialised cognitive assessment services focusing on dementia and cognitive decline in older adults. Eligible participants had completed or were completing clinical postgraduate training in neuropsychology, which may have been a Master's degree or a clinical Doctoral degree. We employed multiple recruitment strategies: the

survey invitation was emailed to official contacts at clinics involved in the Australian Dementia Network (ADNeT) - Memory Clinics initiative, with a request for clinicians to share it within their teams. Additionally, invitations were sent to members of the "NPinOz" (Neuropsychologists in Australia) email distribution list, which includes neuropsychologists, students, and registrars. Furthermore, the survey was extended to members of the BRAINSPaN (Brain Impairment Clinician and Researcher Peer Network) email list. Two reminder emails were sent to these groups over a one-month period.

Clinical Neuropsychology Students

This sampling frame included clinical neuropsychology students enrolled in a Clinical Masters or Doctoral-level program) in Clinical Neuropsychology in Australia. Recruitment strategies comprised sending an email invitation to program directors of postgraduate degrees in Clinical Neuropsychology at Australian universities, requesting them to forward the survey to their enrolled students. Additionally, the survey invitation was emailed to members of the “NPinOz” email list, as described above. Two reminder emails were subsequently sent over a one-month timeframe.

3.4.2 Survey and Procedure

The online survey was developed and administered using Qualtrics, an established online survey platform. Prior to commencing the study, all prospective participants were presented with a Participant Information Sheet and Consent Form outlining the study’s purpose, voluntary nature, and confidentiality protocols. Informed consent was required before proceeding to the survey. Participants had the option to provide personal contact details to receive feedback or information

about future training opportunities. They could also opt out of future contact or withdraw their consent at any time without penalty.

At the outset, respondents were asked to self-identify as either a memory clinic neuropsychologist or a neuropsychology postgraduate student. This branching logic determined the set of questions they received. The clinician version included additional items pertaining to current practice and experience within memory clinic settings. The overall length of the survey was carefully balanced to ensure relevance while maintaining brevity. Completion time was approximately 15-20 minutes, and the survey remained open for a period of 2.5 months.

The survey was designed by the research team with reference to prior national surveys of Australian memory clinics (Mehrani et al., 2021; Naismith et al., 2022) and clinical neuropsychologists (Wong et al., 2014). Item development was also informed by the Working Party's collective experience in research and professional survey design. Survey content was tailored to address the aims of the current study and the broader objectives of the Working Party. It focused on respondents' beliefs, attitudes, and preferences regarding COTs, as well as related treatment components such as feedback and psychoeducation.

Demographic and Practice-Related Questions

This section included approximately 10 multiple-choice items designed to capture information about respondents' professional background, qualifications and training location, current clinical setting and geographic location of practice, as well as their experience working with older adults with MCI.

COT Questions

A total of 25 survey items assessed respondents' beliefs about COT, their level of training, current clinical practices, delivery methods, and perceived barriers to implementing COTs for older adults. Key outcome measures were:

- **Frequency of COT use:** Respondents indicated how often they used any form of COT in their clinical practice using a Likert scale from 0 ("never") to 5 ("very often")
- **Confidence in delivering COTs**: Respondents rated their self-reported on confidence in planning and delivering COTS using a Likert scale rated from 0 ("not at all") to 5 ("extremely confident")
- **Quality of COT-related training:** Respondents rated the quality of COT-related content in their postgraduate neuropsychology training rated from 0 ("very poor") to 5 ("excellent")

Respondents also indicated the types of COTs delivered (e.g., feedback, psychoeducation, memory strategy training, computerised CT), with definitions provided for clarity. Delivery formats (e.g., one-on-one, group, in-person, telehealth) and sources of materials and training (e.g., formal training, peer resources, published programs) were captured via multiple-choice questions allowing for multiple selections. Barriers to implementation were assessed using a checklist derived from prior research in the field (e.g., Naismith et al., 2022; Wong et al., 2014). For all relevant questions, respondents were also given the option to select "Other" and provide free-text responses to capture additional suggestions or context not covered by predefined options. Interest in further training was explored through items on preferred training frequency format (e.g., didactic, observational), and mode of delivery (e.g., in-person, online).

Open-Ended Questions

Two optional free-text questions were included at the conclusion of the survey to elicit additional feedback on improving the quality and accessibility of training in COTs, as well as any additional comments related to the survey topics.

3.4.3 Data Analysis

Survey responses were exported into Excel, where a member of the research team de-identified the data and assigned a unique study ID to each respondent. Only anonymised data were used for the analyses presented in this study. All statistical analyses were performed using IBM SPSS Statistics, Version 27. Descriptive analyses were conducted to assess the representativeness of the sample and to examine frequencies, means, and other trends. Additionally, chi-square tests were employed to evaluate the associations between categorical variables. Given that only two open-ended questions were included, and the purpose of these was to allow respondents to elaborate or offer suggestions rather than to collect in-depth qualitative data, a formal qualitative analysis (e.g., thematic analysis using NVivo or another software package) was not undertaken. Instead, responses were reviewed descriptively by the research team to identify any relevant feedback to inform the development of the proposed training and support package for neuropsychology clinicians.

3.5 Results

3.5.1 General Sample Characteristics

During the 71-day data collection period, 69 individuals accessed the survey. Of these, 58 agreed to participate, and 38 fully completed the survey (completion rate: 65.5%). Among the

respondents, 22 were practicing clinical neuropsychologists working in a memory clinic, and 16 were students. Table 3.1 presents the demographic breakdown of the two subgroups. The majority of survey respondents were female (65.8%), with a higher proportion of women among both clinicians (63.6%) and students (68.8%). As expected, the clinician sample was predominantly older, with 40.9% aged 41-50, while the student sample was mostly younger, with 87.5% falling in the 20-30 age bracket. Most respondents either held or were in the process of completing a Master of Clinical Neuropsychology. Additionally, the majority of respondents completed or were currently pursuing their postgraduate qualifications in Victoria (44.7%), followed by New South Wales (31.6%).

Practice-related characteristics for the clinician and student subgroups are summarised in Tables 3.2 and 3.3, respectively. The clinicians in the sample reported a range of clinical experience as neuropsychologists, with 36.4% having practiced for 10-20 years and 18.2% having over 20 years of experience. Most clinicians (77.3%) were currently working in a memory clinic, with 22.7% having worked in one within the past five years. Most clinicians currently worked in New South Wales (36.4%) and Victoria (36.4%). Clinicians worked in a variety of settings, including private, public, hospital, and community settings. Among the student respondents, a larger proportion (62.5%) had completed three or more clinical placements, indicating considerable progression in their training. Students reported a range of placement settings. The most common placements were in neurology, with 75.0% having completed placements in hospital outpatient neurology settings and 56.3% in inpatient neurology.

Table 3.1

Demographic Characteristics of the Sample (N=38).

	Clinicians (*n*=22)	% of clinicians	Students (*n*=16)	% of students	Total (*N*=38)	% of total
Gender						
Male	8	36.4	5	31.3	13	34.2
Female	14	63.6	11	68.8	25	65.8
Age bracket (years)*						
20-30	1	4.5	14	87.5	15	39.5
31-40	6	27.3	2	12.5	8	21.1
41-50	9	40.9	-	-	9	40.9
51-60	2	9.1	-	-	2	9.1
61+	3	13.6	-	-	3	13.6
Postgraduate qualification/working towards						
Master of Psychology (MPsych)	7	31.8	4	25.0	11	28.9
Doctor of Psychology (DPsych)	9	40.9	1	6.3	10	26.3
MPsych/PhD	3	13.6	5	31.3	8	21.1
PhD	3	13.6	6	37.5	9	23.7
State where degree was completed/currently underway						
New South Wales	7	31.8	5	31.3	12	31.6
Queensland	3	13.6	2	12.5	5	13.2
Victoria	10	45.5	7	43.8	17	44.7
Western Australia	2	9.1	2	12.5	4	10.5

*****There was one missing response for the age variable in the clinician sample*

Table 3.2

Practice-Related Characteristics of the Clinician Subsample (n=22).

	Clinician sample (*n*=22)	Percentage of clinician respondents (%)
Number of years' clinical experience as a neuropsychologist		
0-2	2	9.1
2-5	5	22.7
5-10	3	13.6
10-20	8	36.4
20+	4	18.2
Memory clinic experience		
Current	17	77.3
Within the last 5 years	5	22.7
State location of current practice		
New South Wales	8	36.4
Northern Territory	1	4.5
Queensland	2	9.1
South Australia	1	4.5
Victoria	8	36.4
Western Australia	1	4.5
Tasmania	1	4.5
Current work setting *		1
Private	10	8
Public	12	1
Hospital (inpatient)	11	1
Hospital (outpatient)	10	45.5
Memory clinic	17	77.3
Clinic/community setting	1	4.5
Research setting (e.g., university)	5	22.7
Other	1	4.5
Category of current principal place of work*		
Psychiatric	6	27.3
Geriatric	7	31.8
Neurology	1	4.5
Rehabilitation	2	9.1
Paediatric	4	18.2
Academic	1	4.5
Other	1	4.5

**Respondents could select multiple responses*

Table 3.3

Practice-Related Characteristics of the Student Subsample (n=16).

	Student sample (*n*=16)	Percentage of student respondents (%)
Number of placements completed		
0	2	12.5
1	2	12.5
2	2	12.5
3	6	37.5
4	3	18.8
5	1	6.3
Placement settings*		
Geriatric hospital-inpatient	6	37.5
Geriatric hospital-outpatient	10	62.5
Geriatric clinic/community setting	2	12.5
Rehabilitation hospital-inpatient	5	31.3
Rehabilitation hospital-outpatient	7	43.8
Rehabilitation clinic/community setting	8	50.0
Psychiatric hospital-inpatient	3	18.8
Psychiatric hospital-outpatient	8	50.0
Psychiatric clinic/community setting	5	31.3
Neurology hospital-inpatient	9	56.3
Neurology hospital-outpatient	12	75.0
Neurology clinic/community setting	4	25.0
Paediatric hospital-inpatient	3	18.8
Paediatric hospital-outpatient	10	62.5
Paediatric clinic/community setting	9	56.3

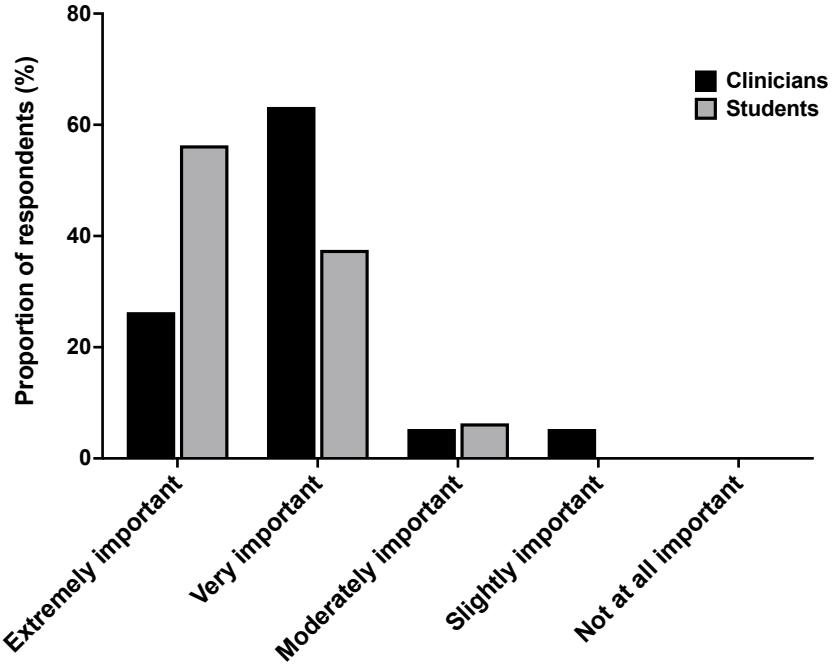
**Respondents could select multiple responses*

3.5.2 Aim 1. Attitudes of neuropsychology clinicians and students toward the use of COTs in clinical neuropsychological practice

Both practicing neuropsychologists and students strongly endorsed the importance of incorporating COTs into routine neuropsychological practice. A significant majority of respondents, including 89.5% of clinicians and 93.8% of students, rated the provision of COTs as "very" to "extremely important" for neuropsychologists in their clinical roles (see Figure 3.1). These findings indicate a broad consensus among both groups regarding the central role of COTs in routine neuropsychological care.

Figure 3.1

Importance of COTs in Neuropsychological Practice as Rated by Clinicians and Students



A significant majority of clinicians (95%) endorsed the beneficial impact of COTs in improving memory and other cognitive skills for older adults with MCI. Furthermore, 86% of clinicians agreed that delivering COTs is a key responsibility of psychologists and neuropsychologists within the multidisciplinary team in memory clinics. Notably, 63.2% of clinicians expressed a desire for greater involvement in the design and delivery of these treatments as part of their clinical practice. A similar proportion (68.4%) believed that their patients also desired more opportunities to engage in COTs within their service. However, more than half of the clinicians (57.9%) reported uncertainty regarding the level of support from their supervisors or heads of department for expanding their role in delivering COTs in their memory clinic. These findings highlight a strong interest among clinicians in enhancing their involvement in COTs, tempered by concerns about institutional or supervisory backing.

3.5.3 Aim 2. Frequency and confidence in the delivery of COTs in clinical neuropsychological practice

A significant majority of clinicians (90%) reported using some form of COT in their current memory clinic practice. Figure 3.2 shows the frequency of different types of COTs administered in memory clinics by clinician respondents. Feedback and psychoeducation were the most commonly provided intervention approaches, with 81.8% of clinicians reporting frequent delivery of both. CST was also widely used with 59.1% of clinicians indicating its regular implementation in practice. In contrast, computerised CT was less frequently utilised, with only 13.6% of clinicians reporting their use. Other types of interventions, reported by 13.5% of clinicians, included functional activity training, memory groups, and the delivery of discrete cognitive strategies outside of a formal program.

Figure 3.2

Frequency of COT Types Delivered in Memory Clinics by Clinicians

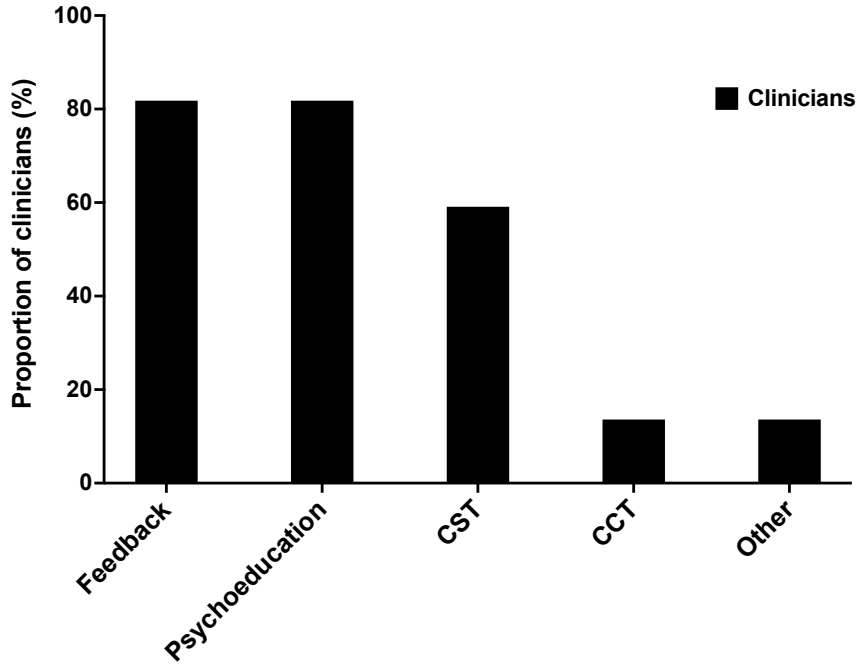
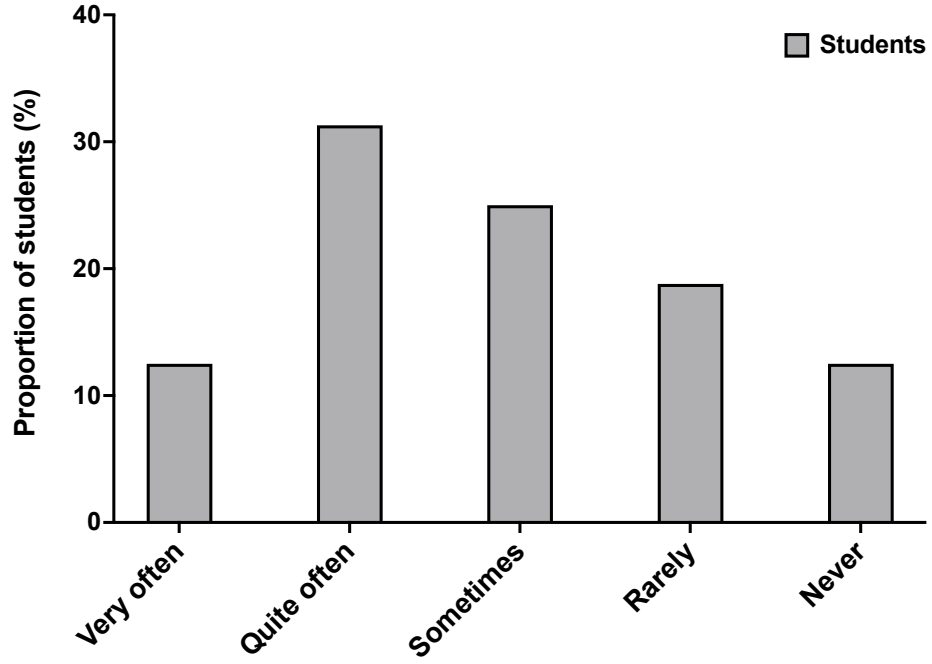


Figure 3.3 illustrates the frequency of COT activities performed by students during their clinical placements as part of the requirements of their university degree. The results indicate a diverse range of engagement levels among the students. A significant proportion (43%) reported delivering or observing some form of COT “quite often” or “very often”, while 12.5% of students indicated they had “never” delivered COTs as part of their clinical placements.

Figure 3.3

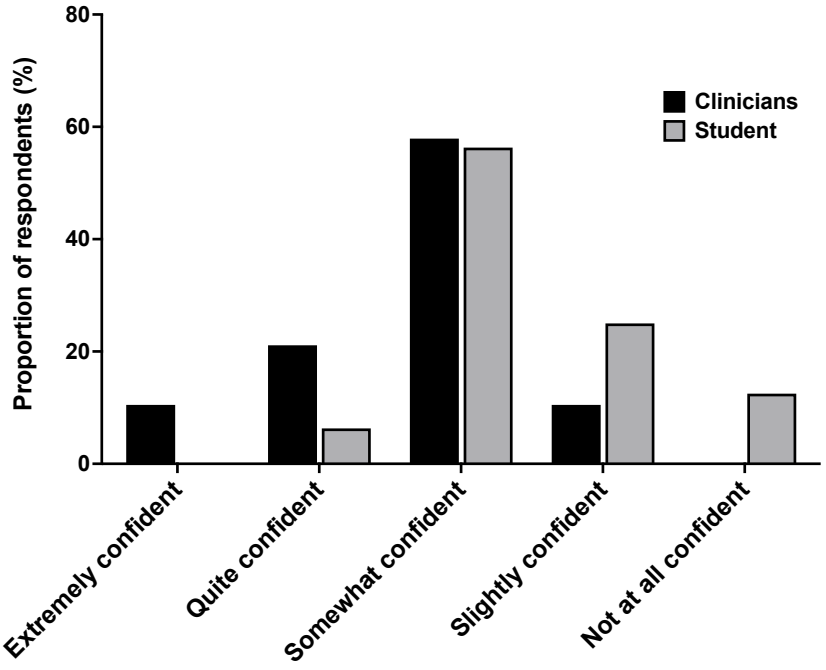
Frequency of COT Delivery by Students During Clinical Placements



Among clinicians, 10.5% reported being "extremely confident" in delivering COTs, while no students felt this way (see Figure 3.4). A larger proportion of clinicians (21.1%) felt "quite confident" compared to 6.3% of students. The majority in both groups felt "somewhat confident" (clinicians 57.9%, students 56.3%). However, 25% of students were "slightly confident" compared to 10.5% of clinicians. No clinicians reported being "not at all confident," whereas 12.5% of students did. These results suggest that clinicians generally have higher confidence levels than students. For clinicians, no significant associations were found with age (p=0.92), gender (p=1.0), years of practice (p=0.07), or training state (p=0.96). Similarly, for students, no significant associations were found with age (p=0.40), gender (p=0.32), university (p=0.67), or number of placements completed (p=0.13).

Figure 3.4

Confidence in Delivering COTs Among Clinicians and Students

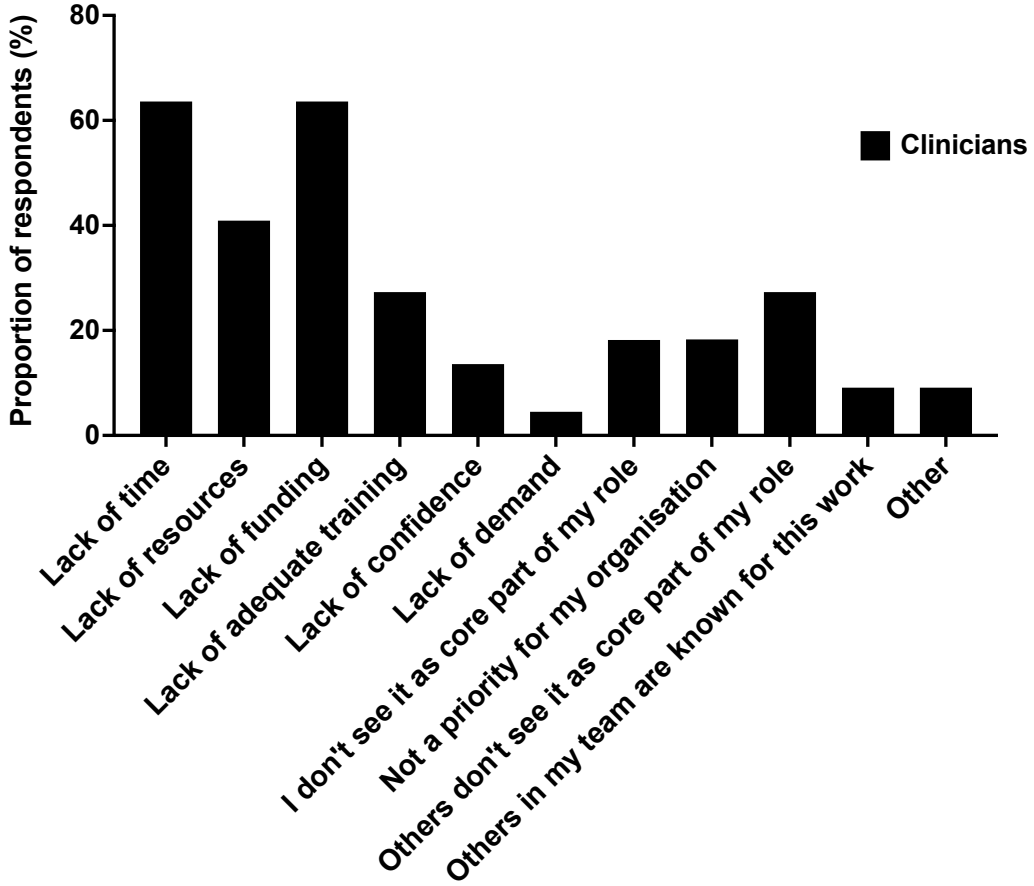


3.5.4 Aim 3. Current barriers to implementing COTs in Australian memory clinics

The frequency ratings illustrated in Figure 3.5 highlight the primary barriers clinicians face when delivering COTs in their current practice in Australian memory clinics. The most commonly cited impediments were constraints related to time, funding, and resources. Additionally, 27% of clinicians identified insufficient training as a barrier. An equal proportion of clinicians noted that their colleagues do not perceive COTs as a fundamental aspect of a neuropsychologist's role. Further examination revealed that among these respondents, 66% attributed this perception to the head of their unit or service.

Figure 3.5

Barriers to Implementing COTs in Australian Memory Clinics as Rated by Clinicians



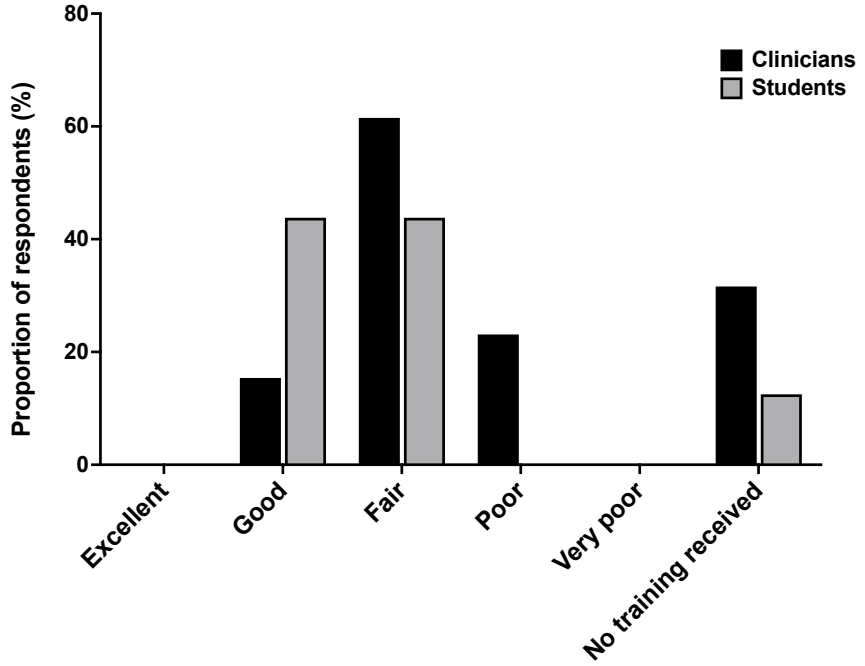
3.5.5 Aim 4. Assessing the frequency and quality of COT training in postgraduate programs.

While the majority of clinicians and students acknowledged receiving some training in COT as part of their neuropsychology degree, a significant portion reported no training: 31.6% of clinicians and 12.5% of students (see Figure 3.6). Additionally, 53.8% of memory clinic neuropsychologists indicated they had not received any training specifically tailored for older adults. Among those who did receive training, most rated its quality as merely "fair" (see Figure 3.6). Furthermore, a substantial 68.8% of student respondents expressed a desire for more

extensive training in COTs as part of their degree. A majority of clinicians (73%) sought additional training in COTs beyond their postgraduate degree. Most respondents received clinical supervision on interventions, and a significant proportion also participated in professional development workshops.

Figure 3.6

Quality of COT Training in Postgraduate Programs



3.5.6 Aim 5. Interest in additional training for delivering COTs for older adults

A significant majority of respondents, including 64% of clinicians and 87.5% of students, expressed a strong interest in receiving more formal training in COTs. Most respondents preferred a brief initial training course, supplemented by booster sessions and ongoing supervision. Clinicians favoured a training format that combines didactic lectures, practical demonstrations,

and observations or videos of clinicians in action. Additionally, there was a preference for a mix of in-person and online delivery modes.

3.5.7 Summary of Clinician and Student Qualitative Responses

Qualitative responses from clinicians and students revealed key challenges and opportunities in COT practices. Clinicians noted limited infrastructure and opportunities to maintain intervention skills, particularly in public settings, where resource constraints and staff confidence were barriers. While skilled in providing feedback, neuropsychologists felt underskilled in delivering multi-session, evidence-based interventions and called for the profession to define a clearer role for COTs, especially as current practices focus on diagnosis. To illustrate these perspectives, key quotations from clinician respondents are presented below:

- *"I feel that intervention, beyond feedback and the provision of strategies, is in its infancy in clinical practice in Australia. There are not funding streams in public or private health for this. We need to change this."*
- *"Beyond feedback and strategies, most neuropsychologists would rate themselves underskilled [in COTs… The profession needs to carve out a space to provide multi-session interventions using evidence-based methods in a way that can be tailored to individual needs and cognitive profiles. Very few of us to this, and it is such a loss of opportunity."*
- *"Neuropsychologists, as experts in the evaluation of cognition, are well placed to provide specialised intervention and care to a range of patients with MCI and dementia. If this was properly funded and there were clear guidelines and training modules on this area of practice, I believe it would be quickly accepted as a core part of neuropsychological practice."*
- *"The challenges to implementing COTs in the memory clinic I work in are multifactorial…lack of funding/clinician time, lack of staff training or materials, attitudes of some staff members, and the fundamental focus of the clinic on diagnosis… There would need to be a big culture and attitude shift higher up in the clinic before there could be any*

significant change in the role of neuropsychologists in providing interventions in this setting."

Students echoed the need for more specific, evidence-based training, emphasising that principle-based approaches lacked practical application. Many advocated for compulsory placements in rehabilitation settings, highlighting the value of hands-on experience. They also called for greater variety in intervention opportunities, more dedicated units on COTs, and role-play to practice skills, viewing COTs as essential, not secondary, to neuropsychological care. To illustrate this, some key quotations from student respondents are presented below:

- *"Training in specific evidence-based frameworks would be useful. Too often the training is broadly principle based and leaves little understanding of how to apply this knowledge, and what the evidence suggests."*
- *"I would have appreciated more time spent on this topic. Some classes and topics felt much less important/impactful for my clinical practice whilst feedback and psychoeducation is something I do with every client… Really, I think COTs could be a whole unit!"*
- *"Training in COTs is done almost like an 'add on' after the formulation. I think the first step in improving the quality of training is to adjust the importance placed on this stage of care in the service provided by neuropsychologists."*
- *"Training should involve the opportunity to practice key skills with role plays. I felt that my training was very general and found it difficult to translate the teaching to a clinical setting."*

3.6 Discussion

Fulfilling our study objectives, the findings provide compelling evidence that Australian memory clinic neuropsychologists and neuropsychology students place high value on the use of COTs for older adults with MCI. Despite this strong professional interest, clinicians and students face systemic and educational barriers that limit their ability to implement these interventions in

practice. The results highlight not only a clear motivation to embed COTs into routine care, but also a widespread demand for targeted training and support to build confidence and competence in their delivery.

3.6.1 Neuropsychologists are Motivated to Deliver COTS

Our findings highlight a clear and widespread professional commitment to COTs among Australian memory clinic neuropsychologists and students. Attitudes toward COTs were overwhelmingly positive, underscoring the perceived importance of these interventions in clinical practice. Most clinicians endorsed the beneficial impact of COTs on memory and other cognitive skills in older adults. This aligns with established research (Gavelin et al., 2020; Matthews, Wells, et al., 2020; Mewborn et al., 2017; Mowszowski et al., 2010; Pavković et al., 2024) as well as international clinical guidelines that endorse COTs as standard care for people with MCI (Ismail et al., 2020; Petersen et al., 2018; World Health Organisation, 2019). Moreover, most respondents endorsed the view that delivering COTs is a core clinical responsibility of neuropsychologists, reinforcing the position that intervention work is a fundamental and distinguishing competency within the profession (Wong, Pestell, et al., 2023).

Echoing the findings from Wong et al. (2014), the majority of neuropsychologists in our sample expressed a strong desire to increase their involvement in COTs as part of routine clinical care. This aspiration, combined with the perception that health consumers also want more opportunities for such interventions, reinforces the growing recognition of COTs as a valuable and expected component of memory clinic services. However, despite this professional motivation, a notable proportion of memory clinic neuropsychologists reported uncertainty regarding the level of support they might receive from supervisors or departmental leadership. Importantly, this

uncertainty is likely multifaceted and may not necessarily reflect a lack of endorsement for COTs by service leadership. Instead, it may reflect a disconnect between clinicians' aspirations and their awareness of broader service-level constraints. Junior clinicians, in particular, may be less familiar with the complexities of memory clinic funding structures, workforce resources, and competing service priorities that managers must navigate. As such, this perceived lack of support may point to deeper organisational and structural challenges that extend beyond individual attitudes.

3.6.2 Frequency and Confidence Ratings Varied Across Experience Levels

While most clinicians reported incorporating some form of COT into their current practice, the frequency and scope of these activities varied considerably. Feedback and psychoeducation emerged as the most commonly delivered components, likely reflecting a combination of practical opportunity, time constraints, and service delivery pressures. These intervention activities are often more feasible to implement within standard appointment structures, as they typically require less preparation and can be delivered flexibly within shorter timeframes or even on the phone (Gruters et al., 2022; Wong, Pike, et al., 2023). These components tend to be widely used in practice (Gruters et al., 2022) and have been associated with improvements in patients' quality of life, illness understanding, and coping ability (Rosado et al., 2018), justifying their continued inclusion in intervention protocols. This practice also aligns with approaches adopted by international memory clinics, including those in the United Kingdom (Royal College of Psychiatrists, 2022) and the United States (Varela et al., 2024).

CST was the next most frequently endorsed COT. This finding aligns with research demonstrating the relatively higher uptake in clinical practice of CST for older adults compared to other COTs (Pike et al., 2024). A key contributing factor to CST's broader implementation is

perhaps the existence of well-established and centralised delivery infrastructure. In particular, the work led by Spector and colleagues at University College London (e.g., Aguirre et al., 2014; Aguirre et al., 2013) has resulted in the development of the International Cognitive Stimulation Therapy Centre, which offers a comprehensive program including manualised materials, structured training pathways, and flexible delivery formats. This has likely facilitated greater accessibility, consistency, and ease of implementation across diverse clinical settings. In contrast, computerised CT was reported far less frequently by respondents, reflecting broader implementation challenges and mirroring the limited evidence base on the routine use of CT and other structured COTs in clinical practice (Pike et al., 2024; Wong, Pike, et al., 2023). This disparity highlights the critical role that infrastructure, training support, and program accessibility play in shaping the real-world adoption of COTs. Building similar implementation pathways for other evidence-based COTs may be essential to promoting their wider integration into memory clinic services.

While most respondents indicated at least moderate confidence in delivering COTs, confidence was notably higher among clinicians, likely reflecting accumulated clinical experience. Importantly, the lower confidence reported by students appears to reflect appropriate self-awareness regarding their stage of professional development, as well as the limited emphasis on intervention delivery within many postgraduate training pathways.

3.6.3 Time, Funding, and Training Shortfalls Hinder COT Delivery

Our survey identified a range of barriers experienced by neuropsychologists in delivering COTs within current memory clinic practice. Consistent with previous work (e.g., Wong et al., 2014), constraints related to time, funding, and resources were frequently cited as major

impediments. Additionally, a lack of specific training in COTs, coupled with a perception among some colleagues that intervention delivery is not a core component of the neuropsychologist's role, emerged as critical obstacles. These findings reflect broader issues in workforce preparation and service delivery models, where intervention may not yet be prioritised or embedded as part of routine neuropsychological care.

Importantly, these barriers must be understood within the context of longstanding memory clinic models. Memory clinics were originally established as multidisciplinary diagnostic services, with the primary remit of facilitating early diagnosis of dementia (Naismith et al., 2022; Woodward & Woodward, 2009). Funding models for these services have remained largely unchanged (Mehrani et al., 2021; Naismith et al., 2022) and have not kept pace with the emergence of evidence-based COTs. Within this framework, neuropsychologists (especially at senior levels) are among the costliest professionals within the multidisciplinary team (MDT) on an equivalent full-time (EFT) basis (Woodward & Woodward, 2009). Compounding this issue, COTs are not currently covered under the Australian Government's Medicare Benefits Schedule, leaving no dedicated funding mechanism to support their provision by neuropsychologists or other allied health professionals (Australian Government, 2022). In resource-constrained environments, service managers may thus be compelled to prioritise neuropsychological staffing toward diagnostic assessments, especially in the face of long waiting lists – a common feature of memory clinics across Australia (Naismith et al., 2022). Consequently, the limited involvement of neuropsychologists in intervention work may reflect systemic funding constraints and service delivery pressures, rather than a lack of value placed on COTs.

In some services, upstream (e.g., history-taking) and downstream tasks (e.g., feedback and care planning) may be delegated to other allied health professionals. This division of labour may

be necessary under current conditions but can constrain opportunities for neuropsychologists to implement COTs, even when their skills in this area are recognised. Managers may also be reluctant to alter existing workforce configurations further complicating reform efforts. Therefore, a broader, system-level re-examination of memory clinic funding and staffing models is likely required. Any such change would need to be supported by cross-disciplinary advocacy, particularly as budgetary control typically resides outside of psychology departments.

Nonetheless, while structural reform is critical, it is not immediately achievable. Within this context, clinician training offers a practical and scalable first step towards bridging this evidence-to-practice gap. Supporting neuropsychologists to develop confidence and competence in delivering COTs can help strengthen their role in intervention delivery, promote uptake of these approaches, and potentially build internal momentum for broader service innovation. Training initiatives that include access to clear frameworks, tools and supervision may also contribute to gradual shifts in workplace culture and service priorities. While training alone cannot overcome systemic constraints, it represents a feasible and impactful lever for change, and one that can support future implementation efforts across diverse service settings.

3.6.4 Current COT Training is Inadequate

While most respondents acknowledged receiving some form of intervention training during their neuropsychology degrees, a notably proportion reported a lack of formal, structured instruction in COTs. This training gap was particularly evident in students' limited opportunities to practise delivering COTs during clinical placements, an issue previously highlighted by Wong et al. (2014). The absence of hands-on experience likely contributed to the variability observed in self-reported confidence levels among both students and clinicians. Among those who had

received some intervention training, the quality was frequently rated as only “fair”, suggesting inconsistencies in the depth and delivery of educational content across training programs.

Many students expressed a strong desire for more extensive and practical training in intervention delivery. Qualitative responses revealed that current training often focused narrowly on feedback and psychoeducation, with limited exposure to more structured, evidence-based approaches. One student characterised intervention content as an “add-on” rather than a central component of their education. Others voiced a desire for more opportunities to observe intervention delivery, engage in role-playing, and complete placements in rehabilitation or intervention-focused settings. Traditionally, clinical placements have prioritised the development of competencies in diagnostic assessment, case formulation, and communication of assessment outcomes (Wong, Pike, et al., 2023). While these skills remain foundational, the lack of embedded training in intervention delivery points to a pressing need for reform.

The inadequacy of postgraduate training in COTs was further corroborated by clinician responses. Many reported seeking additional supervision and attending professional development workshops after qualification, likely as a means of addressing unmet learning needs from their formal education. Collectively, these findings underscore the value of embedding supervised, structured practice in COT delivery within clinical placements and coursework. Doing so would enhance graduate readiness, promote intervention competence, and build long-term capacity for the integration of COTs across the neuropsychology workforce.

3.6.5 Neuropsychologists Want Expanded Training Opportunities COTs

Most respondents expressed a strong desire for further training in COTs. Clinicians indicated a preference for a structured format comprising a brief introductory course, followed by

booster sessions and ongoing supervision. Respondents also highlighted the value of diverse instructional methods, such as didactic teaching, practical demonstrations, and access to observations or video recordings of clinicians delivering COTs, emphasising the importance of experiential learning and real-world application. A strong preference for a blended learning model, integrating in-person and online components, further underscores the need for flexibility to accommodate varying learner needs and service constraints. These findings provided important guidance for the development of a training toolkit for clinical neuropsychologists aimed at supporting the implementation of COTs for people with MCI Australian memory clinics (Bahar-Fuchs et al., 2025).

3.6.6 Limitations

Several limitations should be considered when interpreting the findings of this study. First, the reliance on self-report data introduces potential biases, particularly in the context of retrospective recall. Future studies may benefit from incorporating externally validated or observational methods to more objectively assess the nature and frequency of intervention delivery. Second, the self-selection nature of survey participation may have resulted in a sampling bias. Neuropsychologists with a particular interest in COTs may have been more likely to respond, potentially limiting the representativeness of the findings. The relatively small sample size further constrains the generalisability of the findings. As of March 2025, there are approximately 900 registered clinical neuropsychologists with area of practice endorsement in Australia (Psychology Board of Australia, 2025). However, the exact number of neuropsychologists currently working in memory clinics remains unknown. Moreover, the survey did not ask respondents to specify the clinic in which they currently or previously worked, making it difficult to determine how

representative the sample is of the broader neuropsychology workforce. Although there was a higher response rate from female participants, this gender imbalance was anticipated given the higher proportion of female psychologists registered in Australia (Psychology Board of Australia, 2025).

It is also important to acknowledge that this survey was specifically designed to clarify the current landscape of COT delivery within Australian memory clinic settings. Apart from neuropsychology students, who contributed insights regarding COT training, the survey was limited to clinical neuropsychologists who currently work, or have previously worked, in memory clinics. Consequently, the findings do not reflect practices in other clinical populations, such as individuals with acquired brain injury, where the use, implementation, and accessibility of COTs differ (Wong, Pike, et al., 2023). It also does not consider the experience of other allied health professionals (e.g., clinical psychologists, occupational therapists) who may also be involved in the provision of COTs. Additionally, the patient perspective was not captured in this study, representing a key limitation. Patients are central stakeholders in the successful implementation of COTs, and their engagement, preferences, and needs play a critical role in shaping real-world uptake and sustainability (Pike et al., 2024). These patient-related factors may include an individual's motivation to participate, as well as practical or psychosocial barriers such as cognitive or physical limitations due to disease severity, cultural background, perceived relevance or acceptability of the intervention, out-of-pocket costs, access to services, and transport requirements. These real-world constraints may significantly affect whether patients are able or willing to engage in such interventions (Pike et al., 2024). A deeper understanding of these patient-related facilitators and barriers will be critical for future research aiming to evaluate the feasibility and acceptability of COTs. Nevertheless, our study's targeted focus on clinical neuropsychologists

aligns with our objective to inform the development of a specialised training toolkit for neuropsychologists delivering COTs in Australian memory clinics (Bahar-Fuchs et al., 2025). Moreover, since this study targeted memory clinics, we did not specifically capture the age range of participants. Future studies may wish to consider examining age and other clinical characteristics of the patients who uptake COTs.

3.6.7 Conclusions

This survey study offers a comprehensive snapshot of current practices, attitudes, and training needs related to COTs among memory clinic neuropsychologists and neuropsychology students in Australia. Despite strong professional commitment to expanding COT offering within memory clinic services, implementation efforts remain constrained by inadequate training opportunities as well as systemic barriers such as limited time, funding, and service infrastructure. Addressing the gap in COT-related training is critical to building clinician confidence and competence, and to supporting the sustainable delivery of COTs in line with contemporary clinical guidelines. Ultimately, tailored educational efforts will better equip the neuropsychology workforce to meet the evolving demands of post-diagnostic care, and enable memory clinics to offer more comprehensive, evidence-based interventions for older adults with cognitive impairment.

CHAPTER IV. Assessing the Sustainability of Implementing Cognition-Oriented Treatments for Older People with MCI in Australian Memory Clinics

4.1 Abstract

Background. Despite evidence for their efficacy in older adults with MCI, COTs are rarely embedded into routine memory clinic care in Australia. This study examined the sustainability of COT implementation in Australian memory clinics as part of a national, multi-site feasibility project led by the ADNeT-MC *Cognitive Intervention Working Party*.

Methods. Five memory clinics participated in a 12-month pilot comprising an active implementation phase (with clinician training, peer supervision, and data collection) followed by a six-month maintenance phase without structured support. Guided by the RE-AIM framework, surveys and focus groups were conducted with nine clinicians and four service managers at 12 months to evaluate longer-term sustainability.

Results. Two of five sites continued to deliver COTs during the maintenance phase. Clinicians demonstrated significant and sustained improvements in knowledge and confidence in providing COTs. Key facilitators of sustainability included patient engagement, clinician motivation, and program feasibility. Significant barriers were workload pressures, limited resources, and patient-related challenges. Clinicians emphasised therapeutic processes and patient factors, while service managers highlighted organisational constraints.

Conclusions. Targeted training and structured implementation support strengthened clinician capabilities and facilitated the short-term adoption of COTs. However, systemic and resource-related barriers constrained long-term integration. Sustainable delivery of COTs will require extended support, organisational commitment, and recognition of post-diagnostic support as a core function of memory clinics, informing national strategies for secondary prevention.

4.2 Introduction

MCI, as introduced in *Chapter I*, is characterised by objectively measurable cognitive decline and typically preserved functional independence (Petersen, 2004, 2016; Winblad et al., 2004). As a recognised high-risk state for future cognitive decline (Gauthier et al., 2006; Geslani et al., 2005), MCI presents a critical window for timely intervention. A growing body of evidence, reviewed in *Chapter II*, supports the use of evidence-based COTs to enhance cognitive and daily function, as well as promote wellbeing, in older adults with MCI (Petersen et al., 2018; World Health Organisation, 2019). However, despite promising outcomes, these interventions have not yet been widely integrated into routine clinical care.

In Australia, memory clinics are a central component of the dementia care landscape in many metropolitan settings, providing specialist, gold-standard multidisciplinary assessments and diagnoses of individuals with cognitive concerns (Ng & Ward, 2019; Speechly et al., 2008). Also known as *Memory and Cognition Clinics, Cognitive Disorder Clinics, Cognitive Assessment Clinics or Cognitive Dementia or Memory Services (CDAMS)*, these services typically bring together a combination of geriatricians, neurologists, psychiatrists, clinical neuropsychologists, and other relevant allied health clinicians (e.g., social workers, occupational therapists) to deliver comprehensive diagnostic evaluations (Naismith et al., 2022; Verhey et al., 2011).

While diagnosis remains their primary function, memory clinics are also well-positioned to facilitate post-diagnostic treatment planning and care coordination for individuals and families (Prince et al., 2016; Relkin, 2000; Verhey et al., 2011). This can include medical/pharmacological management, service linkage, allied health support, psychoeducation, and therapeutic interventions. The importance of offering post-diagnostic support is underscored in key policy frameworks such as the *World Alzheimer's Report 2022* (Gauthier et al., 2022) and Australia's

National Dementia Action Plan 2024-2034 (Australian Government Department of Health and Aged Care, 2024). However, current evidence suggests a substantial shortfall in the availability of these services. A national survey of 90 Australian memory clinics found that fewer than one-third offered any form of post-diagnostic support (Mehrani et al., 2021), reflecting broader systemic limitations in service provision. Despite their potential, most memory clinics lack the necessary funding and resources to deliver ongoing therapeutic or supportive interventions (Mehrani et al., 2021; Naismith et al., 2022). This shortfall is not merely a matter of service provision statistics; it represents a tangible gap in care. The absence of structured, accessible, and personalised post-diagnostic support has consistently been identified by families and caregivers as a critical unmet need, with direct consequences for quality of life and ongoing care (Pavković et al., 2025).

In line with international efforts to harmonise diagnostic methods and processes in memory clinics (e.g., Beekly et al., 2007; Doncaster et al., 2011), the Australian Dementia Network (ADNeT) was launched in 2018 to drive national coordination and service improvement. ADNeT brings together researchers and clinicians from 21 institutions, with three key initiatives: (1) the *ADNeT Registry* to monitor and benchmark dementia care, (2) *ADNeT Memory Clinics* (ADNeT-MC) to reduce disparities in service provision, harmonise assessments, and improve post-diagnostic care quality, and (3) *ADNeT Screening for Trials* to support clinical trial research and recruitment (Mehrani et al., 2021; Naismith et al., 2022; Pavković et al., 2024). Within the *Memory Clinics* stream, a core objective is to enhance multidisciplinary collaboration, harmonise clinical practices, and develop clear pathways for post-diagnostic care.

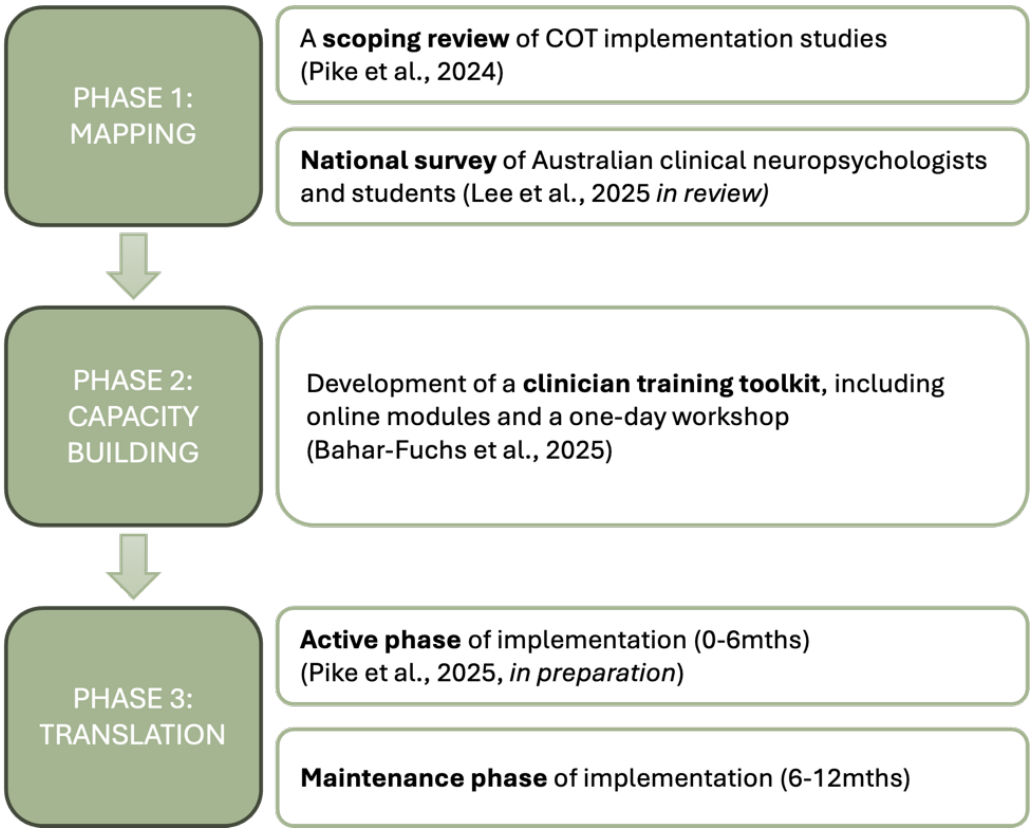
In recognition of both the growing evidence base for COTs and their limited availability in routine care (as reviewed in *Chapter II*), the *ADNeT-MC Cognitive Intervention Working Party* was established in 2022 to investigate and facilitate the feasibility of implementing such

interventions within Australian memory clinics (see ADNeT website: https://www.australiandementianetwork.org.au/initiatives/memory-clinics-network/cognitive-intervention-working-group/). This working party devised and led a three-pronged national, multi-site study to evaluate the real-world implementation of COTs for older adults diagnosed with MCI within the memory clinic setting. The overarching aim of the project was to establish key feasibility and process parameters for implementing individualised COTs within existing service models, with a view to informing their long-term integration into routine care. The broader project comprised three phases: (1) *Mapping* [Scoping Review (Pike et al., 2024) and Survey Study (refer to *Chapter III*)], (2) *Capacity building* (Bahar-Fuchs et al., 2025), and (3) *Translation* (see Figure 4.1).

Clinical neuropsychologists were identified as the ideal group to lead COT delivery as part of this feasibility study, given their expertise in cognitive assessment, case formulation, and evidence-based intervention (Wong, Pestell, et al., 2023). Beyond diagnosis, neuropsychologists are uniquely equipped to contribute to patient education, care planning, and the tailoring of COTs to individual cognitive profiles (Wong, Pestell, et al., 2023). Leveraging this specialised skillset was considered a pragmatic approach to implementation, capitalising on the existing workforce and avoiding the need to create new roles or care pathways.

Figure 4.1

Overview of the ADNeT Cognitive Intervention Working Party Pilot Implementation Project



Findings from *Phase I (Mapping)* revealed that clinician training and confidence were key barriers to the successful implementation of COTs in clinical care (Pike et al., 2024) (see Appendix A). Moreover, findings from the national survey study (see *Chapter III*) confirmed that clinical neuropsychologists in Australian memory clinics want to deliver COTs as part of routine practice and desire greater access to formal training in this area. In response, the working party developed a clinician training toolkit during *Phase II (Capacity Building)*, designed to support memory clinic neuropsychologists in building the knowledge, skills, and confidence required to deliver COTs to older adults with MCI (Bahar-Fuchs et al., 2025) (see Appendix B). The toolkit incorporated two structured programs: the La Trobe and Caulfield Hospital (LaTCH) program and the Healthy Brain

Ageing (HBA) program. LaTCH is a six-week, group-based memory management program designed for older adults with MCI or age-related memory concerns. The program combines psychoeducation on memory and ageing with practical cognitive and lifestyle strategies to support everyday functioning, delivered in a supportive group format (Kinsella et al., 2016; Matthews, Wells, et al., 2020). The HBA program combines psychoeducation focusing on promoting lifestyle and cognitive strategies that reduce dementia risk and maintain brain health, emphasising physical activities, nutrition, social engagement, and mental stimulation, alongside guided practice in compensatory and restorative strategies as well as computer-based cognitive training drawing on the Neuropsychological Educational Approach to Cognitive Remediation (NEAR) Approach (Diamond et al., 2015; Medalia & Freilich, 2008; Naismith et al., 2011; Norrie et al., 2011).

Phase III (Translation) focused on real-world implementation and was conducted in two stages: an initial six-month "active" implementation period that included peer supervision and fortnightly data collection (Pike et al., 2025, in preparation), followed by an additional six-month "maintenance" period during which direct support was withdrawn. Data were collected at three time points: baseline, after the active implementation to assess initial feasibility (6 months), and after the maintenance phase to assess longer-term sustainability (12 months). At baseline, only one of the five participating memory clinics reported regularly offering any form of COT. By the end of the active implementation phase, all five sites were successfully delivering COTs as part of routine clinical care. Across the study period, 159 individuals with MCI were seen; however, only those who met the site-specific eligibility criteria for the chosen COT program were considered for referral. Among eligible individuals, 54 were offered COTs and 43 elected to participate, yielding an overall update rate of 27% across sites. This rate also reflects patient-related considerations, including language factors, interest, perceived relevance, competing commitments,

and other personal circumstances influencing participation. Future studies may wish to examine/record specific patient factors preluding uptake. Three sites adopted group-based programs, while the remaining two delivered individualised interventions, primarily centred on goal setting and spaced retrieval strategies. Baseline surveys highlighted perceived barriers to implementation, particularly in terms of clinician knowledge and confidence in delivering COTs, as well as clinician workload pressures and resource limitations. Following the active phase, increases in knowledge and confidence were evident, and perceptions of resource barriers were somewhat reduced. However, clinician workload remained the most significant challenge. At the patient level, clinicians also identified concerns around engagement and sustainability as barriers. Despite these challenges, by the end of the active phase, all five sites expressed clear intent to continue providing COTs during the maintenance phase (Pike et al., 2025, in preparation).

The current chapter focuses on the second and final stage of implementation, examining the longer-term adoption of COTs within memory clinic sites. This addresses the critical issue of sustainability, defined as the continued use of an intervention as part of routine practice beyond the initial implementation phase (Glasgow et al., 1999; Scheirer, 2005; Stirman et al., 2012). Building on data collected at baseline and six months, the study evaluates the feasibility and acceptability 12 months after the implementation commenced (i.e., six months after the cessation of formal support). The analysis centres on the sustainability of implementation activities in the absence of support, the role of stakeholder engagement, and the enablers and barriers to maintenance in real-world practice. The findings will provide important insights to guide the sustainable and scalable adoption of COTs across memory clinics nationwide.

4.3 Methods

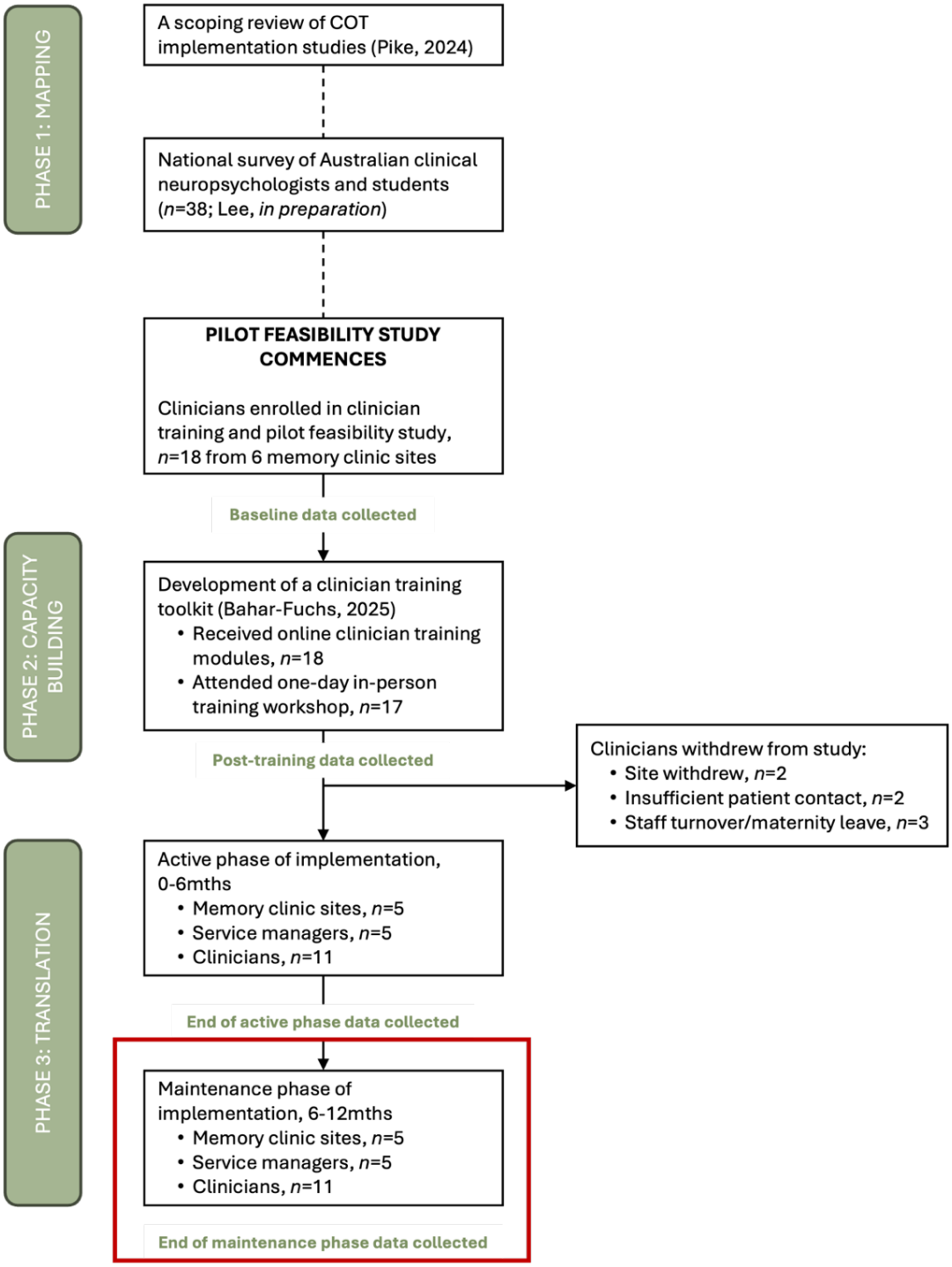
This study received approval from the Sydney Local Health District Human Research Ethics Committee (HREC; ETH02629). Written informed consent was obtained from all participants, who were not reimbursed for their involvement.

4.3.1 Study Design

Figure 4.2 presents a flow diagram illustrating the multi-phase program of work undertaken by the ADNeT-MC *Cognitive Intervention Working Party*. As noted earlier, this program progressed from mapping evidence and current practice to building clinician capacity through training (see Bahar-Fuchs et al., 2025), and finally, implementing COTs into routine memory clinic practice (Pike et al., 2025, in preparation). The present chapter focuses on the maintenance phase of the implementation project, highlighted in Figure 4.2.

Figure 4.2

Flow Diagram of the ADNeT Cognitive Intervention Working Party Pilot Implementation Project, highlighting (in red) the Maintenance Phase. Adapted from Bahar-Fuchs et al. (2025).



4.3.2 Participants

Memory Clinic Sites

As part of the larger implementation project, we aimed for national representation by targeting one to two memory clinics from each Australian state and territory. Potential sites listed on the ADNeT-MC national listing were invited to participate through direct outreach via the professional networks of the research team. Interested clinics received a study overview (Appendix C) and were screened for inclusion based on predefined eligibility criteria (see Table 4.1). Eligible clinics demonstrated neuropsychological expertise and willingness to deliver COTs, had existing infrastructure to support intervention implementation, and were engaged in routine assessment and management of individuals with MCI. Publicly funded clinics were prioritised; however, private clinics were eligible if they could deliver interventions without patient out-of-pocket costs during the active study period.

Six clinics were initially enrolled; however, one site withdrew due to administrative delays, resulting in five clinics completing the 12-month protocol. Participating sites were located in four Australian states, including the metropolitan areas of Melbourne (n = 2), Brisbane (n = 1), and Sydney (n = 1), as well as a regional clinic in Hobart (n = 1). One clinic was privately funded, one clinic was hybrid (using a mix of Medicare and university funding), while the remainder operated within the public health system. Clinic sizes ranged from 8 to 22 staff, with 1-4 neuropsychologists available per site, alongside one service manager or department head overseeing the study. Clinicians saw an average of seven patients per month (range 1-10), of whom approximately two (range 1-6) were estimated to have a clinical diagnosis of MCI. This aligns with national data from the *ADNeT Registry 2024 Status Report*, which indicates that 33% of patients assessed in Australian memory clinics receive an MCI diagnosis (Lin et al., 2025).

Neuropsychology Clinicians and Service Managers

Neuropsychology clinicians and service managers were identified through initial site contact and invited to participate via email or telephone. All were provided with the study overview and screened against the relevant inclusion criteria. In most instances (n = 4), the designated service manager was also a participating neuropsychology clinician.

Table 4.1

Study Inclusion Criteria for Memory Clinic Sites, Service Managers, and Neuropsychology Clinicians

Memory Clinic Sites	Service Managers	Neuropsychology Clinicians
• Demonstrated neuropsychological expertise and willingness to deliver COTs • Commitment to site-level ethics and administrative processes • Routine engagement with patients diagnosed with MCI • Multidisciplinary team including clinical neuropsychologists • Agreement to participate in training, supervision, and data collection	• Willingness and capacity to coordinate site-level logistics and oversee study implementation • Willingness to contribute to data collection	• Endorsement as a clinical neuropsychologist or registrar via AHPRA[a] • Willingness to undertake training and delivery interventions • Capacity to participate in a 12-month study period and contribute to fortnightly data reporting

[a] Australian Health Practitioner Regulation Agency

4.3.3 RE-AIM Framework

As introduced in *Bridging Chapter I*, evaluation of the implementation process was guided by the RE-AIM framework (Reach, Effectiveness, Adoption, Implementation, and Maintenance) (Glasgow et al., 2019). This framework provides a structured approach for examining both individual-level outcomes and organisational-level processes that are critical to the long-term delivery of interventions in real-world settings. RE-AIM was particularly suited to this project as it supports mixed-methods evaluation, enabling integration of quantitative indicators (e.g., surveys) with qualitative insights (e.g., focus groups with clinicians and service managers). Given that the overarching aim of this study was to assess the *sustainability* of COT implementation, the analyses were anchored in the *maintenance* domain. This lens allowed examination of factors influencing the long-term integration of COTs within memory clinic services. While maintenance was the primary focus, insights also emerged regarding *reach, effectiveness, adoption* and *implementation*, which were interpreted in terms of their implications for sustainability. For this study, the RE-AIM domains were operationalised as follows:

- *Reach*: Conceptualised as the number and representativeness of MCI patients who received COTs within their memory clinic service. This was assessed qualitatively via staff reports on patient demographics, referral pathways, patterns of uptake, perceptions of patient eligibility, and barriers to recruitment.
- *Effectiveness*: Conceptualised as the impact of COTs on clinician-, patient-, and service-level outcomes, both positive and negative. This was evaluated primarily through clinician outcomes, using surveys to assess knowledge, confidence, and work satisfaction. Qualitative insights were also captured in focus groups, where clinicians reflected on

perceived professional growth, the observed impact of COTs on patients with MCI, and broader service-level benefits and challenges.

- *Adoption*: Conceptualised as the willingness of clinicians and sites to initiate and deliver COTs. Although less central to the current analysis, this domain concerned the willingness of clinicians and services to undertake training and deliver COTs. Adoption processes were addressed in greater detail in the active implementation phase paper; however, they were considered here insofar as they informed longer-term maintenance.
- *Implementation*: Explored through reported barriers and facilitators to sustained COT delivery, including factors influencing fidelity, feasibility, and service integration. These were analysed with a view to understanding their downstream effects on sustainability.
- *Maintenance*: The central focus of this study was to examine whether COT delivery was sustained beyond the initial implementation phase, what this looked like in practice (e.g., types and formats of COTs delivered), and whether clinicians and services expressed an intent to continue integration into routine care or had developed concrete plans to do so.

4.3.4 12-Month Maintenance Phase Procedure and Outcomes

The maintenance phase was purely observational, with no active support by the research team to participating sites or clinicians. During this period, the team did not initiate contact, and clinicians were no longer offered regular peer supervision or required to contribute to fortnightly data collection (both of which were key components of the active implementation phase). Data for the maintenance phase were collected using a mixed-methods approach, comprising an online survey and a focus group interview, which were completed by participating clinicians and service managers at the conclusion of the study.

Online Survey Content and Measures

Questionnaires designed to capture relevant outcomes were developed during *Phases II* and *III* of the broader implementation study and were administered at the final, 12-month follow-up. The survey was designed by the research team and informed by the Working Party's collective experience in research and professional survey design. Survey content was tailored to address the aims of the current study and the broader objectives of the Working Party. Distinct versions of the questionnaire were distributed to clinicians and service manager respondents, tailored to their respective roles. The clinician version focused more heavily on individual-level outcomes, whereas the service manager version emphasised service-level outcomes. The questionnaire pack comprised the following sections: *(1) Organisational readiness for implementing change (ORIC)* (O'Shea et al., 2018), *(2) Current practice and intervention offering,* and *(3) Implementation factors and intention to continue*. Clinicians were also asked additional questions relating to their knowledge and confidence, while service managers responded to analogous items framed from a service-level perspective.

Organisational Readiness for Implementing Change (ORIC) Scale (Shea et al., 2014). The ORIC tool is a validated, 12-item tool designed to assess the extent to which members of an organisation are psychologically and behaviourally prepared to implement change (Shea et al., 2014). It evaluates two key dimensions: change commitment (the shared resolve among organisational members to pursue change) and change efficacy (the shared belief in their collective capability to do so). Items are rated on a 5-point Likert scale, with higher scores indicating greater organisational readiness. Widely used in implementation research to identify barriers and facilitators to change, the ORIC was administered at baseline, 6 months and 12 months.

Confidence in Abilities. Clinicians self-rated their confidence on a 5-point Likert scale (strongly disagree to strongly agree) across three domains: (1) working therapeutically with older adults in general, (2) working therapeutically with individuals with MCI, and (3) delivering or facilitating COTs for older adults. Each item was framed to assess perceived confidence in ability (e.g., *"I am confident in my ability to deliver/facilitate COTs for older adults"*). For service managers, these items were reworded to reflect a service-level perspective (e.g., *"I am confident in my team's ability…"*). These ratings were collected at baseline, 6-month, and 12-month follow-up time points.

Clinician Knowledge and Confidence. Clinicians' self-reported knowledge of and confidence in delivering information about six ageing-related topics (brain changes, attention, executive function, memory, sleep, goal setting and wellbeing, and dementia risk factors) were assessed using an 8-item scale. For each item, clinicians rated both their current level of knowledge and their confidence in communicating the topic to others, using a 5-point Likert scale ranging from "not at all" to "very high". Subscale scores for knowledge and confidence ranged from 0 to 32, with higher scores indicating greater perceived knowledge or confidence. These measures were administered at baseline, 6-month, and 12-month follow-up timepoints.

Beliefs, Expectations, Barriers and Facilitators. Clinicians and service managers were asked to identify the perceived barriers and facilitators that influence the implementation of COTs within their service. This section comprised multiple-choice questions with a pre-defined list of options informed by existing literature (Pike et al., 2024), allowing for multiple selections. Free-text fields were provided to enable respondents to elaborate on their responses or contribute additional insights.

Online Focus Groups

Online focus groups were conducted via Zoom to explore the experiences of clinicians and service managers in implementing COTs at their sites. A semi-structured focus group guide was collaboratively developed by AL (female, PhD), TWB (female, research assistant), LM (female, postdoctoral research fellow and clinical neuropsychologist with extensive experience in COTs), and SN (female, professor and clinical neuropsychologist with substantial expertise in workgroups, focus groups, and interviews). The focus group guide was structured around five core thematic areas:

1. *Current practice*. This theme explored the delivery of COTs during the maintenance phase. Questions focused on the types of interventions offered, rationale for program selection, any modifications made to the original programs, and reasons for not selecting other COT programs available in the clinician training toolkit.
2. *Changes during the maintenance phase*. This theme examined how COT implementation evolved during the maintenance phase, in the absence of formal support. Participants were asked whether the withdrawal of structured support impacted intervention delivery, and whether they would have preferred continued assistance.
3. *Attitudes toward delivering COTs*. This theme aimed to capture participants' perceptions of providing COTs at their site, including the perceived impact on their professional role, confidence, and motivation. It also explored patient responses to COTs and any shifts in managerial or service-level attitudes toward COT delivery.
4. *Future plans and sustainability*. This theme addressed participants' intentions or plans to continue offering COTs at their site. It explored perceptions of patient demand, key

facilitators and barriers to long-term implementation, and any steps already taken to embed COTs into routine care.

5. *General study feedback*. Open-ended questions invited participants to provide broader input on their involvement in the study, including reflections on the implementation process and any additional suggestions for future research or practice.

A Microsoft PowerPoint presentation was used to guide participants through the focus group questions and facilitate discussions. Data were collected via eight focus groups between October 2024 and March 2025. AL and TWB facilitated each focus group. Focus groups lasted 45-60 minutes and were video recorded, transcribed, and de-identified.

4.3.5 Statistical Analyses

Survey responses were first exported into Microsoft Excel, where a member of the research team de-identified the data and assigned a unique study ID to each respondent to maintain confidentiality. Only anonymised data were included in the present analyses. Quantitative data were analysed using IBM SPSS Statistics (Version 27). Descriptive statistics were used to summarise participant demographics and examine 12-month follow-up data to characterise the sample and identify patterns of response. Repeated-measures analysis of variance (ANOVA) was conducted to investigate changes in ORIC ratings, as well as clinician confidence and knowledge ratings, across the three study timepoints (baseline, active implementation phase, and maintenance phase). Given the small analytic sample, inferential tests were interpreted with caution, with primary emphasis placed on descriptive statistics and visual inspection of trends over time. ANOVA results were reported where effect sizes suggested a meaningful change, using conventional benchmarks for partial eta squared (η^2), whereby values of approximately 0.01, 0.06,

and 0.14 represent small, medium, and large effects, respectively. Thus, results in the medium-to-large range were prioritised, with the recognition that non-significant findings may reflect limited statistical power rather than the absence of genuine effects. This approach ensured that the analyses highlighted clinically relevant patterns while appropriately acknowledging the exploratory nature of the quantitative results.

Focus group transcripts were analysed thematically using NVivo (Version 15), a qualitative data analysis software package. Thematic analysis followed the six-phase approach described by Braun and Clarke (2006), which involved familiarisation with the data, generating initial codes, identifying potential themes, reviewing and refining themes, defining and naming themes, and producing a final narrative. The lead author (AL) and SS (a postdoctoral research associate with 11 years of applied research experience and five years of qualitative research experience) conducted the analysis. SS was not involved in earlier phases of the project to minimise bias. Both analysts independently reviewed transcripts multiple times to achieve data immersion and developed initial codes by identifying salient ideas, concepts, and perceptions. Coding was guided by a combined inductive-deductive approach, drawing on both the research questions and emerging data patterns. Codes were grouped into broader categories and iteratively refined into overarching themes. These were structured into a thematic codebook informed by the RE-AIM implementation framework (Glasgow et al., 2019), with higher-order domains mapped onto sub-themes grounded in participants' experiences. Coding discrepancies and theme development disagreements were resolved through discussion and revision of the codebook until consensus was reached between both coders.

4.4 Results

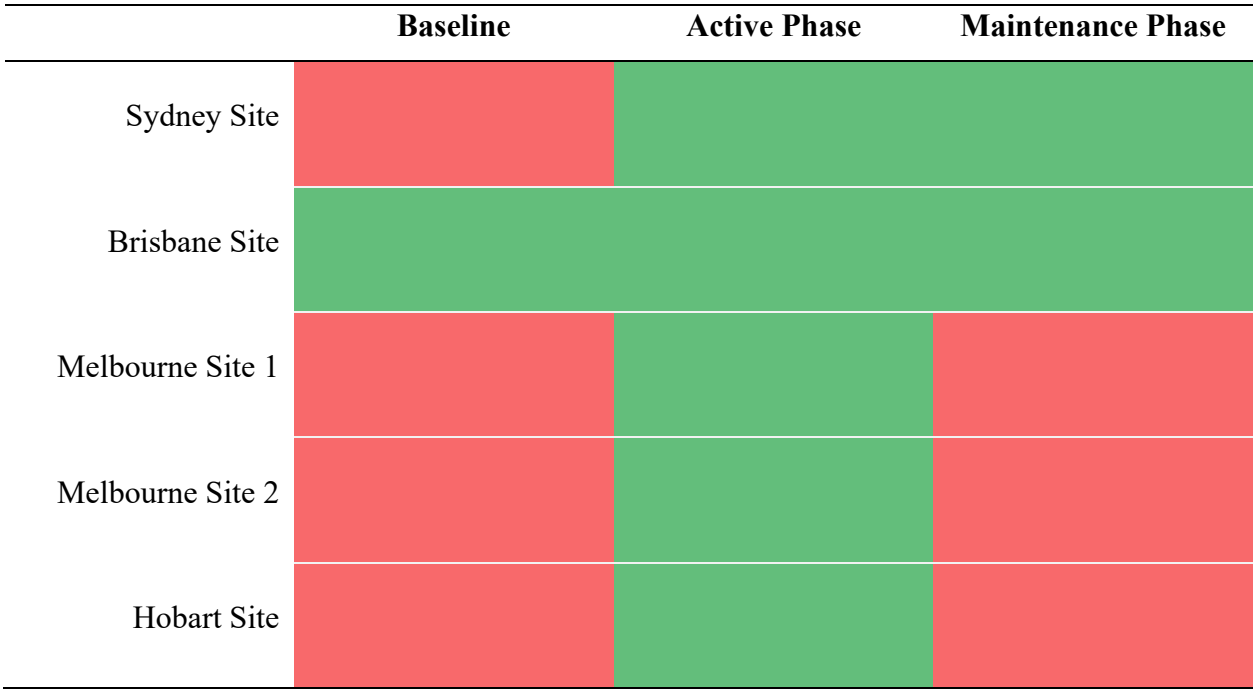
As part of our broader program of work, demographic and baseline data from clinicians who completed the online modules and in-person training workshop have been reported elsewhere (Bahar-Fuchs et al., 2025) (see Appendix B). At the conclusion of the active implementation phase (i.e., six months post-training), data were available from 11 clinicians and five service managers across the five participating sites. By the end of the 12-month maintenance phase, the number of clinicians and service managers had reduced to 9 and 4, respectively, with all sites represented. Attrition was due to sick leave (n = 1), loss to follow-up (n = 1), and staff turnover (n = 1). At the Hobart site, the participating clinician completed the clinician survey but did not contribute to the focus group or service manager survey, as they had left the service and moved overseas before the final data collection. Accordingly, the present analyses draw on data from nine clinicians and four service managers who participated in both the active and maintenance phases of the study.

4.4.1 Evaluation of Maintenance Success

Patterns of implementation varied across sites. Table 4.2 presents site-level delivery of COTs across the baseline, active, and maintenance phases. Although delivery was achieved at all sites during the active phase, only two sites sustained delivery into the maintenance phase. The specific program characteristics sustained at these sites are outlined in Table 4.3.

Table 4.2

Site-Level Delivery of COTs Across Baseline, Active, and Maintenance Phases



Note. Green = Yes; Delivering COTs, Red = No; Not Delivering COTs

Table 4.3

Characteristics of COT Programs Sustained during the Maintenance Phase

Site	COT Program	Format	Delivered by?
Sydney Site	"Wise Minds" Adapted from Making the Most of Your Memory[a]	Group, in-person, 2.5-hour weekly sessions over 6 weeks	Neuropsychologists
Brisbane Site	MEMORehab[b]	Individual, in-person, 60-minute sessions over 6 weeks	Occupational therapist

[a] https://www.assbi.com.au/Making-the-Most-of-Your-Memory

[b] https://www.memorehab.com.au/

The COT programs implemented across sites during the maintenance phase included *Making the Most of Your Memory* and *MEMORehab*. *Making the Most of Your Memory* is a six-week, group-based intervention designed for adults experiencing everyday memory difficulties following neurological conditions, such as epilepsy (Radford et al., 2011). The program combines psychoeducation with training in internal and external memory strategies, emphasising their practical application in daily life. *MEMORehab* (https://www.memorehab.com.au/) is a clinician-guided, web-based adaptation of this program, offering a structured six-week intervention that integrates online educational modules, strategy-training exercises, and weekly videoconference sessions.

4.4.2 Change in Organisational Readiness Over Time

The change in perceived organisational readiness was assessed using the ORIC total score, measured separately for clinicians and service managers at baseline, the end of the active implementation phase, and the end of the maintenance phase. Descriptive statistics and repeated measures ANOVA results are presented in Table 4.4.

For clinicians (n = 8; due to missing data for n = 1), mean ORIC scores decreased from baseline to the end of the active phase and further declined by the end of the maintenance phase. A repeated measures ANOVA indicated a significant main effect of time, $F(2,14) = 31.08$, $p < 0.001$, $\eta^2p = 0.82$. This represents a substantial effect, suggesting that the decline in perceived readiness over time was significant, despite the small sample size. Scores declined significantly across the three timepoints, with a strong linear trend, $F(1,7) = 40.96$, $p < 0.001$, $\eta^2p = 0.85$ (large effect), and a significant quadratic component, $F(1,7) = 10.54$, $p = 0.014$, $\eta^2p = 0.60$ (large effect).

For service managers (n = 4), mean scores remained relatively stable from baseline to the active phase, before decreasing at the end of the maintenance phase. A significant main effect of time was observed, $F(2,6) = 10.72$, $p = 0.01$, $\eta^2p = 0.78$, again representing a large effect size. The decline was best characterised by a linear trend, $F(1,3) = 28.20$, $p = 0.01$, $\eta^2p = 0.90$ (very large effect), whereas the quadratic component was not significant, $F(1,3) = 3.33$, $p = 0.17$.

Together, these findings suggest that both clinicians and service managers perceived reduced organisational readiness for sustaining COTs over time. While clinicians reported a steady and accelerated decline, service managers' readiness was relatively stable during the active implementation period but dropped sharply once external supports were withdrawn.

Table 4.4

Clinician and Service Manager Reported ORIC Total Scores Across Baseline (BL), Active Phase (AP), and Maintenance Phase (MP)

	BL	AP	MP	*F*	*p*	η^2p
	M (SD)	*M (SD)*	*M (SD)*			
Clinician ORIC Total Score	51.13	47.88	34.50	31.08	< 0.001*	0.82
	(4.39)	(6.75)	(9.21)			
Service Manager ORIC	49.00	48.50	37.25	10.72	0.01*	0.78
Total Score	(3.16)	(7.85)	(5.38)			

Note. ORIC = Organisational Readiness for Implementing Change Tool (Shea et al., 2014). Higher total scores reflect greater perceived organisational readiness to implement and sustain change.
*$p < 0.05$

4.4.3 Clinician Self-Reported Knowledge and Confidence Ratings

Descriptive statistics and repeated measures ANOVA results for clinician confidence and knowledge ratings across baseline, active phase, and maintenance phase are presented in Table 4.5.

Clinicians reported relatively high baseline confidence in 'working with older adults' (M = 3.67, SD = 0.50) and 'working with people with MCI' (M = 3.56, SD = 0.53). These ratings remained stable across timepoints, with a slight increase observed at the maintenance phase (M = 4.11 for both domains). However, repeated measures ANOVAs indicated no significant change over time for either domain, $F(2,16) = 1.47$, $p = 0.26$, $\eta^2p = 0.16$ (older adults) and $F(2,16) = 1.68$, $p = 0.23$, $\eta^2p = 0.17$ (MCI). Although not statistically significant, both effect sizes were within the small-to-medium range, indicating only modest changes over time.

In contrast, confidence in 'delivering/facilitating COTs' increased significantly across the study period, from a relatively low baseline rating (M = 1.89, SD = 1.05) to higher ratings during the active phase (M = 3.00, SD = 1.05) and maintenance phases (M = 3.22, SD = 0.67). This increase was statistically significant, $F(2,16) = 17.71$, $p < 0.001$, $\eta^2p = 0.69$, with a strong linear trend, $F(1,8) = 32.00$, $p < 0.001$, $\eta^2p = 0.80$. The effect sizes indicate a very large and practically meaningful improvement in confidence.

Clinicians also rated their knowledge of, and confidence in delivering, information on a range of ageing-related topics (e.g., *brain changes, attention, memory, executive function, wellbeing, sleep, goal setting, dementia risk factors)*. For ease of interpretation, mean confidence and knowledge scores were computed across domains. Average confidence increased significantly over time, with a significant linear trend, $F(1,8) = 7.21$, $p = 0.028$, $\eta^2p = 0.47$, reflecting a large effect. Average knowledge ratings also showed a steady upward trajectory, with a marginal overall effect of time, but a significant linear trend, $F(1,8) = 7.81$, $p = 0.023$, $\eta^2p = 0.49$, again indicating a large effect size. Together, these findings indicate that while clinicians entered the study already confident in their ability to work with older adults and people with MCI, the most substantial improvements were observed in confidence related to delivering COTs as well as communicating

information on a range of ageing-related topics. Gains were particularly pronounced during the active implementation phase and were largely maintained at the 12-month follow-up.

Table 4.5

Clinician Confidence and Knowledge Ratings Across Baseline (BL), Active Phase (AP), and Maintenance Phases (MP)

	BL *M (SD)*	AP *M (SD)*	MP *M (SD)*	*F* (2,16)	*p*	η^2p
Confidence in…						
Working with older adults	3.67 (0.50)	3.56 (0.53)	4.11 (0.78)	1.47	0.26	0.16
Working with MCI	3.56 (0.53)	3.56 (0.53)	4.11 (0.00)	1.68	0.23	0.17
Delivering/facilitating COTs	1.89 (1.05)	3.00 (1.05)	3.22 (0.67)	17.71	<0.001*	0.69
Delivering Information about Ageing-Related Topics[a]	2.74 (0.70)	3.15 (0.54)	3.40 (0.45)	5.28	0.017*	0.40
Knowledge about…						
Information about Ageing-Related Topics[a]	3.03 (0.48)	3.28 (0.54)	3.35 (0.39)	3.54	0.053	0.31

Note. Ratings were provided on a 5-point Likert scale, where higher values indicate greater confidence or knowledge. Repeated-measures ANOVAs were used to assess changes across time points.

[a] Average confidence and knowledge ratings across the following ageing-related topics: *brain changes, attention, memory, executive function, wellbeing, sleep, goal setting, dementia risk factors*

η^2p = partial eta squared

*$p < 0.05$

4.4.4 Barriers and Facilitators

Clinicians and service managers identified multiple factors shaping the sustainability of COT delivery during the maintenance phase (Tables 4.6 and 4.7). The most frequently reported

barrier across both groups was workload, endorsed by two-thirds of clinicians (67%) and three-quarters of service managers (75%). Patient-related challenges were also prominent. Clinicians pointed to limited willingness to engage (44%), the impact of disease severity and comorbidities (33%), and background factors such as culture, perceived stigma, or limited education (44%). Service managers placed even greater emphasis on these domains, with all reporting patient-related sustainability issues (100%) and most highlighting background factors (75%).

Resource constraints were particularly salient for service managers, with half citing insufficient staffing and a quarter pointing to gaps in full-time equivalent (FTE), funding, and infrastructure. Clinicians also reported funding and FTE limitations (22% each), though less frequently. By contrast, clinician skills and knowledge were rarely viewed as barriers (22% of clinicians; 0% of managers), and scepticism about COTs among colleagues or managers was seldom reported (≤11%). Overall, systemic workload pressures, resource shortfalls, and patient-level challenges emerged as the most significant obstacles, rather than clinician capability or motivation.

Facilitators reflected a mirror image of these findings. Both groups consistently emphasised patient engagement as central, with all service managers (100%) and two-thirds of clinicians (67%) noting that enjoyment and perceived benefit supported ongoing delivery. Clinician motivation and enthusiasm were also influential, endorsed by all service managers and over half of clinicians (56%), alongside perceptions of intervention feasibility (clinicians: 56%; service managers: 100%). Clinicians more often highlighted therapeutic relationships with patients (44%) and supportive relationships with managers (33%), whereas service managers underscored organisational enablers, including universal service-level buy-in and team enthusiasm. Resource availability was rarely identified by clinicians (11%) but noted by half of service managers (50%).

In summary, these findings suggest that the sustainability of COT delivery was facilitated by patient engagement, clinician motivation, and intervention feasibility, but hindered by high workloads, resource limitations, and patient-level challenges. Notably, while clinicians tended to view sustainability through the lens of direct patient engagement and therapeutic processes, service managers were more likely to emphasise organisational enablers and systemic constraints.

Table 4.6

Clinician- (n=9) and Service Manager-Endorsed (n=5) Barriers to Delivering COTs during the Maintenance Phase

	Clinicians **% Endorsed**	**Service Managers** **% Endorsed**
Clinician-Related Barriers		
Lacking confidence/knowledge/skills in…	22	0
Selecting COTs	11	0
Delivering COTs	0	0
Monitoring COTs	0	0
Evaluating COTs	22	0
Service Manager/Colleague Barriers		
Service manager beliefs/knowledge of…	11	0
Benefits of COTs	11	0
Colleagues' beliefs/knowledge	0	0
Service-Level Barriers		
Not a priority for organisation	33	-
Resource limitations	22	50
Workload	67	75
Perceptions of Role Clarity		
Others do not see COT delivery as core role	33	-
Patient-Related Barriers		
Patient willingness/interest	44	25

Patient sustainability	33	100
Patient background factors	44	75

Note. Percentages represent the percentage endorsement of each barrier by clinicians (n = 9) and service managers (n = 4) during the 12-month maintenance phase.

Table 4.7

Clinician- (n=9) and Service Manager-Endorsed (n=4) Facilitators to Delivering COTs during the Maintenance Phase

	Clinicians **% Endorsed**	**Service Managers** **% Endorsed**
Clinician-Related Facilitators		
Clinician buy-in	56	100
Enthusiasm and motivation	56	100
Confidence and knowledge	44	100
Capacity/FTE availability	33	50
Service-Related Facilitators		
Enthusiasm from service managers	11	100
Enthusiasm from other team members	11	100
Ease of integration into service	11	75
Patient-Related Facilitators		
Patient buy-in	67	100
Enjoyment of intervention	67	100
Perceived benefit of COT	67	100
Intervention-Related Facilitators		
Feasibility of selected intervention	56	100
Flexibility of intervention	44	50
Resource availability	11	50
Relational Facilitators		
Strong clinician-patient relationship	44	50
Supportive manager-clinician relationship	33	25

Note. Percentages represent the percentage endorsement of each facilitator by clinicians (n = 9) and service managers (n = 4) during the 12-month maintenance phase.

4.4.5 Qualitative Analyses

As outlined in the methodology, focus group transcripts were thematically analysed using a combined inductive-deductive approach, with coding guided by a codebook informed by the RE-AIM framework (Glasgow et al., 2019). In keeping with the study's primary focus on long-term sustainability, themes are not presented in the order of the RE-AIM framework. Instead, findings are organised around key themes that emerged from the data, with their alignment to relevant RE-AIM domains noted where applicable to support interpretability and integration with the broader study aims.

Overview of Sustained Delivery [Maintenance]

At the conclusion of the 12-month maintenance period, there was notable variability in the degree to which COTs were sustained across services. Two sites continued to deliver group-based COTs regularly during the maintenance phase, while all three remaining sites had paused implementation but were engaged in future planning and program development, with the intention of resuming COT delivery in the future.

Two services continued delivery throughout the maintenance phase, running multiple iterations of manualised, group-based programs. In these sites, clinicians reported that the shift from active research support to independent delivery had minimal impact on operations, with interventions described as having become embedded in routine clinical practice. Group programs were scheduled regularly, and teams expressed confidence in their ability to continue without external oversight: *"We've done really well, we have been running a group program which is*

largely based off Making the Most of Your Memory, but we've adopted it for our own population… we've had three six-week programs: April, May, July, August and then starting the October group."

In other settings, intervention delivery continued in a modified format. In some cases, responsibility for COTs had transitioned across disciplines, with allied health staff (e.g., occupational therapists) taking on the delivery of structured programs. At the same time, neuropsychologists continued to work with more complex or non-MCI presentations. These adaptations reflected both local staffing changes and a commitment to sustaining intervention access for patients where possible: *"One of the big changes that's happened is that one of our occupational therapists has stepped up to run some of the cognitive remediation sessions and interventions… And the OT now sees a number of the MCI patients to put them through the MEMO rehab program. And I tend to do the cognitive remediation for the patients with more complex presentations or history of brain injury and things like that."*

In services where delivery had paused, there remained a strong intention to resume. Several teams reported that while no COTs were delivered during the maintenance phase, efforts had been made to plan for future implementation. These included the recruitment of new staff, development of internal workflows, and team discussions regarding referral processes, space allocation, and clinician availability. Although delays were acknowledged, teams remained optimistic: *"We've kicked things off and we have a plan… Ideally, I would have loved to have things more embedded as a standard offering… But it's not a perfect world. So, you know, in that respect, I'm really happy with where things are at because I do see we are going to achieve our vision. It's just a slower timeframe than I would have hoped."*

Across all sites, the decision to sustain or pause delivery appeared to be influenced not by a lack of motivation, but by service-specific factors, including staffing availability, patient demand, and organisational readiness.

Types of COTs Delivered [Implementation]

Among services that delivered COTs during or beyond the active support period, there was considerable variation in the type, structure, and rationale behind the selection of interventions. Across the board, group-based formats were preferred, with clinicians noting their practicality and efficiency compared to individualised delivery. Where group sessions were not possible, some services adapted interventions for one-on-one formats or shifted delivery to other disciplines within the team: *"We just don't have the time to give everybody an individual intervention."*

Group-based programs were commonly adapted from established sources, including programs provided in the clinician training toolkit (e.g., LaTCH [La Trobe and Caulfield Hospital] and the Healthy Brain Ageing Program), as well as external interventions such as Making the Most of Your Memory or MEMO Rehab. Selection was typically guided by perceived fit with the local patient population, clinician familiarity, and ease of implementation.

Even among services that did not continue delivery during the maintenance phase, group-based interventions were consistently described as the most viable option moving forward. These were seen as more structured, easier to scale, and less resource-intensive than individual sessions, particularly where staff capacity was limited: *"The group work was the most realistic to start with… and then they could gradually move into individual interventions, which takes a lot more preparation and tailoring."*

Several clinicians highlighted the added benefits of group formats, including opportunities for peer support, normalisation of cognitive concerns, and increased social engagement among participants: *"A lot of our patients are very socially isolated... So, the socialisation element of the group-based program is really a critical part of it for our population to get the social aspect and to feel like their problems are normalised in a group setting with other people having similar experiences."*

In some services, teams developed hybrid or bespoke programs tailored to their population. These combined elements of multiple frameworks were refined over time based on clinician experience and patient feedback. In one example, a team designed a program integrating psychoeducation, strategy training, and lifestyle factors, delivered in a structured six-week format. The program included weekly themes (e.g., remembering names, prospective memory), practical exercises, and health-promoting behaviours: *"Each week we focus on a different aspect of memory. So, whether it be prospective memory, retrospective memory, remembering conversations or groups and then each week there was also like usually a practical element where we practiced it in the group and then we talked about a lifestyle factor for improving cognition and healthy ageing."*

Familiarity with specific programs, often due to prior training, professional networks, or access to resources, played an essential role in determining which interventions were used or planned for future delivery: *"We'd heard from LaTCH even before we'd had the training with ADNeT… So, we'd already heard of it and were familiar with it. We had the resources. And our service manager as well. A colleague of hers also runs LaTCH. So, she was able to collaborate with her and help with the next lot of people that were coming in with her colleague so she could get a sense and know that it's feasible that we could do this. So that's probably why we chose LaTCH over anything else."*

Overall, while the specific programs varied, services consistently prioritised interventions that were structured, adaptable, and feasible to deliver within existing service models. The shift away from one-on-one delivery, whether due to time constraints, patient preferences, or service structure, was a common feature of sites that had achieved or were working towards sustained implementation.

Challenges in Delivering Individualised or Culturally Responsive Interventions. The resource demands of individualised interventions made them largely impractical in most settings, particularly where clinicians were already stretched due to existing caseload or usual performance quota. While some clinicians attempted to deliver one-on-one sessions early in the implementation period, they later acknowledged that group formats were more manageable and better aligned with their capacity.

In some settings, however, group formats were deemed unsuitable for the patient population. Services with high proportions of patients from non-English speaking backgrounds faced challenges using standardised group materials, particularly in the absence of translated resources or interpreter availability: *"Probably 30 to 50% of the people we see are from non-English speaking backgrounds… so they're ineligible for the kind of groups we're running."*

In these instances, services expressed interest in adapting content for more culturally responsive or individualised delivery formats but acknowledged that doing so would require significant additional resourcing and development time.

Acceptable and Broad Reach [Reach]

Facilitators reported that the program appeared acceptable to patients, with uptake described as high and only a small proportion deciding the program was not suitable for them:

"Uptake is pretty high. They're either in a group or they're waiting to go in a group, I'd say less than 10% would say no. The remainder are either actively allocated to an upcoming group or on a wait list that we've got for next year's groups…we've got five groups for next year."

Several barriers to reach were identified that may limit access. These barriers, along with possible solutions also drawn from the data, are summarised in Table 4.8. The most common issues were related to the referral process, language needs (at some sites, 20–50% of referrals came from non-English-speaking backgrounds, but not all had access to interpreters), transportation, and time commitment.

Table 4.8

Summary of Facilitator-Identified Barriers and Potential Solutions to Improve Reach

Barrier	Possible Solutions
Insufficient or inappropriate referrals	Target GP practices and brand/market program
Language	Engage interpreters and offer one-on-one, instead of group, sessions
Transport	If resources are available, make some allowances for free parking or organise transport
Time commitment	Provide flexible scheduling, shorter sessions, or hybrid delivery

The referral process varied substantially across sites. At one site, no patients with MCI were referred in the first six months, likely due to reliance on a single psychiatrist and the absence of case conferencing. In contrast, another site reported a steady stream of referrals following active marketing and branding of the program, which became embedded in post-diagnostic care pathways: *"The doctors who have reviewed the patients that I've had got the positive feedback from the patient and so they are more aware of the program and want to offer it to their other*

patients as well… It's become part of their post-diagnostic care options. So, we're getting quite a lot of referrals now and I expect that they'll pick up even further."

Other sites achieved engagement by mobilising entire multidisciplinary teams to identify suitable patients in advance: *"We've taken it to our team… our referrers, our geriatricians, doctors, occupational therapists, the whole CDAMS team. And we ask them to identify people that might be suitable for this group and we're collecting names so when we're ready to go, we'll have a pool of people that we can offer it to."*

Proactive engagement with local hospitals also enhanced referral rates. One participant suggested that engaging with these population may be effective because doctors and specialists are increasingly recognising the value of interventions for cognitive decline: *"I feel like there is more awareness of neuropsychs delivering cognitive remediation services. I notice it not just in the MCI field or dementia field, but in head injury and things like that, that I will often get a referral from say a neurologist and they will say, 'could you provide them with education regarding compensatory strategies'… That's definitely a shift I've seen, probably over the past two to three years or so.*

Perceived Effectiveness of Implementing COTs in Routine Practice [Implementation]

Clinician Outcomes. Across services, clinicians reported a range of personal and professional benefits associated with delivering cognitive interventions. These included increased confidence, expanded skillsets, greater job satisfaction, and a renewed sense of purpose in their clinical work. For many, the opportunity to engage in intervention delivery marked a meaningful shift from more traditional neuropsychology roles focused solely on assessment and diagnosis.

Several clinicians reflected on how participation in the training and implementation process enhanced their confidence in delivering interventions. Before the study, some reported feeling uncertain about their skills in this area, particularly if they had not engaged in intervention work since their early training. The combination of formal education (e.g., workshops and modules) and hands-on delivery helped consolidate existing knowledge and build self-efficacy: *"We probably felt initially like we didn't know much about intervention because we hadn't done as much of it… but then once we went through the modules and attended the workshop, we realised, oh, we do actually know this stuff. We just haven't been implementing it."* and *"It definitely upskilled me for sure… it's definitely made me a lot more knowledgeable and a lot more confident."*

Others described how the experience challenged previous assumptions about intervention as a highly specialised or inaccessible skillset. Through direct experience, clinicians began to view intervention delivery as a natural extension of their professional competencies: *"Before I thought about it as this really technical thing… but you do kind of know a lot of it just from your experience and practice… the training kind of helped us realise that we do have the skills."*

Beyond skill development, many clinicians highlighted the emotional and professional rewards of working more directly with patients on their cognitive goals. In contrast to the often transactional nature of assessments, intervention work was seen as an opportunity to build therapeutic rapport, witness progress, and engage in more person-centred care: *"I really enjoy doing the intervention side of things… and the patients I saw when I was here, I think all of them really enjoyed it as well, and that sense of empowerment and confidence and actually having a bit of a plan… was really valued."* and *"It was great to do something a little bit different to what I normally do… it was just good to move away from diagnostics to sit with people and actually explain what's going on."*

Clinicians also noted specific learning outcomes from the intervention content itself. Several reported discovering or deepening their understanding of particular strategies, such as spaced retrieval, and felt these tools could be applied more broadly in their clinical work: *"There were also some new memory strategies… I definitely learned some new strategies that I wasn't aware of… it's definitely broadened my experience."*

Even in cases where patient response to the intervention was mixed, some managers noted that the opportunity to engage in this type of work was still viewed positively by staff. However, in a few instances, lower-than-expected patient benefit was perceived to temper clinician satisfaction: *"It wasn't as satisfying as they thought it might be because the patients didn't always benefit in the same way… so in terms of their work satisfaction, I suppose that tempered it."*

In some services, participation in the implementation project fostered more collaborative discussions among clinicians. Staff reported an increase in the sharing of resources, informal peer consultation, and stronger interdisciplinary relationships. These exchanges contributed to a sense of professional development and connection within teams: *"There was certainly more discussion amongst the clinicians about what we were doing… we would chat about cases or talk about handouts or share resources a bit more."*

Taken together, the delivery of cognitive interventions appeared to offer a meaningful extension to standard neuropsychological practice. Clinicians experienced increased confidence, growth in practical skills, and enhanced job satisfaction, factors that may play a critical role in supporting long-term sustainability.

Patient Outcomes. Clinicians across services reported a range of observed and perceived benefits for patients who engaged in cognitive intervention programs. These included improved emotional wellbeing, increased social connectedness, greater confidence in managing cognitive

difficulties, and direct application of cognitive strategies in everyday life. While formal outcome measures were not always collected, clinicians provided rich anecdotal evidence of patient engagement and perceived impact.

A consistent theme across services was the social benefit of group-based interventions. Many clinicians described how participants formed connections during the program and, in some cases, continued these relationships beyond the intervention period. This sense of belonging was significant for patients who had limited social interaction in other areas of their lives: *"They have recently continued to go out to lunch and have little get togethers socially… they're still talking about our strategies… It's been very heartening."* and *"It's the highlight of their week, they said… I did expect the social side of it to be very beneficial… but the extent of it was a bit surprising."*

In addition to these social effects, patients were reported to apply the cognitive strategies taught during the sessions actively. Clinicians shared examples of patients using memory techniques in their day-to-day lives, including strategies to learn names or remember appointments. This behavioural generalisation was seen as a sign that the interventions were both relevant and empowering: *"They're using the strategies… feedback like, 'I used this to learn the names of people in this group and it worked'… that sort of feedback shows they're really applying it in daily life."*

For some patients, particularly those newly diagnosed, participation in a group intervention provided much-needed reassurance and validation. Psychoeducation components were especially appreciated, offering patients a clearer understanding of their cognitive changes and reducing distress associated with uncertainty: *"I kind of felt like we might have been filling in a gap… they definitely enjoyed the social aspect… but also the normalisation and validation from being with others with similar difficulties."*

However, some clinicians also reflected on cases where the fit between the intervention and patient expectations was more complex. In particular, one-on-one interventions were sometimes met with frustration or confusion, especially when patients expected a more therapeutic or counselling-style experience: *"We found that actually people were less interested in strategies and more interested in the psychoeducation around how our memory works… they often thought they were coming to join a group"* and *"Some people were hoping to come in with problems with anxiety or problems with relationships… and it was hard to make that connection to cognitive symptoms."*

These experiences prompted some services to reflect on the importance of clarifying program aims and ensuring intervention formats matched patient needs and expectations. In general, clinicians noted that group-based delivery better addressed the emotional and social dimensions of cognitive change.

Finally, some clinicians highlighted the importance of providing post-diagnostic support as a standard offering. Several described the intervention program as filling a service gap for patients who would otherwise receive limited follow-up after assessment: *"It really felt like this was a gap that had been filled by the intervention… and it was both from family members and patients themselves."*

Taken together, clinicians predominantly perceived the interventions as highly valued by participants, particularly in terms of social connection, emotional support, and the use of real-world strategies, and especially when the interventions were group-based. While formal evaluation data were not consistently captured, the strength and consistency of patient-related feedback provided compelling anecdotal evidence of benefit.

Facilitators of Long-Term Implementation [Maintenance/Implementation]

Despite the presence of significant barriers, a range of enablers supported both the sustained delivery of cognitive interventions and the development of infrastructure for future implementation. These facilitators were often interrelated and included collaborative team structures, clinician motivation, leadership and managerial support, practical planning, and access to structured intervention resources.

Clinician Motivation, Advocacy for Continuation and Clinical Reward. Clinician motivation emerged as a powerful facilitator of sustained and future-oriented intervention delivery. Across settings, clinicians expressed strong personal commitment to intervention delivery, often describing it as more rewarding than traditional assessment-focused work. Many found the intervention work to be meaningful, both for themselves and for the patients they served: *"We're really highly motivated… because we feel that it's worthwhile and it's rewarding, and we think it's really critical part of care provision."* and *"I really enjoy doing this sort of work. It's a really nice change from just doing straight forward assessments… And largely the feedback we have received is really positive that patients feel empowered, their confidence has improved. And so, as a clinician, you feel really good about providing that service as well."*

Clinicians also reported receiving positive feedback from participants and caregivers, which reinforced their commitment to sustaining the interventions. This feedback was frequently cited as evidence of the program's value and used to support internal advocacy efforts: *"We're trying to build up a case of positive feedback to get more FTE… that would be one of the key things to ensure longevity."*

Some teams set up systems to formally collect patient-reported outcomes or satisfaction data. Although not consistently implemented due to time pressures, these systems reflected

clinician efforts to document impact and advocate for the recognition of COTs within service priorities: *"We set up REDCap… to try and capture the feedback that we were getting in order to make a case for more resources."*

This intrinsic motivation led many clinicians to go above and beyond what was required, often preparing materials or refining content in their own time. In some cases, this was driven by a desire to provide continuity of care beyond diagnosis, which clinicians felt had been historically lacking in their services. In several instances, clinicians described making personal sacrifices to continue intervention work, including running groups without allocated time or investing personal hours into program preparation. These efforts were underpinned by a shared belief that cognitive interventions were a critical component of quality care for older adults: *"We've had to make some personal sacrifices to make it happen… because we feel that it's worthwhile and it's rewarding."* and *"It just wouldn't have happened if I wasn't interested, to be honest."*

At a broader level, clinicians advocated for a shift in how neuropsychological services are conceptualised within their organisations. Some hoped to see greater recognition of the neuropsychologist's role in supporting post-diagnostic care, rather than limiting their contribution to diagnosis alone: *"Sometimes I feel like I'm doing half my job by not being able to give feedback or follow-up… intervention should be part of the model."* and *"When the team starts to see that we can do more than just diagnose, that's when things will really change."*

Access to Structured Resources and Pre-Packaged Programs. The availability of structured, manualised programs was widely viewed as a practical facilitator of implementation. Programs such as LaTCH, MEMO Rehab, and Making the Most of Your Memory were perceived as relatively easy to adopt and adapt to their specific settings. Their structure and reduced

preparation time allowed clinicians to deliver consistent content without needing to build resources from scratch.

Familiarity with specific programs, whether from past training, professional networks, or peer recommendations, also influenced program selection and confidence in delivery.

Some clinicians also proactively sought opportunities to build skills, including attending external training or co-facilitating programs at other sites in preparation for local delivery.

Team Cohesion and Informal Collaboration. Clinician teams that were co-located and had opportunities for regular informal collaboration described this as a key enabler of sustained delivery. Working closely with colleagues allowed teams to share the workload, problem-solve in real time, and iteratively refine program content: *"We definitely are very lucky we have a good team here and it's very much a collaboration… that side of it was very smooth."*

Team-based delivery models also facilitated continuity when individual clinicians were unavailable, with other members able to step in and maintain the program. This flexibility helped mitigate the effects of leave or staff turnover and, critically, supported sustainability at their sites.

Leadership Support and Service-Level Advocacy. Managerial and organisational support emerged as another key enabler to sustainability. This support took various forms, including verbal endorsement of intervention work, allocation of staff time, support for logistics and room bookings, and planning assistance. Where leadership recognised the value of COTs, clinicians felt more empowered to continue advocating for integration: *"The psychology manager is so positive in cognitive interventions… so we had that backing"* and *"We've got the go ahead from our management, at least in the psychology department, to provide staffing towards running the groups. They're very keen so we've got that support. We've got the support of the administration staff; they have set up a template so we can run a group."*

In some cases, service leaders actively championed intervention delivery at higher organisational levels, contributing to cultural shifts that reframed neuropsychology as extending beyond diagnosis. Teams described feeling optimistic about the long-term potential to embed interventions into standard care.

Integration with Broader Service Workflows. Some services described efforts to integrate COT delivery with broader clinical routines and workflows, including use of case conferences to identify eligible patients and raise awareness of intervention offerings. These processes helped build momentum and encouraged broader engagement across multidisciplinary teams: *"Case conference has been the mechanism for engaging quite a large CDAMS team that are really hard to engage individually or in any other sort of forum… [in the future] we'll have more evidence to offer them and… provide some presentations and some education."*

In some instances, clinicians also developed program branding or named interventions, which made it easier to incorporate them into post-diagnostic care plans and enhanced recognition among referrers: *"Our doctors are now saying, okay, I'm going to refer to [intervention name] … It's become part of their post-diagnostic care options."*

Across these examples, it was clear that sustainability was more likely when intervention delivery aligned with both individual clinician priorities and service-level goals, and when practical systems were in place to support ongoing integration.

Barriers to Long-Term Implementation [Maintenance/Implementation]

While there was broad enthusiasm for continuing cognitive interventions, many teams encountered significant and overlapping barriers that impeded ongoing delivery. These challenges spanned across workforce, administrative, organisational, and structural domains, and were often

magnified during the maintenance phase when external research support had been withdrawn. Even in services where delivery had continued, sustainability required significant clinician effort to work around systemic limitations.

Workforce Capacity and Staffing Instability. A key barrier across services was limited staffing capacity and a lack of protected time for intervention delivery. Clinicians frequently reported running group programs in addition to their standard clinical workloads, with an insufficient allocation of time or resources to support planning and delivery. These pressures led to clinicians preparing materials in their personal time and described feeling under strain despite their ongoing commitment: *"Last night I was doing it, then this morning I was doing it on the train… during meetings we're entering our notes and doing data for the groups. It's very hard to make the hours."*

Staffing instability further exacerbated these challenges. Several services experienced long-term leave (e.g., parental leave) among key staff trained to deliver interventions, without adequate backfilling or succession planning. In some cases, the absence of senior clinicians disrupted continuity of delivery, especially where those individuals had been leading coordination and cross-disciplinary engagement: *"All of our middle/senior kind of tier… were removed… So, it's literally just been about staffing… and needing to dedicate that time to assessments rather than being able to offer any more groups."*

Administrative Burden and Lack of Operational Support. The administrative load associated with intervention delivery was frequently cited as a deterrent to sustainability. Tasks such as managing referrals, contacting participants, coordinating bookings, preparing slides, and tracking attendance often fell entirely to clinicians, in contrast to other clinical activities that were supported by administrative staff: *"We've really absorbed all the administrative burden… even*

things like managing the referral list, sending reminders, and checking people in. It's not like other aspects of our clinical work where we get admin support."

While some teams noted improvements in workflow over time, this often came after multiple iterations of the program and considerable personal investment. Program refinement was typically ongoing, particularly for sites that adapted existing materials to suit local populations or delivery formats: *"Each time we've done it has involved a lot of prep and a lot of refinement… we hope to get to a point where it takes less time, but we're not there yet."*

Cost and Access in Privately Funded Services. In privately operated services, the primary barrier to access was cost. During the active phase of the project, some sites were able to deliver interventions at no cost to patients. However, once funding ceased, clinicians reported reduced uptake of services, with some patients declining participation once fees were introduced: *"We didn't charge them in the first six months of the study… but after that, one person backed away after hearing the cost… and we couldn't get in contact with them again."*

While private clinicians valued the flexibility of their setting, they acknowledged that ongoing service delivery was dependent on patient willingness and ability to pay, an issue particularly relevant for those receiving multiple concurrent healthcare services.

Infrastructure Limitations and Logistical Challenges. Several services encountered practical limitations in their physical and digital infrastructure. Room availability was a consistent challenge for group-based programs, particularly in shared clinical spaces where bookings were limited or prioritised for other services. In some settings, suitable rooms were only available outside standard working hours, posing challenges for clinicians in balancing their clinical and personal responsibilities. *"The only time we could run a group would have been on a weekend… but that would have made it really hard to do it."*

In other cases, services struggled with documentation processes or electronic medical record systems that were not easily configured for intervention work. These limitations increased the administrative burden and made it more difficult to track outcomes or report intervention activity.

Misalignment with Service Priorities and Productivity Expectations. A widespread barrier to embedding interventions into routine care was the mismatch between intervention work and existing service productivity measures. In many cases, group interventions were not counted toward clinical activity targets, which remained focused on diagnostic assessments. As a result, interventions were sometimes perceived as taking time away from higher-priority or higher-value activities: *"Despite doing all this extra work, all these extra hours… it amounts to literally zero because we're not allowed to count cognitive intervention in our productivity measures."*

This dynamic made it difficult for clinicians to advocate for formal allocation of time to group delivery and was especially problematic in services facing pressure to reduce waitlists for diagnostic assessments: *"I think diagnosis is still seen as our bread-and-butter work… so if waitlists blow out, intervention would be the first thing to go."*

Even where senior leadership supported intervention work in principle, there was often little structural change to service models, limiting opportunities for interventions to be formally integrated.

Intentions and Plans for Ongoing Integration [Maintenance]

Even in sites where COTs were not delivered during the maintenance phase, there was strong evidence of forward planning and a clear intent to resume intervention work. All sites had

initiated practical steps toward relaunching or expanding programs, with clinicians and managers describing cognitive interventions as a priority area for future development.

In some services, plans included scheduling upcoming intervention groups, identifying patient cohorts for recruitment, or refining workflows to support future delivery. These activities were often led by clinicians but supported by leadership figures who were invested in embedding the program: *"We have four groups planned for next year… and we already have enough participants for the first group."* and *"We're recruiting through case conference… we're hoping to have a group going in a few months."*

Staffing changes were a common factor shaping the timeline for resumption. In services that had experienced periods of instability, new appointments and onboarding processes were underway to ensure that incoming staff could support intervention delivery. In several cases, experienced clinicians were tasked with training newer staff or co-facilitating sessions as a way to build capacity: *"They'll sit in and observe the next group before the current facilitator goes on leave… and we're looking at what professional development they'll need to feel confident."* and *"We're hoping to train up one of the registrars… so that we can continue in my absence."*

In other services, infrastructure for future delivery had been established but not yet activated. This included securing managerial approval, creating scheduling templates, developing referral systems, and co-facilitation planning. In some cases, clinicians used their professional development time to upskill or gain hands-on experience with the program in preparation for rollout: *"We've got the go-ahead from management… the admin staff have set up a template so we can run a group."* and *"I co-facilitated a group externally just to get a sense of how it works… so I could bring those skills back to the team."*

Clinicians also discussed the need to gradually expand the role of interventions within their service, with the ultimate goal of embedding them as standard offerings rather than optional add-ons. This was framed as a cultural shift that would require ongoing effort, evidence of benefit, and buy-in from the broader clinical team: *"We're not quite there yet, but we're slowly working towards making this part of our core offering."* and *"Ideally, we'd like this to be something that doctors talk about in every session with their patients, just like they do with other care options."*

While the pace of progress varied, all services demonstrated a clear intention to either continue or reintroduce interventions, with many expressing optimism about achieving long-term sustainability: *"It's just a slower timeframe than I would have hoped… but I'm happy with where things are heading."*

4.5 Discussion

This national, multi-site implementation study evaluated the longer-term sustainability of COTs within Australian memory clinics over a six-month maintenance period, following the withdrawal of structured implementation support. Drawing on mixed-methods data from five services, the findings offer nuanced insights into both the progress achieved and the challenges encountered when embedding COTs into routine clinical practice.

A central finding was that two of the five participating sites successfully sustained COT delivery during the maintenance period, integrating programs into routine workflows. These services demonstrated that, under favourable conditions, COTs can be maintained beyond initial implementation, representing a critical step towards wider integration across the memory clinic sector. The remaining three sites, although not delivering COTs during this period, were engaged in concrete planning for resumption, including staff recruitment, workflow refinement, and

collaborative program development. This pattern underscores that sustainability is best understood as a dynamic, ongoing process rather than a fixed endpoint (Holtrop et al., 2021; Scheirer, 2005; Stirman et al., 2012). Consistent with implementation science, sustained integration typically requires extended timeframes and iterative adaptation, particularly in resource-constrained settings (Aarons et al., 2011; Proctor et al., 2011).

A novel contribution of this study lies in tracking perceived organisational readiness for change over time. Ratings declined across the 12 months despite sustained gains in clinician knowledge and confidence. Clinicians reported steady erosion in their service's capacity to support change as systemic pressures mounted. Service managers, by contrast, perceived readiness as stable during the active support phase but noted sharp declines once external support was withdrawn. This divergence suggests that while individual capability may be preserved through training, perceptions of organisational readiness are fragile without leadership engagement, protected resources, and formal integration of COTs into service priorities. Sustainability, therefore, requires more than motivated clinicians; it depends on structural alignment at the organisational level.

Another key finding was the durability of training effects. Clinicians retained knowledge and confidence in delivering COTs following the ADNeT training (see also Bahar-Fuchs et al., 2025) and supervised support provided during the active (Pike et al., 2025, in preparation). Given that insufficient training and low self-efficacy are well-documented barriers to implementation (Pike et al., 2024; Wong et al., 2014) (see also *Chapter III*), the persistence of these gains suggests that structured, multi-faceted training can establish a durable foundation for practice change. This is consistent with broader evidence that workforce development, when paired with practical

resources, can overcome resistance and foster sustained adoption (Nelson & Steele, 2007; Wheatley et al., 2021).

Clinicians consistently reported benefits for both patients and themselves. Patients were perceived to gain from psychoeducation, social connection, and practical cognitive strategies that address gaps in standard care. Clinicians, in turn, described intervention delivery as a rewarding departure from predominantly diagnostic work, which enhances professional fulfilment, job satisfaction, and skill development. These findings strengthen arguments for broadening the remit of clinical neuropsychology in routine practice to include intervention as a core practice component (Wong, Pestell, et al., 2023).

Variation across service models highlighted the importance of adaptability. While group-based formats were generally preferred for scalability, some services pursued or planned individualised approaches to meet patient needs, address language barriers, or accommodate workforce limitations. This flexibility aligns with literature emphasising the need to tailor interventions to local contexts and populations (e.g., Moore et al., 2021). At the same time, it was notable that some sites implemented external programs not included in the ADNeT training toolkit. While all were underpinned by neuropsychological principles, their empirical support in MCI populations varied. Moreover, despite strong trial evidence supporting computerised interventions in MCI (Hill et al., 2017), none of the sites adopted them. This likely reflects practical barriers, such as digital literacy, access to technology, and clinician familiarity, but it also highlights the persistent gap between research evidence and clinical adoption.

Importantly, this variation also draws attention to this issue of adherence and fidelity to COT delivery. Although fidelity is often conceptualised within the *Effectiveness* domain of the RE-AIM framework, formal fidelity or adherence measures were not collected systematically across

sites during this study. As the primary focus of this chapter was on long-term sustainability, and given the predominantly qualitative design, fidelity was not assessed using standardised metrics. Instead, issues related to programme consistency, local adaptation, and variation in delivery emerged inductively from the qualitative data and were examined primarily within the *Implementation* and *Maintenance* domains, where they were most salient to understanding real-world sustainability following the withdrawal of structured support.

4.5.1 Barriers to Long-Term Sustainability

Despite positive outcomes, sustainability was constrained by systemic and organisational barriers. Workforce shortages, lack of protected time, administrative demands, and the absence of recognition of COTs within formal care pathways were near-universal challenges. In some cases, clinicians described absorbing additional workload outside contracted hours or navigating productivity metrics that prioritised diagnostic over therapeutic activity. At one site, COT delivery ceased entirely following the departure of a trained neuropsychologist who had championed implementation. Although the role was refilled, the incoming clinician and leadership were unprepared to resume COTs, underscoring how sustainability can hinge precariously on individual champions. This fragility echoes long-standing findings in both Australian (Pavković et al., 2024) and international dementia care research (Wheatley et al., 2021), emphasising the need for structural reform to enable enduring integration.

4.5.2 Facilitators of Sustainability

Conversely, several facilitators supported sustainability. Clinician motivation, peer collaboration, visible patient benefit, and supportive leadership were repeatedly cited. In some services, informal teamwork enabled adaptive problem-solving and workload sharing. Sustained delivery was often driven by clinicians who viewed COTs as integral to their professional identity and invested substantial effort in adapting materials, advocating for intervention pathways, and collecting feedback to support resource allocation. Such ownership reflects principles of engaged leadership and bottom-up change (Aarons et al., 2011; Greenhalgh et al., 2004; Scheirer, 2005). Yet the extent to which clinician advocacy alone can sustain interventions remains contingent on systems that convert this effort into practical supports, such as allocated time, workflow integration, and infrastructure investment (Scheirer, 2005).

4.5.3 Implications for Practice, Policy and Research

Several key implications emerge. First, sustained leadership engagement and ongoing advocacy are essential to maintain momentum and embed interventions into service culture. Second, workforce planning must move beyond training to include protected time, administrative support, and clearly defined intervention responsibilities. Third, implementation strategies should provide ongoing support and structured follow-up, recognising sustainability as an evolving process. Fourth, embedding COTs into referral pathways and care planning could position them as a standard element of post-diagnostic support, rather than an optional add-on. Finally, research and policy must prioritise flexible, scalable, and culturally responsive models to ensure equity across diverse contexts. These implications align with international calls, including the *World Alzheimer Report (2022)* (Gauthier et al., 2022) and Australia's *National Dementia Action Plan (2024–2034)* (Australian Government Department of Health and Aged Care, 2024), for expansion of post-

diagnostic supports as a core element of dementia care. This study demonstrates that scalable, clinician-led models are feasible and acceptable; however, their sustainability depends on the availability of a robust workforce infrastructure and policy alignment.

4.5.4 Strengths and Limitations

This work has several strengths. It is the first national, multi-site investigation of COT sustainability in Australian memory clinics. Its mixed-methods design, integrating longitudinal survey data with clinician and service manager perspectives, provides a rich understanding of sustainability in practice. Moreover, few implementation studies extend beyond the period of active support (Holtrop et al., 2021; Stirman et al., 2012), making this contribution particularly valuable.

Some limitations should also be acknowledged. The modest sample limits generalisability and may not capture the full diversity of Australian practice. The six-month maintenance window provides only a partial view of sustainability trajectories, given the slow pace of staffing, resource negotiations, and cultural change. A longer follow-up is needed to capture the non-linear processes by which interventions are consolidated or lost. While clinicians and managers described meaningful patient benefits, the absence of formal outcome data prevents direct assessment of patient impact. A related limitation is the absence of formal assessment of adherence or fidelity to COT delivery, particularly within the *Effectiveness* domain of the RE-AIM framework. Fidelity data were not routinely collected across participating memory clinics, limiting the ability to quantify the degree to which interventions were delivered as intended. While qualitative data captured meaningful insights into programme adaptations, variation in delivery, and local problem-solving, these data do not allow for systematic evaluation of fidelity or its relationship to perceived

effectiveness. More detailed and structured assessment of fidelity in future studies may help to identify additional barriers and facilitators to adoption, acceptability, and sustained implementation, particularly in resource-constrained clinical settings. Additionally, in some sites, dual clinician-manager roles created potential overlap in perspectives, reflecting real-world practice but also potential bias. Finally, the study was conducted during a period of fiscal constraint within state health systems (Australian Medical Association, 2022, 2025), which likely shaped services' capacity and willingness to trial new approaches. Together, these factors highlight the importance of future research with larger samples, extended follow-up, robust patient outcomes, and perspectives from multiple organisational levels.

4.5.5 Conclusion

In summary, this study demonstrates that the sustainable delivery of COTs in Australian memory clinics is achievable, but it requires more than just clinician motivation. While training and structured support can establish a durable foundation, long-term integration depends on organisational commitment, workforce investment, and policy alignment. These findings provide a roadmap for embedding COTs into routine post-diagnostic care by strengthening clinician capacity, fostering leadership engagement, securing resources, and tailoring interventions to diverse contexts. As Australia advances its national dementia strategy, this study identifies the conditions under which COTs can move from isolated feasibility initiatives to a sustainable standard of care.

BRIDGING CHAPTER II. Expansion to Community Implementation

In parallel with the implementation work in memory clinics described in the preceding chapter, a second stream of research was undertaken to address broader workforce and system-level barriers to delivering COTs. While *Chapter IV* examined the feasibility and sustainability of embedding COTs within specialist memory clinic services, this complementary stream explored how similar approaches might be adapted to community-based models of care (*Chapter V*). The impetus for this expansion arose from recognition that clinical neuropsychologists represent a limited resource within the Australian healthcare system, and reliance on this professional group alone risks constraining the reach and long-term sustainability of COTs for people with MCI.

To address these workforce constraints, this project was developed in partnership with a national community organisation, DA. The collaboration sought to leverage existing community service infrastructure and personnel, thereby broadening the capacity to deliver COTs beyond specialist clinical settings. Central to this approach was training Dementia Support Specialists, a workforce with established expertise in supporting people with cognitive concerns and their families. By equipping DA staff with skills to deliver structured COTs, the initiative aimed to expand access, reduce dependence on scarce clinical resources, and ensure that a greater proportion of people with MCI could benefit from evidence-based supports.

This second stream of work therefore represented both a methodological and conceptual expansion of the thesis' implementation focus. It shifted beyond the clinic-based, specialist-led model to examine how COTs could be adopted, delivered, and sustained within community contexts, where much of dementia care and support occurs. Notably, the community partnership model provided an opportunity to explore training and supervision frameworks tailored to non-clinical staff, offering insights into scalable approaches that could complement and extend specialist-driven services.

Taken together, the two implementation streams – in memory clinics and DA – present a more comprehensive picture of how COTs might be integrated into real-world service pathways. This dual focus reflects an intentional strategy to address both service-level and system-level challenges in scaling up COTs for MCI, with the potential to inform sustainable models of care across the continuum from specialist clinics to community-based supports.

CHAPTER V. Community Implementation and National Scale-up of a Healthy Brain Ageing Cognition-Oriented Treatment Program: A Partnership with Dementia Australia

5.1 Abstract

Background. COTs for people with MCI remain scarce in community settings despite international recommendations. In partnership with DA, we adapted and scaled the evidence-based Healthy Brain Ageing Program to improve national access for people with MCI in the community.

Methods. The program was refined into the *Mild Cognitive Impairment: Thinking Ahead* program through consultation with DA to align with organisational values, workforce capacity, and client needs. Implementation included development of facilitator resources, half-day online workshops, and optional fortnightly support sessions. Evaluation, guided by the RE-AIM framework, drew on surveys at baseline, post-training, and nine-month follow-up, plus facilitator focus groups.

Results. Thirty-six DA staff completed training, and 24 program rounds were delivered nationally to 168 clients with MCI in the first year. Training significantly increased staff knowledge of brain health and dementia risk factors; however, these gains were not sustained by the follow-up. Confidence, already high at baseline, remained stable or showed modest improvement. Facilitators valued the program for its benefits to professional growth and reported positive client outcomes, including empowerment, increased adoption of strategies, and enhanced peer connections. Organisational adoption was supported by DA's strategic expansion to include MCI and by program champions, though referral processes, variable administrative support, and workload demands challenged sustainability. The program has since been embedded into DA's routine national service offerings.

Conclusions. This project demonstrates that research-community partnerships can successfully adapt and embed evidence-based COTs at a national level. Findings underscore the importance of structured training, iterative refinement, and contextual alignment for sustainable implementation, with implications for future translation of interventions into community settings.

5.2 Introduction

Access to structured COTs in community settings remains limited, despite their inclusion in international guidelines (e.g., Petersen et al., 2018; World Health Organisation, 2019) and a growing body of empirical support (see *Chapter II*). In Australia, several COT programs have demonstrated feasibility and benefits for supporting individuals with MCI. Notable examples include the LaTCH memory group program (Kinsella et al., 2016; Matthews, Wells, et al., 2020) and the HBA Program (Diamond et al., 2015; Naismith et al., 2011; Norrie et al., 2011).

The HBA Program, in particular, is a manualised group-based intervention designed to reduce dementia risk and support cognitive functioning in older adults with mild cognitive difficulties. It combines psychoeducation on memory and other cognitive strategies with dementia risk reduction as well as computerised CT tailored to individual cognitive profiles and preferences. Early trials with older adults experiencing late-life depression found the Program to be highly acceptable and associated with improvements in memory and knowledge of brain health (Naismith et al., 2011). The Program was subsequently refined and expanded for people with MCI (Diamond et al., 2015; Norrie et al., 2011). Since then, the HBA Program has been adapted for other chronic conditions, including Parkinson's disease (Naismith et al., 2013; Walton et al., 2018) and chronic obstructive pulmonary disease (Disler et al., 2023). Its key elements have also been incorporated into a multidisciplinary, home-based reablement program for people living with dementia (Jeon et al., 2017; Jeon et al., 2019) and translated for delivery within hospital settings (e.g., Woolf, 2021). Beyond healthcare contexts, the Program has been adapted for community education seminars hosted by the University of Sydney, in partnership with Parkinson's NSW and Dementia Australia (DA), and has been transitioned into an online format (LaMonica et al., 2019). Across these diverse settings, the HBA Program has consistently demonstrated feasibility, acceptability, and positive

outcomes for dementia risk reduction knowledge, as well as improvements in memory, verbal fluency, mood, and sleep. Its flexible, manualised format and proven adaptability position it as a strong candidate for broader translation into community-based initiatives.

While both healthcare and community settings have faced challenges in making COTs widely available despite strong evidence and clinical recommendations, the determinants of successful implementation in community contexts are likely distinct from those in clinical services (Balis et al., 2024; Balis et al., 2022; Mazzucca et al., 2021). In particular, community settings are shaped by contextual and structural factors that influence program delivery (Balis et al., 2024; Balis et al., 2022; Mazzucca et al., 2021). Many organisations operate under mandates and infrastructures not primarily oriented toward health promotion, and resources to sustain the quality of evidence-based programs are often inconsistent (Mazzucca et al., 2021). Unlike health services, which typically draw on an existing patient base, community programs must actively recruit participants, with engagement reliant on local networks and outreach activities. Delivery in these contexts also requires balancing fidelity to the intervention model with flexibility to accommodate diverse client needs, service resources, and financial constraints (Kinsella et al., 2020). Implementation research highlights that these barriers can be mitigated by partnering with large-scale community organisations, tailoring strategies to local circumstances, and applying structured frameworks that align program design with organisational and community capacities (Balis et al., 2024). Collectively, these factors illustrate why community translation is both difficult – requiring organisational adaptation, new workforce capabilities, and sustained investment – and essential, as such programs extend access to individuals who might otherwise never engage with hospital-based services.

DA is the peak national body supporting individuals with dementia, their families, and carers. It plays a central role in the Australian dementia care landscape through its comprehensive services, education, and advocacy efforts aimed at empowering and supporting those affected by cognitive decline. In 2023-2024, DA supported over 44,000 Australians through personalised counselling, education programs, peer support programs, and tailored resources across the dementia continuum (Dementia Australia, 2024). While historically focused on dementia, DA has recently broadened its scope to include individuals with MCI. This shift is evident in the introduction of MCI-specific resources and reinforced by DA's most recent annual report, which outlines a strategic commitment to providing targeted support for people with MCI (Dementia Australia, 2024). With its national infrastructure and extensive community reach, DA is well-positioned as an implementation partner for scalable COTs targeting MCI. Embedding such programs within existing service platforms offers the potential to improve access and support long-term sustainability within a trusted framework.

The University of Sydney HBA research team has a longstanding relationship of collaboration with DA on public engagement and psychoeducation initiatives. Past projects have included revising DA's national dementia risk reduction materials and delivering community-focused seminars to promote cognitive health awareness. Building on this relationship, DA received funding from the Commonwealth Department of Health and Ageing to adapt, via co-design, a bespoke version of the HBA Program suitable for delivery to people with MCI within the community. For the HBA team, this partnership offered a unique opportunity to extend community access to evidence-based COTs. This chapter outlines the adaptation and implementation of the customised *Mild Cognitive Impairment: Thinking Ahead* program at a national level. Specifically, the study aimed to:

1. Adapt and upscale the HBA Program for delivery by DA staff, incorporating iterative refinements based on feedback from DA management and staff;
2. Evaluate the effectiveness of the training provided to DA staff in delivering the program; and
3. Examine facilitators and barriers to embedding the program into DA's routine community-based service delivery.

5.3 Methods

This study was approved by the University of Sydney Human Research Ethics Committee (HREC: 2023/159). All participants provided written informed consent prior to participation. In line with the collaborative nature of the project, participants were not reimbursed for their involvement.

5.3.1 Participants

A convenience sample was recruited, reflecting the parameters of the consultation partnership with DA to develop and implement the program. Participants were Dementia Support Specialist staff employed by DA at the time of the consultation project and nominated by DA as suitable for training in the program based on role, feasibility, and location. Recruitment followed an 'arms-length' process where interested staff were first identified by the DA liaison (VP), and with their consent, contact details were provided to the University of Sydney research team. This ensured voluntary participation while maintaining independence between the research team and DA management. Participants represented a range of allied health disciplines, including occupational therapy, psychology, nursing, and social work. No exclusion criteria were applied, allowing for a broad and representative sample of staff within DA's community services.

5.3.2 Study Design

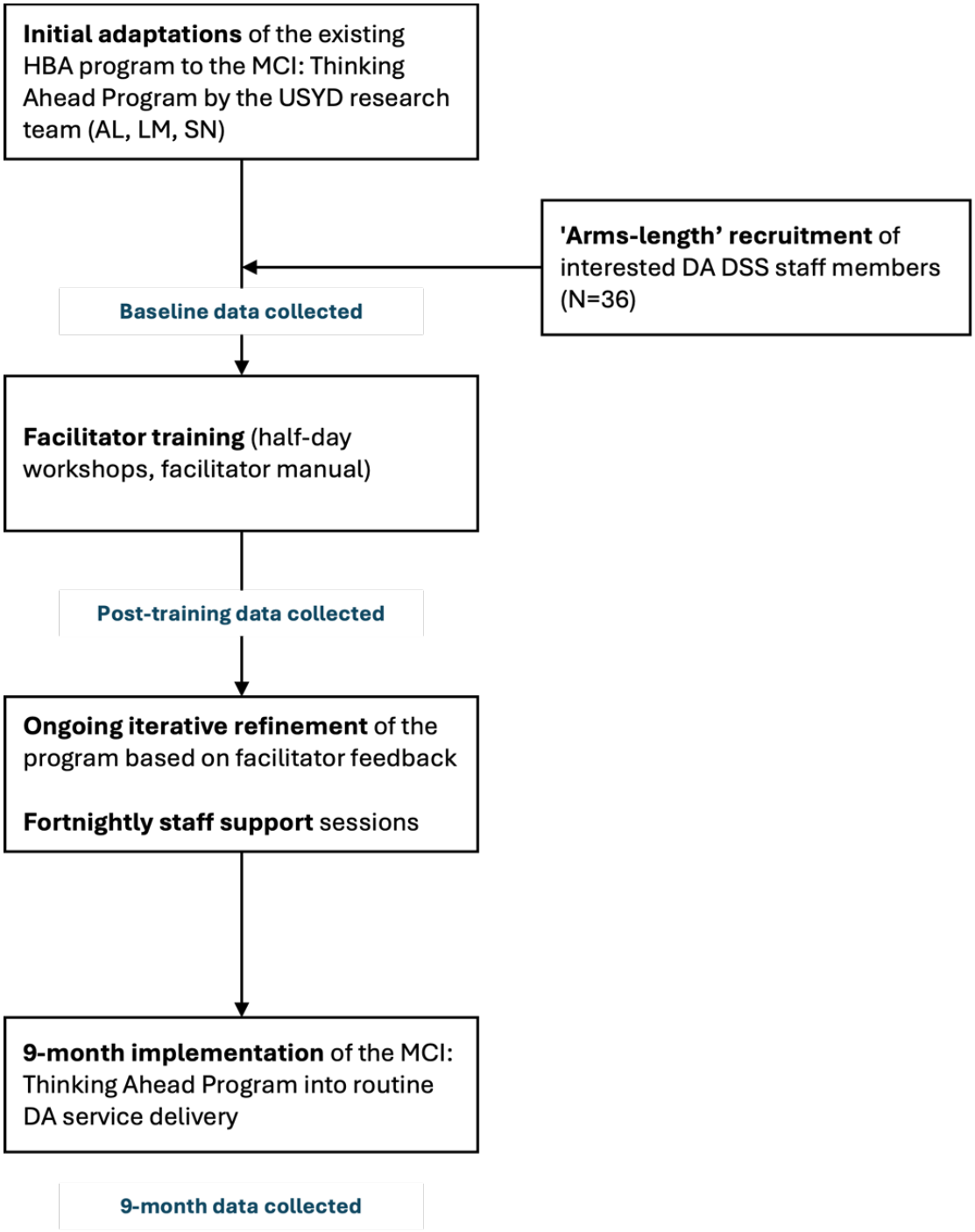
The project progressed through four stages (see Figure 5.1):

1. Program adaptation – adaptation of the HBA Program to align with DA's service delivery needs and preferences
2. Capacity building – structured training of DA staff
3. Iterative refinement – minor adjustments to training and materials informed by facilitator feedback
4. Embedding into practice – full integration of the revised program (renamed the *Mild Cognitive Impairment: Thinking Ahead* program) into routine DA service delivery

Data were collected at three timepoints to capture staff experiences across the implementation cycle: (i) prior to facilitator training (baseline), (ii) within two weeks of completing training (post-training), and (iii) after approximately nine months of program delivery (9-month follow-up). At each time point, participants completed online surveys. At follow-up, additional qualitative data were gathered through online focus groups.

Figure 5.1

Flow Diagram of the DA Community Implementation Project



5.3.3 Procedure and Outcome Measures

RE-AIM Framework

Implementation was evaluated using the RE-AIM framework (Reach, Effectiveness, Adoption, Implementation, Maintenance) (Glasgow et al., 2019), which supports mixed-methods assessment of individual outcomes and organisational processes related to sustainable delivery. In this study, each domain was defined and applied as follows:

- *Reach:* This was conceptualised as the reach of the training among staff within the organisation as well as the reach of the program among clients with MCI. Quantitatively, this was assessed through staff demographics, client referral pathways, and patterns of uptake (i.e., program enrolments, completion rates). The qualitative focus group data further explored staff perceptions of client eligibility, barriers to recruitment, and the role of online delivery in expanding reach.
- *Effectiveness:* This was conceptualised as the effectiveness of the program adaptation and staff training, as well as the perceived effectiveness of the program for staff and clients. Staff outcomes were measured through surveys assessing knowledge, confidence, and work satisfaction at three time points: baseline, post-training and a 9-month follow-up. Effectiveness was also qualitatively explored in focus groups, where staff reflected on their perceived professional growth and observations of the program's impact on clients with MCI (e.g., themes of empowerment, behaviour change, and social connection).
- *Adoption:* At the staff level, adoption was evaluated through staff willingness to undertake training, intention to deliver the program, and subsequent program facilitation. At the organisational level, adoption was assessed using staff perceptions of organisational

readiness for implementing change and explored qualitatively through accounts of leadership support, program champions, and alignment with DA's strategic direction.

- *Implementation:* Considered at two levels. First, the implementation of the staff training resources, workshops, and support sessions was evaluated as a critical facilitator for equipping DA staff with the knowledge, confidence, and practical tools to embed the program into routine service delivery. Second, implementation of the program itself was assessed in terms of fidelity to session structure, facilitator preparation, and workload. Qualitative data provided depth, capturing both barriers and facilitators, as well as the adaptations made in practice to suit diverse client needs and contexts.
- *Maintenance:* Examined sustainability for both individual staff participants and within the organisation. At the individual level, maintenance was examined through staff intentions and capacity to continue facilitating the program beyond initial training. At the organisational level, maintenance was evaluated by the extent to which the program was embedded into DA's regular suite of services, scheduled across states/territories, and the use of internal training resources to build future facilitator capacity.

Program Development

The original HBA Program consisted of ten semi-structured, manualised sessions delivered in small groups (6-8 participants) over five weeks, with two sessions per week (Diamond et al., 2015; Naismith et al., 2011; Norrie et al., 2011). It combined psychoeducation on dementia risk reduction (e.g., lifestyle factors, mood, and vascular risk) with demonstration and rehearsal of evidence-based cognitive and behavioural strategies. The program targeted community-dwelling individuals at increased risk of cognitive decline (e.g., due to MCI or late-life depression).

For this project, the program was collaboratively adapted with DA. Adaptation was led by LM (female, Clinical Neuropsychologist, Postdoctoral Research Fellow, member of the original HBA team), and comprised SN (female, Professor, Clinical Neuropsychologist, Director of the HBA team), and AL (female, PhD candidate, Clinical Neuropsychology Registrar, lead author), working closely with VP (DA liaison). Together, the team refined program content and delivery to suit DA's organisational context and preferences, considering factors such as facilitator expertise, program scheduling and logistical feasibility. Following a four-month consultative process, the program was rebranded as the *Mild Cognitive Impairment: Thinking Ahead* program. The revised structure comprised five weekly sessions, each 2.5 hours in length, covering two topic areas per session, delivered to groups of up to 10 participants by one or two facilitators. A 30-minute break was incorporated to facilitate refreshments and informal socialisation, seen as key components of the original program to promote peer support and normalisation of symptoms/experiences (see Diamond et al., 2015). Sessions blended semi-structured PowerPoint presentations with facilitated group discussion and rehearsal of cognitive-behavioural strategies. The program was designed to be delivered flexibly, either face-to-face or online.

Supporting resources were developed to ensure fidelity and sustainability, including a Clinician Training Manual, Facilitator Guide, and Participant Workbook (see Figure 5.2). A session-by-session overview of the revised program content is presented in Figure 5.3.

Figure 5.2

Screenshots of the Mild Cognitive Impairment: Thinking Ahead (a) Clinician Manual, (b) Facilitator Guide and (c) Participant Workbook.

Figure 5.3

Program Schedule for the Mild Cognitive Impairment: Thinking Ahead Program. Excerpt from the Facilitator Guide.

Target	Week	Topic
Cognition	1	Introduction to the brain, cognition, and MCI
		Attention and concentration: building blocks for cognition
	2	Memory processes and factors affecting memory
		Memory strategies (external and internal techniques)
	3	Executive functions
Risk Reduction		Changing habits: supporting behaviour change
	4	Medical risk factors for cognitive decline
		Lifestyle risk factors for cognitive decline
	5	Psychological wellbeing
		Program summary

Staff Training

Facilitator training was designed to build competence, confidence, and consistency in program delivery. It comprised three key components, outlined below.

Provision of Program Resources. All DA staff received the Clinician Training Manual, Facilitator Guide, and Participant Workbook. These resources articulated the program philosophy, detailed session content, and provided practical tools for participant engagement. Staff were requested to read the materials and familiarise themselves with the program values, parameters, and content prior to attending the online workshop.

Half-Day Online Workshops. Workshops were conducted via Zoom by LM, supported by AL. Between April 2023 and March 2024, four half-day workshops were delivered, with timing and group size determined by DA's nomination and recruitment of interested staff. A structured PowerPoint presentation was used to guide the training, covering the following components:

- Program background, aims, and theoretical underpinnings
- Session structure and detailed walkthroughs of the content
- Practical skills for delivering evidence-based cognitive and behavioural strategies (with demonstration, rehearsal, and role-play)
- Troubleshooting and discussion of anticipated challenges

Workshops were interactive, incorporating group discussion and Q&A. To enhance sustainability, the final workshop was recorded and made available for DA to train future staff.

Ongoing Supervision and Peer Support. Optional fortnightly online supervision and peer-support sessions, facilitated by LM via Zoom, provided opportunities to reflect on experiences of program delivery, discuss any client-related issues, troubleshoot clinical and/or logistical challenges in real time, share strategies to optimise delivery, and revisit program

principles to reinforce fidelity. Participation was encouraged but not mandatory. Feedback from these sessions was documented and informed minor refinements to both training and program materials, as required. Staff were also encouraged to contact LM directly via email in between scheduled support sessions, if required.

Outcomes: Online Survey

Online surveys were administered at all three timepoints via REDCap and were designed to assess changes in knowledge, confidence, expectations, and experiences associated with program delivery.

Demographics and Background. Baseline surveys included demographic items such as age, country of birth, cultural background, first language, gender identity, highest level of education, and professional qualifications. Participants also reported whether they routinely provided services in languages other than English.

Current Practice. At each time point, DA staff reported on their current workload, including time spent delivering COTs and facilitating groups (hours per week). Work satisfaction was rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). Desire to spend more time delivering COTs was assessed using the same scale. At follow-up, additional questions assessed time spent preparing sessions and the number of program completions (including whether this was face-to-face vs. online).

Knowledge and Confidence. Across all surveys, participants rated their confidence in working with older adults, people with MCI, facilitating COTs, and leading groups on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). In addition, participants rated their

knowledge of, and confidence in delivering, psychoeducational material across six domains on a five-point scale (1 = not at all to 5 = very/high):

- Basic information on the brain, cognition, and common cognitive changes in ageing
- Common changes in attention, memory, and executive functioning, and strategies for adaptation or compensation
- Key medical and lifestyle risk factors for dementia
- Psychological wellbeing in ageing, including mood
- Sleep changes and their links with cognition
- General principles of goal setting and behaviour change

Expectations and Appraisal of Training. At baseline, DA staff were asked to indicate areas of training they wished to focus on, preferred training modalities (e.g., self-directed learning, role-play, practical demonstration, observation of clinicians), and to rank expected outcomes of training (e.g., improve knowledge, confidence, practical skills, or group facilitation skills). Immediately post-training, participants rated whether their expectations were met, their satisfaction with the training (0 = not at all satisfied to 10 = very satisfied), and whether further training was required. At follow-up, DA staff reflected on the adequacy of the training after delivering the program, identified strengths and weaknesses, and suggested improvements.

Expectations and Experience of Program Delivery. Baseline and post-training surveys asked participants what they were most and least looking forward to in their DA of the program, and what new skills or experiences they hoped to gain. At follow-up, DA staff reflected on what they had most and least enjoyed about facilitation, the skills and experiences gained, and barriers and enablers to program delivery.

Organisational Readiness for Implementing Change (ORIC) Scale (Shea et al., 2014). The ORIC tool is a validated, 12-item tool designed to assess the extent to which members of an organisation are psychologically and behaviourally prepared to implement change (Shea et al., 2014). It evaluates two key dimensions: change commitment (the shared resolve among organisational members to pursue change) and change efficacy (the shared belief in their collective capability to do so). Items are rated on a 5-point Likert scale (1 = disagree to 5 = agree), with higher scores indicating greater organisational readiness. Widely used in implementation research to identify barriers and facilitators to change, the ORIC was administered at baseline.

Online Focus Groups

Nine months after training (9-month follow-up), DA staff participated in online focus groups conducted via Zoom to explore experiences of program delivery. A semi-structured focus group guide, co-developed by AL and LM, prompted reflection and discussion across these broad areas:

- *Impressions of the program* – how staff perceived the content, its relevance for DA clients, and the extent to which it aligned with the organisation's broader service offerings.
- *Training and support* – staff views on the adequacy of the initial training and the usefulness of the ongoing support (regular supervision and peer support sessions, availability for email contact as required) provided by the University of Sydney research team.
- *Professional impact* – ways in which facilitating the program shaped their confidence, knowledge, skills, and professional practice.
- *Challenges and barriers* – difficulties encountered in delivering the program, including technical or logistical constraints.

- *Facilitators and enablers* – factors that supported program delivery and enhanced facilitation.
- *Client feedback* – reflections on DA client engagement and responses to the program.
- *Sustainability and future delivery* – staff perspectives on the value of continuing to facilitate the program and its potential as an ongoing DA service.

A Microsoft PowerPoint presentation was used to guide participants through the focus group questions and facilitate discussions. Seven focus groups were conducted between March 2024 and February 2025. Each session lasted 60-75 minutes, was video recorded, transcribed verbatim, and de-identified. Focus groups were facilitated by AL, SS (female, Postdoctoral Research Fellow), and ALa (male, Postdoctoral Research Fellow).

5.3.4 Statistical Analyses

Survey responses were exported into Microsoft Excel for de-identification and assignment of unique study IDs before being analysed in IBM SPSS Statistics (Version 27). Descriptive statistics summarised participant demographics and survey responses across timepoints. Internal consistency of the ORIC scale was assessed using Cronbach's alpha. Baseline comparisons of knowledge and confidence ratings across domains were conducted using Wilcoxon signed-rank tests. Changes in self-reported knowledge and confidence ratings over time (baseline, post-training, 9-month follow-up) were examined using repeated-measures analysis of variance (ANOVAs), with Bonferroni-adjusted pairwise comparisons to explore significant main effects. Effect sizes were reported using partial eta squared ($\eta^2 p$). Only anonymised data were included in the analyses.

Focus group transcripts were analysed thematically using NVivo (Version 15), a qualitative data analysis software package. Thematic analysis followed the six-phase approach described by

Braun and Clarke (2006), which involved familiarisation with the data, generating initial codes, identifying potential themes, reviewing and refining themes, defining and naming themes, and producing a final narrative. The lead author (AL) and SS (a postdoctoral research associate with 11 years of applied research experience and five years of qualitative research experience) conducted the analysis, with additional input provided by LM. SS was not involved in earlier phases of the project to minimise bias. Both analysts independently reviewed transcripts multiple times to achieve data immersion and developed initial codes by identifying salient ideas, concepts, and perceptions. Coding was guided by a combined inductive-deductive approach, drawing on both the research questions and emerging data patterns. Codes were grouped into broader categories and iteratively refined into overarching themes. These were structured into a thematic codebook informed by the RE-AIM implementation framework (Glasgow et al., 2019), with higher-order domains mapped onto sub-themes grounded in participants' experiences. Coding discrepancies and theme development disagreements were resolved through discussion and revision of the codebook until consensus was reached between both coders.

5.4 Results

5.4.1 Overview of Program Implementation in DA

During the implementation period, DA reported on key indicators of program activity and integration. Between July 2023 and June 2024, DA delivered 24 rounds of the *Mild Cognitive Impairment: Thinking Ahead* program across all states and territories. Over this period, 221 people were referred, of whom 168 actively participated (76%), 40 withdrew prior to commencement (18%), and 13 remained on the waitlist at the end of the reporting period (5%). The program was promoted through DA's website, where a dedicated public-facing page was developed to provide

information on program content and access pathways (see Figure 5.4). Referrals were most commonly received via MyAgedCare (30%), the National Dementia Helpline (24%), and memory clinics (11%).

In terms of staff involvement, 35 staff members completed the program training as facilitated by the University of Sydney research team. Training was supported by comprehensive program resources and a recorded workshop to ensure sustainability and capacity-building for future facilitators.

Client feedback obtained by DA and included in their reporting to the research team was highly positive; 91% of clients reported applying strategies learned in the program to their daily lives, and 96% reported valuing the opportunity to connect with peers, which helped normalise their experiences and reduce feelings of isolation.

Based on these outcomes, the program was formally embedded into DA's national suite of education sessions at the end of the implementation period, ensuring ongoing delivery as a routine service offering for people with MCI.

Figure 5.4

Public-Facing Information on the Mild Cognitive Impairment: Thinking Ahead Program. As presented on the DA website: https://www.dementia.org.au/get-support/mild-cognitive-impairment-thinking-ahead

5.4.2 Participant Characteristics

A total of 36 DA staff completed training and commenced facilitation of the *Mild Cognitive Impairment: Thinking Ahead* program during the implementation period. Of these, 34 provided baseline and post-training survey data, and 18 completed surveys at the 9-month follow-up. The mean age of participants was 44.7 years (*SD* = 10.9, range 25-65).

Most participants identified as female (85.3%). The majority were born in Australia (76.5%), with others born in Nigeria, the Czech Republic, Sri Lanka, Zimbabwe, Germany, Northern Ireland, and Vietnam. Cultural backgrounds were diverse, and most participants reported English as their first language (88.2%). Educational attainment was high, with most holding postgraduate qualifications. Professional backgrounds included nursing, social work, psychology, counselling, and dual professional roles. Participants were employed across all Australian states and territories, with the largest proportions in Victoria and Tasmania. Across the project timeline and in line with DA's roll out of the intervention across geographical locations (determined by their internal strategy and resourcing), 23.5% of participants attended Workshop 1 (19 April 2023), 11.8% attended Workshop 2 (24 May 2023), 26.5% attended Workshop 3 (2 August 2023) and 38.2% attended Workshop 4 (20 March 2024). Table 5.1 presents demographic characteristics.

Table 5.1

Demographics of Participating DA Dementia Support Specialist Staff

	n	% Respondents
Gender		
Female	29	85.3
Male	5	14.7
Highest Education		
Diploma	11	32.4
Bachelor's degree	14	41.2
Master's degree	8	23.5
PhD	1	2.9
State of DA Employment		
New South Wales	5	14.7
Victoria	10	29.4
Queensland	2	5.9
South Australia	4	11.8
Western Australia	4	11.8
Tasmania	6	17.6
Northern Territory	1	2.9
Australian Capital Territory	2	5.9

5.4.3 Baseline Findings

At baseline, i.e., prior to undergoing training, participants reported spending an average of 12.5 hours per week (*SD* = 8.60, range 0-30) delivering DA rehabilitation services and 4.0 hours (*SD* = 4.43) working with or facilitating groups. Staff expressed high satisfaction with their roles, although most (90.9%) endorsed a desire to deliver more COTs as part of routine work.

Baseline ratings of confidence and knowledge are shown in Table 5.2. Confidence was highest for 'working with older adults' and 'facilitating groups', and lowest for 'working with people with MCI'. Knowledge was strongest for 'dementia risk factors' and weakest for 'sleep'

and ‘cognition’. Wilcoxon signed-rank tests indicated no significant differences between knowledge and confidence across domains (all $p > 0.05$), though staff tended to report higher knowledge than confidence in dementia risk factors ($z = -1.94$, $p = 0.052$).

Table 5.2

Baseline Self-Reported Staff Ratings of Confidence and Knowledge

Variable	*M*	*SD*
Confidence ratings		
Working with older adults	4.33	0.54
Working with people with MCI	3.79	0.65
Delivering/facilitating COTs	3.88	0.70
Facilitating group programs	4.12	0.65
Knowledge ratings		
Brain, cognition, and ageing changes	3.94	0.50
Attention and concentration	3.82	0.68
Memory functioning	3.91	0.58
Executive functions	3.88	0.70
Dementia risk factors	4.27	0.63
Psychological wellbeing	3.88	0.70
Sleep and cognition	3.67	0.74
Goal setting and behaviour change	3.82	0.85

Note. Ratings were provided on a 5-point Likert scale, with higher scores reflecting greater confidence or knowledge.

Baseline ORIC scores indicated a high level of organisational readiness to implement the *Mild Cognitive Impairment: Thinking Ahead* program. Internal consistency was excellent for the total 12-item scale (*Cronbach's* $\alpha = 0.96$), as well as for the commitment ($\alpha = 0.96$) and efficacy ($\alpha = 0.93$) subscales. Staff reported strong change commitment ($M = 23.10$, $SD = 2.70$; possible range = 5-25) and moderate-to-high change efficacy ($M = 30.42$, $SD = 4.39$; possible range = 7-

35), yielding a mean total readiness for change score of 53.52 (*SD* = 6.79; possible range = 12-60). Although overall endorsement was high, relatively lower ratings were observed for items relating to confidence in resource availability and managing potential barriers (e.g., coordinating tasks, navigating organisational politics).

In addition to structured survey items, staff provided free-text responses at baseline. When asked what they were most looking forward to about delivering the program, participants commonly highlighted opportunities to improve client knowledge about MCI, support people to adopt strategies in their daily lives, and further develop their own group-program facilitation skills. The aspects that staff were least looking forward to were administrative tasks, potential technical difficulties, managing time pressures, and, in some cases, delivering sessions alone without local peer support. New skills that staff hoped to gain centred on improving knowledge of MCI and brain health, learning practical strategies to support clients with MCI, and developing confidence in facilitating group-based interventions. Staff anticipated that potential barriers to delivering the program might include low client engagement, time constraints, availability of facilitators, and the unique challenges of delivering interventions in regional settings where support may be more limited than in metropolitan settings. Conversely, staff identified potential enabling factors that might enhance program delivery, including peer encouragement, opportunities to observe or co-facilitate sessions, strong organisational support, and clear leadership.

5.4.4 Staff Support Sessions

As part of the consultancy engagement, online structured staff support sessions were delivered between August 2023 and June 2024. Fourteen sessions were offered, with attendance varying from one to eleven participants per session (*median* = 2.5). Attendance was geographically

diverse, with representation from Victoria, New South Wales, South Australia, Western Australia, Tasmania, Queensland, and the Australian Capital Territory. The first session (30 August 2023) drew the largest group (n = 11), while subsequent sessions typically involved smaller groups of two to four facilitators, with a small number of sessions attended by a single staff member. One scheduled session (14 February 2024) did not include any staff participants.

In practice, these sessions provided dual forms of support. First, they enabled facilitators to access program experts (i.e., LM) for troubleshooting both clinical and logistical issues, consolidating their knowledge, and drawing on prior experience with COT-related programs. Equally important, they created opportunities for peer-to-peer support, where staff could exchange internal resources, share strategies for navigating DA's organisational processes, and reflect on their practical experiences in delivering the program. This combination of expert guidance and collegial exchange was perceived as critical in facilitating the translation of the program into routine practice within DA.

5.4.5 Post-Training and Follow-Up Outcomes

At 9-months follow-up, staff reported spending an average of 2.6 hours per week (SD = 1.97) delivering the *Mild Cognitive Impairment: Thinking Ahead* program. Preparation time was greater for the first program delivered, averaging 12.22 hours (SD = 16.11), compared with 7.06 hours (SD = 15.0) for subsequent programs.

Knowledge Ratings

Repeated-measures ANOVAs revealed significant effects of time for knowledge about the brain and cognition ($F(2,24) = 3.78$, $p = 0.04$, $\eta^2p = 0.24$; medium effect size) and dementia risk factors ($F(2,24) = 10.65$, $p = 0.003$, $\eta^2p = 0.66$; large effect size) (see Table 5.3). Pairwise

comparisons, after Bonferroni correction, showed that knowledge of the brain increased significantly from baseline to post-training ($p = 0.02$). Although this gain was not sustained at the 9-month follow-up, knowledge levels tended to remain higher than at baseline. Similarly, knowledge of dementia risk factors improved post-training compared with baseline, but scores declined to baseline levels at follow-up. No significant changes were observed for their knowledge of changes in attention, memory, executive function, mood, or sleep in MCI, nor within their knowledge of goal setting (all $p > 0.10$). These findings suggest that the program was most effective in enhancing knowledge about brain health and dementia risk factors, although reinforcement may be needed to sustain these gains over time.

Table 5.3

Means, Standard Deviations and Repeated-Measures ANOVA Results for Self-Reported Knowledge Ratings at Baseline (BL), Post-Training (PT) and at 9-Months Follow-Up (FU)

Knowledge Domain	BL	PT	FU	*F*	*p*	η^2p
	M (SD)	*M (SD)*	*M (SD)*	(2,24)		
Brain & cognition	3.92 (0.28)	4.38 (0.51)	4.23 (0.60)	3.78	0.04*	0.24
Risk factors	4.23 (0.60)	4.62 (0.51)	4.23 (0.60)	10.65	0.003*	0.66
Attention & concentration	4.08 (0.49)	4.38 (0.65)	4.08 (0.49)	1.68	0.21	0.12
Memory	4.08 (0.49)	4.46 (0.52)	4.15 (0.56)	2.31	0.12	0.16
Executive function	4.08 (0.49)	4.31 (0.63)	4.00 (0.41)	1.50	0.24	0.11
Mood & wellbeing	3.92 (0.64)	4.23 (0.73)	4.15 (0.69)	1.20	0.31	0.09
Sleep & cognition	3.77 (0.60)	4.00 (0.58)	4.08 (0.76)	1.00	0.38	0.08
Goal setting & behaviour change	3.92 (0.76)	4.08 (1.32)	4.23 (0.73)	0.35	0.71	0.03

η^2p = partial eta squared

*$p < 0.05$

Confidence Ratings

Repeated-measures ANOVAs revealed no significant main effect of time for confidence in working with older adults ($F(2,12) = 0.58$, $p = 0.57$, $\eta^2p = 0.05$), working with people with MCI ($F(2,12) = 2.33$, $p = 0.12$, $\eta^2p = 0.16$), or delivering COTs, ($F(2,12) = 1.37$, $p = 0.27$, $\eta^2p = 0.10$) (see Table 5.4). For confidence in facilitating groups, there was a trend towards a main effect of time ($F(2,12) = 3.26$, $p = 0.056$, $\eta^2p^2 = 0.21$, reflecting a large effect size. Ratings increased from baseline ($M = 4.15$, $SD = 0.56$) and post-training ($M = 4.15$, $SD = 0.56$) to follow-up ($M = 4.54$, $SD = 0.52$). Pairwise comparisons did not reveal significant differences between timepoints after Bonferroni correction, although the improvement in group facilitation confidence between baseline and follow-up approached significance (p = 0.054). These results suggest that participants' confidence was already high at baseline and remained stable or showed modest increases following training and program delivery.

Table 5.4

Means, Standard Deviations and Repeated-Measures ANOVA Results for Self-Reported Confidence Ratings at Baseline (BL), Post-Training (PT) and at 9-Months Follow-Up (FU)

Confidence Domain	BL	PT	FU	*F*	*p*	η^2p
	M (SD)	*M (SD)*	*M (SD)*	(2,12)		
Working with older adults	4.38 (0.51)	4.54 (0.52)	4.46 (0.52)	0.58	0.57	0.05
Working with people with MCI	4.00 (0.41)	4.15 (0.38)	4.38 (0.51)	2.33	0.12	0.16
Delivering COTs	4.08 (0.49)	4.23 (0.44)	4.38 (0.51)	1.37	0.27	0.10
Facilitating group programs	4.15 (0.56)	4.15 (0.56)	4.54 (0.52)	3.26	0.06	0.21

η^2p = partial eta squared

Analyses for confidence ratings according to each domain of content are presented in Table 5.5. Confidence ratings consistently increased from baseline to post-treatment and were

maintained at follow-up, although not all changes reached statistical significance. A significant effect of time was observed for knowledge of dementia risk factors ($F(2,4) = 2.46$, $p = 0.013$, $\eta^2p = 0.55$), representing a very large effect. Quadratic contrasts indicated that confidence increased post-training and then declined slightly by follow-up. For other domains (e.g., information about the brain, attention, memory, executive function, mood, sleep, and goal setting), increases in confidence were observed in raw data but did not reach significance after Bonferroni correction. These results suggest that the program was particularly effective in enhancing participants' confidence in understanding modifiable dementia risk factors, with possible smaller, consistent gains in other areas.

Table 5.5

Means, Standard Deviations and Repeated-Measures ANOVA Results for Domain-Specific Confidence Ratings at Baseline (BL), Post-Training (PT) and at 9-Months Follow-Up (FU)

Domain	BL M (SD)	PT M (SD)	FU M (SD)	*F* (2,4)	*p*	η^2p
Brain information	3.77 (0.73)	4.31 (0.75)	4.15 (0.69)	3.00	0.07	0.20
Attention	3.85 (0.69)	4.31 (0.86)	4.00 (0.58)	2.01	0.16	0.14
Memory	3.92 (0.76)	4.38 (0.77)	4.08 (0.64)	2.01	0.16	0.14
Executive function	3.85 (0.69)	4.15 (0.69)	4.00 (0.58)	1.10	0.35	0.08
Risk factors	4.08 (0.76)	4.54 (0.66)	4.15 (0.56)	6.68	0.01*	0.55
Mood & wellbeing	3.69 (0.86)	4.00 (1.16)	3.92 (0.49)	0.92	0.41	0.07
Sleep & cognition	3.62 (0.65)	3.85 (0.80)	3.77 (0.60)	0.52	0.60	0.04
Goal setting/behaviour change	3.77 (0.93)	4.31 (1.18)	4.08 (0.64)	1.88	0.17	0.14

η^2p = partial eta squared

*$p < 0.05$

5.4.6 Qualitative Analyses

As outlined in the methodology, focus group transcripts were analysed thematically using a combined inductive-deductive approach, with themes organised into a codebook informed by the RE-AIM framework, as defined for our study. To provide clarity and alignment with the overall study aims, themes are presented below according to the five RE-AIM domains (*Reach, Effectiveness, Adoption, Implementation,* and *Maintenance*).

Reach

Broad Program Reach. Staff felt that referral pathways were central to program reach. Referrals came from local memory clinics or via inquiries to DA's National Dementia Helpline. Strong links with clinician referrers (e.g., neuropsychologists, GPs) appeared more likely to attract appropriate clients. Ongoing partnerships with memory clinics and targeted community marketing were critical for sustaining a steady flow of eligible referrals: *"We have a relationship with some memory clinics… we reach out to them and explain our program, give them our flyer and then they were able to refer clients to us. And some of the clients, which is a less percentage, were actually from our existing clients."*

The reported diversity of MCI clients, in terms of cognitive profile and diagnostic stage, demonstrated the program's wide reach. However, broad reach occasionally compromised precision. Some clients initially screened as eligible were later found to be more impaired, with cognitive decline limiting their engagement and occasionally disrupting group cohesion. This highlighted the need for comprehensive screening and clear referral criteria within DA's internal client recruitment process: *"When it actually came to them showing up to the sessions, you'd see that they were a bit more advanced than what they appeared on paper and even when you talk to them over the phone."*

According to staff responses, two factors may have contributed to the presence of inappropriate clients. First, external referrers did not always fully understand the program's target population or eligibility criteria: *"We got heaps of referrals but either they had not a formal diagnosis yet, or their diagnosis was early Alzheimer's disease which was probably mild cognitive impairment, or they needed someone to be with them for driving purposes, vision purposes, used a wheelchair etc. and they just they did not meet the criteria. So, we had 30 referrals, and we got nothing, one person I think qualified for the group."*

Second, facilitators noted that their screening protocols lacked precision. While many refined their processes over time, even experienced staff found it difficult to gauge suitability until clients engaged in sessions. The screening process was described as resource-intensive and stressful: *"We tried refining the process but then you find that with especially with the cognitive diagnosis as well talking to someone for maybe like 20 minutes or half an hour might not be a good reflection of where they are cognitively. Then when you actually sit with them now for maybe two hours in a session, and then that's where you find some of these challenges with some people."*

Virtual Delivery Expands Reach, but Flexibility is Essential. *The mode of delivery played a critical role in program reach. Face-to-face groups were often difficult to establish, even with community engagement and advertising, whereas online delivery consistently attracted strong interest. Virtual sessions extended participation beyond geographic catchments, reaching regional and remote areas where access to memory or dementia services is typically limited: "A lot of the people that are in this online group who are regional don't have a Dementia Australia office close by and so that has been really important… they're ecstatic, they're really happy about it, it's been worthwhile to reach people."*

Online delivery was especially popular in the eastern states and provided a vital option for clients facing transport or mobility barriers: "The transport or perhaps losing a driver's license was the main issue for signing up for the face-to-face version... I'm very grateful that we can offer it as online."

In Western Australia, both face-to-face and online formats had limited uptake. Regional delivery was often not feasible due to distance and travel costs, while online engagement struggled to gain traction: "We haven't done an online version [in WA] as yet… we find that we can't reach regional areas and WA is bloody big. So regional is a lot."

Facilitators therefore emphasised the need for flexibility. Where face-to-face enrolments were low, switching to online delivery was often necessary to ensure program viability: "I am supposed to start face-to-face next week, but it looks like we might have to change it to online because we only have one person registered, although I have done a lot of engagement work leading up to now."

Client Perceptions as Barriers to Program Reach. Despite broad reach and accessible delivery options, staff perceived that client-related factors limited both uptake and sustained engagement. Stigma surrounding cognitive impairment, particularly fears of being perceived as having dementia, was identified as a common deterrent. Staff recounted that some potential clients misunderstood the program as being intended only for people with a dementia diagnosis, a perception unintentionally reinforced by the branding and association with DA: *"Admittedly, we don't get as many MCI clients coming through… Maybe they don't know that they can access support through Dementia Australia for their MCI diagnosis. It is on our website, but it's not widely known."*

Facilitators noted, however, that these misconceptions appeared to be improving over time through community education and stronger referrer relationships: *"Now through building those relationships, they know that we're looking for people with mild cognitive impairment so that in turn is bringing people to Dementia Australia with mild cognitive impairment."*

Staff perceived that other client-related barriers included lack of partner support, reluctance to commit to the program's time demands, and mismatched expectations about content. Clients sometimes disengaged mid-program, citing busy schedules, preference for more social rather than structured content, or feeling the program was *"not for me"*. This sentiment was particularly common when clients had been signed up by their partners.

Effectiveness

Facilitator Learning and Workforce Growth. Facilitators described their experience of the program as highly positive, often noting enjoyment, pride, and professional fulfilment in delivering a unique, evidence-informed intervention. The program and training were consistently viewed as a valuable professional development opportunity that broadened skills and deepened understanding of MCI. Facilitators described gaining confidence through training and delivery of the program: *"I definitely feel like I've been upskilled by participating in the program."*

Confidence appeared to develop progressively with experience, as one facilitator noted: *"I'm really quite confident and comfortable with the content now and I definitely developed that confidence over the weeks."*

Many reported professional growth, through greater familiarity with cognitive strategies, which they were then able to apply more broadly within their DA roles, beyond the setting of the

MCI: Thinking Ahead program: *"I just can incorporate those strategies to everybody that I talk to whether they have an MCI diagnosis or a dementia diagnosis...it gives me confidence."*

Some described the program as prompting ongoing learning and reflection to better respond to client needs: *"I've actually found that it gets me as a facilitator as well to read up a bit more... I found that's helped me as well to understand a bit more about MCI."*

Client Empowerment and Perceived Benefits. Facilitators described observing that client experiences appeared to be highly positive, noting strong client satisfaction and their own sense of fulfilment in delivering sessions. Clients reportedly expressed excitement and achievement upon program completion. While earlier iterations of the program faced some challenges with engagement, refinements to the program during the implementation period appeared to improve outcomes, with staff noting that clients seemed to leave sessions feeling more socially connected, confident in understanding their diagnoses, and motivated to apply strategies in daily life. This further enhanced staff satisfaction with delivering the program: *"The current program I'm running, the participants are very happy with the content. They go home every week feeling confident to take on the strategies and try them out in real life situations. So that is giving me so much joy."*

Staff reported that their clients appeared to value the program's practical focus, and this often seemed to lead to adoption of meaningful behaviour changes. Topics such as nutrition and exercise generated lively discussion, while memory aids like diaries or whiteboards were widely adopted, though some techniques (e.g., rhymes) were harder to implement: *"The physicality of something made it more practical in a sense."*

Client retention rates were high, with facilitators reporting consistent attendance and expressions of hope among participants. Early sessions focused on rapport-building and peer

sharing, which were viewed as key in fostering motivation and optimism: *"They feel hopeful… seeing other people who are willing to share some experiences gives them hope."*

Managing Engagement Challenges. While overall client feedback was positive, facilitators reported several challenges that affected engagement and group dynamics, including variation in cognitive progression, emotional readiness, communication needs, and even sensory impairments (e.g., poor hearing): *"Some people really latched on to the goals and the strategies...and then some people enjoyed learning more about the diagnosis."*

Certain topics appeared to be more emotionally confronting, particularly for clients who may have been less accepting of their diagnosis: *"You sometimes would actually find that people would be a bit confronted with the information...sometimes people are also in denial... and you can see that it's upsetting a bit for the group."*

These moments required careful facilitation and, at times, sensitive follow-up: *"You have to be on your toes to quickly rein in people like that...and also, at the end of the session, just have a side note with them to find out exactly where they are and reassure them."*

Nevertheless, facilitators described these challenges as manageable with responsive facilitation strategies. Brief lapses in attendance were usually addressed through personalised follow-up, helping to sustain participation: *"You just ring them up and follow up again and just reassure them and then they'll come back."*

Adoption

A Proactive Shift in Service Delivery. The program was seen as well-aligned with DA's evolving strategic direction. While the organisation has traditionally delivered dementia-focused services, facilitators noted a shift toward proactive, person-centred programs that intervene earlier

in the cognitive decline process. Adoption of this program, designed specifically for people with MCI, and investment in staff training and resourcing to deliver the program nationwide, were seen as evidence of this change: *"We're building our teams' availability and knowledge in this area now."*

Although staff felt that some content overlapped with existing offerings (e.g., content around grief and loss, self-care, types of dementia), key distinctions were emphasised. Existing programs tended to target carers, with the person diagnosed often a secondary participant, and few explicitly addressed MCI. In contrast, staff highlighted that this program was purpose-built for people with MCI, excluded carers, and offered *"structured cognitive training".* The program was described as *"filling a gap", "meeting an unmet need", and "refreshing": "I do believe this is our only intervention program… we are reaching out and giving people the hope that putting these in place might actually do some reversing."*

Facilitators highlighted the scarcity of accessible options for people with MCI. One staff member recounted that a client who was unable to participate in the program sought alternatives and found a "similar" program priced at $800. This was seen as fostering a form of learned helplessness, where clients seemed to feel that support only becomes available after a dementia diagnosis; however, the *Mild Cognitive Impairment: Thinking Ahead program* provided an avenue to redress this: *"I think it adds a bit of a substance to the whole MCI journey instead of just being like 'I have MCI but I don't got any support and I've got to wait till dementia."*

Program Champions Drove Adoption. Program champions were seen as vital to adoption. These individuals, whether team leaders encouraging staff to engage with training or facilitators promoting the program to colleagues, helped raise awareness and supported uptake. Champions also maintained close contact with the research team, providing updates, mentoring new

facilitators, and troubleshooting implementation barriers. In this way, they acted as key drivers of both awareness and sustainability: *"She was like the co-founder, the launcher for the program at our site. It's kind of like her program really in South Australia."*

Implementation

Building Facilitator Confidence through Training and Hands-On Experience. Facilitators often reported initial nervousness about program delivery. Training and support from the research team, through the formal training manual and workshop as well as the optional online drop-in sessions, helped alleviate this, offering practical advice and key principles. These opportunities were widely described as *"helpful"* and *"one of the best parts"* of the program, expanding facilitator skills into areas not typically addressed within DA: *"MCI is not something that is the bread and butter of Dementia Australia… We don't do a lot of work on executive functioning, encoding and how the memory works."*

Some felt that the program-specific training complemented their extensive experience in other DA services to prepare them to deliver the new intervention: *"I've probably facilitated, I don't know, maybe four or five Living with Dementia programs. I had a really good understanding of connection with the person that has the diagnosis of MCI. I didn't feel like I had to seek out any additional education or information beyond the training."*

Others needed extensive preparation initially, but this eased with experience: *"Now that I've run one, I will not have to do nearly as much preparation for the next one. So, every week I would spend maybe two hours revising the slides, referring to that training manual, adding my own notes. I did do that for every week. But now that I've got that set up, I wouldn't have to do that level of preparation."*

Several noted that the resources only became fully meaningful once delivery began, when they could practically apply the training and materials: *"After I did the training session, I had the workbook, I had the slides. I didn't feel prepared enough but then as I... started doing the sessions, that workbook is like my manual. I use it all the time. It made sense after I had started delivering the sessions."*

Facilitators suggested strengthening training with more hands-on opportunities, such as observing delivery or practising sessions in advance: *"Watching another facilitator deliver it and just sit back and have no pressure and just to see what the responses were and what I thought was important for that face-to-face group was like, wow, okay maybe I don't need to know all the content so much, maybe that's not important. maybe it's just about knowing what you want to hammer home, the main goals and how much is too much and just recognising when people are getting tired or whatever, instead of worrying about getting through the content."*

Drop-in sessions were also valued for peer learning and networking, though timing and workload sometimes limited participation: *"The fact that I can hear from other facilitators in those sessions, to learn from their experience, learn what's working, that sort of thing. That support has been really instrumental to how I have navigated all the challenges, so it's really good."*

Content Evolution and Program Fidelity. Facilitators agreed that the program's structured and evidence-informed design provided a strong foundation for delivery: *"I think the material and the content is really excellent. It's very grounded in evidence and it's really comprehensive… It's all about being proactive, about empowerment."*

Many highlighted the iterative evolution of the content as an advantage to the implementation process, noting that revisions significantly improved delivery and client engagement. Early versions were described as overly dense or academic, while the revised version

was more accessible and better aligned with client needs: *"My initial experience wasn't quite good… some of the clients were not really getting a lot out of it. But [after revisions], the participants are very happy with the content."*

Visual and structural updates to slides and resources were particularly well received, enhancing both delivery and consistency with other DA programs: *"I really appreciated the recent review of the program…even the slides…visually…the slides really fit with all our programs…that made it much easier for all facilitators to deliver it… it just makes sense for the client."*

Despite improvements, the volume of content remained challenging, especially for clients further along in their cognitive progression: *"It is still very heavy for them…even though we are breaking it down in a more digestible way."*

Facilitators described strategies to adapt delivery while maintaining fidelity, such as pacing content, segmenting workbook materials, and creating additional resources to support clients: *"I actually broke up the workbook…gave them the bit about that week, each week instead of giving them the whole thing… I did another printout of the homework just in case people tended to lose things."*

Overall, facilitators welcomed the revised materials and praised the responsiveness of the research team to feedback: *"The change from the first iteration to the second has been enormous… it's so much easier to deliver now."*

Balancing Online vs. Face-to-Face Delivery. Facilitators reflected on the trade-offs between delivery modes. Face-to-face sessions were consistently preferred by staff for rapport, engagement and group cohesion: *"If they can physically get here, then they definitely prefer face-to-face."*

In-person delivery allowed for informal conversations and social moments that were often inaccessible online: *"In-person, you can send them on a tea break… online they are in their own homes and come back and just wait."*

Some facilitators adopted flexible, or hybrid approaches to accommodate clients' needs: *"She was away house-sitting in Melbourne… she joined virtually while the other person came face-to-face… each week we had to help her practice joining to feel confident."*

Ultimately, while face-to-face was seen as the gold standard for engagement, offering both modalities was considered essential to optimise reach and accessibility.

Adapting to Client Needs. Facilitators demonstrated considerable flexibility, frequently adapting format, content, and structure to meet clients' diverse needs in cognitive status, emotional readiness, and technical literacy: *"We're constantly having to… adapt the program to people's needs."*

Adaptations included breaking down workbook materials into smaller segments, condensing delivery, and providing summary emails or handouts to support accessibility: *"I tailored it to suit the people that I was working with… I broke up the workbook… gave them the bit about that week… sent out summary emails after every session… some people needed that structure to get something out of it."*

Facilitators also adjusted pacing to accommodate slower processing or emotional overwhelm: *"I tried to cohesively and succinctly explain everything…adapted each week depending on what participants were most interested in."*

In online formats, technological barriers required creative solutions, such as sending step-by-step guides and relying on partner support: *"We had to send a supporting email with step-by-step guides… some participants needed help from their partner just to join the session."*

Homework was another challenge. Facilitators shifted toward collaborative, in-session goal-setting and problem-solving when clients struggled to complete tasks independently: *"We're probably spending a little bit more time workshopping… because I know they're not going home and actually pinning down their SMART goals."*

Managing expectations was also important, particularly when clients sought solutions beyond the program's scope: *"She was looking to solve the diagnosis… I was clear about the program goals and helped her focus on more specific, achievable goals."*

Although time-intensive, facilitators viewed these adaptations as essential to maintaining engagement and supporting outcomes. They emphasised that such adjustments required attentiveness, creativity, and a strong understanding of both program content and aims, and client needs.

Support Gaps and Workload. Facilitators reported considerable variability in the logistical and administrative support available for program delivery. Some sites had access to dedicated staff who assisted with technical issues and client coordination: *"We always have a support person for technical issues…we always have our admin team at the ready… So, if someone's unable to hop on the meeting or having technical issues… they can ring the client and work with them over the phone."*

Other sites operated with minimal infrastructure, requiring facilitators to manage nearly all aspects themselves: *"We don't have the admin support in the office for that…it's about finding the time ourselves to try and do it… we only have a very small office."*

Preparation for commencing a group was consistently described as labour-intensive, including screening, introductory calls, preparing materials, and booking venues: *"The biggest part is the eligibility check… about three hours per person doing your prechecks."*

Facilitators were often the sole point of contact for clients, balancing logistics with client support. Some managed this workload, while others felt it exceeded that of comparable programs: *"It's probably a lot more in the front end in terms of processing the referral, contacting the client, doing the introduction session, writing up the notes and all of that. It's probably more than I would do for some of the other programs."*

Those delivering from home-based or under-resourced offices reported additional strain in managing printing, materials, and troubleshooting technical issues: *"I'm in a home office… So, it's up to me to produce all that paperwork and the resources… it's hard to find the printing materials."*

Maintenance

Sustaining and Embedding the Program. Facilitators overwhelmingly described the program as sustainable and worthwhile, with strong enthusiasm to continue delivering it: *"Just after completing the first program, I'd love to continue… I think it's really good."*

Its apparent value to clients, along with facilitator satisfaction, was frequently cited as key to ongoing appeal. Many respondents had already delivered multiple rounds of the program at the time of follow-up, suggesting that adoption and embedding of the program within services was feasible and actively pursued across sites. Co-facilitation, adapting to different delivery modes, and drawing on lessons from earlier rounds were viewed as positive indicators of long-term viability. Internal capacity-building also supported sustainability, with colleagues encouraged to shadow sessions and gradually transition into facilitator roles: *"We're building our teams' availability and knowledge in this area now so soon we'll have three staff and by the end of next year we'll have four or five who can take on the program… which will be really good because then*

that gives people that capacity to be able to get expertise from more than one person… So, now we're slowly building so that it will be a broader availability of our staff to be able to run it."

This growing pool of facilitators reduced reliance on single staff members, strengthening program resilience: *"I have other colleagues that have run the program previously that I could ask questions about."*

Several services had begun integrating the program into their routine planning, using prioritisation systems and scheduling more future rounds: *"Currently we're doing six-month plans. So, we just get given a spreadsheet and we do… a wishlist of what we would like to run… I put the MCI program at number one. I really enjoyed running it."*

Early investment in referral networks, community awareness, and central administrative processes were also expected to make future delivery more efficient: *"Now, we have a really big section on our website that is on MCI so hopefully we will see more referrals coming through. So, I would hope that this next financial year, maybe we'll see more."*

Some facilitators expressed interest in expanding eligibility to include support partners, reflecting enthusiasm for program growth and refinement: *"In my ideal world, I would love to see it keep going. I'd love to see it be open to a support person to come along as well because a lot of the strategies you need someone to support you through them to support effective change over time. So, it would be great to see people able to bring along someone if they want to."*

Barriers to Ongoing Delivery. Despite strong enthusiasm for the program, facilitators identified barriers to sustaining delivery over time. Challenges included staffing shortages, geographic limitations, competing service demands, and limited systemic integration. For some sites, simply initiating the program was difficult due to local infrastructure or referral constraints:

"I feel… really excited about finishing the first program because it's been a little bit hard to get going here in Queensland. We've found it quite challenging to get it up and running."

Maintaining momentum was particularly difficult where referrals were too low to form a group: *"We just weren't able to get a full group together in ACT, even our one session was only two individuals."*

Staffing limitations and a lack of internal awareness were frequently cited as bottlenecks. Despite more staff being trained, the program was sometimes described as underutilised or overshadowed by competing responsibilities: *"I think…for the boost of the program would be to have enough staff members who are across it to put their hand up to do the course… I think [the program] lives in the shadows a little bit… there's only a couple of us that are trained in it let alone aware of it despite our knowledge of MCI overall."*

Barriers also stemmed from role structure and workplace isolation. Staff working remotely or across state borders reported difficulty accessing resources, lacking team support, or feeling disconnected from other trained facilitators: *"I think that working remotely was a major contributing factor… It's quite isolating, you know. I'm just looking for somebody else who is delivering it."*

Some facilitators noted that further exposure and opportunities to observe delivery would help them build confidence: *"I'd really like to see it in action before I do anything like this."*

Funding and administrative constraints also limited the number of programs delivered, sometimes leaving facilitators disappointed at not being scheduled to run another round: *"I didn't get put on one [program] this term because I think we're only funded to run a certain amount."*

Future Directions for Program Development.

Inclusion of Partners. One of the most frequent recommendations was to involve clients' partners in sessions. Staff felt that partners could reinforce learning, assist with strategy use, and support homework completion. Partners could also address logistical barriers, as many clients relied on them for transport to face-to-face sessions: *"I like the idea of having a support person if they'd like it, I think that could be really useful because we want to give them some strategies and we want them to have that support to put them into place and you know if they have that backup and someone reminding them like 'remember there was a better way to go about doing that, let's try that today."*

In some cases, facilitators also fostered informal partner networks, offering them opportunities for peer support alongside the structured program: *"We ended up having the wives because our participant group ended up being all men (it just happened that way). The wives all ended up meeting in our family room having tea and coffee or going to the library together and then coming back. So, it was good in terms of them getting the support they need from each other."*

Program Content and Delivery. Facilitators and clients also recommended reducing content per session or adding an extra week, using plain English instead of jargon, and allowing more time for discussion and peer interaction: *"One of the actual goals in the original work is engagement and connecting with people who are going through similar things. And they're not really getting the opportunity to share their experiences and ask for tips and strategies really."*

Facilitators also suggested additional topics, such as disclosing a diagnosis, helping partners understand MCI, maintaining autonomy, driving, and power of attorney. One facilitator emphasised dedicating time early in the program to processing the diagnosis: *"I've heard from a number of participants how even from the start, they don't fully understand their own, I guess,*

assessment outcomes and how they got the diagnosis and I think for them it's a bit of a stumbling block moving forward in terms of maybe accepting some of the information we're providing and so having a good chunk of time devoted to that could be really useful in facilitating their learning."

Facilitators also acknowledged that no single structure could meet every client's needs: *"You're always going to get participants that might have more of an interest in one particular topic… It depends on what their underlying causal factor is. It depends on what support they have at home. So, I feel like it's not as simple to say whether it's too much content or not enough because you're really, it's really going to vary group to group."*

Training and Drop-In Sessions. Finally, facilitators suggested additional training in online facilitation and emphasised the ongoing value of drop-in sessions for sharing strategies, trouble-shooting, and refining delivery.

5.5 Discussion

This study examined the adaptation and national implementation of the HBA Program within DA's service structure. The customised version, called the *Mild Cognitive Impairment: Thinking Ahead* program, was designed to align with DA's strategic priorities. The project aimed to adapt the original HBA Program (Diamond et al., 2015; Naismith et al., 2011; Norrie et al., 2011), train DA staff to deliver it (including development of facilitator resources), and evaluate implementation using the RE-AIM framework (Glasgow et al., 2019).

Across the implementation period, 36 staff were nominated by DA to complete training, 24 rounds of the program were delivered nationally, and 168 clients with MCI participated. A mixed-methods evaluation showed that training increased staff knowledge, particularly in areas related to brain health and dementia risk factors, although some gains declined over time.

Confidence, already high at baseline, remained stable or showed modest improvement, particularly in group facilitation. Both facilitators and clients reported strong satisfaction, with perceived benefits including empowerment, engagement, and meaningful uptake of strategies. At an organisational level, adoption was supported by DA's growing strategic focus on MCI, the presence of program champions, and the adaptability of the program and its resources. Implementation was aided by flexible training, responsive supervision, and iterative content refinement, but constrained by workload pressures, referral challenges, and uneven administrative support. Overall, the adaptation and integration of the program can be considered successful, as DA has now formally embedded it into routine service provision. However, long-term sustainability will depend on broader systemic factors, including staffing capacity, referral pathways, and evolving organisational priorities. Taken together, these findings demonstrate the potential for research-community partnerships to scale evidence-based COTs nationally. At the same time, they highlight the realities of implementing complex interventions within large community organisations, where success depends not only on program quality but also on the context in which delivery occurs (Fixsen et al., 2005; Greenhalgh et al., 2004).

5.5.1 Training and Facilitator Capacity

The evaluation offers several lessons for future implementation strategies. Training improved knowledge, but gains were not fully maintained at follow-up. This findings aligns with evidence that one-off training rarely produces sustained practice change without ongoing reinforcement through supervision, refresher learning, or booster sessions (Durlak & DuPre, 2008; Fixsen et al., 2005). The initial training provided a strong foundation; however, reinforcement strategies appear necessary to maintain improvements over time. Importantly, the observed decline

may not simply indicate a reduction in competence. Staff ratings were qualitative and may instead reflect shifting expectations as facilitators moved from preparing to deliver a content-intensive program to managing the dynamic challenges of real-world delivery. From this perspective, evolving knowledge needs, rather than loss of skills, underscore the importance of targeted, ongoing training at later delivery stages.

Confidence showed limited change, likely due to high baseline ratings, with modest gains in group facilitation. These findings align with research emphasising the role of structured training in supporting the implementation of COTs (Pike et al., 2024) and with broader theories of self-efficacy in behaviour change (Bandura, 1997). They also reinforce that training alone is unlikely to sustain competence over time, and that adaptive, ongoing strategies are needed to address facilitators' evolving needs. Evidence from related health education fields suggests booster training can consolidate learning and support sustainability (e.g., Sutton et al., 2011; Wolfe et al., 2015), although such approaches remain underexplored in COT contexts.

5.5.2 Client Experiences and Outcomes

Facilitators perceived client outcomes as highly positive. Clients reportedly valued the program's practical focus and the opportunity to connect with peers, consistent with findings that group-based COTs can enhance self-efficacy and reduce social isolation (e.g., Gibbor et al., 2021; Kudlicka et al., 2023). Importantly, participation in the program appeared to help clients reframe their diagnosis, shifting from fear or stigma toward greater confidence and hope. Although client-level outcomes were not directly measured, these observations highlight an important direction for future research, as systematic measurement of psychosocial, cognitive, and functional outcomes would allow firmer conclusions to be drawn about program impact.

5.5.3 Organisational Adoption and Sustainability

Adoption was facilitated by DA's strategic expansion to include MCI within its remit (e.g., Dementia Australia, 2024). While historically focused on dementia, DA demonstrated strong organisational readiness through efforts to identify and develop MCI-specific resources. Program funding from the Department of Health further reinforced this momentum, signalling high-level government support and alignment with national priorities for dementia and ageing. This organisational alignment and leadership support have been identified as critical to adoption (Aarons et al., 2014; May et al., 2016; Pike et al., 2024; Scheirer & Dearing, 2011). Our findings also resonate with prior efforts to implement the LaTCH memory group program within DA, which demonstrated feasibility, broad reach, and meaningful benefits for both clients and facilitators (Kinsella et al., 2020). Despite these successes, earlier implementation also faced difficulties in sustaining delivery, particularly in terms of program fidelity, staff resourcing, and client engagement. In contrast, the present project deliberately emphasised adaptability and iterative refinement, embedding staff training, developing flexible resources, and incorporating feedback loops throughout implementation. These strategies directly addressed sustainability challenges highlighted in earlier work (Kinsella et al., 2020) and in the implementation science (Scheirer, 2005; Scheirer & Dearing, 2011; Stirman et al., 2012), and were considered critical to the success of the current program.

At the same time, implementation highlighted the tension between fidelity and contextual adaptation. For example, while the research team recommended clearer MCI eligibility criteria and structured referral processes, DA opted for a broader approach to maximise reach. This reflected the realities of community-based recruitment, where clients may have been referred through

diverse and sometimes unclear pathways. This variability created challenges for group cohesion and facilitator workload. Future strategies might include streamlined referral processes or enrolment sessions that clarify diagnoses and assess client needs prior to participation.

Similarly, the program had inherent infrastructure and administrative requirements (e.g., printing client workbooks), and while this was minimised during the adaptation phase to manage organisational burden, the research team was unaware that some facilitators were tasked with delivering programs from home-based offices with more limited resources. These decisions, outside of the control of the research team, had a significant impact on staff experience with program delivery. Such tensions illustrate a common challenge in implementation science, whereby interventions must be adapted to fit the unique organisational context into which it is being implemented, while also carefully balancing fidelity (Glasgow & Chambers, 2012; Horner & Ross, 2014; May et al., 2016; Pike et al., 2024). The broader implication is that program design alone is insufficient for sustainability; systemic supports, including staffing, time allocation, and administrative infrastructure, are equally critical (Aarons et al., 2011; Scheirer & Dearing, 2011).

5.5.4 Strengths and Limitations

This project had several strengths. It was implemented through a research-community partnership, lending ecological validity and scalability. Evaluation used mixed methods within the RE-AIM framework to assess implementation comprehensively. The requirement to deliver across both in-person and online modalities added complexity but also expanded access for clients who may otherwise have been unable to participate due to geographical, social, or physical barriers. Most importantly, the program achieved national reach and was embedded within DA's routine

services, representing one of the first large-scale translations of a COT to achieve sustainability within a community dementia service.

Limitations must also be acknowledged. The quantitative sample was a convenience group shaped by DA's priorities and resourcing, reducing statistical power. Attrition further constrained follow-up analyses, and reliance on self-report introduced potential bias. Client outcomes were assessed indirectly through facilitator reports rather than direct measurement. These limitations reflected DA's concerns about staff burden, privacy, and client wellbeing, which restricted systematic data collection on clients. Fidelity was not formally assessed, which may have led to inconsistencies due to local adaptations. Finally, variability in site-level resources suggests findings may not generalise uniformly across DA's network. These limitations reflect the realities of conducting research within service environments, where evaluation activities must be balanced against operational demands.

5.5.5 Implications

Theoretically, these findings reinforce the RE-AIM framework's emphasis on contextual factors (Glasgow et al., 2019; Holtrop et al., 2021; Pike et al., 2024), showing that program success depends as much on staff training and organisational structures as on intervention content. Practically, they demonstrate that embedding evidence-based interventions in national community organisations can expand access for underserved groups, particularly in rural and remote areas. They also highlight the value of targeted training, supervision, and peer support in building facilitator capacity, and suggest that MCI-focused programs address a critical service gap by moving DA's portfolio earlier in the cognitive decline trajectory.

At a policy level, the findings align with Australia's *National Dementia Action Plan's* emphasis on providing timely, evidence-informed interventions (Australian Government Department of Health and Aged Care, 2024) and global priorities for dementia risk reduction and early intervention (World Health Organisation, 2019). Future research should include systematic client outcome measurement, evaluation of refresher training or digital learning modules, and exploration of involving support persons to enhance generalisation of cognitive strategies. Cost-effectiveness analyses and longitudinal follow-up will also be essential for informing sustainability and policy decisions.

5.5.6 Conclusion

This project demonstrates that evidence-based COTs can be successfully adapted and scaled nationally through partnerships between research teams and community organisations. The *Mild Cognitive Impairment: Thinking Ahead* program is now embedded within DA's services and available nationally, representing a significant step toward improving access to early interventions for people with MCI. At the same time, the findings highlight the tension between optimal program design and the realities of service delivery, where organisational priorities and resources shape implementation outcomes. By acknowledging both successes and challenges, this study provides valuable insights into the conditions necessary for sustainable and scalable models of COT delivery in community settings.

CHAPTER VI. Summary, Discussion and Future Directions

This thesis set out to address a persistent challenge in dementia prevention and care, namely, how to translate evidence-based COTs into routine clinical and community practice for older adults with MCI. Although COTs are supported by an increasingly robust evidence base and are now recommended in national and international guidelines (Australian Dementia Network, 2024; Petersen et al., 2018; Wong et al., 2014; World Health Organisation, 2019), their uptake in real-world services remains limited.

The central argument advanced here is that the sustainability of COT implementation cannot be explained solely by the appeal and efficacy of interventions. Rather, it depends on the interplay between clinician and facilitator engagement, organisational and community contexts, and broader system-level supports. These factors determine not only whether COTs can be introduced into health services, but also whether they can endure once pilot projects conclude.

The empirical studies presented here explored how workforce training, adaptation, and contextual embedding influenced both the feasibility and sustainability of COTs in Australian memory clinics and community services. Drawing on an implementation science perspective and utilising both quantitative and qualitative methods, this work provides insight into the conditions required for COTs to move beyond feasibility and towards sustainability. The following discussion integrates key findings across the program of work, considers their wider implications in relation to international literature, reflects on methodological strengths and limitations, and outlines directions for future research and practice.

6.1 Summary of Key Findings

The first component of this thesis was a review of the literature on COTs and their lack of translation into practice ***(Chapter II).*** The review highlighted a strong evidence base in MCI, but

also revealed persistent barriers to integration at clinician, client, and organisational levels. Notably, workforce training and confidence emerged as central challenges, yet little was known about how training should be structured to be both effective and sustainable. This gap set the stage for the subsequent empirical studies.

The national survey of Australian neuropsychologists and neuropsychology students in memory clinics ***(Chapter III)*** was the first empirical step in this direction. It revealed strong professional motivation to deliver COTs, but also widespread acknowledgement of limited training and practical opportunities in the Australian context. COTs were viewed as a core aspect of neuropsychology practice yet were considered to be underdeveloped in training and service delivery. These findings showed that motivation was not the limiting factor; rather, systemic and educational barriers constrained implementation.

Together with the scoping review (Pike et al., 2025) (see Appendix A), the survey study formed the initial mapping phase of the ADNeT-MC *Cognitive Intervention Working Party's* national program of work. Insights from this phase informed the development of a structured clinician training package (Bahar-Fuchs et al., 2025) (see Appendix B), which was subsequently trialled in a multi-site implementation study. Under conditions of structured training, supervision, and peer support, all participating memory clinics successfully implemented COTs, demonstrating feasibility when supports were in place (Pike et al., 2025, in preparation).

Chapter IV extended this work by examining whether delivery could be sustained once external supports were withdrawn. During the six-month maintenance period, only two of the five sites continued to deliver COTs, though all expressed intention to resume or embed them in routine care. Clinicians reported lasting gains in knowledge and confidence; however, structural barriers such as workload pressures, resource constraints, and competing service priorities limited

sustainability. Clinicians tended to interpret challenges through the lens of therapeutic engagement and time constraints, whereas managers emphasised leadership, organisational readiness, and resources. This underscored the need for sustainability strategies that address both perspectives in tandem.

These findings also exposed the limitations of relying solely on neuropsychologists to deliver COTs at scale. Workforce shortages, competing diagnostic demands, and structural constraints suggested that alternative models of care were necessary for wider and more sustainable access. In response, the final study ***(Chapter V)*** partnered with DA to adapt and scale the HBA Program (Diamond et al., 2015; Norrie et al., 2011) into the *Mild Cognitive Impairment: Thinking Ahead* program. Through an iterative co-design process, the program was adapted to align with DA's values, workforce capacity, and service model. Structured facilitator training, supported by manuals, workshops, and peer-support sessions, enhanced staff knowledge and confidence. Importantly, training was recorded and retained by DA, creating a lasting resource for future onboarding. Within the first year, 24 program rounds were delivered nationally, reaching 168 clients, receiving highly positive feedback, and becoming embedded in DA's regular service offerings.

Overall, these studies demonstrate that COTs are generally acceptable and feasible in both clinical and community contexts. However, sustainability appears to hinge on a more complex interplay between individual motivation and broader organisational structures. Notably, clinician or facilitator enthusiasm proved necessary but not sufficient on its own; adaptation enhanced rather than undermined fidelity; and ultimately, organisational context played a decisive role in determining whether COTs could persist beyond the pilot phase.

6.2 Implications and Alignment with the Literature

The findings of this thesis align closely with international evidence on implementing cognitive and psychosocial interventions in MCI and dementia care. A central implication is that sustainability cannot be assumed on the basis of efficacy alone. Instead, it depends on whether interventions are embedded within workflows, service systems, and organisational cultures. This distinction is widely reflected in the implementation science literature (Eccles & Mittman, 2006; Nilsen, 2015; Proctor et al., 2011; Scheirer & Dearing, 2011; Stirman et al., 2012).

Large-scale initiatives reinforce this principle. The United Kingdom's *Goal-Oriented Cognitive Rehabilitation in Early-Stage Alzheimer's and Related Dementias (GREAT)* trial demonstrated that while CR was clinically effective, its continuation required explicit service-level integration (Clare et al., 2019). Similarly, the *Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGER)* demonstrated that multi-domain interventions could delay decline; however, sustainability depended on adapting to the infrastructure and funding contexts (Ngandu et al., 2015). More recently, the *World Alzheimer Report 2025* (Alzheimer's Disease International et al., 2025) underscored the fragility of rehabilitation initiatives, noting that many falter after pilot phases unless accompanied by system-level translation strategies. Such lessons underscore the importance of structured frameworks to guide translation, ensuring that implementation is evaluated not only by outcomes but also by the processes that support long-term integration and sustainability.

This thesis contributes directly to this international dialogue by operationalising the RE-AIM framework across both memory clinic and community settings. Implementation science has long emphasised the importance of structured translation approaches (Glasgow et al., 2019; Holtrop et al., 2021), yet their real-world applications have often been limited (Pike et al., 2024).

Incorporating frameworks such as RE-AIM is critical because it shifts evaluation beyond clinical efficacy to also encompass the workforce, organisational, and contextual processes that determine whether interventions become embedded and sustained (Glasgow et al., 2019; Holtrop et al., 2021). In doing so, frameworks promote transparency and comparability across studies, enabling the identification of common barriers and enablers, and supporting the accumulation of evidence for scale-up. They also foreground longer-term outcomes such as sustainability and system-level change, which are frequently neglected in efficacy-focused trials (Scheirer, 2005; Scheirer & Dearing, 2011; Stirman et al., 2012). The flexible application of RE-AIM in this thesis (e.g., combining quantitative indicators for domains such as *Reach* and *Effectiveness*, with qualitative insights for *Implementation* and *Maintenance*) demonstrates its utility in capturing the complexity of real-world contexts.

Consistent with evidence across healthcare settings, clinician and facilitator engagement emerged as a critical determinant of sustainability. Engaged clinicians have been shown not only to facilitate the adoption of new practices but also to drive ongoing adaptation (Cowie et al., 2020; Khalil & Kynoch, 2021; Pike et al., 2024). Evidence further suggests that sustainability is rarely achieved without clinicians acting as "change champions" who advocate for and legitimise new practices (Cowie et al., 2020; Scheirer & Dearing, 2011; Stirman et al., 2012). Studies of CST in Brazil, India, and Tanzania similarly emphasise the importance of training, supervision, and stakeholder involvement in ensuring both fidelity and acceptability (Bertrand et al., 2019; Fisher et al., 2024; Naylor et al., 2024; Stoner et al., 2020). The findings in this thesis reinforce that while structured training can enhance confidence and competence, sustainability ultimately depends on systemic supports such as managerial endorsement, protected time, and integration into established care pathways.

Adaptation also emerged as central to sustainability. Echoing the CST implementation literature, which highlights the necessity of cultural, linguistic, and logistical adaptations (Bertrand et al., 2019; Fisher et al., 2023; Fisher et al., 2024; Naylor et al., 2024; Stoner et al., 2020), this thesis found that adaptation supported rather than undermined fidelity. The DA program exemplified this process, striking a balance between fidelity to core principles and pragmatic adjustments to structure and resources.

Finally, the program of work illustrates the value of networked and collaborative implementation models. The ADNeT initiative demonstrated how national networks can harmonise training and foster shared learning, while the DA partnership showed how embedding within a large-scale community organisation can accelerate rollout and strengthen sustainability. These findings parallel international initiatives such as *CST-International* (Fisher et al., 2023; Spector et al., 2019), the *European Dementia Prevention Initiative* (Dehnel, 2013), the *Canadian Consortium on Neurodegeneration in Aging* (see website: https://ccna-ccnv.ca/), and *GREAT-into Practice* (Clare et al., 2023), which collectively demonstrate that sustainability is more readily achieved when interventions are embedded within coordinated infrastructures rather than left to isolated services.

6.3 Methodological Considerations and Limitations

This body of work had several notable strengths. First, the use of a mixed-methods approach enabled the capture of both measurable outcomes and contextual experiences. This provided complementary insights that strengthened the validity of the findings. A second strength is the inclusion of diverse service settings spanning both specialist memory clinics and a large-scale community organisation. This breadth allowed examination of implementation across

different points on the care continuum and enhanced the ecological validity of the results. A third strength is the integration of multiple stakeholder perspectives, including clinicians, service managers, and community facilitators. This ensured that the analysis reflected the realities of implementation across professional and organisational levels. Taken together, these features provided a comprehensive account of the feasibility and sustainability of COT implementation.

At the same time, several limitations should be acknowledged. The sample sizes in both quantitative and qualitative components were modest, reflecting the challenges of engaging busy clinicians and community facilitators in research while they manage their routine workloads. This limited the statistical power of quantitative analyses, meaning that findings should be interpreted with caution, particularly in relation to the generalisability of effect sizes. However, triangulation with qualitative findings mitigated some of these concerns by providing converging evidence across methods. Another consideration is that all studies were conducted in Australia. While the findings align with international literature, contextual differences in health systems, funding models, and workforce structures mean that direct generalisation across countries should be approached with caution.

A further limitation is that the research did not specifically evaluate cost or cost-effectiveness, despite these being key determinants of feasibility and sustainability (Pike et al., 2024). This omission reflects the ‘arms-length’ design of both implementation studies, in which we partnered with services but did not embed a formal economic evaluation. Nevertheless, it is highly likely that stakeholders in both memory clinics and DA considered cost and value when deciding whether COTs could be incorporated into routine practice. The continuation of COTs at several memory clinic sites and within DA strongly suggests that decision-makers judged them to provide sufficient benefit to justify ongoing delivery. Future research would benefit from explicitly

incorporating health economic analyses to complement the implementation outcomes reported here. This mirrors recommendations from the *World Alzheimer Report 2025* (Alzheimer's Disease International et al., 2025), which emphasises the importance of robust cost-effectiveness evidence to support the scale-up of post-diagnostic rehabilitation initiatives.

6.4 Thesis Reflection

Conducting this program of work required a shift in orientation from evaluating efficacy under controlled conditions to examining the practical realities of embedding interventions into routine care. A central methodological feature of this thesis was the use of the RE-AIM framework to guide the design, analysis, and interpretation of implementation outcomes. Its value lay in providing a structured lens through which to examine not only whether cognition-oriented treatments (COTs) could be delivered, but whether they could feasibly reach target populations, be adopted by services, and be sustained over time. In particular, the explicit inclusion of the Maintenance domain in Chapter IV enabled systematic attention to longer-term continuation following the withdrawal of structured support, a dimension that remains underexamined in much of the implementation science literature.

At the same time, this program of work highlighted several limitations of RE-AIM when applied to complex, real world service systems. While the framework is strong in articulating *what* should be evaluated (e.g., reach, effectiveness, adoption, implementation, maintenance), it is less prescriptive in assessing *how* change occurs within organisations. In this thesis, factors such as leadership engagement, organisational readiness, workforce culture, and the negotiation of resources emerged as central determinants of sustainability. These constructs, although compatible with RE-AIM, sit at its periphery rather than being explicitly foregrounded.

In hindsight, the use of complementary implementation frameworks may have enriched the explanatory depth of this work. For example, the Consolidated Framework for Implementation Research (CFIR) (Damschroder et al., 2022) provides a detailed taxonomy of inner and outer setting determinants, including leadership, implementation climate, and organisational culture, which may have enabled more systematic examination of contextual drivers of sustainability. Other frameworks, such as the Exploration, Preparation, Implementation, Sustainment (EPIS) model (Aarons et al., 2011), may also have supported a more explicit consideration of phase-specific influences on implementation over time.

Nevertheless, the decision to retain RE-AIM as the primary framework was deliberate and appropriate for the aims of this thesis. RE-AIM offered a pragmatic, widely recognised structure that could be consistently applied across diverse service contexts, supporting transparency, comparability, and alignment with existing implementation research in cognitive interventions. Its flexibility also allowed for a hybrid analytic approach, whereby qualitative themes were generated inductively from the data and subsequently mapped onto RE-AIM domains, rather than forcing data into a rigid a priori framework. This approach proved particularly valuable in capturing the realities of implementation within under-resourced and time-pressured services.

Taken together, this reflection suggests that future research examining the implementation and sustainability of COTs may benefit from combining outcome-focused frameworks such as RE-AIM with theory-driven frameworks that more explicitly model organisational processes and contextual mechanisms. Such integrative approaches may provide a more comprehensive understanding of not only whether interventions are sustained, but how sustainability is achieved within real-world memory clinic systems.

The mixed methods approach also underscored the importance of reflexivity in integrating diverse forms of evidence. The perspectives of clinicians, service managers, and community facilitators revealed tensions between professional motivation and systemic constraints, reinforcing the need to examine implementation at multiple levels.

From a personal perspective, as a clinical neuropsychologist, this research deepened my appreciation of the complexity of translating evidence into care. Beyond academic contribution, it represented a process of professional learning about how interventions can be meaningfully embedded within services to improve outcomes for patients and families.

6.5 Future Research Directions

Future research should extend these findings by following interventions beyond the timeframes examined in this thesis. A longer follow-up will help clarify whether COTs can be embedded into services over multiple years and whether intervention effects are sustained for patients. Economic evaluations are equally important, as sustainability will depend on demonstrating cost-effectiveness to policymakers. Including formal health economic analyses would strengthen the case for routine adoption and support informed decisions regarding resource allocation. In addition, long-term data linkage would provide critical information regarding longer-term health outcomes and health service utilisation for those who have undertaken COTs.

Cross-cultural research is also needed to explore how COTs can be adapted and delivered across diverse populations. This is particularly relevant for culturally and linguistically diverse communities, as well as for people living in rural and remote areas who remain underserved by existing service models. In Australia, approximately 30% of older adults come from culturally and linguistically diverse backgrounds (Australian Institute of Health and Welfare, 2024), underscoring

the importance of developing and testing bespoke adaptations across a range of cultures and languages. COTs have also not yet been evaluated within First Nations communities, where such research would be warranted if considered acceptable and appealing, given the earlier onset of dementia and higher rates of comorbidities observed in these populations (Australian Institute of Health and Welfare, 2025). More broadly, the importance of adapting interventions for diverse populations is emphasised across the international literature (Livingston et al., 2024; World Health Organisation, 2019) and reinforced by consumer and advocacy groups (Dementia Australia, 2024; Gauthier et al., 2022).

There is also scope for methodological innovation. Co-design approaches that involve patients, families, clinicians, and service managers can help ensure that interventions and implementation strategies are tailored to real-world needs. Digital models of delivery, which already showed promise in the DA project, should be systematically tested for scalability and equity. Additionally, the development of communities of practice among clinicians and facilitators could help maintain peer support, facilitate professional development, provide access to resources, and ensure intervention fidelity over time.

6.6. Conclusion

This thesis demonstrates that COTs for individuals with MCI can be both feasible and acceptable across clinical and community settings, but their long-term viability depends on coordinated alignment between workforce, organisational, and system-level factors. By applying an implementation science framework, this body of work provides new insights into the conditions necessary for effective translation, thereby bridging the gap between efficacy and sustained practice.

The next challenge is to move beyond small-scale initiatives to systemic integration within dementia care pathways. Achieving this will require investment in workforce development, organisational infrastructure, and policy frameworks that explicitly support post-diagnostic interventions. International evidence demonstrates that such integration is possible, but only when alignment is achieved across levels of the system. If realised, COTs can become a standard component of early intervention, thereby improving accessibility and enhancing quality of life for older adults.

By documenting the feasibility and sustainability of COTs across both clinical and community settings, this thesis provides not only empirical evidence but also a roadmap for embedding these interventions into practice. It offers a vision of dementia care in Australia in which evidence-based, person-centred interventions are no longer the exception, but the norm.

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Appendix

Appendix A

This appendix includes a peer-reviewed article led by Kerryn Pike and published in *Neuropsychology Review,* to which I contributed as a co-author during my PhD candidature.

Neuropsychology Review
https://doi.org/10.1007/s11065-024-09650-6

REVIEW

Implementation of Cognitive (Neuropsychological) Interventions for Older Adults in Clinical or Community Settings: A Scoping Review

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Received: 9 December 2023 / Accepted: 27 August 2024

Abstract

Despite compelling evidence that cognitive interventions for older adults improve cognition, mood, and everyday function, few are implemented in clinical or community practice. This scoping review aims to understand the implementation frameworks and methods used and their contribution to implementation success of cognitive interventions for older adults. We followed the Preferred Reporting Items for Systematic Reviews and Meta-analysis extension for Scoping Reviews (PRISMA-ScR), and searched CINAHL, EMBASE, MEDLINE, and PSYCINFO databases, using terms related to cognitive interventions, implementation, and older adults. This resulted in 5002 studies, of which 29 were included following an iterative process. Most studies reported on implementation of cognitive stimulation for people with dementia. Only four studies used formal implementation frameworks, with three using RE-AIM, and one a process evaluation using complexity theory. The most frequently addressed implementation concepts were Acceptability, Feasibility, and Effectiveness, while Cost, Cost-Effectiveness, and Maintenance were rarely reported. Solutions to common barriers included the importance of good stakeholder relationships and engagement, a manualised intervention flexible enough to adapt to the context, and ensuring facilitators were well-trained, confident, and enthusiastic.

Keywords Cognitive stimulation · Cognitive training · Translation · Dementia · Mild cognitive impairment · Subjective cognitive decline

Introduction

Cognitive decline is a concern for many older adults. It is the cardinal sign of dementia, which affects approximately 55 million people worldwide (World Health Organization,

Protocol registration: The protocol for this review was pre-registered with OSF on November 12, 2021, and is available at: https://osf.io/yb5ej.

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Published online: 06 November 2024

2021) and causes one of the greatest burdens of illness, injury, and premature death (Australian Institute of Health and Welfare 2024). Mild cognitive impairment (MCI), often considered a prodromal phase to dementia, is also typified by objective cognitive decline, though in the absence of substantial impact on everyday function (Petersen et al., 2014). Older adults with subjective cognitive decline (SCD), but no objective change, are also at increased risk of developing MCI and dementia (Mitchell et al., 2014; Pike et al., 2022).

Across these groups of older adults, substantial research has been conducted into the potential benefits of various cognition-oriented (i.e. neuropsychological) interventions, which aim to address cognitive changes and the resulting impact on daily functioning (see, for example, Bahar-Fuchs et al. (2019); Gavelin et al. (2020); Wong et al. (2023)). Such interventions vary in terms of theoretical approaches, practical techniques, target populations, and outcomes of interest, and with such heterogeneity it is not surprising that terminology in this field is often complex. For the purposes of this review, it is sufficient to describe key features of several common cognition-oriented interventions in ageing. First, the cognitive stimulation approach provides generalised engagement without focusing on any specific cognitive domain or functional skill, and often involves multi-sensory stimulation, reminiscence, reality orientation, and group-based activities (Woods et al., 2023). The structured Cognitive Stimulation Therapy (CST) paradigm (Spector & Orrell, 2006) is a commonly used exemplar of this approach. Cognitive training is another approach which more directly targets functioning in specific cognitive domains via repeated practice of exercises or techniques known to recruit those domains. Cognitive training may involve the use of drill-practice computerised exercises (also known as CCT, see Lampit et al. (2014) for a detailed definition), drill-practice non-digitised exercises (e.g. using paper-and-pencil materials, such as tracing a route on a map or recalling a list of ingredients from a recipe), and/or guided and repeated practice in using compensatory or adaptive strategies, such as systematic use of a diary or using face-name associations for memory functioning. The latter is known as strategy-based training (see Wong et al. (2023) for a detailed description and examples). Yet another commonly used intervention in ageing is cognitive rehabilitation, which offers an individualised, goal-oriented approach aimed at improving daily functioning (see Kudlicka et al. (2023)). Here, a clinician may draw on a variety of compensatory, adaptive, drill-practice, generalised, and/or targeted techniques insofar as they relate to achieving a specific functional task or goal (for illustrative examples, see Clare et al. (2019)).

In addition to improving older adults' cognition, cognitive interventions are associated with improvements in strategy use, goal attainment, confidence, adjustment, mood, sleep, relationships, engagement in activities, and everyday function (Bahar-Fuchs et al., 2019; Diamond et al., 2015; Gavelin et al., 2020; Kinsella et al., 2016; Kudlicka et al., 2023; Matthews et al., 2020; Pike et al., 2023). Indeed, for older adults with MCI and those without objective impairment, there is sufficient evidence for the World Health Organization (WHO) to recommend the use of cognitive interventions to reduce the risk of cognitive decline and dementia (World Health Organization, 2019). For those with established dementia, several high-quality international Clinical Practice Guidelines recommend the use of cognitive stimulation, supported learning techniques, and compensatory strategies (see Jeon et al. (2023)), with a recent review supporting the benefits of goal-oriented rehabilitation (Kudlicka et al., 2023). Despite this robust evidence base, there remains an enormous evidence-to-practice gap, as these interventions are largely unavailable in clinical practice. In the Australian context, for example, a recent survey of memory clinics revealed that only 20% provided any memory strategy training, despite 74% of respondents identifying cognitive interventions as an important component of adequate post-diagnostic care (Naismith et al., 2022).

Optimal translation of cognitive interventions into routine practice in clinical or community settings (i.e. implementation) can be informed, facilitated, and evaluated by the rapidly developing field of implementation science, which incorporates several different theoretical approaches and frameworks (e.g. Nilsen (2015)). Some implementation frameworks help describe or guide the process of implementation (process models); others aim to explain what influences implementation; yet others evaluate implementation success. Common *process* models include the CIHR (Canadian Institutes of Health Research) Knowledge Translation model (Canadian Institutes of Health Research (CIHR) 2016), the Knowledge-to-Action Framework (Wilson et al., 2011), and the Quality Implementation Framework (Meyers, et al., 2012). Frameworks explaining what *influences* implementation include determinant frameworks, which often look at barriers or enablers impacting implementation outcomes, such as PARIHS (Promoting Action on Research Implementation in Health Services; Kitson et al., 1998), CFIR (Consolidated Framework for Implementation Research; Damschroder et al., 2009), and the Theoretical Domains Framework (Cane et al., 2012). Classic theories (such as the Theory of Planned Behavior; Azjen, 1991) and implementation theories or concepts (such as Organizational Readiness; Weiner, 2009), are also used to understand what influences implementation. Finally, frameworks such as RE-AIM (Reach, Effectiveness, Adoption, Implementation, Maintenance; Glasgow et al., 2019), PRECEDE-PROCEED (Predisposing, Reinforcing and Enabling Constructs in Educational Diagnosis and Evaluation-Policy, Regulatory, and Organizational

Constructs in Educational and Environmental Development; Green & Kreuter, 2005), and the framework by Proctor et al. (2011) provide different structures for *evaluating* implementation. The framework by Proctor et al. (2011) proposes eight distinct outcomes for evaluation: acceptability, adoption (or uptake), appropriateness, costs, feasibility, fidelity, penetration, and sustainability.

The Current Study

To further understand the research-to-practice gap in cognitive interventions for older adults, we aimed to undertake a scoping review of the international literature in this field. The objective of this review was to broadly investigate the methods used in the implementation of cognitive interventions for older adults into clinical practice or community settings, the success or failure of implementation, and how these characteristics and outcomes may differ according to the context (e.g. sample, setting, intervention approach). We considered implementation studies to be studies where an established cognitive intervention approach is being delivered within a clinical or community setting, by people working within that setting (i.e. not someone from the research team). The cognitive interventions usually already have evidence for their efficacy in a research setting (e.g. from a clinical trial). Implementation studies typically focus instead on the process, influences, and success of delivering the intervention within that setting. This was explored through the following primary research questions:

1. Which implementation frameworks (or parts of frameworks) have been used in translating cognitive interventions for older adults?
2. What methods have been used to operationalise these frameworks?
3. What factors have been reported as barriers and enablers of implementation success?

Secondary research questions were:
Do the results differ according to:

a. sample (healthy older adult, MCI, dementia, or other)
b. setting (inpatient, outpatient health service, community)
c. delivery method (in-person, online; individual, group; computerised)
d. intervention type (cognitive stimulation, cognitive training, cognitive rehabilitation)
e. clinical speciality of person delivering the intervention (neuropsychology, occupational therapy, speech pathology, other allied health, neurology, geriatrics, psychiatry) or layperson (family, volunteer, peer)

Methods

This review follows the Arksey and O'Malley (2005) approach for scoping reviews, with methodological enhancement by Levac et al. (2010). The stages within this framework are (1) identifying the research question; (2) identifying relevant studies; (3) study selection; (4) charting the data; and (5) collating, summarising, and reporting the results. The review is reported following the Preferred Reporting Items for Systematic Reviews and Meta-analysis extension for Scoping Reviews (PRISMA-ScR) checklist (Tricco et al., 2018).

Protocol and Registration

The protocol was registered with the Open Science Framework on 12 November 2021 (https://osf.io/yb5ej).

Eligibility Criteria

Peer-reviewed papers were included if they described both:

- use of a cognitive (i.e. neuropsychological) intervention
- being an implementation study (i.e. translation of cognitive intervention to clinical or community practice)

Exclusion criteria were:

1. non-empirical studies (e.g. review articles, commentaries, letters to the editor)
2. no involvement of older adults (must include some participants > 50 years)
3. published in non-English language
4. full-text unavailable

Information Sources

To identify potentially relevant documents, the following bibliographic databases were searched from inception to 14th November 2021: CINAHL, EMBASE, MEDLINE, and PSYCINFO. Web of Science was initially also included in the search but returned substantially more papers to screen than the other databases (~ 25,000, compared to between 847 and 1583 for each of the other four databases). Following discussion with a research librarian, we considered that the more general nature of Web of Science meant it was likely to have captured many irrelevant articles, compared to the other four databases focused on

allied health, psychology, biomedical, and pharmacology; thus, it was removed from our final search.

Search

The search strategies were discussed and refined through team discussion, in consultation with a research librarian, who provided ongoing support throughout the search process. The search included combining appropriate terms in each database relating to the following three concepts: cognitive interventions, implementation, and older adults. The final search strategy for each database can be found in Appendix 1. The final search results were exported into EndNote, and duplicates removed.

Selection of Sources of Evidence

A team of 5 reviewers (LL, KEP, FH, AL, LM) independently conducted title/abstract screening. Reviewers included the senior authors who are both experienced researchers and Clinical Neuropsychologists, and 3 PhD candidates, 2 who are Clinical Neuropsychology registrars. The same 5 reviewers, plus another experienced researcher and Clinical Neuropsychologist (MEO, working in pairs), performed full-text reviews. After the initial title/abstract and full-text reviews, in accordance with the iterative nature of the scoping review process, senior authors (KEP, LM) observed a need to further refine item two of the inclusion criteria (being an implementation study) and re-categorise papers based on their embodiment of "implementation" (see Results section for further detail). Full-text publications were then re-evaluated by KEP and LM according to these refined definitions. Throughout, disagreements on study selection and data extraction were resolved by consensus and discussion with other reviewers.

Data Charting Process

An online data extraction form within Covidence (Veritas Health Innovation) was jointly developed by three reviewers (LL, KEP, LM). These three reviewers piloted the form on two randomly selected studies by independently extracting the data, discussing results, and continuously updating the data extraction form. Subsequently, data from eligible studies were extracted by a team of 8 reviewers (LL, KEP, AL, LM, MEO, IM, ABF, AB; one reviewer per paper). Any uncertainties during the data extraction process were resolved with discussion and further review of the paper by another author.[1]

[1] Covidence (version 2.0)

Data Items

Data extracted included authors, publication year, sample type, sample size, and country where study was conducted. We also extracted data on various aspects of cognitive interventions including setting, delivery method, intervention type, core aspects, clinician involvement and specialty, outcome effect size estimates, and use of implementation frameworks. Additionally, we gathered information on key implementation components, success and failure measurements, enablers and barriers, stakeholder involvement, outcome conceptualisation, and outcome measures. Health economics data (e.g. cost including resource and equipment use, health-related quality of life, cost-effectiveness) were also extracted where available. The full list of data extraction items can be found in Appendix 2.

Synthesis of Results

Given this is a scoping review, there was no quantitative statistical model, but rather descriptive data analysis. After extraction, we determined that studies would be best synthesised by type of intervention, and notwithstanding the heterogeneity in terminology within the field, we identified commonalities in approaches and methods to derive the following meaningful groupings:

1. Cognitive stimulation only
2. Cognitive training—drill-practice only
3. Goal-orientated cognitive rehabilitation
4. Cognitive strategy training (often combined with other)

KEP and LM performed a content analysis to extract themes from the included studies regarding barriers and enablers to successful implementation of cognitive interventions in clinical or community settings. A realist framework (Rycroft-Malone et al., 2012) was then used to understand the context and mechanisms that pose as barriers and enablers to the desired outcomes.

Results

Selection of Sources of Evidence

Following removal of duplicates, a total of 3354 citations were identified from searches of electronic databases and review article references. Based on the title and abstract, 2092 were excluded, leaving 1262 full-text articles to be retrieved and assessed for eligibility. A total of 1188 papers were excluded from the scoping review (see Fig. 1 for breakdown of search results), with the primary reasons for exclusion being not an implementation study (471), not target

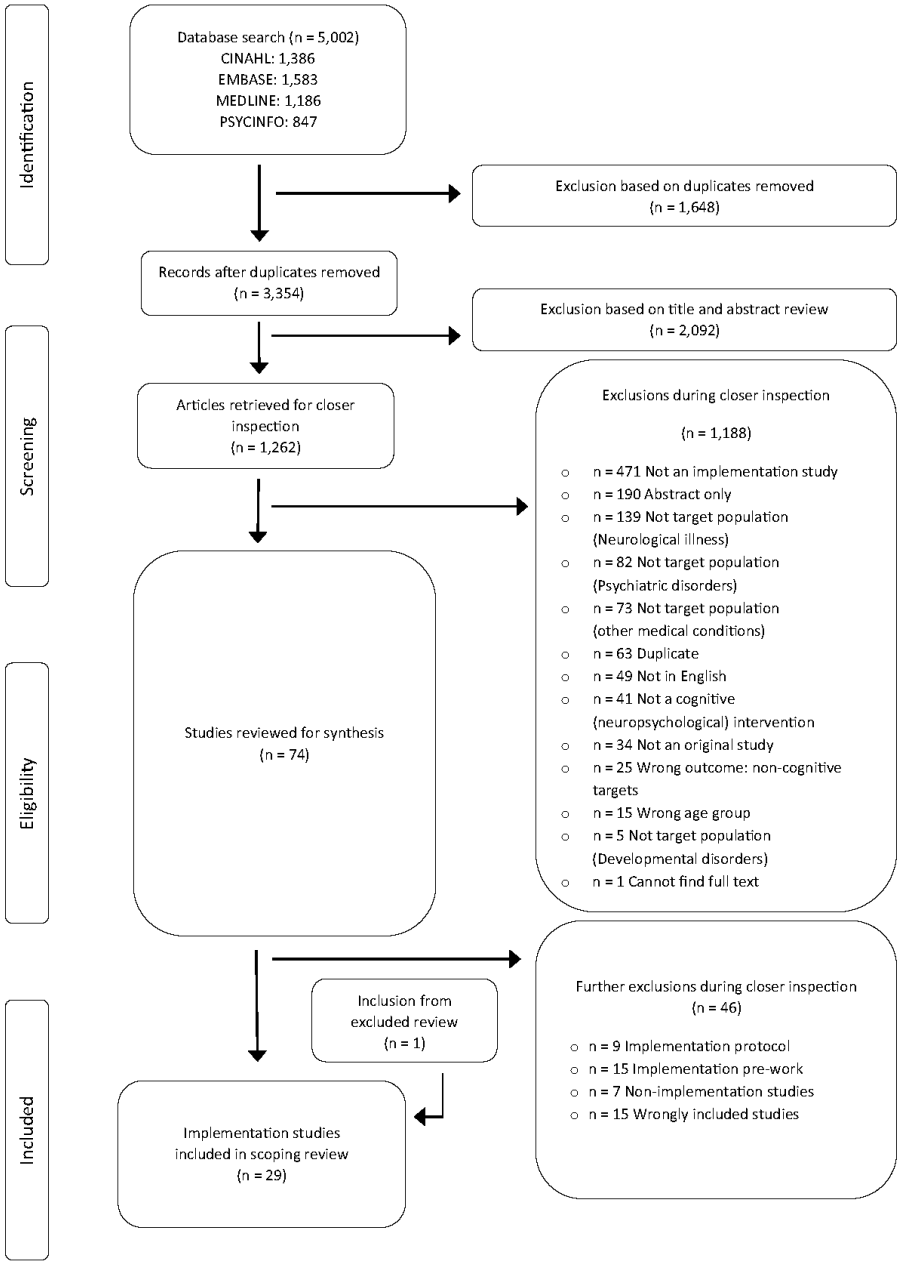

Fig. 1 PRISMA diagram of study selection

population (299), or only abstract available (190). Within the 74 remaining studies, as noted above, senior authors KEP and LM identified a need to iteratively refine our core inclusion criterion relating to implementation, to ensure that our review was appropriately focused (per Mak and Thomas (2022) guidelines for conducting a scoping review). We subsequently characterised the remaining 74 studies as outlined in Table 1.

One additional study (Mao et al., 2021) was found during this re-evaluation process, from the reference list of an excluded review paper (Cheung & Peri, 2017), taking the total included papers to 29.

Description of Included Studies

Study Population and Setting

Tables 2a and b outline the population and setting for the 29 included studies, divided by intervention type. We split cognitive training into drill-practice exercises only (3 studies) and studies using cognitive strategy training plus other approaches (5 studies). Most included studies (18/29, 62%) used cognitive stimulation (Table 2a), all of which involved persons with dementia. Many of these studies included participants from a residential care setting (8/18; 44%), although implementation within community centres (such as a town hall; 7/18, 39%) or day programs (5/18, 28%) was also common. By comparison, other intervention types (Table 2b) included less cognitively impaired older adults including those with MCI, SCD, or cognitively healthy, in addition to a greater mixture of settings (e.g. community, outpatient, day program, home) not including residential care. For cognitive strategy training, the most common setting was community health (community spaces associated with health, e.g. senior centre 4/5; 80%) with the remaining study in an outpatient health setting. The age groups were predominantly older adults over the age of 65, ranging up to a mean of 83.2 years (Cheung et al., 2019), though some studies involved participants aged over 50 (Beishon et al., 2021) or 60 (Kinsella et al., 2020; Lee, 2016). The most common country represented was the United Kingdom (UK; 10/29 studies; 34.48%), in all categories except cognitive strategy training. Six studies were from the United States of America (6/29; 21%), across all categories except drill-practice exercises, while the eight studies from Asian nations were from all categories except cognitive rehabilitation. There were two studies from Africa (Mkenda et al., 2018; Paddick et al., 2017), and one study each from Australia (Kinsella et al., 2020), New Zealand (Cheung & Peri, 2019), and Portugal (Alvares Pereira et al., 2022). Most studies only used one primary intervention approach; however, those within the cognitive strategy training category all also included psychoeducation. Two of these studies (Lee, 2016; Mao et al., 2021) additionally included cognitive stimulation, drill-practice exercises, and training focused on individual goals, with Mao et al. (2021) also including motor-cognitive exercises.

Intervention Characteristics

Tables 3 and 4 summarise the type and frequency of the cognitive intervention approaches. Across all intervention types, most approaches were conducted in-person (28/29; 97%), with the sole remaining study involving an online brain training game (Beishon et al., 2021). Most interventions were conducted in groups (22/29; 76%). Those interventions that were conducted individually included all three cognitive rehabilitation studies, one of the drill-practice exercise studies (Beishon et al., 2021), and three of the cognitive stimulation studies. One study (Clark et al., 2017) used both an individual and group approach. Only the three studies using drill-practice exercises were computerised (3/29; 10%). Most approaches did not offer monitoring throughout the intervention (23/29; 79%), and it was not offered in any cognitive strategy training approach (see Table 4). Across

Table 1 Re-categorisation of remaining 74 studies

Categorisation	Description	No. of studies
Implementation study	Evaluates the translation of an established intervention to a clinical/community setting, by people working within that setting	28
Implementation pre-work	Describes exploration of concepts or development of interventions, intended to inform downstream implementation	15
Implementation protocol	Pre-emptive description of an implementation study; work has not yet been carried out	9
Non-implementation studies	Incorporate concepts or terminology overlapping with implementation frameworks (e.g. "feasibility" or "effectiveness"), but the aims and/or methods do not align with focused implementation work	7
Wrongly included studies	Studies which on further examination did not meet inclusion criteria (and should have been excluded earlier on). Examples include a review paper, studies reporting intervention efficacy rather than translation, studies using the word "implementation" in a different context, studies involving implementation of something other than a cognitive intervention (e.g. model of care; clinical education; occupational therapy)	15

Table 2a Population and setting characteristics of included cognitive stimulation only studies

First Author (Year)	Sample	Setting	Country	Age Group M (SD or range)	Sample Size (*N*)	*N* Sites
Streater (2016)	Dementia	Residential care	UK	N/R	68	14
Clark (2017)	Dementia; HOA; Stroke; Frailty	Residential care	UK	> 80	N/R	50
Kwak (2021)	Dementia	Residential care	USA	N/R	N/R	161
Tompkins (2020)	Dementia	Residential care	USA	N/R	11	2
Cheung (2019)	Dementia	Community day program	Hong Kong	83.2 (7.2)	20	2
Raghuraman (2017)	Dementia	Community day program	India	76.4 (60-84)	9	1
Tuppen (2012)	Dementia	Community	UK	N/R	12	2
Paddick (2017)	Dementia	Community	Tanzania	80.0 (77–85)	34	6
Mkenda (2018)	Dementia	Community	Nigeria; Tanzania	75 (66–82)[a]; 82 (77–85)[b]	23	2
McAulay (2020)	Dementia; Delirium	Inpatient	UK	N/R	N/R	2
Alvares Pereira (2022)	Dementia	Inpatient	Portugal	> 80.0	6	1
Lundy (2021)	Dementia MCI; SCD; HOA	Outpatient health	USA	> 64	150	1
LaRue (2013)	Dementia	Home	USA	> 65 years	42	N/R
Streater (2017)	Dementia	Mixed[c]	UK	N/R	N/R	63
Orrell (2017)	Dementia	Mixed[d]	UK	80 (48–92)	89	11
Dickinson (2017)	Dementia	Mixed[e]	UK	N/R	N/R	4
Cheung & Peri (2019)	Dementia	Mixed[f]	New Zealand	N/R	214	10
Wong (2018)	Dementia	Mixed[c]	Hong Kong	81.5 (5.9)	30	3

MCI mild cognitive impairment; *HOA* healthy older adults; *SCD* subjective cognitive decline; *UK* United Kingdom; *USA* United States of America; *N/R* not reported. [a]Nigerian sample. [b]Tanzanian sample. [c]Residential care, community. [d]Residential care homes, day centres, NHS trusts. [e]Day program, outpatient health, community mental health. [f]Residential care, community health, educational institutes, dementia day programmes

all intervention types, the session duration ranged from just over 15 min (Clark et al., 2017) to a full day (Cheung & Peri, 2019; Nomura et al., 2009). Similarly, the weekly frequency and overall duration of the intervention approaches described in the included studies ranged considerably.

Resources Required for Cognitive Interventions

Tables 5 and 6 summarise the resources in terms of materials, facilitators, and staff training needed for each cognitive intervention. All but one of the interventions required the presence of an active facilitator, although facilitators with different backgrounds and qualifications were used. Cognitive stimulation was most often delivered by an occupational therapist (8/18) or direct care worker (8/18), with nurses and psychologists also common facilitators (see Table 5). In preparation for delivering cognitive stimulation, 13 of the 18 studies required their facilitators to attend an in-person (9/13) or online training (4/13) and 6 studies provided a manual as an additional resource. Five studies did not report on training requirements. Furthermore, four studies reported the use of additional resources in the form of an MP3 Player, instruments, arts materials, or sports supplies (e.g. yoga ball).

Less detail is reported in the three studies using the drill-practice exercises (see Table 6). For the computerised cognitive training in both Ng et al. (2021) and Yeo et al. (2021), they reported using "trained" facilitators but did not provide further detail regarding background expertise, or the training provided to these facilitators. Ng et al. (2021) also had a non-computerised training component, which was delivered by a psychologist, but again did not describe training to deliver the intervention. The remaining study was not facilitated, but a member of the study team attended the participants' home to familiarise the participant with the intervention set-up. Various materials were required to conduct specific interventions, including a computer, electroencephalogram headband, and mobile app.

The cognitive rehabilitation approaches (see Table 6) all required a clinically trained facilitator, and all utilised registered nurses, with two studies also utilising occupational therapists. All interventions provided manuals, comprehensive in-person facilitator training, and ongoing supervision. Clare et al. (2019) also used the Pool Activity

Table 2b Population and setting characteristics of drill-practice exercises, cognitive rehabilitation, and cognitive strategy training studies

First Author (Year)	Sample	Setting	Country	Age Group M (SD or range)	Sample Size (*N*)	Number of Sites	Additional components to primary approach
Drill-practice exercises only							
Beishon (2021)	Dementia; MCI; HOA	Home	UK	> 50.0	37	N/R	-
Ng (2021)	HOA; SCD	Mixed[a]	Singapore	75.6 (9.0)	194	23	-
Yeo (2021)	HOA	Community health	Singapore	68.8 (6.3)	94	1	-
Goal-oriented cognitive rehabilitation							
Clare (2019)	Dementia	Home	UK	78.6 (7.07)	474	8	-
Morgan-Trimmer (2021)	Dementia	Home	UK	N/R	51	8	-
Lu (2013)	MCI	Mixed[b]	USA	N/R	N/R	1	-
Cognitive strategy training (often combined with other)							
Nomura (2009)	Dementia	Community health	Japan	78.9 (6.0)	57	1	Psychoeducation
Mao (2021)	Dementia; MCI	Community health	Taiwan	78.26 (7.0)	130	8	Mixed[c]
Lee (2016)	Dementia; MCI; SCD	Outpatient health	South Korea	> 60	N/R	1	Mixed[d]
Kinsella (2020)	MCI	Community health	Australia	> 60	274	2	Psychoeducation
Felix (2012)	MCI; SCD; HOA	Community health	USA	71.2 (6.6)	112	8	Psychoeducation

MCI mild cognitive impairment; *HOA* healthy older adults; *SCD* subjective cognitive decline; *UK* United Kingdom; *USA* United States of America; *N/R* not reported. [a]Community health, dementia day programs. [b]Home, educational institute clinic. [c]Cognitive stimulation, drill-practice exercises, training focused on individual goals, motor-cognitive exercise. [d]Cognitive stimulation, drill-practice exercises, psychoeducation, training focused on individual goals

Level instrument (Pool, 2012), a checklist completed with the caregiver to assist with planning and implementing the intervention.

Similarly, all cognitive strategy training studies (see Table 6) required a facilitator, including occupational therapists, nurses, social workers, direct care workers, and one used lay health educators (Felix et al., 2012). Only two of the five studies described facilitator training, with both reporting initial training, followed by ongoing supervision or conferences, and manuals available. One study noted that cooking resources (e.g. ingredients, equipment) were needed.

What Implementation Frameworks or Parts of Frameworks Have Been Used?

Of the 29 included studies, only four used structured implementation frameworks. Three studies used the RE-AIM framework (Felix et al., 2012; Mao et al., 2021; Ng et al., 2021), while another study used a process evaluation, based on complexity theory, rather than examining implementation success (Morgan-Trimmer et al., 2021). Of the studies using RE-AIM, only Ng et al. (2021) evaluated all components of the framework (i.e. Reach, Effectiveness, Adoption, Implementation (Fidelity, Cost), and Maintenance, as detailed below).

Regardless of whether a structured framework was used, all included studies referred to key implementation concepts or components. We observed inconsistencies, however, in the use of implementation terms, with several studies using different terms to describe the same method or outcome, or studies operationalising terms inconsistently, indicating discrepancies in their intended application of the concepts. This hampered our ability to synthesise and understand patterns across the studies. Aligned with the iterative nature of scoping reviews, we addressed this by creating a detailed description of key implementation concepts, defined in accordance with seminal implementation science resources (Glasgow et al., 2019; Peters et al., 2013; Shepherd et al., 2019) (see Appendix 3). Authors KEP and LM provided the data extraction team with this list, to be used as a common reference point for identifying which implementation components were reported in the included studies.

Tables 7 and 8 describe the components of implementation frameworks reported by broad intervention approach. The most frequently addressed implementation elements were *Acceptability* (90% of studies), *Feasibility* (82%), and

Table 3 Intervention characteristics of cognitive stimulation studies

First author (year)	Intervention name	In-person (Y/N)	Group (Y/N)	Computerised (Y/N)	Monitoring (Y/N)	Session duration (minutes)	Weekly frequency	Overall duration (weeks)
Streater (2016)	CST	Y	Y	N	N	45	2	7
Clark (2017)	Sporting Memories	Y	both	N	N	> 15 min	N/R	N/R
Kwak (2021)	Music and Memory	Y	N	N	N	0–60	1–10	N/R
Tompkins (2020)	Music and Memory	Y	N	N	Y	30–60	1–13	4
Cheung (2019)	Co-S Play	Y	Y	N	Y	45–60	1	8
Raghuraman (2017)	CST	Y	Y	N	N	45	2	7
Tuppen (2012)	Adapted CST	Y	Y	N	N	300	1	Ongoing
Paddick (2017)	CST	Y	Y	N	N	60	2	7
Mkenda (2018)	CST	Y	Y	N	N	60	2	7
McAulay (2020)	CST	Y	Y	N	N	60	1–2[a]	4
Alvares Pereira (2022)	CST	Y	Y	N	Y	45	2	7
Lundy (2021)	CST	Y	Y	N	N	N/A	2	7
LaRue (2013)	LEEPS	Y	N	N	Y	90	2	13–26
Streater (2017)	CST	Y	Y	N	N	45	2	7
Orrell (2017)	CST	Y	Y	N	N	45	2	7
Dickinson (2017)	CST	Y	Y	N	N	45	1	14[b]
Cheung and Peri (2019)	CST	Y	Y	N	N	1 day	1	N/A
Wong (2018)	CST	Y	Y	N	N	45	2	7

CST Cognitive Stimulation Therapy; *LEEPS* Elder Rehab Program and Language-Enriched Exercise Plus Socialisation; *N/R* not reported; *N/A* not applicable. [a]Ward 1: twice per week, Ward 2: once per week. [b]14 and then 24 for maintenance

Table 4 Intervention characteristics of drill-practice exercises, goal-oriented cognitive rehabilitation, and cognitive strategy training approaches

First author (year)	Intervention name	In-person? (Y/N)	Group? (Y/N)	Computerised? (Y/N)	Monitoring? (Y/N)	Session duration (minutes)	Weekly frequency	Overall duration (weeks)
Drill-practice exercises only								
Beishon (2021)	Lumosity	N	N	Y	Y	30	5	12
Ng (2021)	ProAge; Neeuro	Y	Y	both	N	60–120[a]	2[b]	24
Yeo (2021)	CCT (NeeuroFIT)	Y	Y	Y	N	120	2	10
Goal-oriented cognitive rehabilitation								
Clare (2019)	GREAT	Y	N	N	N	60	10 sessions	12
Morgan- Trimmer (2021)	GREAT	Y	N	N	Y	60	N/A	36
Lu (2013)	DEMA	Y	N	N	N	N/A	Fortnightly	12
Cognitive strategy training (often combined with other)								
Nomura (2009)	Cognitive Rehab	Y	Y	N	N	Full day	Monthly	N/R
Mao (2021)	MCI-SET	Y	Y	N	N	120	1	12
Lee (2016)	GCGMS	Y	Y	N	N	N/A	N/A	N/A
Kinsella (2020)	LaTCH	Y	Y	N	N	120	1	6
Felix (2012)	SeniorWISE	Y	Y	N	N	N/R	1[c]	52

GREAT Goal-oriented cognitive Rehabilitation in Early-stage Alzheimer's and related dementias: multicentre single-blind randomised controlled Trial; *N/R* not reported; *N/A* not applicable; *DEMA* Daily Enhancement of Meaningful Activity; *Rehab* rehabilitation; *MCI-SET* Multicomponent Cognitive Intervention using Simulated Everyday Tasks; *GCGMS* Goyang Centenarians Good Memory School; *LaTCH* La Trobe – Caulfield Hospital Memory Group Program; *SeniorWISE* SeniorWISE Memory Improvement Program. [a]90 min (paper and pencil) 60 min for first 12 weeks (CCT) 60 min; 120 min for second 12 weeks (CCT). [b]Twice per week—first 12 weeks paper and pencil + 60 min CCT; second 12 weeks 2 sessions CCT (60 min, 120 min). [c]Weekly for 12 weeks then monthly for 9 months

Table 5 Resources required to run the cognitive stimulation interventions

First author (year)	Materials	Facilitator expertise	Preparation for delivering program	Facilitated?
Streater (2016)	Manual	OT	In-person training (1 day); manuals; ongoing support by researchers	Y
Clark (2017)	N/R	DCW	In-person training (1–3 half-days); online discussion forum; ongoing support by researchers	Y
Kwak (2021)	MP3 Player	DCW	N/R	Y
Tompkins (2020)	MP3 Player	DCW	Online training (1 h)	Y
Cheung (2019)	Mixed[a]	DCW	Training provided by coordinator	Y
Raghuraman (2017)	N/R	N/R	N/R	Y
Tuppen (2012)	N/R	Volunteers	N/R	Y
Paddick (2017)	Manual	OT	Training provided by researchers	Y
Mkenda (2018)	N/A	OT; RN; geriatrics	In-person training workshop by researchers (1 day)	Y
McAulay (2020)	Mixed[b]	OT; AC	N/R	Y
Alvares Pereira (2022)	Manual	PSY	Training by following manual	Y
Lundy (2021)	N/R	N/R	In-person training provided by researchers	Y
LaRue (2013)	N/R	Volunteers	Training by following manual and videotapes	Y
Streater (2017)	Manual	PSY; OT	In-person training (1 day), manuals, ongoing support from researchers	Y
Orrell (2017)	Manual	DCW	Training by following manual and DVD, or attendance at training	Y
Dickinson (2017)	N/R	PSY; OT; RN; DCW	N/R	Y
Cheung and Peri (2019)	N/R	Mixed[c]	In-person training workshop by researchers	Y
Wong (2018)	Manual	OT; SW; RN; DCW	In-person training provided by researchers (half-day)	Y

N/R not reported; *OT* occupational therapy; *DCW* direct care worker; *RN* registered nurse; *AC* activity coordinator; *PSY* psychology; *SW* social work. [a]Percussive instrument, rings, yoga ball, bean bags, cards. [b]Music required for "sounds" session, and art materials required for "being creative" session. [c]Largest professions were diversional therapists, nurses, occupational therapists, activity coordinators or assistants, healthcare assistants

Effectiveness (76%). Implementation *Barriers* and *Enablers* were each addressed by 55% of included studies. Less frequently addressed elements were *Appropriateness* (48% of studies), *Reach* (45%), *Fidelity* (31%), and *Adoption* (31%). Finally, *Cost* (20%), *Cost-Effectiveness* (10%), and *Maintenance* (6%) were rarely addressed. The patterns of focusing on *Acceptability, Feasibility*, and *Effectiveness* to the exclusion of reporting on *Maintenance*, *Cost*, and *Cost-Effectiveness* were similar across categories of interventions. *Reach* was never reported for studies on cognitive rehabilitation and always reported for studies on drill-practice exercises. *Maintenance* was only assessed in one cognitive stimulation study (Kwak et al., 2021) and one drill-practice exercise study (Ng et al., 2021).

How Were the Implementation Elements Conceptualised?

Tables 9 and 10 show how implementation components were operationalised by each study. *Acceptability* was most often determined from obtaining feedback, but this varied across studies in terms of whether this was obtained from the participant, caregiver, intervention facilitator, or service manager (or a combination). Attendance was also used in some studies to measure *Acceptability*. There were no specific patterns across intervention approaches.

Similarly, across intervention approaches, measurement of *Feasibility* often included measures of attrition and completion rates, as well as availability of staff and resources to deliver the intervention. One strategy training study (Mao et al., 2021) and one cognitive rehabilitation study (Lu et al., 2013) measured *Feasibility* in terms of the uptake of training by staff, whereas a cognitive stimulation study by Kwak et al. (2021) examined staff availability for training.

Studies explored *Effectiveness* in terms of objective and subjective intervention effects on outcomes such as cognition, mood, behaviour, quality of life, and activities of daily living, as well as the effectiveness of implementation strategies, such as impact of facilitator training or organizational support on knowledge and confidence in delivering the intervention. Many studies used standardised, psychometric tools—for example, Paddick et al. (2017) utilised the WHO Quality of Life scale and the Hospital Anxiety and Depression scale to measure intervention effects on participant quality of life and mood, the Addenbrooke Cognitive Examination to measure participant cognitive function, and the Zarit Burden Interview to measure effects on caregiver burden. Other methods included subjective appraisal, where stakeholders were asked to rate or describe their impressions

Table 6 Resources required to run the drill-practice exercises, cognitive rehabilitation, and cognitive strategy training interventions

First author (year)	Materials	Facilitator expertise	Training	Facilitated?
Drill-practice exercises				
Beishon (2021)	Computer	Self	In-person set-up and demonstration of program at home. Set up guide and troubleshooting manual for FAQs provided	N
Ng (2021)	EEG headband	PSY; Unspec	N/R	Y
Yeo (2021)	Mobile app	Unspec	N/R	Y
Goal-orientated cognitive rehabilitation				
Clare (2019)	Manual; Pool Activity Level instrument	OT; RN	In-person training course (2 days), with annual refresher training (1 day) by researchers. Online supervision (monthly, one-on-one), with ad-hoc meetings if needed. Group meetings to share best practice and site consistency	Y
Morgan-Trimmer (2021)	Manual	OT; RN	Training and regular group and individual supervision provided. Practitioner handbook and structured protocol provided	Y
Lu (2013)	Self-management toolkit	RN	In-person training (8 h) and ongoing supervision by researchers	Y
Cognitive strategy training (often combined with other)				
Nomura (2009)	Cooking resources, external aids (e.g. labels)	SW; RN; OT; DCW; Unspec	N/R	Y
Mao (2021)	Manual	OT	In-person training (12 h). Online conference attendance (weekly) to discuss participant experience and adjust activities	Y
Lee (2016)	N/R	Unspec	N/R	Y
Kinsella (2020)	N/R	Unspec	Training through introduction to program, program manual, and co-leading group with experienced member. Ongoing supervision provided (weekly). Train the trainer model for further training	Y
Felix (2012)	N/R	LHE	N/R	Y

Self self-administered; *PSY* psychology; *Unspec* unspecified; *OT* occupational therapy; *RN* registered nurse; *SW* social work; *DCW* direct care worker; *LHE* lay health educators

of intervention effects. For example, Tompkins et al. (2020) administered a subjective questionnaire to intervention facilitators comprising questions around level of knowledge, preparedness, skill development, organizational support, and perceived benefits for managing clients' symptoms. Facilitators were required to rate their subjective agreement with each statement. In another example, Beishon et al. (2021) conducted face-to-face interviews with participants and their caregivers to gather subjective, open-ended feedback on perceived performance improvement over the course of the intervention. Studies differed in their approach to collecting effectiveness data from various stakeholders. Studies utilising drill-practice or goal-oriented rehabilitation interventions tended to focus on participant-reported outcomes, whereas studies employing cognitive stimulation and cognitive strategy training more frequently reported caregiver, facilitator, and sometimes also service manager outcomes in addition to participant outcomes.

Appropriateness was assessed with feedback regarding fit, compatibility, and relevance most commonly from facilitators, caregivers, and participants when reported, and appeared similar across categories of intervention. *Reach* was assessed with the number of people enrolled, questionnaires about the background of participants (to explore representativeness of the study sample), and the total number of people or services eligible for the intervention. For cognitive

Table 7 Implementation components reported for cognitive stimulation studies

First author (year)	Acc	Ado	App	Bar	Cost	C/E	Eff	Enab	Feas	Fid	Main	Reach
Streater (2016)	Y	Y	-	-	-	-	Y	-	Y	-	-	-
Clark (2017)	Y	-	-	Y	-	-	-	Y	Y	-	-	-
Kwak (2021)	Y	-	Y	Y	-	Y	Y	Y	Y	-	Y	-
Tompkins (2020)	Y	Y	-	-	-	-	Y	-	-	-	-	-
Cheung (2019)	Y	-	Y	-	-	-	Y	-	Y	-	-	Y
Raghuraman (2017)	Y	-	Y	Y	-	-	-	Y	Y	Y	-	Y
Tuppen (2012)	Y	Y	Y	Y	Y	-	Y	Y	Y	-	-	-
Paddick (2017)	Y	-	-	Y	Y	Y	Y	Y	Y	-	-	Y
Mkenda (2018)	Y	-	Y	Y	-	-	-	Y	Y	-	-	-
McAulay (2020)	Y	-	-	-	-	-	-	-	-	-	-	-
Alvares Pereira (2022)	Y	-	Y	Y	-	-	-	Y	-	-	-	-
Lundy (2021)	Y	-	-	-	-	-	Y	Y	Y	-	-	-
LaRue (2013)	-	-	-	-	-	-	Y	-	Y	Y	-	Y
Streater (2017)	Y	Y	-	-	-	-	Y	-	Y	-	-	-
Orrell (2017)	Y	-	Y	Y	-	-	Y	Y	Y	Y	-	Y
Dickinson (2017)	Y	Y	Y	Y	-	-	Y	Y	Y	-	-	-
Cheung and Peri (2019)	Y	Y	-	Y	-	-	Y	-	Y	-	-	Y
Wong (2018)	Y	-	Y	Y	-	-	Y	Y	Y	Y	-	Y

Acc Acceptability; *Ado* Adoption; *App* Appropriateness; *Bar* Barriers; *C/E* Cost effectiveness; *Eff* Effectiveness; *Enab* Enablers; *Feas* Feasibility; *Fid* Fidelity; *Main* Maintenance

Table 8 Implementation components reported for drill-practice exercises, goal-oriented cognitive rehabilitation, and cognitive strategy training studies

First author (year)	Acc	Ado	App	Bar	Cost	C/E	Eff	Enab	Feas	Fid	Main	Reach
Drill-practice exercises only												
Beishon (2021)	Y	-	Y	Y	Y	-	Y	Y	Y	-	-	Y
Ng (2021)	Y	Y	-	-	-	-	Y	-	Y	Y	Y	Y
Yeo (2021)	Y	Y	-	Y	-	-	Y	Y	Y	Y	-	Y
Goal-orientated cognitive rehabilitation												
Clare (2019)	Y	-	-	Y	Y	Y	Y	Y	Y	Y	-	-
Morgan-Trimmer (2021)	Y	-	Y	-	-	-	Y	-	Y	Y	-	-
Lu (2013)	-	-	-	-	Y	-	-	-	Y	Y	-	-
Cognitive strategy training (often combined with other)												
Nomura (2009)	Y	Y	Y	-	-	-	Y	-	Y	-	-	Y
Mao (2021)	Y	-	Y	-	Y	-	Y	-	Y	Y	-	Y
Lee (2016)	Y	-	-	Y	-	-	Y	Y	-	-	-	-
Kinsella (2020)	Y	-	Y	Y	-	-	Y	Y	Y	-	-	-
Felix (2012)	-	-	-	-	-	-	-	-	-	-	-	Y

Acc Acceptability; *Ado* Adoption; *App* Appropriateness; *Bar* Barriers; *C/E* Cost effectiveness; *Eff* Effectiveness; *Enab* Enablers; *Feas* Feasibility; *Fid* Fidelity; *Main* Maintenance

stimulation, *Adoption* was surmised from the willingness of facilitators and services to participate in the intervention, and the uptake of training. For drill-practice exercises, *Adoption* was measured by willingness of services, whereas referrals to the intervention was considered in one strategy training study (Nomura et al., 2009).

Fidelity was assessed with checklists, facilitator notes, or audit data. Local adaptations of established interventions were also used as a measure of *Fidelity*, but this occurred exclusively for cognitive stimulation (for example, where the intervention was translated into another language, or where examples or exercises were adapted to suit local culture, traditions, or resources). *Cost* was reported across all intervention approaches based on time invested for all stakeholders, and use of resources and equipment. *Cost-Effectiveness* was calculated based on health-related quality of life, health economics, and feedback from facilitators and service. *Maintenance* was

Table 9 Implementation conceptualisation for cognitive stimulation only studies

Author (year)	Acc	Ado	App	Cost	C/E	Eff	Feas	Fid	Main	Reach
Streater (2016)	Att	Will (s) Train	-	-	-	Know (f) Ap (f) Conf (f)	Compl	-	-	-
Clark (2017)	FB (f)	-	-	-	-	-	Staff (i)	-	-	-
Kwak (2021)	FB(f) FB(s)	-	FB(f) FB(s)	-	FB(f) FB(s)	Sub (f)	Staff (i) Res (i) Staff (t)	-	LT (set)	-
Tompkins (2020)	Att	Train	-	-	-	Know (f) Conf (f) Behav (p)	-	-	-	-
Cheung (2019)	FB (f) Att	-	FB(f)	-	-	Sub (f) Cog (p)	Staff (i) Res (i) Attr	-	-	Enrol
Raghuraman (2017)	FB (p) FB (c) FB (f)	-	FB (e) FB (f)	-	-	-	Staff (i)	Adapt	-	Backr
Tuppen (2012)	FB(f) FB(c) FP(p)	Will(f)	FB(f) FB(c)	Time (f)	-	Know(f) Sub(f) Sub(c)	Staff (i)	-	-	-
Paddick (2017)	Att	-	-	Res/equip (p) Res/equip (s) Time (p) Time (f)	hQoL hEcon	Cog (p) Mood (p) Burden (c) Mood (c) Sub (c)	Staff (i) Res (i) Attr Compl	-	-	Enrol Backgr
Mkenda (2018)	FB (c) FB (p) FB (f)	-	FB (c) FB (p) FB (f)	-	-	-	Staff (i) Res (i) Attr Compl	-	-	-
McAulay (2020)	FB (p) FB (f) Att	-	-	-	-	-	-	-	-	-
Alvares Pereira (2022)	FB (p) FB (f) FB (c)	-	FB (p) FB (f) FB (c)	-	-	-	-	-	-	-
Lundy (2021)	Att	-	-	-	-	Cog (p) Mood (p)	Compl	-	-	Enrol
LaRue (2013)	-	-	-	-	-	Cog (p) Mood (p) Mood (c) Burden (c)	Attr	Adapt	-	Backgr
Streater (2017)	Att	Train	-	-	-	Know (f) Conf (f) Sub (f)	Compl	-	-	-
Orrell (2017)	Att FB (p) FB (f)	-	FB(f)	-	-	Mood (p) Ap (f) Know (f) Conf (f)	Staff (i)	Notes Check	-	Enrol Backgr
Dickinson (2017)	FB(f)	Will (f)	FB (f)	-	-	Tools(f) Ap(f) Sub(f)	Staff (i) Res (i)	-	-	-
Cheung and Peri (2019)	FB (f)	Train Will (f)	-	-	-	Know (f) Conf (f)	Compl	-	-	Enrol
Wong (2018)	FB (c) FB (f) Att	-	FB (c) FB (f)	-	-	Cog (p) Mood (p)	Attr	Adapt	-	Backgr

Acc Acceptability; *Ado* Adoption; *App* Appropriateness; *C/E* Cost effectiveness; *Eff* Effectiveness; *Feas* Feasibility; *Fid* Fidelity; *Main* Maintenance. (p) participant-based measure; (c) caregiver-based measure; (f) facilitator-based measure; (s) service-based measure (e.g. managers); (i) intervention; (t) training; (set) setting. *Att*, attendance; *FB*, feedback; *Will*, willingness; *Train*, training uptake; *Time*, log of time; *Res/equip(s)*, log of resource/ equipment used; *hQoL*, health-related quality of life; *hEcon*, health economics metrics; *Know*, knowledge; *Ap*, approach; *Conf*, confidence; *Sub*, subjective perception; *Behav*, behaviour; *Cog*, cognition; *Mood*, including wellbeing and quality of life; *Compl*, program completed as intended; *Staff*, availability of staff; *Res*, availability of resources; *Attr*, attrition; *Adapt*, local adaptation; *Notes*, facilitator notes; *Check*, program checklists; *LT*, long term; *Enrol*, recruitment records; *Backgr*, background factors

Table 10 Implementation conceptualisation for drill-practice exercises, goal-oriented cognitive rehabilitation, and cognitive strategy training studies

Author (year)	Acc	Ado	App	Cost	C/E	Eff	Feas	Fid	Main	Reach
Drill-practice exercises only										
Beishon (2021)	FB (p) FB (c) Att	-	FB (p) FB (c)	Time (p) Res/equip (p)	-	Cog (p) Mood (p) Conf (p) Sub (s)	Attr	-	-	Tot (p)
Ng (2021)	FB (p) FB (f) FB (s)	Will (s)	-	-	-	Cog (p) Mood (p) ADL (p)	Attr Res (i) Compl	Check	LT (set) LT (i)	Enrol Tot (p)
Yeo (2021)	Att FB (p) FB (f)	Will (s)	-	-	-	Cog (p)	Staff (i) Res (i)	Check	-	Enrol Tot (s)
Goal-orientated cognitive rehabilitation										
Clare (2019)	FB (p) FB (c)	-	-	Time (a) Time (f) Time (c) Res/ equip (s) ServUse	hQoL hEcon	Cog (p) ADL (p) Goals (p)	Compl	Notes Check	-	-
Morgan-Trimmer (2021)	FB (p) FB (c) FB (f)	-	FB (f) FB (p) FB (c)	-	-	Sub (s)	Compl	Notes	-	-
Lu (2013)	-	-	-	Time (a) Time (f) Time (p&c) Res/equip (p)	-	-	Staff (i) Res (i) Prac	Audit	-	-
Cognitive strategy training (often combined with other)										
Nomura (2009)	Att FB (f) FB (c)	Refs	FB (c) FB (f)	-	-	Cog (p) Mood (p) Sub (f) Sub (c)	Res (i)	-	-	Backgr
Mao (2021)	Att FB (p) FB (f) FB (s)	-	FB (f)	Time (f) Res/equip (s)	-	Cog (p) ADL (p)	Attr Staff (i) Prac Staff (t)	Check	-	Tot (p) Enrol Backgr
Kinsella (2020)	FB (p) FB (f)	-	Fb (f)	-	-	Sub (p) Sub (f) Goals (p)	Staff (i)	-	-	-
Lee (2016)	FB (p)	-	-	-	-	Cog (p) Mood (p) ADL (p)	-	-	-	-
Felix (2012)	-	-	-	-	-	-	-	-	-	Tot(p) Tot(s) Enrol Backgr

Acc Acceptability; *Ado* Adoption; *App* Appropriateness; *C/E* Cost effectiveness; *Eff* Effectiveness; *Feas* Feasibility; *Fid* Fidelity; *Main* Maintenance. (p) participant-based measure; (c) caregiver-based measure; (f) facilitator-based measure; (s) service-based measure (e.g. managers); (a) administrative; (i) intervention; (t) training; (set) setting. *Att*, attendance; *FB*, feedback; *Will*, willingness; *Refs*, referrals; *Time*, log of time; *Res/equip(s)*, log of resource/equipment used; *ServUse*, log of service usage; *hQoL*, health-related quality of life; *hEcon*, health economics metrics; *Cog*, cognition; *Mood*, including wellbeing and quality of life; *Conf*, confidence; *Sub*, subjective perception; *ADL*, activities of daily living; *Compl*, program completed as intended; *Staff*, availability of staff; *Res*, availability of resources; *Attr*, attrition; *Prac*, practicality of training schedule; *Notes*, facilitator notes; *Check*, program checklists; *Audit*, audit data; *LT*, long term; *Tot*, total people; *Enrol*, recruitment records; *Backgr*, background factors

evaluated by assessing whether the intervention continued in the setting long term.

What Has Been Reported to Support Successful Implementation (Enablers), or Impede Its Success (Barriers)?

As described above, most included studies utilised a cognitive stimulation approach for people living with dementia, with a smaller group of studies utilising other intervention approaches or working with other populations. Nonetheless, there were no apparent differences in the types of barriers or enablers reported across the studies. Interestingly, factors that were identified as barriers in one study were often then identified as enablers in other studies, and vice versa. Additionally, some studies described particular factors as being both barriers and enablers to implementation. For example, Kinsella et al. (2020) reported that intervention facilitators described using a program manual as "both an asset and a challenge" (p.e174), as while the clear and organized structure facilitated program delivery, the staff occasionally also felt this limited their flexibility for discussion and strategy practice within the sessions. This context-based variability across and within studies limited our ability to definitively attribute individual factors as barriers or enablers. Rather, during our thematic content analysis, we characterised potential barriers and enablers identified in the studies in relation to one of four over-arching factors associated with *Stakeholders*, the *Service*, the *Intervention*, or to the intervention's *Reach*, as shown in Table 11.

Stakeholder Factors

Regarding *Stakeholders*, barriers related to *Client* factors were frequently reported. One of the important client factors was *Background*, including level of education and literacy, technical experience (particularly for computerised tasks), availability, and sensory impairments (e.g. vision or hearing). Many studies commented on cultural factors, for example ensuring that the intervention did not seem "childish" (Raghuraman et al., 2017), or noting that more pragmatic topics such as food or creative production were more acceptable to Chinese participants than more abstract topics (Wong et al., 2018). An often-reported enabler for managing these cultural background factors was the *Adaptability* of the intervention (further considered under *Intervention*), for example the ability to alter the material to account for illiteracy or sensory issues (e.g. Alvares Pereira et al., 2022), or local factors (e.g. Clark et al., 2017). *Acceptability* of the intervention to clients was an important enabler, including that the intervention was enjoyable and had a low chance of negative effects (Tompkins et al., 2020). Another group of client-related barriers were those related to *Disease* factors, for example dementia severity, cognitive impairment, and behavioural symptoms (such as emotional lability, disinhibition, or apathy). They also related to physical disability, particularly impacting mobility.

Facilitator-related factors were also frequently reported as barriers or enablers. Facilitator *Training* including appropriate background, skills, and pre-existing knowledge was identified as an important enabler, particularly for understanding common symptoms of dementia and how to manage them, addressing some of the *Disease*-related barriers. Facilitator confidence in a specific technique was noted as an enabler. The issue of balancing fidelity versus flexibility in intervention manuals and other forms of training was noted as both a barrier and an enabler (e.g. Kinsella et al., 2020). Facilitator *Attitude* was important, with enthusiasm for the intervention highlighted as an enabler (Clark et al., 2017). Finally, *Stakeholder Relationships* could be important enablers or barriers and were noted across all levels of stakeholders. For example, the rapport and therapeutic alliance built between clients and facilitators was identified as an important enabler (Clare et al., 2019), whereas conflict between the client and their caregiver (for example, differing levels of engagement in the intervention) was reported as a barrier (Beishon et al., 2021). The relationships between researchers and the clinicians delivering the intervention could enable implementation (Kinsella et al., 2020; Lundy et al., 2021), but could also be a barrier, for example if researchers had difficulties "letting go" of their program and allowing clinicians to work autonomously (Nomura et al., 2009). The importance of getting administrative staff and managers "on board" was also noted (Mao et al., 2021).

Service Factors

Staff buy-in was an important enabler reported as part of the *Service* factors. Buy-in from managers was identified as critical, and strategies such as having managers involved with recruitment and sending reminders were successful (Ng et al., 2021). Staff buy-in was reported to be increased by successful experiences of the intervention. *Ease of Integration* of the intervention within the service was another enabler, for example interventions sharing commonalities with existing programs in the service were reported to be more easily implemented (Cheung et al., 2019). *Staffing*—particularly staff availability and turnover, cost-effectiveness, and availability of funding—were often reported as barriers. *Limitations of Resources* were potential barriers, although these could often be managed, including considering the space and privacy of the venue, location and ease of use of bathrooms, and transport needs of clients. The local setting was important, with one study noting the issue of extended travel on roads during the rainy season, which meant difficulties with starting sessions on time, although this was accepted by participants (Paddick et al., 2017).

Table 11 Overview of issues influencing success of cognitive intervention implementation (barriers and/or enablers)

Factor	Level	Concept	Reported Issues
Stakeholder	Client	Disease factors	**Dementia severity, apathy, physical disability, mobility, fluctuations, disinhibition, emotional lability, cognitive impairment, fatigue**
		Background factors	**Preferred language, culture, sensory capabilities, education, literacy, technical experience, health** literacy, client buy in (belief it will work), client **preferences (location, computers, groups, modality), motivation, availability (scheduling), physical limitations** (e.g., mobility assistance), other life circumstances
		Acceptability	Program is of interest to target recipients (fun, **enjoyable, worthwhile); low risk of negative effects**
	Facilitator	Training	Fidelity vs flexibility of manual and training, appropriate background and skills, confidence regarding given technique/ approach, knowledge
		Attitude	Enthusiasm
	Stakeholder **relationship**		**Conflict between caregiver and participant, rapport building, therapeutic alliance**, researchers having **difficulty letting go/ letting clinicians take lead, similar motivation, service or setting administration on board, similar therapeutic agenda, support person available/ included in intervention, regular and sufficient interaction between research and clinical team, therapist/ administration communication**
Service		Staffing	**Staff time and availability, number of staff needed, other commitments, staff turnover, cost-effectiveness,** funding
		Limitations of resources	Transport needs (e.g., travel on roads during rainy season), venue – space, privacy, closed space/ groups, **shared facilities, locations and ease of use of bathrooms**
		Ease of integration	**Similar to existing programs in the service**
		Staff buy-in	Observed success increases buy-in, buy-in/ involvement of managers (e.g., recruitment/ reminders)
Intervention		Process	**Timing of goal setting, when is** facilitator involved, role assignment, **Cognitive Stimulation Therapy** session structure
		Adaptability	Group size, sample/ resource factors, individual **participants, openness, program duration, timing**
		Manual	Fidelity, facilitator confidence
		Limitations of equipment	**Technological difficulties, device** portability, access and **condition of equipment, familiarity of equipment/ modality, poor instructions**
		Engagement	**Individualised feedback and personalisation, appropriate reminders, other activities as incentive (lunch), socialisation**
		Group dynamics	**Closed group, individual adherence impacting group,** individual preferences - how they impact others
Reach		Recruitment	**Ability to recruit suitable and sufficient participants**
		Representativeness	**Representativeness of participants increases** confidence/ validity of results (transferability)

Intervention Factors

In terms of factors related to the *Intervention*, as previously noted, *Adaptability* was an enabler, including flexibility around group size, resources required, program duration, and timing. *Manualised* interventions were reported to increase fidelity and facilitator confidence. The intervention *Process*, regarding role assignment, timing of facilitator involvement and goal setting (Clare et al., 2019), and session structure (Mkenda et al., 2018), could be seen as enablers or barriers. *Group Dynamics* such as whether the group was open or closed, and the impact of individual members' preferences and adherence impacting on others, were important for group interventions. *Limitations of Equipment* was a clear barrier, particularly technological difficulties, device portability, familiarity with the equipment or modality, and clarity of instructions. *Engagement* was an enabler including the ability to provide individualised feedback and personalisation, to send appropriate reminders (e.g. text messages, Mao et al., 2021), and including time for socialisation and activities such as lunch as an incentive (Mao et al., 2021).

Reach

Finally, two factors were noted in terms of *Reach*. *Recruitment* was noted as a barrier, particularly recruiting sufficient suitable people with dementia (Cheung & Peri, 2019). *Representativeness* of trial participants relative to the wider community who would be targeted for the intervention was noted as an enabler, providing increased confidence in the validity of the results and transferability to other settings (Paddick et al., 2017).

Understanding Barriers and Enablers: A Realist Approach

We contemplated how these identified barriers and enablers interact with one another, using a realist approach (Rycroft-Malone et al., 2012) to consider the context, mechanisms, and outcomes at each of the micro (client/patient), meso (clinician/health provider/facilitator), and macro (organizational/service) levels. As shown in Fig. 2, contextual factors and mechanisms at all levels interact with one another to produce the desired outcomes. Starting at the base of our model, at the client (micro) level, disease and background factors are important variables that will impact successful

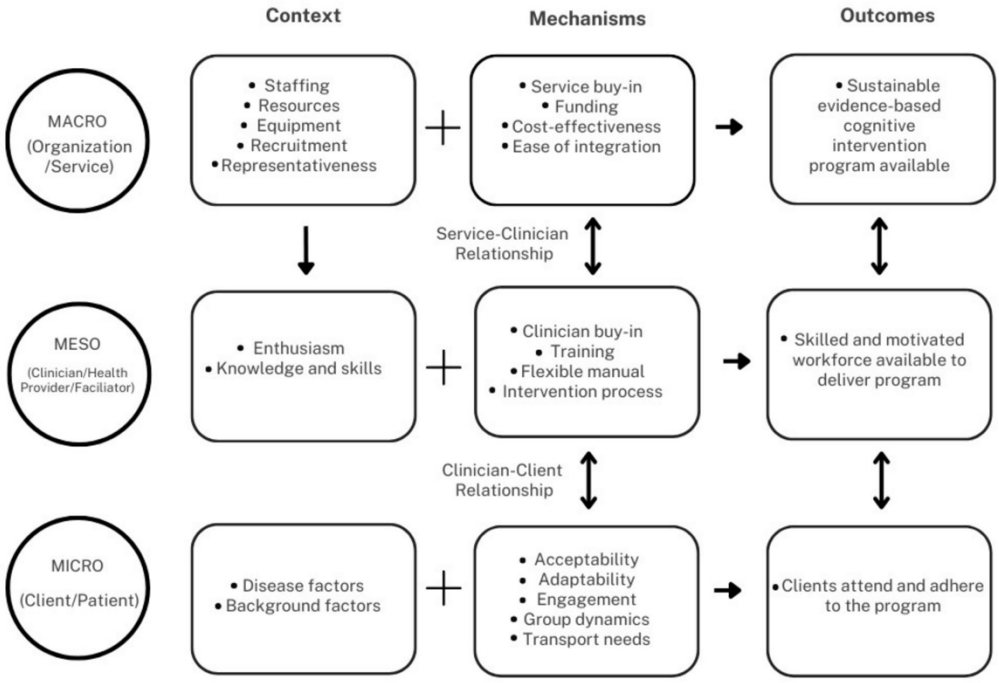

Fig. 2 Realist approach to understanding context, mechanisms, and outcomes of reported barriers and enablers

attendance and adherence to the program (outcome), and are impacted by the acceptability of the program, how adaptable it is, client engagement, transport needs, and group dynamics. These mechanisms are also impacted by the client–clinician relationship, as well as the client-caregiver relationship, when relevant. At the clinician (meso) level, the facilitator's enthusiasm for the intervention and their background knowledge and skills interact with the specific intervention training provided, a flexible manual, clinician belief that the intervention is effective, and the intervention process, leading to a skilled and motivated workforce available to deliver the program. This workforce then impacts on client attendance and adherence as well as the availability of a sustainable cognitive intervention within the setting. Retaining clinicians who have appropriate background skills and who are enthusiastic (rather than burnt out) in turn is influenced by the organizational context (macro level), particularly in terms of adequate levels of staffing, resources, and equipment. A strong relationship between clinicians and their management team and administrative staff supports service-level buy-in to the intervention program. Along with adequate funding, evidence of cost-effectiveness, and ease of integration, these organization-level mechanisms lead to a sustainable, evidence-based cognitive intervention program being made available in a given setting.

Discussion

Summary of Findings

Despite strong evidence that cognition-oriented (i.e. neuropsychological) interventions can maintain or improve cognitive functioning in older people, such interventions remain largely inaccessible to the community outside of research settings (Naismith et al., 2022; Wong et al., 2023). To better understand this research-to-practice gap, we scoped the international literature, finding 29 studies reporting implementation of neuropsychological interventions for older adults in clinical or community settings. Most of these studies (62%) reported on implementation of cognitive stimulation for people with dementia, with fewer studies reporting on other cognitive intervention approaches or within MCI, SCD, or healthy older adult populations. Only four studies utilised a formal implementation framework to underpin their implementation evaluation. Regardless of whether a formal framework was employed, it was common for studies to include the implementation concepts of acceptability, feasibility, and effectiveness, but rare for studies to evaluate cost, cost-effectiveness, or maintenance over time. Standardised questionnaires were often used for measuring effectiveness from various stakeholder perspectives, but other implementation concepts were typically measured using bespoke questionnaires, interviews with stakeholders, and data logs of time, resource use, recruitment rates, and attrition. Factors impacting successful implementation related to the stakeholders (client, clinician, and organization levels), service, intervention, or the intervention's reach. Our realist approach outlined the dynamic interactions between these factors and how consideration of the context and mechanisms at the client, clinician, and organization levels underlies successful implementation of a cognitive intervention program, as indicated by client attendance and adherence, availability of a skilled and motivated workforce, and availability of a sustainable, evidence-based program in the organizational setting.

Comparison of Differences Across Intervention Approaches, Samples, and Settings

Of the 29 included studies, 62% (or 18/29) utilised cognitive stimulation for older people living with dementia, across a broad range of settings including residential care, day programs, community health, inpatient, outpatient, and home. This may partly reflect the extensive work of Spector and colleagues from University College London, in creating the International Cognitive Stimulation Therapy Centre (https://www.ucl.ac.uk/international-cognitive-stimulation-therapy), which facilitates access to their cognitive stimulation program via a manualised approach, centralised training, and ease of adaptation. Three of the 18 cognitive stimulation studies were carried out in the UK by researchers directly associated with Spector's group, with a further 10 studies describing adaptions of the manualised program for delivery in the UK or other countries.

Comparatively fewer studies (38%, 11/29) implemented other forms of cognitive intervention (i.e. drill-practice exercises, goal-oriented rehabilitation, cognitive strategy training). Those that did use these approaches also took place across a broad range of settings. These studies addressed a broader range of older adults than the cognitive stimulation studies, including those with objective or subjective cognitive decline (MCI or SCD), and cognitively healthy older adults. This follows patterns in research studies, where more cognitively demanding interventions are seen to be more effective and appropriate in those with milder or minimal cognitive decline, due to greater residual or compensatory cognitive resources and greater insight (Mowszowski et al., 2010; Pike & Kinsella, 2019). Nevertheless, the relative scarcity of *implementation* of these interventions compared to cognitive stimulation may reflect greater barriers. While we did not observe clear discrepancies in the types of barriers or enablers reported across studies using different intervention approaches or in different samples, we were limited by the small number of studies in categories other than cognitive stimulation for dementia. Ultimately, the scarcity of

implementation studies in cognitively healthy older adults and people with MCI indicates that recommendations (e.g. Ismail et al. (2020); World Health Organization (2019)) to increase accessibility to cognitive interventions for secondary and tertiary dementia prevention have not yet been widely instigated.

Commonly Used Implementation Frameworks and Concepts

Regarding our primary research question, we found that less than 15% of included studies utilised a formal, structured, or evidence-based implementation framework. Of these, use of the RE-AIM framework (Glasgow et al., 2019) was the most common and appeared to work well for guiding methodology and operationalising outcomes. Nevertheless, only one study utilised the entire RE-AIM framework. Implementation frameworks are most useful when taken in their entirety, to enable understanding of all the important components for successful implementation. Our exploration of upcoming implementation work, as reported across the protocol and pre-work studies identified through our selection process (Appendix 4), showed the use of a wider variety of implementation frameworks, including the CFIR, Knowledge to Action framework, and iPARIHS. This is important as different frameworks enable focus on different aspects of implementation and may be more appropriate for particular contexts or settings. While it is still a minority of studies using formal frameworks (4/24), this trend demonstrates that the importance of using frameworks appears to be better recognised in new or work-in-progress. Overall, the small number of studies using formal frameworks likely indicates a lack of familiarity for researchers who develop and evaluate interventions, and later aim to implement them in clinical or community practice. Although these researchers are well-versed in research design for efficacy studies, they may lack knowledge or experience in implementation science.

Most of the studies included in the review selectively addressed only a few implementation concepts, most commonly acceptability, feasibility, and effectiveness. These are arguably the more well-known or easily understandable implementation concepts to those familiar with traditional empirical research methods. Less frequently included elements such as appropriateness, fidelity, adoption, and reach may be seen as more "technical", while rarely included concepts such as cost-effectiveness and costs may be difficult to operationalise without health economics expertise. Maintenance relies on longitudinal monitoring, which is often outside the scope of funding and pragmatic timelines. Yet, these outcomes are just as critical for understanding implementation processes, successes, and failures. Even where an intervention is highly acceptable to stakeholders, produces relevant or meaningful effects, and is feasible to operate, sustainable embedment will fail if the intervention is too costly to run in the longer term, if stakeholders do not adopt the intervention, if it does not fit with the organizations' core values, or if it is not reaching the intended recipients. Looking at the protocol and pre-work studies, there appears to be some upcoming shift away from the focus on effectiveness, with a greater emphasis on cost, although maintenance was still rarely reported. Without an overarching conceptual framework to provide methodological scaffolding, and investigation of all elements of the framework, conclusions regarding the sources of implementation success or failure are inherently limited.

Another complicating factor in interpreting the findings was the marked inconsistency within and across studies in the use of key implementation terminology and in the application of implementation concepts. For example, Tompkins et al. (2020) discuss low implementation fidelity as a key concern, yet they propose to address this by targeting "buy-in" from the care facility administrators and workforce of intervention facilitators, leaving it unclear if they are referring to fidelity, appropriateness, or adoption. We addressed such ambiguities by creating a glossary of implementation concepts, including definitions and practical examples, synthesised from core implementation science publications (Glasgow et al., 2019; Peters et al., 2013; Shepherd et al., 2019). This glossary (Appendix 3) provided a consistent language from which to synthesise findings across the studies. It represents one of the most practical outputs of this scoping review and may be useful as a guide for future research in this area.

Factors Influencing Implementation Success

In terms of our third research question regarding barriers and enablers to the implementation process, these were explicitly discussed by just over half of the included studies. We observed that factors identified fell within one of four overarching categories related to *Stakeholders*, the *Service*, the *Intervention*, or to the intervention's *Reach*. Although many common factors were identified across studies, there were often discrepancies in whether the factors were described as a barrier or as an enabler. We used a realist approach (Rycroft-Malone et al., 2012) to understand how these contextual factors and mechanisms interact at each of the client, clinician, and organizational levels, leading to successful implementation outcomes of client attendance and adherence to the program, a skilled and motivated workforce, and the availability of a sustainable, evidence-based cognitive intervention in the setting. Key factors in successful implementation included (a) stakeholder relationships and involvement at all levels; (b) a manualised intervention that was easy to adapt to the local context (particularly in allowing for culturally relevant tasks, examples, and ideas);

(c) sufficient funding for necessary staffing, resources, and equipment; and (d) ensuring intervention facilitators were well-trained, confident, and enthusiastic in working with the client group and in delivering the intervention.

Strengths and Limitations

Our review had several strengths including pre-registration, a systematic approach following scoping review guidelines, and a comprehensive search strategy, which we then reviewed iteratively to ensure focus on the most relevant studies. We also produced a glossary with definitions and examples of common implementation concepts in this context to aid consistency (Appendix 3), as well as a realist approach model to understand the interaction of factors influencing successful implementation outcomes (Fig. 2).

While our search strategy deliberately included broad search terms to capture as much relevant literature as possible, we recognise that our review may be limited by inadvertently missing some pertinent studies. This may in part reflect heterogeneity in implementation terminology within and across fields (e.g. overlapping use of "effectiveness" to describe both treatment efficacy as well as effectiveness of implementation strategies within the target context). Furthermore, due to the lack of knowledge of researchers in this field regarding implementation science and terminology, particularly from more than a few years ago, it may be that studies did not use the type of terminology that would have been identified in our original search. We scrutinised study aims and methodologies during the screening process to differentiate those studies truly focusing on implementation but recognise the possibility of missing some research due to such overlaps. We have attempted to pragmatically address this issue by creating a useful glossary of terms (Appendix 3) that may be taken up by other researchers, particularly those more familiar with traditional experimental research who then become interested in research translation.

Our findings may also be limited by the scarcity of included studies examining populations other than dementia, and those looking at drill-practice exercises, goal-oriented rehabilitation, and cognitive strategy training relative to cognitive stimulation. There were also few studies examining computerised approaches. Although international guidelines (Ismail et al., 2020; World Health Organization, 2019) suggest cognitive interventions should be offered to older adults with MCI, SCD, or no concerns with their cognition, only seven studies included participants with MCI (only two of these were solely MCI); just four studies included participants with SCD (none SCD alone); and six studies included healthy older adults (only one was solely healthy older adults). This means that our conclusions about implementation challenges and ways to surmount these are tentative for these cohorts. Similarly, our findings are tentative for approaches other than cognitive stimulation as only three studies looked at drill-practice approaches, three looked at goal-oriented cognitive rehabilitation, and five explored cognitive strategy training (combined with other approaches).

Another limitation of our review relates to identification of tools to conceptualise and operationalise different implementation concepts. We were hoping to collate a list of standardised or commonly used measures to inform future implementation trials in this field. Unfortunately, however, the only standardised approaches reported in the included studies were standardised tools (predominantly questionnaires) for measuring effectiveness from relevant stakeholders. For most other implementation concepts, data arose from examining recruitment rates, attrition logs, recording time and resource use, bespoke questionnaires, or qualitative interviews with stakeholders. Although not quite as easy as standardised tools to integrate into future implementation studies, the collation of these examples at least provides a basis for creating relevant methods for measuring outcomes.

Clinical Implications and Future Directions

Buy-in from all stakeholders, and the relationships between stakeholders were important components to implementation success. This suggests that work is needed to champion the effectiveness and need for cognitive interventions at all levels—including the clients, facilitators, and service settings (e.g. memory clinics or residential care settings). This process begins with establishing ongoing relationships between researchers and people working within appropriate organizations. Work into community-based participatory research (e.g. Belone et al. (2016)) demonstrates the complexity of relationships between academia and community, and that these take time and investment from both parties. Successful implementation occurs only after trusted relationships are created, the capacity of the organization—particularly resources, readiness, and priorities—is considered, and there is flexibility and mutual learning from one another (Belone et al., 2016). Often a "bridge person" representing both academia and the community provides a key link (Belone et al., 2016). Effective academic-community partnerships can lead to buy-in at the client, clinician, and organizational level, creating "change champions" who can influence other levels through their relationships with those stakeholders. It may be helpful to target training programs for future clinicians likely to work with older adults in roles where they could potentially deliver these interventions. Currently, many services working with older adults are purely assessment-focused, for example focusing on neuropsychological assessment to determine if the older adult has a diagnosis of dementia. We need to shift the paradigm so that services move beyond assessment to incorporate post-diagnostic care (Jeon et al., 2023), and concurrently to advocate for the critical role that

cognitive interventions can play in this space. Advocacy, particularly from stakeholders at the organizational level, is the best hope for policy change that could result in increased funding to provide staffing and other resources to deliver these interventions.

Few studies in this area have used formal implementation frameworks to date, and only one utilised the entire framework, which creates difficulty in evaluating all aspects of a successful implementation. Lack of formal frameworks also creates issues in the consistency of terminology. Going forward, implementation studies should aim to use formal frameworks, and clearly define the concepts and outcomes being used. We are currently applying the learnings from this scoping review to a pilot study which will train clinical neuropsychologists to implement cognitive interventions for people with MCI in memory clinics around Australia.

We also noted that several studies reported local or contextual adaptations of a manualised intervention as an important component of their implementation process (e.g. Paddick et al. (2017) describe accounting for cultural and education differences as well as resource availability in Tanzania). While this adaptation can present as a barrier as it requires time, creation or modification of content, and in-depth knowledge of local needs and preferences, it also presents as an enabler by enhancing the potential for acceptability, adoption, and appropriateness. Ultimately, this may require scoping of local needs and preferences and training in cultural competence for staff involved in planning and implementing interventions, to maximise reach, engagement, and adherence.

Conclusions

Despite compelling evidence for the benefit of cognitive interventions for older adults, the translation of these programs into clinical practice and community settings has been slow. This is particularly the case for older adults without dementia and for drill-practice, cognitive rehabilitation, and cognitive strategy training intervention approaches. Few studies have used formal implementation frameworks, which can lead to inconsistency in terminology and missed evaluation of important aspects of implementation processes and outcomes. Creating strong stakeholder involvement and relationships across all levels, using manualised interventions that are flexible for adaptation to the local context, and ensuring facilitators receive appropriate training in the client group and intervention so that they are confident and enthusiastic are common enablers of implementation success. Multiple contextual and mechanistic factors at each of the client, clinician, and service levels interact dynamically to aid or hinder implementation success.

Appendix 1

Final Search Terms

Search strategy across CINAHL, MEDLINE, PSYCINFO, and EMBASE—noted where differences occurred within each databasel Search conducted on 14 Nov 2021.

No	Search term
1	cognitive intervention*
2	cognitive training
3	memory training
4	memory intervention*
5	neuropsycholog* intervention*
6	brain training
7	cognitive remediation
8	cognitive rehab*
9	cognitive stimulation
10	/cognitive remediation (for CINAHL, MEDLINE, & PSYCINFO) /cognitive remediation therapy (for EMBASE)
11	/rehabilitation, cognitive (for CINAHL) /cognitive rehabilitation (for EMBASE & PSYCINFO) (not available for MEDLINE)
12	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 (remove "or 11" for MEDLINE)
13	implement*
14	accept*
15	adopt*
16	feasib*
17	usage
18	usability
19	integrat*
20	deploy*
21	utiliti?*
22	framework*
23	knowledge transfer
24	translat*
25	embed*
26	/implementation science (not available for PSYCINFO)
27	13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 (for CINAHL, MEDLINE, & EMBASE) 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 (for PSYCINFO)

No	Search term
28	12 and 27
29	old* adult*
30	old* age*
31	aging
32	/aging
33	ageing
34	aged
35	/aged (not available for PSYCINFO)
36	dementia
37	/dementia
38	Alzheimer*
39	mild cognitive impairment
40	MCI
41	29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 (for CINAHL, MEDLINE, & EMBASE) 29 or 30 or 31 or 32 or 33 or 34 or 36 or 37 or 38 or 39 or 40 (for PSYCINFO)
42	28 and 41

Appendix 2

List of Extracted Data Items

- author(s)
- year of publication
- origin/country of origin (where the source was published or conducted)
- sample (healthy older adult, mild cognitive impairment, dementia, other) and sample size within the source of evidence
- setting (inpatient, outpatient health service, community health, community ageing/seniors services, other)
- delivery method (in-person, remote (e.g. online); individual, group; computerised)
- intervention type (e.g. cognitive stimulation, cognitive training, cognitive rehabilitation)
- core aspects of the intervention (e.g. duration, frequency, materials, adjunctive components)
- clinical specialty of delivery context (neuropsychology, OT, speech pathology, other allied health, neurology/geriatrics)
- intervention outcome effect size estimates
- whether an implementation framework was identified and used (and which one)
- if an implementation framework was not used—are any key components/concepts/themes identified in common implementation frameworks being used (e.g. feasibility, acceptability, sustainability)
- how was implementation success and failure measured
- was implementation successful
- any reported enablers to implementation success
- any reported barriers to implementation success
- who were the stakeholders
- how were outcomes conceptualised
- what outcomes measures were used
- were findings reported or communicated within the setting
- any reported health economics (costings)

Appendix 3

Glossary of Implementation Terms

Component		Examples from our included papers	Short label/code
Effectiveness	The impact of an intervention on important outcomes, including potential negative effects, heterogeneity of effects, and reasons for success or lack of success (Glasgow et al., 2019 – RE-AIM)	Participant changes in cognitive measures/mood (well-being, quality of life)/ADLs/goals/confidence/behaviour	Cog (p) Mood (p) ADL (p) Goals (p) Conf (p) Behav (p) Sub (p)
		Facilitator changes in dementia knowledge/approach/tools/sense of competence;	Know (f) Ap (f) Tools (f) Conf (f) Sub (f)
		Caregiver burden/depression;	Burden (c) Mood (c) Sub (c)
		Subjective impressions (sub) of whether the intervention was helpful (participant, caregiver, facilitator, service)—can be obtained via interviews, surveys, etc	Sub (s)
Acceptability	Perceptions among stakeholders (e.g. consumers, providers, managers, policy makers) of intervention being agreeable, palatable, or satisfactory (Shepherd et al., 2019 – Proctor model; Peters et al., 2013a, b)	Feedback—interest, enjoyment (participant, caregiver, facilitator, service). Can be obtained via interview, survey, questionnaires, etc	FB (p) FB (c) FB (f) FB (s)
		Attendance	Att
Appropriateness	Fit, relevance, or compatibility of the intervention for the given setting, provider, or consumer; or for a particular issue or problem (Shepherd et al., 2019 – Proctor model; Peters et al., 2013a, b)	Feedback (participant, caregiver, facilitator, service, experts) focused on fit, compatibility, and relevance. Can be obtained via interview, survey, questionnaires, etc	FB (p) FB (c) FB (f) FB (s) FB (e)
Feasibility	The extent to which an intervention can be successfully carried out in a particular setting or organization (Peters et al., 2013 a, b; Shepherd et al., 2019, Proctor model)	Availability of staff as required to run the intervention (time OR competency)	Staff (i)
		Availability of resources as required to run the intervention	Res (i)
		Practicality of the training program/schedule	Train
		Availability of staff, resources, and trainers to undergo training	Staff (t) Res (t)
		Attrition/retention	Attr
		Program completion as intended within the setting	Compl

Component		Examples from our included papers	Short label/code
Cost	Financial and economic costs of an implementation effort, comprising cost of the intervention components, cost of the implementation strategies used to implement, and costs of delivery within each setting (Proctor et al., 2011)	Log of time devoted to intervention (admin, facilitators, participants, caregivers)	Time (a) Time (f) Time (p) Time (c)
		Log of resource/equipment used for intervention (site, participant)	Res/equip (s) Res/equip (p)
		Log of service usage during intervention period	ServUse
Cost effectiveness	Weighing up of Cost outcomes vs Effectiveness and Feasibility outcomes, to make some comment on value from a cost/benefit perspective	Health-related QoL	hQoL
		Health economics metrics, e.g. quality-adjusted life years; saving/expenditure calculations; projected costs; cost per unit benefit (e.g. MMSE point)	hEcon
Reach	The absolute number, proportion, and representativeness of individuals willing to participate in a given initiative, intervention, or program (Glasgow et al., 2019, RE-AIM), and the extent to which those eligible to benefit from an intervention actually receive it (Peters et al., 2013)	Population/area records—total people with the named condition	Tot (p)
		Site records—total clients with the named condition	Tot(s)
		Recruitment records (number/proportion enrolled)	Enrol
		Questionnaires/interviews documenting background factors (e.g. education, age, socio-economic, cultural background)	Backgr

Component		Examples from our included papers	Short label/code
Adoption	The number/proportion of settings or intervention-ists with the intention, initial decision, or action to try/initiate/employ an innovation or evidence-based practice (Proctor et al., 2011) and the representativeness of those willing (Glasgow et al., 2019 RE-AIM)	Information obtained from the site regarding willingness (will); staff facilitators, and non-staff facilitators (e.g. caregivers, volunteers). Can be obtained from motivation-based questionnaires (e.g. ORIC) or interviews	Will(s) Will(f)
		Intervention-ist training uptake	Train
		Referrals made	Refs
		Qualifying factors describing those who agree vs those who don't	Facts
Maintenance	The extent to which (a) behaviour is sustained 6 months or more post-intervention for individuals; and (b) a program or policy becomes part of routine organizational practices and policies within the setting after research funding ceases. (Glasgow et al., 2019, RE-AIM)	Number/proportion of settings still delivering the intervention (LT = long term)	LT(s)
		Number/proportion of individuals still using/following the intervention (LT = long term)	LT (i)

Component		Examples from our included papers	Short label/code
Fidelity	The extent to which the intervention is implemented as originally prescribed or intended by the developers (Proctor et al., 2011), and implemented consistently across different settings, staff, and patients (Glasgow et al., 2019 RE-AIM)	Facilitator notes	Notes
		Audit data	Audit
		Protocol/ program checklists	Check
		Local adaptations indicating differences from original version	Adapt

Key for codes

Generally, the short codes appear next to the example that they represent.

We have used (p) to indicate a participant-based measure (i.e. older adult).

We have used (c) to indicate a caregiver-based measure.

We have used (f) to indicate a facilitator-based measure (referring to intervention facilitators—could be staff, laypeople, etc.).

We have used (s) to indicate a service-based measure (e.g.managers).

We have used (a) to indicate administrative.

For feasibility, (i) refers to intervention and (t) to training.

For maintenance, (i) refers to intervention and (s) to setting.

Appendix 4

A Brief Exploration of Trends From Implementation Protocols, Pre-work Studies, or those Mentioning Implementation Concepts

Similar to the "true implementation studies" previously described, the nine implementation protocol studies were mostly focused on dementia (7/9), with more than half describing implementation of cognitive stimulation (5/9). Only two of the protocols reported use of an implementation framework, the Consolidated Framework for Implementation (CFIR; Spector et al., 2019) and the Knowledge to Action framework, along with elements from CFIR (Cooper et al., 2020). *Acceptability* (6/9) and *Feasibility* (7/9) remained commonly included implementation elements, along with *Barriers* (9/9) and *Enablers (7/9)* to implementation. *Effectiveness* was less commonly reported (3/9) than in the studies previously described. *Maintenance* was uncommonly reported (2/9), but *Costs* of the implementation were reported by more than half of the protocols (5/9).

Of the 15 pre-work studies, most (9) focused on dementia. Of note, only 6/15 studies described planned implementation of cognitive stimulation, with an equal number describing drill-practice approaches, and the remaining three describing cognitive strategy training (in conjunction with training focused on individual goals for two of those studies). Two of the pre-work studies used implementation frameworks, the CFIR (Stoner et al., 2020) and the Integrated Promoting Action on Research Implementation in Health Services framework (iPARIHS; Douglas & Afoo, 2019). *Acceptability* (11/15), *Barriers* (11/15), and *Enablers* (10/15) to Implementation were the most reported elements. *Feasibility* was only reported in seven studies, and *Effectiveness* in only three. *Maintenance* was only reported in one study, and *Costs* of the implementation in three.

Finally, the studies that mentioned implementation concepts, but were not true implementation-focused studies, were also primarily in people with dementia (5/7) and focused on cognitive stimulation (5/7). None of these studies used an implementation framework. *Acceptability* and *Feasibility* were the most frequently included implementation concepts, each reported in 4 studies. *Effectiveness* and *Enablers* were reported in 3 studies each, but *Barriers* to implementation were only reported by 2 studies. *Maintenance* (2/7) and *Costs* of the implementation (1/7) were rarely reported.

Acknowledgements We would like to acknowledge the contributions of Fan He, Amit Lampit, and Belinda Goodenough in the initial stages of this project.

Author Contribution Kerryn E. Pike: conceptualisation, data curation, formal analysis, methodology, visualisation, writing—original draft, funding acquisition. Lily Li: data curation, visualisation, writing—review and editing. Sharon L Naismith: writing—review and editing. Alex Bahar-Fuchs: data curation, writing—review and editing. Alessandra Lee: data curation, visualisation, writing—review and editing. Inga Mehrani: data curation, writing—review and editing. Adam Bentvelzen: data curation, writing—review and editing. Nicola T Lautenschlager: writing—review and editing, funding acquisition. Megan E O'Connell: data curation, writing—review and editing, funding acquisition. Irene Blackberry: writing—review and editing, funding acquisition, supervision. Loren Mowszowski: conceptualisation, data curation, formal analysis, writing—review and editing.

Funding Open Access funding enabled and organized by CAUL and its Member Institutions. This research was funded by a La Trobe University Research Themes ABC Scheme 2020–2021 awarded to KEP, IB, NTL, and MEO.

Data Availability The data used in this scoping review is all presented within the tables.

Declarations

Conflict of Interest The authors declare no competing interests.

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Appendix B

This appendix includes a peer-reviewed article led by Alex Bahar-Fuchs and published in *Neuropsychological Rehabilitation,* to which I contributed as a co-author during my PhD candidature.

NEUROPSYCHOLOGICAL REHABILITATION
https://doi.org/10.1080/09602011.2025.2526661

Implementation of cognition-oriented treatments (COTs) for older adults in Australian memory and cognition clinics: development and pilot evaluation of a clinician training toolkit

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ABSTRACT

The uptake of Cognition-Oriented Treatments (COTs) has remained slow in memory and cognition clinics in Australia despite strong research evidence and recommendations for their use in clinical guidelines. A barrier to implementation is clinician knowledge and training in using COTs for older adults. The current study described the development and initial evaluation of a training toolkit to improve Clinical Neuropsychologists' knowledge, skills and confidence in delivering COTs to older adults in Australian Memory and Cognition Clinics. The toolkit, delivered as part of a broader pilot COTs implementation study, included six online learning modules and an in-person workshop. Participants' knowledge and confidence were measured at baseline, while satisfaction and feedback on the training toolkit were assessed post-training intervention. 18 clinicians completed the training toolkit, and 9 responded to the post-training survey. Clinicians' self-rated knowledge and confidence in their ability varied, especially on items about COT delivery. Clinicians were broadly satisfied with the content and delivery of the training toolkit, while qualitative feedback offered opportunities for improvement. The clinician

ARTICLE HISTORY
Received 14 November 2024
Accepted 24 June 2025

KEYWORDS
Cognitive training; cognition; dementia; neuropsychology; mild cognitive impairment; memory clinics

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Supplemental data for this article can be accessed online at https://doi.org/10.1080/09602011.2025.2526661.

training toolkit has the potential to assist with the implementation of COTs in Australia by developing clinicians' skills and knowledge. Plans include revising the training toolkit and exploring its implementation in additional contexts.

Introduction

Dementia represents one of the most pressing challenges of a rapidly ageing global population. There is strong evidence linking dementia risk with a wide range of lifestyle and environmental factors throughout the life course, and it is estimated around 45% of dementia cases are preventable (Livingston et al., 2024). In recent years, primary prevention efforts have targeted multiple modifiable risk factors simultaneously in middle-aged and older people without biomarkers associated with specific neurodegenerative diseases (e.g., amyloid beta plaques, tau-abnormalities). Secondary prevention studies meanwhile have focused on individuals with disease biomarkers who are yet to develop clinical symptoms, and tertiary prevention studies have focused on slowing down the progression to dementia in people with mild cognitive impairment (MCI) or on slowing down decline and minimising excess disability in people with mild dementia.

Among the wide range of existing non-pharmacological interventions, cognition-oriented treatments (COTs) are the class of interventions subjected to the largest amount of research (Sikkes et al., 2020). The most widely accepted classification system (Clare & Woods, 2004) specifies cognitive stimulation (CS), cognitive training (CT), and cognitive rehabilitation (CR) as the primary COTs in the context of ageing and dementia. Briefly, CS is an approach that emphasises broad stimulation of cognition through participation in discussions and activities (typically in groups) covering a wide range of topics (Woods et al., 2012). CT refers to an approach where individuals take part in structured training through practice on standardised tasks targeting a range of specific cognitive processes (Bahar-Fuchs et al., 2013; Clare & Woods, 2004). We conceptualise this to include both drill-practice exercises and practice in using compensatory strategies, or strategy-based training (Mowszowski et al., 2010). Finally, the focus of CR is improvement in the performance of individualised functional goals related to personally meaningful everyday abilities, through a combination of external and internal cognitive and behavioural strategies (Clare & Woods, 2004; Kudlicka et al., 2023). Although there are numerous unanswered questions related to the optimisation of these approaches to suit the needs of individuals, there is mounting support based on methodologically rigorous evidence synthesis studies that cognitively unimpaired older people, those with subjective cognitive decline (SCD), and those with MCI benefit from CT (Gavelin et al., 2018), and that people with dementia can benefit from CT (Bahar-Fuchs et al., 2019), CR (Kudlicka et al., 2023) and CS (Woods et al., 2023).

The evidence supporting COTs in ageing and dementia is gradually being translated into clinical practice guideline recommendations for their use. For example, The World Health Organisation (WHO) Guidelines for Dementia Risk Reduction (World Health Organization, 2019) suggest that cognitive training (CT) should be offered to cognitively healthy older adults and people with MCI, as it may be helpful in the prevention of dementia among cognitively healthy people and people with MCI. The Lancet Commission Report on Dementia Prevention, Intervention and Care (Livingston et al., 2020) summarised the evidence for COTs across the spectrum of ageing as recently reported in high quality systematic reviews (Bahar-Fuchs et al., 2019; Gavelin et al., 2018), indicating small to moderate gains in cognition following cognitive training in people with MCI and dementia. Recommendations for the delivery of COTs are increasingly included in practice guidelines in several countries. For example, the American Academy of Neurology recommended that cognitive interventions should be offered to people with MCI (Petersen et al., 2018), and the Consensus Canadian Guidelines for the Diagnosis and Treatment of Dementia (Ismail et al., 2020) recommended that cognitive training be offered to older people at higher dementia risk, as well as those with mild dementia. The German S3 treatment guidelines for dementia emphasise the importance of non-pharmacological approaches, including COTs in the management of dementia (Jessen et al., 2023). In Australia, citing somewhat dated evidence, the Clinical Practice Guidelines and Principles of Care for People with Dementia (Cognitive Decline Partnership Centre, 2016) made no recommendations in relation to specific COTs, but a recommendation to encourage people to participate in "cognitively engaging activities" as part of a general dementia prevention strategy (Pond & Regan, 2019). The Australian Memory and Cognition Clinic Guidelines (Australian Dementia Network, 2024) however made a strong recommendation that following a diagnosis, people with MCI and dementia should be referred to appropriate post-diagnostic support services, including evidence-based cognitive interventions.

Despite the growing recognition that evidence-based COTs should be offered to older people with or at risk of dementia, the translation of COTs into practice in clinical and community settings has been very slow. A recent scoping review of COT implementation studies (Pike et al., 2024) found that factors related to facilitator training and confidence in the delivery of COTs act as enablers in successful implementation efforts, as did access to structured and manualised but flexible intervention protocols. In Australia, the results of a national survey (Naismith et al., 2022) suggest that 20.00% of Memory and Cognition Clinics offer any form of COTs to clients. More recently, a survey of 38 Australian clinicians (including clinical neuropsychology trainees) confirmed that cognitive interventions are seen to be an important aspect of routine clinical practice, and that clinicians want additional formal training in the delivery of cognitive interventions. Survey respondents listed insufficient training, lack of

resources, and time as prominent barriers to delivering cognitive interventions in practice (Lee et al., under review). While addressing barriers related to time and resources would likely require systems-level changes concerning models of care in Australian Memory and Cognition Clinics, training-related barriers reflect a long-standing focus on assessment and diagnosis in Australian neuropsychology training programmes, with limited training in general models of intervention and rarely with a specific focus on the context of ageing and dementia. The aim of the current study was therefore to develop a training toolkit designed to assist clinicians working in age-related Memory and Cognition clinics in developing knowledge, skills and confidence in the delivery of COTs to older people at risk of or with dementia. Rather than focusing on the training of clinicians in one specific programme or approach, our aim was to develop and pilot a training package that covers a suite of evidence-based COTs, and to support clinicians in designing and delivering an appropriate mix of interventions and techniques likely to be of benefit to the specific context and needs of their patients. In this paper, we report quantitative and qualitative clinician outcomes at baseline, along with their feedback on the training programme. Results from a related, 12-month implementation study are in preparation and will be reported separately.

Methods

The development of a clinician training toolkit formed part of a broader pilot feasibility study exploring the implementation of COTs in Memory and Cognition clinics in Australia, led by the Australian Dementia Network (ADNeT) Cognitive Interventions Working Group (Bahar-Fuchs et al., 2023). The broader project was broken into three phases: (1) Mapping (Lee et al., under review; Pike et al., 2024), (2) Capacity building, and (3) Translation (Figure 1). The current paper focuses on the capacity phase of the study, including the development and delivery of a clinician training toolkit. The Sydney Local Health District Human Research Ethics Committee (HREC) approved the project (ETH02629). Informed consent was obtained from all participants partaking in the project.

Participants and inclusion criteria

Potential sites listed on the ADNeT national registry of clinics providing Memory and Cognition services to the older adult population (approximately 150 in total) were invited to participate through direct outreach via the professional clinical networks of members of the study team, with the aim to have national representation of between 1–2 clinics from all Australian States ($n = 6$) and Territories ($n = 2$). To be eligible for inclusion, clinics had to regularly see clients with mild cognitive impairment (MCI) as part of their routine service and identify

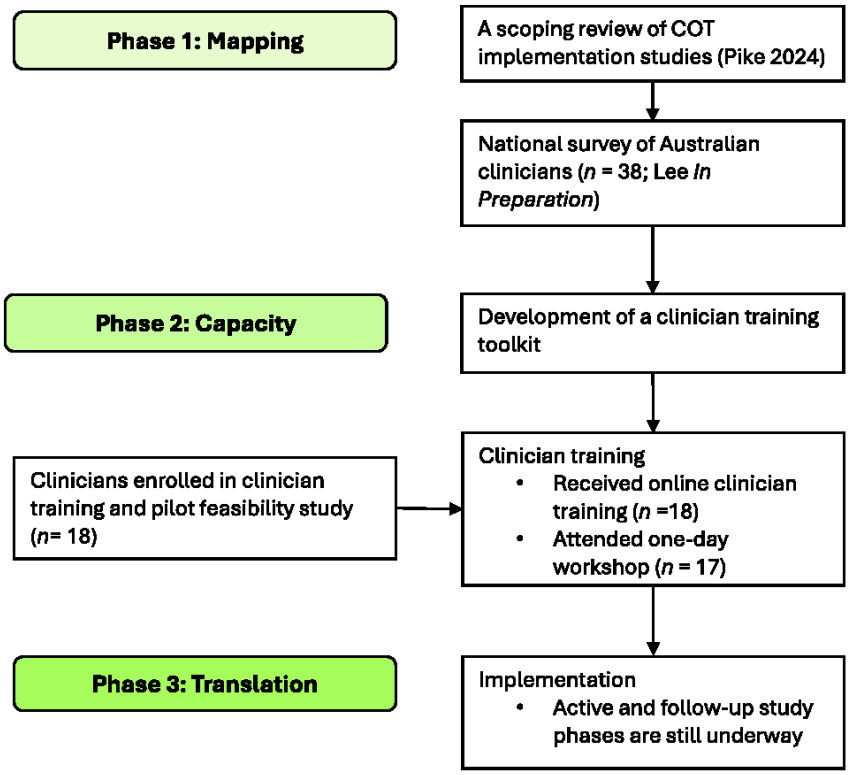

Figure 1. Pilot feasibility study overview.

a service manager and at least one neuropsychologist available to provide outcome data. Although publicly funded clinics were preferred where possible, private clinics were considered for inclusion participation if intervention services provided were not charged during the active implementation period. Service managers were eligible if they consented to coordinating the participation of the clinic, including liaising with the study team as required to support the development of relevant agreements. To be eligible, clinicians had to have endorsement as a neuropsychologist or be a neuropsychology registrar through the Australian Health Practitioner Regulation Agency (AHPRA), be willing to complete the clinician training package, offer cognitive interventions to their patients with MCI, and remain engaged in the implementation programme for up to 12 months, including contributing to fortnightly data collection during a separate implementation study (results in preparation).

Clinician training toolkit

The training toolkit was designed to address clinician-related barriers, specifically those related to a lack of knowledge, confidence, and skills, as well as

challenges associated with time and resources. Our goal was to develop a training package that reflected current conceptual and theoretical knowledge regarding COTs, while covering the evidence base and providing practical tools to guide clinical implementation. The development followed an iterative design process that incorporated elements of a "design for learning" educational approach (Goodyear & Carvalho, 2014; Goodyear & Dimitriadis, 2013), which emphasises the need to plan and structure learning environments specifically for the intended learners to optimise the learning experience, with findings from our scoping review (Pike et al., 2024) and national survey (Lee et al., under review) further informing the rationale, structure, and content of the toolkit.

As each component of the training toolkit was designed, feedback was continually provided by members of the ADNeT cognitive interventions workgroup, who are clinical neuropsychologists with research and clinical expertise in the design and delivery of COTs in ageing and dementia (ABF, LM, KP, SN). The feedback was then incorporated to inform the next round of development and presented back to the group of experts. Throughout the development, we considered our target participants, clinical neuropsychologists working in Memory and Cognition clinics, and aimed to build on their existing training and knowledge, while offering more specific application of the knowledge to the contexts of COTs in ageing and dementia. We also considered the time constraints of the target audience in developing the training and structured the training to enable participants to complete small sections if needed and come back to it later (i.e., ability to navigate at their own pace). We further aimed to optimise the learning environment through the incorporation of digital technologies to support learning, the inclusion of multiple means of engagement to facilitate active learning, the consideration of social interactions through a face-to-face workshop, and providing access to materials and resources (Carvalho & Yeoman, 2019).

The final version of the training toolkit consisted of three components. The first component was a set of six self-paced online training modules. The second was the provision of resources and materials to clinicians in conjunction with the release of online modules. The third component was an in-person one-day workshop for all clinicians enrolled in the study. The six online self-guided learning modules were hosted on and delivered through CogTale, a platform dedicated to the evaluation, synthesis, and dissemination of evidence related to COTs in older adults (www.cogtale.com; Sabates et al., 2021). The six online self-guided learning modules were hosted on and delivered through CogTale, a platform dedicated to the evaluation, synthesis and dissemination of evidence related to COTs in older adults (www.cogtale.com; Sabates et al., 2021). We designed the toolkit to be delivered over 6 weeks (one module per week, requiring 60–90 min to complete) with participants needing to complete each module before gaining access to the subsequent module. All content and resources provided in the training toolkit were evidence-based. Modules contained didactic

content, including video lectures and demonstrations of specific techniques (e.g., spaced retrieval) provided by members of the ADNeT working party and other leading international experts, case vignettes, and multiple-choice question quizzes. The training toolkit covered the theoretical underpinnings and evidence behind the different cognitive interventions, the applications of cognitive interventions to different populations on the cognitive ageing spectrum, practical considerations for implementation, and information related to modifiable risk factors for dementia. The learning objectives, outline, and general structure of each module are described in Table 1.

Accompanying resources were provided to clinicians throughout the digital toolkit; these resources were provided with the authors' permission or were available in the public domain. Resources included further reading references, clinical guidelines, worksheets/ handouts to offer patients, and manuals to deliver specific cognitive interventions (e.g., the La Trobe and Caulfield Hospital Program – LaTCH; Kinsella et al., 2016, and an adapted version of the Healthy Brain Ageing Cognitive Training program; Diamond et al., 2015). Including a wide range of intervention-related resources in one place reduced the time and effort needed for clinicians to collate high-quality and evidence-based cognitive intervention resources, thus addressing barriers associated with limited resources.

Following the completion of all online modules, a one-day face-to-face workshop was held in Melbourne, Australia and facilitated by ADNeT Cognitive Intervention Working Party members. Participants' travel and accommodation costs were provided. The workshop was designed to be complementary to the digital toolkit and provide an interactive opportunity for clinicians to review and consolidate the content provided in the digital toolkit, to collaboratively discuss theoretical and practical elements of delivering cognitive interventions, to practice various techniques, and to identify and discuss potential barriers and enablers to delivering cognitive interventions within their respective settings.

Measures

Questionnaires aimed at capturing relevant clinician outcomes were developed by the study team as part of phases 2 and 3 of the broader implementation study and were administered at baseline (before clinicians completed training), at the end of the 6-month active implementation period, and at the 12-month follow-up period. The baseline questionnaire pack included the following sections: (1) General demographic questions, (2) General training, experience, and employment in neuropsychology, (3) Attitudes towards cognitive interventions, (4) Previous training specifically regarding delivering COTs to older adults, (5) Current practice regarding the delivery of COTs, (6) Clinician confidence and satisfaction in their ability to work with older adults, and (7) Clinician

Table 1. Overview of clinician training toolkit modules.

	Module	Objectives, content outline & module structure
1	*Introduction*	1. Understand the definitions and framework of cognition-oriented interventions. 2. Evaluate the evidence for cognition-oriented interventions in older adult populations.
	Module outline:	*1.1* What are cognition-oriented treatments (COTs); *1.2* How do COTs fit within an older adult population; *1.3* Framework for COTs; *1.4* Evidence in older adults; *1.5* Module review; *1.6* Quiz
	Included in the module:	Embedded slide deck (25 slides), Videos:13 (length in minutes 1:00–5:34), Quiz (4 multi-choice questions); Resource Folder & references
2	*Optimising function using goal setting*	1. Understand the definition of cognitive rehabilitation. 2. Explore goal-based approaches to behaviour change.
	Module outline:	*2.1* Cognitive rehabilitation; *2.2* Goal-setting- where to start; *2.3* Bangor Goal Setting Interview; *2.4* Goal-oriented interventions for memory; *2.5* Case examples; *2.6* Module review; *2.7* Quiz
	Included in the module:	Embedded slide deck (58 slides), Videos:13 (length in minutes 1:17–5:00), case vignettes, Quiz (4 multi-choice questions); Resource Folder & references
3	*Cognition: Speed, attention, working memory, language and executive function*	1. Understand internal and external strategies targeting speed, attention, and working memory. 2. Evaluate cognitive training approaches targeting specific cognitive domains.
	Module outline:	*3.1* Speed, attention, and working memory- a refresher; *3.2* Strategy-based for speed, attention and working memory-compensatory; *3.3* Case vignette; *3.4* Cognitive training and rehabilitation targeting language; *3.5* Cognitive training and rehabilitation targeting executive functions; *3.6* Computer-based interventions for executive functions; *3.7* Quiz
	Included in the module:	Embedded slide deck (50 slides), Videos:9 (length in minutes 0:57–17:50), case vignettes, Quiz (4 multi-choice questions); Resource Folder & references
4	*Cognition: Memory*	1. Understand internal and external strategies targeting memory. 2. Evaluate cognitive training approaches that target memory.
	Module outline:	*4.1* Strategy-based interventions for memory; *4.2* Internal strategies; *4.3* External strategies; *4.4* MEMO cognitive training; *4.5* Computer-based interventions for memory; *4.6* Quiz
	Included in the module:	Embedded slide deck (35 slides), Videos:17 (length in minutes 1:05–17:29), case vignettes, Quiz (4 multi-choice questions); Resource Folder & references
5	*Wellbeing*	1. Understand risk and protective factors associated with cognitive decline and dementia. 2. Understand strategies for identifying and managing the impact of mood and anxiety in older adults.
	Module outline:	*5.1* Risk and protective factors for cognitive decline; *5.2* Managing modifiable risk factors; *5.3* Case vignette; *5.4* Identifying low mood and anxiety in older adults; *5.5* Strategies for the management of low mood and anxiety; *5.6* Case vignette; *5.7* Quiz
	Included in the module:	Embedded slide deck (55 slides), Videos:3 (length in minutes 1:05–12:00), case vignettes, Quiz (4 multi-choice questions); Resource Folder & references
6	*Practical considerations*	1. Explore factors to consider when planning an intervention. 2. Explore implementation of cognitively oriented interventions within older adult clinical settings.
	Module outline:	*6.1* Planning an intervention for a particular patient; *6.2* Neuropsychological feedback; *6.3* Implementing COTs within

(*Continued*)

Table 1. Continued.

Module	Objectives, content outline & module structure
	a clinical setting; *6.4* Implementing existing cognitive intervention programmes; *6.5* Quiz
Included in the module:	Embedded slide deck (58 slides), Videos:9 (length in minutes 2:00–14:27), case vignettes, Quiz (4 multi-choice questions); Resource Folder & references

Note: Videos include a combination of content produced specifically as part of the toolkit and existing material and were provided by members of the ADNeT workgroup and external experts.

expectations regarding participation in the current study. The present study reports clinician knowledge, confidence, and expectations from participation in the study, and these subscales are further described below. The remaining components of the clinician questionnaires will be reported in a later manuscript describing the results of phase 3 of the project ("translation").

Clinician confidence and knowledge

Confidence. Using a 5-point scale (strongly disagree to strongly agree), clinicians rated their confidence in their ability to work therapeutically with older adults in general and with people with MCI in particular ("*I am confident in my ability, e.g., knowledge and skills, to work therapeutically with older adults/people with MCI*"), and in delivering cognitive interventions ("*I am confident in my ability, e.g., knowledge and skills, to deliver/facilitate cognitive interventions for older adults*").

Knowledge. Clinicians' knowledge about, and confidence in delivering information related to six ageing-related topics (brain changes, changes in attention, executive function, memory, sleep, goal setting, wellbeing, dementia risk factors) was assessed using an 8-item self-report scale. In relation to each item, participants were asked to rate their current knowledge and their confidence in delivering information using a 5-point scale ranging from "not at all" to "very high." Scores ranged from 0 to 32 for the knowledge and confidence subscales, with higher scores indicating higher self-reported knowledge or confidence. Establishing the level of confidence and knowledge at baseline was necessary to assess whether clinicians' self-reported knowledge and confidence differed across items related to delivering cognitive interventions. These measures were readministered following the implementation study (phase 3) to evaluate change in self-reported knowledge and confidence. They will be reported in a separate manuscript.

Clinician expectations, perceived enablers and barriers for delivering cognitive interventions

Clinicians' expectations and perceptions about implementing cognitive interventions were assessed at baseline using 5 open-ended questions. Clinicians were asked to describe what they were most and least looking forward to when delivering cognitive interventions, along with what they hoped to gain.

Clinicians were also asked about what they perceived as potential enablers and barriers to delivering cognitive interventions and invited to share any additional thoughts or comments. Relevant parts of this measure were readministered following the implementation study (phase 3) to evaluate whether there had been a change in expectations, enablers and barriers. This will be reported in a separate manuscript.

Clinician training feedback

Within a week of completing all training, including the workshop, clinicians were invited to complete an *optional* feedback survey (delivered through REDCap). Specifically, for each online module, as well as for the entire online training and for the face-to-face workshop, clinicians were asked to rate their satisfaction separately with the *content*, *format*, and *delivery* using a 5-point Likert scale ranging from "not at all satisfied" to "very satisfied." Clinicians were further invited to provide open-ended written feedback for each module on what they enjoyed or valued most and least during the training.

Statistical analyses

Data were analysed using RStudio "psych" and "ggplot2" packages. Participant characteristics and baseline data were analysed descriptively. Open-ended responses related to clinician expectations from the study and feedback from the training were analysed using a thematic content analysis. Two members of the study team (ABF, CC) reviewed open-ended feedback to identify broad themes across the answers. Once the themes were identified, responses were categorised according to the prespecified themes. Responses were reviewed and counted a second time to ensure consistency.

Results

Participants

Recruitment took place between March and December 2022. Of the 12 clinics approached for potential participation, six ultimately declined the invitation, with reasons predominantly related to a lack of resources, including clinician availability, or low priority for the clinic. The six Memory and Cognition Clinics successfully recruited were located in metropolitan Australian cities across five states, including Melbourne ($n = 2$), Adelaide ($n = 1$), Brisbane ($n = 1$), Hobart ($n = 1$), and Sydney ($n = 1$). One clinic was privately funded, with the remaining publicly funded ($n = 5$). A total of 18 clinicians employed by participating clinics were invited to take part in the study and completed the clinician training. Clinicians enrolled in the study were primarily senior clinical neuropsychologists ($n = 10$), followed by clinical neuropsychologists ($n = 3$) and neuropsychology registrars ($n = 5$). Clinicians' experience ranged between 0.5 and 23

Table 2. Characteristics of clinicians.

	Mean ± SD
Age (years)	37.83 ± 8.09
Years since graduating	8.61 ± 6.31
Clinical practice years	9.47 ± 7.14
	n (%)
Gender	
Female	16 (88.89%)
Male	2 (11.11%)
Country of birth	
Australia	14 (78.78%)
Other[a]	4 (22.22%)
First language spoken	
English	17 (94.44%)
Other[b]	1 (5.56%)
Role in clinic	
Senior clinical neuropsychologist	10 (55.56%)
Clinical neuropsychologist	3 (16.67%)
Neuropsychology registrar	5 (27.78%)
Clinical neuropsychology qualification	
Master qualification (Mpsych)	10 (55.56%)
Doctoral qualification (Dpsych, PhD)	8 (44.44%)
Memory clinic employment status	
Part-time	17 (94.44%)
Casual	1 (5.56%)

Note: [a]Croatia (*n* = 1), Hong Kong (*n* = 1), New Zealand (*n* = 1), United Kingdom (*n* = 1). [b]Serbian/Croatian (*n* = 1).

years (*M* = 8.83 years, *SD* = 7.02 years); Table 2 displays further characteristics of participating clinicians.

Clinicians completed the online training in May June 2023, and the face-to-face workshop was held in Melbourne on June 8, 2023. Although we intended to release one module per week over a 6-week period, due to technical issues with the delivery platforms, the training was in fact delivered over a 3-week period, with two modules being released each week. In a small number of cases, delays in completion of the training led to some clinicians needing to complete more than two modules per week to satisfy the requirement to complete the online training ahead of the workshop.

Pre-training clinician knowledge and confidence

Excellent internal consistency was observed in clinician responses to the knowledge (Cronbach alpha = 0.90), and confidence (Cronbach alpha = 0.92) questionnaires. Figure 2 displays clinicians' confidence in their ability to deliver COTs before completing the clinician training. When asked about their ability to work with older adults, all clinicians reported feeling confident, and most reported feeling confident in their ability to work with people with MCI. Confidence in ability varied for items related to delivering cognitive interventions and facilitating groups.

While clinicians generally rated their knowledge (Figure 3) and confidence in delivering information (Figure 4) on topics related to ageing and cognitive

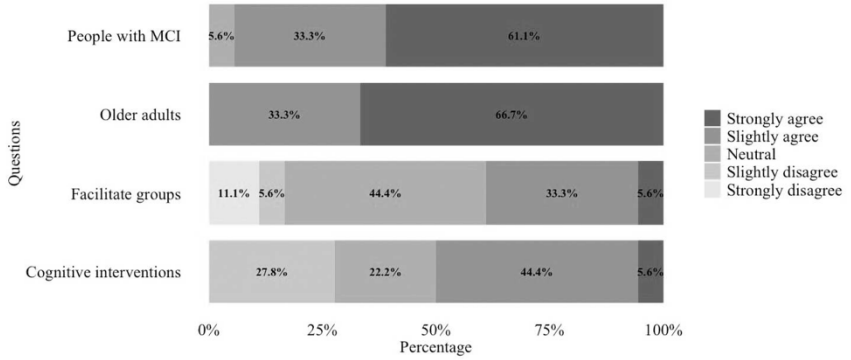

Figure 2. Baseline (pre-training) self-rated confidence in clinician's ability to offer services to older people and deliver cognitive interventions ($n = 18$).

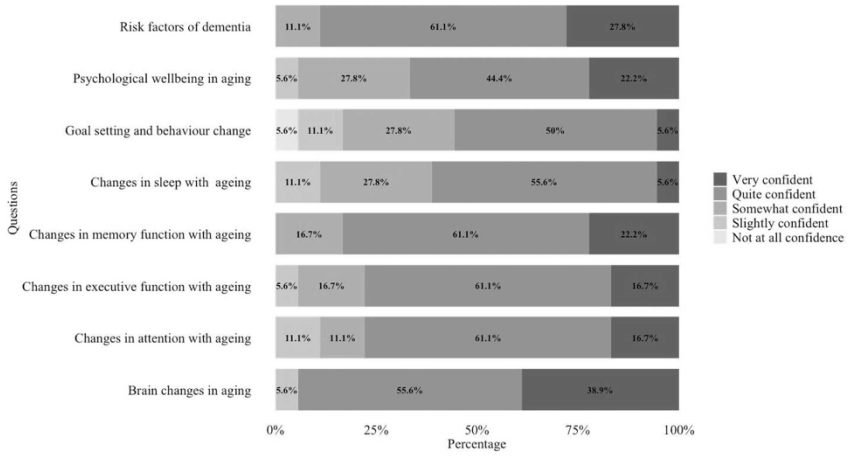

Figure 3. Baseline (pre-training) self-rated clinician *knowledge* on topics related to ageing ($n = 18$).

changes in ageing highly at baseline, there were some variations in the proportion of "*very knowledgeable*" and "*very confident*" responses provided for each topic. The topics with the highest percentage of clinicians reporting "*very knowledgeable*" were risk factors for dementia ($n = 11$, 61.10%) and brain changes in ageing ($n = 10$, 55.60%). Similarly, clinicians had the highest percentage of "*very confident*" ratings for risk factors for dementia ($n = 5$, 27.80%) and brain changes in ageing ($n = 7$, 38.90%). In comparison, changes in sleep with ageing had the lowest percentage of "*very knowledgeable*" ($n = 1$, 5.60%) along with goal setting and behaviour change ($n = 2$, 11.10%). These findings were also reflected in the confidence ratings, with both sleep changes in

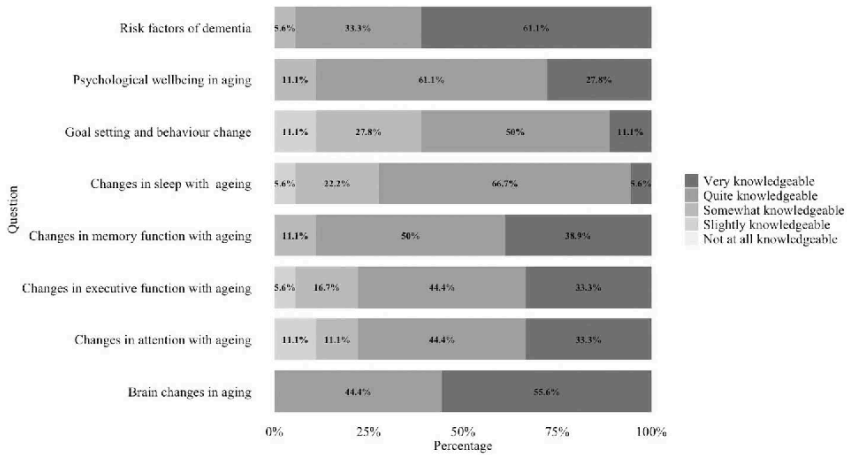

Figure 4. Baseline (pre-training) self-rated clinician *confidence* in delivering information on topics related to ageing ($n = 18$).

aging ($n = 1$, 5.60%) and goal setting and behaviour change ($n = 1$, 5.60%) having the lowest percentage of "*very confident*" responses. A small-moderate association observed between years of experience, and the total confidence score did not reach significance, possibly due to the small sample size, $r = .42$, $p = .10$.

Pre-training clinician expectations, perceived enablers and barriers

Several key themes emerged from clinicians' responses. The first theme identified was clinicians' desire to learn and deliver evidence-based cognitive interventions to clients. The second theme related to concerns around workload and burden, particularly limited time constraints and the potential burden of delivering cognitive interventions. A third theme focused on organisational factors, with clinicians identifying both organisational difficulties with implementing cognitive interventions and a desire for greater organisational support.

Clinicians were most looking forward to delivering cognitive interventions and engaging with clients through providing additional services ($n = 14$). Within these responses, clinicians ($n = 4$) noted that they particularly looked forward to offering services beyond diagnosis and feedback. Clinicians also stated they looked forward to learning more about evidence-based cognitive interventions and developing new skills and competencies to deliver them ($n = 10$). This sentiment carried through when clinicians described what they were hoping to gain from the training, as most clinicians referred to hoping to gain knowledge, skills or confidence in delivering cognitive interventions ($n = 18$), specifically in areas such as goal setting, psychoeducation, and delivering group interventions. Conversely, clinicians described concerns with the time

needed to deliver cognitive interventions, workload expectations ($n = 10$), administrative burden and organisational difficulties ($n = 9$) as components they were least forward to with the implementation.

Similarly, clinicians most frequently listed perceived difficulties with managing workload requirements, time constraints and time commitment as potential barriers to delivering cognitive interventions ($n = 15$). Factors related to clients ($n = 5$) were reported by clinicians as another potential barrier. Among these perceived barriers were clinicians' concerns with potential cultural and language barriers, particularly around the availability of cognitive intervention resources for culturally and linguistically diverse populations (CALD). Other client-perceived barriers included practical considerations of delivery. Some clinicians noted perceived barriers related to organisational factors, including difficulties with implementing change in the workplace ($n = 4$).

Increased time, organisational support, and available resources were all reported as perceived enablers for clinicians to deliver cognitive interventions. Dedicated time to deliver cognitive interventions and having more time available were identified as the highest perceived enabler identified by clinicians ($n = 9$). Organisational support ($n = 8$) included clinicians stating that support from colleagues, peer supervision sessions, and support for admin-related tasks (i.e., scheduling and finding clients) would be potential enablers for delivering cognitive interventions. Resources for delivering cognitive interventions ($n = 7$) were broadly described as potential enablers if they can reduce the time and effort required to plan client interventions. Clinicians suggested session plans, structured programmes, and handouts to provide to clients identified as perceived enablers.

Post-training feedback from clinicians

Clinician digital training toolkit feedback

Nine clinicians completed the optional feedback survey within three weeks of completing the training. No difference in years of clinical experience was observed between clinicians who completed the feedback survey (Mdn = 5.25 years) and those who did not complete the feedback survey (Mdn = 37 years, Mann–Whitney $U = 37$, $p = 0.606$). Similarly, no difference was observed in the age of those who completed the survey (Mdn = 37 years) and those who did not (Mdn = 36 years, $U = 38$, $p = 0.897$). While no clinic had a 100% response rate, at least one response was recorded from each of the participating clinics. Clinicians rated their satisfaction with the *content* of the digital training toolkit as "*very satisfied*" ($n = 6$, 66.67%), followed by "*slightly satisfied*" ($n = 3$, 33.33%). Similarly, clinicians rated their satisfaction with the overall *delivery* of the toolkit as "*very satisfied*" ($n = 6$, 66.67%) and "*slightly satisfied*" ($n = 3$, 33.33%). Satisfaction with the content of each module generally aligned with the overall digital toolkit satisfaction rating. Regarding satisfaction with

Table 3. Qualitative feedback for the online training toolkit and workshop.

Theme	*n*	Strengths	*n*	Areas for improvement
Content	*Theme description.* Feedback on the information and resources provided in the training toolkit. This theme covers responses that reference content included in the toolkit directly or indirect references of the content or the materials			
Online training toolkit	7	Breadth of content covered including, practical demonstrations of techniques, and the range of evidence-based resources supplied	4	Differences in the depth of content covered across modules, suggestion to include more practical demonstrations and information on how to implement techniques
Workshop	4	Improved understanding of how to implement cognitive interventions, content related to group cognitive interventions, overall exposure to more relevant material	3	Desire to have more content that focused on how to choose and deliver cognitive interventions (i.e., feedback sessions, individual vs group training)
Presentation	*Theme description.* Feedback on the presentation of the training toolkit. The feedback on the presentation may refer to aspects of presentation such as quality, mode, or clarity			
Online training toolkit	6	Engaging video presentations, case examples to keep you engaged, resources to explore topics further	3	Inconsistencies in the quality of videos and the presentation of content. Suggestion to integrate resources into the module rather than providing them at the end of the module
Workshop	6	Opportunity to practice strategies, revise the material in person and have discussions with peers	2	Suggestion to add more opportunity for open discussion and more opportunity to practice techniques
Delivery & flow	*Theme description.* Feedback on the overall delivery and flow of the training toolkit. The delivery aspect refers to all aspects of the administration of the training toolkit. "Flow" in this context refers to the structure of the delivery of the online training toolkit modules and the structure of the workshop			
Online training toolkit	5	Online training toolkit was easy to navigate and enjoyed the ability to complete the content at their own pace	3	Modules took longer than expected to complete. Suggestion to review and edit modules to make them flow better
Workshop	7	Enjoyed the flow of completing the online training toolkit before the workshop, interactive nature of the in-person workshop	2	A lot of material to go over in one day, suggestion to make the workshop span over two days to help with the delivery of information

module content, "very satisfied" was the most frequent rating (55.56%–66.67%) followed by "slightly satisfied" (33.33%–44.44%) in all modules but module 3 in which the most frequent rating was "slightly satisfied" (55.6%) followed by "very satisfied" (44.44%). The content of module 1 was rated as "neutral" by one respondent (11.11%). Similarly, regarding delivery, the most frequent rating was "very satisfied" (55.56%–66.67%) followed by "slightly satisfied" (22.22%–44.44%) in all modules but module 3 in which an equal number of respondents were "very satisfied" (44.44%) or "slightly satisfied" (44.44%). One respondent rated the delivery of modules 1–4 as "neutral" (11.11%).

Clinician workshop feedback

Similar to the digital training toolkit, all clinicians reported being "*very satisfied*" or "*slightly satisfied*" with the workshop. Clinicians mostly reported being very satisfied with the workshop's content ($n = 5$, 55.56%), delivery ($n = 8$, 88.89%), and experience ($n = 7$, 77.78%).

Qualitative feedback

An overview of the themes identified in the qualitative feedback responses from clinicians is presented in Table 3. When clinicians were asked what they enjoyed about the online training toolkit, they reported enjoying aspects of the content ($n = 7$), including the breadth and depth of topics covered and practical demonstrations. Relating to the presentation, resources provided, case examples and quizzes ($n = 6$) were also cited as enjoyable components of the training toolkit. Some clinicians related the ease of navigation and the flow of modules ($n = 5$) as positive aspects of the toolkit. In terms of least enjoyable components of the training, clinicians reported that technical issues ($n = 3$), time taken to complete the course ($n = 3$), desire to have some content more tailored to the course ($n = 3$), and insufficient quality of the presentation of some content ($n = 4$). Concerning the workshop, most respondents ($n = 7$) reported that they enjoyed the design and delivery of the face-to-face workshop and the opportunity to discuss with other clinicians. Clinicians also described enjoying the content of the workshop ($n = 6$), in particular, gaining an improved understanding of the content. Regarding the presentation ($n = 4$), clinicians reported enjoying the face-to-face aspects of the workshop and the opportunity to practice techniques.

Discussion

In this paper, we outlined the development of a novel clinician training toolkit focused on COTs in the context of ageing and dementia. We also presented the findings from a pilot evaluation in a small sample of Australian clinical neuropsychologists working in Memory and Cognition clinics taking part in a broader feasibility implementation study. The need for Australian neuropsychologists working in ageing and dementia settings to access additional training in

delivering COTs is well recognised. Findings regarding clinicians' self-reported knowledge and confidence pre-training support a previously identified gap (Pike et al., 2024). The study findings suggest that confidence and knowledge pre-training varied across relevant topics related to delivering cognitive interventions, including goal setting and behaviour change, and changes in specific cognitive functions. The findings support the need for further training to support clinician's ability to implement cognitive interventions. This is further supported by clinicians expressing a strong desire to gain knowledge and skills related to delivering cognitive interventions through their descriptions of what they hoped to gain and what they were most looking forward to about the training. Clinicians further reported wanting to offer cognitive intervention services to patients. This finding aligns with previous research that identified clinicians wanting to offer cognitive interventions as part of post-diagnostic support care in Australian memory and cognition clinics (Naismith et al., 2022).

While some of the enablers and barriers identified can be effectively addressed through the training package, such as the desire for more CALD resources to support the delivery of cognitive interventions to a wider group of populations, it is important to note that the most prevalent identified enablers and barriers are factors that cannot be addressed solely through the current training package. The dominant barriers and enablers in clinicians' responses about their expectations and perceptions of delivering cognitive interventions were time constraints, workload challenges, and organisational factors, highlighting their interconnected nature. This finding aligns with our recent scoping review (Pike et al., 2024), which demonstrated that factors at the client, clinician, and organisational levels intersect to contribute to the implementation of cognitive interventions. While the current study aimed to address factors related to clinician training, it is important to acknowledge that this is only one aspect that can influence implementation. Upon analysis of the findings from the pilot implementation study, our findings will further identify enablers and barriers to the successful implementation of COTs in Memory and Cognition settings within the Australian context, and these will be reported in a future paper.

Training has been identified as an important enabler for the translation of evidence into clinical practice in this area (Pike et al., 2024). In the context of this current pilot study in which the research team comprised subject matter experts in COTs in the context of ageing and dementia, a design for learning approach served as a pragmatic approach for the development of the training materials. In identifying the most relevant content and methods of delivery, and in creating content specific for the needs of clinicians, we drew on the findings of a recent survey of clinicians, and we considered contextual information, including probable previous knowledge of clinicians, as well as the fact that they would be completing the training in the context of their busy schedules. Rather than being overly prescriptive, our approach favoured providing clinicians

with a form of scaffolding for their learning and intervention delivery. We were then able to observe the approach in action during the training phase and in the subsequent active implementation phase of the broader study. The feedback received from clinicians was of great value in revising the clinical training programme. Overall, the findings confirm that participating clinicians were satisfied with the content and delivery of the training toolkit, the different modalities used to present information, and the ability to navigate content at their own pace. Though the design for learning approach aimed to provide practical and specific content, valuable feedback from clinicians suggests the need to add more practical demonstrations of techniques, further content that supports the specifics of implementing cognitive interventions, and a better integration of the additional resources provided within the training toolkit. In future work, in addition to the incorporation of feedback from clinicians, we plan on drawing more explicitly on emerging competency frameworks for Australian neuropsychologists, and on principles of co-design.

Recently, the Australian Neuropsychology Alliance of Training and Practice Leaders (ANATPL) developed a provisional set of professional competencies for clinical neuropsychologists in Australia (Wong et al., 2023). Competencies were grouped to encapsulate different areas of neuropsychology practice, with knowledge-based and applied competencies separated for each area of practice, including delivering neuropsychological interventions. While specific professional competencies were not formally incorporated into our design for learning approach, the final toolkit delivered to clinicians nonetheless addressed some knowledge-based and applied competencies. Specifically, several knowledge-based competencies addressed by the training toolkit included the "provision of information on evidence-based interventions to cognitive outcomes" (Modules 1–4), "presenting the theoretical underpinnings of the cognitive interventions" (Modules 1), "the promotion of cognitive health through addressing dementia risk factors" (Module 5), and "providing information of how affective symptoms can impact the delivery of cognitive interventions" (Module 5). The face-to-face workshop included components that addressed applied competencies such as "identifying targets of interventions and client goals," "identifying potential barriers to interventions and adapt interventions to minimise barriers," and "develop a comprehensive biopsychosocial case formulation" among others.

Work towards revising the training toolkit is currently underway. This revision will involve comprehensively updating and revising the content and structure of the training toolkit as well as adapting the toolkit to other relevant contexts. Specifically, the revision will focus on updating content with the latest evidence, reorganising some of the flow of content, and will more formally/systematically incorporate health professional competency development frameworks, particularly for neuropsychologists. The revision will also, incorporate the feedback received from clinicians in the current study with a continuous emphasis on the "design for learning" principle of reiterative learning through engagement

with learners (Carvalho & Goodyear, 2018). The current study only included metropolitan memory and cognition clinics, limiting the generalisation to rural services as previous research has highlighted the differences and barriers in post-diagnostic care in memory and cognition clinics located in regional Australia (Pavković et al., 2024). Accordingly, plans are underway to adapt the training toolkit to clinicians based in regional and rural memory and cognition clinics through careful consideration of the unique barriers faced by older adults accessing health services, including dementia care (Arsenault-Lapierre et al., 2023). Finally, opportunities to engage with neuropsychologists working in memory and cognition settings in low and middle-income countries are being explored to support the building of capacity beyond Australia through culturally appropriate adaptation of the training toolkit. Ultimately, the success of implementation efforts is also dependent on more fundamental changes to Australian service delivery models for Memory and Cognition services and associated funding available. The development of pragmatic strategies/approaches to continue supporting the implementation of COTs in Australian healthcare settings within current constraints is of great importance. Although the training developed targets clinical neuropsychologists, empowering junior/trainee psychologists and other trained allied health professionals working in these settings to be involved in the delivery of COTs is one such strategy, and there is a need to carefully balance professional and pragmatic considerations. One possibility being explored is for treatment formulations to be led by more experienced neuropsychologists, with the treatment delivery itself being conducted by other trained members of the team under supervision as required.

A limitation of the study was that the post-training feedback survey was optional for clinicians, limiting the available evidence to assess the satisfaction of the training toolkit. This decision was made partially to reduce the overall burden on clinicians as they participate in the broader feasibility study. Clinicians are further interviewed at the 6-month and 12-month point of the implementation period, which will allow for further feedback on the training toolkit. Although we aimed for clinicians to complete the training in a pre-specified schedule of one module per week over six weeks, for pragmatic reasons related to both technical and clinician-level factors, this was not always possible, and in some cases the training was completed in a shorter period. The extent to which any variation in the spread of training completion impacted clinician feedback is unclear, and this question remains to be addressed in future work.

A further limitation of the study was that clinician's knowledge and confidence was assessed before they completed the training and will be assessed again only at the conclusion of the implementation study, limiting our ability to directly compare knowledge and confidence immediately before and after the delivery of the training. Finally, the extent to which our clinician sample is broadly representative of the Australian clinical workforce in Memory and Cognition settings is unclear. Although key characteristics of our sample in terms of

age, gender, cultural background and years of clinical experience appear to be broadly in keeping with clinician characteristics reported in a recent survey of 38 Australian neuropsychologists in Memory and Cognition settings (Lee et al., under review), all clinicians worked in metropolitan clinics. It is also possible that clinicians in the current study were more motivated to offer COTs to people with MCI as a result of our recruitment strategy. Plans are underway for a larger scale-up implementation study in Australia that will include both metropolitan and regional clinics, which will contribute to an even more representative sample of participating clinicians. Memory and cognition clinics in regional Australia face different challenges to those of metropolitan clinics. One such barrier relates to the impact of typically larger catchment areas, often with minimal public transport options. This likely causes access issues for many health services, particularly for individuals without access to a car, which can be further associated with isolation and increased risk of mental health issues. Telehealth options may assist with this, but these can be challenging to deliver effectively owing to reduced computer literacy and quality of internet infrastructure. A further likely barrier is related to lower educational and socio-economic backgrounds, and related reduced health literacy. In Australia, some regional and rural areas have a greater proportion of Indigenous clients. Importantly, lower education and being of Indigenous background have been linked to a greater risk of developing dementia. Conversely, potential enablers in regional areas include more close-knit communities. Group cognitive interventions, utilising videoconferencing/telehealth as needed, can potentially address many of these issues, enabling participation from those who may otherwise be physically isolated, and potentially even providing educational and practical strategies to individuals while waiting for comprehensive assessments. As part of our efforts to expand clinician training to those working in regional and remote communities, plans are underway to co-design adaptation to the toolkit with direct input from clinicians working in these settings.

Conclusions

Findings from this preliminary evaluation highlight the initial success of a training package designed to improve Australian clinical neuropsychologists' knowledge and skill in delivering COTs to older adults with and without dementia. Clinicians' feedback highlighted that the content was well received, with clinicians expressing satisfaction and providing valuable feedback that can be used for future iterations of the training toolkit. The pilot implementation study underway in Australia is expected to be completed in 2025. The study will include an evaluation of participating clinicians' self-rated knowledge, competence and confidence in delivering COTs at two-time points; insights gained from the implementation phase of the study will continue to inform the future development and direction of the training toolkit. Future research that

addresses the implementation of cognitive interventions in clinical contexts should address barriers relating to clinician's knowledge and ability to deliver tailored evidence-based training packages.

Acknowledgments

The study team is grateful for the clinicians, service managers, and Memory and Cognition Clinic clients who took part in this study and the broader implementation study and, in doing so, have made an important contribution to our efforts to translate evidence into clinical practice for the benefit of older Australians with or at risk of dementia. We would also like to acknowledge the following individuals for providing expert video content included in the training package: Benjamin M. Hampstead, Sylvie Belleville, Linda Clare, Wendy Longley, Kathryn Ellis & Claudia Woolf

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

Funding was obtained through Investigators from the Australian Dementia Network Memory and Cognition Clinics Initiative (ADNeT-MC). This initiative was supported by NHMRC Boosting Dementia Research Initiative [grant number APP1152623].

Data availability statement

The datasets generated and/or analysed during the current study are not publicly available due to ongoing research that involves elements of the dataset, but requests to access the dataset can be made to the corresponding author.

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Appendix C

This appendix includes the project overview for the implementation project led by the ADNeT *Cognitive Intervention Working Party.*

Implementing personalised cognitive intervention for older people in Memory Clinics: A pilot feasibility study

PROJECT OVERVIEW FOR IMPLEMENTATION SITES

Australian Dementia Network
REGISTRY. CLINICS. TRIALS.

Who is running the study?

This study is being carried out by the ADNeT-Memory Clinics (ADNeT-MC) Cognitive Intervention Working Party.

- *Convenor*: Prof Sharon Naismith, NHMRC Leadership II Fellow & Lead, ADNeT-MC Initiative, University of Sydney.
- *Chairs*: A/Prof Alex Bahar-Fuchs (NHMRC Boosting Dementia Leadership Principal Fellow, University of Melbourne), Dr Loren Mowszowski (NHMRC-ARC Dementia Fellow, Brain and Mind Centre, University of Sydney)
- *Expert members*: A/Prof Kerryn Pike (Griffith University), Dr Amit Lampit (University of Melbourne), Prof Belinda Goodenough (Dementia Training Australia)
- *PhD student*: Ms Alessandra Lee is conducting this study as the basis for the degree of Doctor of Philosophy (Science) at the University of Sydney
- *ADNeT support*: Adam Bentvelzen (Research Fellow, University of New South Wales), Inga Mehrani (ADNeT-MC National Program Manager, University of New South Wales)

What is the study about?

There is now substantial evidence showing that cognitive (i.e., neuropsychological) interventions can produce benefits for cognition and general wellbeing in older adults, including those with or at risk of dementia. However, these interventions are not routinely offered in memory clinic settings for several reasons including limited time, resources, and clinician training/confidence. A more structured approach to implementation is needed to address this 'research to practice gap'. The ADNeT-MC Working Party will conduct a pilot feasibility study to implement cognitive interventions in a select number of Australian memory clinics.

This study aims to:

a) Provide neuropsychologists with training on a comprehensive cognitive intervention toolkit that can be used for people with Mild Cognitive Impairment
b) Evaluate the uptake and feasibility of implementing these individualised interventions within participating memory clinics (6-month implementation period and 12-month follow-up)
c) Determine key contextual factors, barriers, and enablers of successful implementation at the level of the service, clinician, and patient

Who are we recruiting?

We are seeking to recruit **1-2 memory clinics per state**. Memory clinic sites will be asked to identify **up to 3 neuropsychologists per site** for participation in this study. While we are preferentially recruiting clinics within public health, private clinics may be considered provided that no out-of-pocket fees will be incurred by the patient for the duration of the implementation (6-months).

What will the study involve?

- Completion of brief questionnaires (e.g., 15-20 mins) and interviews (e.g., 20 mins), by the neuropsychologists (and service director/administrator if possible), regarding current knowledge, experience, and site-specific preferences for delivering cognitive interventions.
- Completion of local site ethics applications (assisted by the central team wherever possible).
- Two days (total) of professional training for the neuropsychologists comprising:
    a) Self-guided training: independently working through material from the online training toolkit. The toolkit will include self-guided education modules, manuals for delivering a suite of intervention approaches, worksheets/templates for various intervention techniques, downloadable patient handouts and slides to be used in the training