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"Walk Me Back":

Effects of Combined Reminiscence and Walking Interventions on Cognitive and Psychological Measures in Older Adults Living With and Without Dementia

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To be continued…

Abstract

This thesis explores how autobiographical memory, cognition, and wellbeing can be supported through embodied, social, and person-centred activities in ageing and dementia. It examines the combined effects of walking and reminiscence across neural, behavioural, and community levels. Using a mixed-methods design, the research progresses in line with the Medical Research Council (MRC) framework for complex interventions, moving from intervention development and mechanistic investigation, through feasibility and piloting, to evaluation and implementation considerations. Throughout all phases, Patient and Public Involvement (PPI) was embedded via structured workshops and advisory meetings with people living with and without dementia, and relatives, who contributed directly to the co-design of walking routes, refinement of assessment procedures, ethical considerations, fMRI session design, and implementation planning, ensuring the intervention was dementia-inclusive, feasible, and responsive to lived experience. The first study used structural–functional magnetic resonance imaging to investigate autobiographical memory networks in older adults. Distinct activation patterns within posterior–medial and anterior–temporal regions varied across recent and remote memories, indicating flexible neural reorganisation with age and informing the development of autobiographical cueing strategies later used in the intervention. A development study (n = 2) was conducted with people living with dementia to refine the structure and delivery of a walking-and-reminiscence intervention. Pre–post descriptive changes were observed across autobiographical memory levels, with the most notable shifts in later-life and recent event recall, alongside smaller changes in personal semantic recall and selected cognitive and wellbeing measures, serving primarily to refine feasibility and delivery procedures rather than to test effectiveness in this small sample. A larger mixed-methods developmental study compared people living with dementia (n = 5) and cognitively healthy older adults (n = 5) following a four-week combined walking and reminiscence intervention. While most quantitative changes were modest and did not reach statistical significance, participants living with dementia demonstrated descriptive increases in episodic recall, particularly for late-adulthood and recent life epochs, whereas cognitively healthy participants showed relatively stable episodic performance alongside small increases in semantic autobiographical recall across selected life periods. Global cognition and wellbeing measures remained largely stable in both groups. Qualitative findings across groups highlighted strengthened emotional engagement, shared community narratives, and increasing coherence of personal storytelling over time. Building on this, a three-arm randomised intervention (N

= 36; n = 12 per condition) disentangled walking-only, reminiscence-only, and combined conditions among community-dwelling older adults. Significant improvements in quality of life were observed over time, with the combined Walking + Reminiscence group reporting higher overall CASP-19 scores (Group p = .009; Time p = .010). Semantic autobiographical recall was consistently higher in the combined condition across early and middle adulthood epochs, while episodic recall remained stable across groups. Qualitatively, walking elicited sensory-rich and affectively positive memories, reminiscence fostered structured and culturally inspired narratives, and their combination integrated embodied retrieval with shared meaning and renewed narrative confidence. Finally, a survey involving health policymakers and older adults living with and without dementia (N = 65; 28 cognitively healthy older adults, 16 people living with dementia, 21 health policymakers) confirmed the perceived feasibility and acceptability value of the approach, while identifying practical barriers such as time, staffing, and integration within care systems and highlighting considerations for future implementation and scale-up. Together, these studies show that memory is an active and relational process strengthened through movement, meaning, and connection. The thesis concludes that walking and reminiscence are possible to implement in Ireland and internationally, with scope for cultural adaptation and tailoring to local needs, offering a simple, person-centred way to sustain cognitive and human connection in ageing and dementia.

Chapter 1:

General Introduction

"*Memory is the diary we all carry about with us*."

Oscar Wilde.

Memory plays a central role in how we make sense of ourselves, our relationships, and our daily lives. As we grow older, it is common to experience subtle changes in memory, though the degree, onset, and impact of these changes can vary greatly across individuals. In some cases, memory difficulties may remain within the scope of healthy ageing; in others, they may reflect early signs of cognitive impairment. With recent advances in cognitive neuroscience and ageing research, there is growing interest in how memory can be supported and protected over time. In addition to traditional cognitive training approaches, attention has turned toward lifestyle-based strategies, including physical activity, and particularly walking, as accessible, evidence-informed ways of promoting cognitive health. The following chapters examine these developments in greater depth, focusing on memory processes in later life and the potential role of everyday interventions in supporting brain function and wellbeing.

1.1 Memory

Memory is the ability to encode, store and retrieve information. It is one of the most important cognitive processes that permits organisms to keep past experiences and knowledge and is important for learning and adaptive behaviours (Moscovitch et al., 2022). Although memory is a key capacity of the human brain, focus on the topic and its neural underpinnings started in earnest with Brenda Milner's seminal work in 1957 with patient Henry Molaison (H.M.) following the removal of the hippocampus and surrounding areas bilaterally, H.M. showed severe anterograde amnesia (Scoville & Milner, 1957). Although his long-term and short-term memories remained relatively intact, he was unable to form any new memories. Furthermore, memories for habits and procedures were also unaffected. These led to the development of many influential cognitive and neuro-cognitive accounts of memory. For example, Atkinson and Shiffrin (1968) proposed a memory system that involves three separate systems starting from the sensory store to the short-term memory and finally, the long-term memory (Atkinson & Shiffrin, 1968). These have since been followed by accounts centred on the role of the hippocampus in the consolidation process including Squire's (1991) Standard Systems Consolidation Theory and Nadel & Moscovitch's (2000) Multiple Trace Theory, as well as more recent iterations (Nadel, 2001, Yonelinas, Ranganath, Ekstrom, & Wiltgen, 2019; Moscovitch et al., 2022).

Further investigations suggest that memory comprises separate systems (Squire, 2009). One system is known as the declarative memory system, which involves a memory

that can be consciously recalled (such as facts and events) and can be further divided into episodic memory (personal experiences) and semantic memory (general knowledge). The second is termed non-declarative memory and refers to implicit processes that have an impact on behaviour and skills without any conscious awareness (such as riding a bike). Frequently this memory is linked to procedural learning and is less accessible to conscious introspection (Squire, 2009).

1.1.1 Autobiographical Memory

Autobiographical Memory (AM) is a particularly important type of memory that enables us to construct a meaningful life story (Stramba-Badiale et al., 2025). AM is a memory for personal information that goes beyond recalling information such as what, where and when of an event, to include what that event means and why it is important to our life story (Stramba-Badiale et al., 2025). AM brings together general knowledge from one's past (semantic memory) and from specific events (episodic memory). The main difference between episodic and semantic is that episodic memories allow us to re-experience the event, whereas semantic memories do not include this, although they contain information that includes general knowledge (Viard et al., 2024).

1.1.2 Episodic Memory

Episodic memory refers to the ability to recall events that are linked to a particular moment and setting, including the perceptual and sensory details that were experienced at that time. The defining feature of this type of memory is its specificity, which tends to decline with age. While the richness of detail in a memory is less directly affected by ageing, it is influenced by the length of the retention interval and by the kind of event being remembered. Memories of single, short-lived experiences that occurred once and within the course of a single day are considered specific. In comparison, accounts that summarise repeated experiences, such as several trips to the seaside, or those that cover a longer period, such as a weekend away, are regarded as more general. As individuals grow older, episodic memory often shows a gradual and progressive decline when compared with that of middle-aged adults (Meléndez, 2021). As mentioned above Standard Systems Consolidation Theory (SSCT, Alvarez & Squire, 1994) suggests that memories for events or episodes are temporarily dependent on the hippocampus and is forgotten if it does not go through consolidation (to the neocortex, no longer dependent on the hippocampus). The SSCT theory proposes that, during offline periods (such as sleep), the hippocampus goes through previously encoded events to the neocortex; this

training of the cortex is meant to lead to the gradual strengthening of cortical associations, without involving the hippocampal associations (Meléndez., 2021).

A consistent finding in autobiographical memory research is the reminiscence bump, a tendency for older adults to recall more memories from adolescence and early adulthood (roughly ages 10–30). These memories are often more vivid, emotionally salient, and specific than those from other life periods (Janssen et al., 2005; Berntsen & Rubin, 2004). This effect is thought to reflect both identity formation and enhanced encoding during times of novelty and change. Recent neuroimaging work by Viard et al. (2024) showed that retrieving remote autobiographical memories engages core memory-related areas like the hippocampus and medial prefrontal cortex, supporting the idea that early-life memories remain robustly accessible in ageing. This helps explain why reminiscence interventions (see Section 1.3.1 below) often draw on memories from this life stage, they tend to be richer and more resistant to decline.

1.1.3 Semantic Memory

Semantic information represents a broader category including information describing repeated or temporally extended (longer than a day experiences), as well as personally relevant decontextualized facts (e.g., Eamon and Fiona are my parents) or more universal (e.g., Dublin is Ireland's capital). In some coding schemes, semantic details can be linked to a still-broader category of external details (usually not relevant to the event in question) (Stramba-Badiale et al., 2025). It is considered an objective memory that is related to accumulated knowledge of the world and is organised conceptually.

Neurologically, it is not dependent on the hippocampus over time, especially when facts are decontextualised, with more reliance on neocortical and extrahippocampal regions (e.g. Duff & Brown-Schmidt, 2020; Cabalo et al., 2024). Furthermore, semantic memory tends to be relatively preserved throughout the years. In addition, amnestic Mild Cognitive Impairment (aMCI) patients often show impaired remote semantic memory about impersonal content (i.e. famous faces), but they tend not to have a difficulty with autobiographical memory for personal semantic information (especially personally relevant events) (Meléndez et al., 2021). Other researchers suggest that personal semantic memory is diminished in some patients with aMCI compared to controls and even more pronounced in patients living with Alzheimer's disease (AD). However, old semantic memories tend to be better preserved than more recent ones in mild AD, although they

do decrease through the later stages (especially regarding personally relevant knowledge) (Mohamad et al., 2016). Evoking the Multiple Trace Theory (Nadel et al., 2000), some authors suggest that more frequently retrieved AM are more preserved as they are more independent from the hippocampal complex and better protected from early hippocampal degradation linked to AD (Meléndez, 2021).

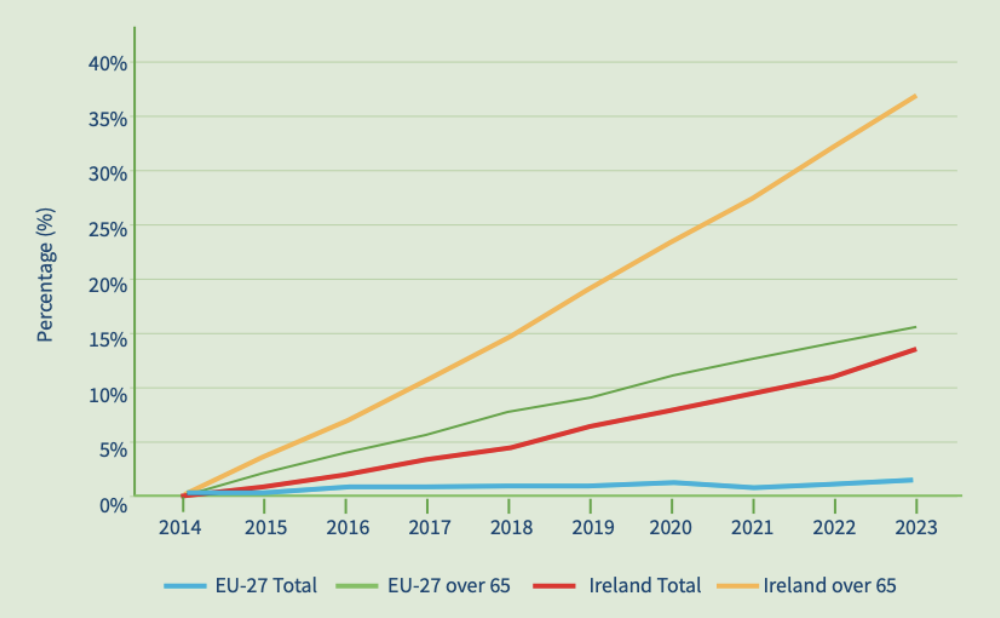
In more general terms, older adults who perform well in cognitive tasks and demonstrate good preservation of cognitive function may do so by adapting to any neural decline via the re-coordination of their neurocognitive networks (Cabeza et al., 2002). This idea of "cognitive reserve" could help in the understanding of why some individuals develop dementia and others do not. The idea could also justify why there is a difference in the rate of change in both healthy ageing and age-related disorders (Schneider and Pichora-Fully, 2000). Generally, ageing brings a certain decline in a variety of cognitive processes and brain functions, some people experience limited degradations in function, others face strong decline (Stern, 2012). On a similar note, in the case of pathological ageing, the speed of change and disease progression can be very different between different groups. This concept of 'neural plasticity" has inspired many theories looking at whether the ageing brain actively compensates for cognitive changes and the ways it might do this. Indeed, it seems likely that older adults may be compensating for neural decline by reorganising their neurocognitive networks (Reuter-Lorenz and Cappell, 2008).

1.1.4 Healthy Ageing and Age-related Cognitive Decline

The world is witnessing a steady rise in the proportion of older adults, accompanied by major demographic shifts across regions. According to WHO Europe, the number of people aged 60 years and older in the European region was estimated at 215 million in 2021 and is projected to reach 247 million by 2030, surpassing 300 million by 2050 (WHO Europe, n.d.). Notably, by 2050, the number of people over 65 years of age will exceed that of younger populations. Within this broader trend, Ireland stands out as one of the fastest-ageing countries in Europe, with the population aged 65 and over expected to double by 2051, placing growing demands on health and social care systems (TILDA, 2025; see Figure 1.1).

Figure 1.1

Cumulative percentage increases in population: all ages and those aged 65 years and over for Ireland and the EU-27, 2014–2023



Note. Adapted from *The Irish Longitudinal Study on Ageing (TILDA) Wave 6: Key Findings Report*, 2025, by The Irish Longitudinal Study on Ageing, Trinity College Dublin (https://tilda.tcd.ie/publications/reports/W6KeyFindings/TILDA-Wave6-Key-Findings-Report.pdf)

In recent years, and due to this important increase in numbers and heterogeneity, research has re-focused with an important distinction made between chronological and biological age (McCarthy et al., 2023). Indeed, although greater age is correlated with increased morbidity, it is important to note that some people live into their 70s, 80s, and 90s in extremely good health. Therefore, chronological age is not relevant as a functional status, people of any age can fall into either category and the link between chronological age and health status is much more dynamic than is often realised. Individuals health depends on genetic make-up (O'Donoghue et al., 2022), socioeconomic factors (McCrory et al., 2021) and lifestyle choices, including exercise (Donoghue et al., 2016) nutrition (Lyons et al., 2022) social engagement (Zhang et al., 2018) and support (Rolandi et al., 2020), stress levels (Cristóbal-Narváez et al., 2022); career experiences (Holton et al., 2019); and geographic location (i.e. neighbourhoods effect, see Coen et al., 2011).

Frequent physical activity can improve cardiovascular health, muscle mass and general well-being, which all combined offers a healthier ageing process and higher lifespan (de Oliveria, et al., 2019). In addition, older adults tend to have a shift in metabolic processes, which results in a more efficient energy functioning and possibly less inflammation from oxidative stress resistance, especially when practicing regular training (e.g. Miller et al., 2021). Hormonal modifications, especially less stress hormones, such as cortisol, in active older adults can help improve mood and cognitive function in the long term (Biagetti et al., 2023).

Cognitive processes also tend to decline with age, especially in the subdomains of memory, attention, language and judgement (Harada et al., 2013). Such deficits may also translate into functional difficulties. For example, Anstey et al. (2011) showed that driving performance decreases with age, with a high level of driving mistakes in later life, especially due to cognitive ageing reasons, such as slower processing speed and lower visual attention. However, some cognitive functions are preserved with age, including emotional regulation. For example, the ageing brain frequently demonstrates higher neural connectivity in zones linked to emotional processing, such as the structural preservation of the amygdala (Jacques et al., 2010). Interestingly, in a neuroimaging study Nashiro et al. (2012) showed a decline in activation in response to negative stimuli in older adults compared to younger controls, underlining a possible higher resilience to stress and higher life satisfaction levels in this demographic. Other domains seem to be also preserved with age, such as crystallized intelligence. For instance, Salthouse (2010) showed that older adults tend to maintain or even help their vocabulary and verbal competences, which are key components of crystallized intelligence, despite declines in other cognitive areas such as processing speed.

1.1.5 Age-related Disorders and Cognitive Decline

The notion of ageing includes a broad and complex set of domains that can bring confusion when discussed through the lens of separate academic areas. Thus, multidisciplinary approaches are essential when working on key issues, more specifically in the context of the early start of decline through various areas of ability in a one unique individual and/or patient. In contemporary conversations in the domain of neurodegenerative disorders, dementia can frequently emerge as a prominent concept due to many persistent preconceptions. Consequently, it is important to elucidate the facts in the most tailored, person-centred and clear manner and disseminate this information

effectively, to demonstrate how vast and different one's journey can be to those who need this knowledge the most (Ali et al., 2023).

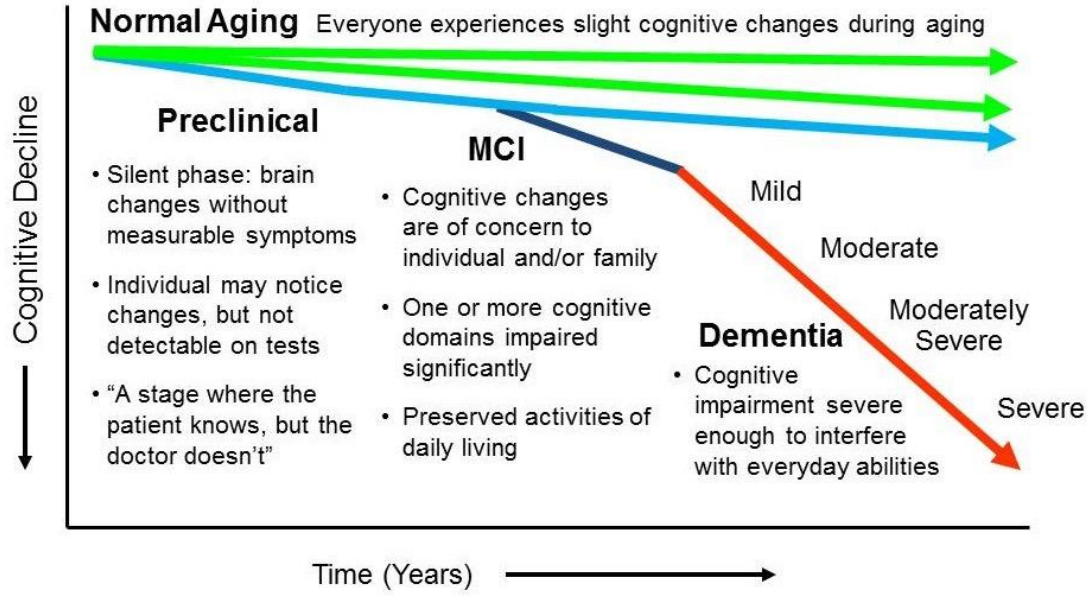
1.1.6 Mild Cognitive Impairment

Mild Cognitive Impairment (MCI) or mild neurocognitive disorder is a clinical stage positioned between normal ageing and dementia (Peterson et al., 1999). However, MCI's definition can strongly vary from one study to another. MCI can be described as involving either impairment in a single-domain and non-amnestic, or in several cognitive domains with or without a memory deficit. Frequently, authors mention two subgroups, an amnestic MCI (memory impairments) and non-amnestic MCI (no memory impairments) (Csukly et al., 2016). In the literature, the terms used can differ, including beginning senescent forgetfulness, late-life forgetfulness, age-associated cognitive decline, mild cognitive decline, age-associated memory impairment, mild neurocognitive decline, cognitive impairment no dementia, and MCI due to Alzheimer's Disease. Generally, studies suggest that the prevalence of MCI is about 10-20% among older adults aged 65 and older. In addition, the prevalence increases with age; for instance, it may be as high as 25-50% in individuals over 85 years old. Furthermore, the approximative rate of progression to dementia is described to be between 10-15% per year; reaching older adults from 65-69 years old at approximately 8.4% and going up to 25.2% in later stages of life 80-84 years old (Eshkoor et al., 2015; Petersen et al., 2014). However, not all MCI patients advance to a major cognitive disorder, some return to normal ageing trajectories, whereas others show long-term stability.

For example, Beckett et al. (2015) found that 25% of MCI patients (83/325) from the longitudinal Alzheimer's Disease Neuroimaging Initiative (ADNI-2) dataset initially diagnosed with MCI subsequently developed AD within 5 years, while 6% reverted to being cognitive healthy and 68% remained stable.

Figure 1.2

Stages of Cognitive Decline from Normal Ageing to Dementia



Note. Adapted from "Mild Cognitive Impairment," by UCI MIND, University of California, Irvine (https://mind.uci.edu/dementia/mild-cognitive-impairment/)

Identified associated biomarkers with this negative progression are suggested to be positive amyloid positron emission tomography (PET) scan, apolipoprotein E4 genotype, abnormal cerebrospinal fluid (CSF) tau levels, or possibly a positive PET scan due to tau deposition into the lateral temporal lobe structures (Hameed et al., 2020). A common diagnostic criterion would be abnormal cognitive function in one or several domains, usual daily activity, and the absence of dementia. Also, an interview about the patient's history from their entourage in order to detect the clinical clues is key in making any potential diagnosis. Importantly, adding appropriate cognitive screening tests is another crucial part, when necessary. One popular tool for the early detection is the Montreal Cognitive Assessment (MoCA; Nasreddine, Phillips, Bédirian, Charbonneau, Whitehead, Collin, & Chertkow, 2005), with the score of 24/25 indicating a possible risk of MCI presence and/or risk of dementia. Importantly, for all memory assessments, scorings would vary by educational level, lifestyle factors, and ethnic diversities.

A recent paper by the The Irish Longitudinal Study on Ageing – Harmonised Cognitive Assessment Protocol (TILDA-HCAP) study, part of The Irish Longitudinal

Study on Ageing (TILDA), aimed to provide a comprehensive assessment of cognitive function in older adults (≥65 years) to facilitate research on dementia diagnosis and cognitive impairment. The protocol involves detailed neuropsychological testing administered face-to-face with participants, alongside structured interviews with informants to gather insights on cognitive and functional changes, with measures harmonized with similar studies globally. This approach enhances understanding of dementia risk factors and supports the development of national prevalence estimates (Feeney et al., 2024).

Some studies have proposed that traditional cognitive tests, such as the Alzheimer's Disease Assessment Scale (ADAS-13), might be more useful in anticipating which individuals with cognitive impairment will progress to dementia than certain biological markers, including amyloid-beta and phospho-tau (Clarke et al., 2022).

Lastly, a recent study by Dyer and colleagues (2025) found that the fully automated Lumipulse G plasma p-tau217 blood test may serve as a valuable diagnostic option for identifying amyloid-beta pathology linked to Alzheimer's disease in specialist memory clinics in Ireland. The test produced an area under the curve (AUC) of 0.92 for detecting Aβ indicating excellent accuracy in distinguishing individuals with Alzheimer's-related brain changes. By reliably identifying such pathology through a simple blood sample, it could help to reduce the need for more than half of diagnostic lumbar punctures in this population.

As mentioned, Mild Cognitive Impairment may progress to dementia, and medications can only delay the disease progression (particularly for Alzheimer's Disease). Therefore, non-pharmacological interventions suggesting brain health programs, such as tailored exercise, social engagement and cognitive training (Jongsiriyanyong, et al., 2018) may offer a good possibility in delaying the progress. Furthermore, if preclinical stages of dementia are identified, tailored interventions to prevent or delay its onset can be developed, and, optimistically, the progression from MCI to dementia may be slowed, promoting successful ageing.

1.1.7 Alzheimer's Disease

Alzheimer's Disease (AD) is the most common type of dementia, accounting for an estimated 60–70% of cases (Favela et al., 2021). It is clinically defined as a progressive neurodegenerative disorder marked by cognitive and functional decline, with hallmark pathological features including extracellular amyloid-beta plaques and intracellular neurofibrillary tangles composed of hyperphosphorylated tau protein. Even though the

pathophysiology of AD has been previously identified as connected to amyloid deposition in the brain, neurofibrillary tangles and neurodegenerative activities, to date, the mechanism underlying AD has not been fully elucidated (Alzheimer Society of Ireland, 2024).

Importantly, while amyloid accumulation has long been central to hypotheses of disease causation, tau pathology is increasingly recognised as more directly associated with cognitive decline and disease severity.

Early-onset cases of Alzheimer's disease (occurring before the age of 65) are extremely rare, representing fewer than 10% of all individuals diagnosed with the condition.

To date, there are currently 64,000 people in Ireland living with dementia, with Alzheimer's Disease representing the most common cause of dementia at over half of all cases (Alzheimer Society of Ireland, 2024). Worldwide, estimates suggest that approximately 55 million people were living with dementia in 2020, with Alzheimer's Disease representing the most common cause and accounting for just over half of all cases. These numbers are estimated to increase significantly, reaching an estimated 78 million by 2050 and 139 million by 2050, primarily due to ageing populations (World Health Organisation, 2023).

The symptoms of AD are well characterised in literature (see *Alzheimer's Disease International*, 2024), but can vary from one stage to another, as well as being strongly dependent on the severity of impairment. The initial and most common symptom of AD is the loss of episodic short-term memory, with a relatively good sparing of long-term memory. Following short-term memory impairment, individuals tend to present difficulties in problem-solving, executive functioning, lack of motivation and disorganisation, which as a result can led to problems with multitasking and abstract thinking. Frequently, this is followed by difficulties in language and visuospatial skills (Silva et al., 2022; Alzheimer Society of Ireland, 2024). This symptom evolution typically unfolds across three clinical stages: early (mild), moderate, and severe, each associated with increasing dependency and care needs.

In parallel to these difficulties, there is a large range of existing neuropsychiatric symptoms which can surface in the mid- to late stages of the disease, such as: apathy, social withdrawal, disinhibition, and wandering. In addition, difficulties performing motor tasks (dyspraxia), sleep disturbances, extrapyramidal motor signs like dystonia, akathisia, and Parkinsonian symptoms can appear later on in the disease. Unfortunately, in the later stages of the disease, these symptoms may progress to include primitive

reflexes and incontinence, ultimately resulting in complete dependence on relatives and health services (Brasure et al., 2018).

To date, unfortunately, there is no cure available for AD. There are however a few pharmacological treatments that have been proven to improve symptoms and alter the disease trajectory. These include drugs such as Donanemab (also known as Kisunla) as well as Leqembi. Donanemab has recently been approved by the Food and Drug Administration in the United States (Alzheimer's Association, 2024). These treatments work on the immune system to remove the protein amyloid from the brain and slow down the cognitive decline, and the risk of functional loss. They belong to a class of monoclonal antibodies targeting aggregated amyloid-beta and are administered intravenously under specialist supervision.

Although many improvements have been made, a number of side effects persist such as "leaky blood vessels". As amyloid is removed, the general structure of blood vessels can be affected. For Leqembi, results have shown that out of 1,800 people living with early-stage AD, when taken for 18 months, patients had a 27% less decline in thinking and memory (van Dyck et al., 2023). While such therapies offer hope in slowing early progression, comprehensive care still requires non-pharmacological approaches including cognitive stimulation, psychosocial support, and tailored relatives' interventions.

1.1.8 Semantic Type Dementia

Semantic type dementia (SD), which is also discussed as a semantic variant of primary progressive aphasia (PPA), is one of the common forms of frontotemporal dementia (FTD). It is recognised by prominent semantic impairments and anterior temporal lobe atrophy (Ding et al., 2024). Mainly due to its selective and progressive semantic memory impairment, semantic dementia is considered as a clinical syndrome and tends to impact a large range of cognitive domains, ranging from language to recognition of familiar people or objects. SD is characterised by fluent speech with profound loss of word meaning, reflecting a breakdown in conceptual knowledge that spans both verbal and non-verbal domains.

Historically, the name 'semantic dementia' was suggested by Snowden et al. in 1989 to describe patients with strong symptoms of semantic deficits but relatively preserved other abilities. The primary clinical diagnosis of SD was discussed in 1998 as one of the prototypic clinical syndromes of frontotemporal lobar degeneration (FTLD; Neary et al.1998). They defined this syndrome as both semantic language and perceptual

difficulties. As suggested by Gorno-Tempini in 2011, the categorisation agreement for primary progressive aphasia was entitled ‘semantic variant of primary progressive aphasia’ (sv-PPA) due to the strong language impairment presence in this type of patient. This nosological shift helped clarify overlapping clinical profiles and improve diagnostic specificity within the frontotemporal dementia spectrum.

Usually anterior temporal lobe (ATL) atrophy can help provide neuroimaging support for the diagnosis for this subgroup of dementia. Indeed, more recently through the use of advancements such as fMRI sequences (e.g. resting state MRI and diffusion weighted imaging), a better and more detailed understanding of this disease has been offered, justifying the new title of ‘semantic behavioural variant frontotemporal dementia’ (semantic bv-FTD) (Murley et al., 2020). Symptoms for the detection of this pathology are characterised in the domain of social processing, pathology biomarkers and follow-up modifications.

The evolution of diagnostic criteria now increasingly incorporates social-emotional deficits and changes in behaviour, which may precede language impairment in certain cases. As a result of a large volume of research, several different types of semantic dementia have been identified, as follows. For prominent left-hemisphere dominant patients the term employed is progressive aphasia or sv-PPA due to their verbal semantic impairments which usually involve word comprehension deficits with severe anomia (Gorno-Tempini et al., 2011). The language deficit confronted by left-dominant patients is defined as being around both language naming and comprehension tasks. Unfortunately, communication impairments resulting from these language difficulties can have a substantial impact on an individual’s quality of life, including their ability to function effectively in the workplace. Their speech remains grammatically good but often includes vague fillers and substitution of specific terms with general categories or circumlocutions.

Individuals with semantic dementia are typically described as having fluent yet semantically impoverished speech, reflecting their underlying loss of word meaning (Montembeault et al., 2023). Their connected speech often contains more general terms, recurring phrases or clichés, questions, and metanarrative comments, as well as tangential or irrelevant content, circumlocutions, and semantic paraphasias. In contrast, they tend to use fewer specific content words and produce nouns that are less frequent, acquired later in life, and less concrete (Auclair et al., 2015; Montembeault et al., 2023).

In addition, other frequently observed symptoms include surface dyslexia and surface dysgraphia (Gorno-Tempini et al., 2011). These difficulties involve problems reading or spelling words that do not follow typical phonetic patterns, reflecting a loss of access to word meaning. As a result, individuals tend to rely more on how words sound rather than on their stored semantic knowledge.

Lastly, as an early biomarker, the abnormal eye-tracking patterns of SD patients during semantic tasks have been shown to be extremely useful, showing more back-and-forth between foils (Seckin et al., 2016), also enabling researchers to speculate that this could suggest lower semantic judgements, as well.

In addition to the semantic variant (sv-PPA) the two other core clinical subtypes of primary progressive aphasia are the nonfluent/agrammatic variant (nfv-PPA) and the logopenic variant (lv-PPA), as defined by Gorno-Tempini et al. (2011).

1.1.8 Cognitive Reserve

The theory of Cognitive Reserve (CR) offers a valuable framework for understanding individual differences in the clinical expression of ageing and neurodegenerative disease. Unlike models that link cognitive performance strictly to structural brain deterioration, CR explains why some people maintain intact function despite significant underlying pathology. Originally emerging from longitudinal observations of Alzheimer's disease, this concept suggests that individuals with more efficient or flexible use of neural networks can compensate for damage for longer periods before symptoms become clinically visible (Stern, 2002; Stern et al., 2020).

In psychological terms, CR is shaped not just by static factors like brain volume or genetic profile but by a dynamic accumulation of life experiences. Education, occupational complexity, bilingualism, musical training, and regular engagement in cognitively stimulating activities have all been associated with higher CR (Scarmeas & Stern, 2003; Valenzuela & Sachdev, 2006; Tucker & Stern, 2011). These experiences seem to enhance the brain's ability to optimise or adaptively re-route processing, especially under cognitive stress. For example, functional imaging studies show that individuals with higher CR exhibit greater activation in prefrontal and parietal regions during memory retrieval and executive tasks, even in the presence of structural atrophy (Barulli & Stern, 2013; Grady, 2012).

This framework is also supported by longitudinal data. For instance, Wilson et al. (2002) found that individuals with higher levels of educational and cognitive engagement had a significantly lower risk of developing dementia, even when controlling for neuropathology at autopsy (Wilson et al., 2002). Likewise, a 2018 review by Cabeza and colleagues described how brain maintenance and compensation strategies interact with CR to preserve function in ageing, especially in frontal-executive systems (Cabeza et al., 2018). The implication here is powerful: CR does not prevent pathology but delays or reduces its functional impact, thereby creating a mismatch between the extent of underlying pathology and clinical symptoms. This has become a central discussion in dementia prevention and early intervention research.

Cognitive reserve also has important psychological and clinical implications. It shifts the emphasis from deterministic models of decline toward models of modifiable resilience, suggesting that lifestyle, education, and sustained engagement across the lifespan can contribute meaningfully to maintaining function, even in individuals with significant underlying neuropathology (Stern et al., 2019; Tucker & Stern, 2011). This perspective aligns with preventive approaches in clinical psychology and public health, where lifelong learning, social connectedness, and physical activity are seen as protective factors not only for general well-being but also for cognitive outcomes (Livingston et al., 2020). Crucially, CR emphasises that interventions need not wait until old age; rather, cognitive resilience is shaped across the lifespan, beginning in early education and continuing through midlife and beyond (Cabeza et al., 2018; Barulli & Stern, 2013). This makes it a powerful framework for understanding variability in ageing trajectories, and a hopeful lens through which to explore the transition from reserve to potential vulnerability.

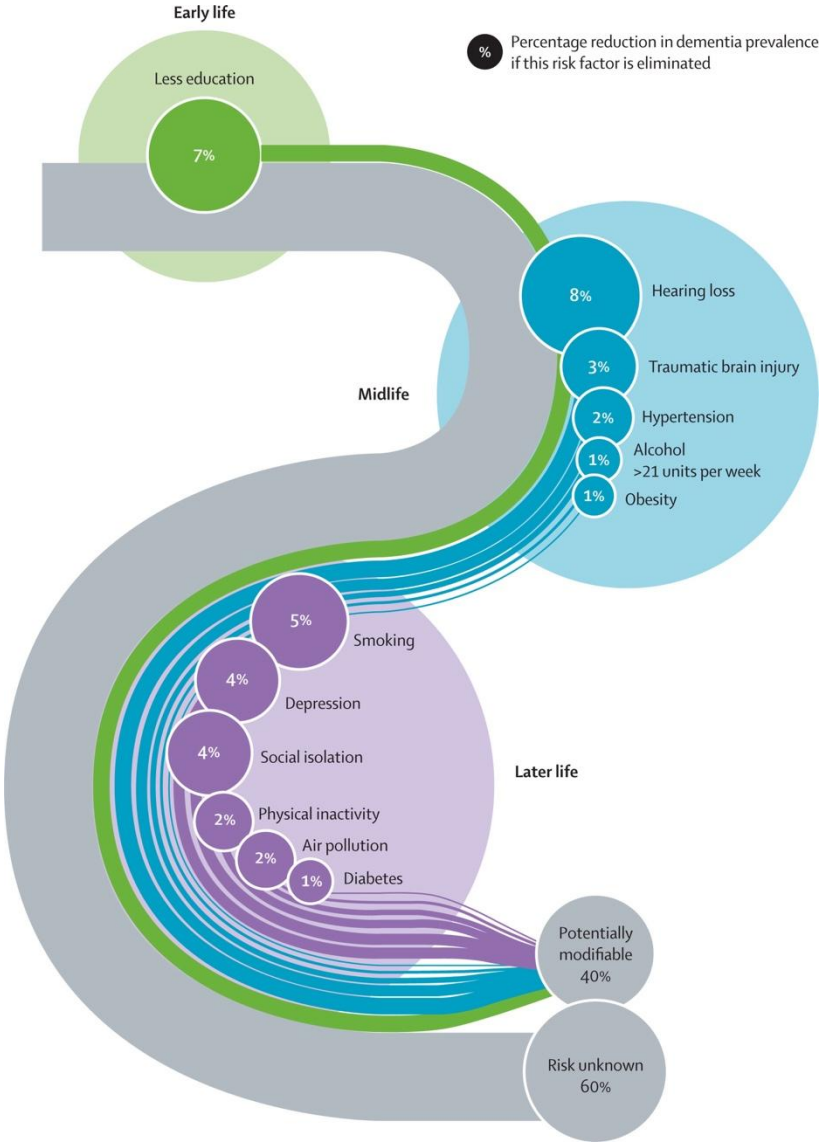
1.1.9 Lifestyle-based Interventions for Preserving Cognitive Health

Given that there are differences in the rate of cognitive decline among older adults that may be related to cognitive reserve and brain plasticity, many have sought ways to target this and offer preventative measures in an attempt to preserve health or slow down decline. As part of work done to prevent health challenges, non-pharmacological interventions have gained significant attention in recent years. Specifically, the 2020 Lancet commission report highlighted twelve risk factors that were potentially capable of preventing, or at least, slowing down approximately 40% of dementia cases. While genetics play a role, environmental factors such as lifestyle choices can also impact health

trajectories. These different factors start in early life (such as the importance of education, see Norton et al., 2014), midlife factors such as hypertension, obesity, hearing loss, traumatic brain injuries and alcohol misuse, as well as later life difficulties including depression, smoking, physical inactivity, social isolation, diabetes, and air pollution, all these factors can serve to increased dementia risk and therefore be targeted (Lancet Commission, 2020). For example, a plant-based Mediterranean diet rich in olive oil, flavonoids, and other phytochemicals possessing high antioxidant and anti-inflammatory characteristics can help with the prevention of Alzheimer's Disease, as well as improving general health and cognitive function (Elouze et al., 2023).

Figure 1.3

Modifiable Risk Factors for Dementia Across the Lifespan



Note. Adapted from "*Dementia prevention, intervention, and care: 2020 report of the Lancet Commission*," by Livingston, G., Huntley, J., Sommerlad, A., Ames, D., Ballard, C., Banerjee, S., et al., 2020, *The Lancet, 396*(10248), 413–446 (https://www.thelancet.com/article/S0140-6736(20)30367-6/fulltext)

A growing body of research has examined how physical activity influences cognitive health in later life. A recent systematic review by Stezichele et al. (2022) reported that exercise tends to offer only modest cognitive gains, which may relate to variations in the type of activity undertaken and the stage of cognitive decline. These factors are particularly important when comparing individuals with Mild Cognitive Impairment (MCI) to those living with more advanced dementia. Home-based programmes, for example, have been shown to support people with dementia by providing a comfortable and less intimidating environment. However, such formats can reduce opportunities for social interaction, which appear crucial for maintaining cognitive and emotional function among those with MCI. In contrast, for people in more advanced stages of dementia, connection often takes different and more sensory forms, through touch, music, emotional presence, and person-centred care that promotes comfort and a sense of relational safety (Smaling et al., 2025). Overall, findings also suggest that aerobic exercise may have greater benefits for daily functioning and neuropsychiatric symptoms, particularly when integrated into broader, multifactorial intervention programmes.

Furthermore, one randomised controlled trial conducted by Hai Duong from 2021 to 2022 showed that a comprehensive combined approach, including exercise, cognitive training, social group organisation, and educational sessions, strongly helped depression levels, activities of daily living, and overall quality of life when compared to a control group (Thu Vu et al., 2024). Similarly, a meta-analysis of randomized controlled trials conducted by Luo et al. (2023) that examined the effects of enriched environments, computerized cognitive training, exercise therapy, photo biomodulation, and cognitive stimulation therapy across 28 trials involving over 3,400 participants, showed strong positive outcomes for all initiatives (except for computerized cognitive training), with cognitive stimulation therapy underlining the best results next to exercise therapy. A further systematic review by Cho et al. (2022) showed that interventions such as music therapy, exercise, reminiscence, and telehealth support all helped with levels of depression and improved psychological and behavioural wellbeing in dementia patients.

These important non-pharmacological interventions underline that tailored lifestyle changes can affect substantial improvement at any age. Findings show that lifestyle changes, like embracing a Mediterranean diet or enhancing sleep quality, can yield strong benefits. For example, older adults, aged 80 and more, adopting prudent lifestyle choices might potentially extend their lifespan by five years or more (Hartley et al., 2023; Lancet et al., 2020).

1.1.10 Awareness about impact of lifestyle choices

Understanding that individuals may underestimate their capacity to maintain vitality into older age is crucial. A nationally representative survey conducted by the Health Service Executive (HSE) in 2021 revealed that a large portion of the population remained unaware of key modifiable dementia risk factors. Notably, only 44% of respondents recognised physical inactivity as a contributor to increased dementia risk. This knowledge gap underscores the pressing need for clearer public health communication on the diverse trajectories of healthy ageing, as improved awareness could foster significant changes in health behaviours at both individual and population levels (Lowsky et al., 2014). Bringing such findings to the forefront has the potential to motivate healthier lifestyle choices from an earlier age. Moreover, this reinforces the importance of a broader societal investment in ageing well, not only to alleviate future social and economic burdens, but also to enable older adults to contribute meaningfully across cultural, social, and economic spheres, ultimately supporting better health and functional outcomes over the life course (Lancet Commission, 2020).

1.2 Exercise, Cognition, and Brain Health

1.2.1 Human Studies of Exercise

For many years, exercise has been recognised as one of the most established and essential activity for maintaining human health (Physical Activity Guidelines Advisory Committee, 2018). However, to drive measurable benefits, individuals must adhere to certain strict recommendations. The World Health Organisation advises completing an average of 150 minutes of moderate-intensity aerobic physical activity, or 75 minutes of vigorous-intensity aerobic physical activity per week, or an equivalent combination, weekly (World Health Organization, n.d.). Interestingly, the exercise of walking has emerged as one of the most discussed and widely applicable, particularly in relation to

health in older age (Watson et al., 2015). Of the various forms of physical activity examined in relation to ageing, walking has received growing scientific attention due to its practicality, low cost, and relevance across age groups. Unlike structured or high-intensity exercise, walking can be sustained without the need for specialised equipment or settings, making it particularly suitable for older adults and individuals with limited mobility (Chodzko-Zajko et al., 2009). In addition to its well-established cardiovascular and metabolic benefits, recent research suggests that walking supports cognitive function by engaging neural networks involved in executive function, spatial navigation, and memory (Bherer et al., 2013; Falck et al., 2017). Moreover, studies have demonstrated that gait patterns themselves may reflect early cognitive decline, offering not only a clinical marker but also a target for early intervention (Allali et al., 2016). These findings position walking not merely as a basic mode of human locomotion, but as a complex behaviour with implications for brain health. The following section focuses on walking as a specific form of exercise, highlighting its broader psychosocial and neurocognitive significance.

In Ireland, research on ageing has placed increasing emphasis on the role of physical activity in maintaining health and quality of life. Findings from *The Irish Longitudinal Study on Ageing (TILDA)* give an overview of how activity levels differ between men and women across age groups, and how these differences relate to wellbeing. The table that follows summarises these patterns, showing that participation in physical activity declines steadily with age, most noticeably among those aged seventy-five and older. These results help ground the earlier discussion by illustrating how activity levels evolve over time and how they remain closely linked to both physical and mental health in later life.

Table 1.1

Levels of physical activity by age group and sex among Irish adults

	Low		Moderate		High		Total	Number in sample
	%	(95% CI)	%	(95% CI)	%	(95% CI)		
Male								
50-64	23	(21-25)	29	(27-31)	48	(45-50)	100	2055
65-74	24	(22-27)	39	(35-42)	37	(34-41)	100	1059
≥75	42	(38-47)	31	(27-35)	27	(23-31)	100	590
Total	*27*	*(25-29)*	*32*	*(30-33)*	*41*	*(39-43)*	*100*	*3704*
Female								
50-64	32	(30-34)	37	(35-39)	31	(29-34)	100	2556
65-74	39	(36-43)	35	(32-38)	26	(23-29)	100	1093
≥75	59	(56-63)	29	(26-33)	11	(9-14)	100	740
Total	*40*	*(38-42)*	*35*	*(33-36)*	*26*	*(24-28)*	*100*	*4389*
Total								
50-64	27	(26-29)	33	(31-35)	40	(37-42)	100	4611
65-74	32	(30-34)	37	(34-39)	31	(29-34)	100	2152
≥75	51	(48-54)	30	(27-33)	19	(16-21)	100	1330
Total	*33*	*(32-35)*	*33*	*(32-35)*	*33*	*(31-35)*	*100*	*8093*

Note. CI = confidence interval; Missing observations = 0.97%

Note. Adapted from *The Irish Longitudinal Study on Ageing (TILDA): Physical Activity, Health and Wellbeing Report (*2020), Trinity College Dublin (https://tilda.tcd.ie/publications/reports/pdf/Report_PhysicalActivity.pdf)

The table presents the percentage of men and women aged 50 years and older who report low, moderate, or high levels of physical activity across three age groups. Higher proportions of inactivity are observed in adults aged 75 years and older, particularly among women. CI = confidence interval; Missing observations = 0.97 %.

1.2.2 The Exercise of Walking

As mentioned above and as a form of active mobility, walking, (which has considerable economic, environmental, social, and health strengths), has attracted increasing attention from researchers and government organisations in urban planning, transportation (Luka, 2023), and health fields (Cuevas et al., 2020; Joo et al., 2024). Evidently, walking is the principal mode of human locomotion, and gait description has recently shown to be extremely important for both clinical evaluation and treatment.

Fascinatingly, recent studies have found that walking speed and type can strongly correlate with overall health, and in the twentieth century is commonly assessed in clinical settings through different recent and innovative tools. For instance, at Tallaght University Hospital in Ireland, the Digital Gait Labs use an artificial intelligence system called *GaitKeeper* to evaluate walking performance and detect early signs of functional decline. Even subtle changes in walking speed can serve as powerful early indicators of declining function or the need for medical intervention (Verghese et al., 2007).

Despite its fundamental biological basis, the ability to engage regularly in walking is not determined solely by individual capacity. Participation patterns are shaped by socioeconomic and environmental factors that influence opportunity and safety. European surveillance data consistently demonstrate a social gradient in physical activity, with lower participation reported among individuals with lower educational attainment and greater financial strain (European Commission, 2022). Irish evidence similarly indicates variation in physical activity engagement across socioeconomic groups (TILDA, 2020). Beyond individual-level characteristics, geographic context plays a significant role. Urban environments may offer shorter distances to services and greater street connectivity, yet they can introduce barriers such as traffic density and safety concerns. Rural settings, while often perceived as beneficial for health, may lack continuous pavements, lighting, pedestrian crossings, and proximate amenities, thereby reducing feasibility for older adults, particularly those with mobility limitations. Environmental supports such as accessible green spaces, benches, rest areas, and predictable route layouts have been associated with greater walking confidence in later life (Luka, 2023). These structural determinants suggest that walking behaviour must be understood not only as a motor function but also as a context-dependent activity embedded within broader social and spatial systems.

1.2.3 Neuronal Processes

Although walking has been examined extensively, the neural mechanisms that support this seemingly simple activity are still not fully understood (Segev-Jacubovski et al., 2011). One of the main challenges in this field is that it is difficult to measure brain activity during movement, since most traditional imaging methods require the participant to remain still. More recently, approaches such as electroencephalography (EEG) and positron emission tomography (PET) have made it possible to explore neural activity while people are walking.

For instance, Maidan et al. (2019) used a combination of wireless EEG and accelerometers to study gait-related potentials (GRPs) in young and older adults walking on a treadmill. They found that older adults had greater GRP amplitudes at the Pz electrode and less consistent activity at Cz when compared with younger adults. When participants were asked to perform a cognitive task while walking, both groups showed shorter GRP latencies, suggesting that mental load can influence motor-related brain processes. These results show that GRPs can reveal age-related differences in neural activity during walking and may provide important clues about changes in mobility with age.

Understanding the broader physiological and cognitive benefits of walking is also essential, as it has been shown to support many aspects of health. In older adults, a decline in walking ability is associated not only with a higher risk of falls but also with structural changes in the brain and reductions in cognitive performance (Segev-Jacubovski et al., 2011). Evidence from a meta-analysis of 16 trials by Kelley et al. (2001) supports this, indicating that regular walking can lower resting blood pressure, with average reductions of 3 mmHg in systolic and 2 mmHg in diastolic values. In addition, a study by Quan et al. (2017) reported that each decrease of 1 decimetre per second in walking speed, which equals about 360 metres per hour, was linked to a 13 percent higher risk of developing dementia. Altogether, these findings suggest that walking connects brain, body, and cognition in complex ways, highlighting its importance in health and ageing research.

1.2.4 Young vs Older

The relationship between brain structure and physical activity remains a complex and actively debated topic. Many studies indicate that regular exercise is associated with greater brain volume in later life, suggesting a protective effect against age-related atrophy, particularly in regions involved in memory and executive functioning such as the hippocampus (Domingos et al., 2021). Other researchers, however, have proposed an alternative interpretation, arguing that individual differences in brain structure might predispose people to be more or less active as they age. In this view, certain structural characteristics could serve as risk factors for inactivity in midlife and older adulthood. The Prospective Evaluation of Experimental or Novel Treatments for Alzheimer's Disease study (PREVENT), which analysed MRI data from 666 participants, provides relevant evidence: sex, age, and educational attainment were found to predict hippocampal and grey matter volumes, with notable sex-related differences in white

matter hyperintensity and other structural features, all of which may be important for future prevention efforts (Ritchie et al., 2024).

Neuroimaging research on gait has shown that older adults often display stronger cortical activation than younger adults during walking or imagined walking tasks (Allali et al., 2016; Wai et al., 2012). This increased activation has been observed in areas such as MT/V5, the right supplementary motor area (SMA), the right orbitofrontal cortex, the left dorsolateral prefrontal cortex (DLPFC), and in subcortical regions including the putamen and substantia nigra (Allali et al., 2016). The degree of activation in these regions has been linked to the level of task difficulty in walking imagination tasks (Blumen et al., 2014).

In walking interventions with community-dwelling older adults, neural activity tends to cluster in motor-related regions including the premotor area, SMA, pre-SMA, and prefrontal and frontal cortices (Fukuyama et al., 1997; Miyai et al., 2001; Harada et al., 2009; La Fougere et al., 2010). Electroencephalography findings also support this pattern: in an event-related potential (ERP) study, De Sanctis et al. (2014) identified late P3 components (450–550 ms) across central and frontocentral regions during walking, indicating engagement of higher-order cognitive control processes.

Further studies have shown that walking activates a broad network that includes M1, the occipital lobule, sensorimotor regions, the anterior cingulate cortex, the visual and temporal cortices, the pons, cerebellum, parahippocampal gyrus, and basal ganglia (Fukuyama et al., 1997; Hanakawa et al., 2003; Suzuki et al., 2004, 2008). By contrast, Shimada et al. (2013) reported reduced activation in the orbitofrontal cortex, superior frontal gyrus, DLPFC, SMA, and posterior cingulate cortex among control participants during walking, along with decreased white matter activity in the temporal gyrus, pons, and hippocampus. Other work suggests lower interhemispheric communication within the sensorimotor cortex and diminished responses in vestibular cortical regions (La Fougere et al., 2010). Doi et al. (2014) observed that older adults exhibit greater prefrontal activity when walking while performing cognitive tasks, which may indicate a compensatory process in response to increased mental demand. In contrast, Berkens et al. (2014) reported an overall reduction in prefrontal activity during walking, with little difference between single-task and dual-task conditions.

These findings collectively suggest that older adults engage different neural strategies to maintain walking performance as cognitive and sensory systems age.

Research by Rossignol et al. (2006) highlighted the essential role of sensory input in locomotor control, proposing that older individuals rely more heavily on sensory–motor integration. This reliance could explain the stronger activation observed in multisensory cortical regions, which may result from reduced inhibitory interactions between sensory systems (Zwergal et al., 2012). The ongoing debate focuses on whether this increased activation reflects a compensatory adaptation to declining peripheral sensory function (Heuninck et al., 2008) or a broader dependence on multisensory co-activation (Zwergal et al., 2012). Overall, the heightened activity seen in the prefrontal cortex and supplementary motor areas among older adults appears to support the concept of compensatory scaffolding, in which the ageing brain recruits additional neural resources to preserve motor control and functional independence (Stern, 2009).

1.2.5 Health predictor

The World Health Organisation (WHO) highlights the major benefits of physical activity for overall health and well-being. For adults and older adults, regular exercise is linked with lower risk of mortality, reduced hypertension, fewer falls, and improvements in mental health, cognitive performance, sleep, and body composition (World Health Organisation, 2024). In recent years, and as discussed in Sections 1.2.3 and 1.2.4, walking has become recognised as an especially valuable measure of health. Studies show that slower walking speed predicts higher risk of cardiovascular disease, cognitive decline, and mortality among older adults (Veronese et al., 2023). Walking speed is now widely regarded as a reliable marker of biological ageing and general health status, sometimes referred to as the "sixth vital sign."

In Ireland, national reports and programmes have reinforced the importance of walking as both a health behaviour and a public health indicator. The *Physical Activity and Older Adults* report by Cunningham and O'Sullivan (2019) emphasises the role of community education and tailored programmes that help older adults remain active safely. Initiatives such as *Go for Life*, coordinated by Sport Ireland and the Health Service Executive, encourage locally delivered walking sessions adapted to ability levels and designed to reduce fall risk. Similarly, the *Healthy Eating and Active Living Programme: National Implementation Plan 2017–2020* identified walking and balance-focused activities as practical ways to support independence and long-term health in older age.

Findings from *The Irish Longitudinal Study on Ageing (TILDA)* (2020) further demonstrate the strong link between walking and wellbeing. Adults who walked at least 150 minutes per week had higher scores for quality of life and self-rated health, fewer symptoms of depression, and greater involvement in social and volunteering activities than those who walked less. As presented in Table 1.2, 81 percent of participants in the higher walking group reported good or very good health compared with 67 percent among those below the recommended threshold. These results underline that walking not only supports physical and mental health but also contributes to social participation and overall life satisfaction.

At the European level, the *Physical Activity Country Factsheet for Ireland* (Sport Ireland and European Commission, 2021) reports that about 36 percent of Irish adults walk daily, mostly within a 2 kilometre range. This reflects walking's importance in everyday life and its value as a form of accessible physical activity. The same report calls for greater education and guidance to adapt walking programmes to different life stages, personal capacities, and local environments. Taken together, the evidence shows that walking is not only a routine form of movement but also a key indicator of health, wellbeing, and functional ageing, offering one of the simplest and most effective strategies for maintaining health across the lifespan.

Table 1.2

Wellbeing measures among adults above and below the recommended weekly walking threshold

	Low Walking <150 mins		High Walking ≥150 mins	
	%	(95% CI)	%	(95% CI)
CASP Quality of Life	42.1	(41.7-42.5)	44.7	(44.4-45.0)
UCLA Loneliness	2.2	(2.1-2.3)	1.9	(1.8-2.0)
Depression (%)				
Clinically relevant depression symptoms	13	(11-14)	8	(7-8)
Self-rated health (%)				
Excellent/Very good/Good	67	(65-69)	81	(80-83)
Social relationships (%)				
Intimate relationships	46	(44-48)	48	(46-49)
Formal organisations	56	(54-58)	63	(61-65)
Active social leisure	83	(81-84)	91	(90-92)
Passive solitary leisure	99	(99-99)	99	(99-99)
Volunteering (%)				
At least once per week	13	(12-15)	17	(15-18)
At least once per month	23	(21-25)	28	(26-30)

Note. CI = confidence interval

Note. Adapted from *The Irish Longitudinal Study on Ageing (TILDA): Physical Activity, Health and Wellbeing Report*(2020), Trinity College Dublin (https://tilda.tcd.ie/publications/reports/pdf/Report_PhysicalActivity.pdf)

The table compares indicators of wellbeing between adults who walk less than 150 minutes per week and those who meet or exceed this level. Participants engaging in ≥150 minutes of walking per week reported higher quality of life (CASP = 44.7 %), better self-rated health (81 %), fewer depressive symptoms (8 %), and stronger social participation, including greater involvement in formal organisations and volunteering. CI = confidence interval.

1.2.6 Task Complexity

Research has shown that the brain structures involved in walking are closely related to how complex the walking task is (Lim et al., 2021). Performing several cognitive tasks at the same time can directly affect both walking performance and brain activity (Patel et al., 2014). People who live with neurological difficulties often compensate for structural or functional changes in their brains by increasing activity in certain areas or by using additional regions to complete the task (Wai et al., 2012).

More demanding motor activities are linked to increased blood flow in both cortical and subcortical regions, including the motor cortex, parietal lobule, thalamus, basal ganglia, and the frontal and occipital areas. This effect is even more pronounced in older adults (Levine et al., 2000). Imaging studies also show that older people display greater activation in the orbitofrontal cortex during imagined walking. This may indicate that executive functions are either restricted or working harder to compensate for other declining abilities, helping to maintain a more typical walking pattern.

These findings highlight how walking is not a simple motor activity but a complex cognitive process that draws on multiple brain regions. The need to integrate sensory, motor, and executive functions means that walking is especially vulnerable to disruption when neurological integrity is compromised. Understanding this interaction provides a foundation for examining how neurological conditions affect both gait and cognition.

1.2.7 Neurological disorders

When neurological disorders develop, the coordination between the brain areas responsible for walking and cognitive control often becomes less effective. Individuals affected by these conditions frequently show both structural and behavioural changes in the brain. Common findings include a reduction in hippocampal volume, particularly among those living with dementia, together with increased gait variability and slower walking speed, which are often observed in people with Mild Cognitive Impairment (MCI) and dementia (Lamoth et al., 2011).

Walking relies on finely tuned communication between cortical and subcortical systems. However, because the brain's energy resources are limited, it can be difficult to process sensory information, maintain motor control, and engage in cognitive activity at the same time (Dietrich, 2006). The Cognitive Reserve theory (see Section 1.2.1)

proposes a slightly different view, suggesting that some individuals can adapt to neurological damage or age-related decline by reorganising or reallocating neural resources in order to sustain performance (Tucker et al., 2011).

More detailed research on how cortical and subcortical areas are activated during walking, especially when combined with cognitive tasks, is needed to guide the design of effective rehabilitation and therapeutic strategies. This line of inquiry is particularly relevant given the well-documented negative effects of physical inactivity on executive functioning, brain health, and overall societal wellbeing (Lipnicki et al., 2009).

1.2.8 Cognition and Well-being

As outlined in Section 1.2.5, walking and regular physical activity are well-recognised predictors of health and well-being. The World Health Organisation and several national reports have underlined their importance not only for physical fitness but also for mental health, social engagement, and life satisfaction. Building on this evidence, recent work has focused on how physical activity, particularly walking, supports cognitive function and psychological well-being in older adults and people living with dementia.

Paterson and Warburton (2010) stressed that exercise programs for older adults should not begin at intensities that are too low. If the workload is insufficient, participants may not perceive progress, which can reduce motivation and commitment. Their review found that older adults adapt to exercise similarly to younger individuals and that maintaining regular aerobic activity through middle and later life can lower the risk of functional decline and disability by 30 to 50 percent. These findings show the importance of exercise programs that are appropriately challenging while remaining safe and achievable.

Although the connection between physical activity and brain health has been widely studied, many mechanisms remain unclear. Small and colleagues (1999) reported that people with Alzheimer's disease showed reduced activation across hippocampal regions compared with controls. They proposed that in the early stages of mild cognitive impairment, hippocampal activity may temporarily increase to compensate for memory loss, but this response tends to weaken as the disease progresses. Similar patterns of early compensatory hyperactivation have been observed in other imaging studies, though longitudinal data are still limited.

Physical activity also appears to help maintain cognitive function in people already living with dementia. Some studies, although small in scale, suggest improvements in general cognition and even a potential to delay or slow the onset of dementia (Dumurtas et al., 2020). Other results have been less consistent. Erickson et al. (2012) reported that moderate-to-high intensity multicomponent exercise occasionally produced lower scores in some cognitive domains among people with dementia. This indicates that while global cognition can improve, certain areas such as attention or memory may be more resistant, particularly in progressive conditions.

Forbes et al. (2015) also found that combined physical activity programs improved overall cognition in Alzheimer's disease and other dementias, yet did not produce significant changes in attention, executive function, memory, or language (Erickson et al., 2012). These findings highlight the need for interventions that target early cognitive and executive difficulties more directly. Overall, physical activity appears to support global cognitive health in people with dementia, although determining specific domain-level effects remains challenging, especially in later disease stages where improvement may be limited by ceiling effects.

Differences in study design, sample size, and program duration make it difficult to reach firm conclusions about domain-specific outcomes. Nevertheless, there is consistent evidence that physical activity has a positive influence on both cognitive function and emotional well-being. The Alzheimer's Society (2023) also emphasises that walking can have direct psychological benefits for people living with dementia, including reducing agitation, promoting calmness, and supporting social connection. These improvements can ease caregiving challenges and contribute to a better quality of life overall.

Taken together, this evidence reinforces the earlier discussion in Section 1.2.5: walking is not only a marker of good health but also an active means of protecting and sustaining cognitive and emotional well-being across ageing.

Walking is frequently described as an accessible and low-cost form of physical activity; however, engagement in walking is shaped by broader socioeconomic and environmental conditions. Data from the TILDA study indicate that older adults who achieve at least 150 minutes of walking per week report higher quality of life, better self-rated health, and lower depressive symptoms than those below this threshold (TILDA, 2020). Nevertheless, not all older adults meet these recommendations, suggesting that

structural and contextual factors influence participation. European surveillance data further demonstrate a clear socioeconomic gradient in physical activity engagement, with higher levels of participation among individuals with greater educational attainment and financial security, and lower participation among socioeconomically disadvantaged groups (European Commission, 2022).

Environmental characteristics also play a decisive role. Neighbourhood walkability — including the availability of continuous pavements, safe crossings, lighting, proximity to amenities, and access to green space, has been consistently associated with higher walking frequency among older adults (Luka, 2023). Urban and rural contexts present distinct challenges: while urban areas may offer closer services and transport links, they may also involve traffic density, noise, and safety concerns; rural environments, although often perceived as restorative, frequently lack pedestrian infrastructure, public transport, and nearby amenities, potentially limiting safe and regular walking. For older adults and people living with dementia, whose mobility may depend on environmental familiarity, predictability, and accessible rest points, these contextual determinants become particularly salient. Therefore, engagement in walking interventions cannot be considered independent of socioeconomic position, local infrastructure, and environmental design, all of which shape the practical feasibility of participation.

1.2.9 Other Forms of Exercise

As discussed in the previous section, physical activity can support cognitive and emotional well-being in later life. A growing body of evidence now shows that the type and intensity of exercise also influence how the brain responds. Different activities appear to activate distinct neural networks, and personal preference plays an important role in this process. In a study by Schneider and colleagues (2009), participants who exercised at a self-selected intensity displayed greater changes in cortical activity than those whose effort was prescribed according to heart-rate limits. The authors suggested that exercising at a preferred pace may reflect stronger intrinsic motivation and a greater sense of autonomy, which in turn can enhance adherence and amplify the neurological benefits of training.

Beyond motivation, the nature of the exercise itself affects cognitive outcomes. Aerobic, neuromuscular, and coordination-based activities each stimulate the brain in unique ways. Netz (2019) found that a walking programme that included coordination

exercises reduced prefrontal activation during cognitive tasks compared with walking alone, suggesting that participants processed information more efficiently. Similarly, Voelcker-Rehage and colleagues (2011) reported that while aerobic walking increased activity within sensory-motor networks, coordination training enhanced activation in visual-spatial regions. These results indicate that combining aerobic and coordination elements can offer complementary neural effects, providing broader cognitive stimulation than single-modality programmes.

Cardiovascular training also contributes to brain health through its impact on vascular and neurochemical processes. Regular aerobic activity promotes angiogenesis, neurogenesis, and neurotransmitter plasticity, all of which are important for maintaining brain function (van Praag, 2009). Higher levels of aerobic fitness are associated with protection against age-related structural decline and long-term cognitive deterioration (Voss et al., 2013). Dupuy and colleagues (2015) showed that older women with greater aerobic capacity, measured by VO_2max, performed better on the Stroop task than those with lower capacity, indicating a clear relationship between cardiovascular efficiency and executive functioning.

The variety of exercises included within a programme also appears to make a difference. Multicomponent interventions that combine flexibility, strength, balance, endurance, and aerobic training tend to produce the most consistent improvements in cognitive performance among older adults (Jofré-Saldía et al., 2023). While single-component approaches can be helpful, multidomain training generally yields broader and more lasting benefits for both healthy individuals and those with mild cognitive difficulties (Bevilacqua et al., 2020). Promoting regular aerobic activity remains particularly valuable in clinical practice, as it can also help prevent or manage chronic conditions that often accompany ageing (Jongsiriyanyong et al., 2018).

Finally, studies exploring biological markers provide insight into how exercise supports brain function at a molecular level. Both aerobic activities such as dance and sport, and anaerobic exercises such as Pilates, have been shown to increase levels of brain-derived neurotrophic factor (BDNF), a key protein involved in neuroplasticity (Santos de Sousa Fernandes et al., 2020). Håkansson and colleagues (2017) found that moderate-intensity aerobic exercise not only raised BDNF concentrations but also improved mood and psychological well-being. These findings reinforce the idea that

regular, varied physical activity benefits both the mind and the body, contributing to healthier ageing and greater overall life satisfaction.

1.3 Cognitive Interventions

In parallel with physical activity, a wide range of cognitive interventions has been developed to help preserve or enhance cognitive function in both older and younger adults. These include commercially available brain training programmes, which aim to support attention, memory, and processing speed through repeated practice, although the generalisation of these effects to daily functioning remains contested. More clinically validated approaches such as Cognitive Stimulation Therapy (CST) have demonstrated stronger and more sustained benefits, especially for individuals with mild to moderate dementia (Woods et al., 2012). CST typically involves a structured programme of themed group sessions focusing on reality orientation, reminiscence, problem-solving, and language, and is now widely implemented in memory clinics, day centres, and nursing homes across the UK and Ireland. For example, a CST group might discuss childhood games or solve word puzzles together, with the aim of stimulating social interaction and preserved cognitive skills. In Ireland, CST has been incorporated into pilot programmes within HSE-supported dementia services (ASI, 2024).

Reminiscence Therapy (RT), which shares some overlap with CST, offers a more personal and memory-based approach. In RT, participants are encouraged to recall meaningful life events, such as family holidays, school experiences, or working life, often through the use of objects, music, or photos. A facilitator might bring in a box of 1950s household items or play music from a participant's youth to stimulate discussion and emotional connection (Westerhof & Bohlmeijer, 2014). Supported by an increasing body of clinical and neuropsychological research across Europe, RT has become a core component of psychosocial dementia care (Wang et al., 2018). Given its relevance to identity, emotion, and autobiographical memory, the next section will examine reminiscence in greater depth.

1.3.1 Reminiscence Therapy

Reminiscence Therapy (RT) is a non-pharmacological intervention designed to support the recall of autobiographical memories, particularly among older adults and those living with dementia (Westerhof et al., 2010). It draws on the therapeutic principle that accessing meaningful personal experiences can offer psychological benefits and

improve wellbeing in the present. While therapy traditionally focuses on curing or alleviating symptoms of disease, RT contributes to this goal by helping individuals reconnect with aspects of their identity and life history that remain preserved, even as other cognitive functions decline (Martin, 2010).

RT typically involves recalling past events, emotions, and thoughts through prompts such as photographs, music, personal objects, or themed discussions. Sessions may be structured, following a planned progression of life epochs, or informal, guided by spontaneous reflection. They can be delivered one-on-one or in group settings, where the added element of peer interaction often enhances the experience (Bulechek et al., 2008). For example, in a nursing home, a group RT session might focus on early school memories or local cultural traditions, with a facilitator using familiar songs or newspapers to stimulate discussion and connection.

A growing body of research supports the clinical value of RT. Recent systematic reviews and meta-analyses have demonstrated its positive effects on mood, quality of life, and cognitive performance, especially in people with mild to moderate dementia (Wang et al., 2018). These benefits are believed to stem from multiple psychological and neural mechanisms—including the activation of long-term memory networks, reinforcement of personal identity, and increased social engagement (Westerhof & Bohlmeijer, 2014). Notably, RT aligns with evidence from autobiographical memory science, which shows that memories from adolescence and early adulthood (known as the "reminiscence bump") are particularly vivid and well-preserved into late life, making them ideal anchors for therapeutic engagement.

In Ireland, RT has been incorporated into several dementia initiatives, including those run by Engaging Dementia (formerly Sonas apc), and is also used within community-based memory cafés and day services supported by the HSE and Alzheimer Society of Ireland. European projects, such as the “SHARE” (Supporting Heritage-based Reminiscence Experiences) initiative, have also explored the role of place, culture, and intergenerational exchange in RT delivery across care contexts in France, Italy, and the Netherlands. These interventions demonstrate the flexibility of RT in being adapted to different settings, populations, and cultural backdrops, while maintaining a focus on meaningful engagement and emotional connection.

Given its accessibility, strong evidence base, and relevance to cognitive and psychosocial health, RT continues to be a cornerstone of dementia-friendly practice. Its

emphasis on preserved rather than lost capacities offer a respectful and person-centred approach to care, one that aligns closely with broader goals of wellbeing, dignity, and identity preservation in ageing. A leading example of this therapeutic model in practice is the Remembering Yesterday, Caring Today (RYCT) programme, which will be explored in the following section.

1.3.2 Remembering Yesterday, Caring Today

Remembering Yesterday, Caring Today (RYCT) (Schweitzer & Bruce, 2008) describes both a structured reminiscence programme and a broader philosophy that can be applied in a variety of care environments. The approach combines established principles of reminiscence work with the person-centred values that guide modern dementia care. When people living with dementia are supported to recall and share memories from earlier life, they often reconnect with feelings of competence, purpose, and energy that once defined them. These experiences can bring renewed confidence and engagement in the present moment (De Sabat, 2001).

Memory loss in dementia usually affects both recent and older events, although long-term memories from early adulthood or childhood often remain accessible. Providing opportunities for these memories to be shared may help sustain them. At times, a familiar sound, smell, or object can suddenly bring back a forgotten experience, creating moments that are both surprising and uplifting for the person and those around them (Gibson, 2004).

As dementia progresses and language skills decline, hearing one's life story retold by others can bring comfort and reassurance. When relatives or family caregivers recall life details with warmth and accuracy, the person with dementia may still recognise their own history, even when they can no longer express it themselves. Keeping these stories active supports continuity of identity and reinforces a sense of belonging.

Creative and flexible forms of reminiscence, such as those promoted by RYCT, rely on shared recognition, sensory engagement, and humour. Perrin and May (2000) described the value of the "playful practitioner," whose sensitivity and spontaneity create moments of connection and emotional release. Their reflections show the difference between routine reminiscence and the kind of imaginative, life-affirming experience that RYCT seeks to encourage.

RYCT was developed through the European Reminiscence Network, which has supported international collaboration on reminiscence practice since the 1990s (Schweitzer, 2014). Projects within this network have involved facilitators, relatives, artists, and researchers across Europe, adapting the programme to local contexts while maintaining its shared values and goals. The map in Figure 1.4 shows the cities and countries where the network has been active.

The programme has been implemented successfully in groups even when family caregivers were not present, and its activities can be adapted for one-to-one use in homes, day centres, and residential settings. Themed sessions such as “school days,” “food,” or “celebrations” provide a framework that helps participants share experiences while fostering mutual understanding and trust.

Research comparing individual and group reminiscence suggests that group sessions can strengthen social bonds and reduce feelings of isolation, while individual sessions allow for a more personal focus on emotional and sensory engagement (Abdel-Aziz, et al., 2021). In recent years, digital versions of RYCT have been developed using tablets, multimedia story tools, and other online resources. These adaptations improve accessibility for people with limited movement or speech and support continued engagement outside traditional group sessions (Subramanian & Woods, 2016).

Figure 1.4

Countries participating in the European Reminiscence Network

Note. Adapted from Remembering Yesterday, Caring Today – London Slides (2014) by P. Schweitzer

(http://www.rememberingyesterdaycaringtoday.com/pdf/London-4-2014-Remembering-Yesterday-web03.pdf)

1.3.4 Simple Reminiscence Therapy

Building on the structured and creative foundations of programmes such as *Remembering Yesterday, Caring Today*, reminiscence can also take simpler forms that rely on more direct recall and discussion of personal memories. In the 1960s, Butler was the first researcher to suggest that reminiscence could be therapeutic for individuals, describing it as a process of "life review" (Butler, 1963). Later, Bluck and Levine (1998) defined it as "the volitional or non-volitional act or process of recollecting memories of

oneself in the past" (Henkel et al, 2017). Research on reminiscence grew rapidly during the 1990s, establishing its relevance across psychology, gerontology, and dementia care.

Today, Reminiscence Therapy is commonly understood as the discussion of life experiences with the support of sensory cues such as photographs, music, or familiar objects that help evoke engagement and recognition (see Allen et al., 2018, for a review). The simple reminiscence approach draws inspiration from the *Remembering Yesterday, Caring Today* model (Schweitzer & Bruce, 2008), which is typically delivered in small groups and brings together people with dementia and their carers through guided memory sharing.

Simple reminiscence has been shown to support autobiographical memory in older adults with memory impairment (Smith et al., 2009; Huang et al., 2015). Despite these findings, relatively little is known about how reminiscence affects memory in community-dwelling older adults. De Medeiros and colleagues (2011) explored how structured autobiographical writing influenced autobiographical memory, mood, and self-concept in this group, but their study faced methodological limitations, including differences in participant age that may have introduced cohort effects. The results were not significant, suggesting a need for more precise and age-consistent research designs.

More recent findings indicate that simple reminiscence does not necessarily enhance autobiographical memory performance in control participants (Roche et al., 2020). However, these studies rarely considered the influence of factors such as the type of reminiscence, education level, or gender, all of which may shape memory outcomes.

There also remains limited investigation into how cultural and historical context influence reminiscence content and emotional tone. Understanding these cross-cultural variations is essential for developing inclusive and responsive reminiscence models that can be meaningfully applied in diverse populations (Wang, 2016).

1.3.5 Other Forms of Reminiscence Therapy

Beyond simple reminiscence, research has shown that reminiscence can take many forms, each serving different emotional and psychological purposes. The effects of reminiscence vary according to the type of memory recalled, the individual's personality and life stage, and the emotional meaning of the experience. Depending on these factors,

reminiscence may function as a way to resolve conflict, to affirm identity, or simply to find pleasure in remembering (Cappeliez et al., 2005; Webster, 1993, 1997).

One of the most influential frameworks for understanding reminiscence comes from Watt and Wong (1991), who identified six distinct forms: integrative, instrumental, transmissive, narrative, escapist, and obsessive. Integrative reminiscence involves accepting one's past and finding meaning in earlier experiences. Instrumental reminiscence draws upon past coping strategies to manage current difficulties. Transmissive reminiscence focuses on passing down values, wisdom, and cultural traditions. Narrative reminiscence is the straightforward retelling of past events without interpretation. Escapist reminiscence allows individuals to revisit happier times as a form of relief from present challenges. Obsessive reminiscence, by contrast, involves repeated reflection on painful or unresolved experiences. Each of these forms has distinct functions, with some supporting self-understanding and social connection, while others may perpetuate distress or rumination.

A related concept, the "simple life review," has also been studied for its influence on wellbeing in older adults. Bohlmeijer and colleagues (2007) found that this approach, which builds on Butler's original theory, significantly improved wellbeing in older people compared to general reminiscence activities. However, at that time, reminiscence was still treated as a single broad concept, without the distinctions later clarified by taxonomies developed after 2006 (Bohlmeijer et al., 2007).

Subsequent research proposed that certain types of reminiscence have specific effects on self-perception and mental health. For example, integrative reminiscence tends to enhance identity and self-coherence, while escapist reminiscence may temporarily reduce boredom but can negatively affect one's sense of self (Talbot-Mahmoudi, 2015).

These insights underline the need for careful consideration of which types of reminiscence are encouraged in therapeutic or research settings. For older adults, particularly those with memory difficulties, targeted use of specific reminiscence types could strengthen autobiographical memory and support cognitive health. This focus remains underdeveloped in current research, despite its potential to inform interventions that help mitigate the effects of cognitive decline and neurodegenerative disease.

1.4 Framework

The present thesis is guided by the Medical Research Council (MRC) framework for the development and evaluation of complex interventions (Craig et al., 2008; Skivington et al., 2021). This framework is particularly relevant where an intervention includes several interacting components, multiple outcomes, and sensitivity to context. In the current thesis, the intervention is not a single, isolated treatment, but a combination of walking, autobiographical reminiscence, social interaction, environmental cueing, and facilitator input. The MRC framework therefore provides an appropriate structure for conceptualising the thesis as a staged programme of research rather than as one standalone trial.

The earlier MRC guidance set out a phased model centred on development, feasibility and piloting, evaluation, and implementation, and emphasised that complex interventions should be grounded in existing evidence and clear theoretical assumptions (Craig et al., 2008). This was an important step in moving health and social intervention research away from overly linear models of testing, particularly in areas where outcomes are shaped by behaviour, setting, delivery, and participant engagement. In that sense, the framework is highly compatible with psychosocial and community-based work in ageing and dementia, where intervention effects are rarely produced by one element alone.

The updated MRC guidance by Skivington et al. (2021) further develops this position by placing stronger emphasis on systems thinking, context, mechanisms of change, stakeholder involvement, and implementation from the outset. Rather than asking only whether an intervention works, the revised framework encourages researchers to ask how it works, for whom, under what conditions, and how it may interact with the social and organisational systems in which it is delivered. This shift is especially important for real-world interventions, where outcomes may depend on setting, participant characteristics, local infrastructure, facilitator style, and the adaptability of the intervention itself. The updated framework is therefore well suited to the present thesis, where walking and reminiscence are expected to operate not only through direct cognitive stimulation, but also through embodied engagement, familiarity of place, social co-construction of memory, and emotional meaning.

Another important contribution of the MRC literature is the recognition that evaluation should not be separated from process. Moore et al. (2015), in the MRC

guidance on process evaluation, argue that understanding implementation, mechanisms of impact, and contextual influences is essential when studying complex interventions. This is particularly relevant here because the thesis does not simply examine whether participants changed on quantitative outcomes, but also investigates how the different intervention formats shaped experience, autobiographical recall, and engagement. In other words, the mixed-method components of the thesis are not supplementary, but central to understanding how the intervention functioned in practice.

Within this thesis, the MRC framework provides a coherent structure across chapters. Chapter 2 contributes to intervention development by drawing on theory, public and patient involvement, route design, and methodological planning. Chapter 3 strengthens the theoretical and mechanistic rationale by examining the neural correlates of autobiographical memory retrieval. Chapters 4 and 5 correspond to feasibility and piloting, focusing on acceptability, procedural refinement, and the practical suitability of outcome measures. Chapter 6 moves into early evaluation by examining the relative contributions of walking, reminiscence, and their combination in community-dwelling older adults. Chapter 7 then extends the work toward implementation by exploring feasibility and implementation issues in Irish community settings. Framed in this way, the thesis reflects the iterative and cumulative logic recommended by the MRC approach, whereby intervention research develops progressively through refinement, testing, and contextual understanding rather than through one single definitive study.

Taken together, the MRC framework strengthens the conceptual foundation of the thesis by linking theory, empirical development, feasibility work, early evaluation, and implementation considerations within one research pathway. It also supports the position that interventions for ageing and dementia should be judged not only by statistical outcomes, but also by their acceptability, practicality, contextual fit, and capacity to be meaningfully embedded in everyday community life. This is especially important for non-pharmacological interventions such as walking and reminiscence, whose value may lie as much in how they are experienced and sustained as in any single measurable effect.

1.5 Outline of the Thesis

Building on the theoretical and practical foundations of reminiscence therapy and its applications for older adults, this thesis reports an investigation of autobiographical memory, well-being, cognitive, and neuronal outcomes of the combination of

reminiscence therapy with the exercise of walking. The methods and techniques for measuring these variables during interventions are detailed in Chapter 2. Chapter 3 uses functional MRI to identify the cortical networks involved in episodic autobiographical memories in community-dwelling older adults, contributing to the theoretical and mechanistic foundations of the intervention. Chapter 4 was a small-sample pilot of walking combined with reminiscence therapy, designed to examine feasibility and refine the intervention structure. Chapter 5 aims to tease apart the relative contributions of walking and reminiscence therapy separately, through further piloting and refinement of the intervention approach. With a sample of older adults from the community, Chapter 6 attempts to determine the effectiveness of the intervention components. In Chapter 7, the focus turns to the feasibility and implementation survey conducted in Ireland, examining practical considerations for scaling and implementation. In Chapter 8, the General Discussion integrates the main results, linking them to wider research on ageing, dementia, and psychosocial intervention, and outlining key implications for future research and practice. This project may serve to establish a feasible, affordable, accessible, and non-invasive therapy for older adults including those living with dementia in community settings, while contributing to scientific understanding and addressing one of the key societal challenges currently faced in Ireland.

Chapter 2:

Development and Adaptation of the Walking and Reminiscence Intervention

Abstract

This chapter describes the development and adaptation of the walking and reminiscence intervention used throughout this thesis. In line with the development stage of the Medical Research Council framework for complex interventions, the chapter focuses on how the intervention was shaped through theory, evidence, and stakeholder engagement prior to feasibility testing and later evaluation. In particular, it outlines the role of Patient and Public Involvement in co-designing the intervention and in refining study procedures, including recruitment approaches, assessment burden, walking route selection, participant comfort, and autobiographical memory cueing. The chapter also describes how the local Maynooth walking routes were selected and audited, and how feedback from people living with dementia, carers, and community-dwelling older adults informed the practical adaptation of the intervention for the Irish context. Overall, this chapter demonstrates how the intervention was iteratively refined to enhance relevance, safety, feasibility, and dementia inclusivity before being piloted and evaluated in the subsequent studies.

2.1 Development Framework: The MRC Framework for Complex Interventions

This thesis follows the Medical Research Council (MRC) framework for the development and evaluation of complex interventions (Craig et al., 2008; Skivington et al., 2021). The MRC framework recommends a phased approach to intervention research consisting of four main stages: development, feasibility/piloting, evaluation, and implementation.

The present thesis was structured in line with this framework. The development stage involved identifying the theoretical and empirical foundations of the intervention and engaging stakeholders to refine its design. This was addressed through the literature review (Chapter 1), the adaptation of reminiscence-based approaches and Patient and Public Involvement activities (this chapter), and a functional MRI study exploring the neural mechanisms underlying autobiographical memory retrieval (Chapter 3).

These early stages informed the design of the walking and reminiscence intervention tested in subsequent chapters. Feasibility and piloting were explored in Chapters 4 and 5 through small-scale studies involving people living with dementia and cognitively healthy older adults. The evaluation phase was addressed through a larger controlled intervention study examining the relative contributions of walking and reminiscence (Chapter 6). Finally, implementation considerations were explored through stakeholder consultation and survey data examining feasibility and scalability in real-world settings (Chapter 7).

This structured progression ensured that the intervention was grounded in theory, informed by stakeholder perspectives, and iteratively refined before larger-scale early evaluation.

2.2 Patient Public Involvement (PPI) in Intervention Development

In line with the development stage of the Medical Research Council (MRC) Framework for Developing and Evaluating Complex Interventions, Patient and Public Involvement (PPI) was embedded throughout the early phases of this research to ensure that the walking and reminiscence intervention was relevant, acceptable, and responsive to the needs of people living with dementia and their relatives/communities. In line with the principles outlined in the Guidance for Reporting Involvement of Patients and the Public reporting framework (GRIPP2), PPI activities in this thesis served two distinct functions: (a) co-designing and adapting the intervention itself, and (b) refining study procedures to improve accessibility, comfort, feasibility, and participant experience.

The term Patient and Public Involvement refers to research carried out with or by members of the public rather than on them (Pickett et al., 2018). Contributors were not research participants in these activities, but advisors who informed decision-making at multiple stages of the programme. Their input shaped practical aspects of the intervention, including the format and pacing of walks, the selection of memory cues, the suitability of routes, and issues relating to participant comfort, communication, and safety. It also informed study procedures such as recruitment language, session burden, session structure, and dissemination.

2.2.1 PPI in co-designing and adapting the intervention

When using Patient and Public Involvement (PPI) in research, co-creation is embedded throughout each step of the project starting from the design stage to the dissemination of the results. This enables researchers, practitioners, but also the members of the public to work at the same level, sharing responsibility and power from the starting point of the project. Tasks could include editing an ethical application, modifying survey questions, working on consent forms or even providing assistance with recruitment. Patients or members of the public can also partner with different organisations. Jenner and colleagues articulated this well:

> "*When patients are consulted, they are given information but have limited impact on decisions; when patients partner, they share power and are active participants in defining agendas and making decisions"* (Baker et al., 2018).

In dementia research, the UK created an Advisory Board in 1999. In 2017, the Alzheimer Society of Ireland established the Dementia Research Advisory Team (DRAT). The DRAT team is a constantly growing group which ensures PPI from the very beginning of the research project, with members offering their natural input into all sections of each step of the research project.

2.2.2 Dementia Research Advisory Team (DRAT) – Alzheimer's Society of Ireland (ASI)

A central source of PPI input in this thesis was the Dementia Research Advisory Team (DRAT) of the Alzheimer Society of Ireland. DRAT is composed of people living

with dementia and relatives who contribute to dementia research as "experts by experience." Their involvement in the present research supported the adaptation of the intervention to the Irish context and helped ensure that the design remained person-centred, dementia-inclusive, and practically feasible. Advisors advised on topics such as recruitment, session length, communication, walking environments, comfort, and the emotional accessibility of memory-related activities.

2.2.3 Format of PPI Activities

PPI meetings can take different formats, such as workshops or focus groups. PPI advisors can be crucial as they ensure that research is relevant and inclusive of various perspectives. In our studies, both in-person group workshops (e.g., World Café) and online meetings (*via* MS Teams) were conducted. The 'World Café' method is a participatory method, which involves bringing people together and is used for engaging participants and facilitating organisation change. This structured dialogue process encourages open and meaningful discussions, enabling participants to connect points within a bigger group around specific questions or topics. It enables the "collective intelligence" of its members and offers a platform for understanding and learning from varied groups (Schiele, 2022). Notably, older adults living without dementia were also recruited through the 'word-of-mouth' technique and social media and were encouraged to attend a three-hour PPI workshop (see below).

2.3 PPI Contributions to Intervention Development

2.3.1 Chapter 4: Initial Co-Design of the Walking and Reminiscence Intervention

PPI design workshops for Chapter 4 were carried out online via MS Teams on 25/05/2022, 27/05/2022 and in-person at the Glenroyal Hotel, Maynooth for further discussions on the 26/05/2022. The main purpose of PPI in this chapter was to co-design the different components of the walking and reminiscence program (including recruitment, pre- and post-intervention assessments, participant comfort, group size, intervention length, dissemination, additional insights). PPI contributors/advisors were recruited through 'Team-Up' for Dementia Research *via* the Alzheimer's Society of Ireland. The contributors involved were two people living with dementia and two relatives. During the PPI workshops we discussed specific themes, including recruitment,

measurements, participants' comfort, group size, intervention length, dissemination, and further additional points (see Table 2.1 below).

Table 2.1

Results of PPI Workshop for Pilot Study

Themes/Issues discussed	Results	Responses
Recruitment	Input: "When recruiting, be thoughtful about use of the word 'dementia'. It has connotations and stigma and can be off putting. It is a clinical term but should be considered when discussing it with people living with dementia and in the community." Input: "When recruiting, must reach the target population. Recruitment should be primary; the rest of the project plans should be on hold until we can get recruitment completed and know who will be participating in the project. Recruitment sources need to be within the community of dementia rather than community at large, consider the local dementia advisor, MDs, public health nurse, and other medically-focused establishments as they are routed for diagnosis and treatment. Must demonstrate a strong, tangible benefit to entice for compliance and participation."	The term 'living with Alzheimer's Disease' was used during recruitment. Reached out largely for recruitment, including the medical sector (i.e. GPs, memory clinics).
Pre- and Post- Intervention Assessments	Input: "For testing battery, consider keeping the time to no longer than 90 minutes. An hour should be okay, time can go by quickly but offer at least one break to restore attention and pause." Input: "For testing battery, measures seem inappropriate. They require insight from participants and those with dementia will be unable to complete these accurately. Suggest having the carer complete the assessment in lieu or in tandem for comparison. Consider sending the assessments home to be completed privately and prior-to the testing session. Testing sessions can be used to corroborate	Assessments reconsidered (GDS short form) 90 minutes maximum including breaks/refreshments Presence of carer/loved one, if wished

Themes/Issues discussed	Results	Responses
	information provided and to update if changes apply. Reconsider measures used and suggested to obtain cognition scores from pre-existing assessments from medical staff or dementia advisors rather than re-assess."	
Participant Comfort	Input: "Building rapport via introductions and tea with biscuits. Tea also serves an important function during/after walks and at breaks to facilitate conversation and camaraderie." Input: "Consider liability, medical presence, and trained staff. Do not expect participants to contribute financially even for tea and biscuits, understand that mood can be variable and volatile. Always ensure adequate training and medical presence on-site when a person with dementia is present. Require carers to always be present when a person with dementia is present. Would advise not to go on walks without a trained medical staff. Certify training for dementia outbursts and shift in mood."	Installed introductory one-to-one sessions at the Glenroyal hotel, with refreshments. Also organised an acknowledgement party for camaraderie Offer financial support to thank people for giving their time (i.e. transport) Staff are trained to assess and work with older adults living with dementia and we worked at every step with the ASI Carers attended walks, if desired
Group Size	Input: "Suggest keeping size of groups to three people, much larger becomes a crowd and is more challenging to facilitate conversation and dialogue." Input: "Suggest keeping the size of groups to three people."	Kept small groups (2 per group)
Intervention Length	Input: "Length of walks will depend on fitness and activity level of the people involved, but one hour is no trouble for Gerry as he walks regularly. Don't presume that because someone has a diagnosis of dementia that they won't enjoy walking or can't go a longer distance/having stamina." Input: "Walks are appropriate and quiet, clear and level.	Adapted walks from 10-15 minutes at an average pace Selected the most safe, quiet and green spaces walks Organised a shopping trolley including camping chairs, and hi-vis jackets, if needed

Themes/Issues discussed	Results	Responses
	Seems adequate in length and approves use of trolleys with chairs for potentially unstable participants."	
Dissemination	Input: "Distribute the information about the study via the library, a good gathering place for the community and where people may go to learn new information." Input: "Distribute the information about the study to care homes after precedent is established. Must show an action-plan and include funding for training. Consider whether this can be deployed to other towns or cities given the necessity for level, quiet areas of walking. Understand the burden and requirement on city- or care home- staff and what this would require. Must demonstrate a strong, tangible benefit to entice for compliance and participation."	Sharing knowledge through talks and writing formats including academic settings (GRASPS seminars MU), and medical (i.e. IGS conference) and local (i.e. exercise groups)
Additional Insights	Input: "Consider the role of transportation and adjust routes to places that are convenient and easy to access." Input: "Highly personal, no way to know for certain, would suggest individual triggers. Example, her husband enjoys nature and animals, but another person may be different. Should be able to respond with memories from far past."	Engaged with people who are from local areas to guide our triggers and historical/geography experts

As noted above, strong and positive feedback was provided on our suggested walking and reminiscence-based interventions. To summarise, the following topics surfaced the most during this program:

- The importance of relationship building;
- Transparency and inclusivity;
- Supportive communication environments
- The role of training
- Availability of funding (when feasible);
- The value of regular feedback and outcome sharing;
- Recognition of acknowledgments of contributions;
- Designing and delivering dementia-friendly environments;
- The need for flexibility in implementation.

The feedback from our PPI advisors enabled us to offer adapted and inclusive routes for the walking interventions. For example, it is important to be able to consider different environmental aspects, such as ensuring a quiet environment, and close parking for easy accessibility. Further, to ensure safety and comfort, a shopping trolley was used to offer seating and refreshments, when needed. Following advice from the PPI experts, walks were 10-15 minutes in total duration, conducted at an average walking pace. However, it is important to note that this tends to vary from one group to another. Indeed, depending on the weather and group, walk times could vary due to a slower or faster pace, or just because sitting down for each reminiscence trigger was sometimes necessary for a better discussion. Therefore, offering both flexibility and a supportive environment were key.

Another aspect considered by our workshops was the number of researchers involved in the walks. It was very important to include several researchers for each walk for security reasons even in small groups of 5-6 maximum (i.e. different paces; personalities). Furthermore, researchers should consider the unique cognitive profiles of those living with dementia (e.g. aphasia). It was very important to consider all aspects by getting to know every participant in a one-to-one interview prior to intervention (i.e. hearing difficulties; walking support; area of drop-off if attending the sessions alone; nutritional requirements). It was important to build up strong relationships with inclusive communication and calm environments. Researchers needed to undertake a person-centred approach to people living with dementia and/or the carer/loved one's present,

acknowledging how hard it can be sometimes to have someone close to us who can no longer engage in the same way as previously.

Another point regarding the idea of relationships was the ending of the PPI sessions. Indeed, participants did not want these sessions to finish, showing how much, they valued and were looking forward to each session. Many insisted on keeping these groups going, so that they can continue to maintain stimulating and social contact. In these situations, to avoid negative feelings it is important to maintain transparency and ensure follow-ups (even years afterwards). This will facilitate the continuation of knowledge-sharing for patients and families in the community who need it the most (see also Schweitzer and Bruce, 2008).

2.3.2 Chapters 5 and 6: Refining the Intervention for Feasibility and Acceptability

PPI for Chapter 5 was carried out in-person at the Glenroyal Hotel, Maynooth on 12/09/2022 and 22/09/2022. The main aim of PPI for this chapter was to engage individuals living with dementia and their relatives in meaningful discussions about different physical activities, specifically focusing on walking, to gather their insights and preferences (see detail below).

PPI advisors living with dementia were again recruited through the "Team-Up for Dementia Research" *via* the Alzheimer's Society of Ireland. Similarly, people living in the community were recruited through local groups, such as the Irish Countrywomen's Association (ICA) group. Six people living with dementia, two carers and eight cognitively healthy older adults from the community participated in several PPI sessions across two different days. Each PPI session lasted an afternoon in duration from 2:00 to 4:00 pm, including a break, and was facilitated by Dr Cassandra Dinius, Professor Richard Roche, myself and Dr Armelle Viard and followed the 'world café' approach (McGrath, 2023). For our study, a hotel conference venue was booked to ensure a calm and safe environment.

Both groups engaged in a carefully structured design to maximise engagement and inclusivity. Each workshop was organised beforehand, ensuring that all logistical considerations were addressed to accommodate the needs of participants, especially those with mobility issues. We underlined accessibility by selecting a venue with flat ground, maintaining a comfortable temperature in the room, providing easily accessible catering services (specific diets requested included i.e. gluten free), ensuring that breaks were scheduled to enable participants to rest. In addition, the proximity of restrooms was taken

into account, and arrangements were made for hotel accommodations for attendees traveling from further distances, alongside taxi services for those arriving directly at the venue.

To foster a sense of community and ease among participants, we organised an informal lunch meet-up prior to the workshops, which facilitated introductions and to promote comfort and information sharing during the sessions. Throughout this process, the Patient and Public Involvement (PPI) advisor from the ASI was kept fully informed, being cc'd on every email interaction to ensure that they were aware of all steps and how the events unfolded.

The workshop format itself involved setting up four different tables, where small groups (5 maximum for better engagement; in line with the PPI Ignite workshop guideline for older adults living in the community) rotated among them to receive presentations on the benefits of various activities, including walking, Tai Chi, breathwork, and music. Each session included presentations (including name badge written in large size format), detailed explanations, video demonstrating the activities, and discussions about their health benefits. Participants were encouraged to provide immediate feedback, both verbally and through post it notes, which enhanced more insights for a better interpretation (as results detailed in Table 2.2 below). The chosen activities were strategically selected based on literature following a specific search strategy from key words memory, cognition, well-being, and aging. To conclude, we conducted a ranking exercise where participants categorised the activities from most to least preferred.

Following the workshops, the key findings extracted for our walking activity were mainly about the format (i.e. 'I Love walking but not with too much people'); the different types of walking (i.e. 'walk for an hour with landscapes and site down in between'); the feasibility of this type of program (i.e. 'only thing I brought from previous life to new life, and my wife ha-ha!') and the role of walking among individual's lives (i.e. 'walking a writing offered me a second life') (see Table 2.2 below for further information). These findings were also included into the studies in Chapters 5 and 6.

Table 2.2

Findings from Patient and Public Involvement workshop for Chapter 5 - the exercise of walking

Theme	Quotations
Walking and Nature	'I Love walking but not with too many people, with dogs as well' 'Good for the mind whoever you are' 'Feet on the ground: sensory, a feeling' 'We love the sea'
Social Interaction and Group Dynamics and group sizes	'Group needs to be small: gives people the chance to chat they're say more in sec then me in an hour. 5 or 6' '5 people with dementia and maybe carers, you'll always lose two anyway' 'People need time to settle in' 'No expectation!'
Personal Reflections and Values	'Only thing I brought from previous life to new life, and my wife,ha!' 'Old values' 'Walking and writing offered me a second life' 'Cooking as well!'
Time and Duration	'30-45 mins' 'Some people need a rest' 'If good mood, [can walk] forever' 'don't know anyone that doesn't [walk]: everyone has to!'
Exploration and Discovery	'So much in Ireland to see, so much history…' 'Walk for an hour with landscapes and sit down in between'

2.3.3 Chapter 3: PPI Input for Dementia-Inclusive fMRI Procedures

As part of the intervention development stage outlined in the MRC framework, an online discussion via MS Teams was organised prior to recruitment of participants for the imaging sessions. One online discussion *via* MS Teams was organised prior to recruitment of participants for the imaging sessions. With input from the project's advisory group from the Alzheimer Society of Ireland, we sought guidance on how to support older individuals joining the study for scans while minimising potential distress.

The project was presented with a slide-based format. Two individuals aged 65 and over who are living with dementia participated in the one-hour session. Their feedback was important in refining aspects of the programme, including the duration of the scanning session and the presentation of data. Table 3.1 presents advisors' recommendations for designing dementia-inclusive fMRI reminiscence/memory recall sessions, highlighting key themes such as comfort, communication, memory support, and accessibility.

Table 2.3

Participant Recommendations for Designing Dementia-Inclusive fMRI Reminiscence/Memory Recall Sessions

Theme	Detail
Comfort in Environment	Many older adults emphasized the importance of feeling comfortable in the scanning environment. They appreciated a calm and inviting atmosphere, which helped reduce anxiety before and during the fMRI session.
Clear Communication	Participants noted that having clear explanations about the fMRI process and the purpose of the study was crucial. They preferred information presented in simple terms to ensure understanding.
Memory Triggers	Older adults expressed a desire for memory triggers that were not only familiar but also personally meaningful. They suggested including prompts related to significant Irish life events or milestones to enhance emotional engagement.
Time for Reflection	Participants appreciated the idea of having extended time to reflect on the memories triggered by visual cues. They felt that longer intervals could lead to richer recollections and deeper emotional connections to the memories.
Support During Recall	Some older adults expressed the need for supportive prompts or encouragement during the memory recall phase, suggesting that a trained facilitator could help if they faced difficulty in recalling certain memories.
Avoiding Distressing Memories:	Participants raised concerns about the potential for distress when recalling traumatic or painful memories. They highlighted the

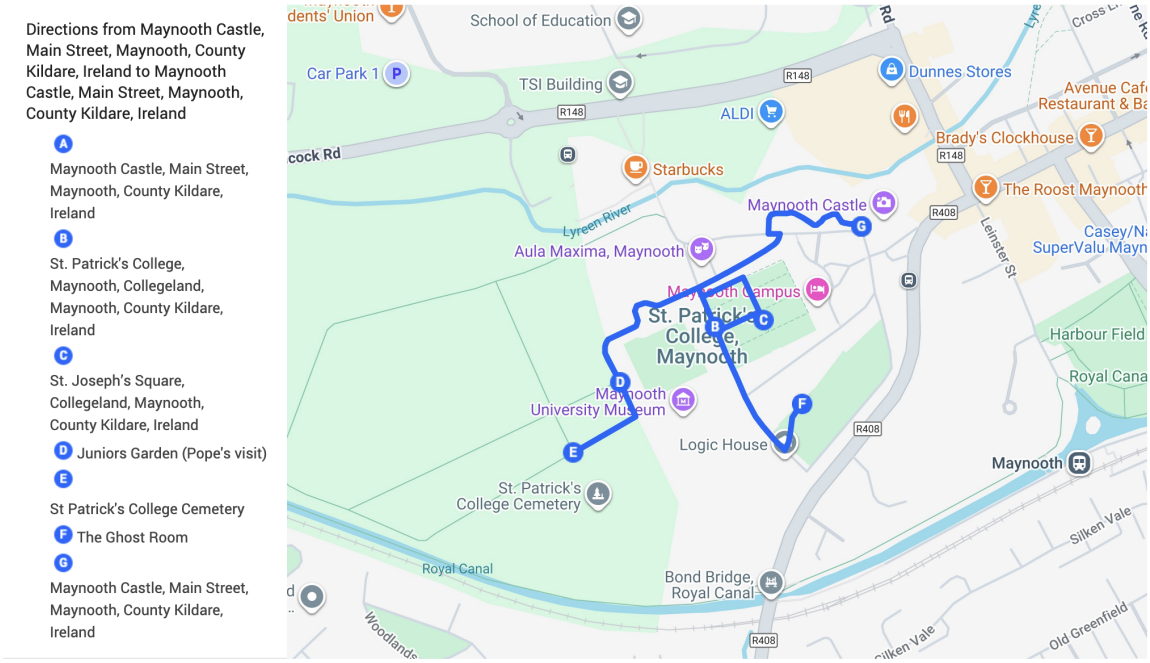
	importance of emphasizing positive (it is not a performance test) and uplifting memories during the reminiscence therapy/memory recall sessions.
Post-Session Discussion	Many expressed a desire for a debriefing session that allows for sharing and processing the memories recalled during the fMRI session. They felt this could provide closure and enhance the therapeutic experience.
Physical Comfort	Feedback indicated that comfort during the fMRI scan itself was important. Suggestions included providing extra padding, adjustable headrests, or the option to listen to calming music, which could help ease the experience.
Feedback Mechanism	Participants appreciated the idea of having a feedback mechanism to report their experiences after the session. They felt that their input could help improve future research designs and make the process more enjoyable and effective.
Accessibility and Inclusivity	Advisors stressed the importance of making the research accessible. They suggested offering transportation assistance and ensuring that the study accommodates varying levels of mobility and cognitive function among participants.

2.4 Walking Route Selection and Walkability Audit

In Chapters 4, 5, and 6, participants were asked to walk and reminisce. This required the careful selection of appropriate routes, drawing on the advice of several stakeholders. These included the outcomes of our PPI workshop (see Tables 2.1 to 2.3 above), discussions with health geographers such as Dr Ronan Foley, and the input of trainers and researchers involved in the study. Four routes were chosen in the Maynooth area: the canal walk, the campus walk, the Carton estate walk, and Pound Lane (see appendix 1). The eastern section of the canal was selected because it offered richer visual cues, while the western section was avoided due to issues with accessibility and walkability. Each of the four routes was chosen for its potential to prompt autobiographical memories within an Irish context, informed directly by feedback from the PPI group.

Figure 2.1

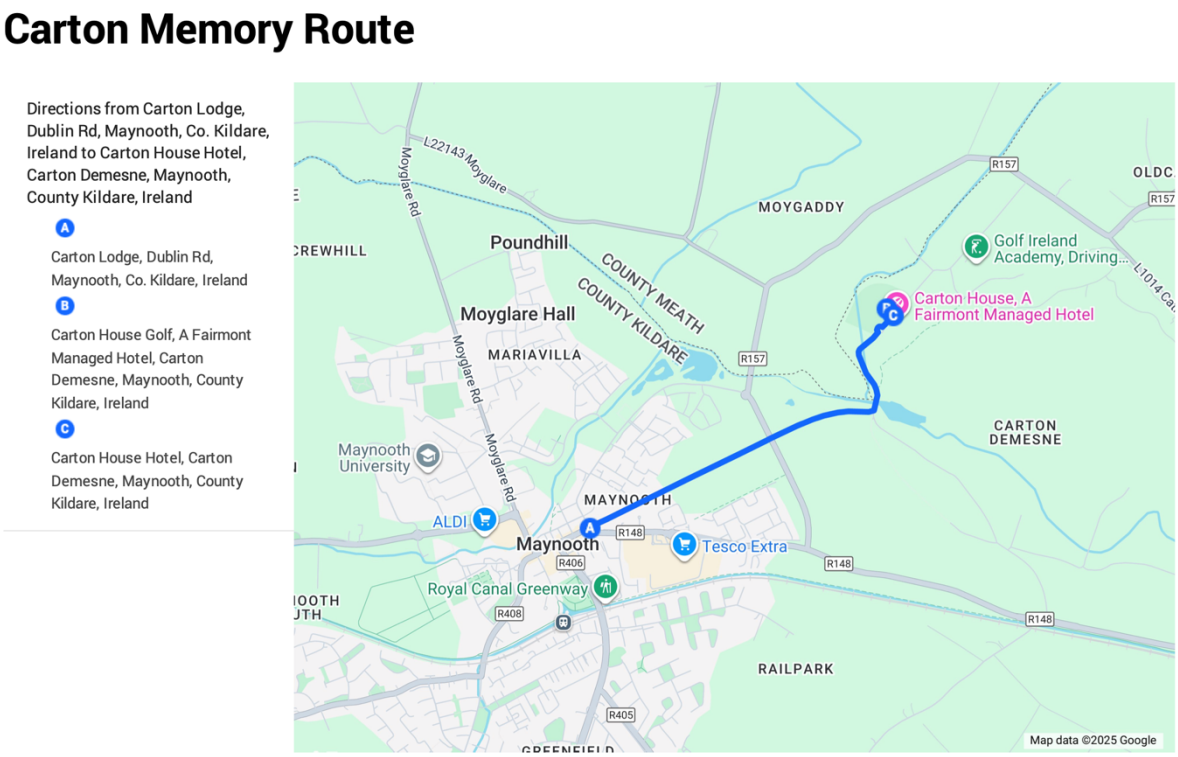
Maynooth Campus Memory Route



Note. This map illustrates the designated walking route used in the reminiscence-based intervention, beginning and ending at Maynooth Castle and passing through key landmarks on the St. Patrick's College campus, including St. Joseph's Square, the Juniors Garden, the College Cemetery, and the Ghost Room. Adapted from Google Maps (2025).

Figure 2.2

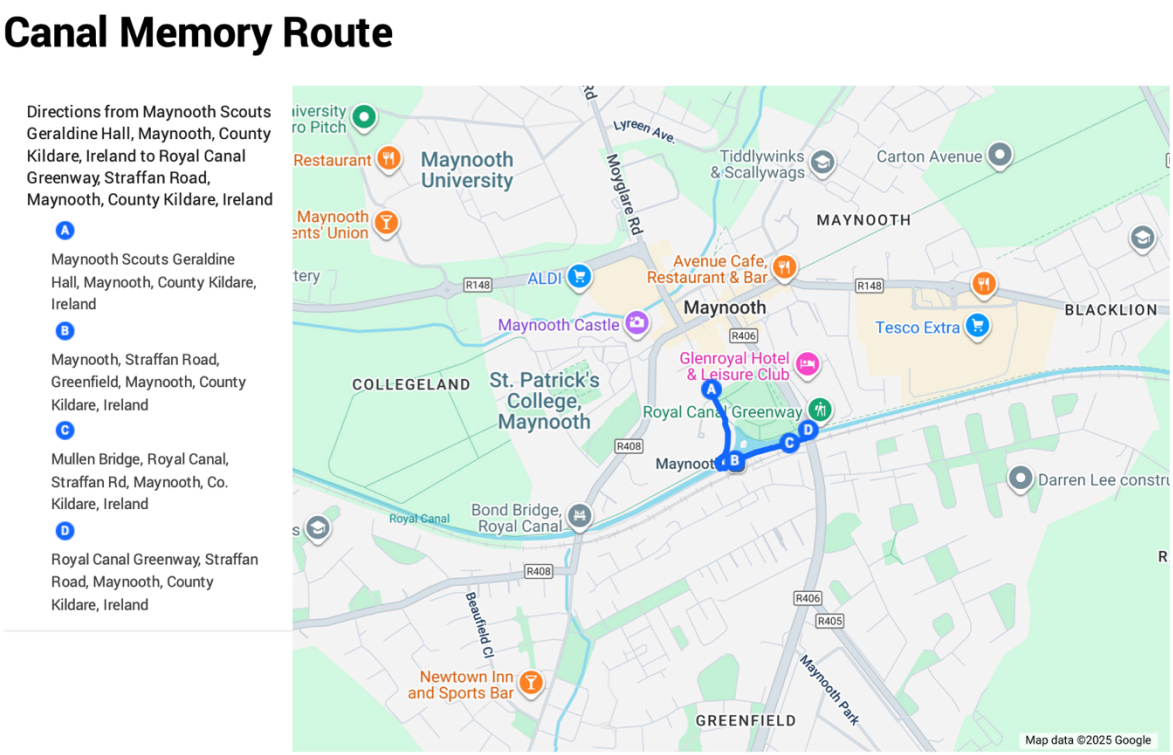
Carton Memory Route



Note. This map illustrates the walking route beginning at Carton Lodge on Dublin Road and continuing through the Carton House Golf Course to the Carton House Hotel, located within the historic Carton Demesne estate in Maynooth, County Kildare. Adapted from Google Maps (2025).

Figure 2.3

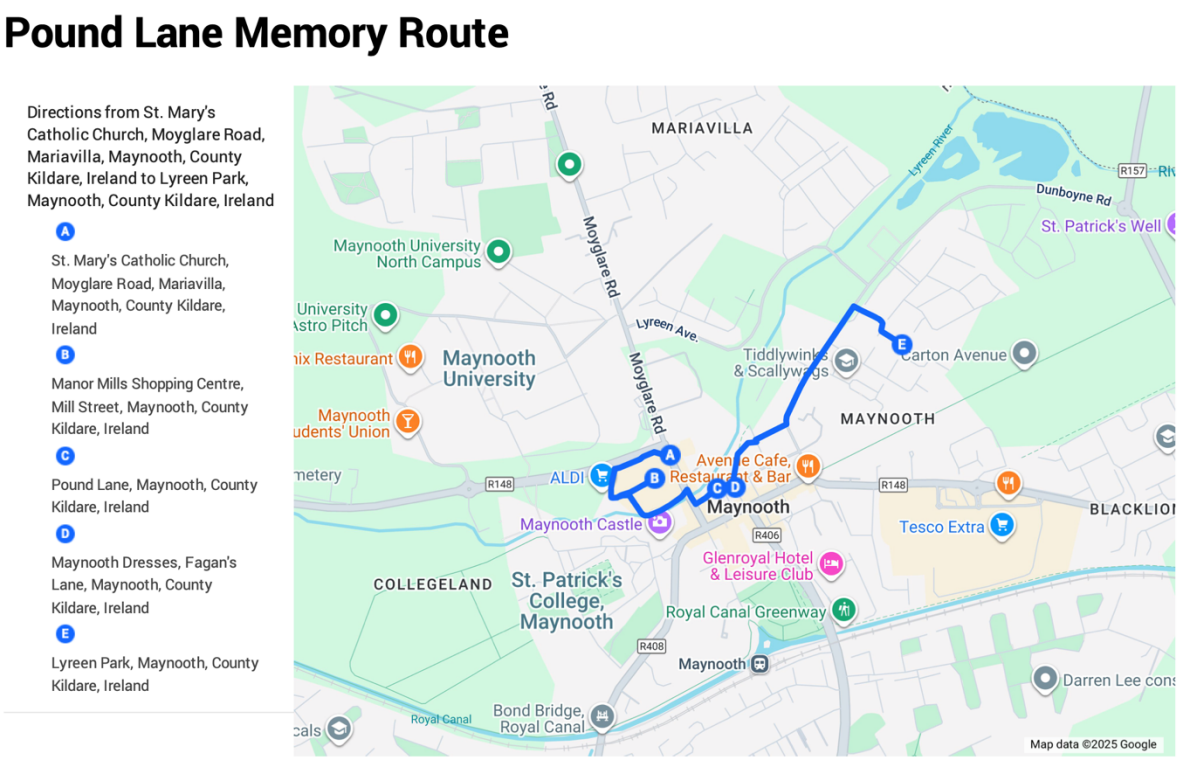
Canal Memory Route



Note. This map shows the Canal Memory Route starting at Maynooth Scouts Geraldine Hall and following the Royal Canal Greenway toward Mullen Bridge and Straffan Road in Maynooth, County Kildare. Adapted from Google Maps (2025).

Figure 2.4

Pound Lane Memory Route



Note. This map depicts the Pound Lane Memory Route beginning at St. Mary's Catholic Church on Moyglare Road and passing through Manor Mills, Pound Lane, and Maynooth Dresses before reaching Lyreen Park in Maynooth, County Kildare. Adapted from Google Maps (2025).

Once the four routes were chosen, we then piloted each route for suitability by two trained researchers, using the 2021 National Transport Authority Universal Design Walkability Audit Tool (Centre for Excellence in Universal Design (2020), see appendix 1). This walkability audit is used to assess the conditions of specific walking routes regarding their walkability, which refers to how accommodating the built environment is for pedestrians. It was created for use by different groups, including disability and older people's organisations, advocacy groups, school travel planners, and local authority officers, allowing people of various ages and abilities to engage. The audit on each route was done by two researchers. During the routes we made sure to plan for the weather (with umbrellas), to set walking at an easy pace, and portable chairs were provided if participants needed to rest. For security and noise reasons, we pursued mostly calm areas

and calm periods of the year. After completing each route, the auditors were required to fill out the Walkability Tool. A higher score indicated greater suitability, with a maximum possible score of 18 (see appendix 1) for detailed results for each of the four memory routes and photos).

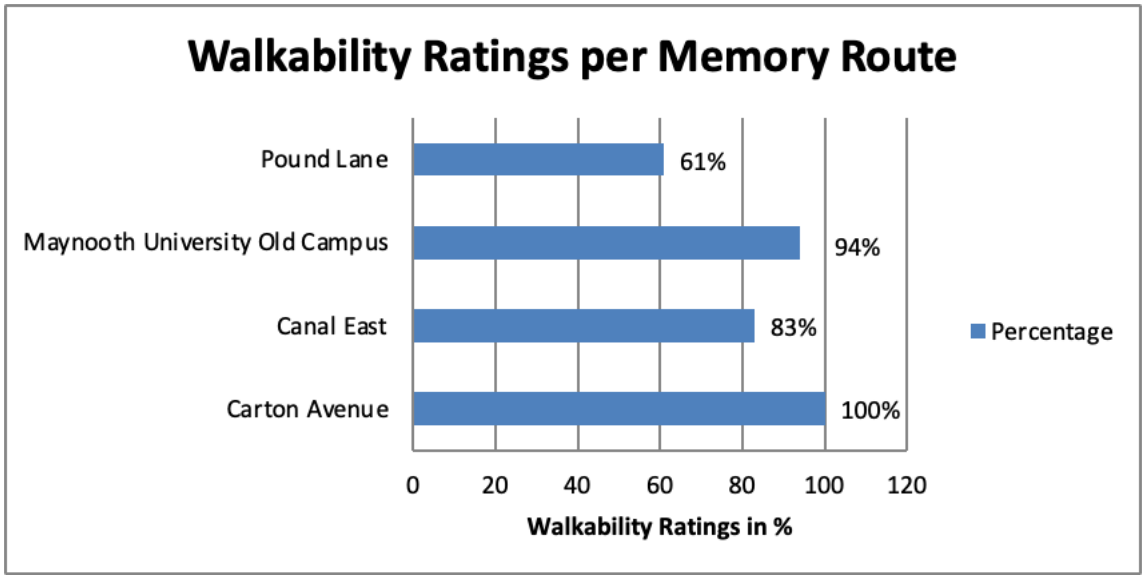
In summary:

1) **The Carton Avenue Memory Route** (400 m, audited on 14 April 2022 in sunny, dry conditions) achieved a perfect score of 18/18 (100%). Footpaths, facilities, safety, and overall look and feel were all rated as "Good," with no road crossings or school gates along the way. Participants described the walk as calming and soothing, with the sounds of nature and surrounding green spaces adding to the enjoyment. The only criticism was that the straight path could become slightly monotonous, and no changes were considered necessary.
2) **The Canal East Memory Route** (800 m, audited on 12 April 2022 in rainy, cloudy conditions) scored 15/18 (83%), with "Ok" ratings for footpaths, facilities, and safety, and "Good" for look and feel. No road crossings or school gates were included. Participants appreciated the quiet canal views, fresh air, and easy, flat terrain. However, they noted the absence of seating as a limitation and suggested adding benches.
3) **The Maynooth University Memory Route** (1.1 km, audited on 12 April 2022 in rainy, cloudy conditions) scored 17/18 (94%). Footpaths, safety, look and feel, and the area outside school gates were all rated "Good," while facilities received an "Ok" rating. The route was praised for its quiet, traffic-free green space, pleasant walking environment, and opportunities for varied sensory experiences, as well as its central location. The only drawback was the five-minute walk to reach a coffee shop or doctor's practice, and no improvements were proposed.
4) **The Pound Lane Memory Route** (550 m, audited on 12 April 2022 during rain and roadworks on Mill Street) scored 11/18 (61%). Footpaths were rated "Poor" due to uneven surfaces, narrow width, and pedestrian congestion. Facilities were considered "Ok," with bins available but no seating. Road crossings were rated "Good" thanks to a crossing guard, while road-user behaviour and safety were both "Ok." Look and feel received a "Poor" rating, as the area was busy, noisy, and close to traffic, making conversation difficult. Despite these challenges, participants valued the historical and sensory interest points, such as the church

and the 1916-pound memorial. No formal recommendations for improvement were recorded.

Figure 2.5

Overall walkability scores per walking route (in percentage)



2.5 Summary of the Development and Adaptation Phase

Taken together, the work presented in this chapter represents the developmental phase of the intervention in line with the MRC framework. The walking and reminiscence programme was not simply transferred from an existing model, but refined through theory, stakeholder engagement, local contextual adaptation, and route auditing. PPI input helped ensure that the intervention was acceptable, flexible, dementia-inclusive, and grounded in the practical realities of participants' lives. The walkability audit added an additional layer of environmental and safety appraisal, ensuring that selected routes were not only meaningful in autobiographical terms but also feasible for delivery. These developmental processes laid the foundation for the feasibility and piloting studies presented in the following chapters.

Chapter 3:

Development of Autobiographical Memory Cues for a Walking and Reminiscence Intervention: A Functional MRI Study of Recent and Remote Episodic Recall in Community-Dwelling Older Adults

Abstract

Autobiographical Memory (AM) comprises personally relevant events situated within specific spatial-temporal contexts and plays a key role in identity, continuity, and emotional well-being from childhood onward. This chapter focuses specifically on the neural mechanisms underpinning the episodic component of AM in older adults, and on how subjective features of these memories correspond to structural variation across regions of the Posterior–Medial (PM) and Anterior–Temporal (AT) systems, as well as on how these findings informed the development of cueing strategies for the intervention described later in this thesis. Positioned within the Medical Research Council (MRC) framework for complex interventions, this chapter represents an early development stage, examining whether theoretically informed autobiographical prompts could successfully elicit meaningful recent and remote episodic recall in community-dwelling older adults. Episodic AM, unlike its semantic complement, depends on the ability to mentally re-experience past events—a process supported by dynamic interaction between visual, affective, and self-referential systems. Using voxel-based morphometry (VBM) and an analogue rating scale with ten phenomenological dimensions of episodic recall, this study aimed to correlate behavioural indices of episodic autobiographical memory with grey matter volume in regions of the PM–AT network, for both Recent and Remote life epochs. In addition, the study explored which memory characteristics appeared most relevant for the later design of personalised walking and reminiscence cues. Findings highlighted a shift in structure–function relationships between these systems: the Precuneus (PM region) shifts from a negative correlation with emotional intensity at recall for Recent events to a positive correlation with autonoetic awareness for Remote ones, while the Superior Frontal Gyrus (AT region) shows the inverse pattern, moving from positive to negative correlations across epochs. A further dissociation was observed between the Precuneus and the Inferior Parietal Lobule (IPL) for Remote memories, suggesting differentiated roles in mental time travel. Taken together, these findings not only deepen understanding of the neural organisation of autobiographical remembering in healthy ageing, but also provide a mechanistic and developmentally informed basis for the design of cues used in the subsequent intervention chapters.

3.1 Introduction

Autobiographical Memory (AM) refers to personally significant memories embedded in time and place and is essential for developing a sense of self-continuity and identity (Conway and Pleydell-Pearce, 2000; Denkova et al., 2014). AM consists of both semantic and episodic components: the former encompasses general self-knowledge, while the latter involves vivid re-experiencing of specific events (Conway, 2001). The episodic form, which is the focus of this chapter, engages a distributed network of brain regions that integrate emotional, sensory, and self-referential processing (Rubin, 2005; Svoboda, McKinnon, & Levine, 2006). The Posterior–Medial–Anterior–Temporal (PM–AT) framework proposed by Ranganath and Ritchey (2012) has provided a valuable lens for understanding these neural dynamics. The posterior–medial system, involving the precuneus, retrosplenial cortex, and posterior hippocampus, supports contextual and spatial features of remembering, while the anterior–temporal system, encompassing the anterior hippocampus, orbitofrontal cortex, and amygdala, contributes emotional and semantic meaning (Ranganath & Ritchey, 2012; Ritchey & Cooper, 2020). Together these systems structure the mental reconstruction of lived experience, linking perceptual imagery with emotional evaluation.

Ageing research has shown that these networks remain flexible even later in life, with compensatory reorganisation between frontal and parietal regions during episodic retrieval (Viard et al., 2007; Lenormand et al., 2024). Interventions such as Reminiscence Therapy (RT) draw directly on this capacity by using personal cues to reactivate meaningful experiences, improving well-being and cognitive resilience in older adults (Allen et al., 2018; Song et al., 2014; Viard et al., 2024). The broader autobiographical memory literature, however, indicates that "personal meaning" is not a unitary mechanism but rather a constellation of interacting processes, including visual scene construction, emotional reactivation, narrative integration, and autonoetic consciousness (Conway & Pleydell-Pearce, 2000; Rubin, 2005; Tulving, 2002). Episodic recollection depends not only on access to stored information but on the subjective sense of reliving, supported by coordinated activity across medial temporal, parietal, and frontal systems (Addis et al., 2007; Levine et al., 2002; Svoboda et al., 2006). Importantly, these components are differentially sensitive to ageing and temporal distance: older adults often retain emotionally salient remote memories, particularly those from the reminiscence bump, even as perceptual vividness or contextual specificity may decline (Piolino et al.,

2002; Rubin et al., 1998; St. Jacques et al., 2012). Socioemotional selectivity theory further suggests that emotional regulation and positivity biases increasingly shape autobiographical recall across the lifespan (Carstensen et al., 2003; Mather & Carstensen, 2005). In practice, this matters because intervention prompts are frequently treated as interchangeable provided they are self-relevant, despite the likelihood that different cues preferentially recruit distinct cognitive and affective processes. A visually evocative cue may primarily engage posterior–medial regions associated with scene construction and spatial perspective (Ranganath & Ritchey, 2012), whereas affectively charged or narratively structured prompts may rely more heavily on anterior–temporal and frontal systems implicated in emotional evaluation and meaning integration (Ritchey & Cooper, 2020). Mapping phenomenological characteristics onto neuroanatomical variation therefore provides a means of specifying which dimensions of autobiographical recall are being supported, and how these dimensions shift between recent and remote remembering in healthy ageing.

Within the Medical Research Council (MRC) framework for complex interventions, intervention development requires the integration of theory, empirical evidence, and stakeholder-informed refinement before formal piloting or evaluation. In the context of the present thesis, autobiographical cueing was treated as one such active ingredient. Before designing the walking and reminiscence intervention, it was therefore important to establish whether different forms of autobiographical prompts were meaningful, theoretically coherent, and capable of eliciting rich episodic recall in older adults, while also clarifying which memory dimensions were most strongly engaged. This chapter is thus positioned primarily within the development stage of the thesis, helping to refine the cueing principles that were later incorporated into the intervention.

By situating subjective memory ratings within the Posterior–Medial and Anterior–Temporal framework, the present study establishes a mechanistic bridge between cue-based autobiographical work and later intervention design, clarifying why certain prompts may be better suited to enhancing vividness and scene-based reconstruction, while others may preferentially strengthen emotional meaning-making and autonoetic awareness.

More specifically, this chapter contributes to the development phase of the thesis by informing the selection, refinement, and theoretical justification of autobiographical cues later used in the walking and reminiscence programme. In this sense, the study

served not only as a mechanistic investigation, but also as a developmental step in specifying how cue formats derived from autobiographical memory theory could support meaningful recall in community-dwelling older adults.

This study therefore aimed to identify anatomical correlates of subjective episodic memory features using voxel-based morphometry (VBM). Ten analogue-rated memory dimensions—including vividness, emotional intensity, autonoetic awareness, and visual perspective—were correlated with grey matter volume in regions of the PM–AT network for Recent and Remote life epochs. A secondary aim was to determine how these findings could inform the development of theoretically grounded cues for the later intervention.

3.2 Materials and Methods

3.2.1 Recruitment and Participant Characteristics

All participants were recruited through word-of-mouth and through adverts and flyers distributed in the Dublin region. Eligibility criteria were as follows:

- Aged 65 years or older
- Living independently in the community
- No clinical diagnosis of dementia
- Eligible for MRI scanning according to safety screening procedures

Participants were excluded if they:

- Had metallic fragments (e.g., shrapnel) or implanted metal/electronic devices such as pacemakers, aneurysm clips, or surgical implants
- Reported a history of significant head trauma
- Reported a history of fainting or severe claustrophobia
- Had major medical, neurological, or psychiatric conditions (including heart conditions or panic disorder)
- Presented with any contraindications identified during MRI safety screening

An a priori power analysis was conducted using G*Power 3.1 (Faul et al., 2007) to estimate the required sample size for detecting associations between grey matter volume and behavioural memory ratings. Given that the primary analyses involved voxel-wise multiple regression examining correlations between continuous analogical scale scores and structural variation, the calculation was based on a bivariate correlation model. Assuming a medium effect size ($r = .30$), an alpha level of .05, and desired statistical power of .80, the required sample size was estimated at $N = 84$ participants. Due to the

practical and financial constraints inherent to MRI research with community-dwelling older adults, the final sample comprised 18 participants (15 females, 3 males). As such, the present findings should be interpreted as exploratory and hypothesis-generating, with an emphasis on effect patterns rather than definitive population-level estimates. The participants' mean age was 70.67 years (SD = 4.54) with a range of 65 to 80 years. The mean age of the female participants was 71.00 years (SD = 4.74), while the mean age for males was 69.00 years (SD = 3.61). Twelve of the participants were right-handed and 6 were left-handed. The study was approved by Maynooth University Biomedical Ethics Committee (BSRESC-2023-36422) and Trinity College Dublin ethics committee (230503) and all ethical and data protection standards were upheld throughout the study (see appendix 2 and section below for more details).

3.2.2 fMRI Acquisition and Processing

Functional Magnetic Resonance Imaging (fMRI) was used to measure brain activity by detecting changes in blood oxygenation associated with neural activation (Viard et al., 2021). Data were acquired at the Trinity College Institute of Neuroscience (TCIN), Dublin, using a 3T Prisma MRI scanner equipped with multi-channel head coils. Scanning took place between April and June 2024.

To ensure participant confidentiality, all MRI data were anonymised prior to analysis, including removal of facial features from structural images. The research team accessed only ID-coded datasets, with no identifying information retained. Clinical scans were reviewed by a radiologist at Tallaght University Hospital, and any incidental findings were communicated to participants' general practitioners with prior consent.

Preprocessing of imaging data was conducted using fMRIprep, an automated pipeline incorporating motion correction, spatial normalisation, and artifact removal. Statistical analyses were performed using SPM12 (Wellcome Trust Centre for Neuroimaging), allowing for voxel-wise examination of brain activation patterns.

3.2.3 Materials

Experimental task

The primary task consisted of the presentation of sentences in two different blocks (Block A and Block B) to participants as they underwent fMRI scanning. These sentences were presented onto a computer screen which was visible to the participants during the scan. According to the structure described by Viard and colleagues in 2007, Block A

(experimental condition) consisted of 16 sentences asking the participants to recall a recent (from the past five years) or a remote memory (specifically from ages 15 to 30 years old, connecting with the reminiscence bump (Rubin, 2005). Half of the sentences on recent memories related to episodic events (4 sentences, see Table 3.2) and half were related to semantic knowledge (4 sentences). Similarly, half of the remote memories related to episodic events (4 sentences, see Table 3.1) and half were related to semantic knowledge (4 sentences). [**Note**: although data on semantic memories were also recorded during this task, as mentioned here, the analysis of semantic data will take place separately and are not reported in this thesis.] Block B (control condition) consisted of 16 questions asking whether a particular word that appeared on the screen was in upper or lower case - '*Is this word in lower or upper case?* (see structure Viard et al., 2007). All words were taken from the Toronto Noun list and were deemed low in imageability ratings based on normative data (Friendly et al., 1982). The blocks were presented to participants using ABAB block-design paradigm, allowing for alternating conditions while minimising carry-over effects.

The sentences were presented via PsychoPy software and were white words on a grey background and with font size 38pt. PsychoPy (version 2023) was used to ensure precise timing of stimulus presentation and synchronisation with the MRI data acquisition. Each block, in which one sentence-cue was presented, lasted 24s in total: the sentence-cue was presented for 5s, followed by a grey screen presented for 19s during which participants carried on their mental retrieval. A 5-second fixation cross was inserted between each block to provide a short break. We chose this memory retrieval duration based on Westmacott and colleagues' work (2004) who showed that adults usually produce specific details about a personal event during the first 4-5s after cue presentation.

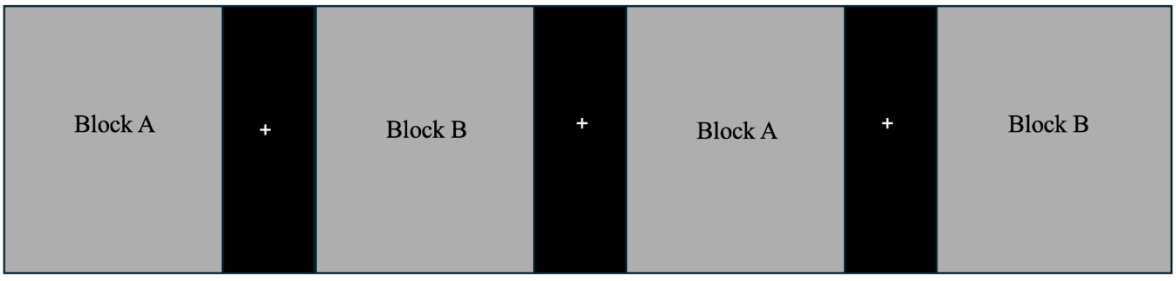
Figure 3.1

Experimental Task Design Illustrating the Memory Retrieval (Block A) and Control Case-Judgment (Block B) Conditions

Note. Each trial consisted of a 5-second cue (sentence or word), followed by a 19-second task period (memory retrieval or case judgment) and a 5-second fixation cross break.

Figure 3.2

Experimental block sequence (ABAB design)



Note. Blocks of the experimental (A) and control (B) conditions alternated, separated by fixation cross breaks.

These memory triggers were chosen not only to elicit autobiographical recall, but also to support the development of a cueing framework for the intervention described later in the thesis. In line with the development stage of the Medical Research Council (MRC) framework, the prompts were intended to test whether theoretically informed, culturally familiar, and personally meaningful cues could evoke rich recent and remote episodic recollection in older adults. The 16 sentence prompts were developed collaboratively by the research team across two focused design meetings. Drawing on established research, previous chapters (see design workshops in Chapter 2), and broader autobiographical memory literature concerning cue salience and personal relevance, the team selected phrasing that would be relevant and culturally familiar to older Irish adults. Examples include references such as “a local TD” or “going to the local church”, which were considered likely to evoke personal and context-specific memories. The final sentence set was reviewed and approved by four researchers.

Table 3.1

Outline of memory prompts Recent vs Remote/Semantic vs Episodic

1) Recent Episodic.
Try to picture (in time and place) a recent moment when you were preparing your lunch.
Try to picture (in time and place) a recent moment when you were doing a hobby.
Try to picture (in time and place) a recent moment when you were going to your current grocery store.
Try to picture (in time and place) a recent moment when you were watching TV.
2) Recent Semantic.
Think about the current name of the closest shop to you.
Think about the current name of your local T.D.
Think about the current name of your local G.P.
Think about the current name of your local school.
3) Remote Episodic.

Try to picture (in time and place) a moment when you were, as a young adult, doing a weekly activity.
Try to picture (in time and place) a moment when you were, as a young adult, visiting the seaside.
Try to picture (in time and place) a moment when you were, as a young adult, at school/work.
Try to picture (in time and place) a moment when you were, as a young adult, enjoying your weekend.
4) Remote Semantic.
During your childhood, think about the name of the nearest grocery store.
During your childhood, think about your local school.
During your childhood, think about the area you lived in.
During your childhood, think about your local church.

Episodic Phenomenological Dimension Scale

The Episodic Phenomenological Dimension Scale used in the present study was based on the autobiographical memory rating procedure developed by Viard et al. (2007), originally designed for use in functional neuroimaging research examining recent and remote episodic recall (see appendix 3 for further detail). The original scale, developed in French, was translated into English for the purposes of the present study. Translation was carried out by the research team to ensure conceptual equivalence of each phenomenological dimension rather than direct word-for-word correspondence. The scale retained the core dimensions assessed by Viard and colleagues, including emotional intensity, valence, vividness of imagery, autonoetic awareness ("I know" versus "I remember"), and visual perspective.

Therefore, to evaluate the phenomenological features of each autobiographical memory retrieved during the scanning session, participants completed this 10-item scale immediately after exiting the scanner. Ten individual scales were presented, each designed to capture a different dimension of the recalled experience. For each item, participants marked their response along a horizontal line, typically ranging from 0 to 10 centimetres, with anchor points at each end representing the extremes of the scale.

Responses were measured manually with a ruler to the nearest millimetre to allow for continuous analysis.

The first item asked participants to rate how frequently they recalled the memory in everyday life, from "Never" to "Very often." The second item concerned the time elapsed since the memory was last spontaneously recalled (excluding the current session), with reference points ranging from "Today" to "Over 10 years ago." The third item focused on accuracy, inviting participants to rate their level of confidence in the precision of their memory, from "No confidence" to "Total confidence." The fourth and fifth items explored the emotional content (both intensity and valence) of the memory: one referred to the emotion experienced at the time of the original event ("Very unpleasant" to "Very pleasant"; "No emotion" to "High emotion"), while the other addressed the emotional experience during retrieval, using the same two scales. The sixth item asked participants to indicate whether they used a more verbal or visual strategy to retrieve the memory, with a line stretching from "Verbal" to "Visual." The seventh item recorded the number of distinct mental images that came to mind, captured as a direct numerical entry. The eighth item asked participants to rate the clarity of these mental images, from "Very blurry" to "Very clear." The ninth item assessed the state of consciousness during retrieval, allowing participants to place themselves on a continuum between "I know" (a feeling of familiarity without vivid re-experiencing) and "I remember" (a sense of mental time travel with contextual detail). Finally, the tenth item addressed visual perspective, offering a categorical choice among "Actor" (first-person view), "Observer" (third-person), or "Both."

The use of ruler-based analogue responses enabled a fine-grained, centimetre-level quantification of each memory dimension. These ratings provided a detailed profile of each participant's subjective memory experience and allowed for later correlation with grey matter structure in voxel-based morphometry analyses.

3.2.4 Procedure

Pre-scan interview and Training

Following recruitment, each participant was invited individually to a pre-scan session at the Trinity College Institute of Neuroscience (TCIN) in Dublin. This appointment, which lasted approximately 30–35 minutes, provided an overview of the project and included time for questions, review of documentation, and completion of screening materials. Participants filled out the Trinity College Institute of Neuroscience (TCIN) COVID-19 checklist, a general consent form, and a screening form covering MRI

safety criteria (e.g. presence of pacemakers or other implants). Each person received a printed copy of the information sheet for their reference (see appendix 4-6).

Prior to this pre-scan meeting, interested individuals had already been sent the information sheet along with an invitation to the pre-scan meeting to discuss any concerns in person. It was explained during the pre-scan meeting that their general practitioner (GP) would be informed before any MRI scanning, to ensure no medical complications. Although the scan was conducted for research purposes, its clinical-grade resolution meant that images would be automatically reviewed and forwarded to the participant's GP. Any incidental findings requiring attention were addressed by the GP directly with the participant, in a process entirely separate from the study itself. A formal letter was posted to the GP, and a two-week interval was observed before scheduling scans. This period also allowed participants time to reflect on their decision and withdraw if they wished, without obligation.

At the second meeting, the researcher briefly revisited the study documents and addressed any outstanding questions. Written consent was then obtained. A 10-minute familiarisation session followed, during which participants were introduced to the task on a laptop using PsychoPy software. They were guided through example sentence prompts and trained to use the response pad (right arrow for "yes, I can recall and event" left arrow for "no, I can't recall an event"). Training items were distinct from those used in the actual scan and were included solely to ensure participants were comfortable with the format and timing of the memory task. The familiarisation component also served a developmental purpose, allowing the research team to confirm that the prompt structure, wording, and response format were understandable and manageable for older adult participants prior to their later use in intervention design. Although both options were suggested, the MRI scan was scheduled immediately after the training, as this arrangement was more convenient for all participants than attending two separate sessions.

Experimental procedure

The scanning session took place at the Trinity College Institute of Neuroscience (TCIN) using a Siemens 3 T PRISMA MRI scanner. Participants lay straight in the scanner while auditory instructions and prompts were delivered *via* headphones, and visual cues were displayed on a screen using a mirror setup. Standard padding and head

supports were used to ensure participant comfort and reduce motion artefacts. Earplugs and additional noise protection were provided due to the acoustic intensity of MRI scanning. A trained radiographer and the research team were present throughout the procedure to monitor safety and support.

The scanning session included four functional runs, each linked to recent semantic, remote semantic, recent episodic, remote episodic. During the experiment, participants were encouraged to mentally relieve personal stories prompted by the visual cue presented (i.e. “Try to picture (in time and place) a recent moment when you were preparing your lunch”) while a trained facilitator led the individual with a microphone. This list was not presented chronologically. A total of 16 sentence-cues were presented per subject, corresponding to the 4 different categories (see above). Participants were asked to press on a response pad as soon as they could recall correctly to the prompted event and try to re-experience and maintain the memory in mind until the end of the block. Each experimental block was followed by a control block. In the control block, subjects were asked to indicate if the low imaginability word from the Toronto list was presented in upper case or lowercase. Also, sentence-cues employed in the training phase were distinct from the scanning session. Sessions were individual and were organised over two months with a qualified MRI radiographer based at Trinity College Dublin.

Completion of the Phenomenological Dimension Scale and Debriefing

Following the scanning session, each participant was given a 10–15-minute break. Following this, participants were requested to measure the characteristics of each of the 8 recalled memories using an phenomenological scale to examine the accuracy of memory recall, vividness, frequency and other features (see above and Viard et al., 2007).

Following this, participants were then thanked for their time and debriefed. The researcher was available to answer any questions. In addition, participants were asked if everything had proceeded smoothly and if they had any suggestions for the future.
Informal participant feedback regarding the clarity, acceptability, and emotional accessibility of the task was considered as part of this developmental work, helping to indicate whether this style of autobiographical cueing was suitable for adaptation into later walking and reminiscence sessions. To thank everyone for their contribution to this project, participants were cordially invited to a tea/coffee meeting that was organised at a later stage at the Maynooth University.

3.2.5 Analysis

Given the relatively small sample size in this study, it was essential to address inter-subject variability—whether anatomical, physiological, or functional—during the preprocessing of MRI data. To enable valid comparisons across participants, each individual brain image was spatially normalised to a standard anatomical template, ensuring that corresponding voxels reflected the same brain region across all scans (Gholipour et al., 2007). This step was necessary for statistical parametric mapping (SPM), a voxel-based technique that allows researchers to assess region-specific effects related to experimental conditions (Friston et al., 2007).

We conducted our preprocessing and analysis using the Computational Anatomy Toolbox 12 (CAT12) implemented in SPM12. The pipeline began with segmentation of T1-weighted structural images, aligning them to the template space using standard priors. Segmentation quality was reviewed manually through slice inspection to detect any artefacts or alignment errors. To ensure sample consistency, we examined the distribution of grey matter volumes using boxplots and correlation matrices. This allowed us to identify outliers and confirm the homogeneity of the dataset before proceeding.

Following quality checks, total intracranial volume (TIV) was estimated for each participant, as this measure is a crucial covariate in voxel-based morphometry (VBM) and helps to control for differences in brain size. The images were then smoothed using a Gaussian kernel to improve the signal-to-noise ratio and enhance the spatial specificity of observed effects.

Statistical models were built using CAT12.8's streamlined batch processing for cross-sectional analysis. This updated interface allowed us to specify our design more efficiently, though legacy methods via the SPM12 GUI remained available if required.

Together, these steps ensured that the data met quality standards for voxel-wise structural analysis. All voxel-based morphometry results were thresholded at a voxel-wise level of $p < .001$ uncorrected ($T \geq 3.73$), with no cluster-extent threshold applied ($k = 0$ voxels).

Once pre-processed, we explored how individual differences in grey matter volume related to memory ratings obtained from the analogical scales. For each participant, scores were averaged across recent and remote memories and entered as continuous variables in a whole-brain multiple regression. This allowed us to identify regions where structural variability corresponded to specific memory characteristics, such

as emotional intensity or image clarity. The resulting structure–function associations are presented in section 3.3 Results below and interpreted in light of behavioural results.

These findings not only offer insight into the neural basis of autobiographical memory in older age, but also formed part of the developmental foundation for the walking and reminiscence intervention presented later in the thesis. In particular, the analysis helped identify which subjective memory dimensions were most meaningfully engaged by different prompt types, thereby informing the design of later cues and session content.

3.2.6 Ethical considerations

All study procedures adhered to the highest standards of ethical and data protection practices, in accordance with Maynooth University's Research Integrity, Ethics, and Data Management policies, and Trinity College Dublin's institutional frameworks. A formal data-sharing agreement between Maynooth University and the Trinity College Institute of Neuroscience (TCIN) ensured secure, GDPR-compliant collaboration and access to scanning facilities, while protecting participants' rights and confidentiality throughout the project.

Participants were community-dwelling older adults who met strict inclusion criteria to ensure safety and eligibility for functional Magnetic Resonance Imaging (fMRI). Prior to enrolment, all individuals received detailed written and verbal information about the study and the scanning procedures. They were informed that participation was entirely voluntary, that they could withdraw at any time without consequence, and that their data would remain confidential. The study involved minimal risk, but given the use of MRI, additional safety considerations were clearly explained. Participants were advised that metal materials could interfere with the magnetic field or warm slightly during scanning; hence, anyone with metallic implants, pacemakers, or electronic devices was excluded. Those with extensive tattoos containing iron-based ink or dental bridges were also advised against participation. A trained radiographer carefully reviewed each participant's eligibility and confirmed the absence of contraindications before scanning.

Participants were reassured that MRI does not involve ionising radiation and is considered safe in neurologically community-dwelling older adults. However, they were made aware that some individuals may feel confined or anxious inside the scanner. To ensure comfort and wellbeing, participants were in constant communication with the

radiographer and research assistant and could request to stop the procedure at any moment.

During the memory recall component, participants were invited to mentally revisit personal experiences but were not required to verbalise these memories. Given the potential for emotional content, facilitators—trained and vetted to work with older adults, were attentive to signs of distress and reminded participants that they could pause or discontinue at any time. The focus of the task was on positive, life-affirming recollections drawn from everyday experiences in the Irish community, and questions were intentionally brief and non-intrusive. After the session, all participants were fully debriefed and had the opportunity to ask questions or discuss their experience.

Data handling followed strict security protocols. Personal identifiers such as names and contact details were stored separately in a secure, access-restricted database used only for scheduling and communication purposes. Experimental and MRI data were encoded and pseudonymised immediately after collection. For MRI files, all identifiable metadata were removed from DICOM files before conversion to NIfTI format, and structural images were anonymised through defacing procedures that preserved brain integrity while removing facial features. Each anonymisation was visually inspected by the imaging team before data transfer.

Scanning took place at TCIN using a Siemens 3T PRISMA scanner. All MRI data were stored on TCIN's protected research servers with daily backups and limited access to authorised personnel only. A qualified radiologist reviewed each scan for anatomical integrity, and in the rare event of incidental findings, results were shared confidentially with the participant's general practitioner for appropriate follow-up. In accordance with GDPR and ethical best practice, the research team did not communicate or interpret clinical findings directly with participants. All anonymised datasets will be retained securely for seven years following study completion, after which they will be permanently destroyed according to Maynooth University policy.

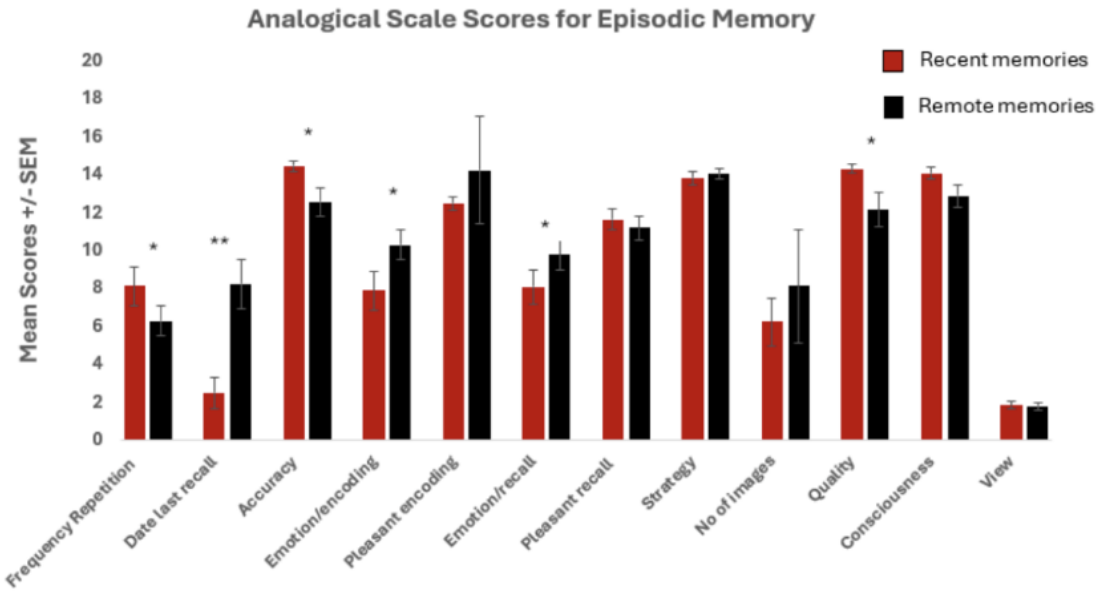
3.3. Results

3.3.1 Behavioural Findings on the Phenomenological Scale for Recent vs Remote Episodic Memory

To investigate differences in phenomenological characteristics between recent and remote episodic memories, paired-sample t-tests were conducted across ten analogical scale sub-measures. Results indicated several significant differences between the two memory types. Participants reported retrieving recent memories significantly more frequently than remote memories, $t(17) = 2.16$, $p = .045$, $d = 0.51$. In line with this, the date of last recall was significantly more recent for recent memories, $t(17) = –4.28$, $p < .001$, $d = 1.01$. Recent memories were also rated as more accurate than remote memories, $t(17) = 2.36$, $p = .031$, $d = 0.56$. In contrast, remote memories were associated with significantly higher emotional intensity at the time of encoding, $t(17) = –2.84$, $p = .011$, $d = 0.67$, as well as stronger emotional responses at recall, $t(17) = –2.77$, $p = .013$, $d = 0.65$. There were no statistically significant differences between recent and remote memories in terms of pleasantness of encoding, $t(17) = –0.63$, $p = .538$, pleasantness of recall, $t(17) = 0.60$, $p = .557$, or retrieval strategy, $t(17) = –0.66$, $p = .516$. Similarly, number of images recalled did not differ significantly between memory types, $t(16) = –1.01$, $p = .325$. However, image quality was significantly higher for recent memories compared to remote ones, $t(17) = 2.43$, $p = .027$, $d = 0.57$. Finally, while level of familiarity at retrieval showed a trend towards higher scores for recent memories, this effect did not reach significance, $t(17) = 1.76$, $p = .097$. No differences were observed in the viewpoint of mental images, $t(17) = 0.55$, $p = .593$. See Figure 3.3 for a summary.

Figure 3.3

Analogical Scale Scores for Recent vs. Remote Episodic Memories



3.3.2 Structural Findings

To align with the study aim of mapping episodic autobiographical memory onto the PM–AT framework, only correlations within core regions of these systems are reported here. Fifteen significant associations were originally identified but results below focused on those within posterior–medial (Precuneus, Angular Gyrus, IPL) and anterior–temporal (Superior Frontal Gyrus, Frontal Pole, Temporal regions) areas. These regions have been implicated in visual scene construction, emotional, and self-referential processes underpinning episodic recollection.

A consistent pattern emerged showing opposing correlations in the Precuneus and Superior Frontal Gyrus (SFG) across both recent and remote memory epochs. Specifically, the Precuneus displayed a negative association with emotional intensity at recall for recent memories but a positive one with autonoetic awareness for remote memories, while the SFG exhibited the reverse pattern. Additionally, a double dissociation was observed within parietal regions for Remote memories (Q9): the Precuneus showed a positive relationship with “I remember” responses, whereas the IPL showed a negative one, suggesting complementary roles in mental time travel and self-projection.

Recent Episodic Memory – Positive Associations

Angular Gyrus – Point of View (Question 10)

A negative correlation between angular gyrus volume (T = 4.68, MNI: -44, -51, 30) and reporting a mixed/observer viewpoint (Q10) supports its role in spatial and visual simulation, particularly in transforming perspectives during episodic retrieval (St. Jacques et al., 2011).

Inferior Temporal Gyrus – Strategy Used (Question 6)

Greater use of visual strategy was linked to lower grey matter in inferior temporal areas (T = 4.29, MNI: –10, –75, –39; CP-08), consistent with the idea that reduced volume in these regions may reflect more efficient visual-perceptual coding (Burianová et al., 2010).

Lingual Gyrus – Number of Mental Images (Question 7)

More images reported (Q7) during recall correlated with higher grey matter in the lingual gyrus (T = 4.17, MNI: –14, –82, –3; CP-09), reinforcing its known role in image-based elaboration during autobiographical remembering (Addis et al., 2009).

Superior Frontal Gyrus – Emotional Intensity at Encoding (Question 4)

Participants who rated their memories as having stronger emotional charge during encoding (Q4: “no emotion” to “very high emotion”; note that this question also includes a separate pleasantness subscale ranging from “very unpleasant to “very pleasant”) showed greater volume in the superior frontal gyrus (T = 5.46, MNI: 36, –58, –62; CP-04), reinforcing its role in evaluative and emotional tagging during autobiographical event registration (Cabeza & St Jacques, 2007).

Middle Temporal Gyrus (R) – Valence at Encoding (Question 4, pleasantness)

Positive affect during memory encoding (Q4 pleasantness subscale) correlated with increased right middle temporal gyrus volume (T = 5.82, MNI: 64, –42, 40; CP-05). This supports existing evidence that this region provides semantic–affective scaffolding during self-relevant event formation (Levine et al., 2002).

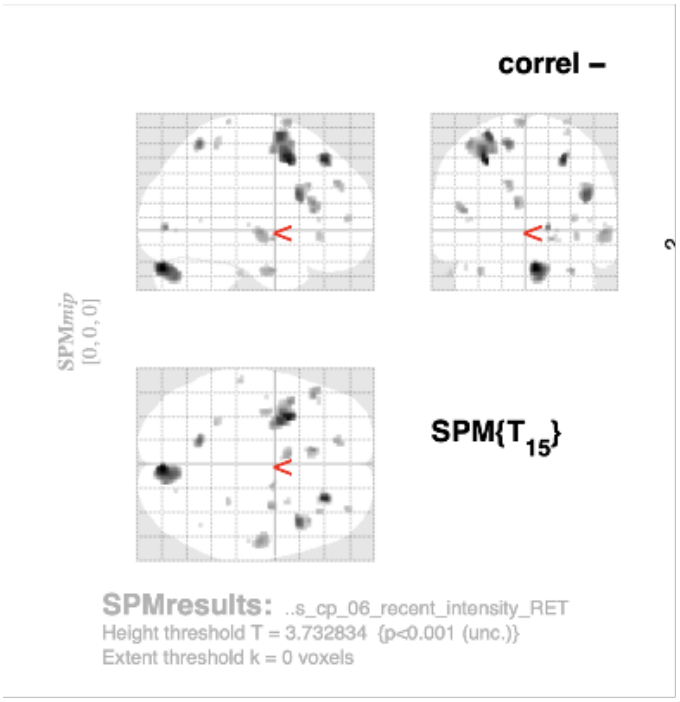
Recent Episodic Memory – Negative Associations

Precuneus – Emotional Intensity at Recall (Question 5).

Higher emotional reactivation during retrieval of recent memories (Q5: “no emotion” to “high emotion”; this question also includes a lower pleasantness scale from “very unpleasant” to “very pleasant”) was associated with lower grey matter volume in the precuneus (T = 6.25, MNI: –4, –84, –28; CP-06). This aligns with prior work demonstrating that the precuneus supports emotionally laden visual imagery and scene integration during vivid recollection (Ranganath & Ritchey, 2012; Ritchey & Cooper, 2020; Viard et al., 2007; St Jacques et al., 2012). The negative direction may reflect age-related neural efficiency or reorganisation within parietal-medial (PM) hubs (see Figure 3.3).

Figure 3.4

Structural scan showing negative association between precuneus volume and emotional reactivation during recent autobiographical memory recall



Dorsolateral Prefrontal Cortex – State of Consciousness (Question 9)

Lower grey matter in the dorsolateral prefrontal cortex (T = 5.18, MNI: –8, –70, –33; CP-11) was associated with a stronger “I remember” experience (Q9: continuum from “I know to “I remember,” indexing autonoetic awareness). This pattern suggests reduced strategic monitoring demands when memories are richly re-experienced,

consistent with Gilboa (2004) and other work linking effortless autonoetic awareness with decreased executive recruitment.

Supramarginal Gyrus – Valence at Recall (Question 5)

Participants who recalled memories as more pleasant (Q5) had lower grey matter in the supramarginal gyrus (T = 5.33, MNI: 15, –80, 24; CP-07). This may reflect greater efficiency in integrating emotional tone during memory retrieval (St. Jacques et al., 2012).

These data are summarised in Table 3.2 and Figure 3.4.

Table 3.2

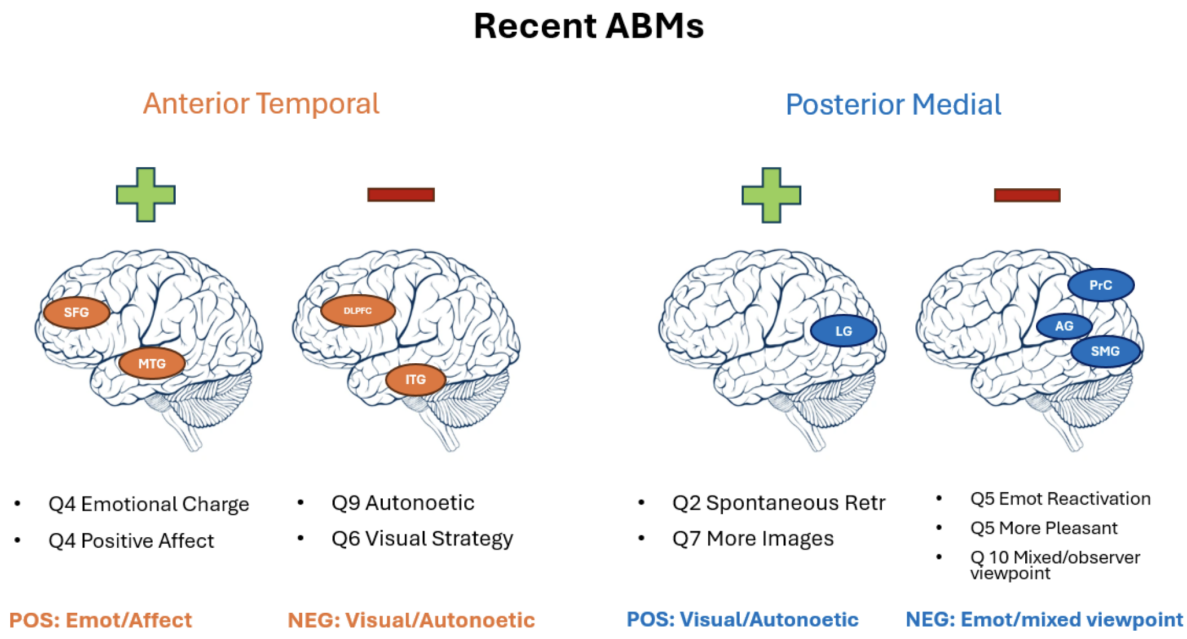
Summary of Positive and Negative Structural Correlates of Recent Episodic Autobiographical Memory within the PM–AT Network

Memory Epoch	Brain Region	Analogical Dimension	Direction	T-value	MNI Coordinates (x, y, z)
Recent Episodic	Superior Frontal Gyrus	Emotional Intensity at Encoding	Positive	5.46	36, –58, –62
Recent Episodic	Middle Temporal Gyrus (R)	Valence at Encoding	Positive	5.82	64, –42, 40
Recent Episodic	Superior Frontal Gyrus (SFG)	Emotional Intensity at Encoding	Positive	5.46	36, –58, –62
Recent Episodic	Lingual Gyrus (LG)	Number of Images	Positive	4.17	–14, –82, –3
Recent Episodic	Angular Gyrus (AG)	Viewpoint	Negative	4.68	–44, –51, 30

Recent Episodic	Inferior Temporal Gyrus (ITG)	Strategy Used (Visual)	Negative	4.29	–10, –75, –39
Recent Episodic	Supramarginal Gyrus (SMG)	Valence at Recall	Negative	5.33	15, –80, 24
Recent Episodic	Precuneus	Emotional Intensity at Recall	Negative	6.25	–4, –84, –28
Recent Episodic	Dorsolateral Prefrontal Cortex	State of Consciousness ("I remember")	Negative	5.18	–8, –70, –33

Figure 3.5

Structural associations for Recent episodic autobiographical memories within the PM–AT network



Note. Positive (green) and negative (red) correlations between grey-matter volume and phenomenological dimensions of Recent autobiographical memories are shown across the Posterior–Medial (PM) and Anterior–Temporal (AT) systems. Emotional-affective

and visual-autonoetic relationships dominate, with greater anterior–temporal engagement (SFG, MTG) during encoding and posterior–medial contributions (LG, AG, PrC) during image-based and perspective-related retrieval.

Remote Episodic Memory – Positive Associations

Precuneus - State of Consciousness (Question 9).

Stronger autonoetic awareness ("I remember" responses on Q9, which measures the participant's state of consciousness from "I know" to "I remember") corresponded to greater precuneus volume (T = 4.39, MNI: –15, –84, –3; CP-21), reinforcing its central role in mental time travel and self-projection (Addis et al., 2007; Viard et al., 2014). In contrast to the negative precuneus correlation observed for recent recall, this positive association for remote events indicates a shift from emotional modulation to constructive reassembly over time.

Angular Gyrus – Point of View (Question 10)

A positive correlation with angular gyrus volume (T = 4.92, MNI: –21, –57, 45; CP-22) supports its known role in perspective-taking and viewpoint transformation (Q10: Actor = first-person "field" perspective; Observer = third-person "external" perspective). (St Jacques et al., 2011). During remote recall, larger angular gyrus volume may facilitate flexible mental positioning between actor and observer perspectives.

Frontal Pole – Strategy Used (Question 6)

Verbal strategy preference (Q6: "verbal" to "visual") was positively associated with frontal pole volume (T = 6.34, MNI: –8, 40, –30; CP-20), indicating reliance on narrative-based, verbally mediated reconstruction of distant events (Gilboa, 2004). Together, these positive associations reflect the anterior–temporal (AT) system's contribution to narrative coherence and self-referential structure in remote recollection.

Remote Episodic Memory – Negative Associations

Inferior Parietal Lobule – State of Consciousness (Question 9)

A negative correlation between grey matter volume in the inferior parietal lobule (T = 6.73, MNI: –9, –62, 54; CP-21) and autonoetic awareness (Q9: "I know" to "I remember" continuum) suggests a complementary mechanism to the precuneus, where

reduced structural reliance may reflect a shift toward posterior-medial specialisation for self-projection (Levine et al., 2002).

Superior Frontal Gyrus – Valence at Recall (Question 5, pleasantness)

More pleasant recollections (pleasantness subscale of Q5, "very unpleasant" to "very pleasant") were associated with lower superior frontal gyrus volume (T = 6.31, MNI: 8, –52, 56; CP-19). This may indicate efficient regulatory control over the affective tone of remote memories, consistent with positivity effects in ageing and the emotion-regulatory role of frontal regions (St Jacques et al., 2012).

These data are summarised in Table 3.3 and Figure 3.5.

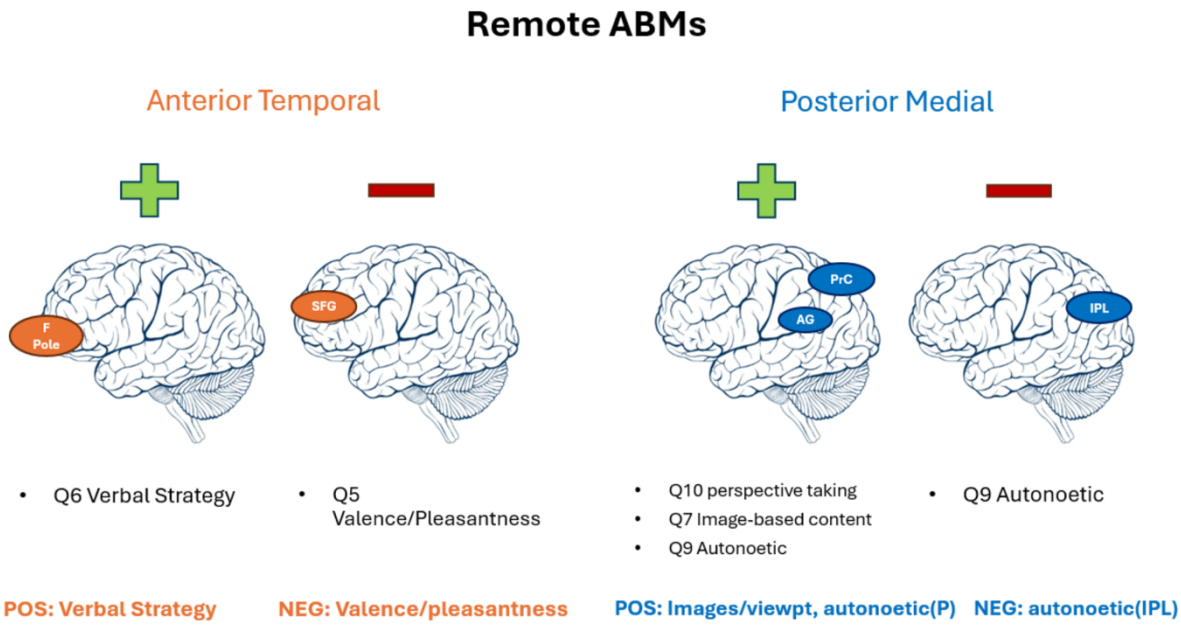
Table 3.3

Summary of Positive and Negative Structural Correlates of Remote Episodic Autobiographical Memory within the PM–AT Network

Memory Epoch	Brain Region	Analogical Dimension	Direction	T-value	MNI Coordinates (x, y, z)
Remote Episodic	Precuneus	State of Consciousness ("I remember")	Positive	4.39	–15, –84, –3
Remote Episodic	Angular Gyrus	Point of View	Positive	4.92	–21, –57, 45
Remote Episodic	Frontal Pole	Strategy Used (Verbal)	Positive	6.34	–8, 40, –30
Remote Episodic	Inferior Parietal Lobule	State of Consciousness ("I remember")	Negative	6.73	–9, –62, 54
Remote Episodic	Superior Frontal Gyrus	Valence at Recall	Negative	6.31	8, –52, 56

Figure 3.6

Structural associations for Remote episodic autobiographical memories within the PM–AT network



Note. Positive (green) and negative (red) correlations for Remote autobiographical memories highlight the reversal between the Superior Frontal Gyrus and Precuneus and the dissociation between Precuneus (positive) and Inferior Parietal Lobule (negative) for autonoetic awareness (Q9). These patterns illustrate adaptive reorganisation of emotional and self-referential mechanisms in ageing across the Posterior–Medial and Anterior–Temporal systems.

3.4 Discussion

The behavioural findings suggest a number of differences with respect to recent and remote episodic memories - recent episodic memories are recalled more frequently, judged to be more accurate, and experienced with greater image clarity. In contrast, remote memories appear to be more emotionally salient, particularly at the time of their original encoding and subsequent recall. This pattern is consistent with established models of autobiographical memory in ageing, where remote memories—especially those from the reminiscence bump (typically spanning ages 10–30)—are preserved with stronger emotional significance, even as vividness or perceptual clarity declines (Conway & Pleydell-Pearce, 2000; Rubin et al., 1998). Older adults may rely more heavily on emotionally salient remote memories as compensatory anchors for identity and continuity

(Piolino et al., 2002; Levine et al., 2002). The greater clarity and retrieval ease of recent memories observed here, however, may also reflect the recency effect, and could be partially explained by the ongoing rehearsal or increased autobiographical saliency of recent life events (St Jacques et al., 2018). The lack of significant differences in viewpoint, strategy, or number of images supports prior work suggesting that older adults may maintain the anatomical structure of memory representations, even as certain phenomenological elements—such as vividness and emotionality—differ with age (Addis et al., 2009; St. Jacques et al., 2012).

The present study also aimed to explore how subjective features of episodic autobiographical memory correspond to grey matter volume in older adults, focusing specifically on the Posterior–Medial (PM) and Anterior–Temporal (AT) systems. By correlating behavioural analogical scale ratings with structural brain data, we identified distinct and opposing relationships across life epochs that highlight the dynamic nature of these systems in ageing. A central observation was the reversal of associations between the Precuneus and Superior Frontal Gyrus (SFG) across Recent and Remote memories. For Recent memories, greater emotional intensity at recall was linked to lower Precuneus volume, suggesting that efficient reactivation of emotional details relies on streamlined integration within posterior–medial regions. In contrast, for Remote memories, the Precuneus showed a positive relationship with autonoetic awareness ("I remember" responses), indicating its renewed importance in supporting self-projection and mental time travel as the temporal distance of memories increases. This shift suggests that the Precuneus may recalibrate its function from sensory–emotional integration to self-referential simulation across the lifespan (Ranganath & Ritchey, 2012; Viard et al., 2014). The SFG showed the opposite pattern—positive association with emotional intensity at encoding for Recent events but a negative one with valence at recall for Remote events. This inversion reflects a redistribution of emotional evaluation from frontal control to posterior perceptual systems over time period. In the context of ageing, such a shift could represent adaptive reorganisation, where older adults rely more on contextual reconstruction (Precuneus and Angular Gyrus) rather than active evaluative monitoring (SFG) when recalling distant/remote events.

An additional and particularly meaningful result emerged for Question 9 on autonoetic awareness ("I know" vs. "I remember"). For Remote memories, we observed a double dissociation within the parietal cortex: the Precuneus correlated positively with "I remember" responses, while the Inferior Parietal Lobule (IPL) correlated negatively.

This pattern suggests a division of labour between these adjacent regions. The Precuneus appears to underpin vivid, self-projected re-experiencing, while the IPL may reflect monitoring or reconstructive processing when subjective reliving is weaker (Levine et al., 2002; St. Jacques et al., 2011). This echoes earlier functional findings where IPL activity increased under conditions of reduced episodic vividness, consistent with compensatory reliance on attentional control (Lenormand et al., 2024).

Taken together, these results indicate that the PM–AT network functions as a flexible system that adapts as memories age. The posterior–medial Precuneus and Angular Gyrus maintain the spatial and perspectival role of recollection, while anterior–temporal and frontal regions contribute emotional colouring and narrative coherence (Ritchey & Cooper, 2020). The observed reversal between Precuneus and SFG involvement across life epochs therefore reflects the interplay between constructive (PM) and evaluative (AT) processes—each system taking on greater or lesser prominence depending on the temporal distance and phenomenological quality of the remembered event.

Our behavioural data complement this neural pattern. As mentioned, recent memories were rated as more vivid, accurate, and easily accessible, whereas remote memories were associated with higher emotional intensity at both encoding and recall. Structurally, these profiles map neatly onto our observed results: recent vividness linked to posterior visual–contextual areas and remote emotional engagement linked to anterior evaluative regions. This convergence reinforces the behavioural–structural coherence of the PM–AT model in ageing and aligns with previous evidence from Viard et al. (2007, 2014) showing that emotional autobiographical retrieval in older adults recruits both PM and AT systems depending on temporal distance. These findings also have implications for theories of self-memory. The Self-Memory System (Conway & Pleydell-Pearce, 2000) posits that autobiographical recall arises through continuous interaction between the working self and stored episodic traces. Our results support this framework by showing that structural variation in both anterior and posterior regions tracks the degree to which memories are experienced as self-related and emotionally rich. The shifting balance between Precuneus and SFG involvement may thus represent the neural signature of this dynamic self–memory interaction.

When viewed within the overall structure of this thesis, these findings are important not only because they extend understanding of autobiographical memory in

healthy ageing, but because they represent a development stage in the construction of the later intervention. Under the MRC framework, complex interventions benefit from being grounded in both theory and empirical evidence before pilot testing. Here, the present findings helped establish that autobiographical prompts could elicit differentiated recent and remote recall in older adults, and that these prompts engaged distinct phenomenological dimensions relevant to intervention design, including image clarity, emotional salience, and autonoetic awareness. This provided an empirical rationale for treating cueing not as a neutral procedural feature, but as an active component requiring careful development.

Finally, these results provide neural grounding for the design of interventions such as Reminiscence Therapy and Walking interventions. By identifying the specific brain regions associated with emotionally vivid and self-referential recall, our data help explain why sensory and emotionally adapted prompts (e.g., familiar landmarks or music) may be effective in stimulating rich autobiographical remembering in older adults. For example, visual cues may engage the PM system, enhancing vividness and scene construction, whereas affective or narrative prompts may recruit AT regions, supporting emotional coherence. In this sense, the present chapter functioned as a developmental study within the thesis, helping refine the nature, content, and theoretical basis of the cues before the intervention moved into formal feasibility testing and evaluation in the next chapters.

3.5 Implications and Future Directions

Beyond its neuroanatomical contribution, this chapter has methodological value within the development of the overall thesis intervention. The observed structural patterns helped identify which dimensions of autobiographical remembering may be most productively targeted through cueing, particularly visual-spatial reconstruction, emotional salience, and autonoetic awareness. As such, the chapter contributes to the developmental phase of the MRC framework by showing how mechanistic evidence can be translated into the design of intervention materials and prompting strategies.

In particular, the Precuneus and Angular Gyrus appear central to sustaining visual–spatial reconstruction and perspective-taking, while the SFG and Frontal Pole contribute evaluative and emotional meaning. This posterior–anterior complementarity aligns with the PM–AT model and underscores the adaptability of the ageing brain. Future

work could expand these findings by incorporating longitudinal or multimodal approaches—combining functional activation with structural mapping—to clarify how compensatory recruitment evolves over time. As mentioned above, the data for semantic autobiographical memories recorded in this task will be analysed in the future, and the patterns of associations compared to those observed for the episodic memories reported here.

It would also be valuable to replicate these analyses in clinical groups, such as individuals with mild cognitive impairment or early-stage dementia, to determine whether shifts in PM–AT dynamics predict memory decline or therapeutic responsiveness. The identification of a Precuneus–IPL dissociation for autonoetic awareness also opens a promising direction for future investigation. This could represent a key neural marker of preserved mental time travel capacity in healthy ageing, offering potential translational value for interventions aimed at sustaining autobiographical coherence. Future work could build on this developmental stage by examining cue acceptability more formally, testing cue refinement iteratively with end users, and comparing which prompt types are most effective across healthy ageing and clinical populations.

3.6 Integration with Intervention Design

As an early development chapter in the thesis, this study contributed directly to the design of the walking and reminiscence intervention presented in the following chapters. Within the MRC framework, it served as part of the intervention development stage by clarifying which aspects of autobiographical recall were most closely linked to variation in specific brain regions, and by helping identify what kinds of cues might best support memory engagement in later applied sessions. In particular, the associations between the precuneus and image-based dimensions of recall, such as clarity of mental images and the sense of "reliving" remote events, reinforced the importance of visual and spatial reconstruction in sustaining vivid remembering in older adulthood.

The structural findings in this chapter helped shape the design of the walking and reminiscence pilot presented in Chapter 4 by clarifying which aspects of autobiographical recall were most closely linked to variation in specific brain regions. This suggested that memory engagement might be strengthened when the surrounding environment actively supports scene construction rather than relying solely on internally generated imagery.

For this reason, the walking routes were selected to include visually distinctive and personally familiar landmarks, such as local churches, coastal paths, neighbourhood shops, and community spaces. The intention was not simply to provide an enjoyable outdoor setting, but to offer concrete spatial reference points that could anchor recall. Being physically present in recognisable environments was expected to ease the effort required to reconstruct scenes mentally, thereby supporting image clarity and a stronger sense of mental time travel.

Similarly, the structural involvement of anterior frontal regions in emotional intensity and evaluative aspects of recall helped inform the conversational structure of the sessions. These regions were associated with how emotionally meaningful events were encoded and later re-experienced, indicating that autobiographical recall depends not only on imagery but also on the integration of personal meaning. As a result, the walking sessions incorporated personalised prompts designed to encourage reflection on emotionally resonant themes, such as family roles, achievements, belonging, or life transitions, rather than relying entirely on spontaneous memory retrieval.

Taken together, the intervention deliberately combined visually grounded environmental cues with emotionally meaningful dialogue. In this way, the neuroanatomical findings did more than support the inclusion of walking and reminiscence; they helped guide how these elements were structured, aligning the practical design of the programme with the cognitive and emotional processes underlying autobiographical remembering in ageing.

3.7 Conclusion

This chapter has been positioned as an early development study within the thesis, demonstrating how autobiographical memory theory and neuroimaging evidence can inform the design of cues for a later complex intervention. This work provides evidence that the phenomenological qualities of episodic autobiographical memory, such as emotional vividness, perspective, and the feeling of “reliving”, correspond to specific patterns of grey matter volume within the PM–AT network. The observed reversal between the Precuneus and Superior Frontal Gyrus from recent to remote memories, alongside the Precuneus–IPL dissociation for autonoetic awareness, suggests a dynamic balance between perceptual–contextual and evaluative–emotional processes across the lifespan. These results contribute to a growing body of literature showing that older adults

retain flexible neural mechanisms for reconstructing the past, relying increasingly on parietal and frontal cortices as integrative hubs for self-referential remembering. By combining detailed behavioural measures with anatomical mapping, this study demonstrates how the structure of the ageing brain mirrors the richness and resilience of autobiographical experience. At the same time, it provides an empirical foundation for the development of personalised and theoretically grounded cues used in the walking and reminiscence intervention that follows.

Chapter 4:

Feasibility and acceptability of a combined walking and reminiscence intervention in older adults with early-stage Alzheimer's disease

Abstract

As the 60+ aged population grows, there is an increased need for evidence-based community programmes to support healthy ageing and conditions like Alzheimer's. Using what we learned from the Public and Patient Involvement (PPI) approach in Chapter 2, we wanted to pilot our walking and reminiscence (RT) intervention. Within the Medical Research Council (MRC) framework for complex interventions, this study corresponds to the feasibility stage, where early implementation of an intervention is tested to determine whether it can be delivered as intended and whether procedures and outcome measures are appropriate before progression to larger-scale evaluation. Specifically we wanted to (i) assess the practicality of implementing a walking and RT intervention, focusing on aspects such as the selection of walking routes, topics of reminiscence, and participant engagement, (ii) to examine the practicality and suitability of the selected outcome measures (cognitive, autobiographical memory, and well-being) for use in a future study, by describing pre–post score patterns at the individual level, without inferential testing and (iii) qualitatively capture the experiences and perceptions of participants regarding the intervention, aiming to understand their engagement with both the walking and reminiscence components. We examined these aims in a small sample of older adults living with Alzheimer's Disease (n = 2). The intervention was facilitated by two researchers, who guided participants through a series of two weekly historical walking tours of their local community over a period of two weeks. In line with feasibility and piloting work within the MRC framework, the objective of this study was not to test intervention effectiveness but to determine whether the intervention protocol was deliverable, acceptable to participants, and capable of producing interpretable measurement data that could inform future study design. Cognitive measurements (including the MoCA) autobiographical memory (including the EAMI Memory Interview) and well-being tools (including the Holden Communication Scale, SWLS and the CASP-19) were administered pre- and post-intervention to evaluate administration burden, acceptability, completion, and interpretability of scores in this context. Quantitative results are presented as descriptive pre–post patterns for each participant (means shown only for illustration), and qualitative data are used to characterise engagement, acceptability, and the types of topics and emotional responses elicited by place-based cues. Overall, the intervention procedures (route selection, pacing, facilitation style, and recording methods) were deliverable in this small feasibility study. Findings are used to refine facilitation guidance, manage potentially distressing triggers,

and inform the design and measurement strategy for a future adequately powered study; no inferences about intervention effectiveness are made.

4.1 Introduction

Dementia is expected to affect over 75 million people by 2030 and more than 135 million by 2050. It impairs memory, attention, language, motor skills, and social understanding, leading to loss of independence. Alzheimer's disease, the most common form, accounts for 60–70% of cases. While linked to brain amyloid buildup and neurodegeneration, its exact cause remains unclear. As the discovery of a cure for dementia in the near future may be unattainable, non-pharmacological approaches to reduce the number of new cases is a major public health priority (Prince, et al., 2015). For this reason, there is an increased focus on modifiable factors like physical activity (Baranowski, et al., 2021; Winchester et al., 2013), social engagement (Barnes, et al., 2004; Savica & Petersen, 2011), and cognitive stimulation (Asiret, G.D., 2016; Huang, et al., 2015). As yet, the potential beneficial link between exercise and AD is poorly investigated (Meng et al., 2020). However, studies have shown that exercise could have a considerable positive effect on executive functions. Indeed, in 2016, a randomized control trial showed that exercise could improve executive function in Alzheimer's Disease patients, particularly through customised home-based programmes that enhance adherence and engagement. While regular exercise can contribute to mild cognitive enhancements, these effects are likely more pronounced in earlier stages of cognitive decline, indicating the need for targeted interventions for later-stage Alzheimer's patients (Öhman et al., 2016).

In molecular terms, physical activity plays a crucial role in helping energy metabolism and increasing synaptic plasticity (Gomez-Pinilla & Hillman, 2013). Additionally, exercise has been shown to reduce neuroinflammation, improve brain insulin sensitivity, and increase levels of brain-derived neurotrophic factor (BDNF) over time, all of which are believed to influence the onset of Alzheimer's Disease (AD) neurodegeneration (Fiuffrida et al., 2018; Baranowski et al., 2021). Statistically, engaging in physical activities both early and later in life is associated with a reduced risk of developing AD (TILDA, 2021). Moreover, a recent study highlighted that combining cognitive stimulation with exercise and social interaction may be more effective than certain pharmacological interventions in addressing depressive symptoms associated with dementia (Watt et al., 2021). Thus, exercise emerges as a particularly promising and accessible intervention for helping degeneration related to Alzheimer's Disease.

Another useful method may be Reminiscence Therapy (RT). Research in this domain has increased greatly through the 1990s. First evoked by Butler in the 1960s, he

suggested that reminiscence could be therapeutic for people and is a simple "life review" (Butler, 1963). In 2011, Bluck and Levine described this concept as "The volitional or non-volitional act or process of recollecting memories of oneself in the past" (Henkel et al., 2017). To date, researchers define RT as a discussion of memories with other individuals, or in a group, with the aid of sense triggers, such as music or historical sites, and can have different types and functions (Webster, 1993, 1997; Wong, & Watt, 1991).

As mentioned in Chapter 1, RT is now supported as a popular treatment for depression, loneliness, and anxiety in older adults by dealing with past life experiences (Syed Elias, et al., 2019; Lopes, et al., 2016; Chueh & Chang, 2014; Scogin, Welsh, Hanson, Stump, & Coates, 2005; Woods, 2005; Hsieh & Wang, 2003). RT also seems to increase psychological well-being such as life satisfaction, communication, and self-esteem (Zhang, et al., 2015; Preschl et al., 2011; Chao, 2006). Interestingly, RT appears to have a positive effect on global cognition as well in dementia patients who report improved mood, well-being and cognitive function after four to six weeks (Lopes, et al. 2016; Serrani, Awcurra, 2012; Wang, 2007; Woods et al., 2005). For example, Lopes and colleagues (2016) found that individual reminiscence therapy significantly improved cognitive function, reduced anxiety and depression, and enhanced autobiographical memory recall among older adults with cognitive impairment living in nursing homes. The intervention consisted of five weekly sessions lasting 30-40 minutes each, where participants engaged in unstructured reminiscence focused on positive life events, facilitated by a trained therapist. Participants exhibited notable improvements in the number and specificity of recalled memories, as well as a decrease in negative valence associated with those memories. In another example, Wang and colleagues (2007) demonstrated that structured group reminiscence therapy significantly improved cognitive function and reduced depressive symptoms among older individuals with dementia in Taiwan. RT also seems to have a significant benefit on autobiographical memory in memory-impaired older adults (Huang, et al., 2015), a form of memory known for its numerous benefits including emotional regulation and identity functions (Bluck, Alea, Habermas, & Rubin, 2005).

However, not all studies have shown RT to be beneficial. For example, Emery et al. (2002) examined the impact of spiritual reminiscence therapy on anxiety and depression in a sample of 35 older adults living in assisted living facilities. The results indicated that spiritual reminiscence therapy did not significantly decrease anxiety. This study highlights the limitations of reminiscence therapy, suggesting that while certain

forms (like group reminiscence) may be effective, others (like spiritual reminiscence) might not yield the same benefits.

Furthermore, combinations of behavioural methods seem to have a greater effect on brain health (Wang et al., 2007). By targeting and combining the two aspects of RT and exercise in the current thesis, we hope to understand further their potential relevance for people living with AD. As demonstrated in Chapter 3, structural MRI findings revealed distinct neural correlates supporting key features of autobiographical memory, providing a mechanistic rationale for designing interventions that stimulate these dimensions. The present pilot therefore translates these mechanistic insights into a practical behavioural format, combining environmental cues, walking, and guided reminiscence within a community setting.

This novel pairing was designed to activate both cognitive and embodied memory pathways, based on evidence that physical and emotional cues jointly support autobiographical recall, and was also selected by PPI advisors (see Chapter 2). Surprisingly, this combination of activities has not yet been widely adopted, yet it is timely to investigate as it could contribute to the moderation and/or decrease of cognitive impairments and neurodegenerative disorders in the population.

Within the Medical Research Council (MRC) framework for complex interventions, intervention development is typically followed by a feasibility and piloting stage. This stage involves testing whether the intervention can be delivered as intended, whether it is acceptable to participants, and whether the proposed outcome measures and evaluation procedures are appropriate before progressing to larger-scale evaluation. Building on the intervention development work described in Chapters 1, 2 and 3, the present chapter therefore represents an early feasibility and piloting study of the walking and reminiscence intervention protocol.

The main aims of this pilot study were: (i) to evaluate the procedural feasibility and acceptability of delivering a combined walking and reminiscence intervention for people living with early-stage dementia, (ii) to assess the feasibility and suitability of collecting proposed cognitive and psychological outcome measures in this context (including administration burden, completion, and interpretability of scores), and (iii) to qualitatively examine whether and how the intervention facilitated reminiscence and participant engagement during the walks, in order to inform intervention refinement.

4.2 Methods

4.2.1 Participant characteristics and recruitment

The pilot study involved a small sample (n = 2), specifically two women living with early-stage Alzheimer's disease (AD, ages 73 and 77). They were recruited through the 'word-of-mouth' technique, with the help of adverts and flyers in Maynooth, Ireland. As our population is hard-to-reach and tend to socialise with like-members (support groups, doctors' appointments, friend/family networks) - we considered this method the most appropriate for recruitment. Our inclusion criteria consisted of participants aged 65 years old or more, were physically active, and had lived more than 10 years in Maynooth or were familiar with the area, for more focused reminiscence. People presenting with severe visual impairments, history of epilepsy, history of movement disorders, moderate and/or advanced Alzheimer's Disease were excluded. Furthermore, participants were recruited on the basis of a self-reported diagnosis of early-stage Alzheimer's disease confirmed by a clinician; however, formal diagnostic verification and additional cognitive screening (e.g., MoCA) were not undertaken within this work, as this was a community-based project prioritising participant comfort, ethical sensitivity, and minimisation of potential distress associated with re-assessment in a non-clinical setting.

4.2.2 Materials

Walking Routes

A geographical walking tour was pre-designed in collaboration with Professor Ronan Foley from Maynooth University's Department of Geography, ensuring the routes were safe through an audit with the Universal Design Walkability Audit Tool (CEUD, 2020). Routes were selected based on historically significant locations to evoke strong emotions and memories, while maintaining a manageable walking pace and offering portable chairs for rest. For further information, see Chapter 2, section 2.4.

Test Battery

The study employed a range of validated neuropsychological and psychosocial assessment tools to capture cognitive function, autobiographical memory, communication ability, quality of life, life satisfaction, and mood.

The Montreal Cognitive Assessment (MoCA; Nasreddine et al., 2005; see Appendix 7) was used as a screening tool for global cognitive function. The MoCA

assesses multiple domains including memory, executive function, attention, language, and visuospatial abilities, with scores ranging from 0 to 30. It is considered more sensitive than the Mini-Mental State Examination (Folstein et al., 1975), particularly for detecting mild cognitive impairment, with reduced ceiling effects. The measure demonstrates good reliability (approximately 80–81%) and high sensitivity (80–100%), with a recommended cut-off score of 25/26 (Nasreddine et al., 2005).

Autobiographical memory was assessed using the Episodic Autobiographical Memory Interview (EAMI; Irish et al., 2008, 2011a, 2011b; see Appendix 8). This structured interview evaluates the ability to recall episodic and semantic autobiographical memories across five life epochs (0–15, 15–30, 31–45, 46 to last 5 years, and the last 5 years). Participants were asked to recall a specific event from each period in as much detail as possible, including contextual elements such as time, place, and individuals involved. Responses were scored based on the richness and type of detail provided.

Quality of life was assessed using the Control, Autonomy, Self-Realisation and Pleasure Scale (CASP-19; Netuveli et al., 2006; see Appendix 9), a 19-item instrument designed for older adults. It evaluates four domains: control, autonomy, self-realisation, and pleasure, based on a needs-satisfaction framework. Items are rated on a four-point scale, with higher scores indicating better quality of life. The CASP-19 is widely validated and commonly used in ageing research (Hyde et al., 2003).

Life satisfaction was measured using the Satisfaction with Life Scale (SWLS; Diener et al., 1985; see Appendix 10), a five-item instrument assessing global life satisfaction. Items are rated on a seven-point Likert scale from strongly disagree to strongly agree. The scale demonstrates strong reliability (test–retest reliability ranging from 0.82 to 0.87) and good convergent validity (Pavot & Diener, 1993, 2008).

Depressive symptoms were assessed using the Geriatric Depression Scale – Short Form (GDS-15; Sheikh & Yesavage, 1986; see Appendix 11). This 15-item yes/no questionnaire is specifically designed for older adults and screens for symptoms such as low mood, loss of interest, and hopelessness. A score of 5 or above suggests the presence of depressive symptoms. The GDS-15 demonstrates high sensitivity (92%) and specificity (89%) (Krishnamoorthy et al., 2019).

Finally, communication abilities were measured using the Holden Communication Scale (HCS; Holden & Woods, 1995; see Appendix 12), a 12-item scale

assessing conversation, awareness, and communication. Items are rated on a scale from 0 to 4, with higher scores indicating greater communication difficulties. The scale demonstrates strong reliability ($\alpha = 0.85$).

Patient and Public Involvement (PPI)

We used a Patient and Public Involvement (PPI) approach at every stage of our research project. Patient and Public Involvement contributors recruited through the "Team-Up for dementia research" *via* the Alzheimer's Society of Ireland, who helped us design every aspect of our research, through their life experiences, particularly with respect to the use of the various routes and the practicularities around walking. For further information on PPI pertaining to this developmental study, see Chapter 2, section 2.2.

Design

The participants engaged in the reminiscence and walking routes twice a week for two weeks, with each session featuring a different walking route – week 1 used the campus and pound lane routes and week 2 used the canal and carton routes (see Chapter 2). This short-duration study format was selected specifically to test the feasibility of implementing the intervention protocol rather than to evaluate intervention outcomes. Performance on cognitive and psychological measures was measured pre- and post-intervention. These measures were administered via pen and paper and in individual sessions with each participant. All members of the research team were Garda vetted and trained in administering cognitive and psychological measures to an older population with dementia. Alternate forms of each measure were administered post-intervention. Experience and perspective on their walking experiences were captured with the help of audio recordings, which were then transcribed, anonymised and analysed.

Feasibility Indicators

In this pilot and consistent with feasibility and piloting work within the MRC framework, feasibility was defined across three domains: (1) procedural feasibility (delivery of walking routes as planned, session completion, time management, safety, and facilitator adherence to the reminiscence structure), (2) acceptability (participant attendance, engagement during sessions, willingness to complete assessments, and retention across timepoints), and (3) measurement feasibility (ability to administer cognitive and psychosocial measures pre- and post-intervention without excessive burden, distress, or missing data). These indicators were documented through session

logs, researcher field notes, and completion rates. No predefined progression criteria were applied, as the primary purpose was exploratory refinement of procedures for a future study.

4.2.3 Procedure

The walking and reminiscence intervention took place in Maynooth using pre-determined and walkability-adjusted routes. Each participant was initially met by two researchers for interviews lasting around 90 minutes in the Glenroyal Hotel, Maynooth, both before and after the intervention. At the first meeting, they were given an information sheet to keep throughout the project (see appendix 13-15). After reading the sheet and asking any questions, participants were asked to give written consent. This was done before the sessions began, and they were clearly told, both in writing and in person, that they could withdraw at any time.

The intervention involved people with early-stage dementia and used a simple, guided reminiscence approach. It was adapted from the "Remembering Yesterday, Caring Today" programme (Schweitzer & Bruce, 2008), originally designed as a group activity for people with dementia and their relatives. Using this approach, participants walked familiar routes, they were encouraged to recall personal memories linked to the places they passed (for example, "That used to be a bistro before the house was built"). A trained facilitator led each walk and gently guided the conversation.

To thank participants for taking part, a tea and coffee gathering was held at the end of the study at National University of Ireland Maynooth.

4.2.4 Data Analysis

Quantitative Data

Quantitative data related to autobiographical memory, global cognition, and psychological well-being were organised using Microsoft Excel Data Processing. Means scores were then computed for each measure at both time points.

Qualitative Data

The memory walk discussions were audio-recorded (with participant consent) using a ZOOM H1 Portable Digital Recorder and subsequently transcribed verbatim in

preparation for analysis. A total of four transcripts (one per walk) were produced and managed using Qualitative Data Analysis Miner Lite (QDA) software to support systematic coding and organisation of the data.

Qualitative analysis was conducted using Braun and Clarke's Reflexive Thematic Analysis (RTA) approach (Braun & Clarke, 2006, 2013b), selected for its suitability in exploring rich, experience-based data generated through autobiographical memory recall. This approach was considered particularly appropriate given the strength of the historical and contextual content elicited through site-specific visual and environmental cues during the memory walks.

Analysis followed the six-phase process outlined by Braun and Clarke (2006): (1) familiarisation with the data, (2) generation of initial codes, (3) construction of themes, (4) review of themes, (5) definition and refinement of themes, and (6) production of the final report. Each transcript was reviewed iteratively and collaboratively within the research team to ensure depth of engagement with the data and reflexive interpretation.

The analysis was underpinned by four key theoretical assumptions, in line with Braun and Clarke's later guidance (2013, 2014, 2021). First, a constructionist epistemological stance was adopted, prioritising meaning and interpretative depth over frequency alone, recognising that significance lies in the richness of participants' lived experiences. Second, an experiential orientation was used to foreground participants' accounts as reflections of their perceived social reality, rather than focusing on underlying contextual determinants. Third, a mixed inductive–deductive approach was employed, allowing themes to be informed both by existing theoretical understanding and by patterns identified directly within the data, thereby maintaining openness to participants' perspectives. Finally, a latent coding approach was applied, enabling analysis beyond the surface (semantic) level to explore underlying meanings, assumptions, and mechanisms shaping participants' experiences.

Together, this analytic framework enabled a nuanced and reflexive exploration of how autobiographical memory, environment, and social interaction intersect within the context of the memory walk intervention. This approach was subsequently retained as the core qualitative methodology across all studies within the thesis, ensuring methodological consistency and coherence in the analysis of experiential data.

4.2.5 Ethical Considerations

Ethical approval for this study was granted by the Maynooth University Social Research Ethics Subcommittee (BSRESC; approval number SRESC-2022-2472536; see appendix 16). All facilitators were appropriately trained and vetted to work with older adults and individuals with memory disorders. Participants provided informed consent prior to participation, and capacity to consent was ensured at the outset. In addition, an ongoing process-consent approach was adopted throughout the sessions to monitor participants' comfort and willingness to continue. Participants were reminded of their right to withdraw at any stage without consequence and without impact on their relationship with the Alzheimer Society of Ireland or Maynooth University. In the event of withdrawal, participants could request that their data be removed where feasible.

To ensure confidentiality, all identifiable information (e.g., names, locations) was removed during transcription and replaced with unique participant codes. Participants were informed both verbally and in writing that their identifiable information would not be linked to any study findings, and only de-identified data were used in analysis and dissemination. Given the group-based nature of the sessions, participants were also reminded to respect the confidentiality of shared information and to avoid discussing personal disclosures outside of the sessions.

Audio recordings of the memory walks were captured using a ZOOM H1 Portable Digital Recorder. These recordings were securely transferred to a protected university server in two stages: first, files were uploaded to a restricted-access server, accessible only to the participants, Principal Investigator, and primary researcher; second, all files were encrypted (e.g., using VeraCrypt) and stored in accordance with Maynooth University data protection policies and General Data Protection Regulation (GDPR) standards. Data will be retained for a period of 10 years for research and audit purposes, after which all identifiable data will be permanently deleted by the Principal Investigator.

To minimise potential psychological distress, participants were provided with an information sheet including contact details for relevant support services. They were also advised to consult their general practitioner should any concerns regarding memory arise during or after participation. Contact details for the lead researcher were made available to address any questions or discomfort. Participants were debriefed at the end of the study to ensure understanding and provide an opportunity to raise any concerns.

Finally, the qualitative analysis was conducted within a contextualist framework. Participants' accounts were understood as grounded in real, embodied experiences of walking through meaningful environments, while also being shaped by social interaction and group dynamics. Rather than treating specific locations as simple triggers, these were conceptualised as part of a broader process of shared meaning-making, in which memories were constructed and negotiated collectively. The use of latent coding allowed the analysis to move beyond surface-level accounts to explore underlying patterns related to identity, continuity, belonging, and change over time, while acknowledging the interpretative role of the researcher in theme development.

4.3 Results

4.3.1 Feasibility Outcomes

Because the purpose of this study was feasibility assessment, results are organised primarily around feasibility indicators rather than outcome evaluation.

Procedural Feasibility

All four planned walking sessions were delivered as scheduled. Both participants attended all sessions, resulting in 100% retention across the two-week intervention. No adverse events or safety concerns occurred during the walks. The walking routes were manageable in length and pacing, and the availability of portable seating supported comfort during longer reminiscence discussions. Sessions lasted between X–Y minutes, aligning with planned duration.

Facilitators adhered to the structured reminiscence format adapted from the "Remembering Yesterday, Caring Today" programme, using place-based cues to prompt autobiographical recall. Minor procedural refinements were identified (e.g., need for clearer transitions between walking and seated discussion periods; need for anticipatory guidance when approaching potentially sensitive sites).

Acceptability

Both participants expressed willingness to continue participation and completed all assessments pre- and post-intervention. No participant withdrew. Verbal engagement during walks was sustained across sessions, and participants initiated topic extensions beyond prompted cues, suggesting active involvement.

Measurement Feasibility

All cognitive and psychological measures were successfully administered at both timepoints without missing data. Administration time was approximately 90 minutes per assessment session. No participant declined or discontinued any measure. Minor fluctuations in fatigue were observed during longer assessment batteries, indicating that assessment scheduling should be carefully paced in future studies.

4.3.2 Demographics

The two participants in this study, both women in their seventies, shared similar backgrounds (see Table 4.1 for demographic information). In summary, Participant 1 born in November 1945, is divorced, while Participant 2, born in November 1949, is married. Both completed some secondary school education and were native English speakers. In terms of work history, only Participant 2 was officially retired, having worked as a civil servant until 1995. Socially, both women described themselves as very engaged, each participating in social activities about four to five times a week. When it came to other types of activities, however, their experiences were different. Participant 1 maintained a similarly active lifestyle beyond socialising, while Participant 2 reported no additional hobbies or structured activities.

Their daily rhythms also reflected individual habits. Participant 1 did not nap during the day, whereas Participant 2 took regular naps, usually around two hours long. Interestingly, both participants were physically active, though in different ways. Participant 1 reported exercising twice a week for about 90 minutes per session. In contrast, Participant 2 exercised more frequently - every day - but for shorter durations, around 30 minutes each time. Neither of them smoked. Participant 1 did not drink alcohol at all, while Participant 2 said she drank four to five times per week. Both Participants 1 and 2 had been diagnosed with Alzheimer's disease. When asked about their overall health, Participant 1 felt her health was good and comparable to others her age. Participant 2, however, described her health as fair and said she believed it to be somewhat worse than her peers.

Table 4.1

Demographic characteristics of participants 1 and 2

Variable	Participant 1	Participant 2
Participant ID	1	2
Sex	Female	Female
Marital Status	Divorced	Married
Primary Language	English	English
Bilingual Status	No	No
Secondary Language (if bilingual)	Not Applicable	Not Applicable
Educational Attainment	Some Secondary School	Some Secondary School
Retirement Status	No	Yes
Last Profession Before Retirement	N/A	Civil Servant
Year of Retirement	N/A	1995
Employment Status	Not Employed, Not Looking	Not Employed, Not Looking
Social Engagement Level	4-5 Times per Week	4-5 Times per Week
Activity Participation Level	4-5 Times per Week	Never
Daytime Napping Frequency	No	Yes
Average Nap Time (hrs)	0	2 Hours
Physical Activity Participation	Yes	Yes
Weekly Exercise Frequency	2 per week	7 per week
Average Exercise Duration (min)	90	30 minutes
Alcohol Consumption	Never	4-5 times
Tobacco Use	Never	Never
Self-Rated Health	Good	Fair
Comparative Health Perception	Same or Similar	Somewhat Worse

4.3.3 Quantitative Findings

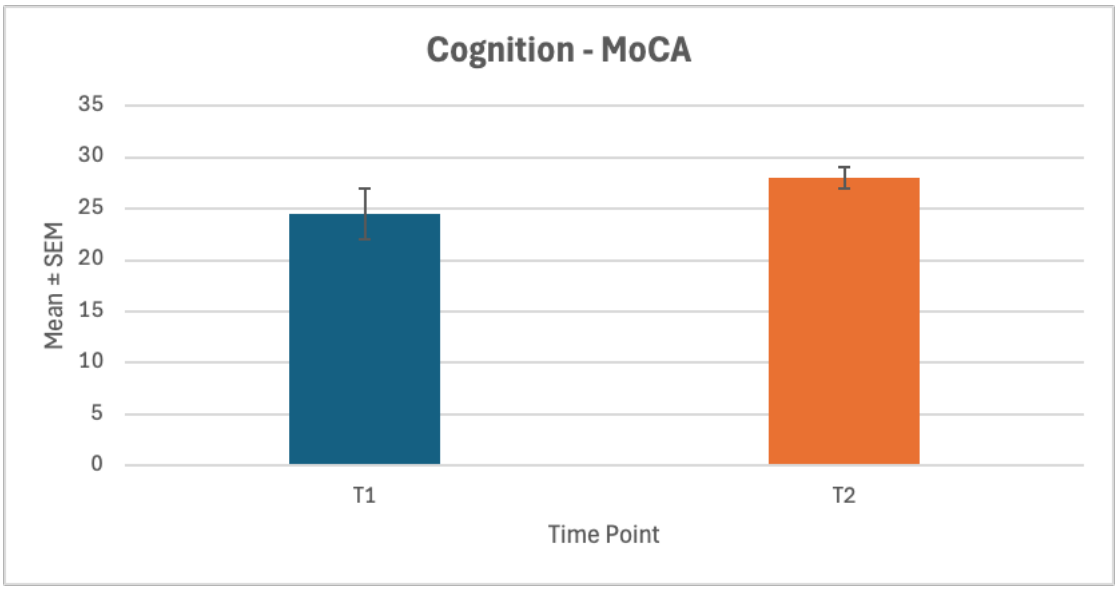
In line with feasibility pilot recommendations, quantitative outcomes are presented descriptively to illustrate measurement practicality and potential variability rather than to assess intervention effects.

Cognitive Data

Cognitive functioning was measured using the Montreal Cognitive Assessment (MoCA). Results showed an increase in participants' average scores from 24.50 at baseline to 28.00 post-intervention. Scores represent mean values across both participants (see Figure 4.1 for mean ± SEM). Again, given the low n, inferential statistics were not conducted here but will be explored further in Chapter 5 and 6. These values are reported descriptively only and should not be interpreted as evidence of cognitive improvement.

Figure 4.1

Mean (+/- SEM) MoCA scores at pre- and post-intervention timepoints for both participants combined



Psychological Well-Being Data

Psychological well-being was assessed using the Control, Autonomy, Self-realisation, and Pleasure Scale (CASP-19), the Satisfaction with Life Scale (SWLS), and the Holden Communication Scale (HCS). CASP-19 scores improved from a pre-intervention mean of 42.50 ± 2.5 to 64.00 ± 1.0 post-intervention. Satisfaction with Life scores remained unchanged from 28.5 ± 2.5 to 28.5 ± 0.5. Communication, measured by the HCS, improved slightly, with scores decreasing from 1.50 ± 1.5 to 0.00 ± 0.0.

Scores represent mean values across both participants (see Figure 4.1 for mean ± SEM). Overall, these data revealed some positive trends in quality of life (CASP-19) and

communication (HCS), which will be explored further in later chapters. Given the feasibility design (n = 2), these patterns are presented for measurement and procedural appraisal only, not as indicators of effectiveness.

Figure 4.2

Mean scores (+/- SEM) on psychological well-being measure CASP-19 at pre- and post-intervention timepoints for both participants combined

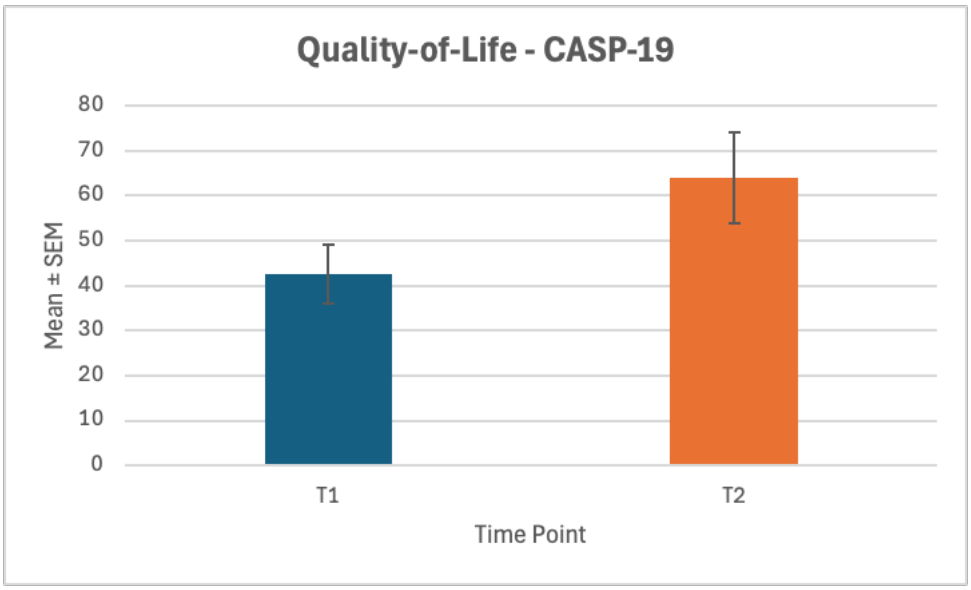
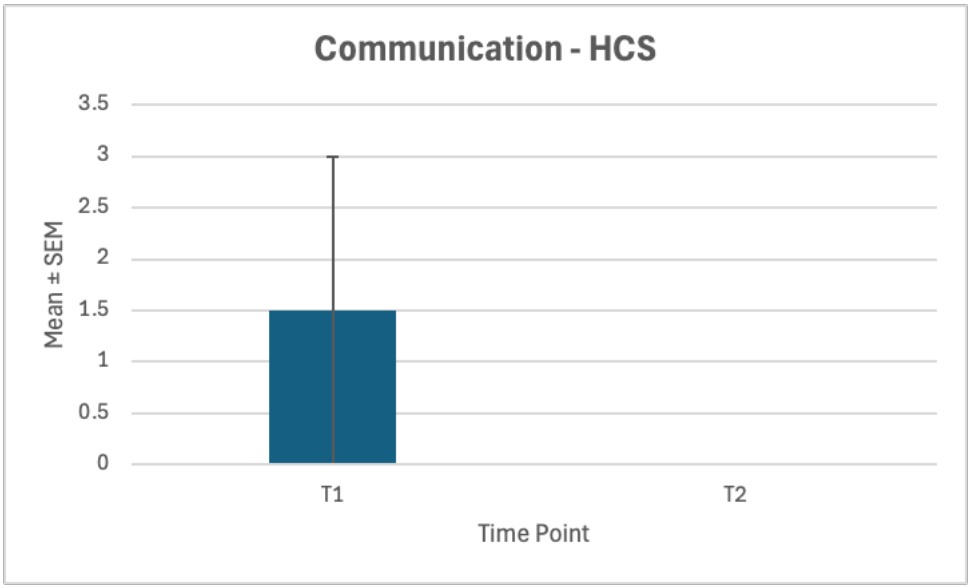


Figure 4.3

Mean scores (+/- SEM) on psychological well-being measure Satisfaction with Life Scale (SWLS) at pre- and post-intervention timepoints for both participants combined

Figure 4.4

Mean scores (+/- SEM) on psychological well-being measure Holden Communication Scale (HCS) at pre- and post-intervention for both participants combined



Autobiographical Memory

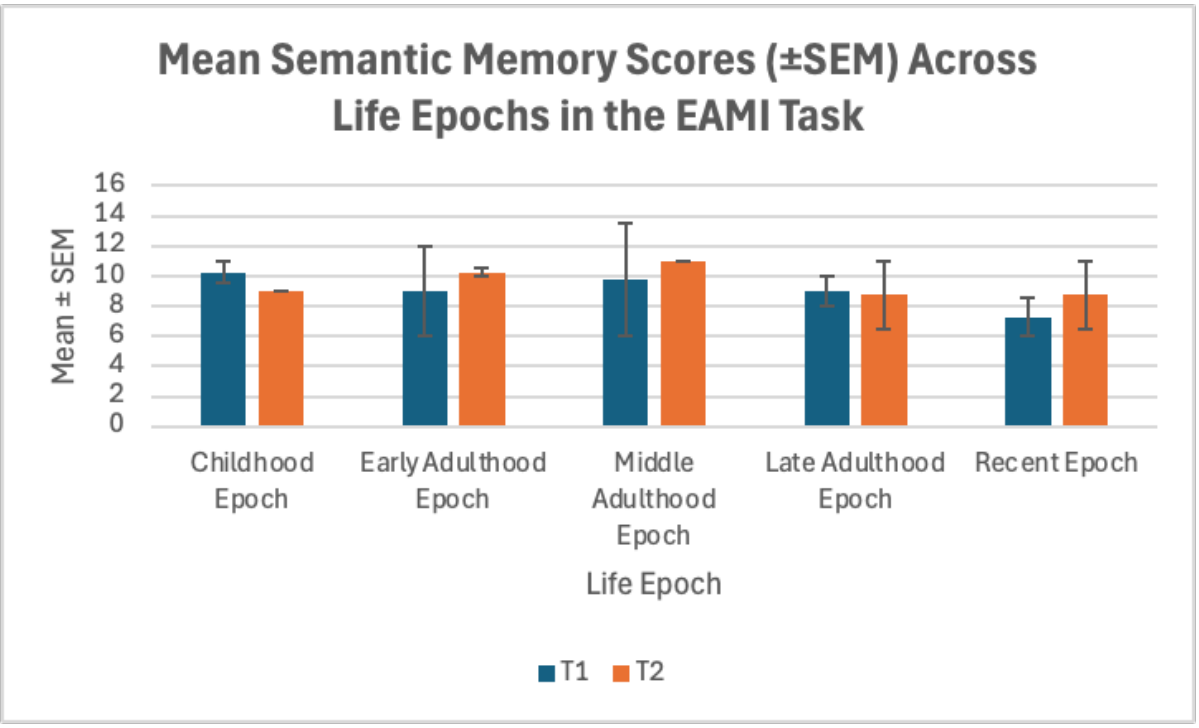
Autobiographical memory was one of the measures used. For both participants, pre- and post-intervention scores on the Episodic Autobiographical Memory Interview (EAMI) were examined across five life epochs, separating semantic and event memory scores (see Table 4.2 and Figure 4.5). Scores are presented as mean values (see Table 4.2) and displayed with standard error of the mean (± SEM) in Figures 4.5 – 4.10. "Event" memories refer to detailed, time-specific recollections, while "semantic" autobiographical memories reflect general knowledge about one's past.

Semantic Memory (EAMI)

For semantic memory, scores showed to be higher post-intervention in the Early Adulthood, Middle Adulthood, and Recent life epochs, while Childhood and Late Adulthood showed slight decreases.

Figure 4.5

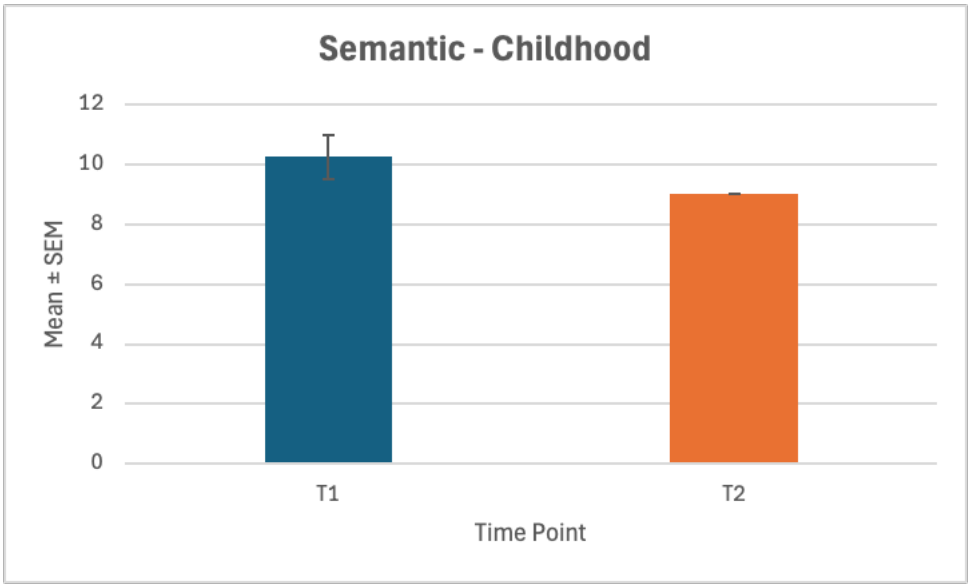
Mean Semantic Autobiographical Memory (EAMI Event) Scores Across Five Life Epochs (±SEM)



Childhood personal semantics levels appeared lower post-intervention from a mean of 10.25 ± 0.75 at T1 to 9.00 ± 0.00 at T2, indicating a modest reduction. See Figure 4.6 for visual representation (mean ± SEM).

Figure 4.6

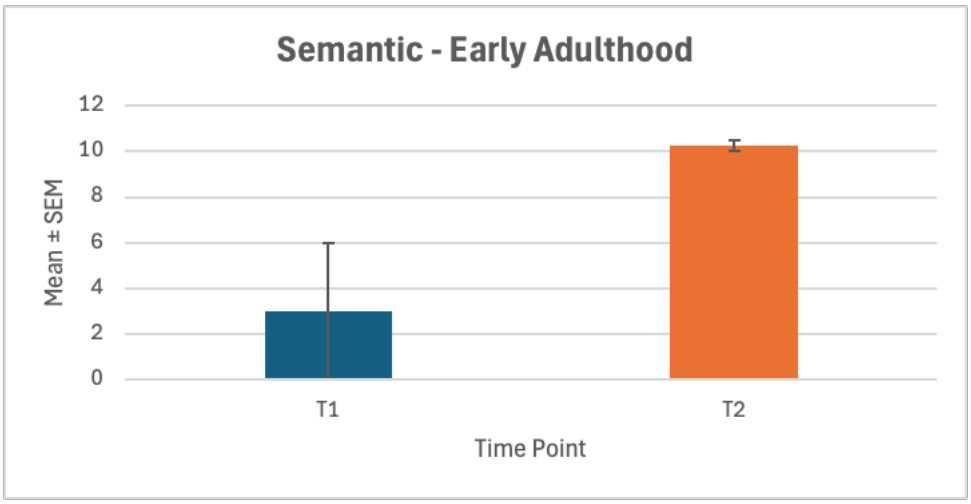
Mean (± SEM) Semantic EAMI scores for Childhood memories at pre- and post-intervention for both participants combined



In contrast, Early Adulthood scores were higher post-intervention from 9.00 ± 3.00 to 10.25 ± 0.25. See Figure 4.7 for visual representation (mean ± SEM).

Figure 4.7

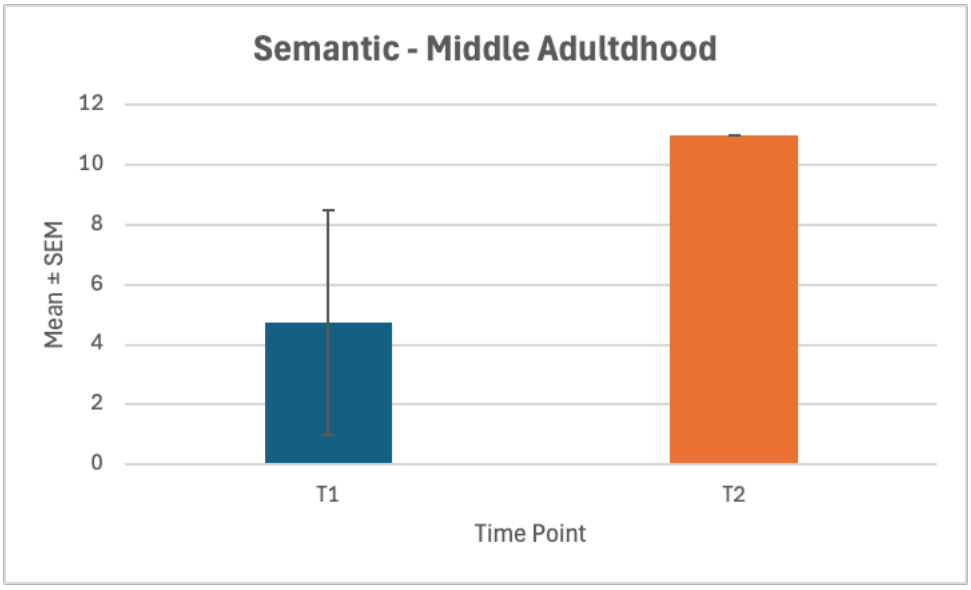
Mean (± SEM) Semantic EAMI scores for Early Adulthood memories at pre- and post-intervention for both participants combined



Middle Adulthood scores showed to be higher post-intervention from 9.75 ± 3.75 to 11.00 ± 0.00. See Figure 4.8 for visual representation (mean ± SEM).

Figure 4.8

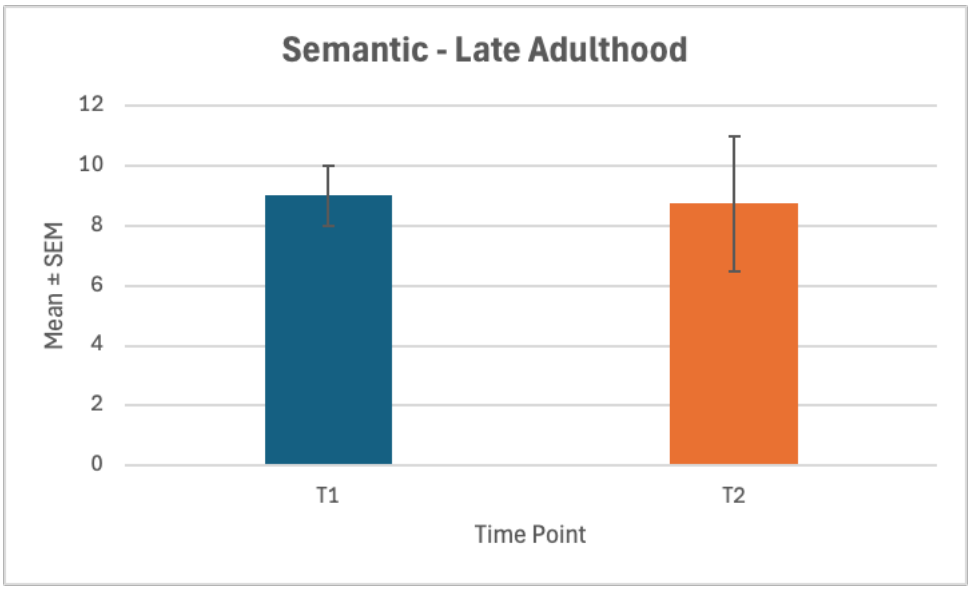
Mean (± SEM) Semantic EAMI scores for Middle Adulthood memories at pre- and post-intervention for both participants combined



Late Adulthood demonstrated lower scores post-intervention, moving from 9.00 ± 1.00 to 8.75 ± 2.25. See Figure 4.9 for visual representation (mean ± SEM).

Figure 4.9

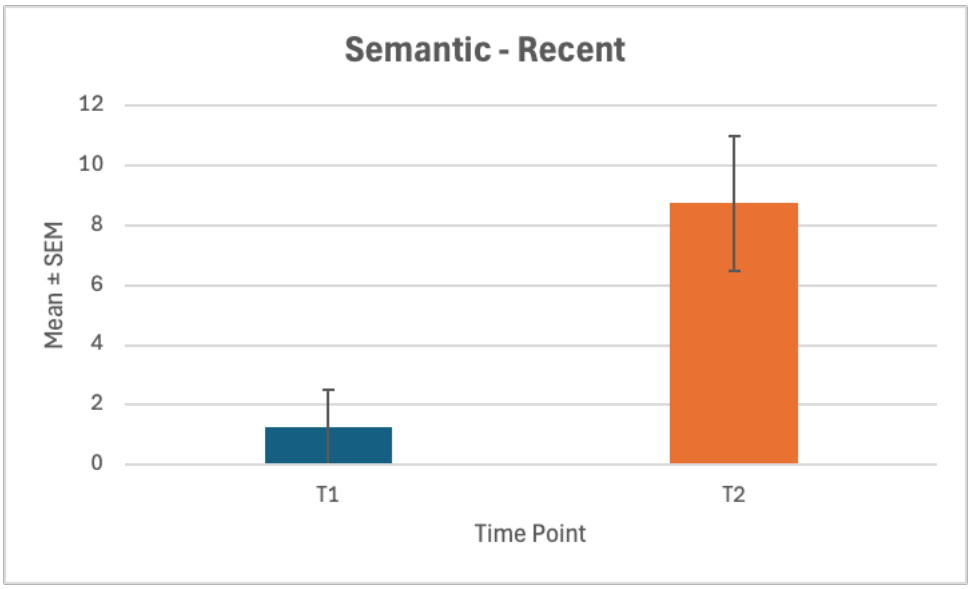
Mean (± SEM) Semantic EAMI scores for Middle Adulthood memories at pre- and post-intervention for both participants combined



Recent personal semantics were higher post-intervention from 7.25 ± 1.25 at T1 to 8.75 ± 2.25 at T2. See Figure 4.10 for visual representation (mean ± SEM).

Figure 4.10

Mean (± SEM) Semantic EAMI scores for Recent Life memories at pre- and post-intervention for both participants combined

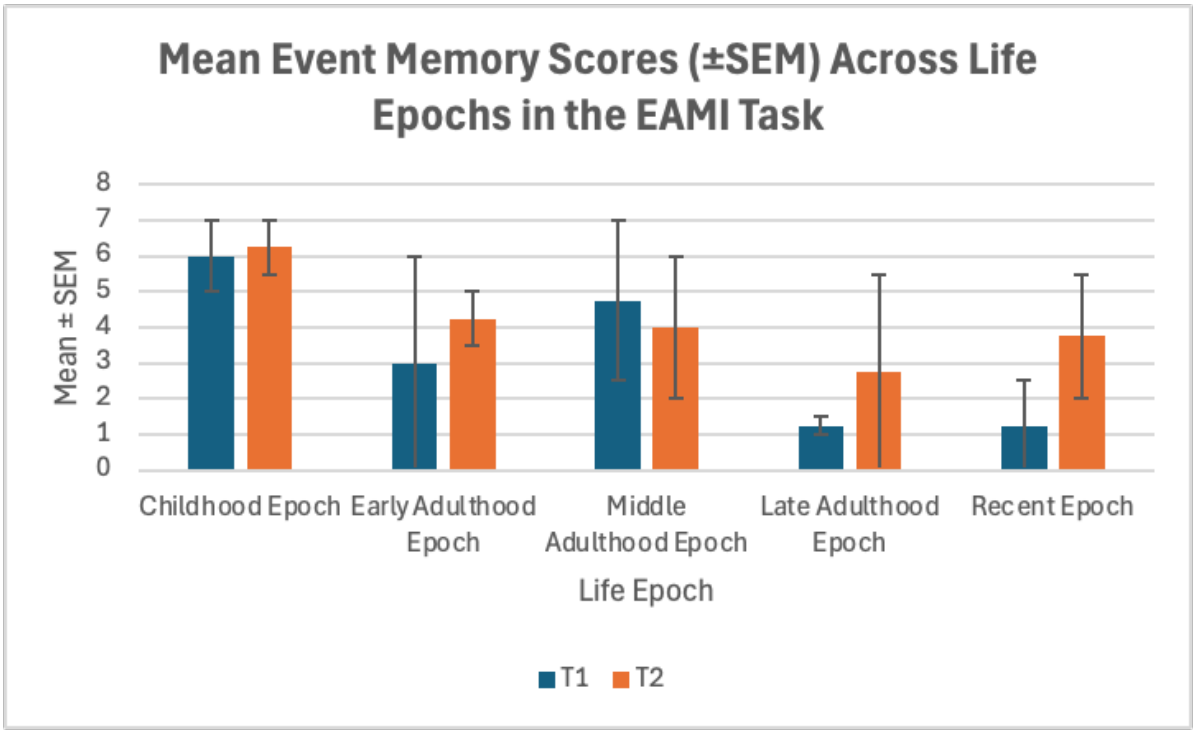


Event Memory (EAMI)

Episodic memory scores were higher post-intervention across life, with positive changes observed in all except Middle Adulthood, which showed a slight decline (See Figure 4.11). These patterns, while descriptive due to the small sample size (n = 2), suggest enhanced autobiographical event recall, particularly for later and recent life periods. See Figures 4.12–4.16 for visual summaries (mean ± SEM).

Figure 4.11

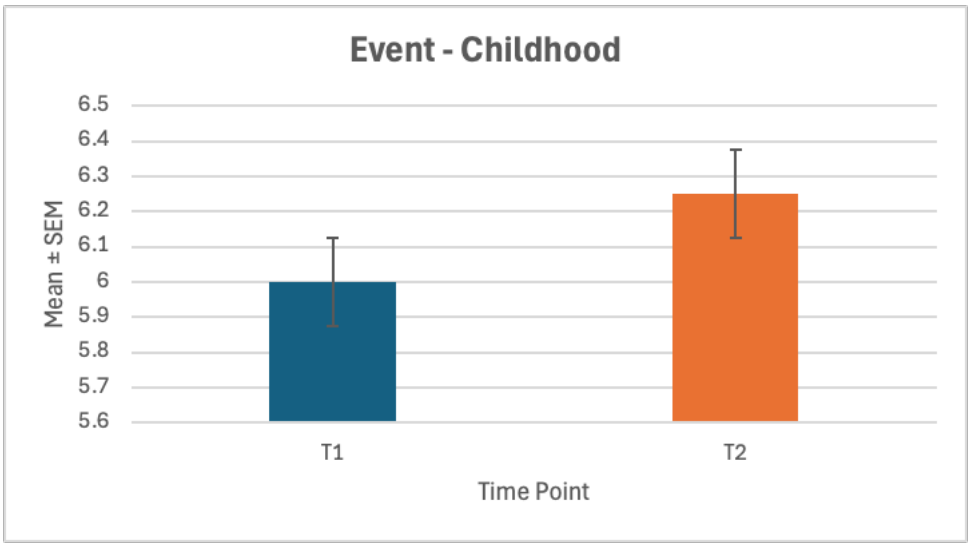
Mean Event Autobiographical Memory (EAMI Event) Scores Across Five Life Epochs (±SEM)



Childhood event recall showed slightly higher score post-intervention from 6.00 ± 1.00 to 6.25 ± 0.75, reflecting stable retrieval of early-life events. See Figure 4.12 for visual representation (mean ± SEM).

Figure 4.12

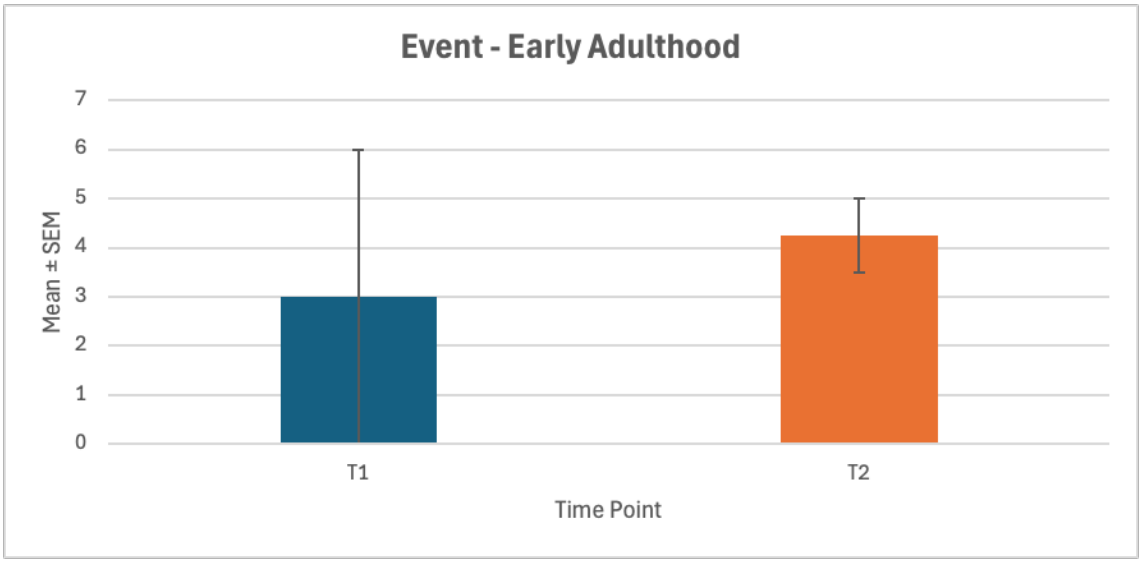
Mean (± SEM) Event (Episodic) EAMI scores for Childhood memories at pre- and post-intervention for both participants combined



Early adulthood event recall was higher post-intervention from 3.00 ± 3.00 to 4.25 ± 0.75, indicating a modest post-intervention improvement. See Figure 4.13 for visual representation (mean ± SEM).

Figure 4.13

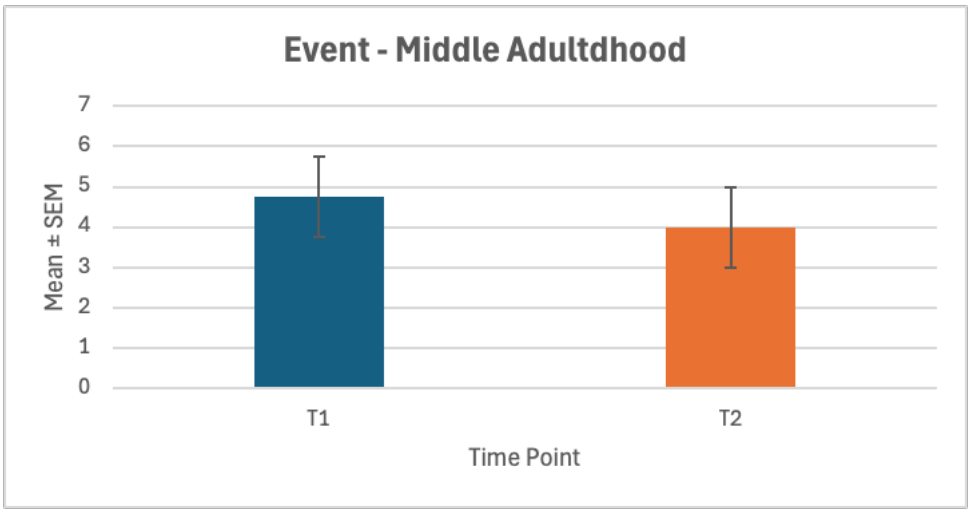
Mean (± SEM) Event (Episodic) EAMI scores for Early Adulthood memories at pre- and post-intervention for both participants combined



Middle adulthood event recall was lower post-intervention marginally from 4.75 ± 2.25 to 4.00 ± 2.00, suggesting minor variability across the intervention period. See Figure 4.14 for visual representation (mean ± SEM).

Figure 4.14

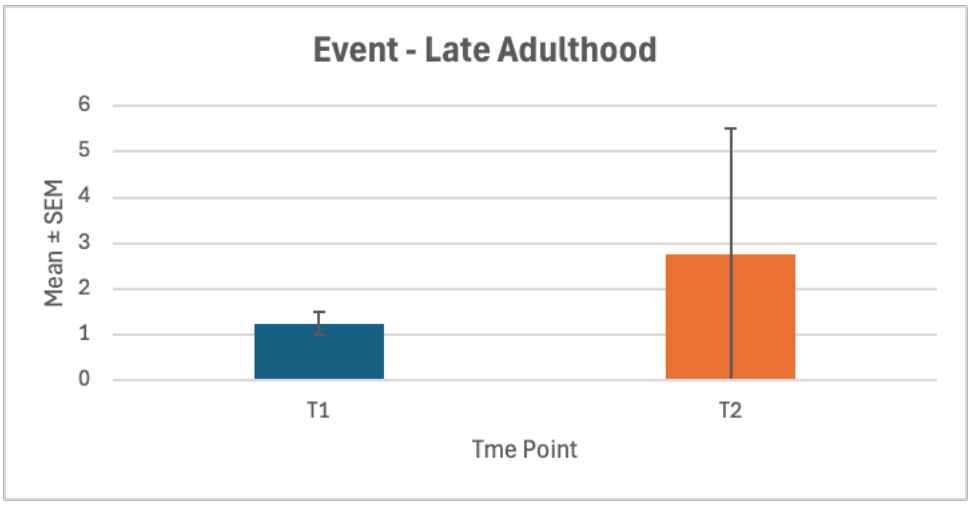
Mean (± SEM) Event (Episodic) EAMI scores for Middle Adulthood memories at pre- and post-intervention for both participants combined



Late adulthood event recall went from 1.25 ± 0.25 to 2.75 ± 2.75, showing better access to later-life memories. See Figure 4.15 for visual representation (mean ± SEM).

Figure 4.15

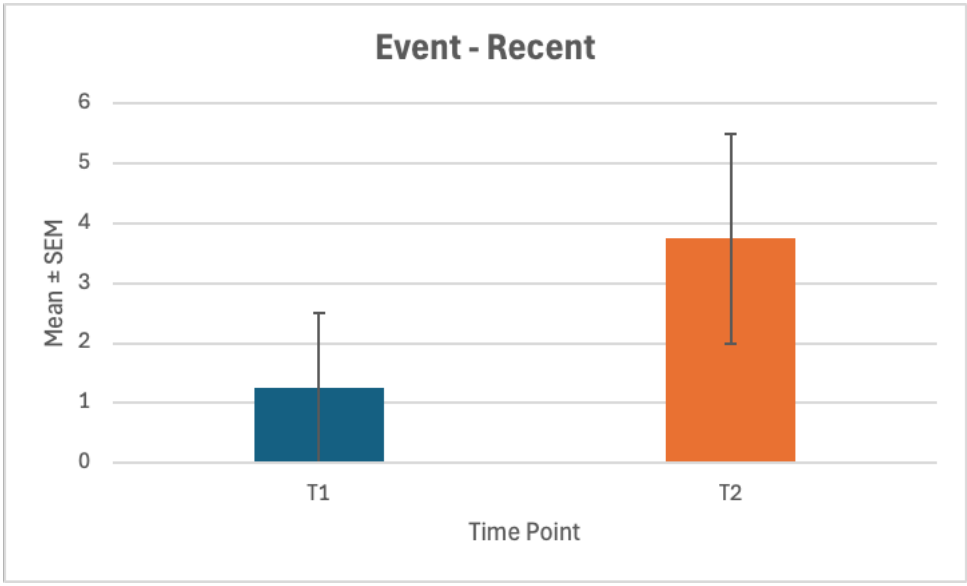
Mean (± SEM) Event (Episodic) EAMI scores for Late Adulthood memories at pre- and post-intervention for both participants combined



Recent event recall demonstrated the greatest increase, from 1.25 ± 1.25 to 3.75 ± 1.75, highlighting higher levels in recent autobiographical remembering. See Figure 4.16 for visual representation (mean ± SEM).

Figure 4.16

Mean (± SEM) Event (Episodic) EAMI scores for Recent Life memories at pre- and post-intervention for both participants combined



4.3.4 Qualitative Findings

Using the RTA approach, we collated the most relevant themes together and completed the six-phase dynamic analytical process, including: the familiarisation with the data, generating initial codes, creating themes, reviewing potential themes, defining and naming themes, and lastly producing the report (Braun and Clarke, 2012, 2013b, 2014, 2020). In addition, at the end, we noted down important recommendations to consider in future studies.

In line with the feasibility aims of this pilot, the qualitative analysis was examined not only in terms of thematic content, but also as an indicator of whether and how the structured walking format facilitated autobiographical reminiscence and participant engagement. Indicators of reminiscence included the retrieval of time-specific past events, transitions across life periods, emotional elaboration, and metacognitive reflections on memory (e.g., expressions of uncertainty or confidence in recall).

Analysis gave rise to the development of eleven themes (see Figure 4.3):

- The community and/or charity programmes;
- Alcohol consumption;

- The financial crisis in Ireland;
- The church (i.e. marriage);
- Mental health;
- Physical activity;
- Change;
- Childhood feelings;
- Gender expectations in family and society;
- Food and restaurants;
- Parental relationships.

Figure 4.17

Main reminiscence topics (11) identified via RTA of qualitative data

Reoccurring Themes

Although 11 different themes were identified, overall, 7 were reoccurring. The most frequently evoked reminiscence topics were (in descending order): ‘change’ (30%), Catholic religion (27%), self-doubt (14%), aesthetic appreciation (12%), health and limitations (9%), cultural contrasts with the researchers (6%), and weather (2%) (see Figure 4.5). However, as we decided to undertake a constructivist approach, we decided to also focus on the reasons why these memories were shared.

Importantly, the recurrence of these themes demonstrates that place-based cues consistently prompted autobiographical reflection rather than purely present-focused conversation. Most themes were discussed in relation to participants’ earlier lived experiences, indicating that the intervention successfully elicited temporally anchored reminiscence.

Interestingly, the theme ‘changes’ surfaced the most in our four historical memory walks. The main sub-themes shared around ‘change’ were the cost of living (‘You’d notice the difference now – money doesn’t stretch the way it used to.’), the respect of rules before (‘Back then, people respected the rules – it was just understood’), the power of local councils (‘The council had more say back then – they knew the people, the streets’), the Irish culture (‘It’s changed a lot... you don’t see the same traditions now.’), the historical sites (‘We used to play around the canals – they meant something to us.’), the church (‘It was a the centre of everything – school, family, even politics’), the accessibility of areas over time (‘Places that were once a world away, you can get to in no time now’), the transport options (‘There were fewer cars - you mostly walked, or waited for the one bus’) and the unofficial functions of place (‘The shops wasn’t just for groceries - it was where news travelled’).

Notably, discussions of “change” frequently involved explicit comparisons between past and present, illustrating active temporal shifting across life epochs, a core feature of autobiographical reminiscence. Participants often underlined reflections in specific historical periods, demonstrating that environmental prompts supported memory retrieval rather than abstract discussion alone.

This is a very interesting aspect of the memory walks, as they seemed to have helped participants transition from their early memories to recent years. This also illustrates well the considerable flexibility of our participants' memories and shows that our memory routes are suitable for triggering retrieval processes at several previous periods of life. Participants did tend to discuss more recent memories in the historical

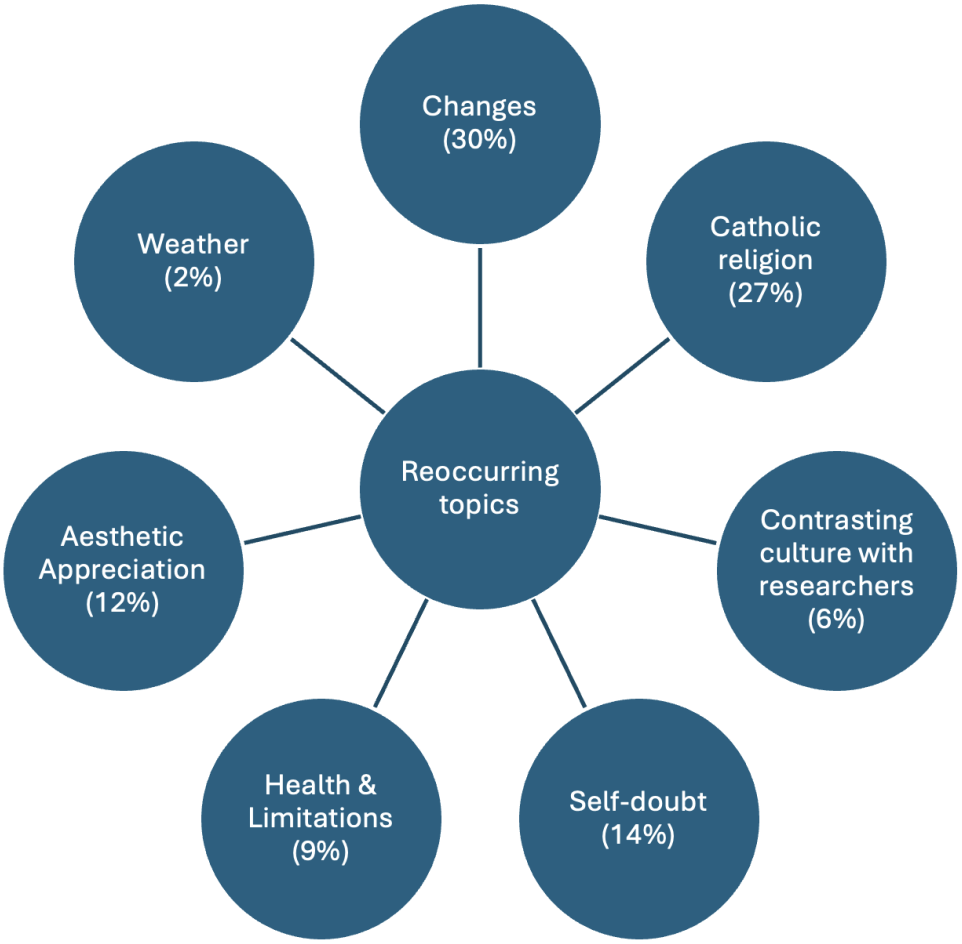
sites as they appeared more comfortable to do so. These temporal transitions suggest that the intervention format facilitated movement across autobiographical time periods, rather than restricting recall to a single life stage.

Furthermore, the theme ‘self-doubt’ emerged frequently (14%) during the reminiscence walks (‘I’m not sure I remember it right… maybe I’m getting it mixed up.’). Expressions of self-doubt can be interpreted as metacognitive engagement with the memory retrieval process, indicating that participants were actively attempting autobiographical recall rather than engaging in surface-level conversation.

When employing the simple reminiscence approach with these types of triggers it is crucial to mention that the discussion of past memories is not a performance test, but clearly a theme given to the group to immerse them in the ‘good old days’ together. This is not only important for the reminiscence sessions, but also to avoid any conflict or uncomfortable situations in the group.

Figure 4.18

Reoccurring themes (7) identified within topics



Triggers along specific routes

Some themes were triggered by particular sites along certain routes including long-term care, the COVID-19 pandemic, confusion regarding historical sites, and the Catholic religion (see Figure 4.5). While these themes tended to be negative, they also offered opportunities for reflection, connection, and authentic engagement.

The emergence of route-specific triggers further supports the feasibility of the place-based design, as specific environmental cues reliably elicited autobiographical narratives tied to those locations.

In future studies, facilitators could be trained to hold space for difficult emotions, recognising their potential to foster group solidarity and therapeutic insight when handled sensitively. These themes will be discussed in turn, with examples of each from the transcripts.

Long-term care/loss of independence

Long-term care was a very interesting and unexpected theme. During our walk along the canal with the intervention group, a local care unit triggered many negative responses for our participants (i.e. ‘But it wouldn’t be deliberate cruelty, but it would be staff’). A general fear seemed to emerge in participants when discussing stories about local care units and their age group. Importantly, these discussions were grounded in participants’ own lived experiences and future-oriented reflections, indicating that the intervention elicited personally meaningful autobiographical and anticipatory narratives rather than abstract commentary.

Even after many attempts to redirect the subject to more positive themes, participants turned the discussion back towards a more negative feeling of fear around the topic of being in a care setting (i.e. ‘it’s really bad!’), demonstrating intensity through the employed intonation and punctuation. This is not a bad thing but is something that can be avoided during the walks to attempt to preserve the most positive memories possible. One topic that helped was that of hope: the hope to preserve a good quality of life, but also that the system will change in with respect to nursing homes (i.e. ‘not us’ ‘fingers crossed’). Such emotionally charged recall further indicates that place-based prompts can access deeply personal and socially situated memories, highlighting the importance of facilitator preparedness when implementing similar interventions.

The COVID-19 pandemic

The subject of the COVID-19 pandemic was triggered by the local supermarket ‘Tesco’, during the Carton Avenue walk. Indeed, the group’s comments engaged in this intervention seemed to be triggered by the shops and how the lockdown changed their lives. Participants discussed how hard it was to organise and collect groceries and how important it was to them to have support during this hard period, demonstrating that environmental prompts facilitated recall of specific recent-life episodes. However, we categorised this theme among the negative ones, as a lot of fear of the unknown and sentiment of isolation was mentioned (i.e. ‘It was long, very long’). Notably, even though the discussion was not highly negative (i.e. pronounced repetitions) there was still a certain fear demonstrated in the participants, and this is something to be conscious and respectful of. In addition, not all older adults had the situation to be supported at this very difficult time.

Confusion about historical sites

Furthermore, one major point that emerged was the fear of not having knowledge around historical sites. Indeed, when discussing the different triggers (i.e. church), some participants felt uncomfortable for not being aware of some local knowledge around the area (i.e. 'I'm just here'). These moments illustrate how reminiscence may intertwine with identity and perceived competence, particularly in dementia contexts. The presence of such reflections suggests that participants were actively situating themselves in relation to the prompted memories and locations.

Importantly, this can also be particularly pronounced within dementia groups, especially for those who have been recently diagnosed and might be susceptible to having a lower level of self-esteem than usual, due to the awareness of recent progressive loss of abilities. One solution to this would be to enable larger topics, or to offer several options among the historical sites, therefore considering everyone's unique background. One other alternative would be to try and categorise different groups depending on their general interests beforehand. However, this would require a larger sample and can be time demanding.

The Catholic religion

The subject of the Catholic church in Ireland was a topic that emerged several times and particularly during the Pound Lane walk, triggered by a local church on the route. Pronouncedly, the memories were not always annotated in a positive way.

Participants discussed previous social events linked to the Catholic church (e.g. communion or marriage, 'I married in the Lucan SPA Hotel') but also conversed about the historical site's aesthetic features (e.g. 'That's a beautiful old church! For weddings and that'; 'There's five churches in Lucan').

Importantly, many of these recollections were temporally anchored to specific life stages (e.g., marriage, schooling, earlier community life), indicating that the church functioned as a strong autobiographical cue.

The conversation centred around the church also produced many negative responses (i.e. 'The power of the church on people'; 'The fear of the church'). Memories seemed to remain vivid and present for the participants and not wishing to place words on their feelings and what happened (i.e 'You know, that stuff.'). Furthermore, indicated by several repetitions (i.e. 'Mind you, it's gone, the whole system of the church is gone. The hold that the church had on people is gone.'), it seemed very hard for the participants to proceed with their thoughts and recalling memories.

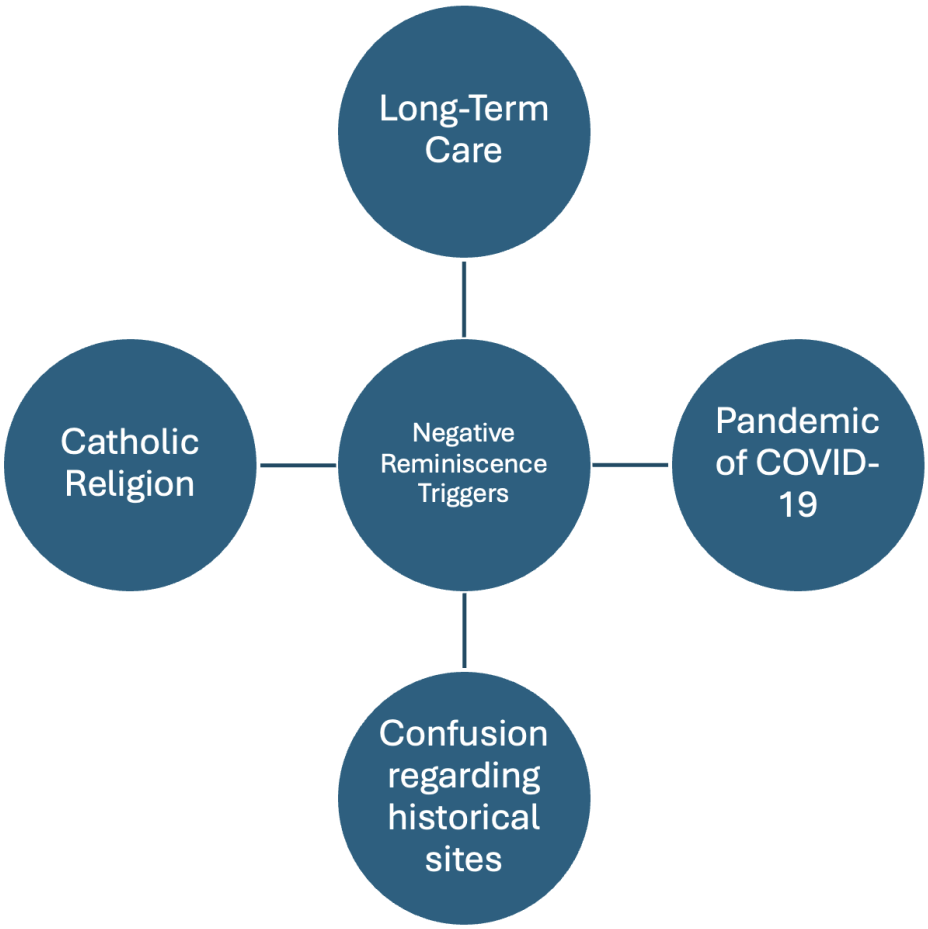
Moreover, the participants did also seem to suggest that it's now over and wanted to put a full stop verbally on their personal stories (i.e. 'The hold that the church had on people is gone'). Equally important, participants shared how difficult it can be to discuss the reality of the church's previous power and place in society with younger generations, as they did not feel understood or felt judged/misunderstood.

These excerpts demonstrate that the intervention facilitated emotionally salient autobiographical recall and reflective meaning-making, rather than purely descriptive conversation about the physical site.

This could also explain the previous repetitions when discussing church power. Indeed, the participants appeared to demonstrate a sentiment of guilt, alongside the fear of being judged by younger generations. In this case, one participant even confirmed these thoughts without leaving the time for the younger generation researchers to offer them reassurance (i.e. 'It was difficult at that time. Yeah. It's impossible for you guys to imagine I know it is.'). The participant also employed the third person 'they', to avoid directly addressing their feelings to the young generation researchers involved in the programme. It was as if the participant wished to protect themselves from any misplaced judgments due to previous negative experiences (i.e. 'You know, they think, why would you put up with that? You feel that people wonder why you put up with this?'). Later on in the discussion, this negative feeling appeared to transform into a sentiment of regret and questioning (i.e. 'I know that but I am not criticizing anyone I am just saying, I just feel you know. To get to the awful part of our society. The abuse and all of that.'; 'Yeah. And honestly, every time it comes up, honestly, I think, I was there why did I not do something about it!').

Figure 4.19

Route-specific themes (4) identified



4.4 General Discussion

4.4.1 Quantitative Discussion

The purpose of this pilot was not to evaluate intervention effectiveness, but to examine procedural feasibility and the suitability of the selected outcome measures for future research. Accordingly, the quantitative findings are interpreted descriptively and should be considered hypothesis-generating only. No inference about outcomes is appropriate with n = 2 and without a comparison condition.

Autobiographical Memory

This pilot study focused on Autobiographical Memory (AM), with particular attention to detailed event recall pre- and post-intervention in two participants living with dementia.

Across the Episodic Autobiographical Memory Interview (EAMI), both participants showed higher event memory scores post-intervention in several life epochs, alongside variability across periods. In the context of a feasibility pilot, these descriptive patterns are most useful for evaluating whether the EAMI is practical to administer, whether it produces interpretable variation, and whether it may be suitable for inclusion in a future adequately powered study. If similar patterns were observed in a larger controlled design, they could be examined in relation to theoretical accounts of autobiographical memory in Alzheimer's disease, such as the Multiple Trace Theory (Nadel & Moscovitch, 1997), which proposes that autobiographical memories are supported by distributed and repeatedly reactivated cortical networks. However, such interpretation remains speculative at this stage and is presented only to illustrate potential future research directions.

Moreover, in this study, the two participants living with dementia were highly socially active. This contextual feature may be relevant when planning future work, as social engagement can influence autobiographical recall and conversational scaffolding (Piolino et al., 2003). However, the heterogeneity of dementia symptoms must be underlined and carefully considered, particularly when interpreting outcomes of the Episodic Autobiographical Memory Interview (EAMI) in very small samples.

In terms of semantic autobiographical memory, small variations were observed across life epochs, with some epochs showing higher scores post-intervention and others showing slight decreases. In early Alzheimer's disease, semantic memory is often relatively more preserved (Moses et al., 2004). A larger sample would be required to determine whether any consistent pattern exists or whether observed differences reflect measurement variability, fatigue, or contextual influences. The absence of consistent change in childhood memory may reflect generational and cultural factors among older Irish participants, consistent with Allen et al. (2020). Again, these observations are best viewed as informing future endpoint selection rather than indicating intervention effects.

Cognition and Psychological Well-Being effect

MoCA scores were higher on average post-intervention. Given the feasibility design (n = 2), this pattern should be interpreted descriptively and cannot be taken as

evidence of cognitive benefit. However, the observation that scores differed across timepoints indicates that the MoCA was feasible to administer in this context and may be sensitive to change in a larger, controlled study. Literature on combined physical–cognitive interventions has frequently reported associations between such approaches and cognitive or mood-related outcomes. For example, Lök et al. (2018) reported changes in mood and cognition following group reminiscence therapy in Turkish nursing homes, and a recent meta-analysis identified associations between reminiscence therapy and depressive symptoms and quality of life among older adults with dementia (Park et al., 2019).

The Satisfaction with Life Scale (SWLS) showed no change across timepoints. This may reflect the scale's limited sensitivity to short-term variation in emotional states or its susceptibility to social desirability bias (Trigg et al., 2007). The Quality-of-Life Scale (CASP-19) scores were higher post-intervention for both participants, and Holden Communication Scale (HCS) scores were lower post-intervention (indicating fewer observed communication difficulties). In this feasibility context, these patterns are best understood as descriptive score fluctuations that inform the suitability and interpretability of these measures rather than as indicators of effect. The variation may reflect normal measurement variability, increased comfort during post-assessment, or contextual influences during testing. Notably, both participants were physically and socially active at baseline. This baseline profile may be relevant for future study design, as high initial activity levels can complicate interpretation of psychosocial measures and may introduce ceiling effects. For example, Wang et al. (2021) suggested that the impact of exercise-related interventions may plateau in individuals who are already physically active, an important consideration for eligibility criteria and analytic planning in subsequent research.

Overall, this pilot does not provide evidence of intervention effectiveness. Instead, it demonstrates that the combined walking and reminiscence format is deliverable and that the selected cognitive and psychosocial measures can be administered pre- and post-intervention, yielding interpretable descriptive data. The observed score patterns support the rationale for conducting a future adequately powered study designed specifically to evaluate outcomes.

4.4.2 Qualitative Discussion

Rather than focusing solely on the thematic content of conversations, the qualitative analysis was reconsidered in light of the feasibility aims of this pilot. Specifically, the transcripts were examined to determine whether and how the structured walking format successfully facilitated autobiographical reminiscence. Indicators of reminiscence included the retrieval of time-specific events, spontaneous elaboration of past experiences, transitions across life epochs, emotional engagement with past experiences, and metacognitive reflections on memory processes. Regarding thematic analysis, it is important to annotate and analyse which topics emerge and how to keep creating positive opportunities for discussion and activities that enhance the well-being of participants living with, or without, dementia. One important aspect to note when discussing these negative topics is that, unfortunately, we cannot control the emotional experience felt by the participants engaged in the interventions. However, we can do our best to minimize this type of experience by maximizing the context and comfort during the programme. Using a structured approach to reminiscence and walks is an ideal way to ensure to stimulate all the senses anticipated to trigger and retrieve positive memories and in the longer term, hopefully, positive health outcomes. As mentioned, it is crucial to enable participants to get to know each other in a calm and structured environment. Even though research tends to be very formatted due to its nature, when working with people living with dementia it is crucial to enable one another to work together, by providing a sense of belonging and relationship during the sessions (see group Guidelines for RYCT project Section 1.3.2). For many families, relatives and participants engaged in this programme, to be able to share personal memories was very significant and helped to fight isolation.

Recommendations

Based on the findings, we can make some tentative recommendations and considerations for future professionals involved in the reminiscence walks (see Table 4.3). This type of intervention also serves as a practical approach to learning how to create and support a dementia-friendly environment through everyday interactions and spatial awareness.

Table 4.3

Recommendations for combined Walking and Reminiscence interventions based on findings from the current study

Category	Refined Recommendations

Logistics of Group Walking	Ensure facilitators are trained in First Aid and carry emergency contact information, as a preventative measure given the outdoor, mobile nature of the sessions, even though no adverse events occurred in this pilot. Plan walking routes in shorter segments (approximately 10–15 minutes) interspersed with seated discussion periods, as researcher observations indicated that pacing and rest supported comfort and sustained engagement. Conduct walkability assessments prior to implementation, as the absence of safety incidents and smooth route navigation in this pilot were likely supported by pre-audit planning.
Technical Issues	Use portable microphones to improve audio clarity during outdoor recording, as environmental noise occasionally affected transcription quality in this pilot.
Social Dynamics	Recognise individual differences in beliefs, background, and comfort with local knowledge during pre-assessment, as moments of self-doubt and sensitivity emerged during discussions of certain historical sites. Consider smaller group sizes where appropriate, to support psychological safety when emotionally charged or identity-related topics arise.
Dementia and Engagement	Incorporate seated discussion points at historically meaningful sites, as seated pauses appeared to support deeper reminiscence and reduce cognitive or physical strain. Maintain a balance between walking and discussion, as movement appeared to sustain engagement while place-based cues prompted autobiographical recall.

Weather Considerations	Schedule walks with attention to weather conditions and provide umbrellas if required, to maintain comfort and reduce fatigue in outdoor sessions. Allow sufficient time for reminiscence without rushing, as temporal transitions and elaborated recall emerged when participants were not time-pressured.
Negative Triggers	Identify and reflect on emotionally sensitive sites post-walk, as certain locations (e.g., long-term care facilities, church sites, COVID-related locations) consistently elicited emotionally charged autobiographical recall. Assess participant expectations and motivations during initial meetings, to anticipate potential sensitivities and tailor facilitation accordingly.

4.5 Limitations

In line with the aims of this study, which focused on feasibility, acceptability, and the suitability of outcome measures within the MRC framework, this work was not intended to evaluate intervention effectiveness. However, several limitations should be noted. The very small sample size (n = 2) and the absence of a control group mean that the findings cannot be generalised and no conclusions about effectiveness can be drawn. The pre–post variations observed are descriptive and may reflect natural fluctuations, practice effects, or contextual influences rather than true change. Participants were recruited locally and were relatively active and socially engaged, which may limit the relevance of these findings to more diverse or less active populations. The short duration of the intervention, over two weeks, also limits understanding of longer-term feasibility and acceptability. In addition, although the assessment battery was feasible to administer, its length may have introduced some fatigue. Finally, the qualitative findings are specific to the context of this study and were influenced by the local environment, the selected routes, and the facilitation approach.

4.6 Conclusion

Although this pilot involved only two participants, it represents an important feasibility and piloting step within the Medical Research Council framework for complex interventions. Over the two-week period, all four sessions were completed as planned. Both participants attended every session, no safety concerns arose, and the routes proved manageable in terms of pacing and distance. The availability of portable seating helped maintain comfort during longer discussions. The structured reminiscence format could be implemented as intended, while also revealing small practical adjustments that will strengthen future delivery, such as clearer transitions between walking and seated discussion and better preparation for potentially sensitive locations. The study also showed that the proposed cognitive and psychosocial measures could be administered at both timepoints without missing data. The assessment sessions were manageable in length, and participants were able to complete the full battery. The pre–post score patterns are therefore presented to illustrate that these tools can be used in this context and generate interpretable data. However, given the case-series design (n = 2), no conclusions about effectiveness can be drawn. The qualitative findings indicate that the walking format did facilitate autobiographical reminiscence. Participants moved between different life periods, recalled time-specific events, reflected emotionally on past experiences, and expressed uncertainty or confidence about their memories. Certain locations consistently triggered personal and historically grounded narratives, while also highlighting the importance of careful facilitation when sensitive topics emerged. These insights are directly relevant for refining route selection, facilitator training, and session structure. In sum, Chapter 4 provides practical evidence that the intervention protocol is deliverable, acceptable, and measurable in this population. These findings primarily inform procedural refinement, facilitator training, and measurement selection. It therefore lays the groundwork for the next stage of evaluation, where the intervention can be examined in a larger and more systematic study design. Chapter 5 builds on this foundation.

Chapter 5:

Feasibility and acceptability of a combined walking and reminiscence intervention in community-dwelling older adults with and without dementia: a mixed-methods pilot study

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Abstract

This study assessed the feasibility and acceptability of a combined walking and Reminiscence Therapy (RT) intervention on memory, cognitive function, and psychosocial well-being in community-dwelling older adults, including those living with dementia (PLwD). Within the Medical Research Council (MRC) framework for complex interventions, this chapter corresponds to the feasibility and piloting stage, where interventions are implemented on a small scale to determine whether they can be delivered as intended and whether procedures and outcome measures are appropriate prior to larger-scale evaluation. Building on preliminary insights from Chapter 4, a mixed-methods piot design was employed with two small groups (n = 5/group): older adults living with dementia and older adults living without dementia. Participants engaged in four sessions over four weeks of reminiscence walks through familiar routes. Pre- and post-intervention assessments included the Episodic Autobiographical Memory Interview (EAMI), the Montreal Cognitive Assessment (MoCA), Control, Autonomy, the Self-Realisation and Pleasure Scale (CASP-19), the Satisfaction with Life Scale (SWLS), the Holden Communication Scale (HCS), and the Geriatric Depression Scale (GDS). Although statistical significance was limited due to sample size, positive trends emerged among PLwD, including enhanced episodic memory in recent and late adulthood, and relatively stable semantic memory across epochs. Qualitative themes reflected shared narratives of community, identity, and change, indicating that structured reminiscence in familiar settings may offer meaningful cognitive and emotional stimulation. Importantly, in line with feasibility and piloting objectives, the purpose of this study was not to determine intervention effectiveness but to assess whether the intervention could be implemented safely, accepted by participants, and measured in a way that would support the design of a subsequent controlled study. These findings support the potential of reminiscence walking interventions and lay the groundwork for further exploration in Chapter 6, where the individual and combined contributions of walking, reminiscence, and their integration will be disentangled to better understand their specific effects on cognitive and psychological well-being outcomes.

5.1 Introduction

In Chapter 4, quantitative analysis demonstrated improvements in event recall and personal semantics among the Alzheimer's Disease group following the intervention. Qualitative findings highlighted recurring themes centred on community experiences, personal change, and environmental triggers, including the impacts of long-term care and the COVID-19 pandemic. These results suggest that combining walking and reminiscence therapy (RT) may help both memory retrieval and emotional engagement, supporting the growing evidence that multimodal, non-pharmacological interventions are particularly effective in dementia care. Previous research has shown that reminiscence-based interventions can improve cognition, mood, and quality of life in individuals with dementia (Cammisuli et al., 2022; Woods et al., 2018). In parallel, physical activity, including walking, has been consistently associated with improvements in executive function, episodic memory, and overall cognitive performance in older adults (Erickson et al., 2015; Bherer et al., 2013). Walking interventions specifically have been shown to support cognitive functioning and reduce risk of decline, partly through mechanisms such as increased cerebral blood flow and neuroplasticity (Blumen et al., 2014; Verghese et al., 2007). Importantly, combining physical and cognitive stimulation may produce greater benefits than single-component interventions, particularly in ageing populations and those with cognitive impairment (Bevilacqua et al., 2022; Ngandu et al., 2015). Furthermore, walking has been linked to mitigating age-related decline in key brain regions involved in memory, particularly the hippocampus and prefrontal cortex (Erickson et al., 2015). By integrating physical activity with cognitively and emotionally meaningful recall processes, this combined approach offers a promising pathway to support people living with dementia, ultimately enhancing their quality of life, sense of identity, and overall well-being.

Within the Medical Research Council (MRC) framework for complex interventions, feasibility and piloting studies play a critical role in determining whether an intervention can be delivered as intended, whether it is acceptable to participants, and whether proposed evaluation methods are suitable before progression to larger-scale evaluation (Craig et al., 2008; Skivington et al., 2021). Building on the early feasibility insights gained in Chapter 4, the present study represents the next stage of feasibility testing by implementing the intervention with a slightly larger sample and across a longer intervention period. Accordingly, Chapter 5 aimed to i) to assess the feasibility of delivering a four-week combined walking and reminiscence intervention in the

community for older adults living with dementia and older adults without dementia (recruitment, retention, session delivery, safety, and completion of assessments), ii) to evaluate acceptability for participants and accompanying relatives (engagement, perceived value, burden, and suitability of the walk-and-talk format), iii) to describe within-person pre–post trajectories in autobiographical memory (episodic and semantic), cognition, communication, mood, and quality of life, and to identify measures that appear sensitive/feasible for a subsequent controlled study, and iiii) to explore how participants (and, where relevant, caregivers) experienced the sessions, and what contextual features (place cues, group dynamics, caregiver scaffolding) appeared to support or constrain autobiographical recall and wellbeing.

5.2 Methods

5.2.1 Participant characteristics and recruitment

This study involved two groups; one group consisted of recently diagnosed People Living with Dementia (PLwD) (N=5) in the community, which included one woman, three men living with mild AD, and one man living with mild dementia of semantic type (age range: 66-79 years; mean = 75). The second group involved self-reported older adults living without dementia (N=5) (age range: 76-84 years; mean = 78.4) that were also community living.

All participants with dementia were accompanied on their walks by a relative - these included three daughters, a spouse, and a neighbour - ensuring both emotional support and safety throughout the sessions (see 5.3.1 section below for full demographics). All participants were recruited through the 'word-of-mouth' technique, with the help of adverts and flyers in Maynooth, Ireland.

Inclusion and exclusion criteria were defined separately for each group.

• Aged 65 years or older (both groups)
• Community-dwelling (both groups)
• Physically able to walk independently, with or without supervision (both groups)
• Lived for at least 10 years in Maynooth/Ireland or were highly familiar with the local area (both groups)
• Recent diagnosis of mild dementia (self-reported and/or confirmed by a relative) (PLwD only)

• No self-reported diagnosis of dementia or other significant neurological condition (community-dwelling group only)

Participants were excluded if they met any of the following criteria:

• Moderate or advanced dementia
• Severe visual impairment
• History of epilepsy
• Significant movement disorders
• Motor or walking impairments compromising safe participation
• Severe memory impairment preventing meaningful engagement in reminiscence activities

5.2.2 Materials

Walking Routes

For this study we used the same four pre-designed walking routes described in detail and piloted in Chapter 4. As mentioned previously, we used the Universal Design Walkability Audit Tool (CAUD, 2022), to ensure that the routes are safe and appropriate to be used. Care was taken to set a walking easy pace, and portable chairs were provided if participants needed to rest. Routes were created to be completed in 10-15 minutes at an average speed of 3 mph. The four routes included the Carton route, the Canal route, the South Campus route and the Pound Lane route. Each route included a number of historical buildings and/or prominent landmarks that would serve to trigger memories (e.g. St Joseph's Square Maynooth University). These historical places were well-known and familiar for the participants. They were chosen to elicit strong emotions and facilitate the reminiscence of old memories. For security, occupancy and noise reasons, we pursued mostly calm areas and calm periods of the year (i.e. summer holidays or middle mornings to avoid University activity).

Test Battery

A battery of cognitive and psychological measures was administered pre- and post- the four-week intervention. Alternate forms of each measure were administered post-intervention. The measures are described in detail in Chapter 4 (Section 4.2.2.), and included:

1) The Montreal Cognitive Assessment (MoCA; Nasreddine, Phillips, Bédirian, Charbonneau, Whitehead, Collin, & Chertkow, 2005).

2) The Episodic Autobiographical Memory Interview (EAMI; Irish, Lawlor, O'Mara, & Coen, 2008,2011a, 2011b).

3) The Control, Autonomy, Self-Realisation and Pleasure Quality of Life Questionnaire (CASP-19; Netuveli, Wiggins, Hildon, Montgomery, & Blane, 2006)

4) The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985)

5) The Holden Communication Scale (HCS; Holden & Woods, 1995)

6) The Geriatric Depression Scale (GDS, Yesavage et al., 1984)

Patient and Public Involvement (PPI)

We used a Patient and Public Involvement (PPI) approach at an early stage of this experiment in-person at the Glenroyal Hotel on 12/09/2022 and 22/09/2022 (see Chapter 2 - PPI for Chapter 5 – PLwD vs older adults living without dementia for further detail), and built on the PPI carried out for Chapter 4, as well as the feedback acquired from this study.

Design

For the quantitative analysis, a mixed factorial design was used, where group (older adults Vs older adults living with dementia) was the between participants factor, and pre- and post-assessment was a within-participants factor. Because the primary aim of this study was feasibility assessment rather than outcome evaluation, the design emphasised descriptive exploration of trajectories and implementation indicators rather than hypothesis testing. The two groups of participants reminisced and walked each of the four routes (1 route/week) for four weeks. Memories and perspectives were captured during walking with the help of audio recordings, which were then transcribed and analysed. Similarly to Chapter 4, the transcripts were analysed based on Braun and Clarke's Reflexive Thematic Analysis (RTA) approach (Braun and Clarke, 2013b) (see Chapter 4 for additional information).

5.2.3 Procedure

After reading the information sheet and asking any questions they had, participants were asked to provide consent. Consent was obtained at commencement of the study, prior to the sessions. Participants were informed both verbally and on paper

that they could end their participation at any time. The cognitive and psychological measures were then administered on paper and in individual sessions in a quiet location agreed with each participant. Administration of the six tests took approximately 90 minutes per session and were not randomised due to their nature (for instance, the EAMI interview required the participant to feel comfortable, and this measure was given towards the end).

The intervention took place in Maynooth using pre-determined and walkability-adjusted routes (see Chapters 2 and 4). People living with early-stage dementia engaged in an intervention using a guided simple reminiscence approach. This was adapted from the "Remembering Yesterday, Caring Today" program (Schweitzer & Bruce, 2008), which is a large group-based approach, bringing people with dementia and relatives together with a focus on active reminiscence. Each participant received an information sheet/emergency contact list (see Appendix 17-24) to keep for their reference throughout the project. During the experiment, participants were encouraged to recall stories and anecdotes about the sights presented (i.e. "Before that house was built, this was a bistro") while a trained facilitator led the group and guided the reminiscence topics. Groups were small (five maximum) and had a session of an hour per week, for four weeks.

5.2.4 Data Analysis

Quantitative Data Analysis

Quantitative analysis was conducted using IBM SPSS Statistics (Version 29). Due to the small sample size, non-parametric tests were employed throughout the analysis. Within-group comparisons from baseline (T1) to follow-up (T2) were carried out separately for the dementia and community-dwelling groups using the Wilcoxon Signed-Rank Test. Between-group comparisons at each timepoint were conducted using the Mann–Whitney U Test. Descriptive statistics (means and standard deviations) were calculated for each outcome at both timepoints. U-values (Mann–Whitney), Z-values (Wilcoxon), and exact p-values are reported for all analyses, with statistical significance set at $p < 0.05$.

Qualitative Data Analysis

The memory walk discussions were again recorded via ZOOM Recorder, transcribed in preparation for data analysis and analysed using the Qualitative Analysis Software Qualitative Data Analysis - Minor Lite software (QDA). Qualitative data

analysis was completed based on Braun and Clarke's Reflexive Thematic Analysis (RTA) approach (Braun and Clarke, 2013b), as detailed in Chapter 4.

5.2.5 Ethical Considerations

The study was approved by Maynooth University's Social Research Ethics Subcommittee (SRESC) (SRESC-2022-2484450, see appendix 25). As a summary (see Chapter 4 for additional information), the research team, trained in administering cognitive and psychological well-being measures to older adults living with dementia, ensured that all participants were informed that their performance would be used solely for research purposes. They were reassured that difficulties in recalling memories did not indicate any issues and were advised to consult their GP if concerned. The study employed Reminiscence Therapy (RT) to focus on positive memories, minimising the risk of distressing recollections through guided prompts. Participation in group discussions was voluntary, and confidentiality was emphasised. Audio recordings of sessions were made anonymous and securely stored, adhering to Maynooth University's ethics policy, which mandates data retention for 10 years before destruction. Participants were provided with support resources and the lead researcher's contact information for any concerns. Only de-identified data were analysed and published, with strict consent for future use required.

5.3 Results

Consistent with feasibility and piloting research, results are presented with emphasis on implementation indicators, participant engagement, and measurement practicality rather than intervention effectiveness.

5.3.1 Feasibility and Engagement Outcomes

All ten participants completed the four-week intervention and both pre- and post-assessments, resulting in 100% retention across groups. No participants formally discontinued participation. Continuous relationship-building through regular contact with community groups prior to and during recruitment contributed to sustained participation. Efforts were made to preserve a relational and human-centred approach, ensuring that participants felt valued and comfortable contributing their time.

Flexibility in scheduling was prioritised. Assessment sessions were arranged at times convenient to participants and, where necessary, adjusted to accommodate health,

family, or caregiving responsibilities. Participants were informed at the end of each session about the structure and expectations of the following week, and reminder messages were sent in advance of upcoming sessions. This consistent communication appeared to reduce uncertainty, reinforce continuity, and support ongoing engagement.

Administration of the cognitive and psychosocial measures took approximately 90 minutes, as anticipated. Although no participant withdrew due to assessment burden, informal observations suggested that fatigue could emerge toward the latter part of testing, particularly in the dementia group. However, completion rates remained high, indicating that the battery was feasible within this small, supported sample.

5.3.2 Demographics

Ten older adults participated in the study, including five people living with dementia (PLwD) and five cognitively healthy older adults. Demographic and baseline characteristics for both groups are summarised in Table 5.1. The groups were broadly comparable in age range and educational background, though the PLwD group included predominantly male participants, whereas the control group was entirely female. Both groups reported regular social engagement and low-to-moderate levels of weekly physical activity.

Table 5.1

Participant Demographic and Baseline Characteristics by Group

Characteristic	PLwD (n = 5)	People living without dementia (n = 5)
Age, mean (SD)	75.0 (5.33)	78.4 (3.36)
Age range	66–79	76–84
Sex (Male/Female)	4 males, 1 female	All female
Education level	Predominantly second-level	Predominantly second-level
Employment status	Retired	Retired
Weekly social activity (mean frequency)	4.0 times/week	3.8 times/week
Weekly physical activity (mean frequency)	1.0 time/week	0.6 times/week

Weekly physical activity (mean duration)	36 minutes	26 minutes
Self-rated health	Mostly 'good' or 'fair'	Mostly 'good' or 'fair'
Notable medical history	Heart surgery, hip replacement, head injury	None reported

5.3.3 Quantitative Findings

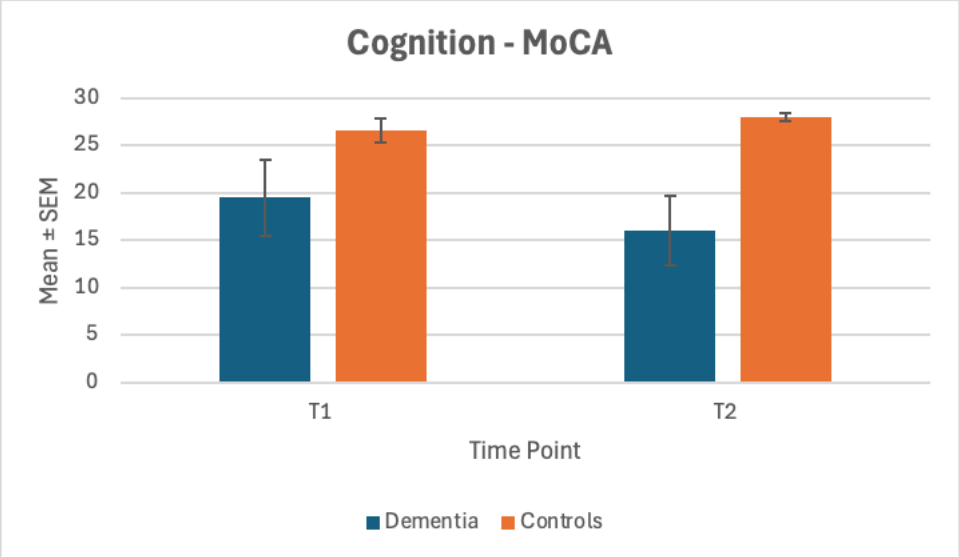
All quantitative results are presented descriptively and should be interpreted as exploratory pre–post trajectories within a feasibility framework rather than as evidence of intervention effectiveness, consistent with recommendations for early-stage feasibility and piloting studies.

Montreal Cognitive Assessment (MoCA)

MoCA scores in the dementia group did not differ significantly between T1 (M = 19.50 ± 3.97) and T2 (M = 16.00 ± 3.65) (Wilcoxon Z = –1.000, p = 1.000, exact two-tailed). The community-dwelling group showed no significant difference between T1 (M = 26.60 ± 1.29) and T2 (M = 28.00 ± 0.45) (Wilcoxon Z = –0.816, p = .750, exact two-tailed). Between-group comparisons revealed significant differences at both timepoints: T1 (Mann–Whitney U = 0.0, p = .008) and T2 (U = 0.0, p = .008), reflecting expected baseline cognitive differences between groups rather than intervention-related change. Figure 5.1 summarises these findings.

Figure 5.1

Cognition (Montreal Cognitive Assessment MoCA) mean scores (± SEM) at baseline (T1) and post-intervention (T2) for dementia and community-dwelling groups

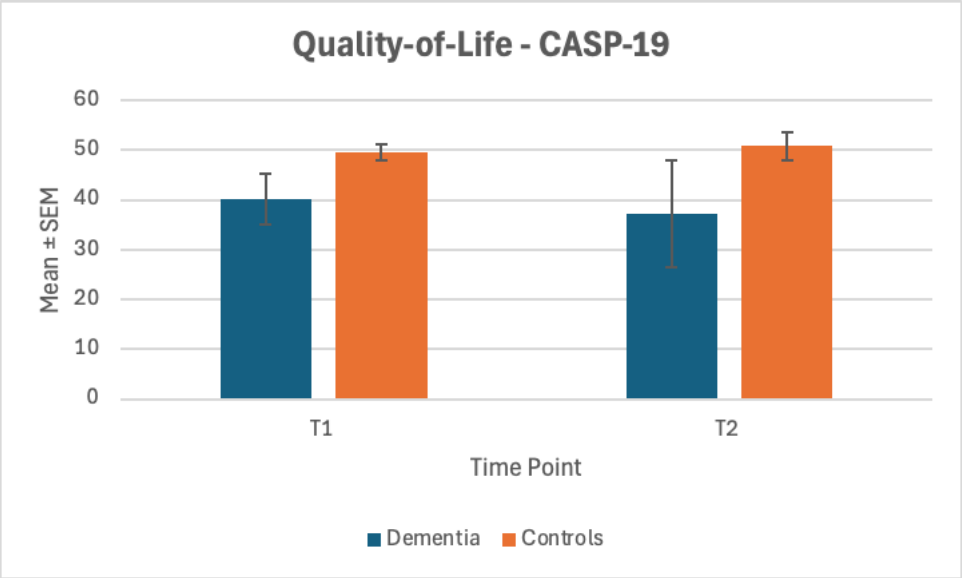


Quality of Life (CASP-19)

CASP-19 scores in the dementia group did not differ significantly between T1 (M = 40.2 ± 4.99) and T2 (M = 37.25 ± 10.8) (Wilcoxon Z = –0.552, p = .750). The community-dwelling group also showed no significant difference between T1 (M = 49.6 ± 1.50) and T2 (M = 50.8 ± 2.75) (Wilcoxon Z = –0.542, p = .688). Between-group comparisons revealed no significant differences at either timepoint: T1 (U = 4.5, p = .111) and T2 (U = 8.0, p = .381). Figure 5.2 summarises these findings.

Figure 5.2

Quality-of-Life (Quality-of-Life; CASP-19) mean scores (± SEM) at baseline (T1) and post-intervention (T2) for dementia and community-dwelling groups

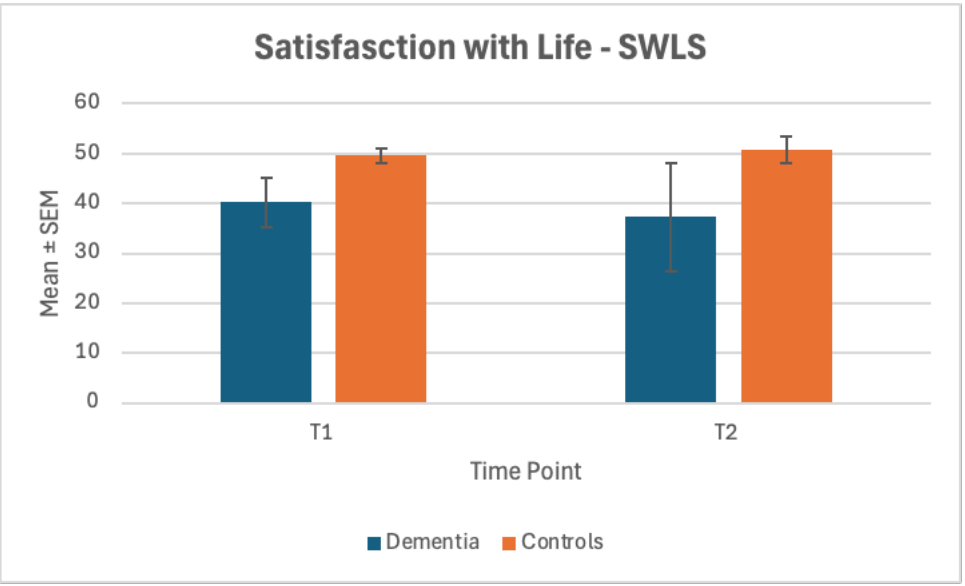


Satisfaction with Life Scale (SWLS)

SWLS scores in the dementia group did not differ significantly between T1 (M = 40.2 ± 4.99) and T2 (M = 37.25 ± 10.8), representing a non-significant change (Wilcoxon Z = 0.000, p = 1.000). The community-dwelling group also showed no significant difference between T1 (M = 49.6 ± 1.50) and T2 (M = 50.8 ± 2.75) (Wilcoxon Z = –0.368, p = .875). Between-group comparisons revealed no significant differences at either timepoint: T1 (U = 8.0, p = .405) and T2 (U = 6.0, p = .190). Figure 5.3 summarises these findings.

Figure 5.3

Satisfaction with Life (Satisfaction with Life Scale; SWLS) mean scores (± SEM) at baseline (T1) and post-intervention (T2) for dementia and community-dwelling groups

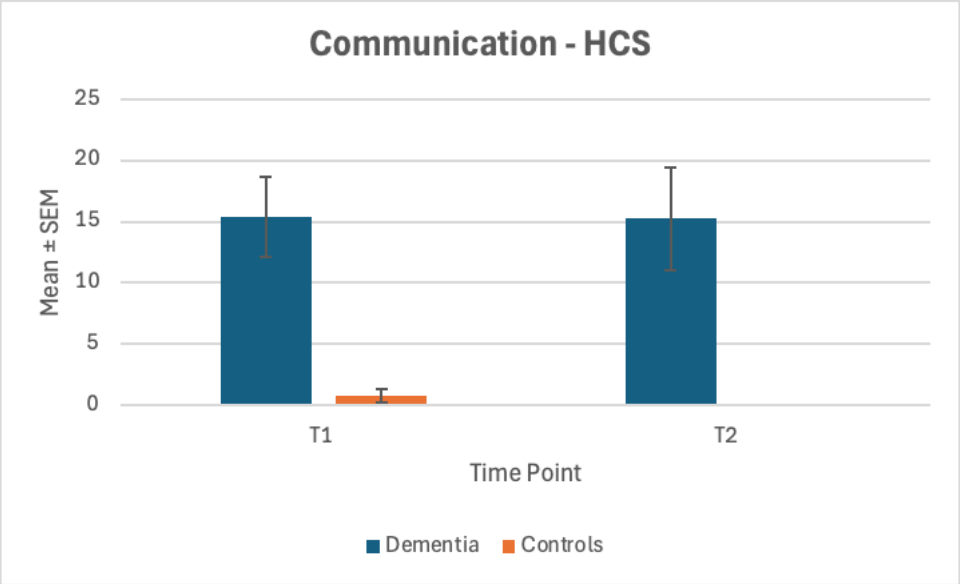


Holden Communication Scale (HCS)

Communication scores in the dementia group did not differ significantly between T1 (M = 15.4 ± 3.23) and T2 (M = 15.25 ± 4.19) (Wilcoxon Z = 0.000, p = 1.000). The community-dwelling group also showed no significant difference between T1 (M = 0.8 ± 0.58) and T2 (M = 0.0 ± 0.0) (Wilcoxon Z = –1.342, p = .500). Between-group comparisons indicated significant differences at both timepoints: T1 (U = 0.0, p = .008) and T2 (U = 2.5, p = .048), confirming consistently higher communication scores showing more difficulties in the dementia group compared to older adults living without dementia, consistent with diagnostic group characteristics rather than intervention effects. Figure 5.4 summarises these findings

Figure 5.4

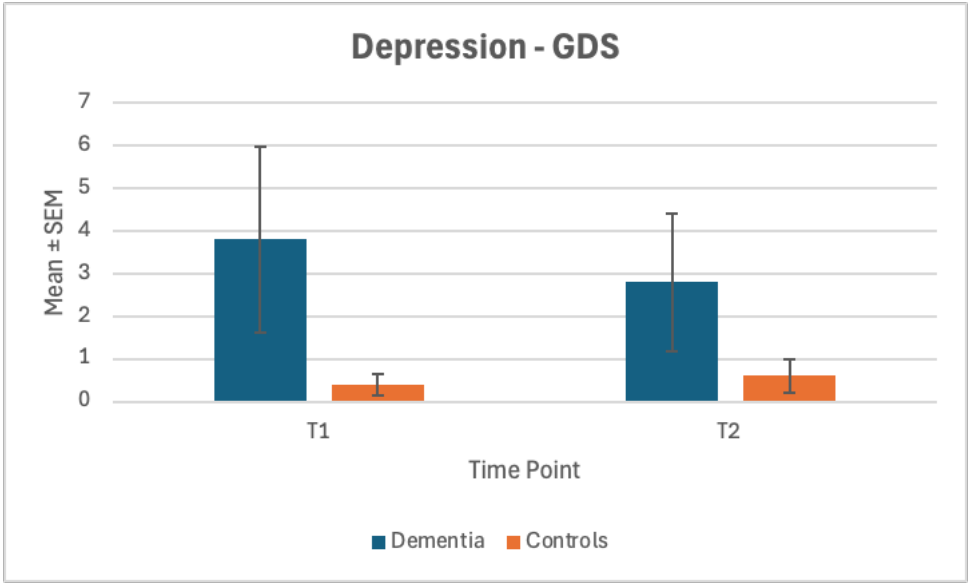
Communication (Holden Communication Scale; HCS) mean scores (± SEM) at baseline (T1) and post-intervention (T2) for dementia and community-dwelling groups



Depression scores on the Geriatric Depression Scale (GDS) in the dementia group did not differ significantly between T1 (M = 3.8 ± 2.2) and T2 (M = 3.2 ± 2.0) (Wilcoxon Z = –1.134, p = .500, exact two-tailed). The community-dwelling group also showed no significant difference between T1 (M = 0.4 ± 0.3) and T2 (M = 0.6 ± 0.3) (Wilcoxon Z = –1.000, p = 1.000, exact two-tailed). Between-group comparisons revealed no significant differences at either timepoint: T1 (U = 6.5, p = .286) and T2 (U = 7.0, p = .286). Figure 5.5 summarises these findings.

Figure 5.5

Depression (Geriatric Depression Scale; GDS) mean scores (± SEM) at baseline (T1) and post-intervention (T2) for dementia and community-dwelling groups



Autobiographical Memory – EAMI

Autobiographical memory was categorised into five epochs: childhood (0–15 years), early adulthood (15–30), middle adulthood (31–45), late adulthood (46–last 5 years), and the most recent five years (see Allen et al., 2020). Both semantic (general self-knowledge) and episodic/event (specific events) memory were assessed. Results are presented separately for semantic and episodic memory, by epoch, and by group (pre vs post), with changes interpreted descriptively within the feasibility context.

Semantic Memory

Figure 5.6

Mean (± SEM) EAMI Semantic Memory scores across five life epochs (Childhood, Early Adulthood, Middle Adulthood, Late Adulthood, and Recent Past) at T1 and T2 in People Living with Dementia

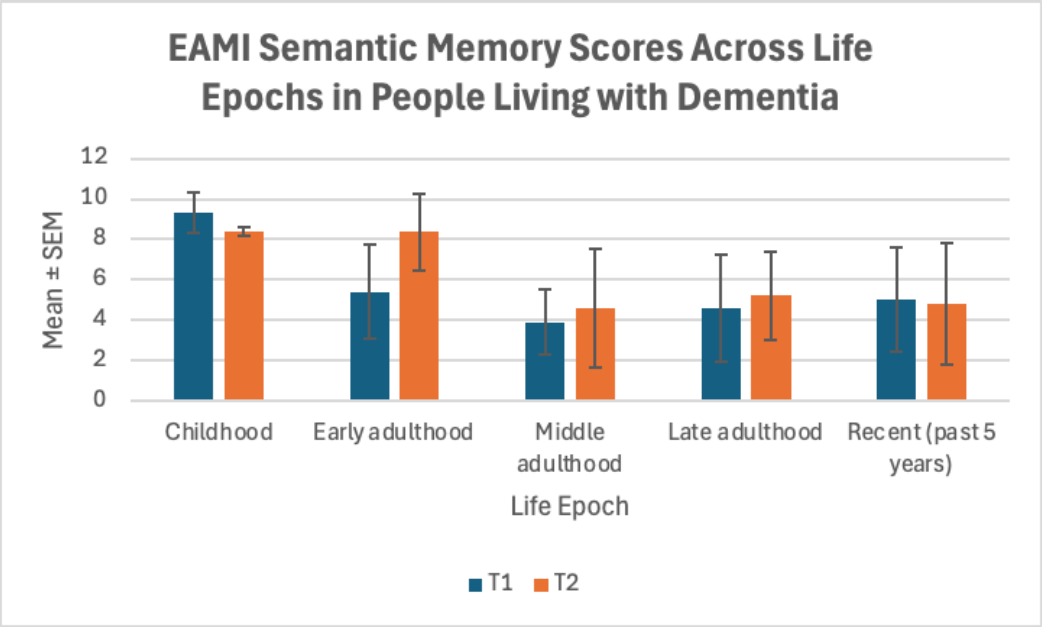
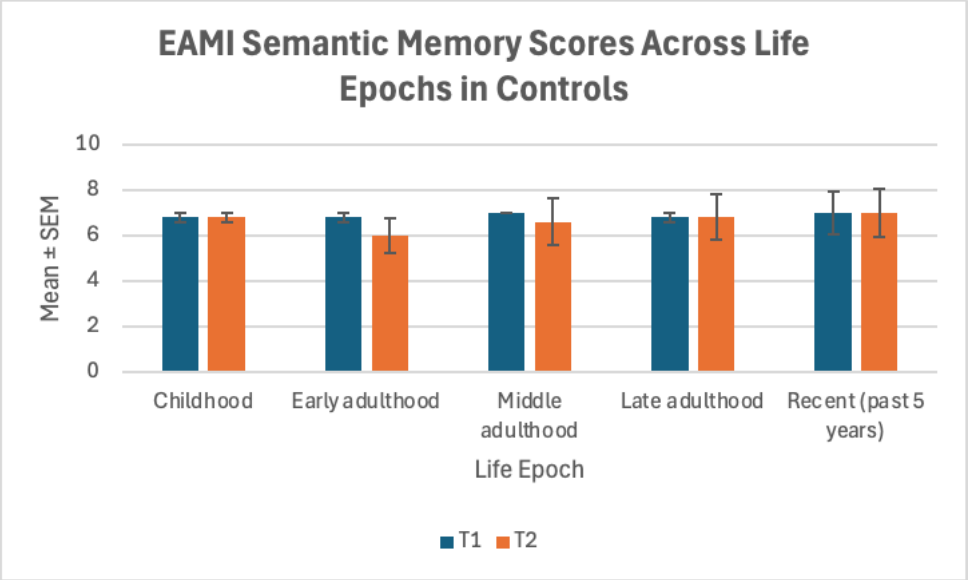


Figure 5.7

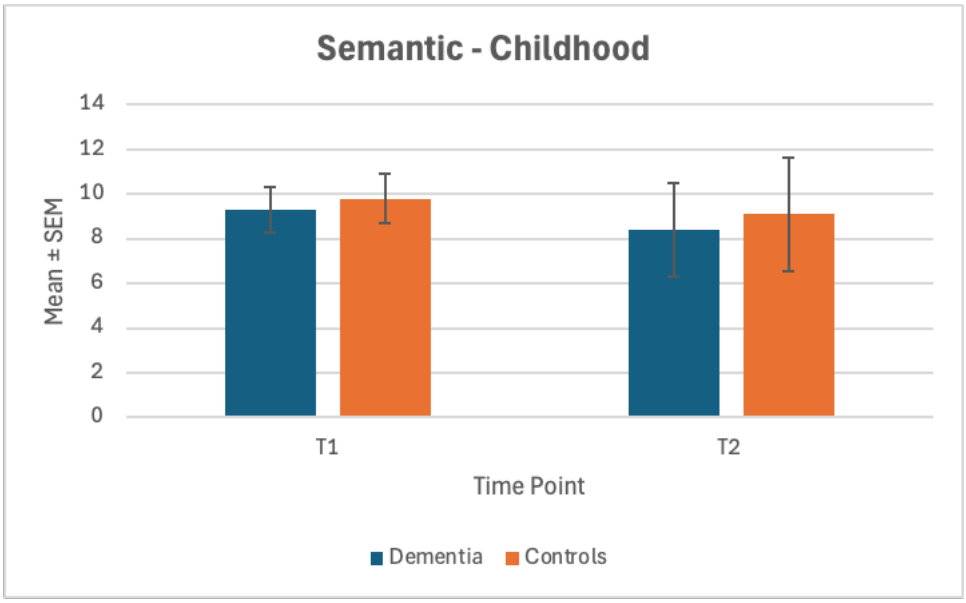
Mean (± SEM) EAMI Semantic Memory scores across five life epochs (Childhood, Early Adulthood, Middle Adulthood, Late Adulthood, and Recent Past) at T1 and T2 in older adults living without dementia



Childhood. Dementia group did not differ significantly between T1 (M = 9.3 ± 0.99) and T2 (M = 8.4 ± 2.12) (Z = –0.921, p = .500). Older adults living without dementia also showed no significant difference between T1 (M = 9.8 ± 1.11) and T2 (M = 9.1 ± 2.56; Z = –0.365, p = .875). Between-group differences were not significant at either T1 (U = 11.5, p = .913) or T2 (U = 10.0, p = .683). Figure 5.8 summarises these findings.

Figure 5.8

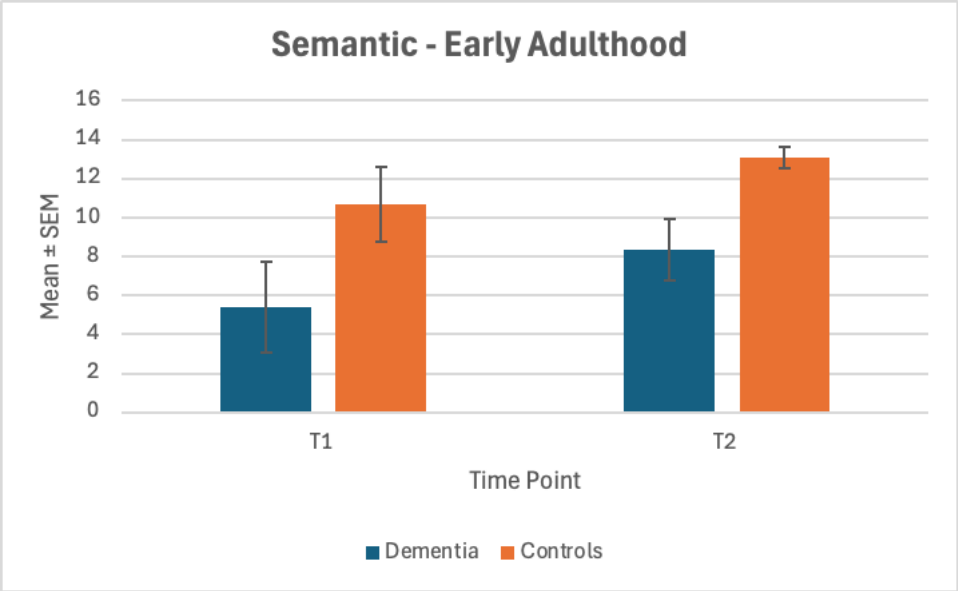
Semantic Memory (Childhood Epoch) in Dementia and Control Groups at T1 and T2 (mean ± SEM)



Early adulthood. Dementia group did not differ significantly between T1 (M = 5.4 ± 2.32) and T2 (M = 8.38 ± 1.91) (Z = –0.73, p = .46). Older adults living without dementia also showed no significant difference between T1 (M = 10.7 ± 1.58) and T2 (M = 13.1 ± 0.56; Z = –1.604, p = .109). Between groups, differences were not significant at T1 (U = 4.0, p = .087) but reached significance at T2 (U = 1.5, p = .024). 5.9 summarises these findings.

Figure 5.9

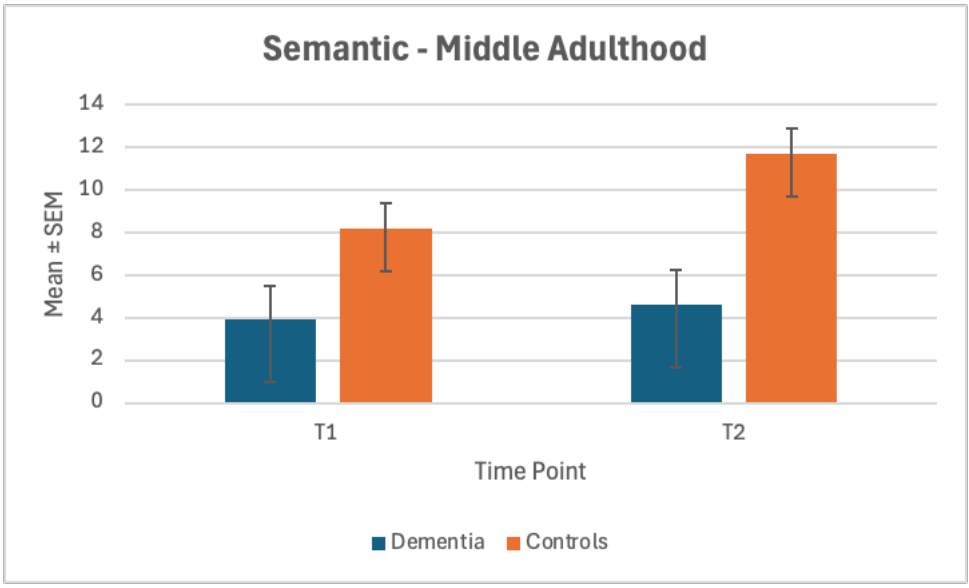
Semantic Memory (Early Adulthood Epoch) in Dementia and Control Groups at T1 and T2 (mean ± SEM)



Middle adulthood. Dementia scores did not differ significantly between T1 (M = 3.9 ± 1.62) and T2 (M = 4.6 ± 2.93) (Z = –1.342, p = .500). Control scores also showed no significant differences between T1 (M = 8.2 ± 1.20) and T2 (M = 11.7 ± 2.01) (Z = –1.214, p = .313). Between-group differences were not significant at T1 (U = 3.0, p = .063) and non-significant at T2 (U = 4.5, p = .111). Figure 5.10 summarises these findings.

Figure 5.10

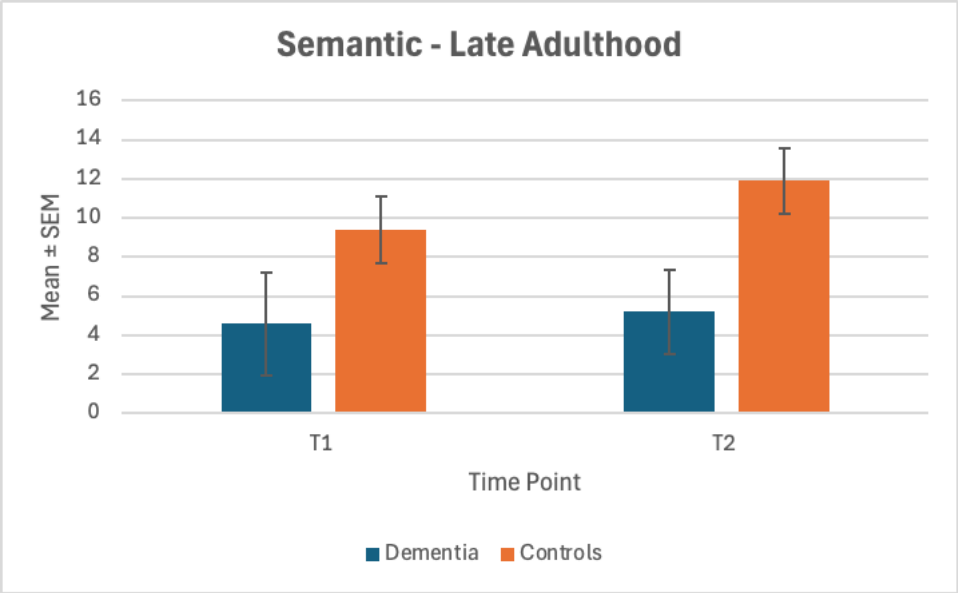
Semantic Memory (Middle Adulthood Epoch) in Dementia and Community-dwelling Groups at T1 and T2 (mean ± SEM)



Late adulthood. Dementia group did not differ significantly between T1 (M = 4.6 ± 2.64) and T2 (M = 5.2 ± 2.15), with Z = 0.000, p = 1.000. Older adults living without dementia also showed no significant difference between T1 (M = 9.4 ± 1.72) and T2 (M = 11.9 ± 1.67) (Z = –1.095, p = .273). Between-group differences were significant at T1 (U = 3.0, p = .048) and at T2 (U = 0.5, p = .016). Figure 5.11 summarises these findings.

Figure 5.11

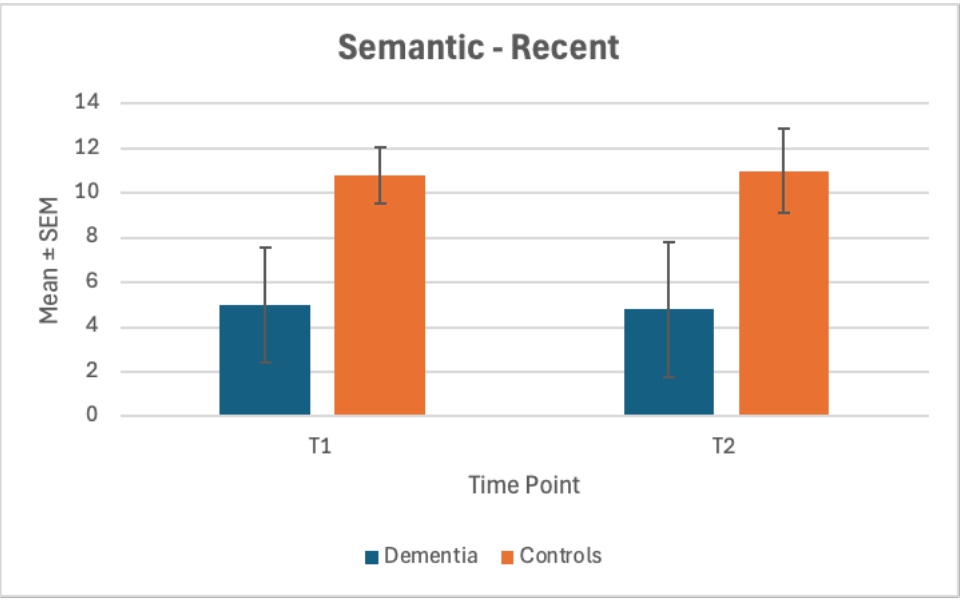
Semantic Memory (Late Adulthood Epoch) in Dementia and Community-Dwelling Groups at T1 and T2 (mean ± SEM)



Recent (past 5 years). Dementia scores did not differ significantly between T1 (M = 5.0 ± 1.53) and T2 (M = 4.8 ± 1.81) (Z = –0.447, p = .655). Older adults living without dementia also showed no significant difference between T1 (M = 10.8 ± 1.27) and T2 (M = 11.0 ± 1.19) (Z = –0.135, p = .893). Between-group differences were not significant at either T1 (U = 5.0, p = .167) or T2 (U = 6.5, p = .214). Figure 5.12 summarises these findings.

Figure 5.12

Semantic Memory (Recent Epoch) in Dementia and Community-Dwelling Groups at T1 and T2 (mean ± SEM)



Episodic (Event) Memory

Figure 5.13

Mean (± SEM) EAMI Event Memory scores across five life epochs (Childhood, Early Adulthood, Middle Adulthood, Late Adulthood, and Recent Past) at T1 and T2 in people living with dementia

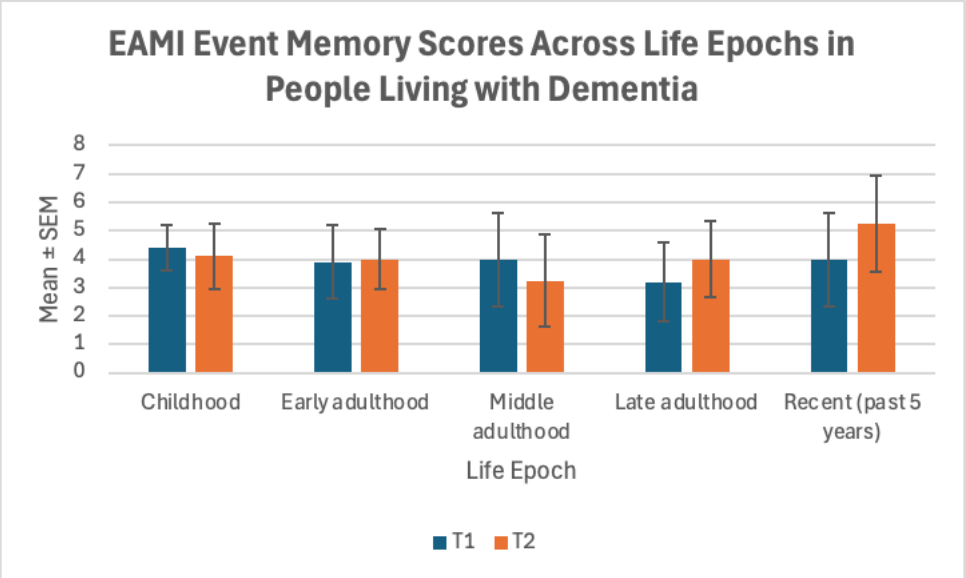
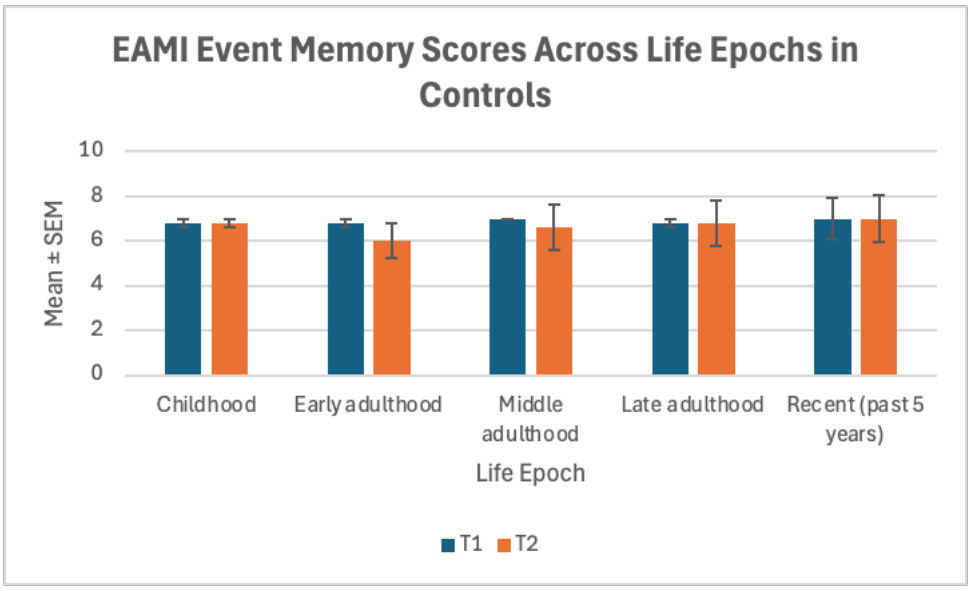


Figure 5.14

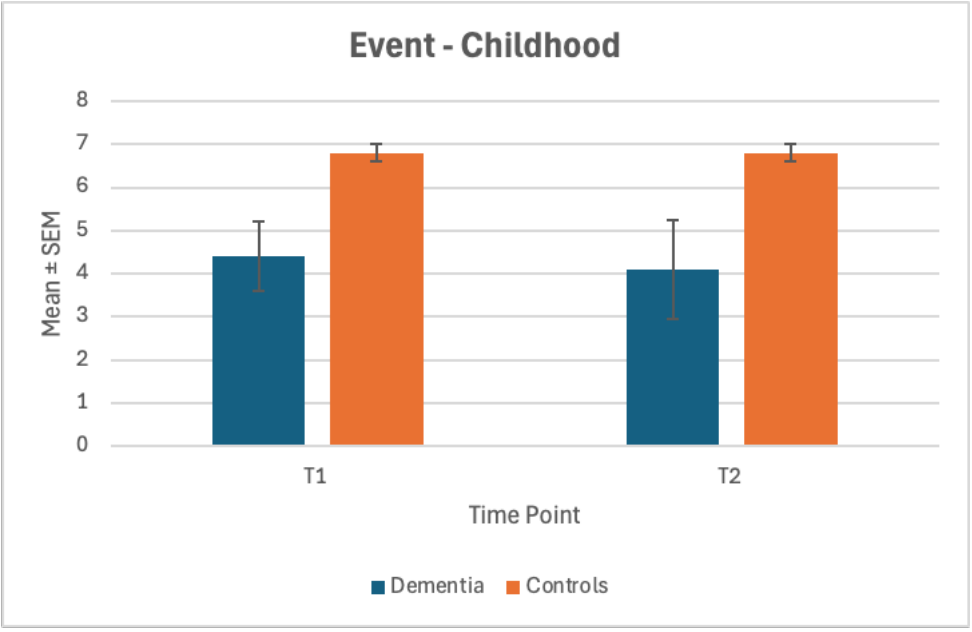
Mean (± SEM) EAMI Event Memory scores across five life epochs (Childhood, Early Adulthood, Middle Adulthood, Late Adulthood, and Recent Past) at T1 and T2 in older adults living without dementia



Childhood. Dementia group did not differ significantly between T1 (M = 4.4 ± 0.80) and T2 (M = 4.1 ± 1.14) (Z = –0.447, p = .655). Community-dwelling group also showed no significant difference between T1 (M = 6.8 ± 0.20) and T2 (M = 6.8 ± 0.20) (Z = 0.000, p = 1.000). Between-group differences were not significant at T1 (U = 5.0, p = .167) or T2 (U = 6.0, p = .056).

Figure 5.15

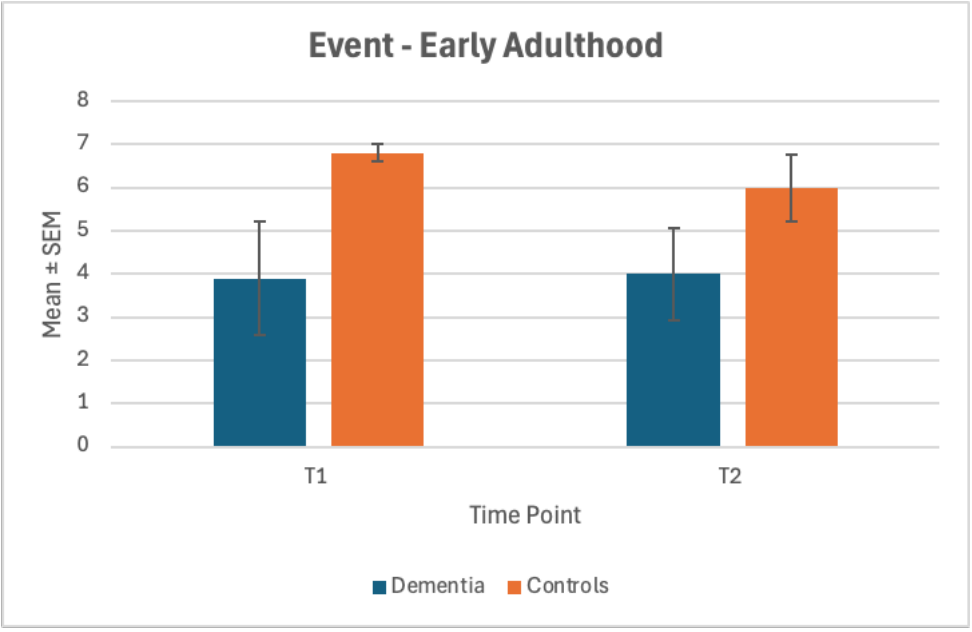
Event Memory (Childhood Epoch) in Dementia and Community-Dwelling Groups at T1 and T2 (mean ± SEM)



Early adulthood. Dementia group did not differ significantly between T1 (M = 3.9 ± 1.31) and T2 (M = 4.0 ± 1.07) (Z = –0.866, p = .375). Community-Dwelling group also showed no significant difference between T1 (M = 6.8 ± 0.20) and T2 (M = 6.0 ± 0.78) (Z = –1.604, p = .250). Between-group differences were not significant at both timepoints (T1: U = 4.0, p = .087; T2: U = 3.0, p = .056).

Figure 5.16.

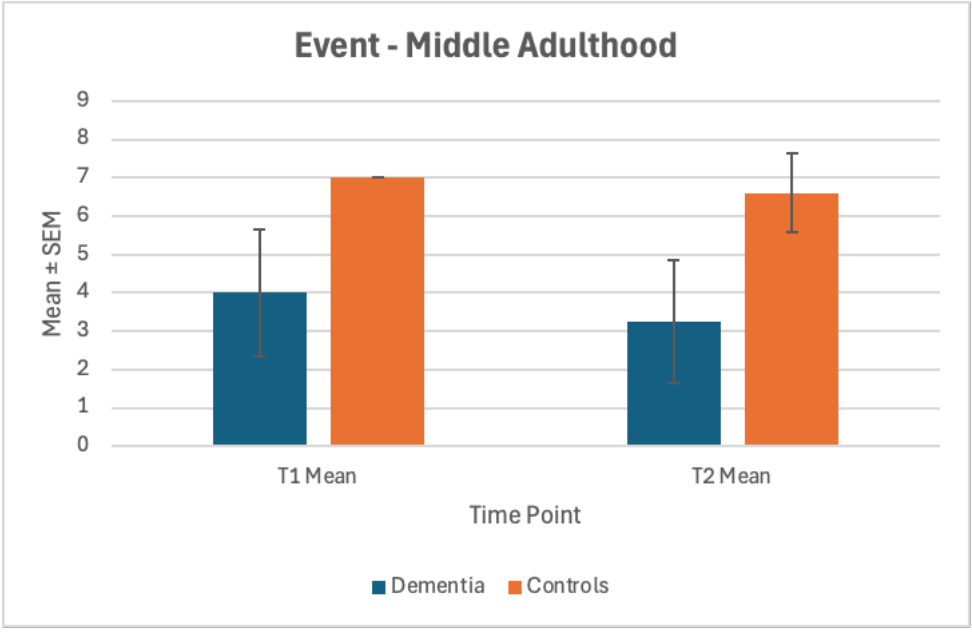
Event Memory (Early Adulthood Epoch) in Dementia and Community-Dwelling Groups at T1 and T2 (mean ± SEM)



Middle adulthood. Dementia group did not differ significantly between T1 (M = 4.0 ± 1.64) and T2 (M = 3.25 ± 1.60) (Z = 0.000, p = 1.000). Older adults living without dementia also showed no significant difference between (M = 7.0 ± 0.00) and T2 (M = 6.6 ± 1.02) (Z = –1.000, p = 1.000). Between-group differences were significant at T1 (U = 3.0, p = .048) and non-significant at T2 (U = 4.0, p = .087)

Figure 5.17

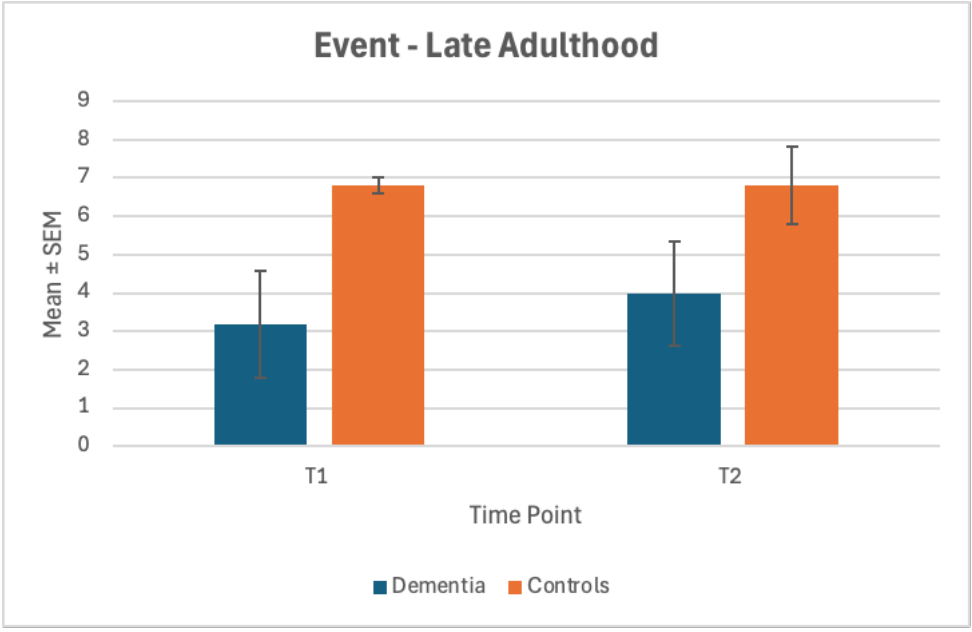
Event Memory (Middle Adulthood Epoch) in Dementia and Community-Dwelling Groups at T1 and T2 (mean ± SEM)



Late adulthood. Dementia group did not differ significantly between T1 (M = 3.2 ± 1.39) and T2 (M = 4.0 ± 1.36) (Z = –1.633, p = .250, exact two-tailed). Older adults living without dementia also showed no significant difference between T1 (M = 6.8 ± 0.20) and T2 (M = 6.8 ± 1.00) (Z = –1.000, p = 1.000). Between-group differences were significant at both timepoints (T1: U = 3.0, p = .048; T2: U = 0.5, p = .016).

Figure 5.18

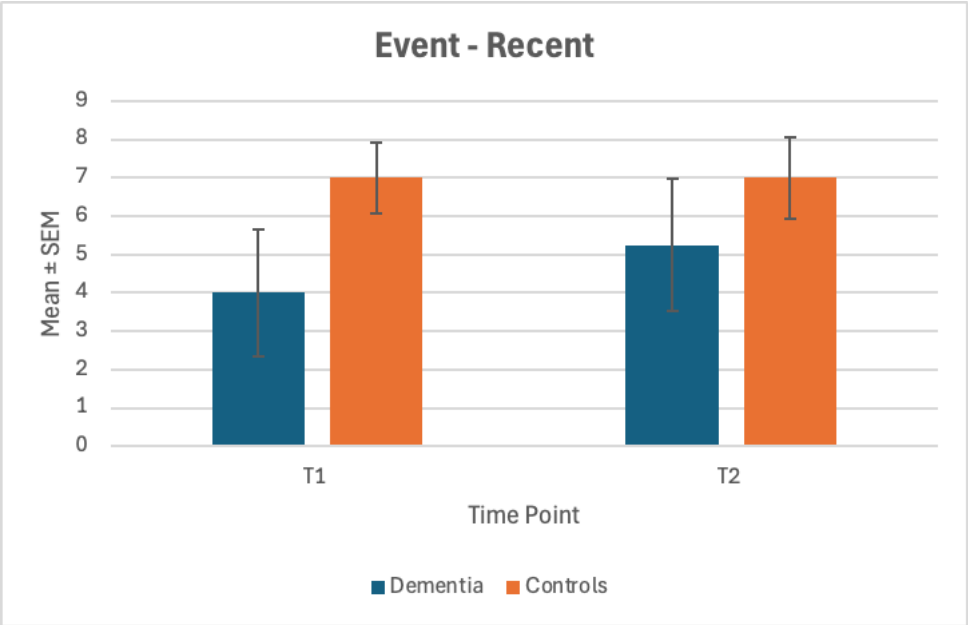
Event Memory (Late Adulthood Epoch) in Dementia and Community-Dwelling Groups at T1 and T2 (mean ± SEM)



Recent (past 5 years). Dementia group did not differ significantly between T1 (M = 4.0 ± 1.64) and T2 (M = 5.25 ± 1.71) (Z = 0.000, p = 1.000). Older adults living without dementia also showed no significant difference between T1 (M = 7.0 ± 0.92) and T2 (M = 7.0 ± 1.07) (Z = –1.000, p = 1.000). Between-group differences were not significant at either T1 (U = 5.0, p = .167) or T2 (U = 5.0, p = .167).

Figure 5.19

Event Memory (Recent Epoch) in Dementia and Community-Dwelling Groups at T1 and T2 (mean ± SEM)



5.3.4 Qualitative Findings

The qualitative analysis revealed overlapping yet distinct thematic landscapes across the two groups. The difference between the groups can be observed in the number and spread of themes. However, common domains between the groups emerged, though they were often expressed and elaborated in contrasting ways.

Thematic Range in Participants Living with Dementia

Across the four walking routes participants living with dementia produced a few sets of themes. For example, seventeen themes were identified in the Canal walk, eleven at Carton, and four on the South Campus. This pattern reflects both the prompting potential of the environment and the recognised challenges of maintaining autobiographical discourse in the context of early dementia, with several noting that “you

know when you see the bridge there, it brings it all back, we used to walk that way every Sunday" or "this place… it looks different now, but I remember the canal when there were hardly any cars."

The most prominent themes included change, family, health and diagnosis, family caregiver roles and reduced independence, geography and native identity, local community groups, education and work identity, mental health, and COVID-19. Change was generally narrated in terms of shifts in services and social resources, rather than in terms of personal development or growth, as illustrated by comments such as "everything's changed with the services… you can't just walk in anymore, you have to make appointments" and "it's not like years ago when you knew everyone in the office; now it's all computers and waiting lists." This style of recall is consistent with research showing that, as episodic access declines, people rely more heavily on semanticized talk, with fewer specific details unless carefully organised (Irish et al., 2010; Nickbakht et al., 2023).

In addition, family talk was strongly shaped by the presence of family caregivers. Their prompts often oriented stories toward parent–child roles and helped sustain momentum when spontaneous recall was less forthcoming, as seen when participants said "well, I wouldn't remember that until she reminded me, but yes, the children were small then," or "he'd always say, 'you mind yourself now,' so I suppose that's what families do, they keep you right." One remarked affectionately, "we do it together now, don't we? I'd be lost without her to prompt me." This dynamic is in line with supported-recall approaches such as SPECAL, which emphasise scaffolding strategies to preserve continuity and reduce anxiety (Riachi, 2018).

Health, diagnosis, and the loss of independence were repeated concerns, often coupled with family caregivers' reflections on stress, convenience, and the logistics of support. Participants captured this poignantly in comments like "you lose bits of yourself, don't you, when you can't drive anymore," "the doctor said it's just the start, but I know I'm not the same," and "it's the small things, remembering the pills, the walking slower, that tell you it's changing."

References to geography and native identity, such as naming familiar places, rivers, and landmarks, offered a sense of belonging and orientation. "Ah that's the river there, if you follow it long enough, you'd come to where I grew up," and "Leitrim's in my bones; I

might live here now, but that's home," echoing the value of spatial cues as memory supports in people living with dementia (Richmond et al., 2018).

Mental health was discussed in an inclusive and non-stigmatising way, while COVID-19 was largely framed as rupture and loss. Participants spoke of confusion, sadness, and frustration at disrupted routines saying things like "I used to worry about it, but now I just say, sure, we all have our off days," "people didn't talk about feelings back then; now it's grand to say you're anxious or tired," or "everything stopped, you'd wake up and forget what day it was." which resonates with broader descriptions of pandemic disorientation in people living with dementia. The tone is clear in remarks such as "Now it hasn't happened due to Covid, of course!" and the more hesitant recollection "The last time were in before Covid was in Doolin, so that's county Clare but um, we were down in Doolin. We were down in Doolin for the last…" (Wright & Lough, 2023).

Certain motifs re-emerged across sessions (see Figure 5.22): change, geography, family roles, travel (often appearing when family caregivers supplied cues), mental health, local groups, COVID-19, and education or work identity. The structured format appeared to lower anxiety and encourage engagement, reflecting evidence that rule-based frameworks can support reminiscence in dementia (Woods et al., 2018). In narrative type, the participants' talk was more often semantic and generalised. Episodic detail did occur, but typically in response to prompts or environmental cues. In narrative quality, however, their contributions were affectively rich and became more coherent with time. Emotional expression was a clear strength, and the second interview often showed greater fluency. Group composition mattered: with more men present, local history and geography were frequent discussions, while the mix of dementia subtypes seemed to foster empathy, producing supportive rather than comparative discussions of health (Pishvaei et al., 2015). These patterns also align with the quantitative findings, which showed growth in emotional expressiveness and modest supported gains in episodic access, as reflected in remarks like "I might not get every detail right, but I remember the feeling, happy times," "sometimes I can't remember what happened, but I remember how it made me feel," and "we're all in the same boat, aren't we, some better days, some worse; it's nice to talk about these things together, it makes you feel lighter."

Figure 5.20

Reminiscence Topics by Group: PLwD

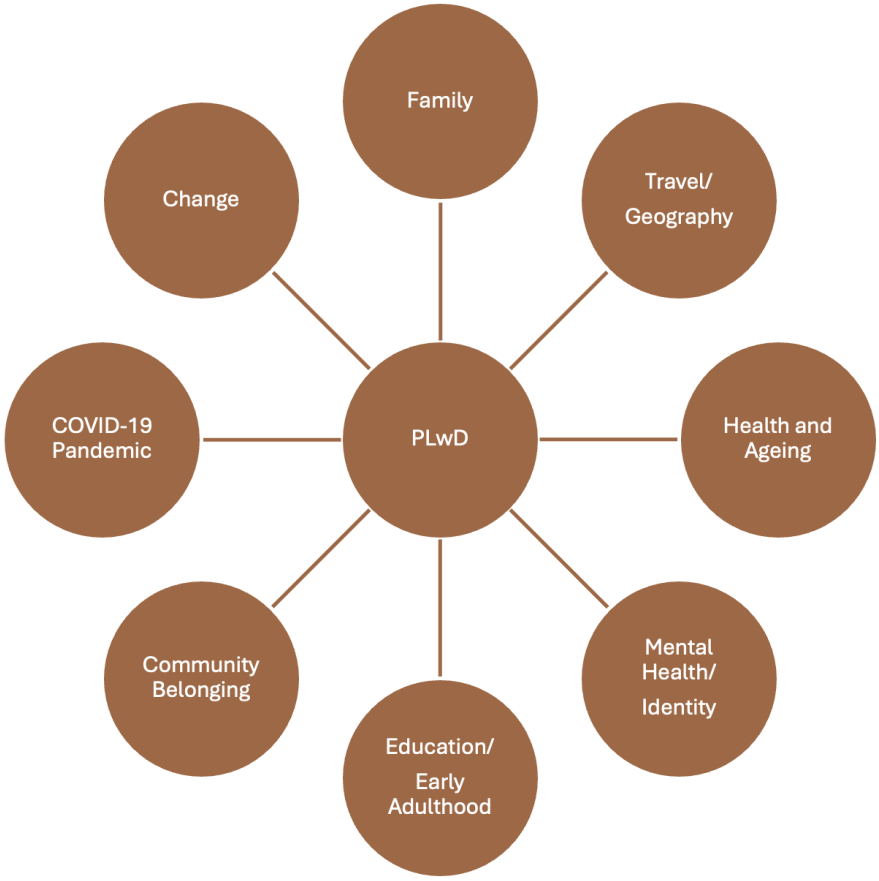
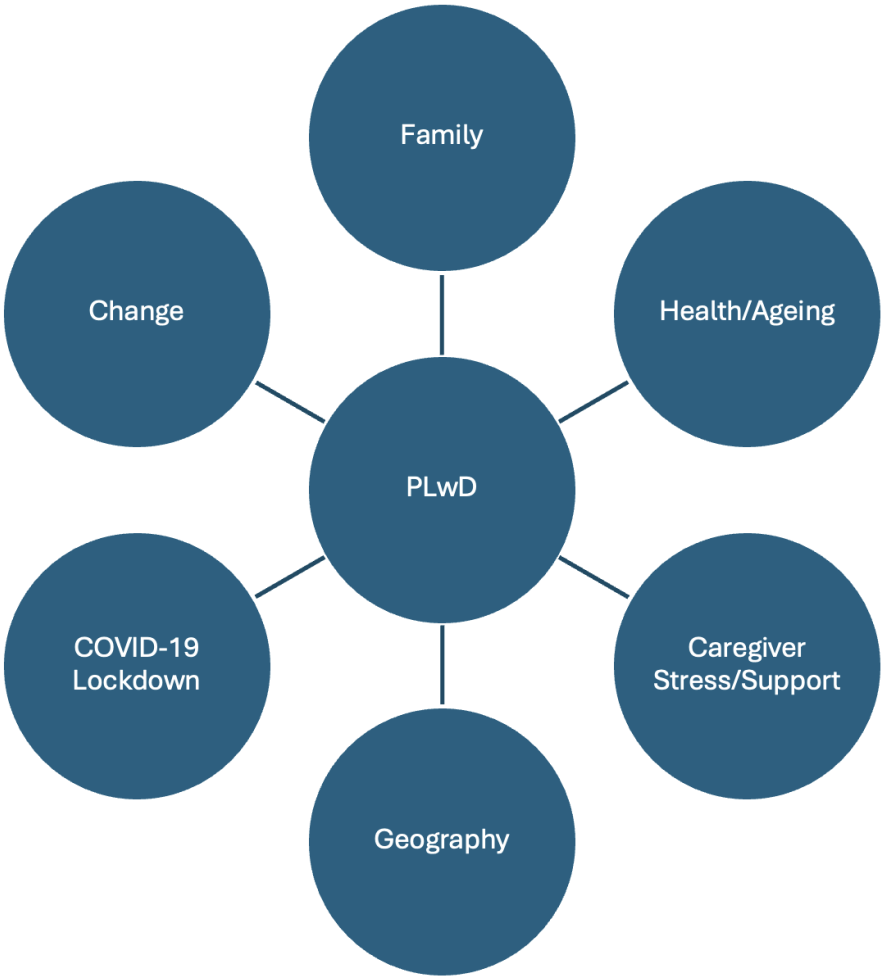


Figure 5.21

Reoccurring Topics by Group: PLwD



Thematic Range in older adults living without dementia

The community-dwelling group, who completed three walks, produced a broader thematic field: twenty-five themes on the Canal, twenty-one at Carton and thirty-four on the South Campus. The range of themes supports the group's preserved ability to move flexibly across autobiographical domains and to elaborate discursively when prompted by the walking environment, often remarking that "it was brilliant, absolutely brilliant, you'd meet everyone up the road" or "we'd go off in the morning and come back at night, wild as anything, and we never wanted to go home."

The main themes encompassed change, family, education, history, religion and church life, natural environments, technology and media, health and medication, local facilities and infrastructure, cultural identity and minority rights, relationships, gender roles, and COVID-19 (see Figure 5.23). Change was usually framed as opportunity or growth, with participants linking education, marriage, and occupational trajectories to narratives of social mobility. “We hadn’t much, but each step felt like moving up, getting married, getting the job, getting the house.” This way of framing memory aligns with models of autobiographical memory in healthy ageing that emphasise the integration of self-defining memories with cultural scripts (Conway & Pleydell-Pearce, 2000; Rubin & Berntsen, 2009).

Family narratives were situated within socio-historical contexts. Stories of hardship and difficulties, such as recollections of “penny meals”, were used to illustrate resilience and shared endurance. “We used to queue for the penny dinners, but we thought it was grand, everyone did.” Education was described both as early schooling and as a return or renewal in later life, reflecting literature on lifelong learning as a contributor to wellbeing in older adulthood (Vilarinho et al., 2021). “I went back to night classes after the kids left home, it kept me alive.” Religion and church practices provided moral and social framing. “If you missed Mass, the whole street knew!". Nature, gardens, trees, and other sensory details, grounded memories with vividness and supportiveness. “The smell of the hay, you’d never forget it.”
Technology and media also featured strongly, participants contrasted “the coat-hanger aerials and black-and-white telly” with “phones you can open doors with now.”

Recurring motifs (see Figure 5.24) across walks included change, nature and environment, religion, technology and media, health, family and origins, education, and relationships. Artefacts such as local news, photographs, or online posts intensified these narratives and facilitated collaborative recall, as when one said, “I saw that post about the old bridge online, it started a whole conversation at home that night.” In narrative type, participants offered specific episodic memories, often temporally and spatially precise, moving fluidly between detailed accounts. In narrative quality, their contributions were elaborate, reflexive, and frequently humorous, even when discussing illness or death (Linde, 1993). “We laughed about the funerals, because if you didn’t, you’d cry.” COVID-19 was not narrated as rupture but as adaptation, with new routines and reconfigured social practices, resonating with reports of resilience in older cohorts (Park

et al et al., 2019). “We just did what we could, got on with it, met in the garden instead of the house.”

Figure 5.23

Reminiscence Topics by Group: older adults living without dementia

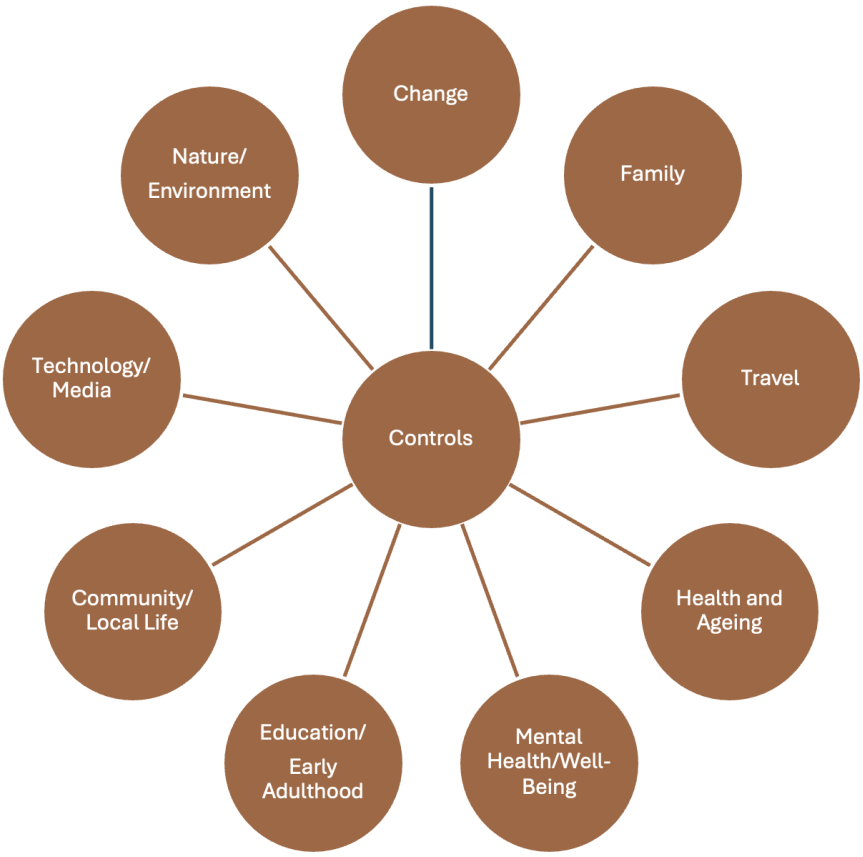
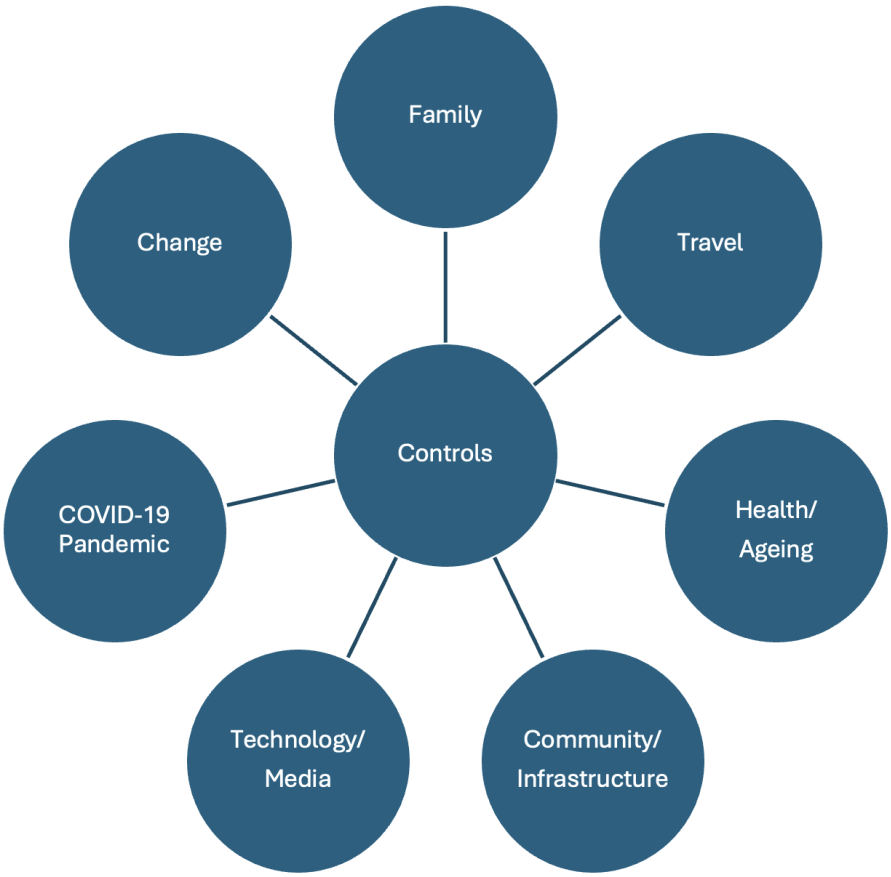


Figure 5.24

Reoccurring Topics by Group: older adults living without dementia



Comparative Thematic Synthesis

Although the number of walks differed, both groups converged on certain domains, change, family, education, and place, but the framing of these domains varied. For participants with dementia, change was narrated as shifts in services and societal structures; for older adults living without dementia, it was expressed as personal growth and opportunity. Family remained central but differed in perspective. Family caregivers guided dementia narratives toward parent–child roles and daily support, "we do it together now, don't we," while older adults living without dementia positioned family within collective histories of diversity and resilience, "we were poor, but we had each other and that was everything." Education underpinned identity in both groups, though for dementia

participants it was often evoked by external prompts, while older adults living without dementia described education as a lifelong pursuit inspired through the life course. “I kept learning, even when I was retired.”

COVID-19 provided the clearest divergence. For participants living with dementia, it was remembered as confusion, disruption, and loss. “Everything stopped, you didn’t know the day from the night,” consistent with reports of pandemic-related isolation and reduced service access (ASI, 2023). For older adults living without dementia, by contrast, it was a story of adaptation and resilience. “We learned Zoom and kept the choir going in the garden,” echoing findings of post-pandemic wellbeing among community-dwelling older adults (Park et al., 2019).

Differences extended to narrative type and quality of memory recall. Dementia accounts tended toward semantic generalisations, sustained by tailored and environmental cues, while episodic recall was not always evident. Their recall strengths were more towards affective expression, inclusivity around mental health, and a gradual increase in coherence between recall and cues. “I remember how I felt, even if not what I did.” Older adults living without dementia, in contrast, provided episodically specific, discursive, and humorous accounts, enriched by collaborative exchanges. “We were all talking at once, but it made sense somehow.” These patterns relate to theoretical distinctions between Alzheimer’s disease and healthy ageing, where semantic memory is relatively preserved but episodic access is difficult (Irish et al., 2010; Nickbakht et al., 2023).

Importantly, placed within the Irish context, these findings align with national evidence. Indeed, recent dementia policy has emphasised timely diagnosis, integrated support, and community pathways (HSE, 2023). Yet evaluations show unmet demand and significant strain on families (ASI, 2023). Irish survey work in 2023 reported restricted access to services and heightened loneliness but also highlighted the protective role of community inclusion (ASI, 2023). With this contextual background in mind, it is not surprising that participants with dementia centred health, care navigation, and family dynamics. “You do your best to manage it all.” Older adults living without dementia, who were active and socially connected, spoke across a broader thematic range with detail and agency. “We’ve the time now to look back and enjoy it.”

Route-Specific Illustrations

The route-specific accounts illustrate these broader contrasts. On the Canal walk, both groups reflected on change, family, travel, and ageing, though older adults living without dementia more often linked these themes to personal opportunity, “that’s when we started travelling, first time out of Ireland,” while participants with dementia emphasised societal supports and the immediate realities of diagnosis, “sure, I can’t do it alone anymore.”

At Carton, geography, local events, and mental health emerged. For the PLwD group, COVID-19 talk was notably concrete and loss-oriented and tailored to place**.** “The shops closed, you couldn’t even meet at the canal.” For older adults living without dementia, the same topic was discussed as adaptation and forward movement within community life. “We kept walking, just further apart.” On the South Campus, education and early adulthood were dominant. In the PLwD group, the facilitator’s academic background acted as a cue: “So you were in the Department of Education. You moved around a little bit into different kinda areas”; “And um I worked all my life in the Department of Education, which I liked. So, good times.”; “The Department of Education, which I enjoyed and had a good life I have to say, and I enjoyed my time and had some great times at various places and done various things”.

Early-adulthood talk also surfaced as positive identity work and place-based recollection: “Well it was all cattle, all the all the cattle Leitrim (inaudible) cattle. It’s quite known for its cattle but anyway. And the the big thing I think for most people was that the farming well I was from farming background, was the horse jumping. Horse, you know, show jumping, and had the big fences up and you know it was great it was really spectacle you know. And this was I would say in my really young days and it still has the show the really big show but it doesn’t have the horse jumping”; “So I’m family 3 and I’m the youngest. And I also wear hearing aids so I might sometimes mishear people so I apologies in advance but the kinda louder speaker does help with me too. But um. I’ve living in Australia for many years and I’ve had my two children there, that’s the time that Anna was talking about, my disappearance and um. But it was amazing 5 years, wouldn’t change it but I’m glad to be home now, that’s for sure. And I live out in Timahoe now.” Older adults living without dementia elaborated more detailed accounts of relationships, cultural identity, and gender roles on the same route. “We weren’t allowed play GAA back then, imagine! We’d watch the lads instead.”

5.4 General Discussion

Within the overall structure of this thesis and the Medical Research Council framework for complex interventions, this chapter represents a further stage of feasibility and piloting work following the initial pilot presented in Chapter 4. The aim was therefore not to determine intervention effectiveness, but to assess whether the intervention could be implemented across multiple sessions and groups, whether participants would engage with the format, and whether the proposed outcome measures and study procedures were suitable for future controlled research.

5.4.1 Quantitative Findings

Changes in Cognitive and Psychological measures following intervention

As might be expected there was a significant difference in the MoCA scores between the older adults living with and without dementia. The MoCA is widely regarded as an effective screening tool for dementia and mild cognitive impairment (Nasreddine et al., 2005), with a commonly used cut-off score of ≤26 indicating a possible presence of cognitive impairment (Luis et al., 2009; Carson et al., 2018). Although not significant, MoCA scores following the intervention seemed to increase slightly in the control group while the scores for the PLwD group declined. These descriptive patterns do not permit conclusions regarding intervention impact and instead reflect short-term trajectories within a small feasibility sample. This is consistent with literature reporting that global cognitive tools may not fully reflect functional or psychosocial gains in short interventions (Clare et al., 2019). The continuity theory of reminiscence therapy (Parker, 1995) suggests that people with dementia maintain cognitive function by drawing on familiar material, which may not be fully assessed through brief screening tools. Satisfaction with life scores, scores on the quality-of-life, communication and depression scores also remained stable in both groups following the intervention. Overall stability across measures suggests that participation did not result in measurable deterioration over the four-week period, but neither can improvement be inferred.

Furthermore, interpreting psychology well-being, particular in a dementia group, is complex. Responses may be influenced by cognitive bias, mood on the day of testing, or even the framing of questions, especially in community setting where participants are getting out of the day-to-day routine (Fisher et al., 2000). For example, the CASP-19 model prioritises autonomy, self-realisation, and pleasure - domains that are meaningful in community dementia care - but extremely difficult to assess through standardised tools

alone and in a community setting (Stoner, Orrell, & Spector, 2019). In addition, all participants were active and engaged in the community so may have high baseline function, the PLwD group in particular reported higher levels of weekly physical activity and social engagement than older adults living without dementia, factors that are known to moderate cognitive decline and improve mood (see Chapter 1). These findings may reflect the limitations of the tools themselves, which may be influenced by social desirability and reduced sensitivity in populations with fluctuating emotional awareness, therefore, caution is warranted when interpreting small fluctuations in early-phase intervention studies. Given the design, it is not possible to determine whether the intervention influenced cognitive or psychological outcomes.

Lastly, the structured nature of the intervention, combined with a relational and supportive context, may have contributed to positive session-level affective experiences, although these were not formally measured. Although not captured formally, verbal feedback from facilitators suggested that participants appeared more relaxed and optimistic during post-intervention sessions. This finding is consistent with the continuity theory (Stapley et al., 2025), which emphasises the stabilising role of meaningful life review in supporting emotional wellbeing in dementia.

Changes in the EAMI following the intervention

As might be expected, older adults living without dementia tended to recall more semantic memories compared to the group living with dementia; these group differences were significant for both early and late adulthood epochs. The lack of significant group differences for the other epochs suggests that semantic autobiographical memory remains relatively stable and preserved until the moderate stages of Alzheimer's Disease (Grossman et al., 1998). These patterns also echo earlier findings in Chapter 4, where participants with dementia often referenced facts or names related to their community, such as street names, churches, or public figures, more easily than event-based details.

Although not significant, slight increases in semantic memory were observed across most epochs in both groups, with the exception of childhood and recent life periods, following the walking and reminiscence intervention. These descriptive trends should be interpreted cautiously and cannot be attributed to the intervention. These results are consistent with findings that autobiographical semantic memory tends to be more resilient to age-related decline than episodic recall and can be supported through structured reminiscence and social engagement activities (Piolino et al., 2006; Addis et

al., 2009; El Haj & Antoine, 2017). Notably, the absence of significant improvement in childhood memory recall may reflect sociohistorical or emotional distancing, particularly relevant in older Irish adults who may associate this period with highly annotated negative events. This response may also be compounded by the "childhood amnesia" effect and a general reduction in emotional re-experiencing early-life events (Allen et al., 2020; Munawar et al., 2018). Despite these challenges, the structure of the intervention may have provided contextual support for recall, although causal inferences cannot be made. Piefke et al. (2003) theorised that repeated retrieval, especially when socially reinforced, may lead to the formation of new traces or reinforcement of existing ones. This may be particularly effective for personal semantic facts, which are less dependent on the hippocampus and more closely linked to temporal and frontal structures.

Participants living with dementia (PLwD) demonstrated more noticeable increases in episodic recall compared to the community-dwelling group following the intervention. While most of these changes were not statistically significant, the significant group differences observed at T2 for late adulthood and at T1 for childhood underscore meaningful distinctions in memory profiles between PLwD and older adults living without dementia at specific life epochs. These differences likely reflect diagnostic group characteristics rather than intervention-related change. These findings reinforce the patterns observed in Chapter 4, where emotional and context-rich cues, especially those tied to place, showed to be effective in triggering memory recall in PLwD participants. Moreover, the community-dwelling group's high and stable episodic memory scores highlight a potential ceiling effect, limiting the capacity to observe measurable change in this group. Prior research shows that episodic autobiographical memory (AM) is particularly sensitive to early Alzheimer's Disease, while semantic memory is more preserved (Stramba-Badiale et al., 2025).

We note that that we had low numbers per group which may have led to mainly non-significant changes. Furthermore, the high level of social and physical activity observed in the PLwD group - weekly physical sessions and 4+ social engagements per week - likely played a protective role in general memory (similar to what we noted for the psychological measures above). Previous studies have suggested that such engagement may work against decline and improve motivation to retrieve memories.

5.4.2 Qualitative Findings

The walking and reminiscence sessions functioned differently across cognitive profiles. For participants living with dementia, engagement depended heavily on the environment and the supportive architecture of the sessions: predictable structure, family caregiver involvement, and facilitation. Their recall shifted toward semantic accounts, with episodic detail emerging under tailoring. The quality of their recall contributions, however, lay in their emotional resonance, openness, and increasing coherence over time with cues, often captured in phrases like "sometimes you forget the facts but remember the feeling." These findings align with research showing the vulnerability of episodic autobiographical memory in Alzheimer's disease and the stabilising role of personal semantics and spatial or emotional cues (Irish et al., 2010; Richmond et al., 2018; Wright & Lough, 2023). In places, proverb-like formulations surfaced to manage difficult topics, such as "house devil, street angel", signalling a communal, culturally grounded way of holding ambivalence while remaining connected.

For the community-dwelling group, the same intervention expanded narrative diversity and detail. Their talk was episodically specific, reflexive, and collaborative, often enriched by humour. We laughed about the funerals, because if you didn't, you'd cry." This matches models of healthy ageing in which autobiographical memory remains coherent and is readily integrated with cultural and life-course frameworks (Conway & Pleydell-Pearce, 2000; Rubin & Berntsen, 2009; Vilarinho et al., 2021). These qualitative differences reflect contrasting cognitive profiles and narrative styles rather than measurable intervention effects.

The Irish policy context helps explain these contrasts. Initiatives such as the Model of Care for Dementia in Ireland and the scaling of Memory Assessment and Support Services aim to support people living at home and in their communities (HSE, 2014). Yet evidence shows ongoing gaps between need and provision, with families experiencing strain (ASI, 2023; ASI, 2024). It follows that participants with dementia, reflecting real community experience, emphasised health, care navigation, and family. "You just try to manage day by day." By contrast, older adults living without dementia, who were socially and physically active, drew on a wider thematic pool and framed change in terms of growth and opportunity. This pattern also aligns with Irish ageing data linking activity and participation with wellbeing (Donoghue, O'Connell, & Kenny, 2016).

Taken together, the findings highlight the ecological value of reminiscence walks. Within the scope of this feasibility study, the intervention appeared implementable, acceptable to participants, and capable of eliciting meaningful autobiographical engagement, supporting progression toward more structured evaluation.

5.5. Limitations

This study provides useful insights but has some important limitations. The small number of participants means the results are less reliable and cannot be widely applied, especially when looking at subgroups. The group of people with dementia included a variety of dementia types, which adds variability that may mask specific effects. Future studies should consider tailoring interventions to particular dementia types, such as primary progressive aphasia (PPA), to better address their unique needs.

An additional limitation concerns the marked gender asymmetry between groups. The community-dwelling group consisted entirely of female participants, whereas the majority of participants living with dementia were male. Given evidence that autobiographical narrative style, emotional expression, and social communication patterns can differ by gender, it is possible that some observed qualitative and quantitative differences between groups may partially reflect gender-related variation rather than cognitive status alone. Due to the small sample size, it was not possible to statistically adjust for sex. Future studies should aim for more balanced recruitment to disentangle the potential effects of gender and diagnosis.

Self-report instruments such as the Satisfaction with Life Scale (SWLS) and CASP-19 may be less appropriate for early-stage dementia populations living in community settings, as these tools often emphasise deficits and negative aspects, potentially underrepresenting subjective well-being. Although qualitative methods, including interviews and observational data, offer important complementary perspectives, they cannot fully replace the need for assessment tools that capture the nuanced and positive aspects of, for example, quality of life in this group.

The short length of the intervention may not have been enough to produce clear improvements in thinking skills or wellbeing that can be measured. Longer studies are needed to see if benefits develop over time. Other factors like differences in the environment, who led the sessions, and how the groups got along were not controlled and might have affected the results. Lastly, the complexity of the topics discussed and whether

participants knew the walking routes might have influenced how well memories were recalled. This should be explored further.

5.6 Conclusion

This study adds to the growing evidence supporting the combination of Reminiscence Therapy and exercise for older adults living in the community, including those with dementia. Within the MRC framework, the findings primarily contribute to the feasibility and piloting stage by demonstrating that the intervention can be delivered safely, that participants engage with the walk-and-reminisce format, and that the proposed outcome measures can be administered successfully in this context. While quantitative improvements in memory, cognition, and well-being were not statistically significant compared to older adults living without dementia, qualitative feedback and observed positive mood changes suggest meaningful psychosocial benefits. These findings build on earlier observations from Chapter 4 and highlight the potential of integrating physical, cognitive, and social engagement within familiar settings to support identity preservation, emotional connection, and overall quality of life in people living with dementia. Further research with larger, more diverse samples is needed to clarify the mechanisms by which these combined interventions work and to optimise their delivery. The next chapter will present findings from an expanded study designed to disentangle the individual effects of walking and reminiscence therapy, providing clearer insight into their distinct contributions to improving outcomes for people living with dementia.

Chapter 6:

Early Evaluation of the Relative Contributions of Walking and Reminiscence, Combined and Separately, in Community-Dwelling Older Adults

Abstract

Community programmes that combine social, cognitive, and light physical activity are a pragmatic route to sustaining wellbeing in later life, particularly where formal services are limited. Reminiscence Therapy (RT) improves mood and quality of life in older adults, and European studies suggest benefits for autobiographical memory when cues are culturally familiar (e.g., Woods et al., 2018; Viard et al., 2024). Walking is widely used in Irish community health promotion and may prime access to personally meaningful memories. This study aimed to disentangle the separate and combined contributions of walking and reminiscence to autobiographical memory, global cognition, and wellbeing in community-dwelling older adults. Thirty-six participants (65–84 years; M = 73) were randomised to: Walking + Reminiscence (WR), Reminiscence-Only (RO), or Walking-Only (WO). In contrast to the earlier feasibility studies described in Chapters 4 and 5, the purpose of this study was to conduct a preliminary evaluation of how the individual components of the intervention contribute to observed outcomes. Over four weekly sessions, groups followed a pre-planned, walkability-checked route in Maynooth (for walking arms) and/or seated reminiscence with place-based prompts. Pre/post measures included MoCA, EAMI (semantic and event memory across life epochs), CASP-19, SWLS, HCS, and GDS (see chapter 4 for further information on test battery employed). Reflexive thematic analysis captured condition-specific experiences. Cognition remained high with a small effect on MoCA and a Time×Group interaction favouring WO/RO over WR for minor gains. Quality of life improved overall, with the largest advantage for WR (CASP-19: Group $p = .009$; Time $p = .010$; Tukey: WR > WO/RO). SWLS showed a modest time effect; HCS and GDS were stable. On the EAMI, WR showed higher semantic scores in selected epochs (early/middle adulthood), while episodic totals were largely unchanged. Qualitatively, RO produced structured, factual, and culturally grounded stories; WO prompted spontaneous, sensory, and humorous memories; WR combined both, movement triggering recall and discussion deepening connection and meaning. These patterns align with findings that structured RT enhances coherence while light activity strengthens affective engagement (e.g., Park et al., 2019). Together, these findings provide an early evaluation of the mechanisms through which walking, reminiscence, and their integration shape autobiographical remembering and wellbeing in later life.

6.1 Introduction

In 2023, life expectancy increased but the quality of life for many families dealing with age-related pathologies did not improving at the same rate (TILDA, 2020). There are specific risk factors linked to age-related disorders like dementia, but the complexity of these factors makes it difficult to find effective treatments. Dementia is a diverse syndrome with various types and unique trajectories, making it challenging to offer specific help. Risk factors for dementia include high stress levels, air pollution exposure, and physical inactivity (Lancet, 2020). Despite this knowledge, there is currently no cure for dementia, leading to many families waiting for solutions. Prevention methods are becoming increasingly important. Reminiscence Therapy (RT) is a stimulation therapy that involves discussing past experiences with sensory triggers like smell or visual cues. RT has shown benefits for people with Mild Cognitive Impairment (MCI) or dementia, including higher well-being and self-esteem scores (i.e. Woods et al. 2018). RT has also been found to have a positive effect on the brain, particularly on autobiographical memory (Viard et al., 2024). Physical activity e.g. walking is also known to improve cognitive and psychological outcomes (Park et al., 2019, see also Chapter 1). Combining cognitive stimulation, physical exercise, and social engagement in weekly programs has been proven to increase benefits (Park et al., 2019; Zhu et al., 2016). However, the effects of combining walking and reminiscence therapy as an intervention is currently unknown. Following on from the previous chapters, the aim of this study was i) to compare the pre–post effects of three community-based conditions,Walking + Reminiscence (WR), Reminiscence-Only (RO), and Walking-Only (WO), on cognitive, psychological wellbeing and autobiographical memory (semantic and episodic/event memory across life epochs) outcomes in community-dwelling older adults, and ii) to characterise and compare the form and content of reminiscence elicited under WR, RO, and WO conditions, examining how setting and cue structure shaped the nature and quality of recall (e.g., sensory and affective immediacy versus chronological and semantic organisation, and processes of co-construction and group dynamics) using reflexive thematic analysis of session transcripts.

Following the feasibility and acceptability work presented in Chapters 4 and 5, the next step in the development of the intervention was to examine the relative contributions of its core components. According to the Medical Research Council framework, this stage involves early evaluation of the intervention in order to understand which elements appear most influential and how the intervention might operate in practice.

6.2 Methods

6.2.1 Recruitment and Participants

This intervention study involved three groups of older adults (N=36), (age range: 65-84 years; mean = 73). They were recruited through the 'word-of-mouth' technique, utilising advertisements and flyers in Maynooth, Ireland. Our inclusion criteria were individuals aged 65 years or older, actively engaged in physical activities, and had resided in Maynooth/Ireland for at least 10 years or were familiar with the area to facilitate more in-depth reminiscing. Those with severe visual impairments, history of epilepsy, movement disorders, moderate or advanced Alzheimer's Disease or another dementia were excluded.

Participants were randomly assigned to one of the three intervention groups (Walking + Reminiscence, Reminiscence-Only, or Walking-Only) following completion of baseline assessments. Allocation was carried out using a simple computer-generated randomisation procedure in SPSS, assigning participants in a 1:1:1 ratio. During the consent process, participants were informed that they would take part in one of three programme formats and that group allocation would be random. They were not informed of their assigned condition until scheduling of sessions began.

No formal stratification by age or gender was implemented. As a result, small differences in mean age emerged between groups, with the Reminiscence-Only group showing a slightly higher average age compared to the other two conditions. However, the overall age range was comparable across groups, and gender distribution was similar, with women comprising the majority in each condition. Given the relatively small sample size (n = 12 per group), simple randomisation was considered appropriate to minimise allocation bias while maintaining procedural clarity.

All 36 participants completed the four-week intervention and post-intervention assessments, resulting in a 100% retention rate.

6.2.2 Pre-designed geographical tour and Memory Markers

For the two walking groups, we employed the same routes that we have described previously (see Chapter 2 for further detail on these routes).

6.2.3 Design

A 3x2 mixed ANOVA factorial design was used (Group (3 levels) as between-participants factor, pre- and post-assessment (2 levels) as within-participants factor). This comparative design was selected to enable preliminary evaluation of the relative contributions of walking, reminiscence, and their integration within a community intervention context. Three cohorts of community-dwelling older adults were randomly assigned to one of the three conditions (n = 12/group): (1) Reminiscence and Walking (R+W); (2) Reminiscence Only (RO) or (3) Walking Only (WO). Performance on cognitive and psychological well-being measures were measured pre- and post-intervention. As with the previous chapters (see chapter 4), the measures below were administered on paper and in individual sessions with each participant and included:

1) Montreal Cognitive Assessment (MoCA; Nasreddine, Phillips, Bédirian, Charbonneau, Whitehead, Collin, & Chertkow, 2005).
2) Episodic Autobiographical Memory Interview (EAMI; Irish, Lawlor, O'Mara, & Coen, 2008,2011a, 2011b).
3) Control, Autonomy, Self-Realisation And Pleasure Quality Of Life Questionnaire (CASP-19; Netuveli, Wiggins, Hildon, Montgomery, & Blane, 2006).
4) Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985).
5) Holden Communication Scale (HCS; Holden & Woods, 1995).
6) Geriatric Depression Scale (GDS, Yesavage et al., 1984).

The three groups of participants completed the different programs once a week for four weeks. Experience and perspective on their reminiscence and/or walking experiences were captured with the help of audio recordings, which were then transcribed and analysed.

6.2.4 Procedure

The intervention took place in Maynooth town. Older adults engaged in an intervention using a guided simple reminiscence approach. This was adapted from the "Remembering Yesterday, Caring Today" program (Schweitzer & Bruce, 2008), which is a large group-based approach, bringing people with dementia and relatives together with a focus on active reminiscence. Each participant received an information sheet/emergency contact list (see appendix 26-29 for the Information sheet/Consent

Form/Emergency Contact List), to keep for their reference and handy through the project.

After reading the information sheet and asking any questions they have, participants were asked to provide consent. Consent was obtained at commencement of the study, prior to the sessions. Participants were informed both verbally and on paper that they can end their participation at any time. As participants were recruited from the same community, a small number were previously acquainted. At the outset of the study, it was clearly explained in both the information sheet and verbally at the beginning of each session that all discussions were to remain confidential within the group context. Ground rules regarding respect, privacy, and non-disclosure outside the sessions were reiterated to minimise any potential influence of prior familiarity on group interactions.

For the R+W (reminiscence plus walking) and the walking only (WO) groups, the next stage of research took place in the town of Maynooth using pre-planned and walkability-adjusted routes. The reminiscence only (RO) group met at the town library. All participants convened again at the library for post-intervention testing and debriefing/feedback. During the experiment, the two reminiscence groups were encouraged to recall stories and anecdotes about the sights presented either physically or through photos (i.e. “Before that house was built, this was a bistro”) while a trained facilitator leads the group and guides the reminiscence topics. Audio from the reminiscence sessions were captured on a handheld recorder for content analysis. Groups were small (five maximum per group for the walking programmes and 12 in the reminiscence-only group taking place in the library) and had a session of an hour per week, for four weeks. The reminiscence-only group allowed for matching the social and conversational aspects of the study but omitting the walking component.

6.2.5 Ethical considerations

All ethical procedures for this stage of the research followed the approval and standards previously described in Section 4.2.5 Ethical Considerations, under the oversight of the Maynooth University Social Research Ethics Sub-Committee (approval number SRESC-2022-2484450, see appendix 30). Participants were cognitively healthy older adults who gave written informed consent before taking part. The study design ensured fair participation and equal treatment across all conditions, with attention to safety, comfort, and clear communication at every step. As this phase involved a non-clinical population, particular care was taken to create a relaxed and respectful environment where participation was entirely voluntary. The reminiscence activities

focused on positive and meaningful memories, and discussions could be redirected or paused if a topic caused discomfort.

To avoid influencing responses, the detailed aims and hypotheses of the study were explained only after participation. Each session was delivered with the same level of care and attention, and participants were encouraged to engage at their own pace. No participant experienced distress or any adverse effects during or after involvement. Procedures for confidentiality, anonymisation, data storage, and debriefing remained identical to those outlined in Chapter 4.

6.2.6 Quantitative Data

Autobiographical Memory, Global Cognition and Psychological well-being data was pre-filtered with Microsoft Excel and then analysed with the statistical program IBM SPSS Mac version 28.0.1.1 (14). Analyses were conducted using 2 × 3 mixed ANOVAs with one between-subjects factor (group: Walking Only, Reminisce Only, Walking + Reminisce) and one within-subjects factor (time: T1 vs. T2). When significant main effects or interactions were observed, *post hoc* comparisons with Tukey's HSD correction were applied where appropriate.

6.2.7 Qualitative Data

The discussions from the memory walk were captured using a ZOOM Recorder, transcribed for data analysis, and analysed using the Qualitative Data Analysis – Miner Lite software (QDA). As previous chapters, the Reflexive Thematic Analysis was conducted following Braun and Clarke's (2013b) approach. As reflexive thematic analysis is interpretive by design, analytic decisions were grounded in repeated reading of transcripts, comparison across groups, and discussion of themes to ensure coherence and consistency of interpretation.

6.3 Results

Consistent with an early evaluation approach, results are presented both quantitatively and qualitatively in order to examine not only whether changes occurred, but also how the different intervention formats shaped participants' experiences and modes of remembering.

6.3.1 Demographics

Baseline demographic characteristics for each intervention group are presented in Table 6.1. As shown, the three groups were broadly comparable in age, gender distribution, social engagement, and exercise habits at study entry, although the Reminiscence-Only group had a slightly higher mean age than the other two conditions.

Table 6.1

Baseline Demographic Characteristics by Intervention Group

Characteristic	Walking Only (WO) (n = 12)	Reminiscence Only (RO) (n = 12)	Walking + Reminiscence (WR) (n = 12)	Total Sample (N = 36)
Age, years (M ± SD)	72.7 ± 5.8	76.2 ± 6.5	71.4 ± 6.2	73.4 ± 6.34
Age range (years)	65–84	65–84	65–84	65–84
Women, n (%)	9 (75%)	10 (83%)	9 (75%)	28 (78%)
Men, n (%)	3 (25%)	2 (17%)	3 (25%)	8 (22%)
Social activities per week (M ± SD)	2.92 ± 1.08	2.75 ± 1.29	2.75 ± 1.22	2.81 ± 1.17
Exercise frequency per week (M ± SD)	1.83 ± 2.04	1.92 ± 2.71	1.67 ± 2.27	1.81 ± 2.29
Exercise duration (minutes) (M ± SD)	22.50 ± 13.57	17.50 ± 20.06	13.33 ± 16.70	17.78 ± 16.92

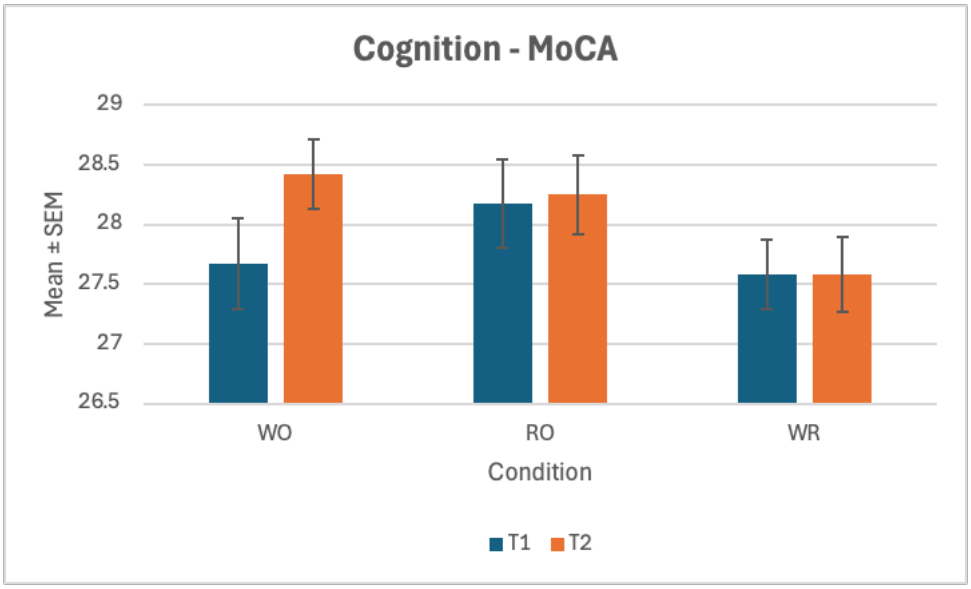
6.3.2 Cognitive Function

Cognition - MoCA

For the Walking Only (WO) group, at baseline, participants scored 27.67 ± 0.38 SEM, increasing slightly to 28.42 ± 0.29 SEM at follow-up. For the Reminiscence Only (RO), mean scores were 28.17 ± 0.37 SEM at T1 and 28.25 ± 0.33 SEM at T2, showing minimal change. For the Walking and Reminiscence (WR), scores remained constant at 27.58 ± 0.29 SEM at T1 and 27.58 ± 0.31 SEM at T2 (see Figure 6.1). Across groups, cognitive function remained high and stable. A two-way mixed ANOVA showed a significant main effect of Time, $F(1, 33) = 6.96$, $p = .013$, partial $\eta^2 = .174$, and a significant Time × Group interaction, $F(2, 33) = 5.08$, $p = .012$, partial $\eta^2 = .235$. The between-subjects main effect of Group was not significant, $F(2, 33) = 1.05$, $p = .360$, partial $\eta^2 = .060$. Collectively, this indicates small overall time-related gains, with the change over time differing by group (WO showed the clearest increase, RO a small increase, WR little change).

Figure 6.1

Comparison of Cognition Scores Across Groups Walking-Only, Reminiscence-Only, and Walking + Reminiscence T1 vs. T2



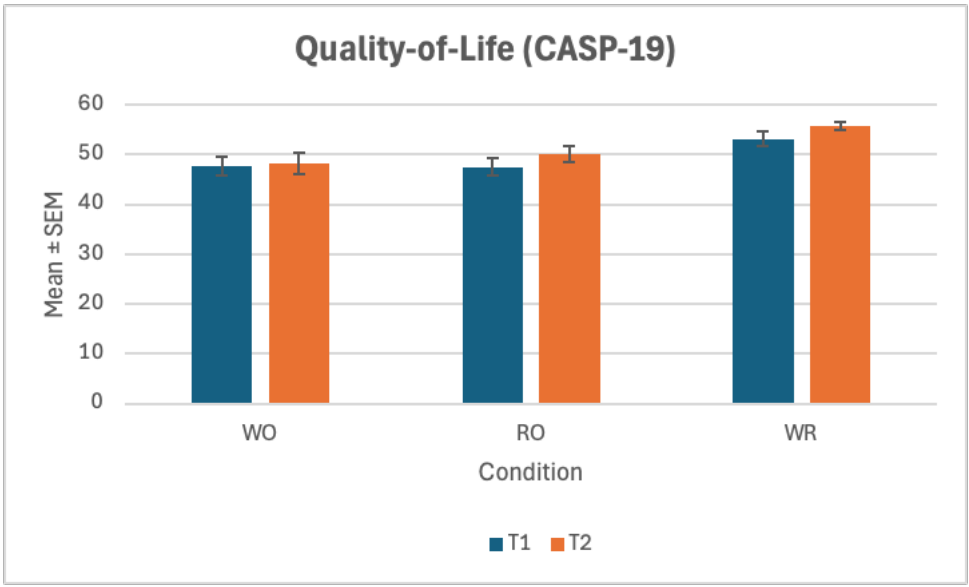
6.3.3 Psychological Well-Being

Quality of Life - CASP-19

For the Walking Only (WO), at baseline: 47.67 ± 1.83 SEM; follow-up: 48.17 ± 2.14 SEM, indicating a modest improvement. For the Reminiscence Only (RO) group, scores increased from 47.50 ± 1.69 SEM to 50.08 ± 1.51 SEM. For the Walking and Reminiscence (WR), the scores increased from 53.17 ± 1.48 SEM to 55.75 ± 0.82 SEM, showing the clearest gain (see Figure 6.2). The ANOVA revealed a significant main effect of Group, $F(2, 33) = 5.50$, $p = .009$, partial eta squared = .250, and a main effect of Time, $F(1, 33) = 7.48$, $p = .010$, partial eta squared = .185, with no Group x Time interaction, $F(2, 33) = 1.01$, $p = .375$, partial eta squared = .058. Tukey's HSD *post hoc* comparisons showed that the WR group reported significantly higher quality of life than both WO ($p = .012$) and RO ($p = .032$), while WO and RO did not differ significantly ($p = .912$). These findings indicate that while quality of life is reported as higher in the combined walking and reminiscence intervention produced the strongest increases.

Figure 6.2

Comparison of Quality-of-Life Scores Across Groups Walking-Only, Reminiscence-Only, and Walking + Reminiscence T1 vs. T2



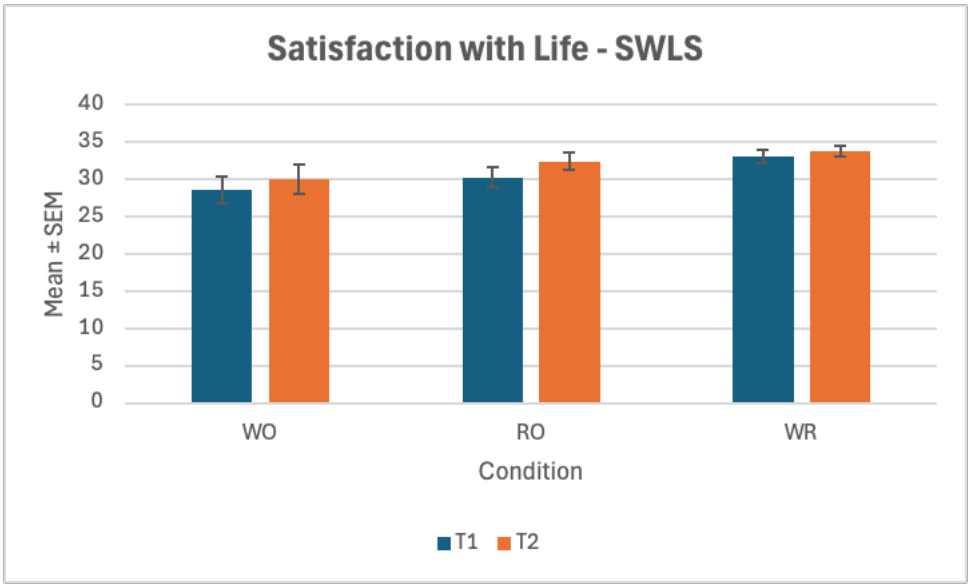
Satisfaction With Life - (SWLS)

For the Walking Only (WO) group, mean scores increased from 28.58 ± 1.72 SEM to 30.00 ± 1.98 SEM. For the Reminiscence Only (RO) group, scores increase from 30.25 ± 1.31 SEM to 32.42 ± 1.15 SEM. For the Walking and Reminiscence (WR) group, scores showed a small increase from 33.00 ± 0.86 SEM to 33.75 ± 0.68 SEM (see Figure 6.3). The 2 × 3 mixed ANOVA indicated a significant main effect of Time, $F(1, 33) = 8.76$, p

= .006, partial η^2 = .210, suggesting a modest overall increase in life satisfaction from pre- to post-test. However, there was no significant main effect of Group, $F(2, 33) = 2.49$, $p = .098$, partial $\eta^2 = .131$, and no Group × Time interaction, $F(2, 33) = 0.70$, $p = .502$, partial $\eta^2 = .041$.

Figure 6.3

Comparison of Satisfaction of Life Scores Across Groups Walking-Only, Reminiscence-Only, and Walking + Reminiscence T1 vs. T2

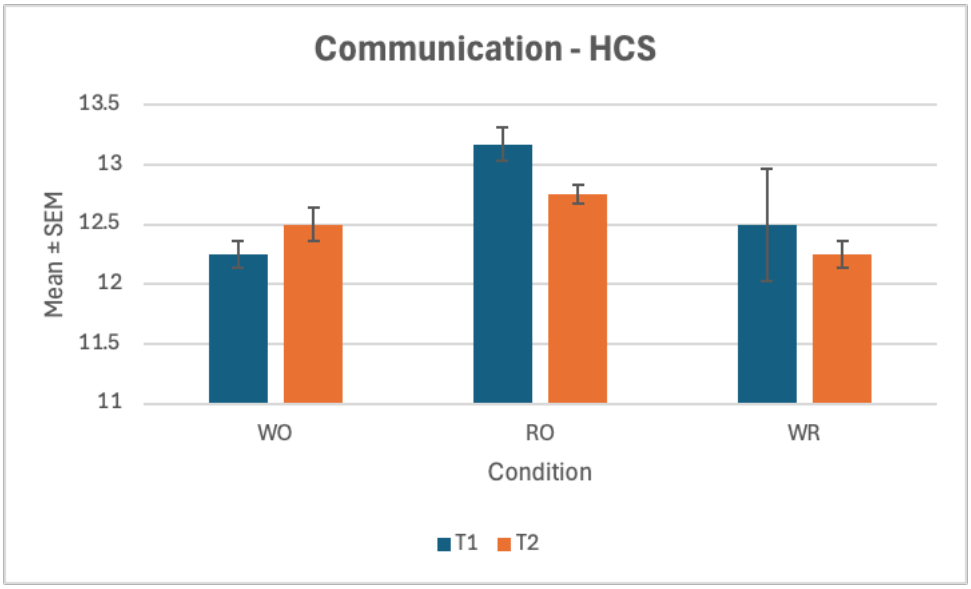


Holden Communication Scale - HCS

For the Walking Only (WO), communication scores enhanced slightly from 12.25 ± 0.11 SEM to 12.50 ± 0.14 SEM. For the Reminiscence Only (RO), scores declined marginally from 13.17 ± 0.14 SEM to 12.75 ± 0.08 SEM (see Figure 6.4). For the Walking and Reminiscence (WR), scores remained stable (12.50 ± 0.47 SEM to 12.25 ± 0.11 SEM) see Figure 6.4 The 2 × 3 mixed ANOVA revealed no significant main effect of Time, $F(1, 33) = 0.19$, $p = .666$, partial $\eta^2 = .006$, no main effect of Group, $F(2, 33) = 0.96$, $p = .394$, partial $\eta^2 = .055$, and no interaction, $F(2, 33) = 0.13$, $p = .879$, partial $\eta^2 = .008$.

Figure 6.4

Comparison of Communication Scores Across Groups Walking-Only, Reminiscence-Only, and Walking + Reminiscence T1 vs. T2

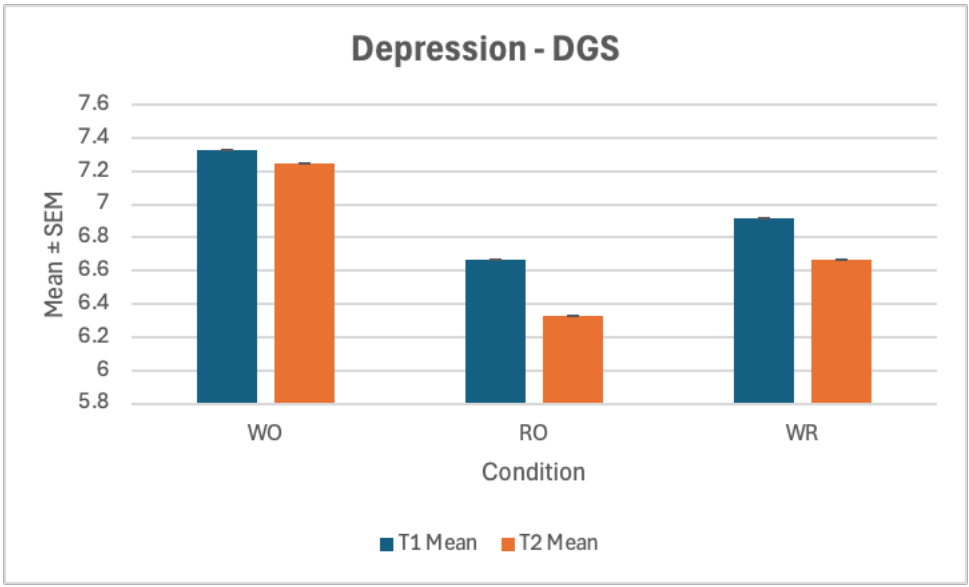


Geriatric Depression Scale - GDS

For the Walking Only (WO) group, scores were stable from 7.33 ± 0 SEM to 7.25 ± 0 SEM. For the Reminiscence Only (RO), scores decreased slightly from 6.67 ± 0 SEM to 6.33 ± 0 SEM. For the Walking and Reminiscence (WR) group, scores declined minimally from 6.92 ± 0 SEM to 6.67 ± 0 SEM (see Figure 6.5). The 2 × 3 mixed ANOVA indicated no main effect of Time, $F(1, 33) = 0.41$, $p = .527$, partial $\eta^2 = .012$, no main effect of Group, $F(2, 33) = 0.58$, $p = .567$, partial $\eta^2 = .034$, and no Group × Time interaction, $F(2, 33) = 0.19$, $p = .828$, partial $\eta^2 = .011$.

Figure 6.5

Comparison of Depression Scores Across Groups Walking-Only, Reminiscence-Only, and Walking + Reminiscence T1 vs. T2



6.3.4 Autobiographical Memory

Semantic Memory

Overall semantic memory scores were stable across groups. At baseline, WO scored M = 47.75 (SD = 3.86), RO M = 48.67 (SD = 9.45), and WR M = 56.50 (SD = 0.71). At follow-up, WO scored M = 53.50 (SD = 5.00), RO M = 52.67 (SD = 5.77), and WR M = 55.50 (SD = 14.85). The ANOVA showed no Group effect, $F(2, 6) = 0.60$, $p = .580$, partial $\eta^2 = .166$, no Time effect, $F(1, 6) = 1.53$, $p = .262$, partial $\eta^2 = .203$, and no Group × Time interaction, $F(2, 6) = 0.66$, $p = .549$, partial $\eta^2 = .181$. Figure 6.6-6.8 show an overall breakdown of the different life epochs per group.

Figure 6.6

Mean EAMI Semantic scores (± SEM) across five life epochs for the Walking –Only (WO) group at baseline (T1) and follow-up (T2)

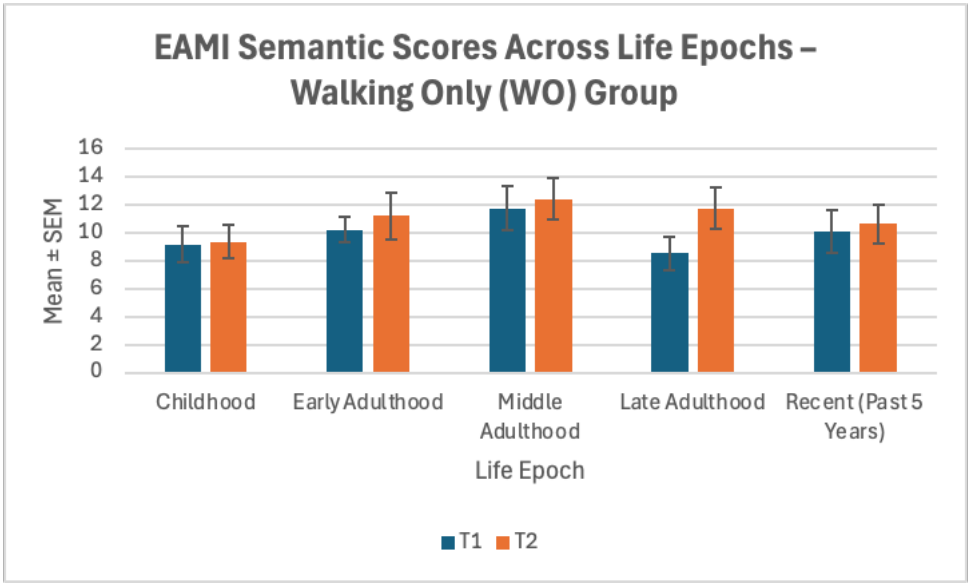


Figure 6.7

Mean EAMI Semantic scores (± SEM) across five life epochs for the Reminiscence-Only (RO) group at baseline (T1) and follow-up (T2)

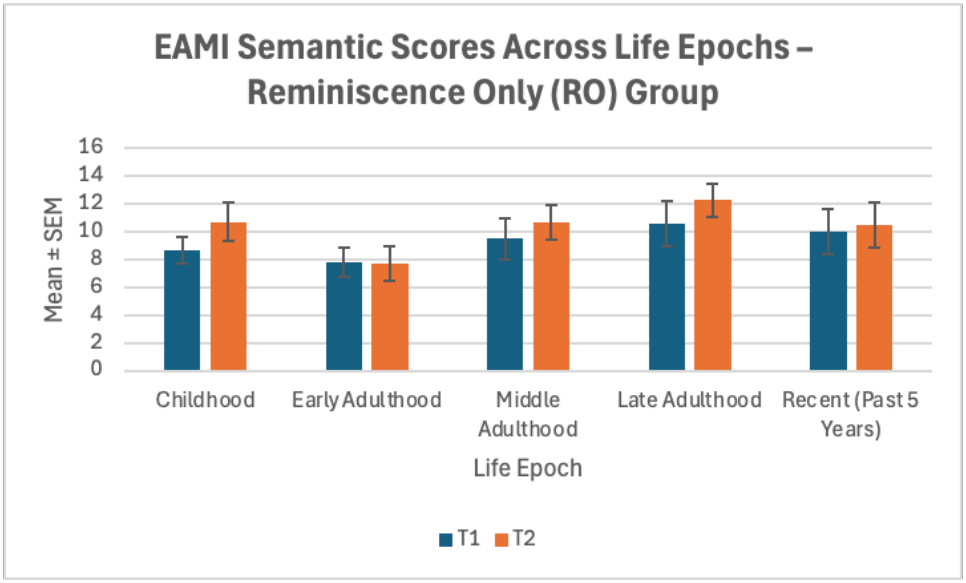
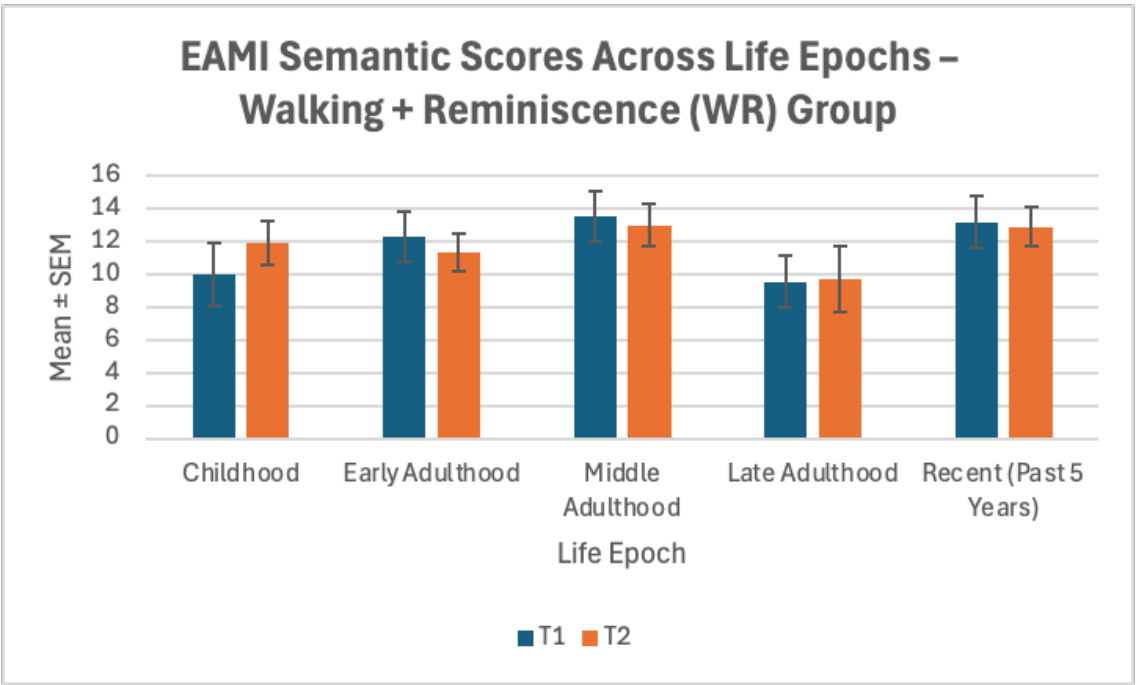


Figure 6.8

Mean EAMI Semantic scores (± SEM) across five life epochs for the Walking and Reminiscence (WR) group at baseline (T1) and follow-up (T2)

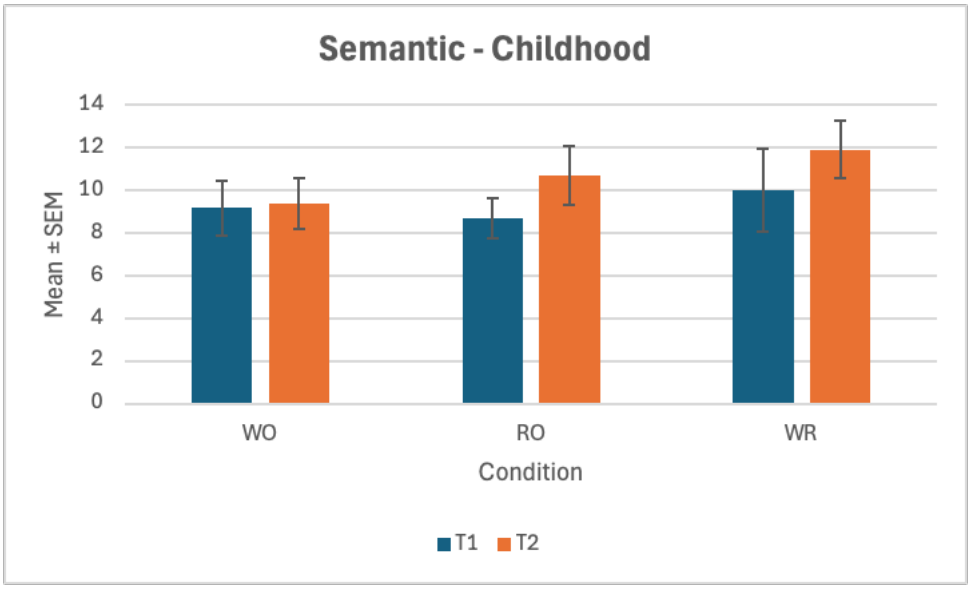


Semantic recall – Childhood

For the Walking Only (WO) group, scores increased slightly from 9.18 ± 1.29 SEM at T1 to 9.36 ± 1.20 SEM at T2. For the Reminiscence Only (RO), scores improved from 8.70 ± 0.95 SEM to 10.70 ± 1.39 SEM. For the Walking and Reminiscence (WR) group, scores increase from 10.00 ± 1.94 SEM to 11.89 ± 1.35 SEM. The ANOVA showed no significant main effect of Group, $F(2, 27) = 0.58$, $p = .569$, partial $\eta^2 = .041$, no main effect of Time, $F(1, 27) = 3.87$, $p = .059$, partial $\eta^2 = .125$, and no Group × Time interaction, $F(2, 27) = 0.77$, $p = .474$, partial $\eta^2 = .054$. These results suggest semantic childhood memory remained largely unchanged across interventions (see Figure 6.9).

Figure 6.9

Comparison of Semantic Childhood Scores Across Groups Walking-Only, Reminiscence-Only, and Walking + Reminiscence T1 vs. T2

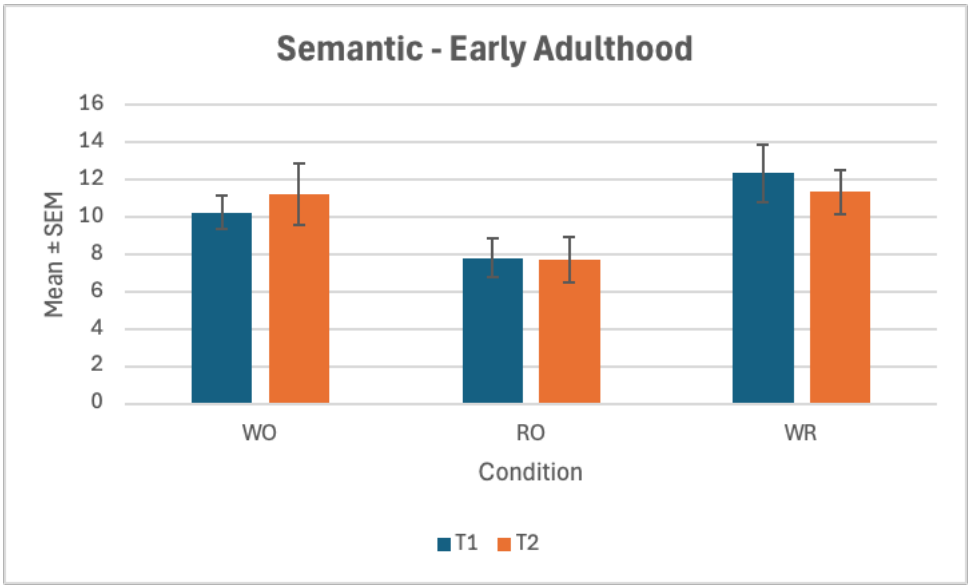


Semantic recall – Early Adulthood

For Walking Only (WO), scores increased from 10.22 ± 0.90 SEM to 11.22 ± 1.66 SEM. For Reminiscence Only (RO), scores remained stable at 7.80 ± 1.06 SEM at T1 and 7.70 ± 1.22 SEM at T2. For Walking + Reminiscence (WR), scores decreased slightly from 12.33 ± 1.52 SEM to 11.33 ± 1.16 SEM (see Figure 6.10). The mixed factorial ANOVA revealed a significant main effect of Group, $F(2, 25) = 5.78$, $p = .009$, partial $\eta^2 = .316$, but no effect of Time, $F(1, 25) = 0.004$, $p = .951$, partial $\eta^2 = .000$, and no interaction, $F(2, 25) = 1.12$, $p = .341$, partial $\eta^2 = .082$. Tukey's HSD indicated WR vs RO ($p = .009$), while WO vs RO ($p = .063$) and WO vs WR ($p = .666$) were not significant. These findings suggest the RO group had lower early-adulthood semantic recall than WR irrespective of timepoint.

Figure 6.10

Comparison of Semantic Early Adulthood Scores Across Groups Walking-Only, Reminiscence-Only, and Walking + Reminiscence T1 vs. T2

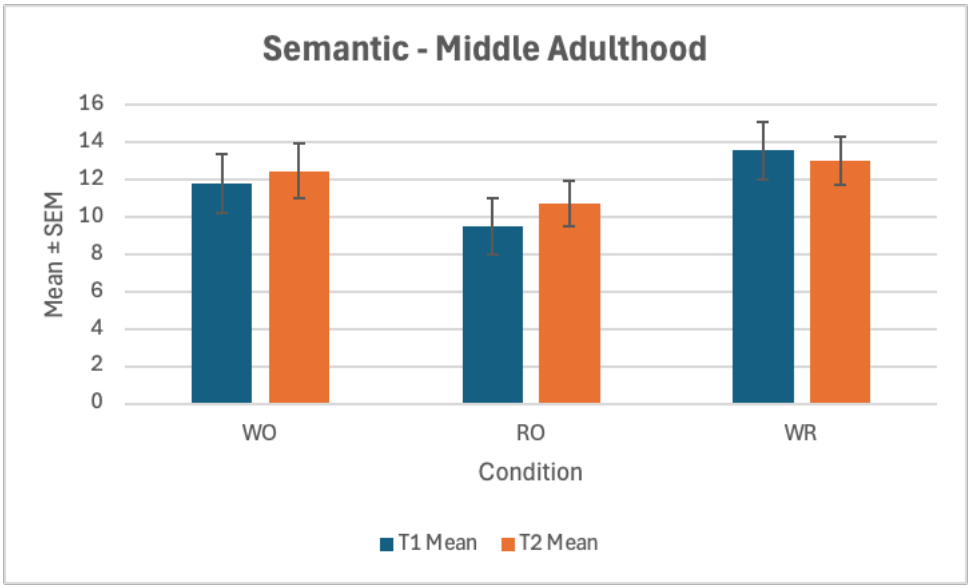


Semantic recall – Middle Adulthood

For Walking Only (WO), scores increased from 11.78 ± 1.60 SEM to 12.44 ± 1.47 SEM. For Reminiscence Only (RO), scores improved from 9.50 ± 1.49 SEM to 10.70 ± 1.22 SEM. For Walking + Reminiscence (WR), scores decreased slightly from 13.56 ± 1.55 SEM to 13.00 ± 1.27 SEM (see Figure 6.11). The ANOVA revealed no main effect of Time, $F(1, 25) = 0.76$, $p = .392$, partial $\eta^2 = .029$, no Group × Time interaction, $F(2, 25) = 1.08$, $p = .356$, partial $\eta^2 = .079$, but a significant main effect of Group, $F(2, 25) = 4.50$, $p = .021$, partial $\eta^2 = .265$. Tukey's HSD showed WR > RO ($p = .018$); WO vs RO ($p = .169$) and WO vs WR ($p = .550$) were not significant. These results suggest that the RO group again recalled less memories during middle-adulthood semantic memory compared to the WR group, irrespective of timepoint.

Figure 6.11

Comparison of Semantic Middle Adulthood Scores Across Groups Walking-Only, Reminiscence-Only, and Walking + Reminiscence T1 vs. T2

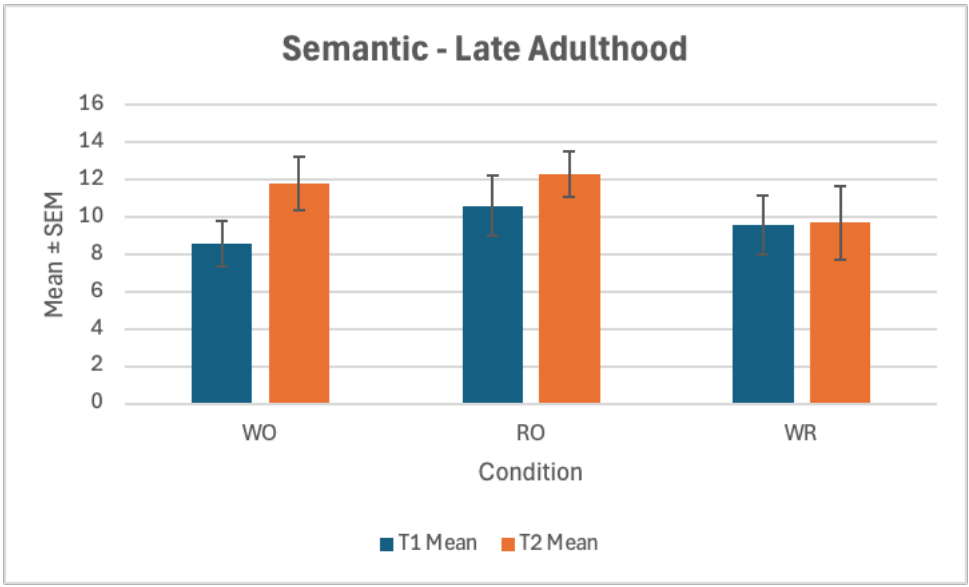


Semantic recall – Late Adulthood

For Walking Only (WO), scores increased from 8.56 ± 1.19 SEM to 11.78 ± 1.46 SEM. For Reminiscence Only (RO), scores rose from 10.60 ± 1.60 SEM to 12.30 ± 1.20 SEM. For Walking + Reminiscence (WR), scores remained stable at 9.57 ± 1.60 SEM and 9.71 ± 1.97 SEM (see Figure 6.12). The 2 X 3 ANOVA showed no main effect of Group, $F(2, 23) = 0.86$, $p = .438$, partial $\eta^2 = .069$, no main effect of Time, $F(1, 23) = 2.80$, $p = .108$, partial $\eta^2 = .108$, and no Group × Time interaction, $F(2, 23) = 0.72$, $p = .496$, partial $\eta^2 = .059$. These findings suggest semantic late adulthood memory was preserved across groups.

Figure 6.12

Comparison of Semantic Late Adulthood Scores Across Groups Walking-Only, Reminiscence-Only, and Walking + Reminiscence T1 vs. T2

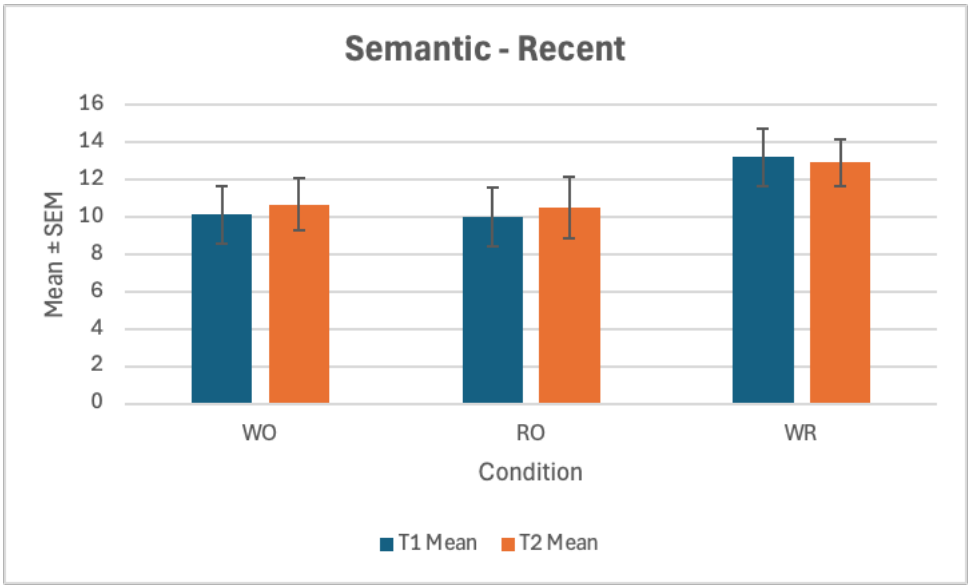


Semantic recall – Recent years

The Walking Only (WO), scores increased from 10.11 ± 1.53 SEM to 10.67 ± 1.40 SEM. The Reminiscence Only (RO) group, scores increased slightly from 10.00 ± 1.60 SEM to 10.50 ± 1.66 SEM. For the Walking + Reminiscence (WR), scores decreased slightly from 13.20 ± 1.55 SEM to 12.90 ± 1.22 SEM (see Figure 6.13). The ANOVA showed no significant Time effect, $F(1, 24) = 0.24$, $p = .629$, partial $\eta^2 = .010$, no interaction, $F(2, 24) = 0.31$, $p = .739$, partial $\eta^2 = .025$, but a significant Group effect, $F(2, 24) = 4.10$, $p = .029$, partial $\eta^2 = .255$. Post-hoc Tukey comparisons suggested that participants in the WR condition tended to achieve higher scores than those in the WO and RO conditions (WR > WO, $p = .058$; WR > RO, $p = .053$). Overall, semantic recall for recent events remained stable across time, with the combined walking and reminiscence approach showing consistently higher performance.

Figure 6.13

Comparison of Semantic Recent Scores Across Groups Walking-Only, Reminiscence-Only, and Walking + Reminiscence T1 vs. T2



Event (Episodic) Memory

For the Walking Only (WO) group, overall baseline scores were $M = 33.30$ ($SD = 3.16$), and follow-up scores were $M = 33.50$ ($SD = 3.06$). For the Reminiscence Only (RO) group, baseline scores were $M = 34.50$ ($SD = 1.00$), and remained unchanged at follow-up ($M = 34.50$, $SD = 1.00$). For the Walking + Reminiscence (WR) group, baseline scores were $M = 32.00$ ($SD = 1.73$), and slightly increased at follow-up ($M = 33.00$, $SD = 2.65$). The ANOVA revealed no significant Group effect, $F(2, 14) = 0.51$, $p = .614$, partial $\eta^2 = .067$, no significant Time effect, $F(1, 14) = 3.88$, $p = .069$, partial $\eta^2 = .217$, and no significant Group × Time interaction, $F(2, 14) = 1.78$, $p = .205$, partial $\eta^2 = .202$. See Figures 6.14-6.16 for breakdown of these per life epoch and group.

Figure 6.14

Mean EAMI Event scores (± SEM) across five life epochs (Childhood, Early Adulthood, Middle Adulthood, Late Adulthood, and Recent) for the Walking Only (WO) group at baseline (T1) and follow-up (T2)

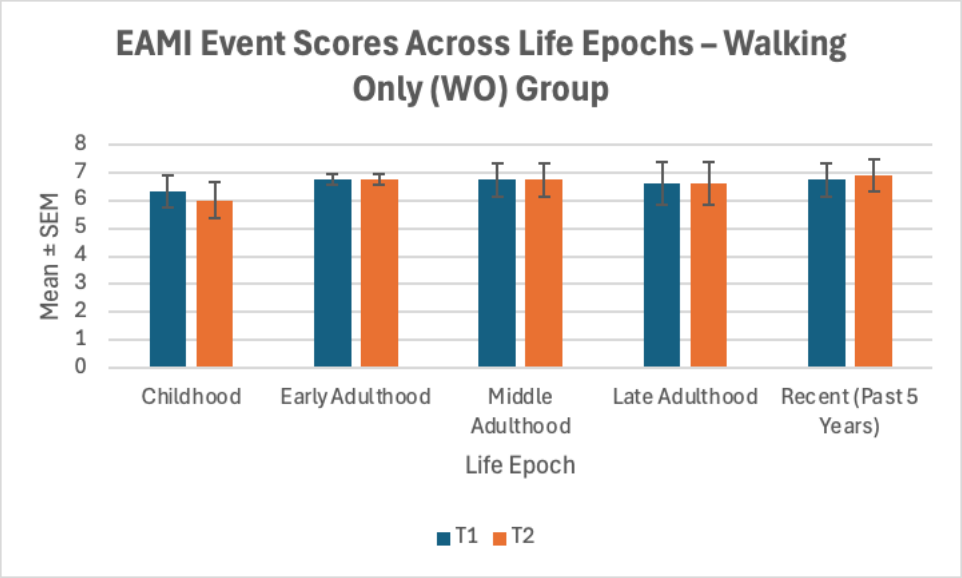


Figure 6.15

Mean EAMI Event scores (± SEM) across five life epochs for the Reminiscence Only (RO) group at baseline (T1) and follow-up (T2)

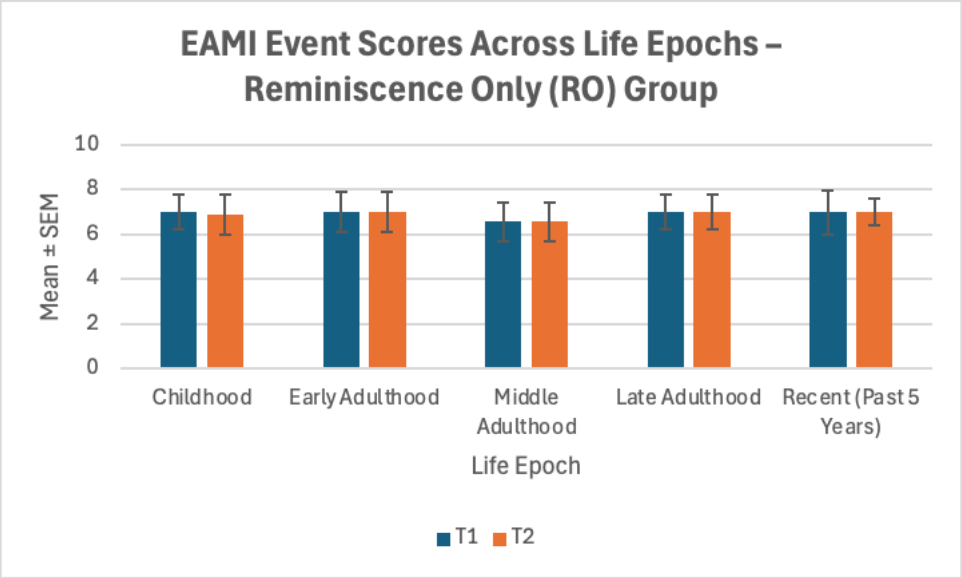
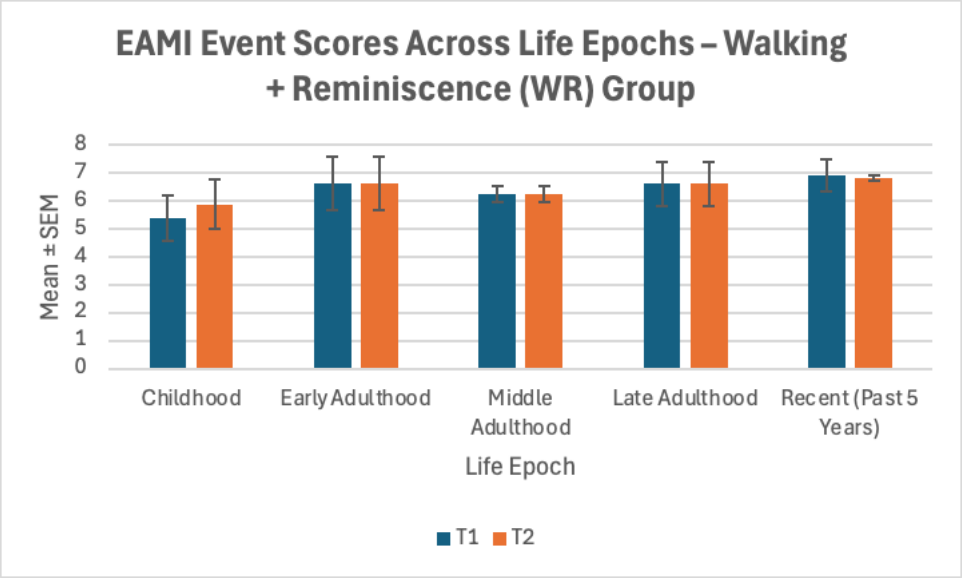


Figure 6.16

Mean EAMI Event scores (± SEM) across five life epochs for the Walking + Reminiscence (WR) group at baseline (T1) and follow-up (T2)

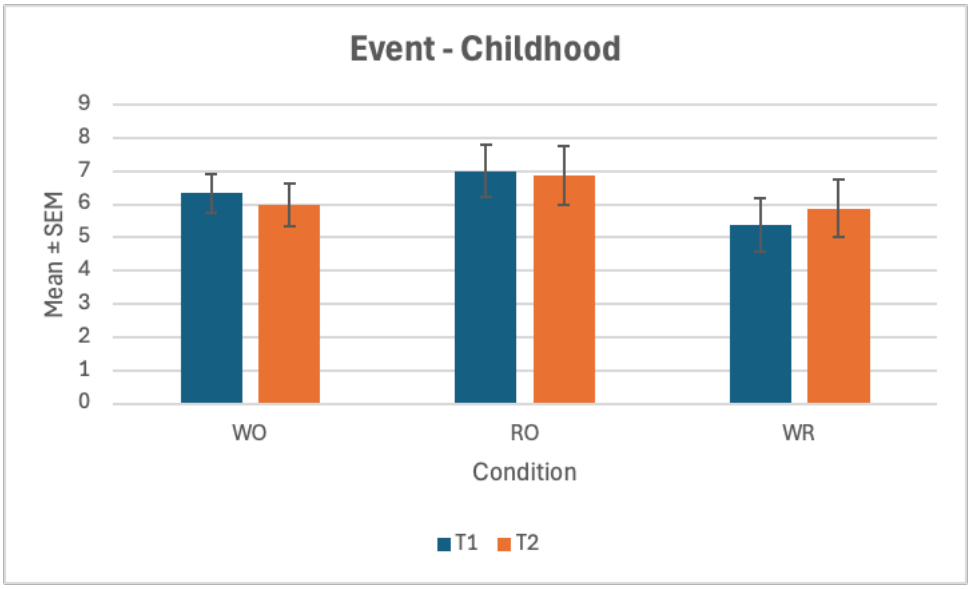


Event recall – Childhood

For the Walking Only (WO), scores decreased slightly from 6.33 ± 0.58 SEM to 6.00 ± 0.64 SEM. For the Reminiscence Only (RO) group, scores decreased marginally from 7.00 ± 0.78 SEM to 6.88 ± 0.89 SEM. For the Walking + Reminiscence (WR) group, scores increased from 5.38 ± 0.82 SEM to 5.88 ± 0.87 SEM (see Figure 6.17). The ANOVA showed no significant Group effect, $F(2, 25) = 1.45$, $p = .254$, partial $\eta^2 = .104$, no Time effect, $F(1, 25) = 0.002$, $p = .967$, partial $\eta^2 = .000$, and no interaction, $F(2, 25) = 0.57$, $p = .575$, partial $\eta^2 = .043$.

Figure 6.17

Comparison of Event Recent Scores Across Groups Walking-Only, Reminiscence-Only, and Walking + Reminiscence T1 vs. T2

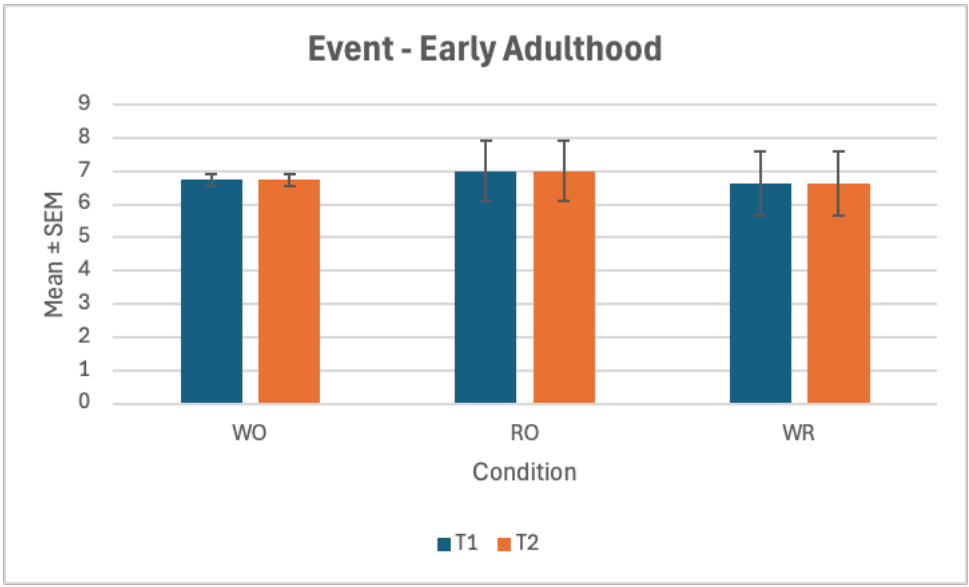


Event recall – Early Adulthood

For the Walking Only (WO) group, scores remained stable at 6.75 ± 0.18 SEM at both T1 and T2. For the Reminiscence Only (RO) group, scores remained at 7.00 ± 0.91 SEM across both timepoints. For the Walking + Reminiscence (WR), scores were consistent at 6.63 ± 0.96 SEM for both T1 and T2 (see Figure 6.18). The ANOVA showed no Group effect, $F(2, 26) = 1.01$, $p = .377$, partial $\eta^2 = .072$, no effect of Time ($F(1, 26) = 0.00$, $p = 1.000$, $\eta^2 = .000$), and no Time × Group interaction ($F(2, 26) = 0.00$, $p = 1.000$, $\eta^2 = .000$). Event recall in early adulthood therefore remained fully stable across conditions and timepoints.

Figure 6.18

Comparison of Event Early Adulthood Scores Across Groups Walking-Only, Reminiscence-Only, and Walking + Reminiscence T1 vs. T2

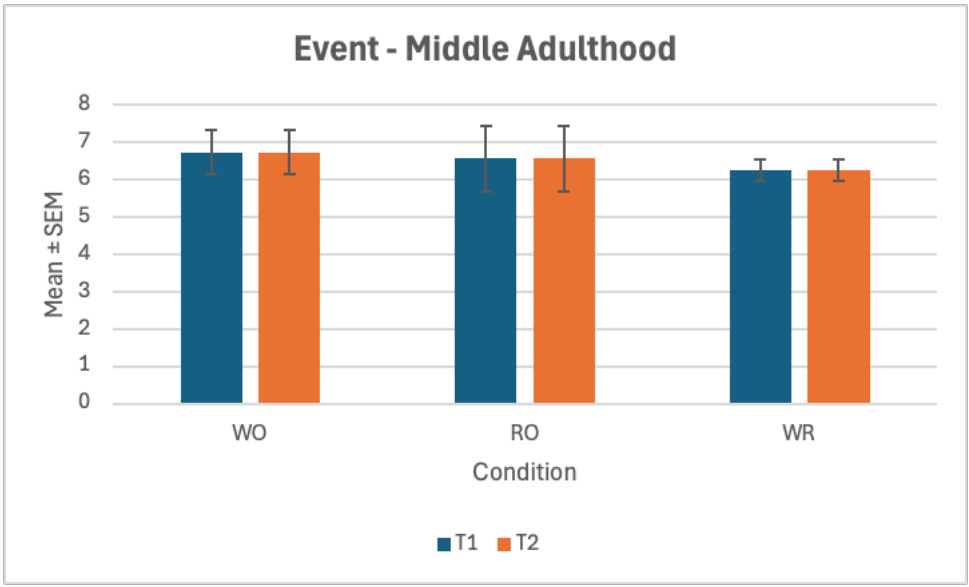


Event recall – Middle adulthood

For the Walking Only (WO), scores remained constant at 6.73 ± 0.59 SEM at both T1 and T2. For the Reminiscence Only (RO) group, scores stayed at 6.56 ± 0.88 SEM across sessions. For the Walking and Reminiscence (WR) group, scores were stable at 6.25 ± 0.30 SEM at both time points (see Figure 6.19). The ANOVA showed no Group effect, $F(2, 29) = 0.86$, $p = .433$, partial $\eta^2 = .056$, no effect of Time ($F(1, 29) = 0.00$, $p = 1.000$, $\eta^2 = .000$), and no Time × Group interaction ($F(2, 29) = 0.00$, $p = 1.000$, $\eta^2 = .000$). Event recall during middle adulthood therefore remained entirely stable over time and between conditions.

Figure 6.19

Comparison of Event Middle Adulthood Scores Across Groups Walking-Only, Reminiscence-Only, and Walking + Reminiscence T1 vs. T2

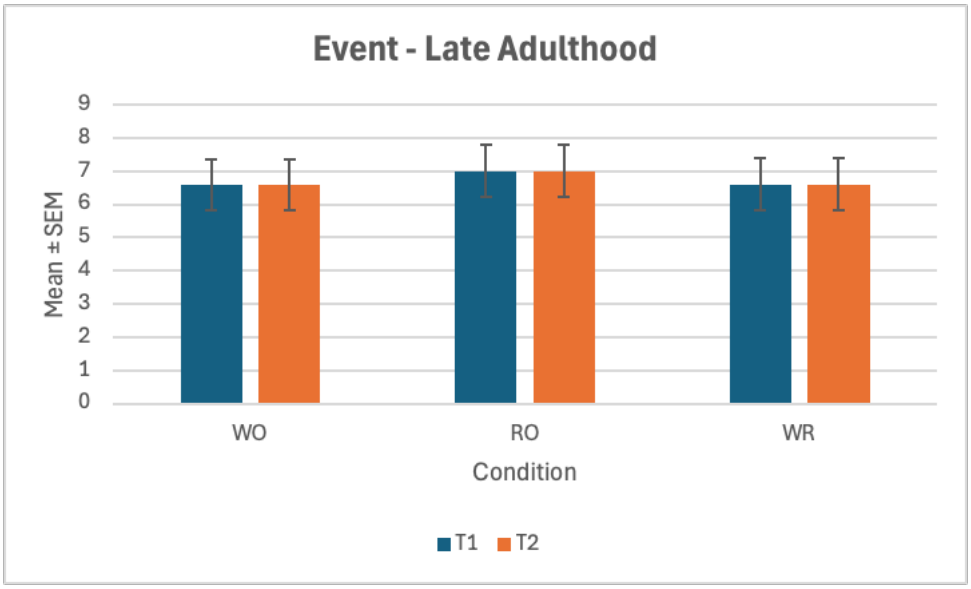


Event recall – Late Adulthood

For the Walking Only (WO) group, scores were unchanged at 6.60 ± 0.77 SEM across timepoints. For the Reminiscence Only (RO) group, scores remained stable at 7.00 ± 0.79 SEM. For the Walking and Reminiscence (WR) group, scores were identical at 6.60 ± 0.78 SEM at both T1 and T2 (see Figure 6.20). The ANOVA showed no Group effect, $F(2, 27) = 0.97$, $p = .391$, partial $\eta^2 = .069$, no effect of Time ($F(1, 27) = 0.00$, $p = 1.000$, $\eta^2 = .000$), and no Time × Group interaction ($F(2, 27) = 0.00$, $p = 1.000$, $\eta^2 = .000$). Event recall during late adulthood therefore remained stable across time and conditions.

Figure 6.20

Comparison of Event Late Adulthood Scores Across Groups Walking-Only, Reminiscence-Only, and Walking + Reminiscence T1 vs. T2

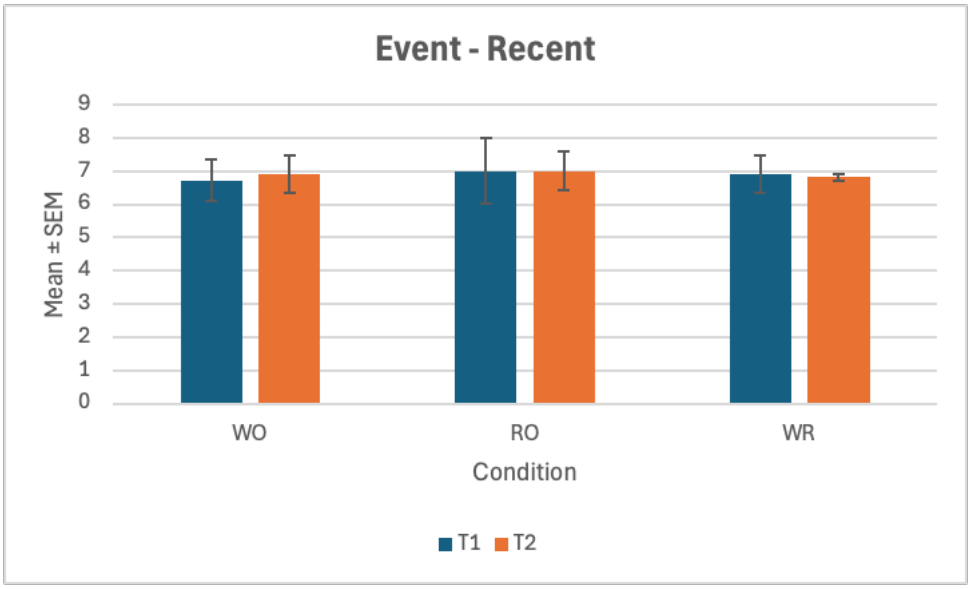


Event recall – Recent years

For the Walking Only (WO) group, scores increased slightly from 6.73 ± 0.61 SEM to 6.91 ± 0.58 SEM. For the Reminiscence Only (RO) group, scores were stable at 7.00 ± 0.99 SEM and 7.00 ± 0.58 SEM. The Walking and Reminiscence (WR) group, scores decreased marginally from 6.91 ± 0.58 SEM to 6.82 ± 0.11 SEM (see Figure 6.21). The ANOVA revealed no significant Group effect, $F(2, 27) = 0.52$, $p = .603$, partial $\eta^2 = .037$, no effect of Time ($F(1, 27) = 0.11$, $p = .741$, $\eta^2 = .004$), and no Time × Group interaction ($F(2, 27) = 0.87$, $p = .431$, $\eta^2 = .060$). Event recall for recent years therefore remained stable across both measurement points and conditions.

Figure 6.21

Comparison of Event Recent Scores Across Groups Walking-Only, Reminiscence-Only, and Walking + Reminiscence T1 vs. T2



It is important to acknowledge that the number of statistical comparisons conducted relative to the modest sample size increases the risk of Type I error. With multiple outcome measures and life-epoch analyses, some statistically significant findings may have occurred by chance. As this study was exploratory and designed to examine potential patterns rather than confirm definitive effects, the results should be interpreted cautiously. Replication with larger samples and more conservative correction procedures would be necessary to confirm the robustness of the observed effects.

6.4 Qualitative Findings

In this chapter, the term “quality of recall” does not refer to objective memory accuracy or quantity of details. Rather, it refers to the observed characteristics of narrative expression during sessions, including (i) degree of sensory detail, (ii) emotional engagement, (iii) chronological coherence, and (iv) collaborative co-construction within the group. These features were identified inductively through reflexive thematic analysis and were compared descriptively across conditions. No formal scoring rubric was applied; instead, interpretation focused on consistent patterns in how memories were structured and expressed within each setting.

Reflexive thematic analysis revealed both shared and condition-specific ways in which participants remembered and talked about their lives. The environment in which sessions took place strongly influenced not only what was remembered but also how those memories were expressed and connected to emotion.

6.4.1 Thematic Range in Walking-Only (WO) Condition

The walking-only sessions unfolded outdoors along pre-defined community routes, without visual or photographic cues. Participants' recall was shaped by sensory contact with the environment. Across sessions, participants' discussions clustered around several interconnected topics. The main themes included local environment and green spaces, historical landmarks and Irish heritage, housing and neighbourhood change, technology progress and change over time, seasonal and nature-related experiences, community groups and senior citizen activities, health, ageing, and physical movement, and family and social connection. Together, these reflect how walking in familiar surroundings prompted participants to engage with both personal and collective histories, using sensory and spatial cues as gateways to recall. Such patterns align with ecological approaches to reminiscence, which view place-based engagement as central to autobiographical continuity in later life (ASI, 2024).

Figure 6.22

General Themes – Walking-Only (WO) Condition

Note. Main themes identified among participants in the Walking-Only group.

We then explored in greater depth the reoccurring themes that appeared most consistently across participants' narratives, infrastructure and environment, housing, technology progress, church and religious memory, education, and community groups, to illustrate how physical activity and environmental familiarity worked together to offer meaningful and socially important memory recall. We deal with each of these themes separately.

Figure 6.23

Reoccurring Themes – Walking-Only (RO) Condition

Note. Main themes identified among participants in the Walking-Only group.

Infrastructure and Environment: Participants' reflections often centred on visible change in their surroundings, with several noting how "the roads weren't like this before" or "you'd never have seen that much traffic years ago." These observations reveal a strong awareness of environmental transformation, echoing Irish studies showing that familiarity with place helps older adults' sense of orientation and social belonging (Lebrusán et al., 2022). The contrast between old and new built spaces appeared to cue layered autobiographical recall, consistent with evidence that spatial context stimulates memory through embodied perception (Chang et al., 2024).

Technology Progress and Housing: Walking past newly built estates and renovated houses prompted comparisons with the past. One participant remarked, "Every

house had a coal shed, now it's all oil and solar," while another added, "We thought a colour TV was magic." These memories highlighted intergenerational contrasts and adaptation to technological change. This aligns with recent research work showing that environmental novelty supports autobiographical reflection by juxtaposing continuity and innovation (Cappeliez al., 2008; O'Philbin et al., 2018). The everyday encounter with changed housing also evoked nostalgia balanced by humour, showing how temporal contrasts sustain self-continuity in later life.

Church and Religious Memory: Passing the parish church prompted gentle reminiscence: "That's where we queued for confirmation," one participant smiled, "and the teacher watching if we'd remember our prayers." Religion was mentioned with warmth rather than rigidity, signalling a cultural rather than doctrinal bond. This tone echoed the observations made by Orr et al. (2022), who noted a shift within Irish ageing research from formal, institutional religion toward more individual and culturally grounded expressions of faith, in which spiritual memories serve as collective points of connection within community life.

Community Groups and Sociability: Humour and group synchrony were defining features of these walks. When one participant laughed, "That was the smell every morning before school—ye'd nearly float in!" another added, "And we're still chasing the buns." Laughter travelled easily along the route, transforming reminiscence into a collective rhythm. This pattern resonates with Tappen's et al.'s (2007) "walking dialogue effect," in which physical synchrony fosters conversational reciprocity and mutual validation.

Education and Lifelong Learning: Passing former schools or community centres often triggered stories about early education: "We had the old wooden desks, and you'd get a whack if you looked out the window." Though light-hearted, such comments illustrate how environmental prompts can reactivate long-term semantic and episodic traces of childhood. The cognitive engagement visible in these exchanges supports findings that outdoor reminiscence enhances attention and working memory through sensory stimulation (Yanagida et al., 2024).

Altogether, the WO sessions revealed that even without structured cues, sensory immersion and group rhythm sustained emotionally rich and coherent memory sharing. Walking transformed reminiscence from a task of mental recall into a shared, embodied experience, where memory, movement, and social connection operated together. This

pattern reflects contemporary ecological models of ageing that emphasise the integration of physical engagement, emotional wellbeing, and cognitive continuity, as documented in recent Irish and European studies (O'Philbin et al., 2018; Ustad et al., 2024).

6.4.2 Thematic Range in Reminiscence-Only (RO) Condition

The reminiscence-only sessions took place indoors at Maynooth Library, where participants gathered around photographs of familiar landmarks such as the canal bridge, the church, and the old school. The quiet, ordered setting shaped the tone of discussion. The room itself, surrounded by books, windows overlooking the town, and the spread of historical photographs, encouraged careful and structured storytelling rooted in collective experience.

Across sessions, participants' reflections covered a broad range of interconnected topics. The main themes included family and formative experiences, education and discipline, religion and cultural influence, health and ageing, community belonging and group dynamics, local history and identity, work and daily routine, and emotional motivation and resilience. Together, these themes reflected how the library environment invited participants to organise memory through moral and social frameworks. The calm structure of the setting appeared to slow conversation, giving space for factual accuracy, turn-taking, and reflective depth, illustrating what O'Shea and Cahill (2022) describe as the "anchoring effect" of culturally familiar, predictable reminiscence settings that support semantic precision and emotional containment.

Figure 6.24

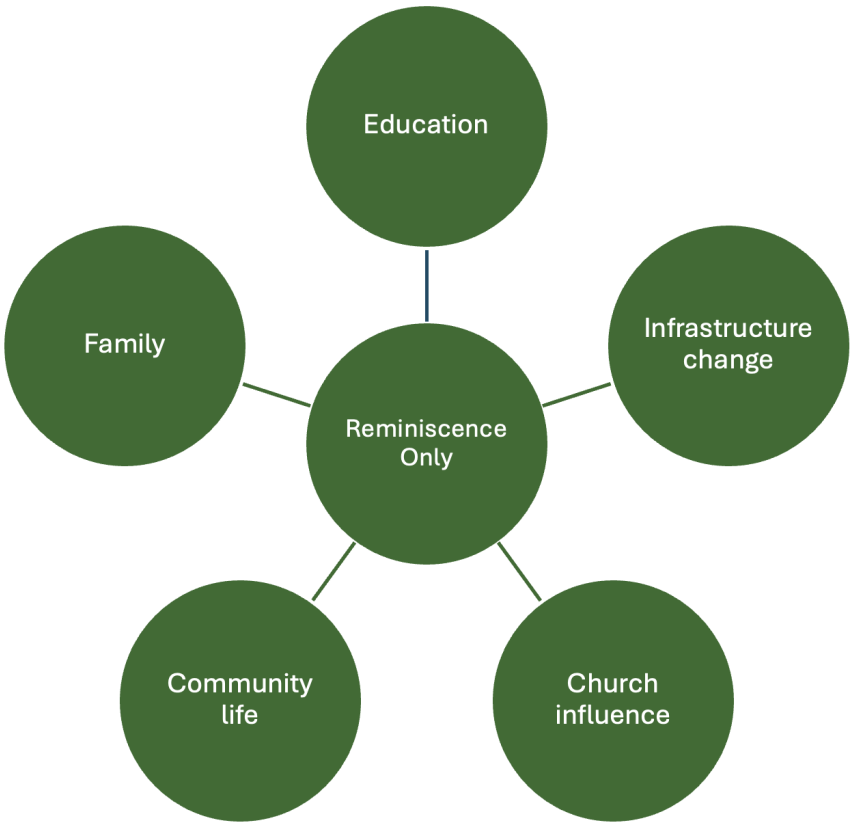
General Themes – Reminiscence-Only (RO) Condition

Note. Main themes identified among participants in the Reminiscence-Only group.

The following analysis explores the reoccurring themes that appeared most consistently across transcripts, education, family, infrastructure change, church influence, and community life; to show how collective memory was reconstructed.

Figure 6.25

Reoccurring Themes – Reminiscence-Only (RO) Condition



Note. Main themes identified among participants in the Reminiscence-Only group.

Education: Memories of schooling dominated discussion and were recalled with remarkable precision. One participant began, "I was four and a half when I started school—walked a mile each way," while another added, "Sister (name) remembered my father when I went there." Others recalled the texture of the classrooms: "You'd get the cane if you talked, but we still laughed," and "Those wooden desks had your name carved into them." The tone balanced affection with realism, describing education as both discipline and opportunity. Participants often corrected or confirmed one another's accounts, suggesting shared ownership of the past: "No, the boys' school was beside the chapel, not across," someone said, followed by a round of agreement.

These scenes mirror Irish findings that memories of education are often "moral anchors," linking individual identity with collective progress and national history

(O'Shea & Cahill, 2022). The structured visual cues, photographs of the school and nearby streets, appeared to support semantic retrieval, enabling participants to piece together shared narratives. This pattern supports evidence from Marselli et al. (2023) that familiar cueing enhances narrative coherence and confidence, particularly when memory is socially verified within a predictable environment.

Family: Family stories were woven through almost every exchange, often carrying emotional warmth and pragmatic humour. "My mother would send us out early, fresh air made you strong," said one woman. Another added, "We hadn't much, but there was always tea on the table." Conversations about family also revealed generational contrast: "You'd never see kids outside now; we lived on the roads." These remarks reflected the changing rhythms of care, childhood freedom, and domestic work. In several cases, the group compared how parents then "kept the house spotless, even with nothing," bringing nods and laughter.

Such narratives underscored the continuity of moral and emotional learning through family life, a finding echoed in European reminiscence research that links intergenerational storytelling with enhanced emotional regulation and wellbeing (Cappeliez et al., 2008; Fisher et al., 2025). The collective sharing of family anecdotes also created an atmosphere of quiet validation. As one participant noted, "It's nice when someone remembers the same things, it makes you feel it really happened."

Church Influence: Faith-based memories were another strong thread, intertwined with social order and community rhythm rather than religious doctrine. One participant observed, "You knew the time by the bells, you'd stop wherever you were." Another recalled, "Sunday was for Mass, and everyone knew their place on the pews." Faith was described with calm certainty rather than sentimentality, a reflection of its embeddedness in daily structure. For others, religion blended into moral reflection: "You mightn't go now, but it was a good thing back then, it kept people grounded."

These comments resonate with recent Irish findings that older adults increasingly remember faith as a cultural rhythm rather than a belief system (Cheng et al., 2025). The predictability of religious routine mirrored the predictability of the reminiscence setting itself, supporting what Park et al. (2019) call the semantic soothing effect of structured recall, where the reliability of cues promotes cognitive clarity and emotional calm.

Infrastructure Change: Discussion of the town's transformation offered both humour and nostalgia. "You'd hardly know it now—the shops, the roads, even the faces," one participant said. Another remarked, "That was the post office, and now it's a coffee place, what would my father say!" The conversation often moved between description and evaluation, contrasting past simplicity with modern convenience. Yet the mood remained balanced: "You can't stop progress," someone shrugged, "but I miss the small windows and the smell of turf."

These place-based observations linked collective identity to the physical environment, relating to Chang and colleagues (2024) work, who describe spatial memory as a stabilising structure for autobiographical recall. The photographs of familiar landmarks acted as "temporal triggers," helping participants navigate the passage of time. Several commented that the images made the past feel tangible: "You'd swear you could walk into it again." Such sensory immediacy supports findings that visual environmental cues reawaken multisensory traces of autobiographical memory (Lopis et al.,2021).

Community Life: Neighbourliness and social belonging emerged repeatedly, often in the form of gentle corrections or collective laughter. When one participant described a shop in town, another interrupted to offer some more detail. These small negotiations of accuracy carried social warmth, illustrating co-construction of memory rather than contradiction. Such exchanges exemplify the collaborative retrieval processes identified by Irish et al. (2023), where shared detail verification reinforces self-continuity and community identity. The reminiscence setting supported this cooperative dynamic by allowing participants to "think aloud together," creating what one participant called "a nice mix of stories—it's like putting a jigsaw back."

Moments of humour also softened nostalgia. Describing local dances, a participant recalled, "If you didn't dance, you'd hold the coats—and I always held coats." Another added, "You'd be caught if you left early—the nuns would know!" Laughter followed, demonstrating how humour worked as emotional regulation and social glue, aligning with Fisher et al. (2025) who note that shared laughter in reminiscence groups supports group cohesion and positive reappraisal of ageing.

Generational Contrast and Reflection: As discussions moved forwards, participants often compared past and present lifestyles: "We walked everywhere, no cars, you stayed fit without trying," said one, while another replied, "Different times, but better in some ways." These remarks reflected both gratitude and critical distance, showing how

reminiscence allowed participants to negotiate continuity between self and society. This interpretive stance corresponds to what Cappeliez et al., (2008) describe as adaptive autobiographical reflection, where older adults use memory to reconcile past hardship with present wellbeing.

The RO sessions, held in the familiar setting of the local library, therefore supported factual precision, calm validation, and a shared sense of continuity. The photographs inspired conversation, but the real cohesion came from how participants collectively rebuilt meaning through story and correction. This setting demonstrated the stabilising function of structured, culturally embedded reminiscence, where memory becomes both an act of identity reconstruction and a social affirmation of belonging (Clare et al., 2023).

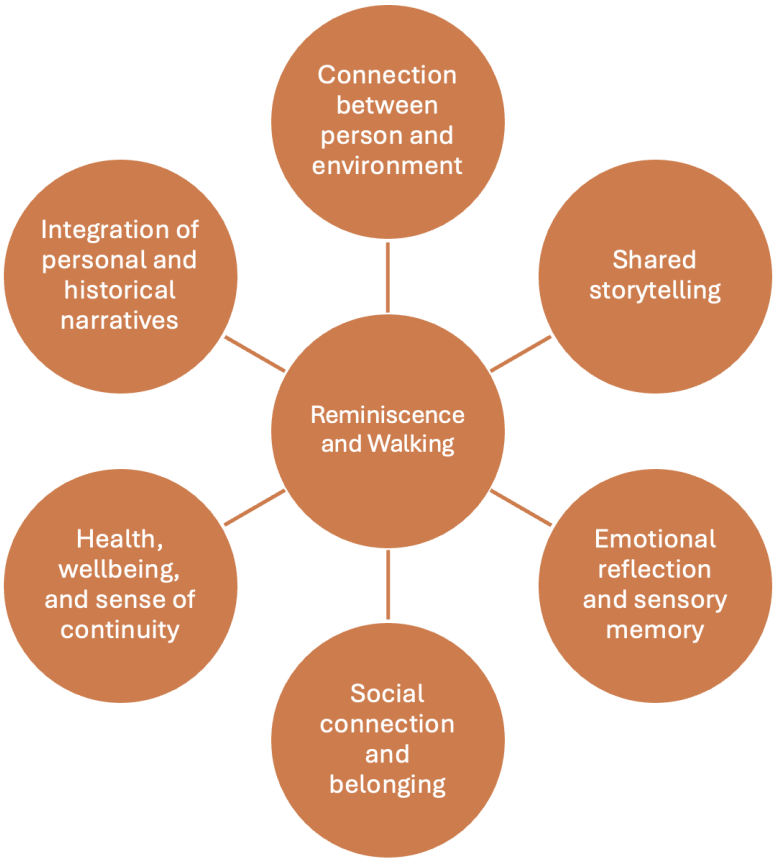
6.4.3 Thematic Range in Walking + Reminiscence (WR) Condition

The combined walking and reminiscence sessions integrated pre-defined walking routes with known environmental cues (see Chapter 2 for further information). Participants moved through these visual and sensory landmarks before sharing memories.

Across sessions, participants' reflections converged around several interconnected topics. The main themes included connection between person and environment, shared storytelling, emotional reflection and sensory memory, social connection and belonging, health and wellbeing, and integration of personal and historical narratives. Together, these patterns illustrated how moving through familiar spaces acted as a "living archive," remembering memories that were then shaped and contextualised through conversation. This dual process, physical encounter followed by verbal meaning-making, aligns with ecological models of reminiscence, which view embodied movement as the trigger that enables autobiographical networks to activate (Lopis et al., 2021; Lenormand et al., 2024).

Figure 6.26

General Themes – Walking and Reminiscence (WR) Condition

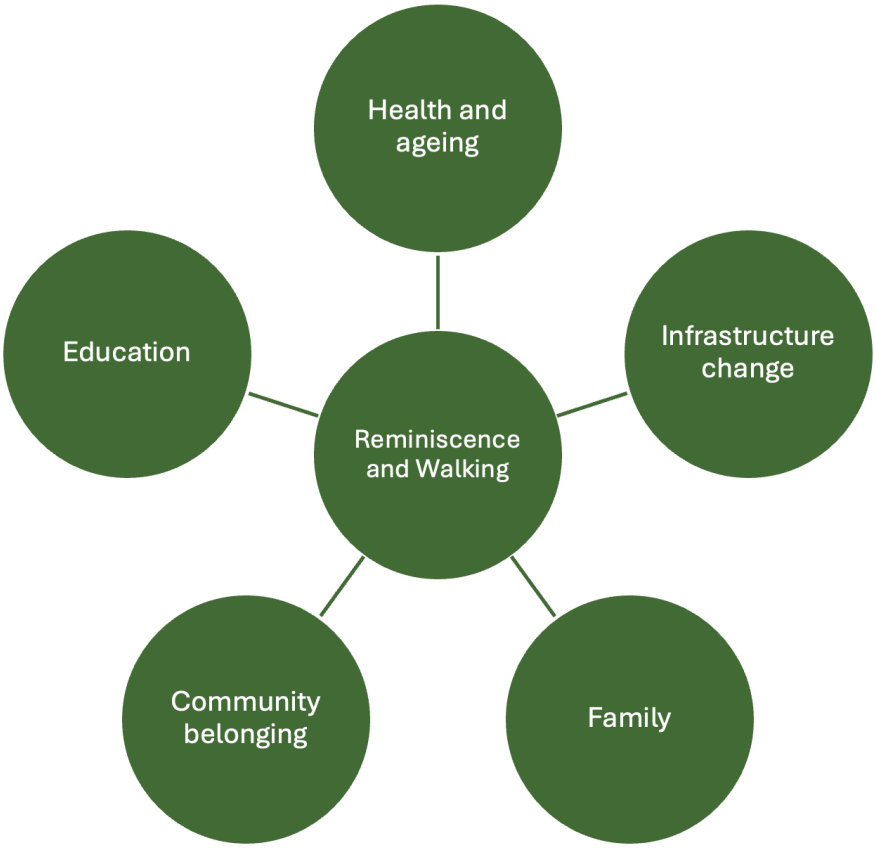


Note. Main themes identified among participants in the Walking and Reminiscence group.

The following section explores in greater depth the reoccurring themes that appeared most consistently across participants' narratives: health and ageing, family, education, infrastructure change, and community belonging.

Figure 6.27

Reoccurring Themes – Walking and Reminiscence (WR) Condition



Note. Main themes identified among participants in the Walking and Reminiscence group.

Health and Ageing: Participants reflected often on their physicality while walking. "You know you're alive when the wind hits your face," said one participant, smiling. Another added, "We might go slower, but at least we're going." Walking seemed to awaken bodily awareness, both the strength and the frailty of ageing. "It's good pain," one man laughed, patting his knee. This open acceptance of physical limitation reflected what Cappeliez et al. (2008) describe as active ageing through embodied adaptation, where mobility and memory merge into affirmations of vitality.

Such reflections carried a quiet pride in endurance. "You notice more when you're walking — the smell, the houses, the changes — it brings it all back." The phrase "brings it all back" echoed across sessions, signalling not just recall but reconnection, like dusting off an old photograph and finding it still vibrant. The rhythm of movement appeared to

unlock emotional ease, consistent with Clare et al. (2023), who found that synchronised group walking fosters both self-esteem and emotional cohesion in older adults.

Family: Family emerged as an emotional bridge between past and present. “My granddaughter’s doing her Leaving Cert now, same school,” one woman said with visible pride, while another replied, “She’s carrying it on for you.” These exchanges linked personal memory with generational continuity. “You think they don’t care,” someone reflected, “but they’re listening when you talk about the old days.”

This intergenerational layering of stories turned recollection into legacy, reflecting findings by Fisher et al. (2025) that structured reminiscence enhances purpose and coherence when linked to family identity. One participant summarised the sentiment simply: “It reminds you that you still matter, that what you remember is part of something.” The walks gave these memories movement, translating reflection into a living thread between generations.

Education: Stories of schooling reappeared spontaneously, often triggered by walking past the old buildings. “That’s where we queued for our lunch, bread and jam,” one laughed, while another added, “The nuns would be shouting before you even crossed the gate.” The physical presence of the school site seemed to pull these memories to the surface, blending humour with respect.

This type of “environmental cueing” mirrors Lopis et al. (2021), who describe how spatial familiarity activates episodic traces tied to movement and perception. Participants noted that walking past these sites helped them “see it again,” as one said, “like the day replayed itself.” The combination of movement and structured conversation allowed these scenes to unfold with emotional colour and detail, reinforcing that the WR setting stimulated not just factual recall but embodied storytelling.

Infrastructure Change: Discussions of place transformation carried both nostalgia and curiosity. “That used to be a field, now it’s all houses,” one participant said, to which another replied, “You’d hardly recognise it; even the air feels different.” Walking through areas of visible change evoked mixed emotions, admiration for progress tempered with loss. “You’re glad it’s thriving,” one participant said, “but you miss when everyone knew each other.”

This ambivalence captures the tension between continuity and change central to autobiographical reconstruction. The physical act of walking through transformed landscapes provided what one participant called “a reminder of where you started.” It illustrates findings by Pink et al. (2011) that embodied movement through altered environments can reactivate place-based identity, helping older adults negotiate self-continuity amid social transformation.

Community Belonging: Community belonging was the strongest reoccurring theme across sessions. “It feels like being part of something, you’re not just walking; you’re remembering together,” one participant said. Another added, “You forget little things until someone else mentions it, then it all comes back.” These interactions revealed memory as a shared act of reconstruction, one story unlocking another, like sparks lighting a line of candles.

Group laughter often followed. Passing the canal bridge, one participant remarked, “That’s where we used to court, when there was no money for the pictures,” met with a chorus of agreement. Such humour helped social warmth and validation, mirroring Lenormand et al. (2024), who found that collaborative reminiscence strengthens narrative confidence and collective identity. The walking discussions created a rhythm that was physical, conversational, and emotional, “like a tide going out and back again,” as one participant described.

Integration and Reflection: Throughout, the WR sessions intertwined spontaneity and structure. Walking opened the sensory and emotional channels for recall, while the seated discussions afterwards provided space to organise and interpret meaning. Participants seemed to move from feeling to framing their memories, what one called “making sense of what you see again.” This embodied rhythm supports experimental findings from Lopis et al. (2021) showing that movement-based priming followed by reflective conversation maximises both episodic richness and wellbeing outcomes.

The WR approach therefore represented an ecological synthesis, memory activated by place and motion, deepened through shared reflection, and reinforced by group belonging. Like paths converging at a crossroads, walking and talking became inseparable forms of remembering, one grounding the other, both sustaining connections.

6.4.4 Comparative Thematic Synthesis

Across all three conditions, the form and emotional tone of reminiscence were closely shaped by environmental structure and sensory engagement. Participants recalled the same broad life domains, education, family, faith, community, and health, but expressed them differently depending on the condition. This pattern mirrors the general to reoccurring theme structure reported above (e.g., environment/green space, housing/technology change, church influence, education, community groups), showing that the same domains were taken up differently as the cue structure shifted across WO, RO, and WR.

In the Reminiscence-Only (RO) sessions, the controlled indoor setting encouraged ordered, factual narratives. Memories followed a sequential logic: “I was four and a half when I started school,” one participant said, as others nodded in recognition. This deliberate, confirmatory exchange reflected what Park et al. (2019) describe as the stabilising function of structured reminiscence, where familiar cues promote semantic precision and social reassurance. Participants drew on the photographs to situate their memories in time, producing narratives that were coherent and emotionally composed.

By contrast, the Walking-Only (WO) sessions generated vivid but loosely inspired recollections. Without visual aids, participants drew primarily on sensory and spatial prompts, for example: “That shop was the old bakery, wasn’t it?”, to stimulate spontaneous recall. The laughter that followed (“And we’re still chasing the buns!”) exemplified the immediacy and emotional lift created by movement. Although the recall was sometimes less structured in time, this spontaneity reflected the emotional and neural benefits of embodied reminiscence. From a neurocognitive perspective, physical movement is known to activate sensorimotor and limbic networks that support mood regulation and social fluency, consistent with ecological findings showing that walking enhances emotional balance and conversational flow (Pink et al., 2011).

The Walking and Reminiscence (WR) condition bridged these two forms. The physical act of walking through cue-rich areas triggered sensory and emotional access, “That lane still smells of hay”, while the subsequent seated discussion transformed these impressions into structured stories: “You forget little things until someone else says it.” This alternation between embodied activation and reflective organisation produced narratives that were both coherent and emotionally engaging. Recent evidence from integrated activity trials supports this pattern, showing that combining movement with guided dialogue yields stronger autobiographical fluency and wellbeing than either

element alone (Clare et al., 2023; Lopis et al., 2021). Table 6.1 tries to capture the similarities and differences between the 3 groups.

Table 6.2

Overview of Thematic Findings by Intervention Type (Walking Only, Reminiscence Only, Combined)

Condition	Main Qualitative Findings	Interpretive Summary
Walking-Only (WO)	• Sensory-led, affectively positive reminiscence along familiar routes. • Vivid perceptual detail (smells, sounds, sights) but loosely ordered chronology. • Frequent humour and spontaneous group exchange. • Recall emphasised lived experience and community familiarity.	• Promoted embodied, emotionally salient recall with strong sensory richness. • Enhanced mood and group synchrony. • Lower temporal structure and reduced factual sequencing.
Reminiscence-Only (RO)	• Indoor, photograph-guided sessions produced factually precise, semantically coherent narratives. • Core themes: education, family, religion, and local identity. • High accuracy through peer correction and shared confirmation. • Emotional tone calm and reflective, less sensory intensity.	• Supported semantic and chronological organisation of recall. • Reinforced collective memory and cultural continuity. • Emotionally contained, with limited affective spontaneity.
Walking + Reminiscence (WR)	• Combined movement and discussion balanced autobiographical recall. • Walking triggered emotional access; seated reflection added structure. • Narratives were rich, coherent, and socially resonant. • Participants linked past and present with generational continuity.	• Produced narratives that integrated sensory detail, emotional engagement, and chronological organisation. • Integrated affective immediacy with semantic clarity. • Fostered emotionally positive, detailed, and cognitively organised narratives.

When viewed together, these contrasts suggest that environmental and cue design directly influence the balance between semantic stability and emotional immediacy. RO encouraged verification and coherence; WO prioritised spontaneity and humour; WR integrated both processes. This mirrors the dual-process accounts of autobiographical memory in ageing, where sensory immersion enhances affective salience and structured retrieval supports temporal organisation (Stramba-Badiale et al., 2025). Practically, this means the same thematic material (education, faith, family, community, health) becomes either more semantic (RO), more affective-sensory (WO), or optimally integrated (WR) depending on cueing and context. In Irish community contexts, such ecological tailoring of cueing conditions could guide the design of sustainable reminiscence-based interventions for both healthy and cognitively vulnerable populations.

6.4.5 Route-Specific Illustrations

Specific environmental encounters along the routes brought the interplay between memory, place, and emotion to life. During the WR canal walk, one participant stopped at the water's edge and said quietly, "We used to throw sticks in here for races, you can nearly see them still." Another laughed, "It was always cold, but we didn't care." These shared reconstructions, combining gesture, laughter, and sensory language, reflect the concept of embodied anchoring, whereby environmental affordances directly re-activate lived experience (Gallagher, 2020).

In the WO condition, a participant pointed to the bakery and said, "That was the smell of every morning, bread and smoke." Another added, "They've built flats there now, but you can still smell it when the wind's right." The dialogue illustrated pragmatic acceptance of social change rather than nostalgia. The immediacy of the scene and the warmth of laughter supported studies on place-based reminiscence showing that sensory continuity, not photographic familiarity, sustains emotional engagement in older adults (Cappeliez et al., 2008).

By contrast, RO participants remained focused in visual rather than sensory detail. When shown a photograph of the old post office, one participant said, "You'd queue for stamps and end up talking half the morning." Another corrected gently, "No, that place was the market day queues." The exchange became a collective reconstruction of social routine. Such moments demonstrate how static visual cues prompt shared verification and factual refinement, reflecting Zemla et al. (2023) observation that guided imagery promotes cognitive organisation and interpersonal trust.

Together, these route-specific illustrations reveal that reminiscence is not only thematic but spatially embodied. The degree of physical immersion shaped not just what was remembered, but how meaning and emotion were jointly constructed within the group. In short, RO produced visually structured semantic clarity, WO produced sensory-led social vitality, and WR combined these pathways by coupling movement at cue-points with reflective organisation.

6.6 General Discussion

The integration of quantitative and qualitative components served complementary purposes. Within the broader structure of this thesis, this chapter represents the first stage in which the intervention is examined comparatively across multiple conditions. While Chapters 4 and 5 focused primarily on feasibility and acceptability, the present chapter moves toward early evaluation by examining the relative contributions of walking, reminiscence, and their combination.

The quantitative analyses examined whether measurable changes occurred in cognition, wellbeing, and autobiographical memory performance. The qualitative analysis explored how memories were produced and expressed within each condition. Together, this mixed-method approach allowed examination of both outcome change (what changed) and process mechanisms (how reminiscence unfolded under different environmental conditions). The qualitative findings therefore contextualise and help interpret the modest quantitative differences observed across groups.

6.6.1 Qualitative Discussion

The qualitative component was not designed to measure experience in a general affective or satisfaction-based sense, but rather to examine how different environmental and cue structures shaped the form, organisation, and social construction of autobiographical recall. Indeed, each condition fostered a distinct mode of remembering, structured and factual in RO, spontaneous and sensory in WO, and integrative in WR.

This progression echoes the condition-level reoccurring themes above, showing how the same life domains (education, faith, family, community, health) were taken up differently as a function of cueing and context.

In the RO sessions, reminiscence followed a collective verification model. Participants used familiar photographs as external cues for memory retrieval, producing detailed yet socially co-constructed narratives. Corrections and confirmations “No, it was

beside the convent, not across", served to maintain shared coherence. This aligns with research across Europe showing that predictable cueing and cultural familiarity reinforce semantic stability and social confidence in older adults (Irish et al., 2023). Such structured formats appear particularly valuable for sustaining collective memory traditions in Irish community contexts where shared moral and educational references remain strong (O'Shea & Cahill, 2022).

The WO sessions demonstrated that movement transforms reminiscence into an embodied and affective experience. Participants' use of sensory language "You can nearly smell the turf again" and humour "At least we're still walking!" reflected the link between physical engagement, mood enhancement, and conversational fluency observed in recent walking-based interventions (Browne et al., 2024). Though these sessions produced less chronologically precise narratives, they showed greater vitality and laughter, suggesting that environmental spontaneity enhances social connection even without fixed cueing.

The WR condition, combining movement and structured discussion, offered a synthesis of the two mechanisms. Walking through pre-defined cues activated embodied recall, while subsequent seated conversation organised these impressions into coherent stories. The resulting narratives were emotionally rich yet temporally structured, a pattern that reflects recent findings that physical activation followed by guided reflection enhances both episodic and semantic recall (Lopis et al., 2021; Clare et al., 2023). This interaction between body, environment, and language underscores the multidimensional nature of reminiscence as both a cognitive and social practice.

Comparing these findings with Chapter 5, which involved participants living with dementia, further illustrates the sensitivity of reminiscence to cognitive context. Whereas structured cues previously acted as recognition structure, in the present study they enabled fluent, elaborated storytelling. This difference highlights the cognitive flexibility of community-dwelling older adults, who were able to transform structured prompts into coherent and integrative stories. It suggests that reminiscence retains its adaptive potential in ageing, particularly when environments support embodied engagement. Depending on individuals' cognitive levels, such approaches could be further tailored to promote person-centred recall and meaningful participation. In practice, this implies selecting RO-like formats when semantic structure is needed, WO-like formats when affect and

sociability are priorities, and WR when an integrated balance of embodied access and narrative organisation is the goal.

Overall, the results demonstrate that reminiscence is a contextual, embodied process that depends on the affordances of place, movement, and social interaction. Structured indoor settings strengthen factual coherence and shared verification; unstructured walking environments foster humour and sensory vitality; and combined formats like WR achieve the richest balance between the two. These findings provide empirical grounding for designing flexible reminiscence interventions in community settings, libraries, parks, or local heritage routes, that can be tailored to diverse cognitive profiles and cultural environments.

The qualitative evidence also complements the quantitative outcomes that follow, explaining why WR participants showed the most improvement in wellbeing and semantic measures. The combination of movement and structured discussion amplified engagement, meaning, and affective tone, demonstrating that reminiscence, when embodied and socially situated, functions as both a cognitive support and a form of shared belonging in later life. As shown in the condition sections, intergenerational references ("same school"), community belonging ("remembering together"), and sensory anchors ("smell of turf," "lane still smells of hay") are likely mechanisms underlying these gains.

6.6.2 Quantitative Discussion

The quantitative results indicate that participation in the programme, in every condition, was linked to small improvements in cognitive function and wellbeing, but no measurable change in autobiographical memory. Cognitive scores improved slightly over time, with the Walking-Only group showing the clearest upward trend. This finding is consistent with earlier work suggesting that brief periods of light physical activity can enhance alertness and executive function in older adults (Park et al., 2019; Zhu et al., 2016). The gains observed here are likely to reflect general engagement and stimulation rather than specific training effects, given the already high baseline scores of this community-dwelling sample.

Measures of wellbeing showed a similar pattern. Quality-of-Life (CASP-19) scores increased modestly across the sample, with the Walking and Reminiscence group consistently reporting the highest levels of control, autonomy, self-realisation, and

pleasure. Since these differences did not vary over time, they appear to reflect stable group characteristics rather than direct intervention effects. Nevertheless, the combination of movement and shared reflection may have created a setting that supported self-expression and social connection. Studies of combined psychosocial and physical activity interventions have found similar benefits for quality of life and emotional wellbeing in older adults (Clare et al., 2023).

Satisfaction with Life (SWLS) also increased slightly over time. Even small, structured activities that involve social interaction can enhance daily mood and perceived purpose, as shown in other ageing studies (Pinquart & Sörensen, 2001; Kelly et al., 2024). The modest improvements seen here suggest that a sense of routine, community, and contribution can play an important role in maintaining wellbeing, even when the intervention is brief and low in intensity.

Autobiographical memory (EAMI) remained largely unchanged. No time-related and interaction effects were found, yet participants in the Walking and Reminiscence group tended to score higher on semantic recall across early, middle, and recent life epochs. Event-based recall was stable for all groups. This suggests that semantic autobiographical knowledge, such as general facts or themes about one's life, may have been more easily accessed when movement and conversation occurred together. The walking component likely provided spatial and sensory cues that helped trigger memories, while the reminiscence discussions helped participants organise and share them. Previous research supports this interpretation, showing that embodied or context-rich cues enhance access to semantic self-knowledge (Irish et al., 2018; Viard et al., 2024).

The absence of measurable change in episodic recall was expected given the short duration of the programme and the good cognitive health of participants. Episodic memory typically requires longer or more focused stimulation to produce measurable effects (Stramba-Badiale et al., 2025). The small semantic advantage in the combined condition is therefore best understood as the result of enriched contextual and social cues rather than new learning. Gallagher's (2020) concept of "situated remembering" describes how bodily movement, environment, and narrative can work together to strengthen the recall of personally meaningful information, which may explain the pattern seen here.

Taken together, these findings indicate that the main benefit of the programme lies in maintaining wellbeing and engagement rather than producing strong cognitive change. Even light, routine participation appeared to sustain a sense of vitality, connection, and purpose. The results support the idea that consistent, socially grounded activities can stabilise wellbeing and reinforce self-continuity in later life (Fisher et al., 2025). Although the intervention did not alter memory performance, it seemed to create the right conditions for participants to remain active, connected, and reflective.

In summary, small improvements were observed in cognitive and wellbeing measures across all conditions, with the combined Walking and Reminiscence group showing the most consistent advantage. Autobiographical memory performance remained stable overall, although participants in the combined condition tended to recall more semantic information across early, middle, and recent life epochs. Event-based recall was unchanged, reflecting the stability of episodic remembering in this community-dwelling older adults over a short period. Together, these results align with wider evidence that short, community-based programmes can help maintain psychological wellbeing and engagement, even when measurable changes in memory or cognition are limited (Lopis et al., 2021).

6.7 Limitations

Several limitations should be considered when interpreting these findings. Although larger than the earlier feasibility studies, the sample remained modest, with 12 participants per group, which may have limited power to detect smaller effects, particularly across the multiple autobiographical memory outcomes and life epochs examined. The intervention was also relatively brief, lasting four weeks, which may not have been sufficient to produce measurable changes in more stable outcomes such as episodic memory or depression. In addition, participants were community-dwelling, physically active older adults recruited locally, which may limit the generalisability of the findings to more diverse or less active populations. Finally, the number of statistical comparisons conducted increases the possibility of Type I error, and the qualitative findings were shaped by the specific routes, cues, and group contexts used in this study.

6.8 Conclusion

The findings show that the programme helped maintain cognitive function and wellbeing while encouraging connection and reflection among older adults. Within the

MRC framework for complex interventions, these findings represent an early evaluative step that helps clarify how different components of the intervention contribute to outcomes.

Small improvements were seen in cognition and life satisfaction, with the Walking and Reminiscence group showing the highest wellbeing and stronger semantic recall. Event memory remained stable, suggesting preservation rather than change. Participants described the sessions as relaxed, social, and meaningful, with walking supporting openness and belonging. Overall, reminiscence walks appear adaptable, safe, and feasible for community use. The next chapter considers how this model can be embedded sustainably across Irish community settings through collaboration with health policymakers and people living with and without dementia.

Chapter 7:

Evaluating the Feasibility of Walking–Reminiscence Programmes for Older Adults in the Community

Abstract

This chapter provides an implementation-focused feasibility evaluation named "Walk & Recall: Online Feasibility and Implementation Survey". The primary aim of the study was to evaluate the feasibility and potential implementation of a reminiscence and walking programme tailored for older adults, particularly those living with dementia, within Irish communities. Within the Medical Research Council (MRC) framework for developing and evaluating complex interventions (Skivington et al., 2021), this chapter contributes to the feasibility stage by examining implementation-related considerations and stakeholder readiness for wider community delivery. A mixed-methods design was employed using two structured online surveys (Microsoft Forms), distributed to three stakeholder groups: community-dwelling older adults aged 65+ without dementia (n = 28), people living with dementia (n = 16), and health policymakers involved in dementia-related services (n = 21), regrouping a total sample of 65 participants. Quantitative measures included demographic variables (age, location, self-rated health), walking behaviours (enjoyment, walking style), prior engagement with reminiscence programmes, and willingness to participate in the proposed intervention. Descriptive statistics (frequencies and percentages) were calculated, and group comparisons between older adults with and without dementia were conducted using Chi-square and Fisher's exact tests in SPSS. Qualitative data from open-ended survey responses were analysed thematically following Braun and Clarke's six-phase framework, with theme frequencies reported to enhance analytic transparency and rigour. Findings from this multifaceted approach contribute to the development of strategies to strengthen community programmes and to enhance the quality of life for older adults. In summary, over nine out of ten older participants, living with and without dementia, indicated an interest in taking part, while every policymaker recognised the programme's joint value for memory, mobility, and social connection, demonstrating its broad acceptability and practical feasibility across stakeholder groups. No significant differences were observed between older adults with and without dementia in willingness to participate, reinforcing the intervention's cross-group acceptability. Overall, the findings provide structured feasibility evidence to inform future community implementation and policy integration within Irish service contexts.

7.1 Introduction

The rising prevalence of dementia among older adults necessitates innovative and effective approaches that support quality of life, autonomy, and community participation (Department of Health, Ireland, 2023; see Chapter 1). In keeping with European and Irish policy priorities to shift supports closer to home, there is a need for person-centred, tailored interventions that can be delivered in everyday community settings (Health Service Executive, 2022; European Commission, 2021). Reminiscence therapy has been associated with improvements in cognitive function, emotional wellbeing, and social connectedness for people living with dementia, including in Irish and European care contexts (O'Shea et al., 2014; Surr et al., 2020). By mobilising autobiographical memory and identity-relevant cues, reminiscence can help sustain continuity of self while supporting communication with family and staff (Woods et al., 2018).

Walking is one of the most accessible physical activities for older adults and aligns with Irish public health guidance on everyday activity. Population studies and community reports link regular walking with benefits for mobility, cardiovascular health, mood, and broader social participation (e.g., TILDA, 2020; O'Donoghue et al., 2016). Combining walking with cognitively engaging conversation offers a pragmatic route to stimulate physical, cognitive, and social domains simultaneously. In our earlier chapters, a combined walking-and-reminiscence programme enhanced autobiographical recall, social interaction, and perceived wellbeing, with patient and public involvement (PPI) feedback emphasising enjoyment and personal relevance. These patterns mirror broader European signals for multi-component "move-and-think" approaches in ageing and dementia care (Bossers et al., 2014). Translating such programmes into routine practice, however, is not straightforward. Reported barriers span the individual, organisational, and environmental: time and staffing pressures; variable training and confidence among frontline workers; competing service priorities; sustaining adherence; and aligning risk assessment with real-world walking routes (Surr et al., 2020; Waymouth et al., 2023; White & Montgomery, 2016). For some participants, mobility limitations, fluctuating health, or weather-related constraints may reduce feasibility; others may require adapted routes, assistive devices, or indoor alternatives. Cultural meanings of reminiscence, access pathways, and expectations of "what counts" as therapeutic activity can also shape uptake and acceptability across Irish and European settings (Stephan et al., 2018).

In this context, the present chapter assesses feasibility, acceptability, and perceived barriers to delivering a combined walking-and-reminiscence programme at community level. In line with the staged approach recommended by the Medical Research Council framework for complex interventions, earlier chapters of this thesis addressed the development, feasibility, and preliminary evaluation of the intervention (Chapters 4–6). The present chapter extends this work by examining implementation-related feasibility through the perspectives of key stakeholders. By gathering perspectives from potential participants and policymakers, the chapter explores factors that may influence the future implementation of the intervention within community and policy settings. We conducted a structured survey with critical stakeholders, potential participants (older adults and people living with dementia) and professionals across health, social care, policy, and community sectors, to capture priorities and practical concerns from both user and decision-maker perspectives. The intention is to inform pragmatic adaptation and scalable implementation responsive to Irish and European service realities (e.g., Swan et al., 2022; Department of Health, Ireland, 2023).

The primary aim of the survey and this chapter is to examine:

1. How the feasibility of a walking-reminiscence-based program is perceived within an Irish context

2. What are the perceived benefits and challenges of such a program among health policymakers, older adults living with or without dementia.

3. What strategies can be employed for the effective implementation of the program in community settings?

7.2 Methods

7.2.1 Participants

Three different cohorts were surveyed: health policy makers, older adults and older adults living with dementia (PLwD). Health policymakers were invited through collaborations with national and community organisations such as the Alzheimer's Society of Ireland (ASI) and carers groups (e.g. Family Carers Ireland). Recruitment was conducted via email, whereby participants were contacted directly by our partner organisations (e.g. ASI, FCI etc.) using their existing mailing lists. The survey was targeted towards individuals involved in health policy related to dementia care in Ireland

and included researchers and clinicians. Individuals that were not actively involved in health policy or not engaged with dementia care strategies were excluded. Examples included local government officials with no health portfolio, policymakers in unrelated sectors, policy makers from non-health related agencies, members of the judiciary or non-health regulatory bodies. Community-dwelling older adults were recruited via community organisations such as Men's Shed groups, Maynooth Arthritis Walking Group and other local community groups. Our inclusion criteria were self-reported, cognitively healthy older adults aged 65+ and living independently in the community. People Living with Dementia (PLwD) were invited through partnerships with the Dementia Research Advisory Team (DRAT) and local dementia-friendly community groups. We excluded any individuals that were diagnosed with dementia but were aged less than 65 years (see more information from appendix 31-35).

7.2.2 Survey

Two online surveys were developed based on recurring implementation themes identified across the previous walking-and-reminiscence studies, particularly around participation rates, perceived benefits, barriers, transport, facilitator capacity, and community readiness. We employed MS Forms and one questionnaire was directed towards older adults (both older adults living with and without dementia) and a second questionnaire was developed for the health policy makers. Each version took approximately 10 minutes to complete. The survey sent to the older adults consisted of a demographic question about age, a question asking whether they had been diagnosed with dementia or not (allowing us to separate out the two groups during interpretation), which was followed up with a question on general health "How do you feel about your overall health?" and general location "Where do you live?". Two questions related to walking were asked: "Do you enjoy walking?" and "If yes, what benefits do you see with walking?" and "Do you tend to walk alone or with others?"; this question was followed up with open ended questions that asked "If with others, do you share memories during walks and if so, what sort of memories?". The survey ended with two questions on the possibility of joining a Walking and Reminiscence programme - "Would you consider joining a walking and reminiscence program?" and "If No, what concerns/barriers/obstacles would put you off joining?" (see appendix 36).

The survey directed towards the health policy makers consisted of questions relating to their current profession "What is your current job title and nature of your

organisation? (e.g. NGO, charity, etc)?", "What is your current role in health policy making?" and "How many years have you worked in health policy related to older adults?". Four questions related to reminiscence programmes or walking with reminiscence-type programmes. These included "Have you previously engaged with reminiscence therapy or similar types of programmes?", "If yes, how would you rate their usefulness and impact", "Do you think there are benefits associated with combining walking with reminiscence?" "If yes, what are the main benefits?" and "What challenges, if any, do you foresee in implementing this type of programme in Ireland?" (see appendix 37).

7.2.3 Data Collection and Analysis

Data collection took place during July and August 2025. Participants accessed the survey via a secure online link distributed by email and through collaborating organisations. Microsoft Forms automatically recorded responses in a secure database, with access restricted to the research team. The survey was fully compliant with General Data Protection Regulation (GDPR) requirements, and anonymity was preserved by avoiding the collection of personally identifiable information.

Data were analysed using descriptive statistics to summarise the characteristics of the sample and the distribution of categorical responses. Frequencies and percentages were calculated for age, health status, living environment, enjoyment of walking, walking style, and willingness to participate in the programme. Where appropriate, group comparisons were conducted using Chi-square tests, particularly focusing on willingness to participate across both groups of older adults: those living with and without dementia. These analyses were carried out using SPSS.

Qualitative data from open-text responses were analysed thematically following Braun and Clarke's six-phase framework (Braun & Clarke, 2006). The process involved familiarisation with the data, systematic coding, clustering of codes into themes, reviewing and refining the themes, assigning labels, and reporting the findings. To ensure transparency and rigour, the frequency of each theme was counted and reported. Illustrative participant quotations were included to ground the analysis in the lived experience of respondents and to capture nuances of perception that could not be conveyed through descriptive statistics alone.

7.2.4 Ethical Considerations

Informed consent was obtained from all participants, ensuring they fully understand their rights, the purpose of the research, and the confidentiality of their responses. The study adheres to ethical guidelines established by the Maynooth University Social Research Ethics Sub-Committee (SRESC-2025-39596, see appendix 38), emphasising transparency and participant welfare throughout the research process.

7.3 Results

7.3.1 Older Adults living with and without Dementia

Demographics

In total, 65 individuals completed the survey. The sample included 28 community-dwelling older adults aged 65 or over without dementia (43% of the sample), 16 older adults with a confirmed dementia diagnosis (25%), and 21 health policymakers (32%). This distribution ensured representation across the three stakeholder groups central to the study.

Analysis of the older adult groups showed a relatively balanced distribution across three age categories. Among community-dwelling older adults, thirteen participants (46.4%) were aged 65–74, nine (32.1%) were aged 75–84, and six (21.4%) were aged 85 years or older. Among participants living with dementia, six (37.5%) were aged 65–74, five (31.3%) were aged 75–84, and five (31.3%) were aged 85 years or older. These figures indicate no marked age bias between the two groups. Table 7.1 presents the full demographic breakdown.

Table 7.1

Demographic characteristics of both groups of older adults: those living with and without dementia

Characteristic	**Older Adults without Dementia (n = 28)**	**Older Adults Living with Dementia (n= 16)**
Age (years)		
65–74 years	13 (46.4 %)	6 (37.5 %)
75–84 years	9 (32.1 %)	5 (31.3 %)
≥ 85 years	6 (21.4 %)	5 (31.3 %)
Location: n (%)		

Urban (City)	10 (35.7%)	4 (25.0 %)
Urban (Town)	6 (21.4 %)	4 (25.0 %)
Rural (Village/Countryside)	12 (42.9 %)	5 (31.3 %)
Other	0 (0.0 %)	3 (18.8 %)

Table 7.2

Comparative outcomes for older adults with and without dementia

Variable	**Older Adults without Dementia (n = 28)**	**Older Adults with Dementia (n = 16)**	**χ^2 (df)**	**p-value**
Excellent/Good Health	16 (57.1%)	7 (43.8%)	3.32 (3)	.344
Enjoy Walking	26 (92.9%)	12 (75.0%)	2.30 (1)	.129
Walk with Others	21 (75.0%)	12 (75.0%)	0.03 (1)	.858
Willing to Participate	25 (89.3%)	15 (93.8%)	0.35 (1)	.557

Note. Fisher's exact tests were used where cell counts were small.

Health Status

The community-dwelling older adult group rated themselves more positively overall: seven of the twenty-eight (25.0%) reported excellent health, nine (32.1%) reported good health, ten (35.7%) reported fair health, and only two (7.1%) rated their health as poor. By contrast, four of the sixteen (25.0%) with dementia rated their health as excellent, three (18.8%) as good, five (31.3%) as fair, and four (25.0%) as poor. These results suggest that community-dwelling older adult participants perceived themselves as being in slightly better overall health compared with their peers living with dementia. A Chi-square test showed no significant difference between the groups, $\chi^2(3) = 3.32$, $p = .344$ (Fisher–Freeman–Halton $p = .355$).

Figure 7.1

Self-rated health status among healthy older adults

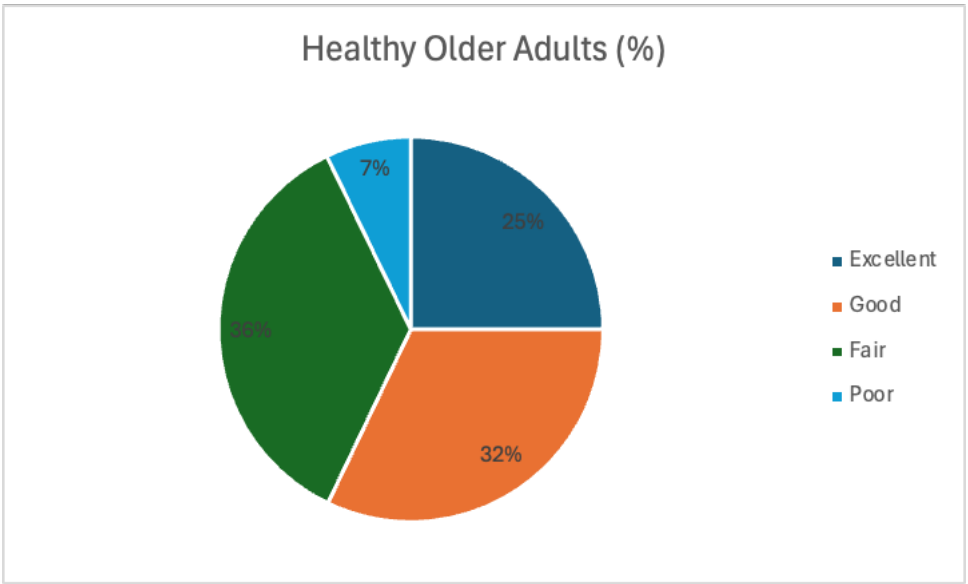
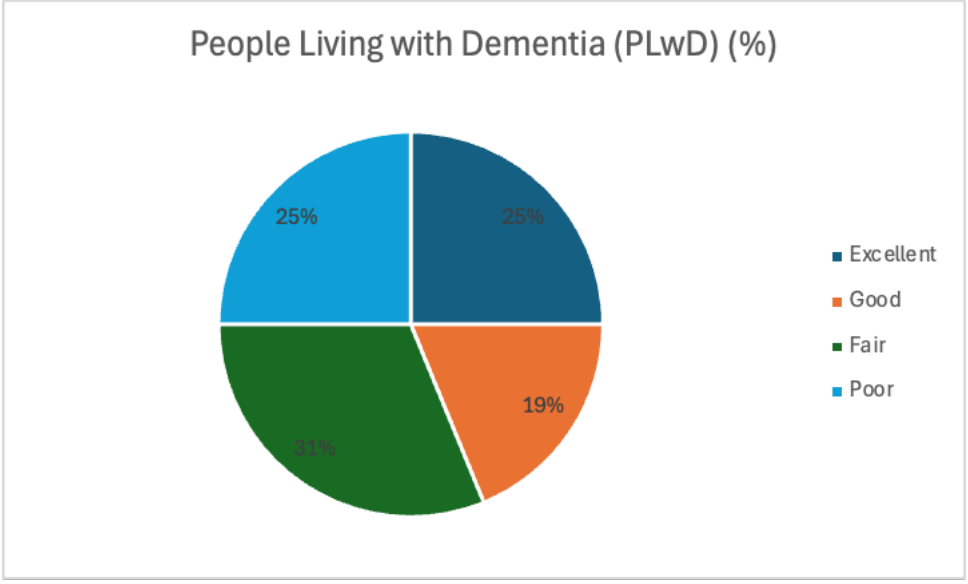


Figure 7.2

Self-rated health status among people living with dementia (PLwD)



Differences were also apparent in reported living environments (see Table 7.2). These data suggest that participants were somewhat more likely to live in rural settings, whereas People Living with Dementia reported a higher mixed distribution. A Chi-square test showed no significant difference between the groups, $\chi^2(3) = 5.43$, $p = .143$ (Fisher–Freeman–Halton $p = .187$).

Walking

Walking enjoyment was reported by the majority in both groups. In the community-dwelling older adult group, twenty-six of the twenty-eight participants (92.9%) reported enjoying walking, and two (7.1%) did not. In the dementia group, twelve of the sixteen participants (75.0%) stated that they enjoyed walking, while four (25.0%) did not. A Chi-square test indicated no significant difference between the groups, $\chi^2(1) = 2.30$, $p = .129$ (Fisher's exact $p = .186$).

Walking style followed a similar pattern, with both groups expressing a preference for walking with others. In the community-dwelling group, twenty-one (75.0%) walked with others and seven (25.0%) walked alone. In the dementia group, twelve (75.0%) typically walked with others and four (25.0%) walked alone. A Chi-square test showed no difference between the groups, $\chi^2(1) = 0.03$, $p = .858$ (Fisher's exact $p = 1.000$).

When asked about willingness to join the Walk & Recall programme, levels of interest were high in both groups. In the community-dwelling group, twenty-five of twenty-eight participants (89.3%) expressed willingness to join, while three (10.7%) declined. For the dementia group, fifteen of sixteen participants (93.8%) indicated "yes" and only one (6.3%) declined. A Chi-square test revealed no significant difference between groups, $\chi^2(1) = 0.35$, $p = .557$ (Fisher's exact $p = 1.000$), confirming that enthusiasm for the programme was consistent irrespective of dementia status.

7.3.2 Health Policymakers

Table 7.3

Descriptive responses from health policymakers (n = 21)

Variable	**n (%)**
Prior engagement with reminiscence programmes	18 (85.7%)
Rated impact as Excellent/Good	19 (90.5%)
Believe combined walking + reminiscence beneficial	21 (100%)
< 5 years policy experience	6 (28.6%)
5–10 years experience	7 (33.3%)
11–20 years experience	4 (19.0%)
> 20 years experience	4 (19.0%)

Health policymakers represented the third stakeholder group in this study. A total of twenty-one policymakers completed the survey. Their professional backgrounds were diverse and included respondents from non-governmental organisations, charities, and health authorities. Years of experience in health policy related to older adults varied widely: six participants (28.6%) had fewer than five years of experience, seven (33.3%) reported between five and ten years, four (19.0%) between eleven and twenty years, and four (19.0%) had more than twenty years.

When asked about prior engagement with reminiscence therapy or similar programmes, eighteen policymakers (85.7%) reported previous involvement, while three

(14.3%) had no prior experience. Despite this variation, perceptions of reminiscence or other related programmes were overwhelmingly positive. Fourteen participants (66.7%) thought that the impact of such programmes would be excellent, five (23.8%) rated it as good, and two (9.5%) rated it as average; no respondents selected fair, poor, or very poor.

Every policymaker surveyed (100%) indicated that they believed there were benefits associated with combining walking and reminiscence.

7.3.3 Analysis of open-ended questions

Community-dwelling older adults

Community-dwelling participants focused on the benefits of companionship. Thirteen of the twenty-eight (46.4%) highlighted social benefits, with one explaining, "It's nicer to walk with others, you end up chatting, and the time passes quicker." Physical wellbeing was raised in eleven accounts (39.3%). For example, one participant wrote, "Walking is good for my balance and keeps me fit." Nine respondents (32.1%) discussed memory stimulation, with one stating, "I always remember things when I'm out walking, it clears my head." Six participants (21.4%) mentioned enjoyment and mood, with one describing, "It would be fun to join something like this, it gives you something to look forward to."

Barriers described by participants included transport and accessibility, mentioned by seven (25.0%). One noted, "If you live out in the country it's hard to get to organised walks." Six participants (21.4%) raised concerns about resources and trained facilitators, with one stating, "It will only work if there are enough people running it." Awareness and engagement were also flagged in five accounts (17.9%). A respondent explained, "You'd need to advertise this well so people know it's happening."

Older Adults living with Dementia

Participants living with dementia often described the programme's benefits in reducing isolation. One respondent explained, "Walking with others helps me feel less alone and brings back good memories." In total, nine of the sixteen respondents (56.3%) highlighted social benefits of this kind. Physical wellbeing was also an important theme, with seven participants (43.8%) describing the advantages of walking for mobility and fitness. For example, one person commented, "I don't walk much now, but if I had a reason to, it would keep me moving." Cognitive and memory stimulation was mentioned

by six respondents (37.5%). One participant noted, “Talking about the past brings back things I thought I had forgotten.” Emotional wellbeing was present in four accounts (25.0%), with comments such as, “It makes me feel happy to share stories.”

Barriers identified by people with dementia similarly included transport and accessibility, raised by five participants (31.3%). One explained, “It’s hard for me to get into town for groups, I’d need someone to bring me.” Health limitations were also frequently mentioned, with four respondents (25.0%) highlighting fatigue or comorbidities as potential challenges. As one participant put it, “Some days I’m too tired, it depends how I’m feeling.” A smaller number (n=3, 18.8%) expressed uncertainty about whether the programme would be structured and supported enough, asking, “Would there be someone there to help us if we got confused?”.

Health Policy makers

Policymakers described the programme’s broader social and health benefits. Ten of the twenty-one respondents (47.6%) pointed to social inclusion, with one noting, “This type of programme reduces loneliness and builds community ties.” Nine respondents (42.9%) emphasised cognitive stimulation, describing reminiscence as, “a meaningful way to support memory and mental health.” Eight policymakers (38.1%) mentioned physical health benefits, and six (28.6%) referred to mood and wellbeing, with one commenting, “Programmes like this improve quality of life in a very holistic way.”

Barriers were identified more in terms of system-level concerns. Eight respondents (38.1%) emphasised resources and staff training, with one policymaker writing, “Without investment in facilitators, this will not be sustainable.” Seven (33.3%) described transport and accessibility as a major issue, noting, “Rural communities are at risk of being excluded if transport is not addressed.” Four respondents (19.0%) raised awareness and engagement as challenges, with one explaining, “Programmes need to be promoted locally and endorsed by trusted organisations.”

Table 7.4

Shared Perspectives (Across All Groups)

Common Benefits	Common Barriers

• Social connection and companionship • Physical and cognitive engagement • Enjoyment and emotional wellbeing	• Transport and accessibility challenges • Need for trained facilitators and support • Limited awareness and promotion

7.4 Discussion

Importantly, this chapter focuses on perceived implementation feasibility rather than direct evaluation of intervention outcomes. The findings therefore reflect stakeholder perspectives on readiness, acceptability, and anticipated barriers to delivery within real-world contexts. Generally, the findings of this survey indicate that a walking-and-reminiscence programme is considered both acceptable and feasible. More precisely, the survey findings indicate strong perceived feasibility and high anticipated acceptability across stakeholder groups. Willingness to participate exceeded ninety per cent in both community dwelling older adults and those living with dementia, with no significant differences between groups. This consistency across cohorts reinforces the potential of the programme to engage diverse populations, including those with cognitive impairment.

The high acceptability observed here is consistent with evidence from meta-analyses demonstrating the benefits of reminiscence for mood, cognition, and quality of life (Wang et al., 2018) and the established role of walking in maintaining functional ability and psychological wellbeing in later life (Paterson & Warburton, 2010; Vilarinho et al., 2021).

Importantly, while survey data cannot empirically confirm feasibility of programme delivery, the perceptions expressed here align closely with the implementation observations reported in earlier chapters. Chapters 4–6 demonstrated that combined walking-and-reminiscence sessions could be delivered safely and meaningfully in small-group contexts, with sustained attendance, positive participant feedback, and manageable facilitator demands. In this sense, the present findings extend prior empirical piloting by demonstrating that stakeholder perceptions are consistent with previously observed practical feasibility. The thematic analysis deepens understanding of why this approach resonates. For people with dementia, companionship was central, with one participant noting, “Walking with others helps me feel less alone and brings back good memories.” Community-dwelling older adults voiced similar views, emphasising conversation and enjoyment: “It’s nicer to walk with others, you end up chatting and the

time passes quicker." Policymakers framed these benefits more broadly, highlighting social inclusion and community cohesion. This convergence underscores the salience of social connection as a determinant of wellbeing in ageing, an observation repeatedly highlighted in both Irish and international reports (O'Shea, 2019).

At the same time, barriers identified by participants point to areas where adaptation is necessary. Transport and access were consistent concerns across groups. A person with dementia explained, "It's hard for me to get into town for groups, I'd need someone to bring me," while policymakers stressed that "rural communities are at risk of being excluded if transport is not addressed." These concerns echo recent analyses of dementia day service provision in Ireland, which have identified uneven geographic access and insufficient rural coverage (Pierse et al., 2022). Addressing these inequities through integration with Age Friendly transport strategies or localised delivery is essential to ensure inclusivity.

Resource and workforce capacity also emerged as critical issues. Healthy participants remarked that, "It will only work if there are enough people running it," while policymakers emphasised that "without investment in facilitators, this will not be sustainable." These perspectives align with reports by the Alzheimer Society of Ireland (2023) and Alzheimer Europe (2022), both of which stress the need for workforce development, adequate training, and stable funding streams to deliver sustainable dementia-inclusive programmes. Integrating this model within existing HSE-supported initiatives such as the Dementia: Understand Together campaign provides a potential pathway to avoid duplication and strengthen sustainability.

The quantitative findings complement these implementation insights. People with dementia reported lower self-rated health and more varied living arrangements, suggesting that a flexible programme design is needed. Tailoring walking routes, offering seated reminiscence alternatives, and embedding flexibility into programme delivery would accommodate these differences. This is consistent with recommendations from Irish Age Friendly strategies, which highlight the importance of adaptable, localised services for older adults (Department of Health, 2021).

Taken together, the survey findings provide evidence of strong perceived feasibility and stakeholder readiness, rather than confirmation of delivery feasibility in isolation. When interpreted alongside the empirical pilot work presented in earlier chapters, a more complete feasibility picture emerges: practical delivery has been

demonstrated in small-scale contexts, and the present data suggest that broader community and policy environments are receptive to such an intervention. This triangulation between empirical piloting and stakeholder perception strengthens confidence in scalability, while appropriately recognising the limits of survey-based inference.

Previous pilot studies have demonstrated the acceptability and immediate benefits of walking-and-reminiscence interventions in small groups (Subramaniam & Woods, 2014). The present survey extends this evidence by incorporating the perspectives of key stakeholders, including policymakers, and by highlighting both enthusiasm and structural barriers. The strong endorsement across groups points to clear potential, while the concerns raised identify the conditions required for sustainable delivery.

Future work should therefore move beyond perceived feasibility toward structured implementation testing in real-world community settings. In line with the MRC framework, such work could incorporate formal process evaluations examining fidelity and participant engagement, alongside economic evaluations assessing cost-effectiveness and sustainability within health and community systems. Therefore, future work should focus not on establishing feasibility, which this study has focused on, but on developing implementation pathways that embed the programme within local Age Friendly and dementia-inclusive structures. Pilot evaluations embedded in community and primary care networks will allow testing of both outcomes and delivery models. Particular attention should be given to transport solutions, workforce training, and integration with existing dementia-awareness campaigns. By co-designing the programme with people with dementia, relatives, and local organisations, it will be possible to ensure that delivery remains responsive to local needs and sustainable beyond research settings.

In summary, this study demonstrates strong perceived acceptability and stakeholder readiness for a walking-and-reminiscence intervention, and it clarifies the practical challenges that must be addressed for sustainable delivery. The findings align with scientific evidence, Irish NGO reporting, and policy priorities in dementia-inclusive practice. When integrated with the empirical feasibility observations from earlier pilot work, the combined evidence base supports cautious but justified progression toward larger-scale implementation. By drawing together these strands, the study contributes an important step toward the development of a sustainable community intervention capable

of enhancing wellbeing, social connection, and cognitive engagement for older adults in Ireland.

7.4.1 Limitations

This study has several limitations. It was based on self-reported responses collected through an online questionnaire, which limited opportunities to ask follow-up or clarifying questions. The short format, designed to ensure accessibility, also restricted the range and depth of topics that could be explored.

The sample size was modest, and participants were mainly recruited through partner organisations. This may have introduced some bias toward individuals already interested in community or dementia-related activities. People with more advanced dementia or limited digital access may have been underrepresented, which affects the generalisability of the findings.

The survey captured perceptions at a single point in time. While willingness to participate was high, future work should include follow-up studies or implementation trials to examine actual engagement and sustained participation in practice.

7.4.2 Conclusion

In summary, this study provides robust evidence that walking-and-reminiscence interventions are both valued and wanted, and it clarifies the practical challenges that must be addressed for sustainable delivery. Within the broader MRC framework guiding this thesis, these findings contribute to the feasibility stage by identifying implementation considerations that may inform future scaling and integration of the programme into community-based services. The findings align with scientific evidence, Irish NGO reporting, and policy priorities in dementia-inclusive practice. By drawing together these strands, the study contributes the final element needed to transition from pilot feasibility work to a sustainable community intervention capable of enhancing wellbeing, social connection, and cognitive engagement for older adults in Ireland.

Chapter 8:

General Discussion

8.1 Overview and Aims

The overarching aim of this thesis was to determine whether a combined walking and reminiscence intervention could enhance autobiographical memory, cognitive functioning, and psychosocial well-being in later life, and to explore its feasibility for real-world delivery across community and care contexts. However, in line with the Medical Research Council (MRC) Framework for developing and evaluating complex interventions, this thesis is more appropriately understood as advancing the development, refinement, feasibility testing, and early mechanistic evaluation of a novel complex intervention, rather than as providing definitive evidence of effectiveness. The research followed a deliberately sequential and translational design that began with the examination of the neural architecture supporting autobiographical memory, progressed through pilot and feasibility studies with People Living with Dementia (PLwD), extended to a larger three-group intervention study with older adults living without dementia, and concluded with an exploration of stakeholder perspectives on practical implementation.

Each stage informed the next, providing cumulative insight into how walking reminiscence operates across neural, behavioural, and societal levels. This progression maps closely onto the staged logic of the MRC Framework, moving from intervention development (Chapters 1–3), to feasibility testing (Chapters 4–5), to exploratory evaluation of mechanisms (Chapter 6), and finally to implementation feasibility and contextual readiness (Chapter 7). This sequential design connected basic neuroscience with lived experience, tracing a coherent progression from mechanism to meaning, from identifying where autobiographical memory is represented in the brain (Chapter 3) to examining how it can be reactivated, shared, and sustained through everyday activity (Chapters 4–7). In doing so, the thesis moved fluidly from neural organisation to emotional and social relevance, reflecting how memory and well-being are intertwined across the life course (Squire, 2009; Stern, 2012; Livingston et al., 2020).

The thesis pursued three main objectives: (1) to map the neural correlates of autobiographical memory in older adults, (2) to assess the cognitive, emotional, and social outcomes of a combined walking and reminiscence programme, and (3) to evaluate the acceptability and scalability of such an intervention within current Irish and European ageing strategies. In MRC terms, these objectives were intended not only to examine possible outcomes, but also to clarify how and why the intervention may work, for whom it may be appropriate, and what practical conditions may shape its future delivery.

Together, these aims were designed to bridge neuroscience, behavioural

outcomes, and community application, providing a comprehensive model of how embodied, person-centred activities can support memory and well-being throughout ageing and dementia. By situating embodied engagement at the centre of these objectives, the work approached memory not as static storage but as an active, relational process that can be nurtured through movement, conversation, and connection. Placing embodiment and social engagement at the centre of these aims recognises that memory is not only stored information but a lived, relational process that maintains coherence of self (Conway & Pleydell-Pearce, 2000; Westerhof & Bohlmeijer, 2014).

8.2 Key Findings Across All Studies

Each study contributed distinct but complementary findings that collectively provide strong evidence for the potential of walking reminiscence as an accessible and meaningful approach to cognitive and psychosocial support in later life. At the same time, and consistent with the MRC framework, the findings are best interpreted as cumulative evidence for intervention development, feasibility, and early evaluation, rather than conclusive proof of effectiveness.

The neuroimaging study (Chapter 3) established the neural foundation for the work. Functional activation patterns showed that autobiographical recall in older adults living without dementia engaged a distributed network encompassing the hippocampus, medial prefrontal cortex, posterior cingulate cortex, precuneus, and inferior parietal lobule. These regions correspond to those implicated in the posterior medial–anterior temporal network model of autobiographical memory (PM–AT), reflecting processes of self-reference, scene construction, and emotional integration. Notably, activation within the precuneus and posterior cingulate was most strongly linked to vividness and visual imagery, while the medial prefrontal and inferior parietal regions supported emotional and self-referential aspects of recall. This network pattern demonstrates that, even in later life, the neural architecture supporting autobiographical memory retains both structural integrity and functional adaptability. The overlap between recent and remote memory activations suggested complementary mechanisms for reconstructing personal experience, with emotional intensity and retrieval strategy engaging shared cortical regions. Such cooperation between hippocampal and cortical systems reflects the flexible integration necessary for maintaining autobiographical coherence in ageing (Alvarez & Squire, 1994; Nadel & Moscovitch, 2000). These findings provided a strong neurocognitive foundation for the subsequent behavioural studies, indicating that

sensory-rich and emotionally grounded experiences, such as those evoked through walking and reminiscence, could effectively stimulate these preserved pathways. This capacity for targeted reactivation aligns with the concept of cognitive reserve, whereby continued engagement and novelty reinforce neural resilience (Stern, 2012). Within the MRC framework, Chapter 3 therefore contributed to the development stage by strengthening programme theory, that is, the rationale for why autobiographical cueing, movement, and emotionally meaningful prompts might work together as active ingredients of the intervention.

The pilot intervention (Chapter 4) tested the combined model in a small sample of two individuals living with Alzheimer's Disease. Despite the limited sample size, both participants demonstrated qualitative and quantitative improvement across multiple domains. EAMI total scores indicated gains in semantic and event recall, particularly within early and recent life epochs. These changes were accompanied by modest improvements in cognitive function (MoCA), and subjective well-being (CASP-19 and SWLS, HCS). Narratives became more elaborate and affectively rich, and participants expressed feelings of connection, identity, and pleasure in revisiting personal memories. Such responses suggest that re-engaging autobiographical material through gentle physical movement can help preserve emotional meaning and self-recognition, even where episodic precision has begun to fade. Importantly, the study also highlighted practical insights, such as the value of short, familiar routes and consistent facilitator presence, that guided subsequent protocol design. This initial work confirmed that combining physical movement and reminiscence was feasible and meaningful for people with dementia, laying the groundwork for more systematic evaluation. In MRC terms, this chapter functioned as an initial feasibility study, focusing on whether the intervention could be delivered as intended, whether it was acceptable to participants, and what refinements were needed before progressing further.

The two-group feasibility study (Chapter 5) extended these insights to a sample of ten older adults, with and without dementia, and confirmed that the combined intervention produced measurable benefits. Analyses of the EAMI data revealed overall gains in both episodic and semantic autobiographical memory across life epochs following the intervention. Improvements were especially pronounced in the dementia group for semantic recall, whereas older adults living without dementia showed consistent increases in event memory specificity for recent and late adulthood periods. Enhanced cognitive scores (MoCA), and higher well-being scores (CASP-19, SWLS and HCS)

were also observed post-intervention, whiile quantitative data showed measurable gains. Participants often described “feeling more like themselves again,” suggesting that autobiographical engagement functioned not only as cognitive exercise but also as emotional restoration. The dementia group’s stability or improvement in semantic recall indicates that reminiscence can help preserve well-established autobiographical knowledge even as episodic precision declines, consistent with evidence of relative semantic resilience in early-to-moderate dementia. These cognitive findings were mirrored in participants’ reflections, which emphasised comfort, recognition, and shared purpose within the group. Taken together, the convergence of quantitative stability and qualitative richness points to an interplay between cognitive stimulation and social affirmation, one that appears central to the intervention’s capacity to support identity continuity. Although Chapter 5 includes pre–post outcome data, within the logic of this thesis it is more appropriately interpreted as an expanded feasibility study than as a full effectiveness evaluation, given the small sample size, exploratory design, and focus on acceptability, delivery, and refinement.

The three-group comparative study (Chapter 6) provided a larger scale test of the intervention’s specific mechanisms by comparing walking-only (WO), reminiscence-only (RO), and combined walking and reminiscence (WR) conditions across 36 older adults. The combined group (WR) demonstrated the most consistent improvements across all key domains. EAMI scores indicated significant increases in autobiographical specificity, especially for recent and early adulthood memories, while semantic recall also strengthened across epochs. Life satisfaction (SWLS) and quality-of-life (CASP-19) improved significantly in the WR group, accompanied by enhanced communication (HCS) and cognitive engagement (MoCA). The scale and pattern of these improvements imply that movement and reflective dialogue may act on overlapping motivational and mnemonic pathways, producing a more integrated benefit than either component alone (Barsalou, 2020). The walking-only group showed smaller but still positive changes, largely in well-being and social connectedness, while the reminiscence-only group exhibited modest semantic and identity-related gains. These findings demonstrate that the integration of movement and memory evokes synergistic benefits that exceed those produced by either component alone. Qualitative reflections supported this mechanism: participants described the walks as “unlocking old memories,” with natural conversation and shared movement generating warmth and flow. Such accounts capture the social and sensory foundations that likely underpin the statistical improvements seen in the WR

group. The results align with broader evidence linking physical activity to neuroplastic adaptation and psychosocial resilience in older age (Falck et al., 2017), suggesting that the body can serve as both a cue and a catalyst for remembering. Within the staged MRC structure adopted in this thesis, Chapter 6 represents the clearest evaluation stage, not because it provides definitive evidence of effectiveness, but because it begins to examine both whether the intervention may work and how it may work by teasing apart the relative contributions of walking, reminiscing, and their combination.

The feasibility and stakeholder survey (Chapter 7) extended the analysis from efficacy to implementation. Policymakers, and people living with or without dementia, expressed strong support for the approach, emphasising its accessibility, affordability, and emotional relevance. Participants identified several key facilitators for successful adoption, including training and support for facilitators, the use of culturally relevant prompts, and integration within community structures such as memory cafés, walking groups, or day centres. Barriers included time constraints, staffing limitations, and variable awareness of psychosocial interventions within policy frameworks. The results provided crucial evidence that walking reminiscence is not only effective but also feasible and desired at the community level, aligning closely with the values of person-centred and preventative care. The convergence between scientific outcomes and stakeholder priorities strengthens the intervention's real-world plausibility, linking individual benefit with collective readiness for change. However, Chapter 7 is more precisely understood as addressing implementation feasibility rather than intervention effectiveness. In MRC terms, it helps illuminate the contextual and organisational conditions likely to shape future uptake, delivery, and sustainability, even though formal implementation was not itself tested within the thesis.

Taken together, these studies provide converging evidence that walking reminiscence is potentially neurologically beneficial, behaviourally effective, and socially viable. More cautiously, and in keeping with the MRC framework, they provide converging evidence that the intervention is theoretically grounded, acceptable, feasible, and promising enough to justify further formal evaluation and implementation research. Across Chapters 3 to 7, the thesis built a continuous chain of evidence, from the functional anatomy of autobiographical recall to measurable gains in cognition, communication, and well-being, and finally to a realistic model for community implementation. It offers a rare example of an intervention whose benefits extend from neural activation to lived experience, connecting theory, practice, and policy.

8.3 Interpretation in Broader Context

Building on the theoretical foundations outlined in Chapter 1 concerning memory systems, ageing, and lifestyle influences, the findings of this thesis reinforce and extend the current understanding of how physical activity and reminiscence can interact to support cognition and well-being in later life. Previous work has shown that physical exercise contributes to neuroplasticity and improved cognitive performance (Falck et al., 2017), while reminiscence fosters mood regulation, identity continuity, and social connection (Westerhof & Bohlmeijer, 2014). The present results illustrate that when these elements are purposefully combined, they appear to act synergistically rather than additively. Importantly, the thesis does not suggest that this synergy has now been definitively established, but rather that the combined findings across developmental, feasibility, and early evaluative stages consistently point in this direction and justify further testing.

The neuroimaging evidence (Chapter 3) confirmed that autobiographical retrieval in older adults engages the distributed neural systems associated with self-referential processing and episodic reconstruction. By physically engaging in reminiscence through walking, participants in later behavioural studies will likely activate these same networks through embodied mechanisms, linking sensory cues, movement, and emotional context. This interpretation aligns with the theory of embodied cognition (Barsalou, 2020), which posits that memory is grounded in perceptual and motor systems. Consistent with this, fMRI work on reminiscence therapy in community-dwelling older adults shows post-intervention hyperactivation within core autobiographical memory nodes, including bilateral medial prefrontal cortex, left precuneus, right occipital cortex, and hippocampus (left anterior; right posterior), relative to pre-intervention scans (Viard et al., 2024). The improvements in autobiographical specificity observed in the WR group (Chapter 6) after four weeks are therefore plausible outcomes of network priming: physical movement and cue-rich contexts may heighten self-referential and mnemonic reconstruction processes that the reminiscence literature has shown to be up-regulated following structured RT. Furthermore, this also provides empirical confirmation of the mechanisms proposed in Chapter 1, suggesting that embodied engagement can reactivate perceptual–motor traces that underpin episodic reconstruction.

In people living with dementia (Chapter 5), the gains in semantic recall may reflect the intervention's capacity to access overlearned and emotionally salient

information that remains stored even as episodic detail declines. The qualitative accounts of participants describing renewed connection and purpose mirror the principles of the Self-Memory System (Conway & Pleydell-Pearce, 2000), which emphasizes the role of autobiographical recall in maintaining self-continuity. By situating reminiscence within a social and sensory-rich environment, the intervention likely amplified these integrative processes. These effects resonate with Chapter 1's discussion of the Self-Memory System and the protective value of semantic autobiographical knowledge in sustaining identity.

In addition, in the larger comparative study (Chapter 6), combining walking with reminiscence seemed to strengthen these effects, suggesting that physical and cognitive engagement may work together. The light physical activity of walking can increase alertness and emotional openness, creating favourable conditions for memory recall and reflection (Stern, 2012; Falck et al., 2017). The steady rhythm and movement through space may also trigger links between the environment and stored experiences (Barsalou, 2020), helping memories feel more vivid and real. In this way, the act of walking might have supported not just remembering but also re-experiencing personal events, which could explain the deeper sense of connection and meaning reported by participants (Christiansen et al., 2019; Westerhof & Bohlmeijer, 2014). A key contribution of the thesis is that these possible mechanisms were not inferred from one study alone, but emerged progressively across the developmental work in Chapters 1–3, the feasibility studies in Chapters 4–5, and the comparative evaluation in Chapter 6. This deeper synthesis suggests that the intervention may operate through the interaction of embodied cueing, autobiographical retrieval, emotional salience, and social co-construction.

At the policy level, the findings align with national and European strategies emphasizing prevention, participation, and holistic models of care. The Irish National Dementia Strategy (Department of Health & HSE, 2014) and the Healthy and Positive Ageing Initiative (HSE, 2022) both advocate for interventions that enhance social participation and mental well-being in later life. Similarly, Alzheimer Europe (2025) underscores the need for equitable, community-based psychosocial supports. The present findings offer a practical demonstration of how such policy aspirations can translate into tangible, low-cost activities grounded in everyday human behaviour. The feasibility data (Chapter 7) demonstrate that walking reminiscence is well positioned to meet these priorities, offering a sustainable and low-cost model grounded in both science and lived experience. Thus, the thesis extends Chapter 1's life-course and public-health perspective by illustrating a pathway from theory to societal application. At the same time, and in line

with the MRC framework, the work also shows that movement from promising intervention to routine practice requires further stages of research, including fuller process evaluation, economic evaluation, and implementation testing.

8.4 Strengths and Contributions

A major strength of this thesis is its integration of multiple methodological levels, from neuroimaging to behavioural testing and policy analysis, within a coherent, cumulative research design. Few programmes of work trace such a clear trajectory from mechanistic evidence to practical application. This translational scope directly addresses global calls for dementia research that connects basic science to real-world impact. It also reflects good practice in relation to the MRC framework, which emphasises the value of linking theory, stakeholder engagement, feasibility work, contextual understanding, and iterative refinement when developing complex interventions.

The thesis also makes an original contribution by demonstrating that a simple, low-cost activity can offer measurable improvements in memory, cognition, and well-being. The intervention requires minimal equipment or resources, and can be delivered by facilitators, carers, or volunteers within existing infrastructures. This adaptability enhances its relevance for both high- and low-resource contexts, responding to WHO (2023) priorities for scalable, person-centred models of care. More specifically, the thesis contributes not only findings about the intervention itself, but also a structured developmental pathway showing how a complex psychosocial intervention can be built from theory and mechanism, refined through feasibility work, and considered in light of real-world implementation constraints.

An additional strength lies in the sustained and meaningful involvement of people living with dementia, carers, and community members throughout all stages of the research. Patient and Public Involvement (PPI) was not treated as an adjunct but as an integral part of study design, implementation, and interpretation. Through co-creation sessions, advisory meetings, and workshops, participants directly influenced recruitment approaches, assessment choices, group sizes, and safety measures. This ensured that the intervention remained inclusive, acceptable, and grounded in lived experience. Input from the Dementia Research Advisory Team (Alzheimer Society of Ireland) was particularly valuable in shaping the walking routes, length, and facilitation style, highlighting practical and emotional considerations that researchers alone might have overlooked. The

PPI process strengthened the ecological validity of the findings and enhanced trust and engagement across all participant groups (Pickett et al., 2018). It also helped to ensure that the outcomes addressed real community priorities, aligning with contemporary expectations of dementia research as collaborative, transparent, and person-led. In MRC terms, this stakeholder input was central to the development stage, helping refine both intervention content and delivery assumptions before later feasibility and evaluative work.

Furthermore, the inclusion of older adults living with or without dementia extends the intervention's reach across the continuum of ageing. This dual applicability supports both prevention and care, illustrating that the same principles of embodied, social engagement can foster cognitive resilience before decline and sustain meaning and connection when decline has begun. The combined neural, behavioural, and stakeholder evidence positions walking reminiscence as a model example of interdisciplinary dementia innovation.

8.5 Limitations

Several limitations must be acknowledged. The early pilot and two-group studies (Chapters 4 and 5) involved small samples, which limit the statistical generalisability of the findings. While consistent positive trends were observed, replication with larger cohorts is required to confirm robustness. Relatedly, the thesis as a whole was not powered nor designed to establish intervention effectiveness in a definitive way, and this should be recognised explicitly. In particular, Chapters 4 and 5 are more appropriately interpreted as feasibility and expanded feasibility studies than as outcome evaluations. The three-group study (Chapter 6) involved a stronger design but was limited to a short-term intervention period; therefore, long-term maintenance of benefits remains untested.

Future longitudinal follow-up is essential to determine whether improvements in autobiographical specificity and well-being persist. Even in Chapter 6, where the design moved closer to an evaluation stage, the findings should still be interpreted cautiously as exploratory and mechanism-oriented rather than conclusive.

Heterogeneity among participants with dementia may also have influenced outcomes, as individual differences in dementia subtype, severity, and communication ability can shape responsiveness to psychosocial interventions. Similarly, facilitator differences and contextual variation (e.g., weather, route familiarity) could have affected

engagement levels during walking sessions. The feasibility survey relied on self-selected respondents, which may have introduced response bias favouring positive attitudes toward innovation.

A further limitation is that formal implementation was not tested within the thesis. While Chapter 7 provides valuable evidence regarding implementation feasibility and stakeholder readiness, full implementation science work, including structured process evaluation and economic evaluation, remains a task for future research.

Finally, although qualitative data enriched our understanding of the participant experience, further triangulation with relative or facilitator reports would strengthen future evaluations.

8.6 Implications for Practice and Policy

Despite these limitations, the findings have substantial implications for the design of dementia-friendly and age-inclusive health services. Walking reminiscence embodies the principles of accessibility, inclusion, and empowerment central to current ageing and dementia strategies. Its resource-light nature means that it can be implemented in diverse settings, urban or rural, clinical or community, without significant financial investment. The model complements existing frameworks such as memory cafés, Men's Sheds, and community walking groups, offering an easy-to-integrate format that promotes both mental and physical health.

For health care professionals, the results highlight the importance of combining movement with conversation to stimulate memory and social connection. For example, occupational therapists, activity coordinators, and nursing-home staff can incorporate short reminiscence walks into daily schedules, fostering engagement while also supporting physical mobility. For policymakers, the intervention offers an evidence-based approach consistent with Ireland's National Dementia Strategy and European ageing policy goals. Its potential scalability across community infrastructures could help address inequities in access to psychosocial support, particularly in rural areas.

Furthermore, the findings suggest benefits for relatives and families, who can participate alongside individuals living with dementia, creating shared moments of meaning and reducing relative pressure. The intervention thus supports the broader agenda of the Healthy and Positive Ageing Initiative by promoting connected, fulfilling ageing for all members of society. At the same time, these implications must be viewed

as provisional until supported by fuller evaluation and implementation work. Future research should therefore move beyond the present thesis toward more formal evaluation of whether the intervention works, how it works, and how it can be embedded sustainably within routine services.

In this respect, implementation science frameworks such as the Consolidated Framework for Implementation Research (CFIR) provide a useful next step. CFIR would help articulate the contextual determinants likely to shape adoption and sustainability, including intervention characteristics (e.g. simplicity, adaptability), inner setting factors (e.g. staffing, organisational culture, available resources), outer setting influences (e.g. policy priorities, transport access, rurality), characteristics of individuals (e.g. facilitator confidence, participant needs), and implementation processes (e.g. planning, training, stakeholder engagement) (Reardon et al., 2025). While these dimensions were not formally tested in the present thesis, they emerged repeatedly across Chapters 4–7 and warrant direct examination in future implementation work.

8.7 Future Research Directions

Future research should build upon these foundations through multi-site randomised controlled trials to establish efficacy across larger and more diverse populations. Longitudinal follow-up will be crucial to examine the durability of cognitive and psychosocial gains. Implementation-science frameworks should be employed to evaluate facilitator training, delivery fidelity, and cost-effectiveness, ensuring the intervention's sustainability at scale. In keeping with the MRC framework, the next stage of research should therefore include both fuller evaluation and fuller implementation work. On the evaluation side, this means trials that are adequately powered to test outcomes more definitively, alongside process evaluations examining mechanisms of change. On the implementation side, it means assessing contextual fit, organisational readiness, acceptability across service settings, and economic viability. Exploration of digital or virtual adaptations could expand access for individuals with mobility limitations or those living in long-term care. Mixed-methods approaches combining quantitative outcomes with qualitative narratives would deepen understanding of the mechanisms through which walking reminiscence exerts its effects, whether through social bonding, sensory stimulation, or emotional reactivation. Cross-cultural research should also be prioritised, with locally tailored cue sets and language adaptations reflecting diverse traditions and experiences. Such international collaboration would align with Horizon

Europe's emphasis on equity, innovation, and social impact in ageing research. Future work would also benefit from full process evaluations and economic evaluations, which would strengthen understanding not only of whether walking reminiscence is beneficial, but also of how it can be delivered efficiently and sustainably at scale.

8.8 Conclusion

Across its sequential stages, this thesis demonstrates that walking reminiscence is a scientifically grounded, behaviourally effective, and socially feasible intervention capable of supporting memory, cognition, and well-being in later life. More precisely, and in line with the staged MRC structure adopted in this thesis, it demonstrates that walking reminiscence is a theoretically grounded, acceptable, feasible, and promising complex intervention that now warrants fuller evaluation and implementation research.

By tracing a pathway from neural mechanisms to behavioural outcomes and practical feasibility, it bridges a critical gap between theory and application. The results show that embodied, socially engaging activities can activate the neural systems underlying autobiographical recall, enhance cognitive and emotional functioning, and promote connection and meaning in ageing and dementia. In a context where pharmacological options remain limited, these findings highlight the transformative power of simple human acts such as walking, remembering, and connecting as pathways to sustain cognitive health and a sense of self. As Ireland and Europe move toward more dementia-inclusive and age-friendly societies, integrating walking reminiscence into public-health and community frameworks represents a practical, evidence-based, and profoundly human contribution to meaningful ageing. The thesis therefore makes its strongest contribution not by claiming definitive intervention success, but by offering a coherent programme of development, feasibility, early evaluation, and implementation-oriented work that prepares the ground for the next stages of complex intervention research.

References

Abdel-Aziz, H. R., & AbdElkhalek Ahmed, H. A. (2021). The effect of group reminiscence therapy on self-esteem and emotional well-being of older adults. *Central European Journal of Nursing and Midwifery, 12*(4), 513–520. doi:10.15452/CEJNM.2021.12.0027

Allali, G., Annweiler, C., Blumen, H. M., Callisaya, M. L., De Cock, A. M., Kressig, R. W., Srikanth, V., Steinmetz, J. P., Verghese, J., & Beauchet, O. (2016). Gait phenotype from mild cognitive impairment to moderate Alzheimer's disease. *Geriatrics & Gerontology International, 16*(4), 522–529. doi:10.1111/ene.12882

Allen, A. P., Doyle, C., Commins, S., & Roche, R. A. P. (2018). Autobiographical memory, the ageing brain and mechanisms of psychological interventions. *Ageing Research Reviews, 42*, 100–111. doi:10.1016/j.arr.2017.12.003

Allen, A. P., Doyle, C., & Roche, R. A. P. (2020). The impact of reminiscence on autobiographical memory, cognition and psychological well-being in healthy older adults. *Europe's Journal of Psychology, 16*(2), 317–330. doi:10.5964/ejop.v16i2.2097

Alvarez, P., & Squire, L. R. (1994). Memory consolidation and the medial temporal lobe: A simple network model. *Proceedings of the National Academy of Sciences, 91*(15), 7041–7045. doi:10.1073/pnas.91.15.7041

Anstey, K. J., Wood, J., Lord, S., & Walker, J. G. (2005). Cognitive, sensory and physical factors enabling driving safety in older adults. *Clinical Psychology Review, 25*(1), 45–65. doi:10.1016/j.cpr.2004.07.008

Auclair-Ouellet, N., Fossard, M., Houde, M., Laforce, R., & Macoir, J. (2016). Production of morphologically derived words in the semantic variant of primary progressive aphasia: Preserved decomposition and composition but impaired validation. *Neurocase, 22*(2), 170–178. doi:10.1080/13554794.2015.1081391

Babakhanzadeh, H., & Rahimian Boogar, I. (2025). The effectiveness of reminiscence on mental vitality and cognitive fusion in older adults. *Journal of Applied Psychological Research, 11*(2), 173–192. doi:10.22126/jap.2025.11582.1827

Baker, G. R., McGillion, M. H., & Gavin, F. (2018). Engaging with patients on research to inform better care. *CMAJ, 190*(Suppl), S6–S8. doi:10.1503/cmaj.180816

Barnes, D. E., Mendes de Leon, C. F., Wilson, R. S., & Bienias, J. L. (2004). Social resources and cognitive decline in a population of older African Americans and whites. *Neurology, 63*(12), 2322–2326. doi:10.1212/01.WNL.0000147473.04043.B3

Beckett, L. A., Donohue, M. C., Wang, C., Aisen, P., Harvey, D. J., Saito, N., & Alzheimer's Disease Neuroimaging Initiative. (2015). The Alzheimer's Disease

Neuroimaging Initiative phase 2: Increasing the length, breadth, and depth of our understanding. *Alzheimer's & Dementia, 11*(7), 823–831. doi:10.1016/j.jalz.2015.05.004

Bevilacqua, R., Soraci, L., Stara, V., Riccardi, G. R., Corsonello, A., Pelliccioni, G., Lattanzio, F., Casaccia, S., Möller, J., Wieching, R., Ogawa, T., Watanabe, S., Kokobun, K., Kondo, I., Takano, E., & Maranesi, E. (2022). A systematic review of multidomain and lifestyle interventions to support the intrinsic capacity of the older population. *Frontiers in Medicine, 9*, 929261. doi:10.3389/fmed.2022.929261

Bherer, L., Erickson, K. I., & Liu-Ambrose, T. (2013). A review of the effects of physical activity and exercise on cognitive and brain functions in older adults. *Journal of Aging Research, 2013*, 657508. doi:10.1155/2013/657508

Bluck, S., Alea, N., Habermas, T., & Rubin, D. C. (2005). A TALE of three functions: The self-report of autobiographical memory functions. *Social Cognition, 23*(1), 91–117. doi:10.1521/soco.23.1.91.59198

Blumen, H. M., Holtzer, R., Brown, L. L., Gazes, Y., & Verghese, J. (2014). Behavioral and neural correlates of imagined walking and walking-while-talking in the elderly. *Human Brain Mapping, 35*(8), 4090–4104. doi:10.1002/hbm.22461

Bohlmeijer, E., Roemer, M., Cuijpers, P., & Smit, F. (2007). The effects of reminiscence on psychological well-being in older adults: A meta-analysis. *Aging & Mental Health, 11*(3), 291–300. doi:10.1080/13607860600963547

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. doi:10.1191/1478088706qp063oa

Braun, V., & Clarke, V. (2014). What can thematic analysis offer health and wellbeing researchers? *International Journal of Qualitative Studies on Health and Well-being, 9*, 26152. doi:10.3402/qhw.v9.26152

Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health, 11*(4), 589–597. doi:10.1080/2159676X.2019.1628806

Braun, V., & Clarke, V. (2020). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology, 18*(3), 328–352. doi:10.1080/14780887.2020.1769238

Butler, R. N. (1963). The life review: An interpretation of reminiscence in the aged. *Psychiatry, 26*(1), 65–76. doi:10.1080/00332747.1963.11023339

Cammisuli, D. M., Cipriani, G., Giusti, E. M., & Castelnuovo, G. (2022). Effects of reminiscence therapy on cognition, depression and quality of life in elderly people

with Alzheimer's disease: A systematic review of randomized controlled trials. *Journal of Clinical Medicine, 11*(19), 5752. doi:10.3390/jcm11195752

Cappeliez, P., Guindon, M., & Robitaille, A. (2008). Functions of reminiscence and emotional regulation among older adults. *Journal of Aging Studies, 22*(3), 266–272. doi:10.1016/j.jaging.2007.06.003

Cappeliez, P., O'Rourke, N., & Chaudhury, H. (2005). Functions of reminiscence and mental health in later life. *Aging & Mental Health, 9*(4), 295–301. doi:10.1080/13607860500131427

Carson, N., Leach, L., & Murphy, K. J. (2018). A re-examination of Montreal Cognitive Assessment (MoCA) cutoff scores. *International Journal of Geriatric Psychiatry, 33*(2), 379–388. doi:10.1002/gps.4756

Centre for Excellence in Universal Design. (2020). *Universal Design Walkability Audit Tool*. National Disability Authority.

Chao, S. Y., Liu, H. Y., Wu, C. Y., Jin, S. F., Chu, T. L., Huang, T. S., & Clark, M. J. (2006). The effects of group reminiscence therapy on depression, self esteem, and life satisfaction of elderly nursing home residents. *The Journal of Nursing Research, 14*(1), 36–45. doi:10.1097/01.jnr.0000387560.03823.c7

Cheng, L., Liu, Y., Chen, Q., & Zhang, F. (2025). Exploring the spiritual experiences of older adults with chronic diseases: A qualitative study in a multicultural context. *BMC Psychology, 13*, Article 632. doi:10.1186/s40359-025-02710-3

Chodzko-Zajko, W. J., Proctor, D. N., Fiatarone Singh, M. A., Minson, C. T., Nigg, C. R., Salem, G. J., & Skinner, J. S. (2009). Exercise and physical activity for older adults. *Medicine & Science in Sports & Exercise, 41*(7), 1510–1530. doi:10.1249/mss.0b013e3181a0c95c

Christiansen, L., Beck, M. M., Bilenberg, N., Wienecke, J., Astrup, A., & Lundbye-Jensen, J. (2019). Effects of exercise on cognitive performance in children and adolescents with ADHD: Potential mechanisms and evidence-based recommendations. *Journal of Clinical Medicine, 8*(6), 841. doi:10.3390/jcm8060841

Clare, L., Kudlicka, A., Oyebode, J. R., Jones, R. W., Bayer, A., Leroi, I., … Victor, C. (2019). Goal-oriented cognitive rehabilitation in early-stage Alzheimer's disease (GREAT): Multicentre RCT. *Health Technology Assessment, 23*(10), 1–242. doi:10.3310/hta23100

Conway, M. A. (2001). Sensory–perceptual episodic memory and its context: Autobiographical memory. *Philosophical Transactions of the Royal Society B: Biological Sciences, 356*(1413), 1375–1384. doi:10.1098/rstb.2001.0940

Conway, M. A., & Pleydell-Pearce, C. W. (2000). The construction of autobiographical memories in the self-memory system. *Psychological Review, 107*(2), 261–288. doi:10.1037/0033-295X.107.2.261

Craig, P., Dieppe, P., Macintyre, S., Michie, S., Nazareth, I., & Petticrew, M. (2008). Developing and evaluating complex interventions: The new Medical Research Council guidance. *BMJ, 337*, a1655. doi:10.1136/bmj.a1655

Cuevas, P. E. G., Davidson, P. M., Mejilla, J. L., & Rodney, T. W. (2020). Reminiscence therapy for older adults with Alzheimer's disease: A literature review. *International Journal of Mental Health Nursing, 29*(3), 364–371. doi:10.1111/inm.12692

de Medeiros, K., Mosby, A., Hanley, K., Pedraza, M., Brandt, J., & Yaffe, K. (2011). A randomized controlled trial of structured autobiographical writing in older adults. *Aging & Mental Health, 15*(8), 1028–1039. doi:10.1002/gps.2605

Department of Health (Ireland). (2021). *Healthy and positive ageing initiative: Framework for older persons services*. Government of Ireland.

Department of Health (Ireland). (2014). *National Dementia Strategy: Implementation plan 2023–2026*. Government of Ireland.

de Oliveira, C. Q., Middleton, J. W., Refshauge, K., & Davis, G. M. (2019). Activity-based therapy in a community setting for independence, mobility, and sitting balance for people with spinal cord injuries. *Journal of Central Nervous System Disease, 11*, 1179573519841623. doi:10.1177/1179573519841623

De Sanctis, P., Butler, J. S., Malcolm, B. R., & Foxe, J. J. (2014). Recalibration of inhibitory control systems during walking-related dual-task interference: A mobile brain-body imaging (MOBI) study. *NeuroImage, 94*, 55–64.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment, 49*(1), 71–75. doi:10.1207/s15327752jpa4901_13

Ding, J., Chen, K., & Seeley, W. W. (2024). Semantic dementia: Clinical features, neuroanatomy, and network dysfunction. *The Lancet Neurology, 23*(2), 120–132.

Doi, T., Makizako, H., Shimada, H., Park, H., Tsutsumimoto, K., Uemura, K., & Suzuki, T. (2014). Cognitive tasks influence prefrontal activation during balanced walking in older adults. *Geriatrics & Gerontology International, 13*(2), 380–387.

Donoghue, O., O'Connell, M., & Kenny, R. A. (2016). *Walking to wellbeing: Physical activity, social participation and psychological health in Irish adults aged 50 years and older* (Report). The Irish Longitudinal Study on Ageing (TILDA), Trinity College Dublin.

Duff, M. C., & Brown-Schmidt, S. (2012). The hippocampus and the flexible use of language and memory: Evidence from amnesia. *Frontiers in Human Neuroscience, 6*, 69.

Dupuy, O., et al. (2015). Aerobic fitness level is associated with cerebral oxygenation during a Stroop task in older women. *Frontiers in Aging Neuroscience, 7*, 236.

Erickson, K. I., Hillman, C., & Kramer, A. F. (2015). Physical activity, brain, and cognition. *Current Opinion in Behavioral Sciences, 4*, 27–32. doi:10.1016/j.cobeha.2015.01.005

Ellouze, I., Sheffler, J., Nagpal, R., & Arjmandi, B. (2023). Dietary patterns and Alzheimer's disease: An updated review linking nutrition to neuroscience. *Nutrients, 15*(14), 3204. doi:10.3390/nu15143204

European Commission. (2021). *Green Paper on Ageing: Fostering solidarity and responsibility between generations*. Publications Office of the European Union.

Falck, R. S., Davis, J. C., & Liu-Ambrose, T. (2017). What is the association between sedentary behaviour and cognitive function? *British Journal of Sports Medicine, 53*(13), 1013–1020.

Feeney, J., et al. (2024). The TILDA-HCAP study: Protocol and harmonised measures for cognitive assessment in Ireland. *Aging Clinical and Experimental Research, 37*(1), 1–12.

Fisher, E., Chick, I., Fossey, J., & Spector, A. (2025). Barriers and facilitators to implementing cognitive stimulation and reminiscence therapy for dementia in care homes: Systematic review. *International Journal of Geriatric Psychiatry, 40*(7), e70124. doi:10.1002/gps.70124

Fisher, R. J., & Katz, J. E. (2000). Social-desirability bias and the validity of self-reported values. *Psychology & Marketing, 17*(2), 105–120. doi:10.1002/(SICI)1520-6793(200002)17:2<105::AID-MAR3>3.0.CO;2-9

Folstein, M. F., Folstein, S. E., & McHugh, P. R. (1975). "Mini-mental state." *Journal of Psychiatric Research, 12*(3), 189–198. doi:10.1016/0022-3956(75)90026-6

Forbes, D., Thiessen, E. J., Blake, C. M., Forbes, S. C., & Forbes, S. (2015). Exercise programs for people with dementia. *Cochrane Database of Systematic Reviews, 2015*(4), CD006489. doi:10.1002/14651858.CD006489.pub4

Friendly, M., Franklin, P. E., Hoffman, D., & Rubin, D. C. (1982). The Toronto Word Pool… *Behavior Research Methods & Instrumentation, 14*(4), 375–399. doi:10.3758/BF03203275

Fukuyama, H., et al. (1997). Brain functional activity during gait in normal subjects: A SPECT study. *Neuroscience Letters, 228*(3), 183–186. doi:10.1016/S0304-3940(97)00381-9

Gholipour, A., Kehtarnavaz, N., Briggs, R., Devous, M., & Gopinath, K. (2007). Brain functional localization: A survey of image registration techniques. *IEEE Transactions on Medical Imaging, 26*(4), 427–451.

Gibson, F. (2004). *The past in the present: Using reminiscence in health and social care*. Health Professions Press.

Gilboa, A. (2004). Autobiographical and episodic memory—One and the same? *Neuropsychologia, 42*(10), 1336–1349. doi:10.1016/j.neuropsychologia.2004.02.014

Gomez-Pinilla, F., & Hillman, C. (2013). The influence of exercise on cognitive abilities. *Comprehensive Physiology, 3*(1), 403–428. doi:10.1002/cphy.c110063

Google. (2025). *Google Maps* [Maps for figures].

Gorno-Tempini, M. L., et al. (2011). Classification of primary progressive aphasia and its variants. *Neurology, 76*(11), 1006–1014.

Grady, C. (2012). The cognitive neuroscience of ageing. *Nature Reviews Neuroscience, 13*(7), 491–505.

Grossman, M., Robinson, K., Biassou, N., White-Devine, T., & D'Esposito, M. (1998). Semantic memory in Alzheimer's disease: Representativeness, ontologic category, and material. *Neuropsychology, 12*(1), 34–42. doi:10.1037/0894-4105.12.1.34

Håkansson, K., Ledreux, A., Daffner, K. R., Terjestam, Y., Bergman, P., Carlsson, R., … Granholm, A. C. (2017). BDNF responses in healthy older persons to 35 minutes of physical exercise, cognitive training, and mindfulness: Associations with working memory function. *Journal of Alzheimer's Disease, 60*(2), 645–657.

Hanakawa, T., Immisch, I., Toma, K., Dimyan, M. A., Van Gelderen, P., & Hallett, M. (2003). Functional properties of brain areas associated with motor execution and imagery. *Journal of Neurophysiology, 89*(2), 989–1002. doi:10.1152/jn.00132.2002

Harada, T., Miyai, I., Suzuki, M., & Kubota, K. (2009). Gait capacity affects prefrontal activation in elderly during dual-task walking. *Neuroscience Letters, 463*(3), 219–223.

Health Service Executive. (2023). *National Dementia Model of Care*. Health Service Executive.

Henkel, L. A., Kris, A., Birney, S., & Krauss, K. (2017). The functions and value of reminiscence for older adults in long-term residential care facilities. *Memory, 25*(3), 425–435. doi:10.1080/09658211.2016.1182554

HSE. (2021). *Dementia: Public knowledge and attitudes in Ireland* (Survey report).

Hsieh, H.-F., & Wang, J.-J. (2003). Effect of reminiscence therapy on depression in older adults: A systematic review. *International Journal of Nursing Studies, 40*(4), 335–351. doi:10.1016/S0020-7489(02)00101-3

IBM Corp. (2021). *IBM SPSS Statistics for Macintosh* (Version 28.0.1.1) [Computer software]. IBM Corp.

IBM Corp. (2022). *IBM SPSS Statistics for Windows* (Version 29) [Computer software]. IBM Corp.

Irish, M., Addis, D. R., Hodges, J. R., & Piguet, O. (2010). Exploring the recollective experience during autobiographical memory retrieval in amnestic mild cognitive impairment. *Neuropsychologia, 49*(12), 3317–3326.

Irish, M., Lawlor, B. A., O'Mara, S. M., & Coen, R. F. (2010). Impaired capacity for autonoetic reliving during autobiographical event recall in mild Alzheimer's disease. *Cortex, 44*(7), 890–900. doi:10.1016/j.cortex.2010.01.002

Janssen, S. M. J., Rubin, D. C., & St. Jacques, P. L. (2005). The reminiscence bump in autobiographical memory. *Psychonomic Bulletin & Review, 18*(4), 786–802.

Jongsiriyanyong, S., & Limpawattana, P. (2018). Mild cognitive impairment in clinical practice: A review. *Clinical Interventions in Aging, 13*, 143–157.

Kahn, D. M., & Krubitzer, L. A. (2002). Massive cross-modal plasticity in developmentally blind mammals. *Nature Neuroscience, 5*(6), 564–570.

Kahya, M., Moon, S., Ranchet, M., Vukas, R. R., Lyons, K. E., Pahwa, R., Akinwuntan, A., & Devos, H. (2019). Brain activity during dual task gait and balance in aging and age-related neurodegenerative conditions: A systematic review. *Experimental Gerontology, 128*, 110756. doi:10.1016/j.exger.2019.110756

Kelley, G. A., Kelley, K. S., & Tran, Z. V. (2001). Walking and resting blood pressure in adults: A meta-analysis. *Preventive Medicine, 33*(2 Pt 1), 120–127. doi:10.1006/pmed.2001.0860

Krishnamoorthy, Y., Sarveswaran, G., Sakthivel, M., & Majella, M. G. (2019). Diagnostic accuracy of the GDS-15 for screening depression among older adults. *BMJ Open, 9*, e027801.

La Fougère, C., Zwergal, A., Rominger, A., Förster, S., Fesl, G., Dieterich, M., Brandt, T., Strupp, M., Bartenstein, P., & Jahn, K. (2010). Real versus imagined

locomotion: A PET–fMRI comparison. *NeuroImage, 50*(4), 1589–1598. doi:10.1016/j.neuroimage.2009.12.060

Lamoth, C. J. C., et al. (2011). Gait stability and variability in MCI and dementia. *Gait & Posture, 33*(1), 96–100.

Lopis, D., Le Pape, T., Manetta, C., & Conty, L. (2021). Sensory cueing of autobiographical memories in normal aging and Alzheimer's disease: A comparison between visual, auditory, and olfactory information. *Journal of Alzheimer's Disease, 80*(3), 1169–1183. doi:10.3233/JAD-200841

Lebrusán, I., & Gómez, M. V. (2022). The importance of place attachment in the understanding of ageing in place: "The stones know me". *International Journal of Environmental Research and Public Health, 19*(24), 17052. doi:10.3390/ijerph19241705

Lenormand, D. (2024). The formation of episodic autobiographical memory is predicted by mental imagery, self-reference, and anticipated details. *Frontiers in Psychology, 15*, Article 1355343. doi:10.3389/fpsyg.2024.1355343

Levine, B., Svoboda, E., Hay, J. F., Winocur, G., & Moscovitch, M. (2002). Aging and autobiographical memory: Dissociating episodic from semantic retrieval. *Psychology and Aging, 17*(4), 677–689. doi:10.1037/0882-7974.17.4.677

Lim, S. B., Louie, D. R., Peters, S., Liu-Ambrose, T., Boyd, L. A., & Eng, J. J. (2021). Brain activity during real-time walking and with walking interventions after stroke: A systematic review. *Journal of Neuroengineering and Rehabilitation, 18*(1), 8. doi:10.1186/s12984-020-00797-w

Linde, C. (1993). *Life stories: The creation of coherence*. Oxford University Press.

Livingston, G., Huntley, J., Sommerlad, A., Ames, D., Ballard, C., Banerjee, S., … Mukadam, N. (2020). Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. *The Lancet, 396*(10248), 413–446.

Lopes, T. S., Afonso, R. M., & Ribeiro, Ó. M. (2016). A quasi-experimental study of a reminiscence program focused on autobiographical memory in institutionalized older adults with cognitive impairment. *Archives of Gerontology and Geriatrics, 66*, 183–192. doi:10.1016/j.archger.2016.05.007

Luo, M., et al. (2023). Non-pharmacological interventions for dementia: Meta-analysis of RCTs. *Journal of Affective Disorders, 328*, 642–653.

Macleod, F., Storey, L., Rushe, T., & McLaughlin, K. (2020). Towards an increased understanding of reminiscence therapy for people with dementia: A narrative analysis. *Dementia, 20*(4), 1375–1407. doi:10.1177/1471301220941275

McCrory, C., Fiorito, G., O'Halloran, A. M., Polidoro, S., Vineis, P., & Kenny, R. A. (2021). Early life adversity and age acceleration at mid-life and older ages indexed using the next-generation GrimAge and Pace of Aging epigenetic clocks. *Psychoneuroendocrinology, 131*, 105643. doi:10.1016/j.psyneuen.2021.105643

McGrath, B. (2023). *PPI Ignite Network: Guidance for inclusive workshops with older adults*.

Meng, Q., Lin, M. S., & Tzeng, I. S. (2020). Relationship between exercise and Alzheimer's disease: A narrative literature review. *Frontiers in Neuroscience, 14*, 131. doi:10.3389/fnins.2020.00131

Miyai, I., Tanabe, H. C., Sase, I., Eda, H., Oda, I., Konishi, I., Tsunazawa, Y., Suzuki, T., Yanagida, T., & Kubota, K. (2001). Cortical mapping of gait in humans: A near-infrared spectroscopy study. *NeuroImage, 14*(5), 1186–1192.

Moore, G. F., Audrey, S., Barker, M., Bond, L., Bonell, C., Hardeman, W., Moore, L., O'Cathain, A., Tinati, T., Wight, D., & Baird, J. (2015). Process evaluation of complex interventions: Medical Research Council guidance. *BMJ, 350*, h1258. doi:10.1136/bmj.h1258

Moscovitch, M., Cabeza, R., Winocur, G., & Nadel, L. (2016). Episodic memory and beyond: The hippocampus and neocortex in transformation. *Annual Review of Psychology, 67*, 105–134. doi:10.1146/annurev-psych-113011-143733

Nadel, L., & Moscovitch, M. (1997). Memory consolidation, retrograde amnesia and the hippocampal complex. *Current Opinion in Neurobiology, 7*(2), 217–227. doi:10.1016/S0959-4388(97)80010-4

Nasreddine, Z. S., Phillips, N. A., Bédirian, V., Charbonneau, S., Whitehead, V., Collin, I., … Chertkow, H. (2005). The Montreal Cognitive Assessment (MoCA): A brief screening tool for MCI. *Journal of the American Geriatrics Society, 53*(4), 695–699. doi:10.1111/j.1532-5415.2005.53221.x

Neary, D., Snowden, J. S., Gustafson, L., Passant, U., Stuss, D., Black, S., … Benson, D. F. (1998). Frontotemporal lobar degeneration: Clinical diagnostic criteria. *Neurology, 51*(6), 1546–1554. doi:10.1212/WNL.51.6.1546

Netuveli, G., Wiggins, R. D., Hildon, Z., Montgomery, S. M., & Blane, D. (2006). Quality of life at older ages: Evidence from ELSA. *Journal of Epidemiology & Community Health, 60*(4), 357–363. doi:10.1136/jech.2005.040071

Netz, Y. (2019). Is there a preferred mode of exercise for cognition enhancement in older age? A narrative review. *Frontiers in Medicine, 6*, 57. doi:10.3389/fmed.2019.00057

Ngandu, T., Lehtisalo, J., Solomon, A., Levälahti, E., Ahtiluoto, S., Antikainen, R., Bäckman, L., … Kivipelto, M. (2015). A 2-year multidomain intervention…

(FINGER). *The Lancet, 385*(9984), 2255–2263. doi:10.1016/S0140-6736(15)60461-5

Nickbakht, M., Angwin, A. J., Cheng, B. B. Y., Liddle, J., Worthy, P., Wiles, J. H., Angus, D., & Wallace, S. J. (2023). Putting "the broken bits together": A qualitative exploration of the impact of communication changes in dementia. *Journal of Communication Disorders, 101*, 106294. doi:10.1016/j.jcomdis.2022.106294

Norton, S., Matthews, F. E., Barnes, D. E., Yaffe, K., & Brayne, C. (2014). Potential for primary prevention of Alzheimer's disease: Population-based estimates. *The Lancet Neurology, 13*(8), 788–794. doi:10.1016/S1474-4422(14)70136-X

O'Donoghue, P., O'Halloran, A. M., Kenny, R. A., & Romero-Ortuno, R. (2022). Do the frail experience more adverse events from intensive blood pressure control? A 2-year prospective study in the Irish Longitudinal Study on Ageing (TILDA). *EClinicalMedicine, 45*, 101304. doi:10.1016/j.eclinm.2022.101304

O' Philbin, L., Woods, B., Farrell, E. M., Spector, A. E., & Orrell, M. (2018). Reminiscence therapy for dementia: An abridged Cochrane systematic review of the evidence from randomized controlled trials. *Expert Review of Neurotherapeutics, 18*(9), 715–727. doi:10.1080/14737175.2018.1509709

Orr, J., Kenny, R. A., & McGarrigle, C. A. (2022). Religiosity and quality of life in older Christian women in Ireland: A mixed methods analysis. *Journal of Religion and Health, 61*(4), 2927–2944. doi:10.1007/s10943-022-01519-3

PAGAC. (2018). *2018 Physical Activity Guidelines Advisory Committee Scientific Report*. U.S. Department of Health and Human Services.

Park, K., Lee, S., Yang, J., Song, T., & Hong, G. S. (2019). A systematic review and meta-analysis on the effect of reminiscence therapy for people with dementia. *International Psychogeriatrics, 31*(11), 1581–1597. doi:10.1017/S1041610218002168

Parker, R. G. (1995). Reminiscence: A continuity theory framework. *The Gerontologist, 35*(4), 515–525. doi:10.1093/geront/35.4.515

Pavot, W., & Diener, E. (1993). Review of the Satisfaction With Life Scale. *Psychological Assessment, 5*(2), 164–172. doi:10.1037/1040-3590.5.2.164

Pavot, W., & Diener, E. (2008). The Satisfaction With Life Scale and the emerging construct of life satisfaction. *Journal of Positive Psychology, 3*(2), 137–152. doi:10.1080/17439760701756946

Peirce, J. W., Gray, J. R., Simpson, S., MacAskill, M., Höchenberger, R., Sogo, H., Kastman, E., & Lindeløv, J. K. (2019). PsychoPy2: Experiments in behavior made

easy. *Behavior Research Methods, 51*(1), 195–203. doi:10.3758/s13428-018-01193-y

Petersen, R. C., et al. (2016). Mild cognitive impairment: Clinical characterization and outcomes. *Neurology, 82*(7), 512–519.

Petersen, R. C., Smith, G. E., Waring, S. C., Ivnik, R. J., Tangalos, E. G., & Kokmen, E. (1999). Mild cognitive impairment: Clinical characterization and outcome. *Archives of Neurology, 56*(3), 303–308. doi:10.1001/archneur.56.3.303

Pickett, J., Bird, C., Ballard, C., Banerjee, S., Brayne, C., Cowan, K., … Brayne, C. (2018). A roadmap to advance dementia research: Prioritization with PPI. *Alzheimer's & Dementia, 14*(3), 353–362. doi:10.1002/gps.4868

Piefke, M., Weiss, P. H., Zilles, K., Markowitsch, H. J., & Fink, G. R. (2003). Differential remoteness and emotional tone modulate the neural correlates of autobiographical memory. *Brain, 126*(3), 650–668. doi:10.1093/brain/awg064

Pink, S. (2011). From embodiment to emplacement: Re-thinking competing bodies, senses and spatialities. *Sport, Education and Society, 16*(3), 343–355. doi:10.1080/13573322.2011.565965

Piolino, P., Desgranges, B., & Eustache, F. (2009). Episodic autobiographical memories over the course of time. *Neuropsychologia, 38*(10), 1333–1349.

Piolino, P., et al. (2003). Autobiographical memory and autonoetic consciousness: Triple dissociation… *Brain, 126*(10), 2203–2219. doi:10.1093/brain/awg222

Pinquart, M., & Sörensen, S. (2001). Influences on loneliness in older adults: A meta-analysis. *Basic and Applied Social Psychology, 23*(4), 245–266. doi:10.1207/153248301753225702

Price, A., Clarke, M., Staniszewska, S., Chu, L., Tembo, D., Kirkpatrick, M., & Nelken, Y. (2022). Patient and public involvement in research: A journey to co-production. *Patient Education and Counseling, 105*(4), 1041–1047. doi:10.1016/j.pec.2021.07.021

Prince, M., Wimo, A., Guerchet, M., Ali, G.-C., Wu, Y.-T., & Prina, M. (2015). *World Alzheimer Report 2015: The global impact of dementia*. Alzheimer's Disease International.

Provalis Research. (n.d.). *QDA Miner Lite* [Computer software].

Ranganath, C., & Ritchey, M. (2012). Two cortical systems for memory-guided behaviour. *Nature Reviews Neuroscience, 13*(10), 713–726. doi:10.1038/nrn3338

Reuter-Lorenz, P. A., & Cappell, K. A. (2008). Neurocognitive aging and the compensation hypothesis. *Current Directions in Psychological Science, 17*(3), 177–182.

Riachi, M. (2018). *Contented Dementia: A practical guide to managing memory loss (SPECAL method)*. Random House.

Ritchey, M., & Cooper, R. A. (2020). Deconstructing the posterior medial episodic network. *Trends in Cognitive Sciences, 24*(6), 451–465. doi:10.1016/j.tics.2020.03.006

Ritchie, S. J., et al. (2024). Brain structure and midlife activity: PREVENT-Dementia cohort MRI study. *Brain Imaging and Behavior, 18*(2), 450–463. doi:10.1093/braincomms/fcae189

Rose, N. S., Rendell, P. G., McDaniel, M. A., Aberle, I., & Kliegel, M. (2010). Age and individual differences in prospective memory during a "Virtual Week." *Psychology and Aging, 25*(3), 595–605.

Rossignol, S., Dubuc, R., & Gossard, J.-P. (2006). Dynamic sensorimotor interactions in locomotion. *Physiological Reviews, 86*(1), 89–154.

Sabat, S. R. (2001). *The experience of Alzheimer's disease: Life through a tangled veil* (Rev. ed.). Wiley-Blackwell.

Salthouse, T. A. (2010). Selective review of cognitive aging. *Journal of the International Neuropsychological Society, 16*(5), 754–760. doi:10.1017/S1355617710000706

Schiele, V. (2022). The World Café method for collaborative change: A practical guide. *International Journal of Action Research, 18*(2), 145–162.

Schneider, B. A., & Pichora-Fuller, M. K. (2000). Implications of perceptual deterioration for cognitive aging research. In F. I. M. Craik & T. A. Salthouse (Eds.), *The handbook of aging and cognition* (2nd ed., pp. 155–219). Lawrence Erlbaum Associates.

Scogin, F., Welsh, D., Hanson, A., Stump, J., & Coates, A. (2005). Evidence-based psychotherapies for depression in older adults. *Clinical Psychology: Science and Practice, 12*(3), 222–237.

Scoville, W. B., & Milner, B. (1957). Loss of recent memory after bilateral hippocampal lesions. *Journal of Neurology, Neurosurgery, and Psychiatry, 20*(1), 11–21.

Scarmeas, N., & Stern, Y. (2003). Cognitive reserve and lifestyle factors. *Journal of Clinical and Experimental Neuropsychology, 25*(5), 625–633. doi:10.1076/jcen.25.5.625.14576

Segev-Jacubovski, O., Herman, T., Yogev-Seligmann, G., Mirelman, A., Giladi, N., & Hausdorff, J. M. (2011). The interplay between gait, falls and cognition: Can cognitive therapy reduce fall risk? *Expert Review of Neurotherapeutics, 11*(7), 1057–1075. doi:10.1586/ern.11.69

Schweitzer, P., & Bruce, E. (2008). *Remembering Yesterday, Caring Today: Reminiscence in dementia care*. Jessica Kingsley.

Sheikh, J. I., & Yesavage, J. A. (1986). Geriatric Depression Scale (GDS): Recent evidence and development of a shorter version. In T. L. Brink (Ed.), *Clinical gerontology: A guide to assessment and intervention* (pp. 165–173). Haworth Press. doi:10.1300/J018v05n01_09

Shimada, H., Suzuki, T., Suzukawa, M., Makizako, H., Doi, T., Yoshida, D., Tsutsumimoto, K., Anan, Y., Uemura, K., Ito, T., Lee, S., & Park, H. (2013). Performance-based assessments and demand for personal care in older Japanese people: A cross-sectional study. *BMJ Open, 3*(4), e002424. doi:10.1136/bmjopen-2012-002424

Skivington, K., Matthews, L., Simpson, S. A., Craig, P., Baird, J., Blazeby, J. M., Boyd, K. A., Craig, N., French, D. P., McIntosh, E., Petticrew, M., Rycroft-Malone, J., White, M., & Moore, L. (2021). A new framework for developing and evaluating complex interventions: Update of Medical Research Council guidance. *BMJ, 374*, n2061. doi:10.1136/bmj.n2061

Song, D., Yu, D. S. F., & Li, P. W. C. (2014). The effectiveness of physical exercise on cognitive and psychological outcomes in older adults with MCI. *Journal of Clinical Nursing, 23*(3–4), 261–269.

Stramba-Badiale, C., Frisone, F., Biondi, D., & Riva, G. (2025). Autobiographical memory in Alzheimer's disease: A systematic review. *Frontiers in Neurology, 16*, 1546984. doi:10.3389/fneur.2025.1546984

SPM12. (2014). *SPM12 (Statistical Parametric Mapping)* [Computer software].

Squire, L. R. (2009). Memory and brain systems: 1969–2009. *The Journal of Neuroscience, 29*(41), 12711–12716. doi:10.1523/JNEUROSCI.3575-09.2009

Syed Elias, S. M., Petriwskyj, A., Scott, T., & Neville, C. (2019). Spiritual reminiscence therapy for older people with loneliness, anxiety and depression living in a residential aged care facility, Malaysia: A qualitative approach. *Australasian Journal on Ageing, 38*(1), E25–E30. doi:10.1111/ajag.12598

Stapley, S., Pentecost, C., Hillman, A., Jones, I. R., Morris, R., Quinn, C., Ravi, M., Thom, J., & Clare, L. (2025). Continuity, change and "living well" for older people with dementia: Longitudinal qualitative findings from the IDEAL cohort study. *Ageing and Society, 45*(11), 1–20. doi:10.1017/S0144686X24000333

St Jacques, P. L., Carpenter, A. C., Szpunar, K. K., & Schacter, D. L. (2018). Remembering and imagining alternative versions of the personal past. *Neuropsychologia, 110*, 170–179. doi:10.1016/j.neuropsychologia.2017.06.015

St. Jacques, P. L., Kragel, P. A., & Rubin, D. C. (2011). Dynamic neural networks supporting memory retrieval. *NeuroImage, 57*(2), 608–616. doi:10.1016/j.neuroimage.2011.04.039

St. Jacques, P. L., Rubin, D. C., LaBar, K. S., & Cabeza, R. (2012). The short and the long of it: Neural correlates of temporal-order memory for autobiographical events. *Journal of Cognitive Neuroscience, 24*(5), 1087–1097.

Stern, Y., Barnes, C. A., Grady, C., Jones, R. N., & Raz, N. (2019). Brain reserve, cognitive reserve, and brain maintenance: Past, present, and future. *Neurobiology of Aging, 68*, 1–2.

Stern, Y. (2012). Cognitive reserve in ageing and Alzheimer's disease. *The Lancet Neurology, 11*(11), 1006–1012. doi:10.1016/S1474-4422(12)70191-6

Stern, Y. (2002). What is cognitive reserve? *Journal of the International Neuropsychological Society, 8*(3), 448–460.

Stoner, C. R., Orrell, M., & Spector, A. (2019). The psychometric properties of positive psychology outcome measures in dementia: A systematic review. *International Psychogeriatrics, 31*(12), 1711–1723.

Subramaniam, P., & Woods, B. (2014). The impact of individual reminiscence therapy for people with dementia: Systematic review. *Expert Review of Neurotherapeutics, 12*(5), 545–555. doi:10.1586/ern.12.35

Subramaniam, P., & Woods, B. (2016). Digital life storybooks for people with dementia. *Dementia, 15*(6), 1604–1629.

Suzuki, M., Miyai, I., Ono, T., Oda, I., Konishi, I., Kochiyama, T., & Kubota, K. (2004). Prefrontal and premotor cortices are involved in adapting walking and running speed on the treadmill. *Cerebral Cortex, 14*(3), 369–377.

Tappen, R. M., Roach, K. E., Applegate, E. B., & Stowell, P. (2000). Effect of a combined walking and conversation intervention on functional mobility of nursing home residents with Alzheimer disease. *Alzheimer Disease and Associated Disorders, 14*(4), 196–201. doi:10.1097/00002093-200010000-00002

TILDA. (2016). *Walking to wellbeing: Physical activity in the Irish population*. The Irish Longitudinal Study on Ageing.

Trigg, R., Skevington, S. M., & Jones, R. W. (2007). How can we best assess the quality of life of people with dementia? *The Gerontologist, 47*(6), 789–797. doi:10.1093/geront/47.6.789

Trinity College Dublin. (2025, September 11). *Launch of the TILDA Wave 6 report* [News release]. TILDA – The Irish Longitudinal Study on Ageing.

Ustad, A., Sverdrup, K., Tangen, G. G., Døhl, Ø., Vereijken, B., Thingstad, P., & Skjæret-Maroni, N. (2024). Daily physical activity in older adults across levels of care: The HUNT Trondheim 70+ study. *European Review of Aging and Physical Activity, 21*, Article 20. doi:10.1186/s11556-024-00355-6

Valenzuela, M. J., & Sachdev, P. (2006). Brain reserve and dementia: A systematic review. *Psychological Medicine, 36*(4), 441–454.

Van Dyck, C. H., Swanson, C. J., Aisen, P., Bateman, R. J., Chen, C., Gee, M., Kanekiyo, M., Li, D., Reyderman, L., Cohen, S., … Iwatsubo, T. (2023). Lecanemab in early Alzheimer's disease. *The New England Journal of Medicine, 388*(1), 9–21. doi:10.1056/NEJMoa2212948

van Praag, H. (2009). Exercise and the brain: Something to chew on. *Trends in Neurosciences, 32*(5), 283–290. doi:10.1016/j.tins.2008.12.007

Venegas-Sanabria, L. C., Cavero-Redondo, I., Martínez-Vizcaino, V., Cano-Gutierrez, C. A., & Álvarez-Bueno, C. (2022). Effect of multicomponent exercise in cognitive impairment: A systematic review and meta-analysis. *BMC Geriatrics, 22*(1), 617. doi:10.1186/s12877-022-03302-1

Verghese, J., et al. (2007). Quantitative gait markers and risk of cognitive decline and dementia. *Journal of Gerontology: Series A, 64A*(8), 896–901.

Viard, A., Allen, A. P., Doyle, C. M., Naveau, M., Bokde, A. L. W., Platel, H., Eustache, F., Commins, S., & Roche, R. A. P. (2024). Autobiographical cerebral network activation in older adults before and after reminiscence therapy: A preliminary report. *Biological Research for Nursing, 26*(2), 257–269. doi:10.1177/10998004231210982

Viard, A., Piolino, P., Belliard, S., de La Sayette, V., Desgranges, B., & Eustache, F. (2014). Episodic future thinking in semantic dementia: A cognitive and fMRI study. *PLOS ONE, 9*(10), e111046. doi:10.1371/journal.pone.0111046

Viard, A., Piolino, P., Desgranges, B., Chetelat, G., Lebreton, K., & Eustache, F. (2007). Hippocampal activation for autobiographical memories over the entire lifetime in healthy aged subjects. *Cerebral Cortex, 17*(10), 2453–2467. doi:10.1093/cercor/bhl153

Vilarinho, R., Garcia, L. J., & Crossley, M. (2021). Lifelong learning and wellbeing in older adulthood: A systematic review. *Educational Gerontology, 47*(8), 356–372. doi:10.1080/03601277.2021.1948606

Voelcker-Rehage, C., Godde, B., & Staudinger, U. M. (2011). Cardiovascular and motor coordination training differentially impact brain networks. *Frontiers in Human Neuroscience, 5*, 26.

Wang, J. (2007). Group reminiscence therapy for cognitive and affective function of demented elderly in Taiwan. *International Journal of Geriatric Psychiatry, 22*(12), 1235–1240. doi:10.1002/gps.1821

Wang, J., et al. (2018). Reminiscence therapy for dementia: Systematic review and meta-analysis. *Ageing Research Reviews, 42*, 54–65.

Wang, Q. (2013). *The autobiographical self in time and culture*. Oxford University Press.

Waymouth, M., Siconolfi, D., Friedman, E. M., Saliba, D., Ahluwalia, S. C., & Shih, R. A. (2023). Barriers and facilitators to home- and community-based services access for persons with dementia and their caregivers. *The Journals of Gerontology: Series B, 78*(6), 1085–1097.

Webster, J. D. (1993). Construction and validation of the Reminiscence Functions Scale. *Journal of Gerontology, 48*(5), P256–P262. doi:10.1093/geronj/48.5.P256

Webster, J. D. (1997). The Reminiscence Functions Scale: Replication with a younger sample. *Journal of Adult Development, 4*(2), 73–85.

Wellcome Centre for Human Neuroimaging, UCL. *SPM12*.

Westerhof, G. J., & Bohlmeijer, E. T. (2014). Celebrating fifty years of research and applications in reminiscence and life review. *Journal of Aging Studies, 29*, 107–114. doi:10.1016/j.jaging.2014.02.003

Westerhof, G. J., Bohlmeijer, E. T., & Webster, J. D. (2010). Reminiscence and mental health: A review. *Ageing & Society, 30*(4), 697–721.

Westmacott, R., Black, S. E., Freedman, M., & Moscovitch, M. (2004). The contribution of autobiographical significance to semantic memory: Evidence from Alzheimer's disease, semantic dementia, and amnesia. *Neuropsychologia, 42*(1), 25–48. doi:10.1016/S0028-3932(03)00147-7

World Health Organization. (2025, March 31). *Dementia*.

World Health Organization. (n.d.). *Physical activity*.

Wong, P. T. P., & Watt, L. M. (1991). What types of reminiscence are associated with successful aging? *Psychology and Aging, 6*(2), 272–279. doi:10.1037/0882-7974.6.2.272

Woods, R. T., Aguirre, E., Spector, A. E., & Orrell, M. (2012). Cognitive stimulation to improve cognitive functioning in people with dementia. *Cochrane Database of Systematic Reviews, 2012*(2), CD005562.

Woods, R. T., O'Philbin, L., Farrell, E. M., Spector, A. E., & Orrell, M. (2018). Reminiscence therapy for dementia. *Cochrane Database of Systematic Reviews, 2018*(3), CD001120. doi:10.1002/14651858.CD001120.pub3

Yanagida, N., Yamaguchi, T., & Matsunari, Y. (2024). Evaluating the impact of reminiscence therapy on cognitive and emotional outcomes in dementia patients. *Journal of Personalized Medicine, 14*(6), 629. doi:10.3390/jpm14060629

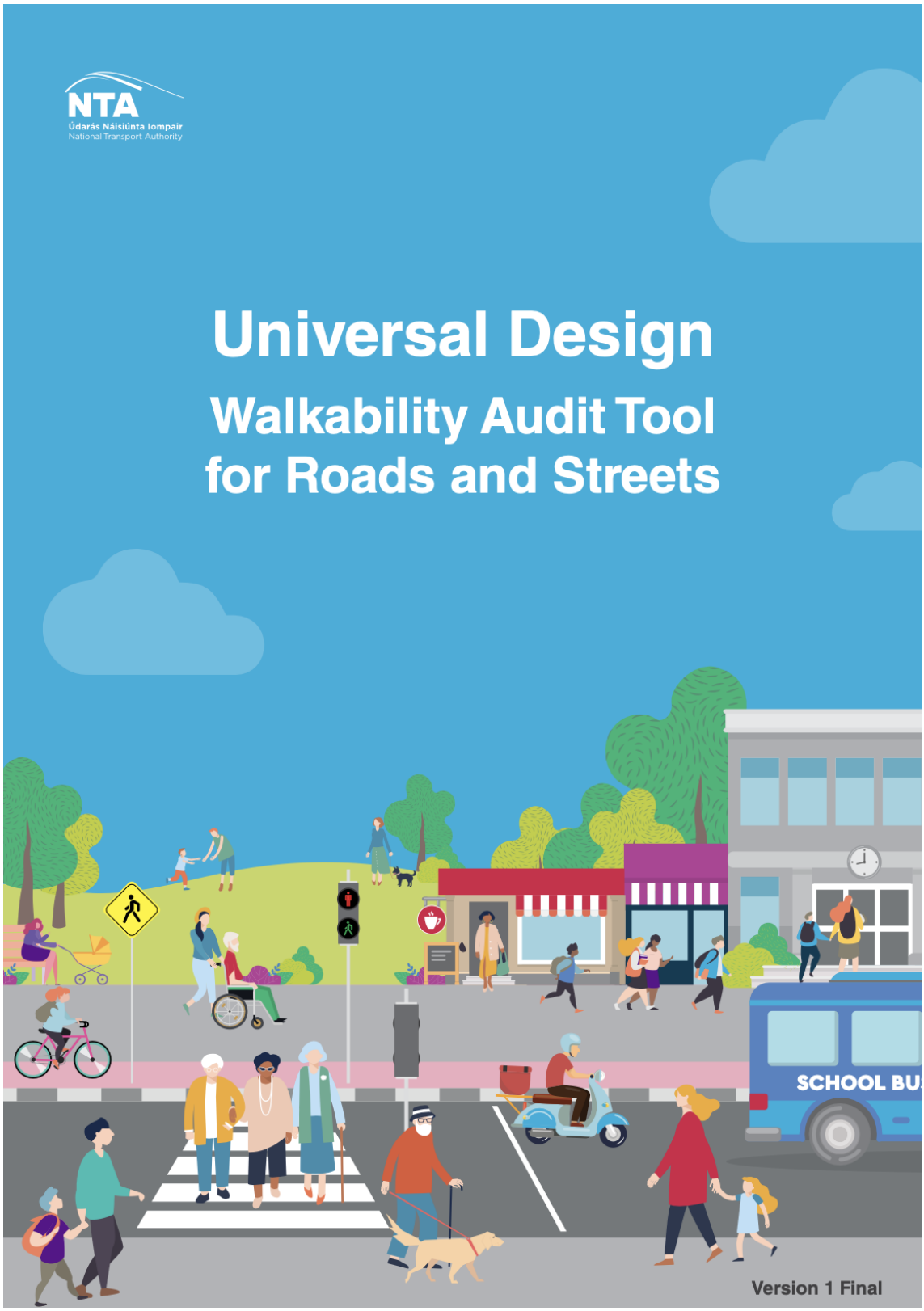
Yesavage, J. A., Brink, T. L., Rose, T. L., Lum, O., Huang, V., Adey, M., & Leirer, V. O. (1982–1983). Development and validation of a geriatric depression screening scale. *Journal of Psychiatric Research, 17*(1), 37–49. doi:10.1016/0022-3956(82)90033-4

Yonelinas, A. P., Ranganath, C., Ekstrom, A., & Wiltgen, B. (2019). A contextual binding theory of episodic memory. *Nature Reviews Neuroscience, 20*(8), 469–480.

Zemla, K., Sedek, G., Wróbel, K., Postepski, F., & Wojcik, G. M. (2023). Investigating the impact of guided imagery on stress, brain functions, and attention: A randomized trial. *Sensors, 23*(13), 6210. doi:10.3390/s23136210.

Appendices

Appendix 1. Universal Design Walkability Audit Tool for Roads and Streets scores for each route – Maynooth University



Introduction

Government policy seeks the transition to more sustainable forms of transport. To facilitate this, we need to check that our neighbourhoods and streets are places where people of all ages and abilities can walk safely, conveniently and independently.

A Universal Design approach, which caters for the broadest range of users, can result in streets and neighbourhoods that can be used and enjoyed by everyone, regardless of their age, size, ability or disability. Increased walking activity contributes to a wide range of societal and health benefits including improved levels of fitness, cleaner air, safer environments and better social inclusion.

The Universal Design Walkability Audit Tool was developed as a collaboration between the National Transport Authority, Age Friendly Ireland, Green-Schools and the National Disability Authority's Centre for Excellence in Universal Design. This Audit will be used to capture the existing conditions of a specified walking route in relation to its walkability. Walkability is the extent to which the built environment is friendly to the presence of people walking, living, shopping, visiting, engaging or spending time in an area. The Audit is intended to be carried out by a wide range of people of various ages and abilities including disability and older people's organisations, advocacy organisations, school travel planners, members of the public and Local Authority officers.

The Audit process will enable the identification of a priority list of recommendations for the route. The recommendations from the audit will be taken into account when local authorities are planning improvements to roads and streets in the future.

Undertaking the Audit

To reflect a Universal Design approach, it is desirable to have participants with a diverse range of ages and abilities undertaking the Audit. This includes for example: parents with buggies, children, wheelchair users, older people and people with impaired vision. Participants with local knowledge, who use the route regularly, will enrich the Audit process.

Audits will typically be carried out by a group of participants, working with a trained coordinator, such as those engaged with the Age Friendly Ireland or the Green-Schools Travel programmes. However, Audits can also be carried out independently by individuals.

Typically, the Audit should cover a walking trip and route of up to an approximate 20-30 minute walking distance. Allowing for stops and short discussion, the Audit itself should take around 45 minutes but can be longer or shorter depending on the group.

Additional time either side of the Audit itself, should be catered for to provide an information briefing (prior to the commencement of the Audit) and a discussion to inform the final report at the end of the Audit.

The following items are generally required to inform your audit;

- A map of the route
- A pen or pencil to complete responses
- A measuring tape or trundle wheel
- A recording device such as a camera or mobile phone
- A pedometer and
- A stopwatch.

Role of the Coordinator

In most cases, the coordinator is likely to be tasked with;

- **Consulting local participants to identify the route(s) to be audited**
- **Explaining the audit process**
- **Co-ordinating maps and photographs**
- **Assisting participants to complete the audit tool, if required**
- **Facilitating a discussion with participants after the audit is complete**
- **Analysing the completed audit tools and compiling an audit report, complete with maps and photographs of the route.**

Prior to the Audit, coordinators should consider walking the route to familarise themselves with the surroundings, to identify rest areas and anticipate safety issues. A suitable location for the briefing session should also be identified.

The coordinator may wish to delegate specific tasks to individuals within the group, for example having a dedicated photographer or time-keeper.

After the audit, the coordinator should facilitate the discussion and seek to gain an understanding of the key issues identified by the participants under the different headings in the audit tool.

There should be a broad consensus of the key recommendations and suggestions that are required to improve the route. After the group discussion, the coordinator should allow additional time to analyse the feedback from participants and write the audit report.

Photographs

Space has been provided at the end of the Audit Tool to allow for additional comments and useful information including supporting photographs, maps and text. Please ensure that all personal data collected, including photographs, is compliant with data protection requirements.

Final Report

The completed audit report will include analysis of the feedback received from participants and a series of recommendations to improve the route. This audit report will be submitted to the relevant local authority for its consideration.

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Participant's Details

Please tick all that apply in each section

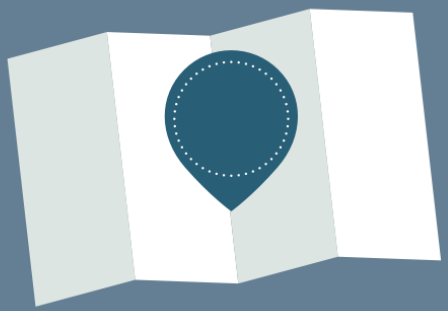
Please Indicate the Number of Participants in the following Categories:

Age	Number of Participants	Sex	Number of Participants
☐ Up to 4		☒ Female	Two Participants during assesment
☐ 5-12		☐ Male	
☐ 13-18			
☒ 19-25			
☒ 26-64			
☐ 65-79			
☐ 80+			

Participants and Ability Range

Ability — This risk assessment was done for :	No. of Participants
☐ A person who is using a wheelchair	Max. ten participants
☐ A person who has reduced mobility	
☐ A person who is blind or with low vision	
☐ A person who is Deaf or has a hearing loss	
☒ A person who has cognitive difficulties	
☐ A person with a buggy or stroller	
☐ A person with a young child	
☒ A carer	
☐ None of the above	
☐ Other, please specify	

Details of the Route



Please include a map of the route in the space provided at the end of the Audit

Town / City	Maynooth Town
County	Kildare
Distance of Route	1,1 km
Date of Audit	12/04/2022
Start Time	10:00am
End Time	10:13am (13 min. 11 sec. in all)
Weather Conditions	Raining and cloudy conditions.

Participant's Details

Footpaths

Please tick all that apply in each section

Footpaths

What are the main problems with footpaths?

- [x] There are no real problems
- [ ] There is no footpath
- [ ] They are not always continuous (they stop and start in places)
- [ ] They are not wide enough for everyone to use
- [ ] People need to step off the footpath and onto the road at busy times
- [ ] There is a footpath on one side of the street only

Surface Condition

Are there any problems with the condition of footpaths?

- [x] There are no real problems
- [ ] Ponding or flooding on the footpath
- [ ] Splashes from the road due to poor drainage
- [ ] Cracks on the footpath
- [ ] Evidence of poor repair work
- [ ] Damage caused by tree roots
- [ ] Litter
- [ ] Dog poo
- [ ] Uneven surfaces (e.g. entrances, driveways)
- [ ] Slippery surfaces in wet conditions
- [ ] Steps that cause difficulty

Obstacles on the Footpath

Are there any problems with obstacles on the footpath?

- [ ] There are no real problems
- [x] The footpaths are generally clear of obstacles
- [ ] Advertising boards/ shop signage
- [ ] Outdoor tables and chairs from businesses
- [ ] Permanent litter bins
- [ ] Domestic / commercial bins on bin collection days
- [ ] Bicycles
- [ ] Lighting columns/ poles
- [ ] Guardrail / bollards
- [ ] Vehicles either fully or partially parked on the footpath
- [ ] Overgrown hedging / trees
- [ ] Street furniture (seating, bins, poles) that is hard to see (no colour contrast)
- [ ] Edge of footpath is hard to see (no colour contrast)

Overall Score for Footpaths

Please identify any problem areas

- [ ] Poor
- [ ] Ok
- [x] Good

Facilities

Please tick all that apply in each section

Access to Local Shops and Services

On this route, it is too far to walk to the following services:

- [ ] There are no real problems
- [x] Shops and cafés
- [x] Childcare facilities / crèches
- [x] Community facilities such as post offices, community centres and ATMs
- [x] Doctor surgeries, medical centres or chemists
- [x] Places of worship
- [x] Sports facilities and clubs

Public Seating and Rest Areas

Are there any problems with resting and seating facilities?

- [ ] There are no real problems
- [x] There are not enough places to stop and rest
- [ ] There is no seating
- [ ] The seating is not suitable for some people (e.g. does not provide back/arm support)
- [ ] The seating is not in areas that provide shade and shelter
- [ ] The seating is located too near heavy traffic
- [ ] The seating faces the wrong way
- [ ] Surface materials are too hot or cold

Public Bins

Are there any problems with public bin facilities?

- [ ] There are not enough bins
- [ ] Bins are full and over-flowing

Public Toilets

Are there any problems with public toilet facilities?

- [ ] There are no problems with the availability of toilets
- [ ] Toilets are not suitable for wheelchairs or those with mobility impairments
- [ ] Toilets lack suitable baby changing areas
- [ ] Toilets are poorly maintained
- [ ] Toilets cannot be used by the general public
- [x] There are no toilets available on this route
- [ ] Sports facilities and clubs

Parks and Playgrounds

Are there any problems with parks and playgrounds? This is not relevant.

- [ ] There are no parks and / or playground facilities
- [ ] Seating areas do not enable supervision of children by parents or guardians
- [ ] Facilities are not well-maintained
- [ ] No opportunities for informal play (e.g. ball games, running)
- [ ] Dogs are not under control by their owners

Parking Issues

Are there any problems with parking facilities?

- [ ] There is not enough cycle parking
- [ ] There is no designated car parking for older people or persons with disabilities
- [ ] Paying for parking is difficult
- [ ] There are no safe, designated loading and delivery facilities for larger vehicles

Overall Score for Facilities *Please identify any problem areas*

- Poor
- [x] Ok
- Good

Crossing the Road

Please tick all that apply in each section

Formal Pedestrian Crossing Areas (Traffic Lights)

The main problems at pedestrian crossings with signals (for example, a green man signal) are:

- [x] There are no real problems
- [ ] There are not enough pedestrian crossings
- [ ] Crossings do not offer direct connection to where I need to go
- [ ] It takes too long to wait for the green man to appear
- [ ] There are no pedestrian crossings near the bus stop
- [ ] Pedestrian signals do not give me enough time to cross the road
- [ ] Pedestrian guard railings restrict movement of buggies, wheelchairs etc.
- [ ] There are no countdown facilities on crossings
- [ ] There are no pedestrian push buttons to stop motor traffic
- [ ] Drivers do not give enough time to cross at zebra crossings or flashing ambers
- [ ] The crossings are not level (i.e. there are kerbs)
- [ ] There is no tactile paving at crossings
- [ ] There are no audible cues at crossings

Informal Pedestrian Crossing points (without traffic lights/ signals)

Where there are no pedestrian crossing signals, the main problems with crossing the road are:

- [x] There are no real problems
- [ ] The speed of traffic makes it hard to cross the road
- [ ] The amount of traffic makes it hard to cross the road (no gaps in traffic)
- [ ] The road is too wide to cross in one go
- [ ] There are no step-free crossings for people using wheelchairs and buggies
- [ ] There is no tactile paving at informal pedestrian crossing points
- [ ] Obstacles (such as parked cars) block my view of traffic where I need to cross
- [ ] There is mud or grass at the point where I need to cross
- [ ] The road surface is uneven/has potholes

Overall Score for Crossing the Road

Please identify any problem areas

- [ ] Poor
- [ ] Ok
- [x] Good

Not applicable. There is no road crossing required on this walk.

Road-User Behaviour

Please tick all that apply in each section

Driver Behaviour

What are the main problems with driver behaviour?

- [x] There are no real problems
- [ ] Driving too fast
- [ ] Failing to stop at red lights or stop signs
- [ ] Failing to yield to pedestrians on zebra crossing or flashing amber lights
- [ ] Using beeps and car horns regularly
- [ ] Leaving engines running while waiting outside schools and shops
- [ ] Using mobile phones while driving or while stationary at red lights
- [ ] Stopping in traffic to set-down or pick-up passengers
- [ ] Driving too close to cyclists or pedestrians

Poor Parking Practices

What problems with poor parking practices are there?

- [x] There are no real problems
- [ ] Parking outside of designated car parking areas
- [ ] Parking on footpaths (either fully or partially blocking them)
- [ ] Parking in accessible/designated parking spaces without a disabled persons parking permit
- [ ] Parking on double yellow lines
- [ ] Parking at junctions obstructing people crossing
- [ ] Parking across dropped kerbs used by wheelchairs and buggies
- [ ] Parking across cycle lanes
- [ ] Blocking driveways
- [ ] Blocking buses, bus stops or bus lanes
- [ ] Blocking emergency vehicles

Cycles and Scooters

Are there any issues with cyclist and scooter-user behaviour?

- [x] There are no real problems
- [ ] Failing to stop at red lights or stop signs
- [ ] Cycling on footpaths
- [ ] Scooting on footpaths
- [ ] Travelling dangerously on shared footpaths/greenways
- [ ] Manoeuvres that put other road users in danger
- [ ] Parking bikes or scooters in places that block the footpath

Overall Score for Road-user behaviour

Please identify any problem areas

- [ ] Poor
- [ ] Ok
- [x] Good

Not applicable. There is no road included on this walk.

Road-User Behaviour

Safety

Please tick all that apply in each section

Personal safety and Feeling of Safety in Surroundings.

Some of the safety issues with the route include:

- [ ] There are no real problems
- [ ] A lack of visible Garda presence
- [x] Area is too isolated
- [ ] Poor road user behaviour
- [ ] Groups of people making me feel intimidated
- [ ] Anti-social behaviour (e.g. street drinkers, drug use)
- [ ] Stray or noisy dogs
- [ ] I feel unsafe at night time
- [ ] A lack of activity and people
- [ ] Derelict and unoccupied buildings
- [ ] Long stretches of blank walls
- [ ] High walls and fences along it
- [ ] Hidden alleyways and blind corners
- [ ] Other (please comment below)

Layout and Clarity

It is not clear and obvious where I need to walk to:

- [x] There are no real problems
- [ ] Street is cluttered and confusing
- [ ] Street signage is difficult to read (e.g. faded, dirty, small letters)
- [ ] Street signage is not needed and could be removed
- [ ] Street signage is damaged
- [ ] Street signage is overly complicated
- [ ] Street signage is wrong (e.g. pointing wrong way, out of date etc.)

Lighting

We did the work in the morning.

What are the problems with street lighting when dark?

- [x] There are no real problems
- [ ] There are no street lights
- [ ] Street lights are broken
- [ ] Street lights are not bright enough
- [ ] Street lights are too bright
- [ ] Street lights only cover the road and not the footpath
- [ ] Lack of street lighting in some areas
- [ ] Lighting is blocked by trees (especially when in full leaf)

Overall Score for Safety

Please identify any problem areas

- [ ] Poor
- [ ] Ok
- [x] Good

Look and Feel

Please tick all that apply in each section

Attractive and Pleasant

Some problems with the route include:

- [x] There are no real problems
- [ ] A lack of things to see and do
- [ ] Poorly-maintained building façades and shopfronts
- [ ] Connections to other streets are poor
- [ ] Litter
- [ ] No public places to chat with friends
- [ ] I don't feel relaxed on the street
- [ ] A lack of street trees and planting
- [ ] Neglected properties (e.g. evidence of dumping)
- [ ] Vacant/ derelict buildings
- [ ] Street clutter (e.g. unnecessary signage, bins, utility boxes, poles)
- [ ] Little evidence of community initiatives (e.g. Tidy Towns)
- [ ] A lack of places for shade and shelter (e.g. awnings, trees)

Clean Air and Air Quality

Are there any issues with air quality on the route?

- [x] There are no real problems
- [ ] Unpleasant smells
- [ ] Chimney smoke
- [ ] Construction dust
- [ ] Fumes from traffic
- [ ] Persistent smoking at certain locations e.g. bus shelters
- [ ] I have breathing difficulties in this location
- [ ] I have coughing problems in this location

Noise

Are there any sources of excessive noise on the route from the following?

- [x] There are no real problems
- [ ] Motor traffic
- [ ] Music from nearby shops or cafes
- [ ] Street performers
- [ ] Demolition and/or construction
- [ ] Road works
- [ ] Crowds or gatherings of people
- [ ] Industry
- [ ] Other noises (please comment below)

Overall Score for Look and Feel

Please identify any problem areas

- [ ] Poor
- [ ] Ok
- [x] Good

Outside the School Gates

Please tick all that apply in each section

Walking to School
What are the main problems when walking to school?

- [x] There are no real problems
- [ ] There is too much traffic
- [ ] Footpaths are lacking at both sides of the road
- [ ] There are not enough safe crossings to get to school
- [ ] The footpaths are not wide enough to walk with family and friends
- [ ] I sometimes need to step onto the road when the footpath is busy
- [ ] There is no lollypop person at school times
- [ ] There are no 'Walking Buses' or 'Park and Stride' initiatives

Student Safety and Air Quality
What issues are there with Student Safety and Air Quality?

- [x] There are no real problems
- [ ] Drivers are driving too fast
- [ ] Students get in or out of cars while car is in traffic
- [ ] Drivers park on footpaths
- [ ] Drivers park in cycle lanes
- [ ] Drivers leave the engine running when parked and waiting for pupils
- [ ] Drivers park or wait on double yellow lines/at bus stops
- [ ] No 'School Street' initiative to improve safety and reduce emissions

Parking and Traffic Arrangements
What problems are there with parking and traffic arrangements?

- [x] There are no real problems
- [ ] There are not enough cycle parking spaces within the school
- [ ] There is not enough space for buses to safely drop-off pupils
- [ ] There are no direct crossings to school from bus stops
- [ ] There are no dedicated drop-off/set-down areas for the school
- [ ] There are no designated spaces for disabled parking
- [ ] Pupils must cross a car park or moving traffic to access the school
- [ ] There are no 'No Stopping' signs or double yellow lines around the school gate
- [ ] There is not a separate entrance (away from cars) for pedestrians or cyclists
- [ ] There are no sheltered waiting areas for parents or guardians

Behavioural Change
If conditions improved, students would:

- [ ] Walk more to school with friends and family
- [ ] Use the bus or train to go to school
- [ ] Use the car less
- [ ] Feel safer around the school gates

Overall Score for Outside the School Gates

Please identify any problem areas

- [ ] Poor
- [ ] Ok
- [x] Good

Not applicable. There are no students taking part in this walk.

Outside the School Gates

After the Audit

Scoreboard

Please add up the total score for your walk using the table below.
Each section offers a range from 1 (Poor) 2 (OK) 3 (Good)

		Poor	Ok	Good
Footpaths		☐	☐	☒
Facilities		☐	☒	☐
Crossing the Road	'Crossing the Road' + 'Road-User Behaviour' are not relevant to this walk.	☐	☐	☒
Road-User Behaviour		☐	☐	☒
Safety		☐	☐	☒
Look and Feel Outside the School Gates (if applicable)		☐	☐	☒

Total Score

17/18	**Walkability Audit** (Total score out of a maximum of 18)
This is not relevant to this walk.	**Walkability Audit plus Outside of the School Gates** (Total score out of a maximum of 21)

Further questions

How enjoyable was your walk?

Not Enjoyable — Ok — Very Enjoyable ✕

What did you like most about the walk along the route?
Please provide a few examples.

This route is a particularly quiet green space, with no traffic.
The walk is pleasant, without any obstacles, and sensory.
The great feature of this itinerary is it's perfect location in Maynooth town.

What did you dislike most about the route?
Please provide a few examples.

There is a 5 min walk to reach a coffee shop/doctor practice.

After the Audit

Recommendations

What improvements could be made to the route?
Please list them in order of priority.

1.

2.

3.

4.

5.

If these recommendations were implemented, would you consider walking the route more?

☐ No ☐ Maybe ☒ Yes

Recommendations

Maps

Insert Map

Maps

Photographs

Insert Photographs

Maynooth University - South Campus

Maynooth University - Sidewalk towards the exit of South Campus

Peaceful sidewalk on South Campus - Maynooth University.
At the end of the path, we can perceive, on this image, the entrance of the famous Saint Patrick's College Cemetery.

Photographs

NTA
Údarás Náisiúnta Iompair
National Transport Authority

Thank you for completing this Audit.

The responses to this Audit will be compiled and analysed to determine whether improvements should be made to the route. Any suggested improvements will be subject to further analysis and consideration by the relevant Local Authority.

Appendix 2. Ethical Approval Letters – Chapter 3: TRIADICS Project (Maynooth University & Trinity College Dublin)

MAYNOOTH UNIVERSITY RESEARCH ETHICS COMMITTEE
MAYNOOTH UNIVERSITY,
MAYNOOTH, CO. KILDARE, IRELAND

Maynooth University
National University of Ireland Maynooth

Dr Carol Barrett
Secretary to Maynooth University Research Ethics Committee

14 June 2023

Professor Richard Roche/Cassandra Dinius
Department of Psychology
Maynooth University

Dear Richard and Cassandra,

The Biomedical and Life Sciences Research Ethics Sub-Committee has reviewed the application for project title: **Tailored Reminiscence Interventions for Ageing and Dementias in Community Settings (TRIADICS project) reference [BSRESC-2023-36422]** and we would like to inform you that ethical approval has been granted.

Any deviations from the project details submitted to the ethics committee will require further evaluation. This ethical approval will expire on 30/06/2024.

Kind Regards,

Dr Carol Barrett
Secretary,
Maynooth University Research Ethics Committee

Reference Number
BSRESC-2023-36422

Coláiste na Tríonóide, Baile Átha Cliath
Trinity College Dublin
Ollscoil Átha Cliath | The University of Dublin

Prof Richard Roche, John Hume Building, Maynooth University
Dr Cassandra Dinius, John Hume Building, Maynooth University
Dr Arun Bokde, Trinity College Institute of Neuroscience

21st June 2023

Ref: 230503
Title of Study: Tailored Reminiscence Interventions for Ageing and Dementias in Community Settings (TRIADICS)

Dear Dr Dinius,

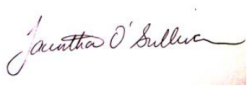
Further to a meeting of the Faculty of Health Sciences Ethics Committee held in June 2023. We are pleased to inform you that the above project has ethical approval to proceed.

This study has been ethically approved. We would advise you to seek review and comments on your DPIA from the DPO if required prior to study commencement.

As a researcher you must ensure that you comply with other relevant regulations, including DATA PROTECTION and HEALTH AND SAFETY.

We wish you every success with this study and should you require any assistance in the future please do not hesitate to contact us.

Yours sincerely,



Prof. Jacintha O'Sullivan
Chairperson
Faculty Research Ethics Committee

Dámh na nEolaíochtaí Sláinte
Foirgneamh na Ceimice,
Coláiste na Tríonóide,
Ollscoil Átha Cliath,
Baile Átha Cliath 2, Éire.

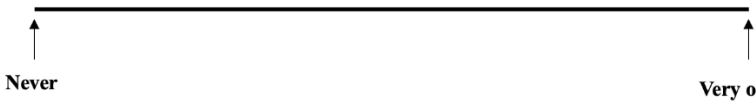
Faculty of Health Sciences
Chemistry Building,
Trinity College Dublin,
The University of Dublin,
Dublin 2, Ireland.

www.healthsciences.tcd.ie

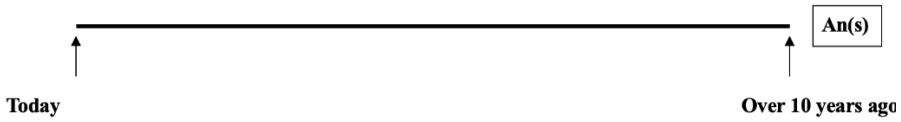
Appendix 3. Analogical Scale Translated in English (Viard et al., 2007)

Memory: .....

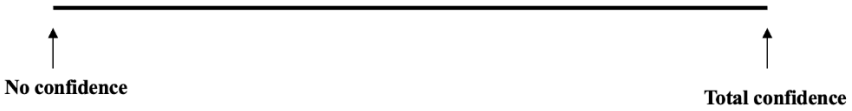
1. Frequency of repetition



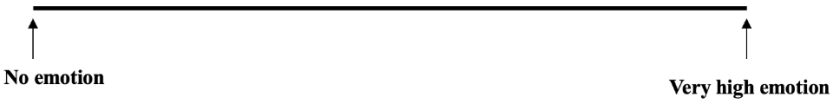
2. Date of last recall (excluding during this experiment)

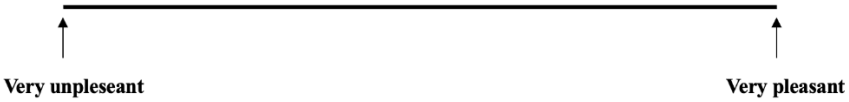


3. Accuracy of my memory

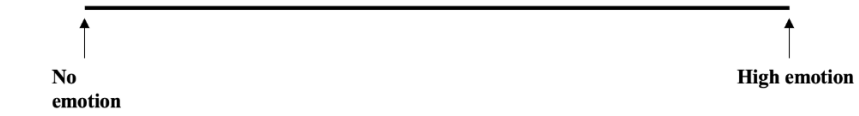


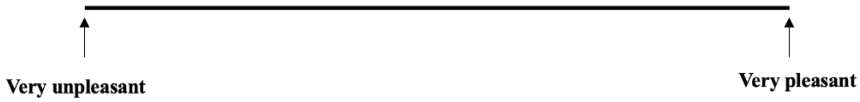
4. Emotional level during encoding of this memory



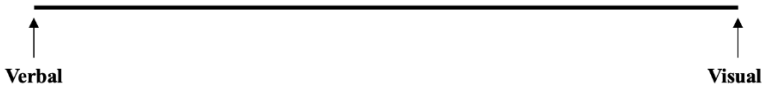


5. Emotional level when retrieving this memory



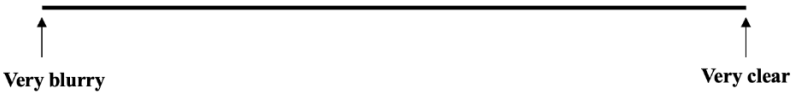


6. Strategy used?

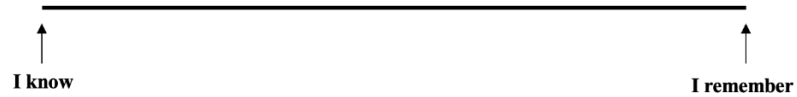


7. Number of images? **Number of images** =

8. Quality of the images when retrieving this memory



9. State of consciousness when retrieving this memory



10. Point of view of the mental images?

- ❑ **Actor**
- ❑ **Observer**
- ❑ **Both**

Appendix 4. Chapter 3 – Flyer for Recruitment

Coláiste na Tríonóide, Baile Átha Cliath
Trinity College Dublin
Ollscoil Átha Cliath | The University of Dublin

Maynooth University
National University of Ireland Maynooth

IRISH RESEARCH COUNCIL
An Chomhairle um Thaighde in Éirinn

Are you 65 or over, available for one hour, and interested in helping us understand how the human brain remembers information?

We are researchers and psychologists based in Dublin conducting research on reminiscence, memory, and well-being.
We are currently looking for volunteers aged 65 years or over to participate in a short 1-hour functional MRI while they think about positive memories from history and their personal past.

To be included in the study, we ask that you:

- Are age 65+
- Consent to participate
- Have no history of cognitive disorders diagnosis

You would not be a good fit for this study if you have:

- Presence of shrapnel or other metal or electronic implants in your body (such as pacemakers, aneurysm clips, surgical devices, etc.)
- History of head trauma or fainting
- Major medical, neurological, or psychological disorders (including panic attacks, heart conditions, claustrophobia, etc.)
- Severe visual impairments
- Motor or mobility impairments
- History of movement disorder
- History of falls
- Feeling confused about your location or frequently becoming lost

If you are interested in helping and/or have any questions, please contact Carmen Elise Pocknell at: **carmen.pocknell.2022@mumail.ie.**

Appendix 5. Chapter 3 – Participant Information Leaflet

Participant Information Leaflet

Name of Study: Tailored Reminiscence Interventions for Ageing and Dementias in Community Settings

Site	Trinity College Dublin Maynooth University
Principal Investigator(s) and Co-Investigator(s) (insert names, titles and contact details)	Lead Researcher: Richard Roche Richard.roche@mu.ie Research Assistant: Carmen Elise Pocknell Carmen.pocknell.2022@mumail.ie
Study Organiser/ Sponsor (if applicable)	Irish Research Council
Data Controllers	Trinity College Dublin (for research data)
Data Protection Officer	Data Protection Officer Secretary's Office Trinity College Dublin Dublin 2 Data Protection Officer 17 Rye Hall Extension North Campus Maynooth University Tel: 01-7086184

Hello, I am Richard Roche, a professor in the Department of Psychology at Maynooth University. I am undertaking a study as part of my research funded by the Irish Research Council. Before you decide whether or not you wish to take part, please read this information sheet carefully. Ask if you have any questions. Don't feel rushed or under pressure to make a quick decision. You should understand the risks and benefits of taking part in this study so that you can make a decision that is right for you. You may wish to discuss it with your family, friends or GP.

This leaflet has five main parts:
Part 1 – The Study
Part 2 – Data Protection
Part 3 – Costs, Funding and Approval
Part 4 – Future Research
Part 5 – Further Information

Part 1 – The Study

Why is this study being done?
The study is concerned with improving quality of life and understanding cognition for older people. We are using a technique called reminiscence, where you think back on memories throughout your life. It may also help us understand how our minds work to recall memories.

Why have I been invited to take part?
You have been asked because you are an older person who has shown interest in these activities. We are especially interested in capturing your recollections.

To be included in the study, we ask that you:

- Are age 65+
- Consent to participate
- No history of cognitive disorders diagnosis

You would not be a good fit for this study if you have:

- Severe visual impairments
- Motor or mobility impairments
- History of movement disorder
- History of falls
- Feeling confused about your location or frequently becoming lost

Do I have to take part? Can I withdraw?
You don't have to take part in this study. It is entirely voluntary. If you decide not to take part it won't affect your relationships with Maynooth University or any member of the research team. You can change your mind about taking part in the study and opt out at any time even if the study has started. You don't have to give a reason for not taking part or for opting out. If you wish to opt out, please contact the lead researcher or postdoctoral researcher who will be able to organise this for you.

What happens if I change my mind?
You can change your mind at any time by contacting the lead researcher or postdoctoral researcher who will be able to organise this for you. If you choose not to continue to take part, this will not affect your relationships with Maynooth University or any member of the research team. If you choose not to take part any more, you will be asked to fill in a withdrawal form. If you wish, you can ask for your data stored to be destroyed. If you request this, we will destroy all identifiable data that are still in our possession. We will no longer use or share your samples or data for research from this point onwards. However, it will not be possible to destroy samples and data already used in research studies prior to this time.

How will the study be carried out?
If you decide to participate in the study, part of the experiment will conducted in the brain scanner, and another part outside of the scanner. In total, the experiment will last approximately 2 hours in total. The actual time in the scanner will be about 60minutes, but the safety procedures and set-up before the study and questionnaires afterwards require some extra time.

Upon arrival in the disinfected lab, the radiographer will review the MRI criteria with you to confirm that the scanning can be performed in a safe manner, and there are no issues such as claustrophobia, pregnancy, and metallic implants. In case an exclusion criterion is met, you will not participate further in the study on the day of scanning. We will ask you to remove all jewellery, watches, and metal-containing clothes on your upper body (e.g. a wired bra).

After the research assistant informed you about the specifics and task of the experiment, the radiographer will go with you into the scanner room. You will enter the shielded magnet room and lie down on the movable table. Please relax and lie as comfortably as possible. During the experiment the scanner will make a lot of knocking sounds and noises of varying volumes. You will be provided with earplugs and noise protection headset to wear. It is important to be relaxed as possible during the scanning.

The radiographer will give you a rubber ball that will be attached on your waist, easily accessible for you. If you squeeze the ball during the experiment this will inform the radiographer, and he will stop the experiment and contact you through an intercom system. In total a scan session lasts approximately one hour. Via the intercom, the researcher keep you informed about the progress of the experiment and also when the experiment is finished. The researcher and you can communicate via an intercom.

As part of the study, we are going to ask you to provide a limited amount of personal information about your date of birth, handedness, and gender. In the main part of the experiment, you will be presented with visual prompts to trigger your memories. After each prompt, you will have ten seconds to think of a memory. You will press a button to advance to the next prompt.

The study will take place at the Trinity Institute for Neuroscience, Lloyd Building, Trinity College Dublin. For the institute and the specific building, there are extensive protocols in place to limit the risk of COVID transmission, and we will adhere to the Trinity-approved protocol, as well as the HSE guidelines meticulously. We will be meeting at the Trinity College Institute of Neuroscience. Your functional MRI information will be recorded during your time in the scanner.

After the completion, the experiment will be finished. You will debrief with a researcher and talk about how you found the experience.

What will happen to me if I decide to take part?
You will read this Information Sheet and then meet with us to ask any questions you may have. First, we will meet to discuss the study and, if you are interested, you will provide consent to participate. If you provide consent to participate, please know that functional MRI information will be recorded during your time in the scanner.

After this, you will complete a short survey about things like your gender, handedness, and age (approximately 10 minutes total). Some of these questions will require responding to questions on paper, and some will require talking one on one with a researcher. Then, you will be guided to the fMRI scanner where you will have a short orientation and settling-in period (approximately 15 minutes). This involves exposure to non-ionising radiation.

You will lie down and think about memories as we provide visual prompts. You will be asked to think of occasions in your life as well as general information. You will press a button to advance to the next topic. This will take approximately 45 minutes.

What will happen to my Samples and Data?
As we are interested in your recollections of life memories, it is possible that cultural, ethnic, medical and personal memories may come up in the course of our session. You are not obligated to share any details if you are not comfortable to do so, and it will not affect your participation.

Your personal information will be assigned a unique code number at the beginning of the testing session. This code will subsequently be stored by the research team in a single password-protected, encrypted Excel file. The entry linking your name with the identifier code will be deleted after completion of the data acquisition, at which time all data with the exception of the consent form will be irreversibly anonymized.

The contact information and names of participants will only be used during the time of your participation in this study to contact you about a suitable timeslot. The additional personal data (you age, gender, and handedness) will be used solely to provide demographic information about the participants (e.g. the average age of a participant). The anonymized data will be maintained by the Bokde and Roche Labs indefinitely for the purposes of audit and reinvestigation and be made available to other researchers on an open science platform.

MRI pre-screening questionnaires will be administered by Maynooth research staff prior to the invitation to the lab to assess potential exclusion criteria and a second time in written form by the radiographer. The form will be stored for seven years.

As mentioned above, your MRI images will be recorded. Raw MRI images contain imprints of the participants' face, therefore we will use software to erase the face and ear data. With this preprocessing step, the relevant information is kept in an anonymized form, but the personal data is removed to protect the privacy of the participant.

The clinically relevant MRI scans will be sent to Tallaght University Hospital to be read by a radiologist. They will inform your GP if there is any relevant issue. If your GP does not receive any communication then it indicates there was nothing to report. The clinical MRI images will only be viewed by the TCIN radiographer, and a radiologist (so a trained doctor) at Tallaght University Hospital. These MRI images shared with the radiologist at Tallaght University Hospital underlie doctor-patient confidentiality. Should incidental findings come up, the information will be shared with your GP. For this, we ask for explicit consent from you. The research team will only have access to the MRI datasets in an ID-coded form, which means the datasets do not contain face- or ear information, no names or other identifiable information. At the time of anonymization, we will delete the document that links personal information with the study ID-codes.

In addition to this, the informed consent sheets signed by volunteers will be kept locked in a cabinet for seven years after completion of research project as required by the EU funding regulations.

Are there any benefits to taking part in this research?

Taking part in this study will not directly benefit you. However, research performed with your coded information may help us to better understand memory and cognition for older adults and may result in new tests and treatment approaches. This is a long-term research project, so the benefits of the research may not be seen for several years. By participating, you are helping to advance science and medicine for future generations.

Are there any risks to me or others if I take part?
For research and safety reasons, candidates must meet certain requirements to be eligible to participate. There are no risks associated with any of the procedures in neurologically healthy individuals. Because the present study is one that involves functional Magnetic Resonance Imaging, there are additional criteria that matter for participation. Metal objects are attracted to the magnet and/or disturb the measurement. Also there is a slight chance metal can warm-up, therefore metal parts in or on the body are not allowed in the scanner room. To date there are no known risks of MRI during pregnancy, however, to eliminate any potential risk, if you are or might be pregnant a participation in this study is not possible.

MRI uses magnetic fields to produce pictures of your brain and of the activities in your brain. This does not hurt, does not involve radiation and is not dangerous. As MRI can interfere with magnetic body implants, nobody with metalic implants is allowed to participate in the study. In addition, people with large tattoos (ink which contain iron particles) on upper body or with dental bridges. Therefore, our trained radiographer will review carefully with you if there are any issues that may preclude you taking part in the MR scanning. Furthermore he will ask you that you are not carrying any electronic devices that can be damaged by the magnetic fields.

Some persons undergoing an MRI may feel confined, closed-in, or frightened. If this happens, you can contact the radiographer and research assistant at any point during the scanning and communicate with them.

Reminiscing on memories is generally accepted as safe. There is the risk of unearthing traumatic, distressing, or painful memories from the past. Our main goal is to focus on your positive memories. We strive to keep sessions short and positive, and to allow breaks when necessary. For the unlikely case that you should encounter psychological distress during or after participating in our study, we will provide you with the contact details of TCD's student counselling services.

There is a risk that a connection to your identity could be made. Great care will be taken to ensure the confidentiality of all data and the risk to participants of a breach of confidentiality is considered very low. The personal data will be kept until we anonymize the data, which we expect to be 1 year after completion of the data acquisition, which eliminates the risk from that point onwards.

Will I be told the outcome of the study? Will I be told the results of any tests or investigations performed as part of this study that relate to me?
We will ask to collect imaging information about your brain activity while you think about the topics we prompt you with. You will not receive any individualised results, including tests or assessments, from the study. The information we gather from you is not clinical in nature and is not used to diagnose you in any way. This study is designed only to better understand improving quality of life and cognition for older people.

Under the Freedom of Information Act you can have access to any information we store about you, if requested.

MRI-images (anatomical images of your brain) and incidental findings:
The clinical images will be read by a radiologist at Tallaght University Hospital to examine if there are any clinically relevant findings ('incidental findings'). If no incidental findings are found in images no further action will be taken.

Incidental findings: What happens if the scan shows something unexpected?
If, however, some unexpected information of potential clinical importance is found on your images the radiologist at Tallaght Hospital will inform your GP. We will not be included in any communication between the medical professionals (GP and radiologist) as this is part of patient-doctor confidentiality. You should be aware that the scans obtained in the research testing is not a full diagnostic scan and we cannot guarantee that an existing abnormality will be identified in the images.

During your visit to the institute, some of the assessments may indicate a serious issue that may need immediate clarification, treatment or intervention (for example depression, suicidality, serious crime) and in such cases we are required to break confidentiality (please see section later in this information sheet which includes more details). In those cases we will inform you as well as ask for your consent to provide this information to your GP and, in addition, if you wish to another person close to you. The tools we use are not diagnostic but they may indicate the presence of a disorders, and it would be necessary to obtain a full clinical examination before a diagnosis may be given.

Part 2 – Data Protection

What information about me (personal data) will be used as part of this study? Will my medical records be accessed?
Your personal information from the short survey (e.g., gender, handedness, and age) will be collected. We will also collect imaging information about your brain activity while you think about the topics we prompt you with. We will not have access to your medical records, only the information you provide us will be used.

What will happen to my personal data?
On completion of the research, the data will be retained on the MU server. After seven years, all identifying information will be removed, rendering the information anonymous. Manual data will be shredded confidentially and electronic data will be reformatted or overwritten by Richard Roche in Maynooth University.

Arrangements are in place so that your personal data will be processed only as is necessary to achieve the objective of the research and will not be processed in a way that would cause damage or distress to you.

Who will access and use my personal data as part of this study?
All hard copy information will be held in a locked cabinet at the researchers' place of work, electronic information will be encrypted and held securely on PC or servers and will be accessed only by the research team (Prof Richard Roche, Dr Arun Bokde, Dr Armelle Viard, Dr Cassandra Dinius, Dr Michelle Caffrey and Carmen Pocknell). The raw data will not leave the EU.

Will my personal data be kept confidential? How will my data be kept safe?
Confidentiality will be breached if the research team has a strong belief or evidence exists that there is a serious risk of harm or danger to either the participant or another individual. (For example suicide risk and self-harm). In addition, disclosure is required as part of a legal process or Garda investigation. Where possible, a full explanation will be given to the participant regarding the necessary procedures and also the intended actions that may need to be taken.

Irish law , as detailed in Child First Policy, states that specific reports of child abuse and maltreatment must be reported to the Health Service Executive (HSE) Children and Family Services for further investigation. A "specific report" is when information is disclosed to a third party (e.g. a NETHATE researcher) that implicates or names a person that might have committed child abuse and/or maltreatment. If we receive such information, we are required to break our participant-researcher confidentiality agreement with you, and submit a report to Tusla - the Child and Family Agency. We would ask for your assistance to complete the report. Under these circumstances this report is a legal requirement and must be submitted regardless of your wishes.

The research team is responsible for data confidentiality, including storage and sharing of data collected during the course of research. We do not anticipate any breach of confidentiality, but it is possible to occur. This must be reported to the Ethics board, with additional requirements for reporting depending on content of the information breached. A data breach can occur from one of the following circumstances: lost or stolen equipment, unencrypted information sent outside of the organisation, unsecured protocols, information delivered to the wrong source. A breach of confidentiality should be reported promptly to address the breach and reduce the risk for participants. Should this occur, investigators will follow a procedure of contacting the Trinity College Dublin and Maynooth University research ethics office.

What is the lawful basis to use my personal data?
By law, we can use your personal information for scientific research (in the public interest). We will ask for your explicit consent to use your data as a requirement of the Irish Health Research Regulations.

What are my rights?
By law you can exercise the following rights in relation to your personal data, unless the request would make it impossible or very difficult to conduct the research. You can exercise these rights by contacting the lead researcher or postdoctoral researcher, or the Trinity College Data Protection Officer, Secretary's Office, Trinity College Dublin, Dublin 2, Ireland. Email: dataprotection@tcd.ie. Website: www.tcd.ie/privacy.

Part 3 – Costs, Funding and Approval

Has this study been approved by a research ethics committee?
Yes, this study has been approved by Trinity College Dublin and Maynooth University Research Ethics Committee. Approval was granted on [INSERT DATE ONCE OBTAINED].

Who is organising and funding this study? Will the results be used for commercial purposes?

Funding for this study comes from the Irish Research Council. The study is organised and conducted by Prof Richard Roche and his research team at Maynooth University, in collaboration with the research team at Trinity College Dublin.

We are not affiliated with or supported by any commercial enterprises and we are not paid or remunerated in any form for recruiting participants for this study.

Is there any payment for taking part? Will it cost me anything if I agree to take part?
No, we are not paying participants to take part in the study. However, you will be reimbursed for travel expenses and refreshments if you need.

Part 4 – Future Research

Will my personal data and/or biological material be used in future studies?
The anonymized data will be maintained by the Bokde and Roche Labs indefinitely for the purposes of audit and reinvestigation and be made available to other researchers on an open science platform.

Part 5 – Further Information

Who should I contact for information or complaints?
If you have any concerns or questions, you can contact:

Lead Researcher: Richard Roche
Richard.roche@mu.ie

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Under GDPR, if you are not satisfied with how your data is being processed, you have the right to lodge a complaint with the Office of the Data Protection Commission, 21 Fitzwilliam Square South, Dublin 2, Ireland. Website: www.dataprotection.ie.

Will I be contacted again?
We do not intend to contact you again, though you are welcome to reach out to us with any queries.

If you would like to take part in this study, you will be asked to sign the Consent Form on the next page. You will be given a copy of this information leaflet and the signed Consent Form to keep.

Appendix 6. Chapter 3 – Consent Form

Consent Form

STUDY NAME: Tailored Reminiscence Interventions for Ageing and Dementias in Community Settings **Centre ID:** **Identification Number for study:**

There are 2 sections in this form. Each section has a statement and asks you to initial if you agree. The end of this form is for the researchers to complete. ***Please ask <u>any</u> questions you may have when reading each of the statements.*** ***Thank you for participating.*** ***Please <u>Initial</u> the box if you agree with the statement. Please feel free to ask questions if there is something you do not understand.***	
General	***Tick box***
I confirm I have read and understood the **Information Leaflet** for the above study. The information has been fully explained to me and I have been able to ask questions, all of which have been answered to my satisfaction.	
*I understand that this study **is entirely voluntary, and if I decide that I do not want to take part, I can stop taking part in this study at any time without giving a reason**. I understand that deciding not to take part will not affect my future medical care.*	
I understand that I **will not be paid for taking part in this study**	
I know how to contact the research team if I need to.	
I agree to take part in this research study having been fully informed of the **risks, benefits and alternatives** which are set out in full in the information leaflet which I have been provided with.	
I understand that there are **no direct benefits to me** from participating in this study. I understand that **results from analysis of my personal information will not be given to me**.	
I understand that **I can stop taking part in this study** at any time without giving a reason and this will not affect my future medical care.	
Data processing	***Tick box***
I agree to provide **name and contact information** of my **GP**. I understand that my MRI scans will be read by **the radiographer at**	

TCIN, and the **radiologist** (a trained doctor at Tallaght Univ Hospital) and he/she will **inform my GP of any clinically relevant findings**. For this, my name, age, contact information and GP contact will be shared with the radiographer and radiologist. I understand however that this is **a scientific and not a medical investigation** and thus there is no guarantee that abnormalities will be detected.	
I consent to having **any potential other health-related issue** for which the investigators have significant evidence **forwarded to my GP** for follow up (and to another person if you provide consent) as described in the information leaflet. I understand however that this is a scientific and not a medical investigation and thus a full clinical examination is not being performed. There is no guarantee that any abnormality will be detected, and any that are, need to be fully investigated in the context of a clinical examination.	
I understand that personal information about me will be **protected** in accordance with **the General Data Protection Regulation**.	
I understand that confidentiality may be breached in circumstances in which: ● The research team has a strong belief or evidence exists that there is **a serious risk of harm or danger** to either the participant or another individual. This may relate to issues surrounding physical, emotional and/or sexual abuse, concerns for child protection, rape, self-harm, suicidal intent, or criminal activity. Disclosure is required as part of a legal process or **Garda investigation**. In such instances, information may be disclosed to significant others or appropriate third parties without permission being sought. Where possible, a full explanation will be given to the participant regarding the necessary procedures and the intended actions that may need to be taken.	

FUTURE USE OF INFORMATION		
RETENTION OF RESEARCH SAMPLES IN THE FUTURE [please choose one or more as you see fit]	**Y**	**N**
OPTION 1: I give permission for my personal information to be stored for *possible future research **related*** to the current study regarding well-being and cognition in older adults ***only if consent is obtained*** at the time of the future research and the research is approved by a Research Ethics Committee.		
OPTION 2: I give permission for my personal information to be stored for *possible future research **related*** to the current study		

regarding well-being and cognition in older adults ***without further consent*** being required but only if the research is approved by a Research Ethics Committee.		
OPTION 4: I understand **I will not be paid for any** future use of my personal information or products derived from it.		

Patient Name (Block Capitals) Patient Signature Date

--- ---

Witness Name (Block Capitals) Witness Signature Date

To be completed by the Principal Investigator or nominee.
I, the undersigned, have taken the time to fully explain to the above patient the nature and purpose of this study in a way that they could understand. I have explained the risks and possible benefits involved. I have invited them to ask questions on any aspect of the study that concerned them.

I have given a copy of the information leaflet and consent form to the participant with contacts of the study team

Prof Richard Roche
Professor, Department of Psychology, Maynooth University

2 copies to be made: 1 for patient, 1 for PI.

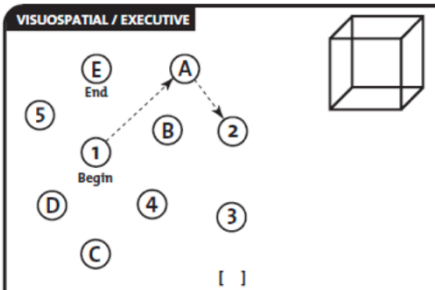
Appendix 7. The Montreal Cognitive Assessment (MoCA; Nasreddine, Phillips, Bédirian, Charbonneau, Whitehead, Collin, & Chertkow, 2005)

SAMPLE Montreal Cognitive Assessment (**MoCA**; Nasreddine, Phillips, Bédirian, Charbonneau, Whitehead, Collin, & Chertkow, 2005)

MONTREAL COGNITIVE ASSESSMENT (MOCA)

NAME :
Education :
Sex :
Date of birth :
DATE :

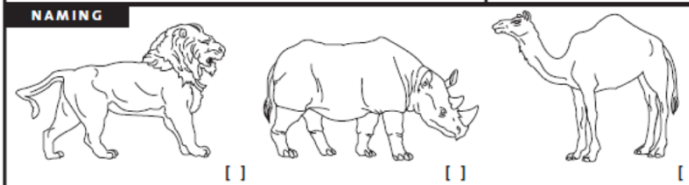
VISUOSPATIAL / EXECUTIVE — POINTS



Copy cube [ ] [ ]

Draw CLOCK (Ten past eleven) (3 points) [ ] Contour [ ] Numbers [ ] Hands __/5

NAMING __/3



[ ] [ ] [ ]

MEMORY Read list of words, subject must repeat them. Do 2 trials. Do a recall after 5 minutes. — No points

	FACE	VELVET	CHURCH	DAISY	RED
1st trial					
2nd trial					

ATTENTION Read list of digits (1 digit/ sec.). Subject has to repeat them in the forward order [ ] 2 1 8 5 4 — Subject has to repeat them in the backward order [ ] 7 4 2 __/2

Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors [ ] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B __/1

Serial 7 subtraction starting at 100 [ ] 93 [ ] 86 [ ] 79 [ ] 72 [ ] 65 — 4 or 5 correct subtractions: **3 pts**, 2 or 3 correct: **2 pts**, 1 correct: **1 pt**, 0 correct: **0 pt** __/3

LANGUAGE Repeat : I only know that John is the one to help today. [ ] — The cat always hid under the couch when dogs were in the room. [ ] __/2

Fluency / Name maximum number of words in one minute that begin with the letter F [ ] ____ (N ≥ 11 words) __/1

ABSTRACTION Similarity between e.g. banana - orange = fruit [ ] train – bicycle [ ] watch - ruler __/2

DELAYED RECALL

	Has to recall words WITH NO CUE	FACE [ ]	VELVET [ ]	CHURCH [ ]	DAISY [ ]	RED [ ]	Points for UNCUED recall only
Optional	Category cue						
	Multiple choice cue						

__/5

ORIENTATION [ ] Date [ ] Month [ ] Year [ ] Day [ ] Place [ ] City __/6

© Z. Nasreddine MD Version November 7, 2004
www.mocatest.org

Normal ≥ 26 / 30

TOTAL __/30
Add 1 point if ≤ 12 yr edu

Appendix 8. The Episodic Autobiographical Memory Interview (EAMI; Irish, Lawlor, O'Mara, & Coen, 2008, 2011a, 2011b)

Childhood years: age 0-15

1. ***Can you give the full names of three people from among your acquaintances during this period?***
   For example, the name of a friend, neighbour, doctor, priest, teacher or colleague? *If possible, try to restrict your answers to people you have only known during the period in question.*

	Response	Score
(i) Name of person Profession/Relationship		
(ii) Name of person Profession/Relationship		
(iii) Name of person Profession/Relationship		
	Total Score	

2. ***Can you give the name of the institution you studied/worked at, the location of the institution, and the nature of the study/work you did? How did you get there each day?*** *(In later epochs this may include hobbies/social clubs/activities.)*

	Response	Score
Name of institution		
Location		
Nature of study/work		
Travel to location		
	Total Score	

3. ***Can you recall an important date in this time period such as a birth, death, ceremony? Please give the event, the complete date (month and year) and the location.***

	Response	Score
What the event was:		*Do not score*
Date		
Month		
Year		
Location		

	Total Score	

Total Personal Semantic Score _____

Childhood years: age 0-15, Autobiographical Event Recall

"*I would like you to describe out loud and with as much detail as possible, an event that occurred during this time period that stands out for you*."
Description/Free Recall:

	Prompts	**Notes**	**Score**
1. Event Detail	What happened? Who was present? Their relationship to you? What was the weather like? What were you wearing? What food/music/transport? Was this a once-off event?		
2. Temporal Specificity	What year? What season? What month? What date? What day of the week? What time of day?		
3. Sensory/ Perceptual Detail	What can you picture/visualise now when you think about this event? What textures/physical sensations? What movements did you make? What sounds/smells/tastes? Is this memory vivid or vague?		

4. Spatial Specificity	Where did this event occur? What country/city/street? What building/floor/room? Where were you within that scene?		
5. Emotion	What did you feel at the time in terms of emotion?		
6. Implication	What happened beforehand? What happened afterwards?		
7. Thoughts	What were you thinking at the time?	**Total Score**	

Early adult: age 16-30

1. ***Can you give the full names of three people from among your acquaintances during this period?***
   For example, the name of a friend, neighbour, doctor, priest, teacher or colleague? *If possible, try to restrict your answers to people you have only known during the period in question.*

	Response	**Score**
(i) Name of person Profession/Relationship		
(ii) Name of person Profession/Relationship		
(iii) Name of person Profession/Relationship	**Total Score**	

2. ***Can you give the name of the institution you studied/worked at, the location of the institution, and the nature of the study/work you did? How did you get there each day?*** *(In later epochs this may include hobbies/social clubs/activities.)*

	Response	**Score**
Name of institution		
Location		
Nature of study/work		
Travel to location	**Total Score**	

3. ***Can you recall an important date in this time period such as a birth, death, ceremony? Please give the event, the complete date (month and year) and the location.***

	Response	Score
What the event was:		*Do not score*
Date		
Month		
Year		
Location		
	Total Score	

Total Personal Semantic Score _____

<u>Early adult: age 16-30, Autobiographical Event Recall</u>

"*I would like you to describe out loud and with as much detail as possible, an event that occurred during this time period that stands out for you*."
Description/Free Recall:

	Prompts	**Notes**	**Score**
1. Event Detail	What happened? Who was present? Their relationship to you? What was the weather like? What were you wearing? What food/music/transport? Was this a once-off event?		
2. Temporal Specificity	What year? What season? What month? What date?		

	What day of the week? What time of day?		
3. Sensory/ Perceptual Detail	What can you picture/visualise now when you think about this event? What textures/physical sensations? What movements did you make? What sounds/smells/tastes? Is this memory vivid or vague?		
4. Spatial Specificity	Where did this event occur? What country/city/street? What building/floor/room? Where were you within that scene?		
5. Emotion	What did you feel at the time in terms of emotion?		
6. Implication	What happened beforehand? What happened afterwards?		
7. Thoughts	What were you thinking at the time?	**Total Score**	

Middle adult: age 31-45

1. ***Can you give the full names of three people from among your acquaintances during this period?***
   For example, the name of a friend, neighbour, doctor, priest, teacher or colleague? *If possible, try to restrict your answers to people you have only known during the period in question.*

	Response	**Score**
(i) Name of person Profession/Relationship		
(ii) Name of person Profession/Relationship		
(iii) Name of person		

Profession/Relationship	**Total Score**	

2. ***Can you give the name of the institution you studied/worked at, the location of the institution, and the nature of the study/work you did? How did you get there each day?*** *(In later epochs this may include hobbies/social clubs/activities.)*

	Response	**Score**
Name of institution		
Location		
Nature of study/work		
Travel to location		
	Total Score	

3. ***Can you recall an important date in this time period such as a birth, death, ceremony? Please give the event, the complete date (month and year) and the location.***

	Response	**Score**
What the event was:		*Do not score*
Date		
Month		
Year		
Location		
	Total Score	

Total Personal Semantic Score _____

<u>Middle adult: age 31-45, Autobiographical Event Recall</u>

"*I would like you to describe out loud and with as much detail as possible, an event that occurred during this time period that stands out for you*."
Description/Free Recall:

	Prompts	Notes	Score
1. Event Detail	What happened? Who was present? Their relationship to you? What was the weather like? What were you wearing? What food/music/transport? Was this a once-off event?		
2. Temporal Specificity	What year? What season? What month? What date? What day of the week? What time of day?		
3. Sensory/ Perceptual Detail	What can you picture/visualise now when you think about this event? What textures/physical sensations? What movements did you make? What sounds/smells/tastes? Is this memory vivid or vague?		
4. Spatial Specificity	Where did this event occur? What country/city/street? What building/floor/room? Where were you within that scene?		
5. Emotion	What did you feel at the time in terms of emotion?		
6. Implication	What happened beforehand? What happened afterwards?		
7. Thoughts	What were you thinking at the time?		
		Total Score	

Later adult: age 46 until the year 2016

1. ***Can you give the full names of three people from among your acquaintances during this period?***
   For example, the name of a friend, neighbour, doctor, priest, teacher or colleague? *If possible, try to restrict your answers to people you have only known during the period in question.*

	Response	**Score**
(i) Name of person Profession/Relationship		
(ii) Name of person Profession/Relationship		
(iii) Name of person Profession/Relationship		
	Total Score	

2. ***Can you give the name of the institution you studied/worked at, the location of the institution, and the nature of the study/work you did? How did you get there each day?*** *(In later epochs this may include hobbies/social clubs/activities.)*

	Response	**Score**
Name of institution		
Location		
Nature of study/work		
Travel to location		
	Total Score	

3. ***Can you recall an important date in this time period such as a birth, death, ceremony? Please give the event, the complete date (month and year) and the location.***

	Response	**Score**
What the event was:		*Do not score*
Date		
Month		
Year		
Location		
	Total Score	

Total Personal Semantic Score _____

<u>Later adult: age 46 until the year 2016, Autobiographical Event Recall</u>

"*I would like you to describe out loud and with as much detail as possible, an event that occurred during this time period that stands out for you*."

Description/Free Recall:

	Prompts	**Notes**	**Score**
1. Event Detail	What happened? Who was present? Their relationship to you? What was the weather like? What were you wearing? What food/music/transport? Was this a once-off event?		
2. Temporal Specificity	What year? What season? What month? What date? What day of the week? What time of day?		
3. Sensory/ Perceptual Detail	What can you picture/visualise now when you think about this event? What textures/physical sensations? What movements did you make? What sounds/smells/tastes? Is this memory vivid or vague?		
4. Spatial Specificity	Where did this event occur? What country/city/street? What building/floor/room? Where were you within that scene?		

5. Emotion	What did you feel at the time in terms of emotion?		
6. Implication	What happened beforehand? What happened afterwards?		
7. Thoughts	What were you thinking at the time?		
		Total Score	

Recent years, since the year 2017

1. ***Can you give the full names of three people from among your acquaintances during this period?***
   For example, the name of a friend, neighbour, doctor, priest, teacher or colleague? *If possible, try to restrict your answers to people you have only known during the period in question.*

	Response	**Score**
(i) Name of person Profession/Relationship		
(ii) Name of person Profession/Relationship		
(iii) Name of person Profession/Relationship		
	Total Score	

2. ***Can you give the name of the institution you studied/worked at, the location of the institution, and the nature of the study/work you did? How did you get there each day?*** *(In later epochs this may include hobbies/social clubs/activities.)*

	Response	**Score**
Name of institution		
Location		
Nature of study/work		
Travel to location		
	Total Score	

3. ***Can you recall an important date in this time period such as a birth, death, ceremony? Please give the event, the complete date (month and year) and the location.***

	Response	**Score**

What the event was:		*Do not score*
Date		
Month		
Year		
Location		
	Total Score	

Total Personal Semantic Score _____

<u>Recent years, since the year 2017, Autobiographical Event Recall</u>

"*I would like you to describe out loud and with as much detail as possible, an event that occurred during this time period that stands out for you*."
Description/Free Recall:

	Prompts	**Notes**	**Score**
1. Event Detail	What happened? Who was present? Their relationship to you? What was the weather like? What were you wearing? What food/music/transport? Was this a once-off event?		
2. Temporal Specificity	What year? What season? What month? What date? What day of the week? What time of day?		
3. Sensory/ Perceptual Detail	What can you picture/visualise now when you think about this event?		

	What textures/physical sensations? What movements did you make? What sounds/smells/tastes? Is this memory vivid or vague?		
4. Spatial Specificity	Where did this event occur? What country/city/street? What building/floor/room? Where were you within that scene?		
5. Emotion	What did you feel at the time in terms of emotion?		
6. Implication	What happened beforehand? What happened afterwards?		
7. Thoughts	What were you thinking at the time?		
		Total Score	

Appendix 9. Control, Autonomy, Self-Realisation And Pleasure Quality Of Life Questionnaire (CASP-19)

Here is a list of statements that people have used to describe their lives or how they feel. We would like to know how often, if at all, you think this applies to you.

		Often	Sometimes	Not Often	Never
1	My age prevents me from doing the things I would like to do				
2	I feel that what happens to me is out of my control				
3	I feel free to plan for the future				
4	I feel left out of things				
5	I can do the things I want to do				
6	Family responsibilities prevent me from doing what I want to do				
7	I feel that I can please myself with what I do				
8	My health stops me from doing the things I want to do				
9	Shortage of money stops me from doing the things I want to do				
10	I look forward to each day				
11	I feel that my life has meaning				
12	I enjoy the things that I do				
13	I enjoy being in the company of others				
14	On balance, I look back on my life with a sense of happiness				
15	I feel full of energy these days				
16	I choose to do things that I have never done before				

17	I feel satisfied with the way my life has turned out				
18	I feel that life is full of opportunities				
19	I feel that the future looks good for me				

Appendix 10. The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin 1985)

Here is a list of statements that people have used to describe their lives or how they feel. We would like to know how much you agree with each statement in relation to yourself.

Statement	Strongly Disagree	Disagree	Slightly Disagree	Neither agree or disagree	Slightly agree	Agree	Strongly agree
In most ways my life is close to my ideal.							
The conditions of my life are excellent.							
I am satisfied with my life.							
So far I have gotten the important things I want in life.							
If I could live my life over, I would change almost nothing.							

Appendix 11. The Geriatric Depression Scale (GDS; specifically the GDS-15; Sheikh & Yesavage, 1986)

Circle the best answer that for how you felt over the past week.

Question	Answer
Are you basically satisfied with your life?	Yes/No
Have you dropped many of your activities and interests?	Yes/No
Do you feel that your life is empty?	Yes/No
Do you often get bored?	Yes/No
Are you in good spirits most of the time?	Yes/No
Are you afraid that something bad is going to happen to you?	Yes/No
Do you feel happy most of the time?	Yes/No
Do you often feel helpless?	Yes/No
Do you prefer to stay at home, rather than going out and doing new things?	Yes/No
Do you feel you have more problems with memory than most people?	Yes/No
Do you think it is wonderful to be alive?	Yes/No
Do you feel pretty worthless the way you are now?	Yes/No
Do you feel full of energy?	Yes/No
Do you feel that your situation is hopeless?	Yes/No
Do you think that most people are better off than you are?	Yes/No

Appendix 12. The Holden Communication Scale (HCS; Holden & Woods, 1995)

The Holden Communication Scale (HCS)

The Holden communication scale (HCS) has been developed by Una Holden and includes 12 items. The score range from 0-48 and the higher score the more difficulties. Choose only **ONE** answer. The HCS was psychometric tested in 2016 (Strøm, Engedal, Saltyte Benth, & Grov, 2016).

Holden		**Score**
Conversation		
1.Response	0. Initiates conversation deeply involved with anyone	
	1.Good for those familiar to person	
	2.Fair response to those close by; no initiation of conversation	
	3.Rather confused; poor comprehension	
	4.Rarely or never converse	
2.Interest in past events	0.Long, full account of past events	
	1.Fairly good description	
	2.Short description; a little confused	
	3.Confused or disinterested	
	4.No response	
3.Pleasure	0.Shows real pleasure in situation /achievement	
	1.Smiles and shows interest	
	2.Variable response; slight smile; vague	
	3.Rarely shows even a smile	
	4.No response of just weeps	
4.Humour	0.Creates situation or tells funny story on own initiative	
	1.Enjoys comic situations or stories	
	2.Needs an explanation and encouragement to respond	
	3.Vague smile; simply copies others	
	4.No response or negativistic	
Awareness and knowledge		
5.Names	0.Knows most people's names on ward	
	1.Knows a few names	
	2.Needs a constant reminder	
	3.Knows own name only	
	4.Forgotten even own name	
6.General orientation	0.Knows day, month, weather and whereabouts	
	1.Can forget one or two items	
	2.Usually gets two right but tries	
	3.Vague; may guess one	
	4.Very confused	
7.General knowledge	0.Good om current events; generally able	
	1.Outstanding events only; fair on general knowledge	

Appendix 13. Chapter 4 – Information Sheet

Information Sheet

Purpose of the Study
Hello, I am Richard Roche, an associate professor in the Department of Psychology at Maynooth University. I am undertaking a study as part of my research funded by *the Irish Research Council.*

The study is concerned with improving quality of life for people living with dementia. We are using a technique called Reminiscence Therapy, where you think back on memories throughout your life and share them verbally with others. It may also help us understand how our minds work to recall memories.

What will the study involve?
First, we will meet to discuss the study and, if you are interested, you will provide consent to participate. We will be meeting at places in and around Maynooth town like on campus, at the Glenroyal hotel, and community rooms.

After this, you will complete five surveys and questionnaires about things like your mood, your life history, and your daily living (approximately 90 minutes total). Some of these questions will require responding to questions on paper, and some will require talking one on one with a researcher.

Then, we will meet in small groups and talk about the history of Maynooth (approximately 60 minutes each session). The group of three- to five peers that you meet with will remain the same each week as will the group facilitator. These groups will be lead by a trained researcher who will use prompts to guide your discussion about your memories of Maynooth town.

You are invited to bring a family member/spouse/carer to and from the sessions, and they can stay during the meetings/walks as well. The family members/spouses/carer will not have any tasks to carry out during this project, but they are welcome to attend for your comfort.

We will show you places throughout the town that you may be familiar with. If you have memories about these places, you are encouraged to share them with the group. Some of you will be walking to see these places in person, and some will be looking at images of these places. You will meet with your group weekly, and then complete five surveys and questionnaires again.

Who has approved this study? This study has been reviewed and received ethical approval from Maynooth University Research Ethics committee and is supported by the Alzheimer's Society of Ireland. You may have a copy of this approval if you request it.

Why have you been asked to take part? You have been asked because you are an older person who has lived in Maynooth for some time. As a person living with early-stage of Alzheimer's, we are especially interested in capturing your recollections.

Do you have to take part?
No, you are under no obligation whatsoever to take part in this research. However, we hope that you will agree to take part and give us some of your time to complete some surveys and meet with the group. It is entirely up to you to decide whether or not you would like to take part. If you decide to do so, you will be asked to sign a consent form and given a copy and the information sheet for your own records. If you decide to take part, you are still free to withdraw at any time without giving a reason and/or to withdraw your information up until such time as the research findings are analysed on 15th June. A decision to withdraw at any time, or a decision not to take part, will not affect your relationships with Alzheimer's Society of Ireland, Maynooth University, or any member of the research team.

What information will be collected?
We will ask to collect your answers to the questionnaires. We will also audio record the small group sessions so that we can listen to the conversation again.

Will your participation in the study be kept confidential? Yes, all data that is collected about you during the course of the research will be kept confidential. No names will be identified at any time, and any identifying information that is audio recorded will be removed.All hard copy information will be held in a locked cabinet at the researchers' place of work, electronic information will be encrypted and held securely on MU PC or servers and will be accessed only by Dr Richard Roche (Associate Professor at Maynooth University), Dr Ronan Foley (Associate Professor at Maynooth), Dr Sean Commins (Professor at Maynooth), Dr Cassandra Dinius (postdoctoral researcher at Maynooth) and Carmen Pocknell (research assistant at Maynooth). No information will be distributed to any other unauthorised individual or third party. If you so wish, the data that you provide can also be made available to you at your own discretion.

The information shared in these sessions is private and confidential. We encourage all participants to respect these guidelines and to not share or disclose any personal or sensitive information that is discussed during these sessions with outside parties.

'It must be recognised that, in some circumstances, confidentiality of research data and records may be overridden by courts in the event of litigation or in the course of investigation by lawful authority. In such circumstances the University will take all reasonable steps within law to ensure that confidentiality is maintained to the greatest possible extent.'

What will happen to the information which you give? All the information you provide will be kept at Maynooth University in such a way that it will not be possible to identify you. On completion of the research, the data will be retained on the MU server. After ten

years, all data will be destroyed (by the primary investigator, Dr Richard Roche of the Psychology Department of Maynooth University). Manual data will be shredded confidentially and electronic data will be reformatted or overwritten by Richard Roche in Maynooth University.

What will happen to the results? The research will be written up and presented as a summary report and presented at conferences. Some of this information may also be published in scientific journals. A copy of the research findings will be made available to you upon request.

What are the possible disadvantages of taking part?
Reminiscence Therapy is generally accepted as safe. There is the risk of unearthing traumatic, distressing, or painful memories from the past. Our main goal is to focus on your positive memories in the Maynooth community. Some of you may not feel comfortable sharing memories in a group environment. All group engagement is voluntary and no one is called on or asked for their specific memories. You choose to socialize at your own comfort level.

Some of you will be navigating paths throughout the area of Maynooth town. There is the possibility of falls or injury. To minimize this risk, we have completed walkability assessments and will set an easy pace. Folding chairs will be provided if you need to rest.

All facilitators are trained and garda vetted to work with older adults and people with memory disorders. We strive to keep sessions short, positive, and to allow breaks when necessary. The information we gather from you is not clinical in nature and is not used to diagnose you in any way. This study is designed only to better understand how to improve quality of life for people with early-stage Alzheimer's.

What is being done to keep me safe from Covid?
As with all social interaction and public environments, there is a risk of Covid exposure. To mitigate this, government advised Covid protocol will be monitored and implemented if guidelines change. All facilitators are vaccinated and boosted and masks will be worn when social distancing cannot be maintained. We advise that if you have any signs or symptoms of illness to stay home. Staying home due to illness will not compromise the integrity of the project. We advise you to participate at your own comfort level.

What if there is a problem?
At the end of the six weeks (two for surveys, four for recalling memories), I will discuss with you how you found the experience and how you are feeling. If you experience any distress you may contact the following support organizations:

Pieta:
www.pieta.ie
Tel: 1800 247 247 (24-Hour Helpline)
Tel: 0818 111 126 (for an appointment)

Irish Advocacy Network:
www.peeradvocacyinmentalhealth.com
Tel: 1800 700 700 (in emergency)
Tel: 01 547 0510 (for an appointment)

Alzheimer's Society of Ireland:
alzheimer.ie
Tel: 1800 341 341 (National Helpline)

If you agree to take part in the study, please complete and sign the consent form overleaf.

Thank you for taking the time to read this

Any further queries?
If you need any further information, you can contact:

Lead Researcher: Richard Roche
087 398 5702
Richard.roche@mu.ie

Postdoctoral Researcher: Cassandra Dinius
087 398 5702
Cassandra.Dinius@mu.ie

Appendix 14. Chapter 4 – Consent Form

Consent Form

I, _____ _____, agree to participate in Richard Roche's research study titled Age-Inclusive Maynooth, Walk and Recall Memories.

Please tick each statement below:

- ☐ The purpose and nature of the study has been explained to me verbally & in writing. I'vebeen able to ask questions, which were answered satisfactorily.
- ☐ I am participating voluntarily.
- ☐ I give permission for my participation to be audio-recorded.
- ☐ I understand that I can withdraw from the study, without repercussions, at any time, whether that is before it starts or while I am participating.
- ☐ I understand that I can withdraw permission to use the data right up to the 15th of June, 2022, when the data is analyzed.
- ☐ It has been explained to me how my data will be managed and that I may access it on request.
- ☐ I understand the limits of confidentiality as described in the information sheet.
- ☐ I understand that my data, in an anonymous format, may be used in further research projects and any subsequent publications if I give permission below.
  Check one:
  - ☐ I do not agree for my data to be used for further research projects and subsequent publications.
  - ☐ I agree for my data to be used for further research projects and subsequent publications.

Signed: _____ Date:_____/_____/_____

Participant name in block capitals: _____

Participant name in block capitals: _____

I the undersigned have taken the time to fully explain to the above participant the nature and purpose of this study in a manner that they could understand. I have explained the risks involved as well as the possible benefits. I have invited them to ask questions on any aspect of the study that concerned them.

Signed: _____ Date:_____/_____/_____

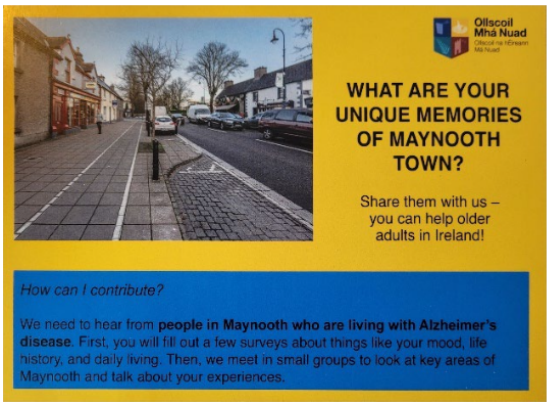
Researcher name in block capitals: _____

If during your participation in this study you feel the information and guidelines that you were given have been neglected or disregarded in any way, or if you are unhappy about the process, please contact the Secretary of the Maynooth University Ethics Committee at research.ethics@mu.ie or +353 (0)1 708 6019. Please be assured that your concerns will be dealt with in a sensitive manner.

For your information the Data Controller for this research project is Maynooth University, Maynooth, Co. Kildare. Maynooth University Data Protection officer is Ann McKeon in Humanity house, room 17, who can be contacted at ann.mckeon@mu.ie. Maynooth University Data Privacy policies can be found at https://www.maynoothuniversity.ie/data-protection.

Two copies to be made: 1 for participant, 1 for PI

Appendix 15. Chapter 4 – Flyer for Recruitment



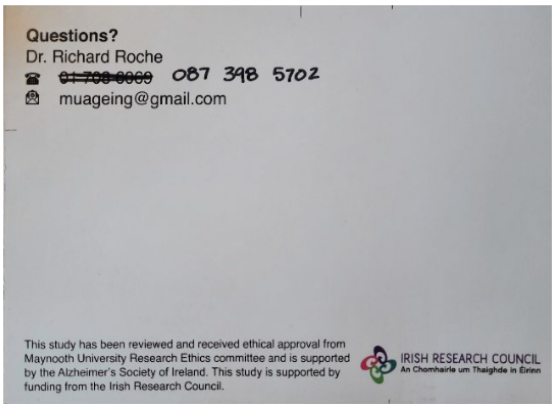
Ollscoil Mhá Nuad

WHAT ARE YOUR UNIQUE MEMORIES OF MAYNOOTH TOWN?

Share them with us – you can help older adults in Ireland!

How can I contribute?

We need to hear from **people in Maynooth who are living with Alzheimer's disease**. First, you will fill out a few surveys about things like your mood, life history, and daily living. Then, we meet in small groups to look at key areas of Maynooth and talk about your experiences.



Questions?

Dr. Richard Roche

~~01 708 6000~~ 087 398 5702

muageing@gmail.com

This study has been reviewed and received ethical approval from Maynooth University Research Ethics committee and is supported by the Alzheimer's Society of Ireland. This study is supported by funding from the Irish Research Council.

IRISH RESEARCH COUNCIL
An Chomhairle um Thaighde in Éirinn

Ollscoil Mhá Nuad
Ollscoil na hÉireann Má Nuad

WHAT ARE YOUR UNIQUE MEMORIES OF MAYNOOTH TOWN?

Share them with us – you can help older adults in Ireland!

We are looking for active adults living with early-stage Alzheimer's who would enjoy short walks around Maynooth town!

We are interested in hearing from older people (65 and older) as they remember local places like the canal and also personal life events such as the first time they visited the train station. Some of the groups will be walking throughout Maynooth town to share memories as they see historical sites in-person.

This is a short, four-week project. Everyone who participates will receive a certificate of recognition, logo-branded hi-vis vest, and (hopefully!) a small group of local friends.

This study has been reviewed and received ethical approval from Maynooth University Research Ethics committee and is supported by the Alzheimer's Society of Ireland. This study is supported by funding from the Irish Research Council.

IRISH RESEARCH COUNCIL
An Chomhairle um Thaighde in Éirinn

Appendix 16. Ethical Approval Letter – Chapter 4: AIM-WARM Study

MAYNOOTH UNIVERSITY RESEARCH ETHICS COMMITTEE
MAYNOOTH UNIVERSITY,
MAYNOOTH, CO. KILDARE, IRELAND

Maynooth University
National University of Ireland Maynooth

Dr Carol Barrett
Secretary to Maynooth University Research Ethics Committee

17 May 2022

Dr Richard Roche
Department of Psychology
Maynooth University

Dear Richard,

The Social Research Ethics Sub-committee has reviewed the ethical protocol for your project: **Age-Friendly Maynooth: Walk and Recall Memories (AIMWARM)** and we would like to inform you that ethical approval has been granted.

Any deviations from the project details submitted to the ethics committee will require further evaluation. This ethical approval will expire on 31/05/2023.

Kind Regards,

Dr Carol Barrett
Secretary,
Maynooth University Research Ethics Committee

Reference Number
SRESC-2022-2472536

Appendix 17. Chapter 5 – Information Sheet Community-Dwelling Older Adults

Community-Dwelling Older Adults
INFORMATION AND CONSENT FORM FOR RESEARCH PARTICIPANTS
Information Sheet

Purpose of the Study
Hello, I am Richard Roche, an associate professor in the Department of Psychology at Maynooth University. I am undertaking a study as part of my research funded by *the Irish Research Council.*

The study is concerned with improving quality of life for older people. We are using a technique called Reminiscence Therapy, where you think back on memories throughout your life and share them verbally with others. It may also help us understand how our minds work to recall memories.

What will the study involve?
You will read this Information Sheet and then meet with us to ask any questions you may have. First, we will meet to discuss the study and, if you are interested, you will provide consent to participate. We will be meeting at places in and around Maynooth town like on Maynooth University campus, at the Glenroyal hotel, and community rooms. If you provide consent to participate, please know that audio from the reminiscence portion of the programme will be captured on a handheld recorder.

After this, you will complete five surveys and questionnaires about things like your mood, your life history, and your daily living (approximately 90 minutes total). Some of these questions will require responding to questions on paper, and some will require talking one on one with a researcher.

Then, we will meet in groups of 10-15 people to talk about our memories and participate in an activity (either T'ai Chi or meditation). T'ai chi is an art used for health benefits that consists of sequences of very slow controlled movements. Tai chi's health training concentrates on relieving stress on the body and mind. Meditation involves focusing on your breath and returning to that object whenever you get distracted or notice your mind starting to wander.

The group of peers that you meet with will remain the same each week as will the group facilitator. These groups will be led by a trained researcher who will use prompts to guide your discussion about your memories and your practice of the exercise.

The proposed schedule of the weekly sessions includes:

- 15-minute settling-in, welcome, and catch-up period

- 30 minutes of the activity
- 15-minute comfort break
- 30 minutes of group reminiscence

We will show you some events that you may be familiar with. If you have memories about these events, you are encouraged to share them with the group. You will meet with your group weekly for six weeks, and then complete five surveys and questionnaires again.

Who has approved this study? This study has been reviewed and received ethical approval from Maynooth University Research Ethics. You may have a copy of this approval if you request it.

Why have you been asked to take part? You have been asked because you are an older person who has shown interest in these activities. We are especially interested in capturing your recollections.

To be included in the study, we ask that you:

- Are age 65+
- Are a native-English speaker
- Have no current experience of depression or anxiety
- Consent to participate
- No history of cognitive disorders diagnosis

You would not be a good fit for this study if you have:

- Severe visual impairments
- Motor or mobility impairments
- History of movement disorder
- History of falls
- Feeling confused about your location or frequently becoming lost

Do you have to take part?

No, you are under no obligation whatsoever to take part in this research. However, we hope that you will agree to take part and give us some of your time to complete some surveys and meet with the group. It is entirely up to you to decide whether or not you would like to take part. If you decide to do so, you will be asked to sign a consent form and given a copy and the information sheet for your own records. If you decide to take part, you are still free to withdraw at any time without giving a reason and/or to withdraw your information up until such time as the research findings are analysed on 15th May, 2023. A decision to withdraw at any time, or a decision not to take part, will not affect your relationships Maynooth University or any member of the research team.

What information will be collected?

We will ask to collect your answers to the questionnaires. If you provide consent to participate, please know that audio from the reminiscence portion of the programme will

be captured on a handheld recorder. After removing any identifying or sensitive information from these audio sessions, audio files will be archived with the Irish Qualitative Data Archive (IQDA) via the Digital Repository of Ireland (DRI), which has obtained the Digital Seal of Approval certifying it as a Trusted Digital Repository. You will be issued a login and password allowing you access to audio files in the archive. Via the DRI, you can either download audio files to your own computers/PCs, or the audio files can be played online. If you do not have access to your own computer, we encourage you to use the computers in public libraries.

You will not receive any individualised results, including tests or assessments, from the study.

Will your participation in the study be kept confidential? Yes, all data that is collected about you during the course of the research will be kept confidential. No names will be identified at any time, and any identifying information that is audio recorded will be removed.All hard copy information will be held in a locked cabinet at the researchers' place of work, electronic information will be encrypted and held securely on MU PC or servers and will be accessed only by Dr Richard Roche (Associate Professor at Maynooth University), Dr Cassandra Dinius (postdoctoral researcher at Maynooth), Dr Michelle Caffrey (research assistant at Maynooth) Carmen Pocknell (research assistant at Maynooth).. If you so wish, the data that you provide can also be made available to you at your own discretion. The facilitators of the activities will not have access to your raw data and they are aware of the need for confidentiality during the sessions they facilitate.

The information shared in these sessions is private and confidential. We encourage all participants to respect these guidelines and to not share or disclose any personal or sensitive information that is discussed during these sessions with outside parties.

'It must be recognised that, in some circumstances, confidentiality of research data and records may be overridden by courts in the event of litigation or in the course of investigation by lawful authority. In such circumstances the University will take all reasonable steps within law to ensure that confidentiality is maintained to the greatest possible extent.'

What will happen to the information which you give? All the information you provide will be kept at Maynooth University in such a way that it will not be possible to identify you. On completion of the research, the data will be retained on the MU server. After ten years, all data will be destroyed (by the primary investigator, Dr Richard Roche of the Psychology Department of Maynooth University). Manual data will be shredded confidentially and electronic data will be reformatted or overwritten by Richard Roche in Maynooth University.

As we are interested in your recollections of life memories, it is possible that cultural, ethnic, medical and personal memories may come up in the course of our reminiscence sessions. You are not obligated to share any details if you are not comfortable to do so,

and it will not affect your participation. Any identifying or sensitive information will be removed to render it anonymous. This information is being collected for preservation via a digital repository and for content analysis. You are invited to listen back to the memories and discussions before they are uploaded to the digital archive. At your request, any information you deem sensitive will be removed.

Should you indicate consent on your consent form, your data may also be used in future research projects. For example, we may want to analyse the content of our reminiscence sessions for content or themes.

What will happen to the results? The research will be written up and presented as a summary report and presented at conferences. Some of this information may also be published in scientific journals. Results may also be shared to inform future community programmes and via both academic (e.g., conference posters, event presentations, academic journal manuscripts) and non-academic (e.g., community talks, newsletters, blogs) outlets. A copy of the de-identified, aggregated research findings will be made available to you upon request.

What are the possible disadvantages of taking part?
Reminiscence Therapy is generally accepted as safe. There is the risk of unearthing traumatic, distressing, or painful memories from the past. Our main goal is to focus on your positive memories. Some of you may not feel comfortable sharing memories in a group environment. All group engagement is voluntary and no one is called on or asked for their specific memories. You choose to socialize at your own comfort level.

There is the possibility of falls or injury. To minimize this risk, we have hired certified professionals and completed assessments of the meeting space. Folding chairs will be provided if you need to rest.

All facilitators are trained and garda vetted to work with older adults and people with dementia. We strive to keep sessions short and positive, and to allow breaks when necessary. The information we gather from you is not clinical in nature and is not used to diagnose you in any way. This study is designed only to better understand how to improve quality of life for older people.

Please be assured that the reminiscence activities engaged in for this project do not constitute diagnostic tests, and poor performance or inability to recall events or details does not indicate a memory impairment or problem. You are advised that, if you have concerns over your memory, you should contact your GP in relation to these worries.

What is being done to keep me safe from Covid?
As with all social interaction and public environments, there is a risk of Covid exposure. To mitigate this, government advised Covid protocol will be monitored and implemented if guidelines change. All facilitators are vaccinated and boosted and masks will be worn when social distancing cannot be maintained. We advise that if you have any signs or

symptoms of illness to stay home. Staying home due to illness will not compromise the integrity of the project. We advise you to participate at your own comfort level.

What if there is a problem?
At the end of the eight weeks (two for surveys, six for activities), I will discuss with you how you found the experience and how you are feeling. If you experience any distress you may contact the following support organizations:

Pieta:
www.pieta.ie
Tel: 1800 247 247 (24-Hour Helpline)
Tel: 0818 111 126 (for an appointment)

Irish Advocacy Network:
www.peeradvocacyinmentalhealth.com
Tel: 1800 700 700 (in emergency)
Tel: 01 547 0510 (for an appointment)

Age Action:
https://www.ageaction.ie/
Tel: 01 475 6989
Email: info@ageaction.ie

If you agree to take part in the study, please complete and sign the consent form overleaf.

Thank you for taking the time to read this

Any further queries?
If you need any further information, you can contact:

Lead Researcher: Richard Roche
087 398 5702
Richard.roche@mu.ie

Postdoctoral Researcher: Cassandra Dinius
087 398 5702
Cassandra.Dinius@mu.ie

Appendix 18. Chapter 5 – Consent Form for People Living with Dementia

Information Sheet

Purpose of the Study

Hello, I am Richard Roche, an associate professor in the Department of Psychology at Maynooth University. I am undertaking a study as part of my research funded by *the Irish Research Council.*

The study is concerned with improving quality of life for people living with dementia. We are using a technique called Reminiscence Therapy, where you think back on memories throughout your life and share them verbally with others. It may also help us understand how our minds work to recall memories.

What will the study involve?

You will read this Information Sheet and then meet with us to ask any questions you may have.First, we will meet to discuss the study and, if you are interested, you will provide consent to participate. We will be meeting at places in and around Maynooth town like on Maynooth University campus, at the Glenroyal hotel, and community rooms. If you provide consent to participate, please know that audio from the reminiscence portion of the programme will be captured on a handheld recorder.

After this, you will complete five surveys and questionnaires about things like your mood, your life history, and your daily living (approximately 90 minutes total). Some of these questions will require responding to questions on paper, and some will require talking one on one with a researcher.

Then, we will meet in groups of 5-10 people to talk about our memories and participate in an activity (either walking or listening to music). The group of peers that you meet with will remain the same each week as will the group facilitator. These groups will be led by a trained researcher who will use prompts to guide your discussion about your memories and your practice of the exercise.

The proposed schedule of the weekly sessions includes:

- 15-minute settling-in, welcome, and catch-up period
- 30 minutes of the activity
- 15-minute comfort break
- 30 minutes of group reminiscence

You are invited to bring a family member/spouse/carer to and from the sessions, and they can stay during the meetings/walks as well. The family members/spouses/carer will not

have any tasks to carry out during this project, but they are welcome to attend for your comfort.

We will show you some events that you may be familiar with. If you have memories about these events, you are encouraged to share them with the group. You will meet with your group weekly for six weeks, and then complete five surveys and questionnaires again.

Who has approved this study? This study has been reviewed and received ethical approval from Maynooth University Research Ethics committee and is supported by the Alzheimer's Society of Ireland. You may have a copy of this approval if you request it.

Why have you been asked to take part? You have been asked because you are an older person who has shown interest in these activities. As a person living with early-stage dementia, we are especially interested in capturing your recollections.

To be included in the study, we ask that you:

- Are age 65+
- Are a native-English speaker
- Have no current experience of depression or anxiety
- Consent to participate
- Have a diagnosis of early-stage dementia

You would not be a good fit for this study if you have:

- Severe visual impairments
- Motor or mobility impairments
- History of movement disorder
- History of falls
- Diagnosis of moderate- to late- stage dementia
- Feeling confused about your location or frequently becoming lost

Do you have to take part?

No, you are under no obligation whatsoever to take part in this research. However, we hope that you will agree to take part and give us some of your time to complete some surveys and meet with the group. It is entirely up to you to decide whether or not you would like to take part. If you decide to do so, you will be asked to sign a consent form and given a copy and the information sheet for your own records. If you decide to take part, you are still free to withdraw at any time without giving a reason and/or to withdraw your information up until such time as the research findings are analysed on 15th May, 2023. A decision to withdraw at any time, or a decision not to take part, will not affect your relationships with Alzheimer's Society of Ireland, Maynooth University, or any member of the research team.

What information will be collected?

We will ask to collect your answers to the questionnaires. If you provide consent to participate, please know that audio from the reminiscence portion of the programme will

be captured on a handheld recorder. After removing any identifying or sensitive information from these audio sessions, audio files will be archived with the Irish Qualitative Data Archive (IQDA) via the Digital Repository of Ireland (DRI), which has obtained the Digital Seal of Approval certifying it as a Trusted Digital Repository. You will be issued a login and password allowing you access to audio files in the archive. Via the DRI, you can either download audio files to your own computers/PCs, or the audio files can be played online. If you do not have access to your own computer, we encourage you to use the computers in public libraries.

You will not receive any individualised results, including tests or assessments, from the study.

Will your participation in the study be kept confidential? Yes, all data that is collected about you during the course of the research will be kept confidential. No names will be identified at any time, and any identifying information that is audio recorded will be removed.All hard copy information will be held in a locked cabinet at the researchers' place of work, electronic information will be encrypted and held securely on MU PC or servers and will be accessed only by Dr Richard Roche (Associate Professor at Maynooth University), Dr Cassandra Dinius (postdoctoral researcher at Maynooth), Dr Michelle Caffrey (research assistant at Maynooth) Carmen Pocknell (research assistant at Maynooth). If you so wish, the data that you provide can also be made available to you at your own discretion. The facilitators of the activities will not have access to your raw data and they are aware of the need for confidentiality during the sessions they facilitate.

The information shared in these sessions is private and confidential. We encourage all participants to respect these guidelines and to not share or disclose any personal or sensitive information that is discussed during these sessions with outside parties.

'It must be recognised that, in some circumstances, confidentiality of research data and records may be overridden by courts in the event of litigation or in the course of investigation by lawful authority. In such circumstances the University will take all reasonable steps within law to ensure that confidentiality is maintained to the greatest possible extent.'

What will happen to the information which you give? All the information you provide will be kept at Maynooth University in such a way that it will not be possible to identify you. On completion of the research, the data will be retained on the MU server. After ten years, all data will be destroyed (by the primary investigator, Dr Richard Roche of the Psychology Department of Maynooth University). Manual data will be shredded confidentially and electronic data will be reformatted or overwritten by Richard Roche at Maynooth University.

As we are interested in your recollections of life memories, it is possible that cultural, ethnic, medical and personal memories may come up in the course of our reminiscence sessions. You are not obligated to share any details if you are not comfortable to do so,

and it will not affect your participation. Any identifying or sensitive information will be removed to render it anonymous. This information is being collected for preservation via a digital repository and for content analysis. You are invited to listen back to the memories and discussions before they are uploaded to the digital archive. At your request, any information you deem sensitive will be removed.

Should you indicate consent on your consent form, your data may also be used in future research projects. For example, we may want to analyse the content of our reminiscence sessions for content or themes.

What will happen to the results? The research will be written up and presented as a summary report and presented at conferences. Some of this information may also be published in scientific journals. Results may also be shared to inform future community programmes and via both academic (e.g., conference posters, event presentations, academic journal manuscripts) and non-academic (e.g., community talks, newsletters, blogs) outlets. A copy of the de-identified, aggregated research findings will be made available to you upon request.

What are the possible disadvantages of taking part?
Reminiscence Therapy is generally accepted as safe. There is the risk of unearthing traumatic, distressing, or painful memories from the past. Our main goal is to focus on your positive memories. Some of you may not feel comfortable sharing memories in a group environment. All group engagement is voluntary and no one is called on or asked for their specific memories. You choose to socialize at your own comfort level.

Some of you will be navigating paths. There is the possibility of falls or injury. To minimize this risk, we have completed walkability assessments and will set an easy pace. Folding chairs will be provided if you need to rest.

All facilitators are trained and garda vetted to work with older adults and people with dementia. We strive to keep sessions short, positive, and to allow breaks when necessary. The information we gather from you is not clinical in nature and is not used to diagnose you in any way. This study is designed only to better understand how to improve quality of life for people with early-stage dementia.

Please be assured that the reminiscence activities engaged in for this project do not constitute diagnostic tests, and poor performance or inability to recall events or details does not indicate a memory impairment or problem. You are advised that, if you have concerns over your memory, you should contact your GP in relation to these worries.

What is being done to keep me safe from Covid?
As with all social interaction and public environments, there is a risk of Covid exposure. To mitigate this, government advised Covid protocol will be monitored and implemented if guidelines change. All facilitators are vaccinated and boosted and masks will be worn when social distancing cannot be maintained. We advise that if you have any signs or

symptoms of illness to stay home. Staying home due to illness will not compromise the integrity of the project. We advise you to participate at your own comfort level.

What if there is a problem?
At the end of the six weeks (two for surveys, four for recalling memories), I will discuss with you how you found the experience and how you are feeling. If you experience any distress you may contact the following support organizations:

Pieta:
www.pieta.ie
Tel: 1800 247 247 (24-Hour Helpline)
Tel: 0818 111 126 (for appt)

Irish Advocacy Network:
peeradvocacyinmentalhealth.com
Tel: 1800 700 700 (in emergency)
Tel: 01 547 0510 (for appt)

Alzheimer's Society of Ireland:
alzheimer.ie
Tel: 1800 341 341 (National Helpline)

Age Action:
https://www.ageaction.ie/
Tel: 01 475 6989
Email: info@ageaction.ie

If you agree to take part in the study, please complete and sign the consent form overleaf. **Thank you for taking the time to read this. Any further queries?** If you need any further information, you can contact:

Lead Researcher: Richard Roche
087 398 5702
Richard.roche@mu.ie

Postdoctoral Researcher: Cassandra Dinius
087 398 5702
Cassandra.Dinius@mu.ie

Appendix 19. Chapter 5 – Information Sheet for Relatives

INFORMATION FOR RELATIVES

Information Sheet

Purpose of the Study

Hello, I am Richard Roche, an associate professor in the Department of Psychology at Maynooth University. I am undertaking a study as part of my research funded by *the Irish Research Council.*

The study is concerned with improving quality of life for people living with dementia. We are using a technique called Reminiscence Therapy, where people think back on memories throughout their lives and share them verbally with others. It may also help us understand how our minds work to recall memories.

What will the study require from me?

While there is no direct involvement from relatives, we recognise that your involvement and support may be required for your care-receiver to participate. For example, in the form of providing transportation to sessions. We will be meeting at places in and around Maynooth town like on Maynooth University campus, at the Glenroyal hotel, and community rooms.Family members/spouses/carers are invited to all sessions, and you can stay during the meetings/walks as well.

For people living with dementia, we ask that a support person or carer is invited to the first meeting. This allows you to advocate for any questions or clarification that may be required before the care-receiver decides whether to provide consent to participate. If they provide consent to participate, please know that audio from the reminiscence portion of the programme will be captured on a handheld recorder.

After this, they will complete five surveys and questionnaires about things like mood, life history, and daily living. Breaks are provided as needed, with the session lasting approximately 90 minutes. Some of these questions will require responding to questions on paper, and some will require talking one on one with a researcher. All researchers are garda vetted and trained to work with people living with dementia.

Then, we will meet in groups of 5-10 people to talk about our memories and participate in an activity (either walking or listening to music). These groups will be led by a trained researcher who will use prompts to guide discussion about memories and practice of the exercise. Sessions last approximately 90 minutes.

The proposed schedule of the weekly sessions includes:

- 15-minute settling-in, welcome, and catch-up period
- 30 minutes of the activity
- 15-minute comfort break
- 30 minutes of group reminiscence

Groups will meet weekly for six weeks, and then complete five surveys and questionnaires again.

Will your participation in the study be kept confidential?
The information shared in these sessions is private and confidential. We encourage all participants (and any family members/spouses/carers) to respect these guidelines and to not share or disclose any personal or sensitive information that is discussed during these sessions with outside parties.

'It must be recognised that, in some circumstances, confidentiality of research data and records may be overridden by courts in the event of litigation or in the course of investigation by lawful authority. In such circumstances the University will take all reasonable steps within law to ensure that confidentiality is maintained to the greatest possible extent.'

What are the possible disadvantages of taking part?
Reminiscence Therapy is generally accepted as safe. There is the risk of unearthing traumatic, distressing, or painful memories from the past. Our main goal is to focus on positive memories. Some people may not feel comfortable sharing memories in a group environment. All group engagement is voluntary and no one is called on or asked for their specific memories. Each person chooses to socialize at their own comfort level.

Some of you will be navigating paths. There is the possibility of falls or injury. To minimize this risk, we have completed walkability assessments and will set an easy pace. Folding chairs will be provided if you need to rest.

We strive to keep sessions short, positive, and to allow breaks when necessary. The information we gather is not clinical in nature and is not used to diagnose in any way. This study is designed only to better understand how to improve quality of life for people with early-stage dementia.

Please be assured that the reminiscence activities engaged in for this project do not constitute diagnostic tests, and poor performance or inability to recall events or details does not indicate a memory impairment or problem. You are advised that, if your care-receiver has concerns over their memory, you should contact their GP in relation to these worries.

What if there is a problem?
At the end of the six weeks (two for surveys, four for recalling memories), I will discuss how you found the experience and how you are feeling. If you experience any distress you may contact the following support organizations:

Pieta:
www.pieta.ie

Irish Advocacy Network:
peeradvocacyinmentalhealth.com

Tel: 1800 247 247 (24-Hour Helpline)
Tel: 0818 111 126 (for appt)

Tel: 1800 700 700 (in emergency)
Tel: 01 547 0510 (for appt)

Alzheimer's Society of Ireland:
alzheimer.ie
Tel: 1800 341 341 (National Helpline)

Age Action:
https://www.ageaction.ie/
Tel: 01 475 6989
Email: info@ageaction.ie

Any further queries? If you need any further information, you can contact:
Lead Researcher: Richard Roche
087 398 5702
Richard.roche@mu.ie
Postdoctoral Researcher: Cassandra Dinius
087 398 5702
Cassandra.Dinius@mu.ie

Appendix 20. Chapter 5 – Consent Form for both groups

Consent Form

I, _____ _____, agree to participate in Carmen Elise Pocknell's research study titled Age-Inclusive Maynooth, Walk and Recall Memories.

Please tick each statement below:

☐ The purpose and nature of the study has been explained to me verbally & in writing. I've been able to ask questions, which were answered satisfactorily.

☐ I am participating voluntarily.

☐ I give permission for my participation to be audio-recorded.

☐ I give permission for my anonymised audio recordings to be uploaded to the Digital Repository of Ireland.

☐ I understand that I can withdraw from the study, without repercussions, at any time, whether that is before it starts or while I am participating.

☐ I understand that I can withdraw permission to use the data right up to the 31st, October, 2023, when the data is analyzed.

☐ It has been explained to me how my data will be managed and that I may access it on request.

☐ I understand the limits of confidentiality as described in the information sheet.

☐ I understand that my data, in an anonymous format, may be used in further research projects, thesis and any subsequent publications if I give permission below.

☐ I agree for my data to be used for further research projects and subsequent publications.

Signed: _____ Date:_____/ _____/____

Participant name in block capitals:

_____

.

I the undersigned have taken the time to fully explain to the above participant the nature and purpose of this study in a manner that they could understand. I have explained the risks involved as well as the possible benefits. I have invited them to ask questions on any aspect of the study that concerned them.

Signed: _____ Date:_____/ _____/____

Researcher name in block capitals:

_____

If during your participation in this study you feel the information and guidelines that you were given have been neglected or disregarded in any way, or if you are unhappy about the process, please contact the

Secretary of the Maynooth University Ethics Committee at research.ethics@mu.ie or +353 (0)1 708 6019. Please be assured that your concerns will be dealt with in a sensitive manner.

For your information the Data Controller for this research project is Maynooth University, Maynooth, Co. Kildare. Maynooth University Data Protection officer is Ann McKeon in Humanity house, room 17, who can be contacted at ann.mckeon@mu.ie. Maynooth University Data Privacy policies can be found at https://www.maynoothuniversity.ie/data-protection.

Two copies to be made: 1 for participant, 1 for PI (Carmen Elise Pocknell

Appendix 21. Chapter 5 – Recruitment Dementia Group 1

Have you been diagnosed with dementia?
Are you looking for social activities?

Maynooth University
National University of Ireland Maynooth

IRISH RESEARCH COUNCIL
An Chomhairle um Thaighde in Éirinn

Participants needed!

- ✓ Are you age 65+
- ✓ Have a diagnosis of early-stage dementia
- ✓ Not currently experiencing depression or anxiety
- ✓ Willing and able to attend sessions in Maynooth town

If so, you are eligible to take part in our project!

Memory trouble can affect a person's wellbeing. Here, we are looking for people who are living with early-stage dementia and wish to understand how to improve their quality of life. Reminiscence Therapy, where you reflect on memories throughout your life and share them with others, might help.

Taking part in our project involves answering some questions and participating in group activities. You will complete questionnaires about your mood, life history, and daily living experience. Then, once a week, we will meet in small groups (5-10 people) to talk about our memories and participate in activities like walking or listening to music.

A weekly session might look like :

- 15-minute settling-in and welcome
- 30 minutes of guided activity
- 15-minute comfort break
- 30 minutes of group reminiscence

You are invited to bring a family member/spouse/carer to the sessions. They will not have any tasks to carry out during this project, but they are welcome to attend for your comfort. You will meet once a week for six weeks.

How do I let you know I'm interested?

For more information and to take part, contact us to chat!

Email: **Muageing@gmail.com**
Mobile: **087 398 5702**

Or scan the QR code on your mobile:

Who designed this project?

This project was designed by people living with dementia, carers for people with dementia, and scientific researchers. People with lived experience selected the activities you will be participating in, so we believe it will be a positive, fun, and interesting experience! We look forward to meeting you!

Appendix 22. Chapter 5 – Flyer for Recruitment 2

Maynooth University
National University of Ireland Maynooth

IRISH RESEARCH COUNCIL
An Chomhairle um Thaighde in Eirinn

BE ACTIVE AND CONNECT WITH OTHERS ALONG THE WAY!

Maynooth University is seeking older adults (65+) in the Maynooth area to take part in a research project to help learn about well-being for people with memory trouble.

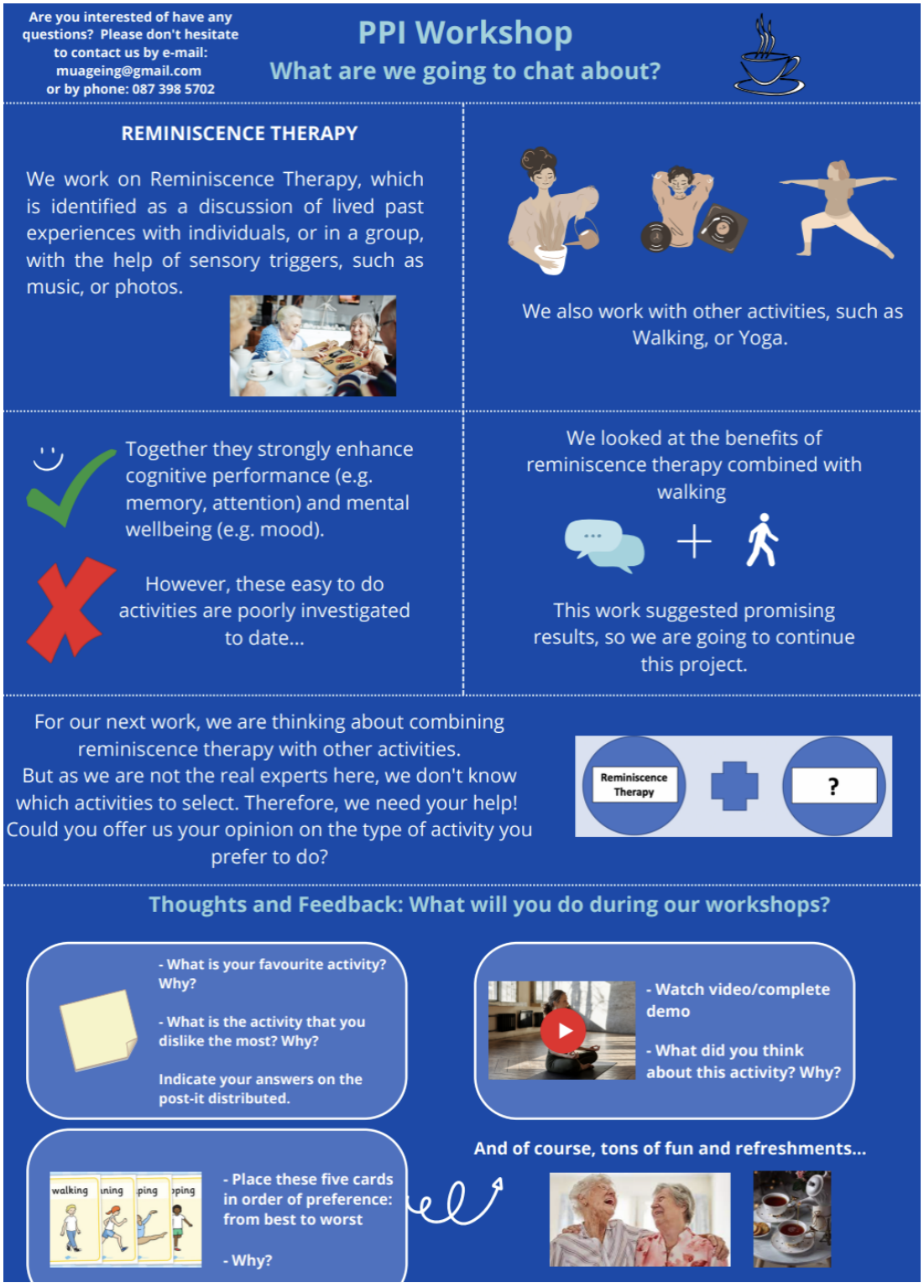
The Irish Research Council, The Alzheimer's Society of Ireland, and Maynooth University are working in partnership with older people to deliver a FREE 6-week workshop.

Join us to go for walks, listen to music and reminisce! Be active and chat with others along the way!

Please tell anyone you know who might be interested and contact us if you have questions or would like to join!

Maynooth Ageing Lab
Email: MUageing@gmail.com
Phone: 087 398 5702

Appendix 23. Chapter 5 – PPI Workshop Flyer – Activity Selection



Appendix 24. Chapter 5 – Recruitment Community-Dwelling Older Adults

PARTICIPANTS NEEDED FOR REMINISCENCE AND WALKING RESEARCH STUDY

Hello!
My name is Carmen Elise, a doctoral student in Maynooth University.
As part of my doctoral studies, I am looking for people living in the community who would like to meet to walk & chat about past memories in local areas, within a small group.
For example, where was your favourite local area, and why?

Criteria:

- Adults 65+,
- Familiar and/or lived in an Irish local area (for familiarity with landmarks).
- Can meet in Maynooth Town

Procedure:
This study will last **6 weeks**, starting **from November to December 2023.**
Before and after the program you will fill out surveys about different aspects, such as mood, life history, and daily living.
During the program, we will meet in a small social group to walk and discuss key areas of Maynooth and talk about your experiences.

Exclusion:

- Severe visual impairments
- History of epilepsy
- History of movement disorders
- Active diagnosis of early-stage moderate or advanced Alzheimer's disease (AD) or other dementia

Are you interested or have any questions?

carmen.pocknell.2022@mumail.ie

089 261 9433

Looking forward to hearing from you!

Ollscoil Mhá Nuad
Ollscoil na hÉireann Má Nuad

Appendix 25. Ethical Approval Letter – Chapter 5: TRIADICS Part 2 Study

MAYNOOTH UNIVERSITY RESEARCH ETHICS COMMITTEE
MAYNOOTH UNIVERSITY,
MAYNOOTH, CO. KILDARE, IRELAND

Maynooth University
National University of Ireland Maynooth

Dr Carol Barrett
Secretary to Maynooth University Research Ethics Committee

10 November 2022

Professor Richard Roche
Department of Psychology
Maynooth University

Dear Richard,

The Social Research Ethics Sub-committee has reviewed the ethical protocol for your project: **TRIADICS part 2** and we would like to inform you that ethical approval has been granted.

Any deviations from the project details submitted to the ethics committee will require further evaluation. This ethical approval will expire on 30/11/2023.

Please note: all projects now require an end of project report which is attached. Please complete and upload the end of project report to your RIS ethics record after the project end date.

Kind Regards,

Dr Carol Barrett
Secretary,
Maynooth University Research Ethics Committee

Reference Number
SRESC-2022-2484450

Appendix 26. Chapter 6 – Information Sheet

INFORMATION AND CONSENT FORM FOR RESEARCH PARTICIPANTS

Information Sheet

Purpose of the Study

Hello, I am Carmen Elise Pocknell, a doctoral student at Maynooth University. I am undertaking a study as part of my research funded by *the Irish Research Council.*

The study is concerned with improving quality of life for older people living in the community. It may also help us understand how our minds work to recall memories.

What will the study involve? First, you will complete five surveys and questionnaires about things like your mood, your life history, and your daily living. Then, we will meet in small groups and talk about the history of Maynooth. We will show you places throughout the town that you may be familiar with. If you have memories about these places, you are encouraged to share them with the group. Some of you will be walking to see these places in person, and some will be looking at images of these places. You will meet with your group once a week for four weeks, and then complete five surveys and questionnaires again.

Who has approved this study? This study has been reviewed and received ethical approval from Maynooth University Social Research Ethics Sub-committee. You may have a copy of this approval if you request it.

Why have you been asked to take part? You have been asked because you are an older adult who is familiar and/or has lived in Maynooth for some time. Therefore, we are especially interested in capturing your recollections.

Do you have to take part?

No, you are under no obligation whatsoever to take part in this research. However, we hope that you will agree to take part and give us some of your time to complete some surveys and meet with the group. It is entirely up to you to decide whether or not you would like to take part. If you decide to do so, you will be asked to sign a consent form and given a copy and the information sheet for your own records. If you decide to take part, you are still free to withdraw at any time without giving a reason and/or to withdraw your information up until such time as the research findings are analysed in October 2023. A decision to withdraw at any time, or a decision not to take part, will not affect your relationships with Maynooth University or any member of the research team.

What information will be collected?
We will ask to collect your answers to the questionnaires. If you provide consent to participate, please know that audio from the reminiscence portion of the programme will be captured on a handheld recorder. After removing any identifying or sensitive information from these audio sessions, audio files will be archived with the Irish Qualitative Data Archive (IQDA) via the Digital Repository of Ireland (DRI), which has obtained the Digital Seal of Approval certifying it as a Trusted Digital Repository. You will be issued a login and password allowing you access to audio files in the archive. Via the DRI, you can either download audio files to your own computers/PCs, or the audio files can be played online. If you do not have access to your own computer, we encourage you to use the computers in public libraries.

We will ask to collect your answers to the questionnaires. We will also audio record the small group sessions so that we can listen to the conversation again. You will not receive any individualised results, including tests or assessments, from the study. A copy of the de- identified, aggregated research findings will be made available to you upon request.

Will your participation in the study be kept confidential? Yes, all data that is collected about you during the course of the research will be kept confidential. No names will be identified at any time, and any identifying information that is audio recorded will be removed. All hard copy information will be held in a locked cabinet at the researchers' place of work, electronic information will be encrypted and held securely on MU PC or servers and will be accessed only by Prof. Richard Roche (assistant professor at Maynooth), and Carmen Elise Pocknell (PhD researcher at Maynooth). No information will be distributed to any other unauthorised individual or third party. If you so wish, the data that you provide can also be made available to you at your own discretion.

'It must be recognised that, in some circumstances, confidentiality of research data and records may be overridden by courts in the event of

litigation or in the course of investigation by lawful authority. In such circumstances the University will take all reasonable steps within law to ensure that confidentiality is maintained to the greatest possible extent.'

What will happen to the information which you give? All the information you provide will be kept at Maynooth University in such a way that it will not be possible to identify you. On completion of the research, the data will be retained on the MU server. After ten years, all data will be destroyed (by the PI). Manual data will be shredded confidentially, and electronic data will be reformatted or overwritten by the PI in Maynooth University.

What will happen to the results? The research will be written up and presented as a summary report and presented at conferences and as part of Carmen Elise Pocknell's PhD thesis. Some of this information may also be published in scientific journals. A copy of the research findings will be made available to you upon request.

What are the possible disadvantages of taking part?

Reminiscence Therapy is generally accepted as safe. There is the risk of unearthing traumatic, distressing, or painful memories from the past. Our main goal is to focus on your positive memories in the Maynooth community. Some of you may not feel comfortable sharing memories in a group environment. All group engagement is voluntary, and no one is called on or asked for their specific memories. You choose to socialize at your own comfort level.

Some of you will be navigating paths throughout the area of Maynooth town. There is the possibility of falls or injury. To minimize this risk, we have completed walkability assessments and will set an easy pace. Folding chairs will be provided if you need to rest.

All facilitators are trained and garda vetted to work with older adults and people with memory disorders. We strive to keep sessions short, positive, and to allow breaks when necessary. The information we gather from you is not clinical in nature and is not used to diagnose you in any way. This study is designed only to better understand how to improve quality of life for older people living in the community.

What if there is a problem?

At the end of the six weeks (two for surveys, four for recalling memories), I will discuss with you how you found the experience and how you are feeling. If you experience any distress you may contact the following support organizations:

Pieta: www.pieta.ie Tel: 1800 247 247 (24-Hour Helpline) Tel: 1800 700 700 (in emergency)

Irish Advocacy Network: www.peeradvocacyinmentalhealth.com

Tel: 0818 111 126 (for an appointment) Tel: 01 547 0510 (for an appointment)

If you agree to take part in the study, please complete and sign the consent form overleaf.
Thank you for taking the time to read this

Any further queries?

If you need any further information, you can contact:

Principal Investigator & Doctoral Researcher:	Carmen Elise Pocknell 087 701 1773 Carmen.pocknell.2022@mumail.ie
Supervisor:	Richard Roche 01 708 6069 Richard.roche@mu.ie
Co-Supervisor:	Seán Commins 01 708 6069 seán.commins@mu.ie

Appendix 27. Chapter 6 – Consent Form

Consent Form

I, _____ _____, agree to participate in Carmen Elise Pocknell's research study titled Age-Inclusive Maynooth, Walk and Recall Memories.

Please tick each statement below:

☐ The purpose and nature of the study has been explained to me verbally & in writing. I've been able to ask questions, which were answered satisfactorily.

☐ I am participating voluntarily.

☐ I give permission for my participation to be audio-recorded.

☐ I give permission for my anonymised audio recordings to be uploaded to the Digital Repository of Ireland.

☐ I understand that I can withdraw from the study, without repercussions, at any time, whether that is before it starts or while I am participating.

☐ I understand that I can withdraw permission to use the data right up to the 31st, October, 2023, when the data is analyzed.

☐ It has been explained to me how my data will be managed and that I may access it on request.

☐ I understand the limits of confidentiality as described in the information sheet.

☐ I understand that my data, in an anonymous format, may be used in further research projects, thesis and any subsequent publications if I give permission below.

☐ I agree for my data to be used for further research projects and subsequent publications.

Signed: _____ Date:_____/ _____/____

Participant name in block capitals:

_____

I the undersigned have taken the time to fully explain to the above participant the nature and purpose of this study in a manner that they could understand. I have explained the risks involved as well as the possible benefits. I have invited them to ask questions on any aspect of the study that concerned them.

Signed: _____ Date:_____/ _____/____

Researcher name in block capitals:

_____

If during your participation in this study you feel the information and guidelines that you were given have been neglected or disregarded in any way, or if you are unhappy about the process, please contact the Secretary of the Maynooth University Ethics Committee at research.ethics@mu.ie or +353 (0)1 708 6019. Please be assured that your concerns will be dealt with in a sensitive manner.
For your information the Data Controller for this research project is Maynooth University, Maynooth, Co. Kildare. Maynooth University Data Protection officer is Ann McKeon in Humanity house, room 17, who can be contacted at ann.mckeon@mu.ie. Maynooth University Data Privacy policies can be found at https://www.maynoothuniversity.ie/data-protection.

Two copies to be made: 1 for participant, 1 for PI (Carmen Elise Pocknell

Appendix 28. Chapter 6 – Flyer for Recruitment 1

Appendix 29. Chapter 6 – Flyer for Recruitment 2

GROUP WALKING OPPORTUNITY

April/May 2023 Maynooth Town

We are looking for adults (65+) who would like to take part in a study on walking in the next few weeks, in the Maynooth area.

It's a great opportunity to get some fresh air, meet new friends & do some exercise together! Get in touch with us:

089 261 9433 carmen.pocknell.2022@mumail.ie

Maynooth University
National University of Ireland Maynooth

Appendix 30. Ethical Approval Letter – Chapter 6: Walking and Reminiscence Study

MAYNOOTH UNIVERSITY RESEARCH ETHICS COMMITTEE
MAYNOOTH UNIVERSITY,
MAYNOOTH, CO. KILDARE, IRELAND

Maynooth University
National University of Ireland Maynooth

Dr Carol Barrett
Secretary to Maynooth University Research Ethics Committee

29 June 2023

Carmen Elise Pocknell
Department of Psychology
Maynooth University

Dear Carmen,

The Social Research Ethics Sub-committee has reviewed the ethical protocol for your project: **Investigating the relative impact of reminiscence, walking and the combination of the two on cognitive function and psychological wellbeing in cognitively healthy older adults living in the community** and we would like to inform you that ethical approval has been granted.

Any deviations from the project details submitted to the ethics committee will require further evaluation. This ethical approval will expire on 30/06/2024.

Please note: all projects now require an end of project report which is attached. Please complete and upload the end of project report to your RIS ethics record after the project end date.

Kind Regards,

Dr Carol Barrett
Secretary,
Maynooth University Research Ethics Committee

c.c. Prof. Seán Commins, Department of Psychology
Prof. Richard Roche, Department of Psychology

Reference Number
SRESC-2023-36576

Appendix 31. Chapter 7 – Information Sheet for Health Policy Makers Walk & Recall: Online Questionnaire

Purpose of the Study

My name is Carmen Elise Pocknell and I am a PhD student at Maynooth University under the supervision of Professors Richard Roche and Sean Commins. I am researching ways to improve the quality of life for older adults living in the community, including those with dementia. We have previously run a pilot programme involving a number of older adults including those living with dementia in the Maynooth area. This programme offered a walking and reminiscence programme and participants gathered weekly for four weeks to engage in walking activities and share their memories within a local Irish setting. It often uses things that engage our senses to help bring back memories. Research shows that combining reminiscence therapy with walking can improve cognitive function and well-being in older adults.

We would be grateful for your thoughts and preferences to help us improve this programme in the future. This survey will allow us to gather those thoughts, including the practical issues and other factors that might impinge on the successful expansion of the programme.

What Will the Survey Involve?

You will complete a short questionnaire that takes about 10 minutes. This questionnaire asks for your opinions about the walking and reminiscence programme, including its feasibility and possible implementation. Your feedback is very important for shaping future programmes.

Who Has Approved This Study?

This study has ethical approval from the Maynooth University Social Research Ethics Sub-committee. You can ask for a copy of the approval if wanted.

Limits to Confidentiality Statement:

Your participation in this survey is greatly appreciated, and we want to assure you that your responses will be kept confidential. However, it is important to note that there are limits to confidentiality. In some circumstances, such as if there is a risk of harm to yourself or others, or if required by law, we may need to disclose information to appropriate authorities. We will take all reasonable steps to protect your data and

maintain confidentiality in accordance with legal requirements. By participating in this survey, you acknowledge and understand these limits to confidentiality.

Why Have You Been Asked to Participate?

You have been invited to participate because you are a policymaker, researcher or clinician working in the area of dementia care in Ireland. Your views will be valuable for helping to inform the successful implementation of the program.

Do You Have to Take Part?
Participation is completely voluntary. You do not have to fill out the questionnaire, but your input would be appreciated and will help improve the programme. You can leave the study at any time without any consequences.

What Information Will Be Collected?
We will collect your responses through the questionnaire. Your feedback will help us understand the feasibility and implementation of the programme.

Will My Participation Be Confidential?
Yes, your data will be kept confidential. No personally identifiable information will be collected.

What Will Happen to the Results?
The results will be summarised in a report, presented at conferences, and included in my PhD thesis. Some findings may be published in scientific journals, and you can ask for a copy of the research findings.

What Are the Possible Disadvantages of Taking Part?
There are no significant disadvantages to participating in this study.

What If There Is a Problem?
If you have any concerns or issues while completing the survey, please contact me at: carmen.pocknell.2022@mumail.ie or either of my co-supervisors/PIs at: Richard.Roche@mu.ie or Sean.Commins@mu.ie.

Appendix 32. Chapter 7 – Information Sheet for Older Adults

Walk & Recall: Questionnaire for Older Adults

Purpose of the Study

My name is Carmen Elise Pocknell and I am a PhD student at Maynooth University under the supervision of Professors Richard Roche and Sean Commins. I am researching ways to improve the quality of life for older adults living in the community, including those living with dementia. We have been using a walking and reminiscence programme to do this. In this programme, participants gathered weekly for four weeks to engage in walking activities and share their memories within a local Irish setting. This programme often uses things that engage our senses to help bring back memories. Research shows that combining reminiscence with walking can improve cognitive function and well-being in older adults.

We would be grateful for your thoughts and preferences to help us improve this programme in the future. This survey will allow us to gather those thoughts, including the practical issues and other factors that you think might improve the programme.

What Will the Survey Involve?

You will complete a short, self-administered questionnaire that takes about 10 minutes to complete. You may choose to complete the questionnaire either online or on paper. This fully anonymous questionnaire is accessible through a link which we will provide after the information sheet and consent form, and asks for your opinions about the walking and reminiscence programme, including its feasibility and possible implementation. If you prefer to complete a paper-based version of the survey, you may do so during the in-person session detailed on the flyer, which will take place at Maynooth library. Your feedback is very important for shaping future programmes.

Who Has Approved This Study?

This study has ethical approval from the Maynooth University Social Research Ethics Sub-committee. You can ask for a copy of the approval if wanted.

Limits to Confidentiality Statement:

Your participation in this survey is greatly appreciated, and we want to assure you that your responses will be kept confidential. However, it is important to note that there are limits to confidentiality. In some circumstances, such as if there is a risk of harm to

yourself or others, or if required by law, we may need to disclose information to appropriate authorities. We will take all reasonable steps to protect your data and maintain confidentiality in accordance with legal requirements. By participating in this survey, you acknowledge and understand these limits to confidentiality.

Why Have You Been Asked to Participate?
You have been invited because you are an adult aged 65 or older. Your experiences are important for understanding the program's feasibility.

Do You Have to Take Part?
Participation is voluntary. You do not have to complete the questionnaire, but your participation would be appreciated and will help inform the program. If you choose to participate, you will receive a consent form. You can leave the study at any time without any consequences.

What Information Will Be Collected?
We will collect your responses through the questionnaire designed for older adults, including people living with dementia.Your feedback will help us assess the program.

Will My Participation Be Confidential?
Yes, your data will be kept confidential. No personally identifiable information will be collected. The questionnaire is anonymous.

What Will Happen to the Results?
The results will be summarized in a report, presented at conferences, and included in my PhD thesis. Some findings may be published in scientific journals, and you can ask for a copy of the research findings.

What Are the Possible Disadvantages of Taking Part?
There are no significant disadvantages to participating in this study.

What If There Is a Problem?
If you have any concerns or issues while completing the survey, please contact my co-supervisors/PIs at: Richard.Roche@mu.ie or Sean.Commins@mu.ie .

Appendix 33. Chapter 7 – Paper Copy Survey Consent Form

☐ I agree to participate in this research study titled Walk & Recall: Feasibility Survey.

Please tick each statement below:

☐ The purpose and nature of the study has been explained to me. I've been able to ask questions, which were answered satisfactorily.

☐ I am participating voluntarily.

☐ I understand that I can withdraw from the study, without repercussions, at any time, whether that is before it starts or while I am participating.

☐ I have been informed about how my data will be managed and that, due to the anonymous collection of data, I cannot withdraw my data once submitted.

☐ It has been explained to me how my data will be managed and that I may access it on request.

I, the undersigned, have taken the time to fully explain to the above participant the nature and purpose of this study in a manner that they could understand. I have explained the risks involved as well as the possible benefits. I have invited them to ask questions on any aspect of the study that concerned them.

Signed: _____ Date:_____/_____/_____

Researcher name in block capitals: ____CARMEN ELISE POCKNELL_____

If during your participation in this study you feel the information and guidelines that you were given have been neglected or disregarded in any way, or if you are unhappy about the process, please contact the desk of the Maynooth University Ethics Committee at research.ethics@mu.ie.

Please be assured that your concerns will be dealt with in a sensitive manner. For your information the Data Controller for this research project is Maynooth University, Maynooth, Co. Kildare. Maynooth University Data Protection officer is Cecily Giles in 17 Rye Hall Extension, North Campus, who can be contacted at dataprotection@mu.ie. Maynooth University Data Privacy policies can be found at https://www.maynoothuniversity.ie/data-protection/policies-privacy-notices.

Two copies to be made: 1 for participant, 1 for postgraduate student (Carmen Elise Pocknell)

Appendix 34. Chapter 7 – Online Survey Consent Form

Thank you for considering participation in Carmen Elise Pocknell's research study titled "Walk & Recall: Online Feasibility and Implementation Survey." Your participation is important to us.

Please read the statements below and indicate your consent by ticking each box.

By ticking the boxes, you confirm that:

☐ I agree to participate in this research study titled Walk & Recall: Online Feasibility Survey.

☐ I have read and understood the purpose and nature of the study. I have had the opportunity to ask questions, and they have been answered to my satisfaction.

☐ I am participating voluntarily.

☐ I understand that I can withdraw from the study at any time without any consequences.

☐ I have been informed about how my data will be managed and that, due to the anonymous collection of data, I cannot withdraw my data once submitted.

☐ I acknowledge that my participation in this online survey is conducted on a secure platform, ensuring my anonymity and confidentiality.

If during your participation in this study you feel the information and guidelines that you were given have been neglected or disregarded in any way, or if you are unhappy about the process, please contact the desk of the Maynooth University Ethics Committee at research.ethics@mu.ie.

Please be assured that your concerns will be dealt with in a sensitive manner.
For your information the Data Controller for this research project is Maynooth University, Maynooth, Co. Kildare. Maynooth University Data Protection officer is Cecily Giles in 17 Rye Hall Extension, North Campus, who can be contacted at dataprotection@mu.ie. Maynooth University Data Privacy policies can be found at https://www.maynoothuniversity.ie/data-protection/policies-privacy-notices.

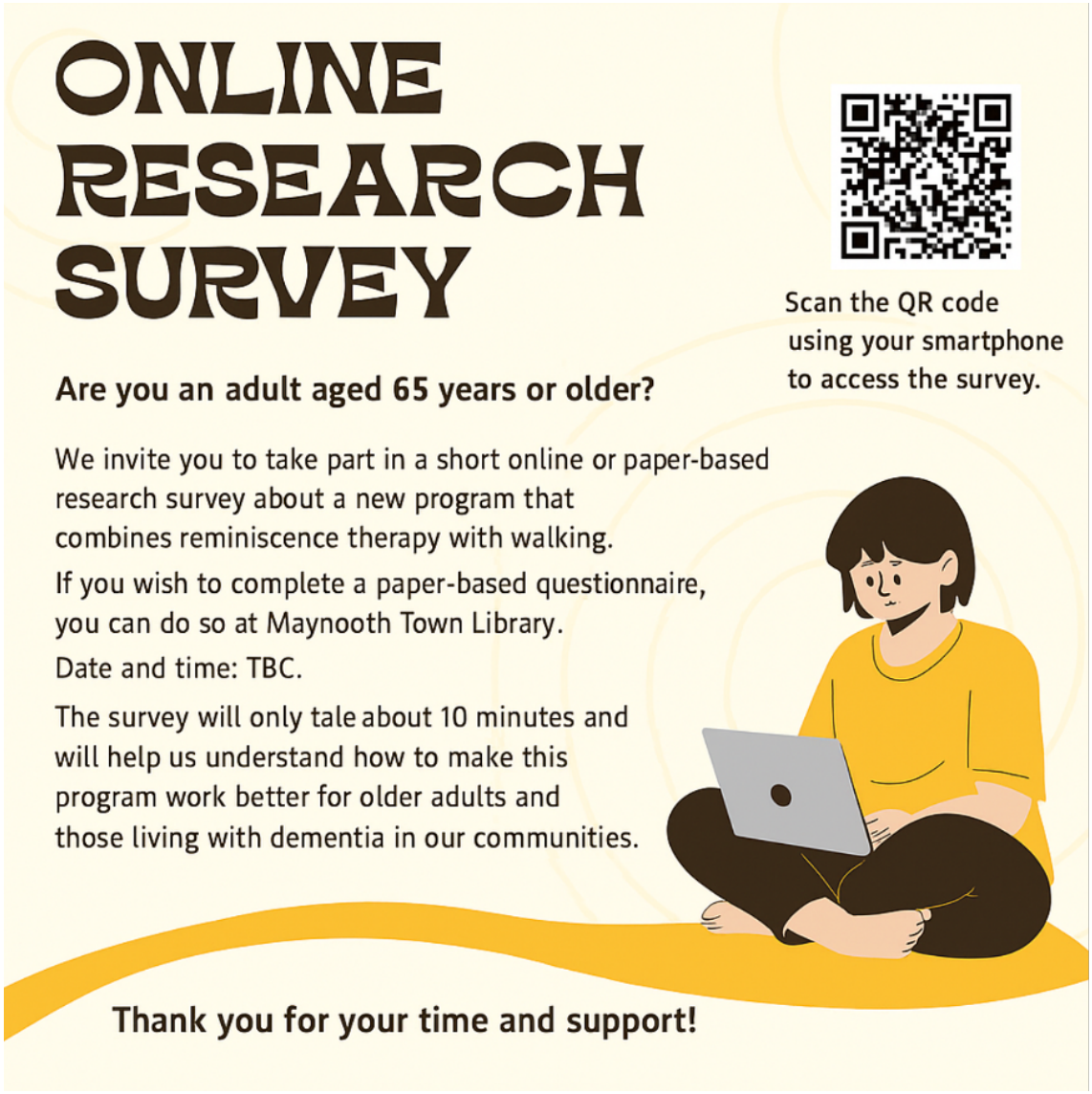
Contact Information for Further Queries:

- Doctoral Researcher: Carmen Elise Pocknell | carmen.pocknell.2022@mumail.ie

- Supervisor/PI: Professor Richard Roche | 01 708 6069 | richard.roche@mu.ie
- Co-Supervisor/PI: Professor Sean Commins | 01 708 6182 | sean.commins@mu.ie

Thank you for taking the time to read this information and for considering participation in the study

Appendix 35. Chapter 7 – Recruitment Flyer – Older Adults Living with and without dementia



Appendix 36. Chapter 7 – Questionnaire for Older Adults Living with and without Dementia

Walk and Recall: Questionnaire for Older Adults living with and without dementia

1. How old are you?
    a. 65-74 years old
    b. 75-84 years old
    c. 85 or older

2. Have you been diagnosed with dementia? (Yes/No)

3. How do you feel about your overall health?
    d) Excellent
    d) Good
    d) Fair
    d) Poor

4. Where do you live?
    a. Urban (city)
    b. Urban (town)
    c. Rural (village/countryside)
    d. Other (Please specify):____

5. Do you enjoy walking? (Yes/No).

    If Yes, what benefits do you see with walking (Open box).

6. Do you tend to walk alone or with others? (Alone/With others).

    If with others, do you share memories during walks and if so, what sort of memories? (Open box)

7. Would you consider joining a walking and reminiscence program? (Y/N)

    If No, what concerns/barriers/obstacles would put you off joining (Open box).

Appendix 37. Chapter 7 – Questionnaire for Health Policy Makers

Questionnaire for Health Policy Makers

1. What is your current job title and nature of the organisation (e.g. NGO, charity, etc)?

2. What is your current role in health policy making?
   (Open box)

3. How many years have you worked in health policy related to older adults?
   (Open box)

4. Have you previously engaged with reminiscence therapy or similar types of programmes? (Yes/No)

   If Yes, how would you rate their usefulness and impact
   Scale 1-10, with 10 being excellent.

5. Do you think there are benefits associated with combining walking with reminiscence?
   (Yes/No)

   If Yes, what are the main benefits?
   (Open box).

6. What challenges, if any, do you foresee in implementing this type of programme in Ireland?

   (Open Box)

Appendix 38. Ethical Approval Letter – Chapter 7: Walk & Recall Online Feasibility Survey

MAYNOOTH UNIVERSITY RESEARCH ETHICS COMMITTEE
MAYNOOTH UNIVERSITY,
MAYNOOTH, CO. KILDARE, IRELAND

Maynooth University
National University of Ireland Maynooth

Dr Fiona Nic Fhionnlaoich
Chair of the Social Research Ethics Subcommittee
Maynooth University Research Ethics Committee

25 June 2025

Carmen Elise Pocknell
Department of Psychology
Maynooth University

Re: Application for ethical approval for a Project entitled: Walk & Recall: Online Feasibility Survey. Feasibility and Implementation survey of a Combined Reminiscence-Based Program for Cognitively Healthy Older Adults living in Irish Communities.

Dear Carmen,

The Social Research Ethics Sub-committee has reviewed the ethical protocol for your project: Walk & Recall: Online Feasibility Survey. Feasibility and Implementation survey of a Combined Reminiscence-Based Program for Cognitively Healthy Older Adults living in Irish Communities, and we would like to inform you that ethical approval has been granted. Any deviations from the project details submitted to the ethics committee will require further evaluation. This ethical approval will expire on 14/08/2025. Please note: all projects now require an end of project report which is attached. Please complete and upload the end of project report to your RIS ethics record after the project end date.

Kind Regards,

On behalf of
Dr Fiona Nic Fhionnlaoich
Chair of the Social Research Ethics Subcommittee

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SRESC-2025-39596