

Examining the Livability of a Day
Program for Individuals with Alzheimer's
Disease and Other Memory-related
Disorders: A Case Study of The Dotsa
Bitove Wellness Academy

by

Stephanie Lacey-Avon

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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

The number of people affected by Alzheimer's disease and other memory-related disorders (ADMRD) is increasing at substantial rates. A specific challenge for planners is to build non-institutional environments that can accommodate the desire to age in place for this demographic. Planning initiatives that support ageing in place are embedded within broader healthy community objectives of creating livable communities. Livable communities are intended to positively influence the quality of life of all individuals. However, the inherent problem pervasive in literature is to understand how livability objectives overlap with ageing in place objectives (CMHC, 2008).

Adult day programs have been identified as an effective type of community-based care to assist those with dementia to age in place. The focus of this study was to take the concept of livability and consider its applicability to an academy for those with dementia in Toronto. Through this, findings seek to provide information on how physical and social environmental characteristics influence livability of adult day programs for those with dementia.

This study was guided by the following research objectives: 1) to assess the role of physical and social environments when considering the livability of an academy; 2) to identify whether livability is an appropriate measure of small-scale environments such as the academy and whether the concept is appropriate for ADMRD populations; and 3) to determine if adult day programs are an effective solution for mitigating rising care needs for those with ADMRD. A mixed methods case study approach was used. Data collection techniques included a built environment audit, time-lapse mapping, an art-analysis, and covert-overt observations.

Results from this study suggest the academy effectively incorporated both physical and social environmental elements, contributing towards a cohesive space. As well, livability can be measured in small-scale environments such as the academy and capture the needs of those with ADMRD. Livability is widely used in planning policy as a term to coin environments that are desirable, healthy, and enhance community well-being (Ontario Ministry of Infrastructure, 2006). Findings recommend for planners to retrofit and ensure that the concept of livability encompasses quality of living standards for all ages in order to make an integrated approach to decision-making. As well, adult day programs should be recognized in zoning by-laws as a stand-alone use, and regarded as an effective way to mitigate rising care needs for those with ADMRD. There are changes beginning to take place within the built form, such as the promotion of Smart Growth development, although a complete paradigm shift from the way environments were conventionally planned will take some time.

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Dedication

To my aunt- *“...Life perpetuates itself regardless and sometimes nature is the only governing force despite the control we may think we wield.”*

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Chapter 1 Introduction

1.1 Background and Context

Population ageing is a global phenomenon that is expected to continue over the next several decades at unprecedented rates (United Nations, 2002). According to the United Nations (2002), by 2050, those aged 60 and over will exceed younger populations across the globe. Specific to Canada, in 2011 there were five million seniors¹ and this number is expected to double by 2036, eventually reaching 25% of the total population by 2051 (Statistics Canada, 2010). These climbing rates of senior populations are attributed to lower fertility and mortality rates, and ageing of the baby boom generation (Statistics Canada, 2010).

There are a number of economic, social, and political consequences to population ageing. For instance, there will be impacts on economic growth, investment and consumption rates, health and health care, living accommodations, housing, and voting patterns and representation (United Nations, 2002). Of particular interest for this research and planning more generally is health and health care needs of this changing demographic, along with ensuring appropriate/suitable living conditions such as housing.

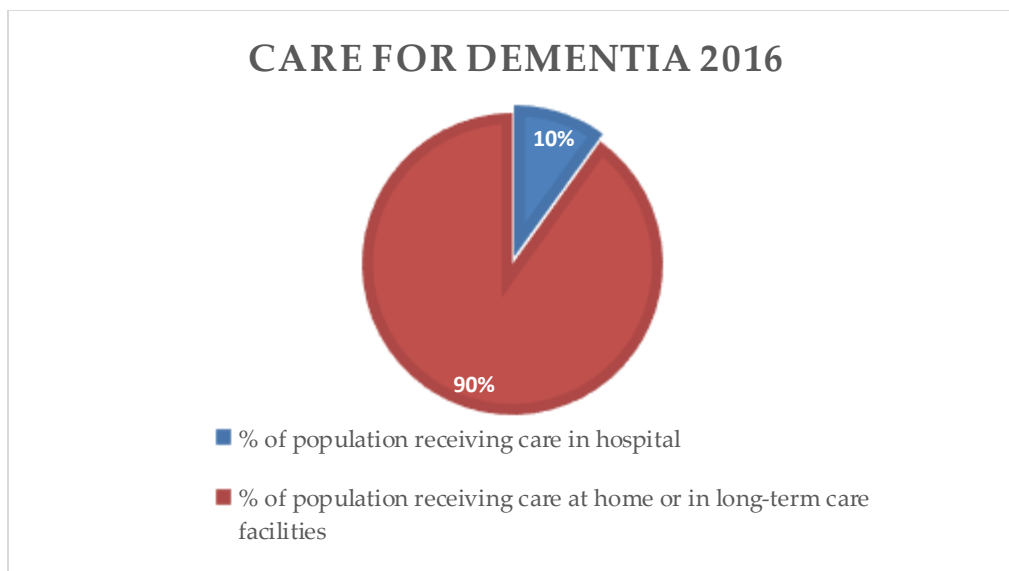
In parallel with the ageing trend, there is a marked growth in the incidence of age-related cognitive diseases, notably dementia. The Alzheimer's Society of Canada (2016) recently reported that there are an estimated 564,000 Canadians living with dementia, which represents ~1.6% of the total population (Statistics Canada, 2016). Each year, there are reportedly about 25,000 new cases diagnosed. By 2031, the national population with dementia is expected rise to ~2.7% of the total population, with almost one million people (Alzheimer Society of Canada, 2016 & Statistics Canada, 2016).

Consequently, direct and indirect health care costs of dementia, are increasing at a staggering rate. In 2016, costs were estimated at \$10.4 billion per year, and by 2031, this value is expected to increase to \$16.6 billion (Alzheimer's Society of Canada, 2016). To assist in mitigating these costs, there is a driving need to emphasize the importance of determinants of health (e.g. housing, health services, and social support networks) along with community-based types of care to alleviate existing pressures on the health care system.

¹ Seniors are defined by Statistics Canadas as 65 years and older (Statistics Canada, 2010).

Roughly, 56,000 or 10% of Canadians with dementia are being cared for in hospitals, whereas the remainder 90% of this population segment is being cared for either at home, or in long term care facilities (Alzheimer’s Society of Canada, 2016). These findings are illustrated in table 1. Hospitals are not the ideal location of care for populations with Alzheimer’s disease and other memory-related disorders (ADMRD), as these institutions are designed to provide patient treatment, accommodate those with injuries, and to diagnose diseases. A number of spatial implications of this demographic shift need to be considered and incorporated into long-range community planning along with the subsequent shift in housing and health supports.

Table 1 Care for populations with dementia in Canada (Alzheimer Society of Canada, 2016)



In the last few decades, there has been a growing emphasis for those with chronic health conditions and ageing needs in Canada on creating settings that allow them to age in place for as long as possible in order to stave off institutionalized types of care (Sinha & Bleakney, 2015). Ageing in place is the desired option for most individuals, as it provides them with an opportunity to maintain a sense of familiarity with their surroundings, to sustain a level of independence, and to avoid the costly expenses of institutional care (Sinha & Bleakney, 2015). The focus on ageing in place stretches beyond the home environment and is inclusive of surrounding neighbourhoods and communities (Wiles, Leibling, Guberman, Reeve, & Allen, 2012). Consideration must be allocated to housing needs, in addition to transportation, recreational opportunities, amenities that enhance physical activity, social interaction, cultural engagement, and ongoing education (Wiles et al., 2012). Ageing in place also reduces the demand for retirement homes and/or long-term care facilities, resulting in a

decrease in demand for serviceable, developable land for these purposes. This is an advantage for many urban centers, as the land may be used for other means, such as commercial, or recreational spaces that contribute to the overall attractiveness of an environment.

Despite the number of benefits to ageing in place, there are also a number of challenges, particularly, from a caregiver's perspective. Caregivers notably play a critical role in keeping an older individual in their home environment for as long as possible, although, there are often unfavorable stressors that affect the caregiver's personal health and financial obligations (Schulz & Beach, 1999). For example, the caregiver costs for people with dementia are about five-and-a-half times greater than for those without the disease (Alzheimer's Society of Canada, 2016). Furthermore, family members or friends reported spending on average 37 hours a week caring for an individual with dementia (Sinha & Bleakney, 2015).

There have been a growing number of support strategies proposed to assist individuals age in place. For instance, the planning community has begun to adopt policy initiatives that support "age-friendly" and "dementia-friendly" concepts. Inherent in these concepts, is the notion that environments should be developed to be conducive to the overall well-being and enhanced quality of life (QoL) for this segment of the population. Additionally, community-based services such as adult day programs have also been identified as playing a critical role in assisting those with ADMRD age in place and offering caregiver relief (Morton-Chang, 2015). Planning initiatives that influence the built environment and policy to support ageing in place are a part of the broader objective of creating livable communities for all populations. Ideally, livable environments aim to achieve accessibility for everyone.

The notion of a livable community is broadly evidenced in many planning documents across the country. For example, in Vancouver's Local Area Downtown Eastside Plan a key objective is "Healthy Environments" (ensuring livability now and into the future) (2015, pg.7). Another example is the Official Plan of Oakville titled "The Livable Oakville Plan" which establishes policies and land use designations that implement the Town's vision "to be the most livable town in Canada" (Town of Oakville, 2015, pg. A-1). The Waterloo Region Official Plan also incorporates livability through the following phrase... "a livable Waterloo Region depends on many interconnected cultural, environmental, social and economic elements..." (Region of Waterloo, 2015, pg. 39). Lastly, Winnipeg's development plan asserts that "Winnipeggers see that our work is just beginning and that effective planning for the next 25 years will be critical to our city remaining livable, affordable and desirable..." (City of Winnipeg, 2011, pg. 25). As such, livability is an important concept and

objective of broader healthy community objectives that are meant to positively impact the QoL of all populations, including those that are ageing and living with dementia. However, to date there has been little consideration to how livability applies to small-scale environments that assist those to age in place.

Currently, difficulties exist in planning when trying to incorporate both ageing in place and livability objectives, because there is a lack of understanding on how these two overlap. For example, a number of physical built environment features may be conducive to aiding one objective but not the other. In order to address this gap, this study will look at an important community-based program that supports ageing in place of the growing ADMRD population and will assess the livability of this space. Through this, findings will provide insight as to how environments may be created for those with ADMRD.

1.2 Statement of Purpose and Research Questions

The purpose of this case study was to explore the applicability of livable community indicators developed by the Canadian Mortgage and Housing Corporation (CMHC) to a community-based program that supports ageing in place objectives for those with dementia, and to further understand how this concept applies to small-scale environments. Specifically, this study is guided by the following research questions and objectives:

Research Question

How do physical and social environmental characteristics influence livability of the academy for individuals with ADMRD?

Objectives

1. What factors in the physical and social environments contribute to the livability of the academy?
2. Is livability an appropriate measure of small-scale environments such as the DBWA and is the concept appropriate for ADMRD populations?
3. Are day programs an effective solution for mitigating rising care needs for those with ADMRD?

In order to meet these research objectives, a mixed methods case study design was used to examine The Dotsa Bitove Wellness Academy (DBWA), a program located in Toronto designed for those with dementia. The academy is not a day program but rather an academy for teaching and

learning with a relational arts-based curriculum, however, Adult Day Programs (ADP) are the closest comparison.

1.3 Thesis Outline

This thesis is organized into the following six chapters. *Chapter 1* introduces the thesis topic through providing background information and context, identifying the research questions, and highlighting the rationale for conducting this study. The following *Chapter 2* reviews relevant literature on age-friendly and dementia-friendly environments, introduces the concept of livability and how it relates to urban planning, and identifies alternate solutions to institutionalized care. *Chapter 3* outlines the main methodological components to the research. In *Chapter 4*, findings are summarized from the four data collection techniques used in this research study. *Chapter 5* discusses the major analytic themes that developed over the course of the study and brings together the findings under an integrated holistic model. Lastly, *Chapter 6* identifies key findings and how these relate to the gaps in literature, provides concluding remarks, and suggests opportunities for future research and recommendations for practice.

Chapter 2 Literature Review

2.1 Introduction

As a response to the growing ageing demographic, the Canadian Medical Association (Canadian Medical Association, 2015) have recently initiated the “National Seniors Strategy for Canada”. This program is designed to establish a policy framework to guide future programs for this segment of the population. Two of the main challenges identified in this program are ensuring that environments for seniors are age-friendly and that seniors are provided a good quality of life (Canadian Medical Association, 2015). Thus, throughout this research, three main research and policy domains that target these challenges will be discussed individually in subsections below. There is specific focus on populations with ADMRD.

The first section describes the concept of livability and the association to urban planning, and conveys how the livability of a community or city can be measured. The second section provides information on alternative types of care for those with dementia, with specific reference to ageing in place and adult day programs. Lastly, the third section examines the terms “age-friendly” and “dementia-friendly” environments and includes details about what these entail. As well, a discussion takes place on the preferred physical and social environments for those with dementia. A focused review of the concept of livability, alternative types of care for those with dementia, and age-friendly/dementia-friendly environments appropriately situates this research to address the goal of understanding the livability of small-scale dementia-friendly environments that aid individuals to age in place.

2.2 Livability and Urban Planning

2.2.1 Urban Livability

The concept of urban livability began to take prominence in urban development and planning policies over the last few decades, with the main driving force being a shift from the industrial to post-industrial society (Kaal, 2011). Urban planning throughout the industrial revolution (~1700's-1800's) had guided mass urban growth and development to accommodate populations seeking employment in factories. Housing stock was mass produced with the intent of being able to accommodate high densities (Feinstein, 1998), although most housing lacked sanitary facilities and

residents had limited private space thus leading to rapid spread of diseases (Feinstein, 1998). It was only during the 1970's that change began to take place in urban environments. In most parts of North America throughout this time, the post-industrial society was beginning to unfold impacting the direction of urban planning (Ley, 1980). The landscape of urban environments changed. Factories were either closed or reallocated to the periphery of urban areas and were being replaced by office towers, promoting a service society rather than a goods society (Ley, 1980). There was also a shift in societal values. Society placed stronger emphasis on a knowledge based economy where the focus was on intellectual capabilities, rather than on physical inputs and natural resources. With that, there was a subsequent shift in urban development needs of citizens (Kaal, 2011; Ley, 1980). Individuals were demanding greater urban quality of life, with more humane, and socially progressive approaches to urban development (Kaal, 2011). Along with the shift to a more person-centered economy came the new ideology of urban development, the *livable city* (Ley, 1980).

In Canada during 1972, a political reform party of Vancouver, The Electors Action Movement (TEAM), adopted the ideology of the livable city (Ley, 1980). Through this, TEAM proposed changes to urban policy that were in line with the fundamentals guiding the livable city. Major elements on the policy agenda for TEAM were “*participation, aesthetics, pollution control, more parks, neighborhood preservation, and mixed land use*” (Ley, 1980, p. 250). The livable city has now become commonly recognized worldwide, in part due to The Economist Intelligence Unit, (an independent business within The Economist Group), responsible for publishing yearly global livability rankings (EIU, 2014). These rankings are typically used in order to attract economic growth (Myers, 1988). There is also growing prominence of this term specifically within the urban planning profession (Wagner & Caves, 2012). In Canada, for instance, the national professional planning association CIP, along with numerous municipal planning departments, underscore the concept of livability as a key objective (Lanarc & Canadian Institute of Planners, n.d.; Town of Oakville, 2015; Region of Waterloo, 2015; City of Winnipeg, 2011; City of Vancouver, 2015).

Two urban design community-level movements are heavily rooted in the concept of livability: New Urbanism and Smart Growth (Godschalk, 2004). ‘New urbanism’ was introduced in the early 1990's, and included design principles such as: mixed-used, interconnected streets that are pedestrian and cyclist friendly, high-quality parks and conservation lands, aesthetically pleasing urban design, and quality public gathering places (Ellis, 2002; Kristen Day, 2003).

‘Smart Growth’ was proposed during the same time period of ‘New Urbanism’ and was developed as a response to suburban sprawl. There are some similarities between the two movements,

for instance, ‘Smart Growth’ also encourages more transit- and walking-friendly environments, and mixed-use development. A point of emphasis in the ‘Smart Growth’ movement is the call for more compact forms of urbanization that are less environmentally damaging (Filion, 2003). ‘Smart Growth’ is also said to foster a high quality of life and social equity, resulting from shorter travel distances, along with a broader range of life-style options (Filion, 2003; Scott, 2007).

In general, livable communities are judged based on the ability of the community to supply the needs and wants of populations, along with how well these can be met through the local provision of goods and services (Ruth & Franklin, 2013). These ideal communities accordingly encompass features that encourage walkability, high-densities, diversity, efficiency, safety, affordability, accessibility and are well-served by public transit systems (Banister, 2008; Miller et al., 2013).

2.2.2 Definition(s) of Livability

Following the period in which livability was first introduced as a new ideology of urban development, the concept of the livable city has continued to evolve. Pacione (1990) defined livability as a “behavior-related function of the interaction between environmental characteristics and personal characteristics” (p. 1-2). Newman (1999) also incorporated the notion that livability is about the human and natural environment, and further added that the concept should encompass both individual and community well-being. Livability has also been defined as “a statement of desires related to the contentment with life in a particular location...” (Chazal, 2010, p. 587). More recently, the American national organization Partners for Livable Communities, defined livability as “the sum of the factors that add up to a community’s quality of life—including the built and natural environments, economic prosperity, social stability and equity, educational opportunity, and cultural, entertainment and recreation possibilities” (Partners for Livable Communities, 2016).

From the definitions provided, there is evidence that the concept of livability is heavily focused on the physical attributes of a given location and also on the relationship between the physical attributes and the social life that it sustains (Lowe, Whitzman, Badland, & Davern, 2013). Livability is perceived to focus on localized concerns, and to investigate the immediacy of issues in a given environment, therefore planners perceive livability as tangible and achievable (Allen, 2010; Gough, 2015; Miller, Witlox, & Tribby, 2013; Myers, 1987; Ruth & Franklin, 2013). Livability interventions have been integrated into community plans and policies with a directed focus of enhancing how people experience place (Gough, 2015).

2.2.3 Livability and Policy

Within the province of Ontario, there is a hierarchy of policy documents that influence planning decision-making. At the provincial level, there is the Provincial Policy Statement (PPS) and the Places to Grow Act (PGA). Both of these policies inform decision-making at the provincial, regional, and municipal levels. They prioritize the notion of creating livable environments and enhancing livability. For example, under section 1.1.1 of the PPS, the focus is to build healthy, livable and safe communities through managing land use patterns (Ontario Ministry of Municipal Affairs and Ministry of Housing, 2014). One of the ways to achieve this is by *“improving accessibility for persons with disabilities and older persons by identifying, preventing and removing land use barriers which restrict their full participation in society”* (Ontario Ministry of Municipal Affairs and Ministry of Housing, 2014, pg. 6). With specific reference to the proposed growth plan for the Greater Golden Horseshoe, part of the vision is to create livable urban and rural areas to enhance community health and well-being (Ontario Ministry of Infrastructure, 2006). As well, there is mention that through establishing *“a livable, compact, complete urban structure with good design and built form”* this will support attainment of economic and environmental goals (Ontario Ministry of Infrastructure, 2006).

Livability is also widely addressed throughout Official Plan (OP) documents in greater detail. For instance, the OP of Oakville- *Livable Oakville* conveys that the town’s vision is to *“become the most livable Town in Canada”* (Town of Oakville, 2015, section A-1). In section 6 of the *Livable Oakville* OP, there are a number of urban design policies that support the creation of a livable community. For instance, section 6.2.1 (E) states that the public realm should include *“furnishings, trees and landscaping, wayfinding, and public art that provide orientation and a sense of identity”* (Town of Oakville, 2015). As well, new streets and redevelopment of streets should be *“comfortable, barrier-free and safe”* (Town of Oakville, 2015, section 6.3.1 (D)). The streetscapes should *“provide variation in façade articulation and details”* (Town of Oakville, 2015, section 6.4.1 (C)). New buildings should be *“fully accessible by incorporating universal design principles to ensure barrier-free pedestrian circulation”* (Town of Oakville, 2015, section 6.9.12).

The City of Waterloo’s OP also shows evidence of prioritizing policy towards making the city more livable. Under section 3.9.2, subsection 3 (B)- Neighbourhoods, the City has noted the importance of *“encouraging accessible and visitable housing in order to facilitate ease of living and aging in place”* (City of Waterloo, 2012a, pg. 38). Visitable housing is described as incorporating accessible features such as: a zero-step entrance, wider doorways (at least a 32-inch clear opening), and a half bathroom on the main floor (City of Waterloo, 2012a). These measures are intended to help

encourage “*a more livable and adaptable built environment*” (City of Waterloo, 2012a, pg. 380). There is also mention of urban design guidelines that contribute towards a “*memorable, attractive, and livable city*” (City of Waterloo, 2012a, pg. 39). For example, section 3.11.1, subsection 13 (28) discusses wayfinding elements like clear signage, and subsection 13 (13) promotes universal design standards like flush curbing, ramps, and contrasting pavement elements (City of Waterloo, 2012a).

Some of the common themes discussed within the official planning documents related to ensuring livability was to remove land use barriers, create more compact urban structure, adopt wayfinding elements, utilize public art to enhance orientation, add comfort through trees and landscaping, offer barrier-free streets and buildings, have clear signage, and ensure flush curbing and contrasting pavement features. A number of these initiatives that are configured towards enhancing livability also appeal to ageing populations. Examples of these are to enhance wayfinding strategies, to have barrier-free public spaces, and to encourage accessible visitable housing. There are very few instances where ageing populations are explicitly mentioned within official planning documents, however, there is clear intent of making communities appeal to all demographics and age-groups.

2.2.4 Measuring livability

Initial metrics for livability solely ranked communities and cities based upon standard of living, and not quality of life. Therefore, under these terms, an urban environment may have been deemed as a “livable space” and still have really poor quality of life standards for individuals due to perhaps personal circumstances (illness, unemployment, etc.). The concept of livable spaces is now trying to be more inclusive (Hwang, Glass, Gutzmann, & Shin, 2008). The efforts to change indicators with the purpose of guiding results towards a higher quality of living and quality of life have not been easy. Much of the difficulties have been attributed to the lack of connection and lack of dialogue between urban planning and public health.

In the early 19th century, public health and planning worked together to solve rapidly growing, harmful effects of industrialization and urbanization. Following the end of the 19th century, however, there was a shift in focus in public health to more individual level health (Corbun, 2004). The focal point was to better understand diseases, rather than addressing problems with urban infrastructure. Concurrently, planning development shifted and adopted “the Haussman model” of zoning in order to separate residential areas and other land uses. After a century of these two fields detaching from one another, recent findings have acknowledged the importance of the two fields working towards similar objectives, and that reconnecting the two would be of great value (Corbun, 2004). Increased attention is needed to the public health effects of the built environment. Initiatives which involve both planners

and public health professionals is required in order to improve health in urban populations (Corbun, 2004). In this regard, the analysis of the concept of livability will play a prominent role in reconnecting the two fields, since its aim is to measure indicators that can effectively gauge the quality of living and the quality of life.

When developing indicators, there must be a clear understanding of the main point(s) of interest, along with the purpose of conducting an analysis (Ciegis, Ramanauskiene, & Startiene, 2009). For example, because ageing populations are more prone to losing their driver's license (Turcotte, 2012), community livability for ageing populations assumes that individuals have adequate access to goods and services within walkable range. There would therefore be a need to quantify the walkability of these spaces. Criteria used to measure walkability have been identified as knowing the average number of resting locations along sidewalks, the number of pedestrian injuries and fatalities from vehicles, and the condition of sidewalks (Corporation, 2008). Indicators are not only useful when measuring and assessing an area, but they are also used to illustrate needs, to track performance towards goals and objectives, and to be able to inform in a comprehensive way to general users (Ciegis, Ramanauskiene, & Startiene, 2009; Litman, 2008; Miller et al., 2013; Smeets & Weterings, 1999). They are also said to be useful when tracking long-term planning because it is possible to identify where improvements are needed and to show over time evidence of potential progress (Balsas, 2004).

Additional recommendations have been made by Miller et al. (2013), Litman (2008), and Balsas (2004) on the various principles that should be applied when creating indicators. Indicators should be comprehensive so that they effectively enhance the understanding of the broader goal that is being addressed. Data quality should also be of high standard so that others may easily replicate data collection for a desired indicator, or utilize the collected data with a degree of reliability. Interested knowledge users should be able to readily access information collected from an indicator that is clear and concise. Performance of one indicator should be independent of the performance of another indicator. Collecting information related to an indicator should be cost effective, and lastly, indicators should be non-redundant in order to alleviate data duplication (Litman, 2008).

Measuring livability is conducted by using both objective and subjective indicators (Kaal, 2011; Kamp, Leidelmeijer, & Marsman, 2003). Objective indicators are related to hard facts, such as the number of educational facilities in an area, the amount of open space, or the prevalence of connected street networks (those that include shorter blocks, intersections, and avoid dead-ends) (Berrigan, Pickle, & Dill, 2010; Lowe et al., 2013). Whereas, subjective indicators are often

concerned with the populations' beliefs and perceptions of a given environment and whether their needs are being satisfied (Lowe et al., 2013).

Because livability is measured by using a combination of both objective and subjective indicators, this leads to variability when defining this concept. In particular, subjective indicators are susceptible to societal shifts, such as, the emergence of new technologies and new environmental constraints that shape the populations' wants, needs, and values of a given environment (Miller, Witlox, & Tribby, 2013; Ruth & Franklin, 2013). There are also generational shifts in livability preferences that make it difficult to come up with a single, spatially, and temporally constant definition of the term (Ruth & Franklin, 2013). An emerging constraint on many urban areas is the increasingly ageing population which creates new demands for infrastructures, social services, and private and public spaces (Ruth & Franklin, 2013).

2.2.5 Livable community indicators for an ageing population

According to a Canadian study conducted in 2008 by the CMHC, Canadian communities need to improve awareness of the consideration required for environments to better align with the needs of ageing populations (Corporation, 2008). A preliminary literature review conducted by this study group found that there was minimal literature that explicitly connected the topics of livable communities and ageing in place. There were also findings that suggest Canadian communities have made little progress towards implementing livable initiatives (Corporation, 2008).

The objective of the study was to come up with a set of indicators and a checklist to help inform Canadian communities of particular community attributes that are sufficient, need improvement, or need to be considered, in order to facilitate "ageing in place" (Corporation, 2008). The CMHC utilized qualitative measures - a literature review and focus groups with seniors, to come up with a preliminary set of indicators and check list. Following this, the researchers interviewed 30 planners and professionals to obtain feedback on the proposed indicators and checklist. Ten case studies were then conducted to investigate how communities have been addressing the needs of seniors. Lastly, there was a pilot test conducted with two Canadian communities to test the indicators and their utility. Upon completion of the pilot test, the researchers refined the indicators and check list to represent the proposed changes (Corporation, 2008).

In response to the apparent gaps in research, six key areas were identified by synthesizing literature related to land-use planning and the built environment that would help address the challenges of an ageing population.

1. Neighbourhood walkability

2. Transportation options
3. Safety
4. Housing choice
5. Access to services
6. Community engagement in civic activities

Each of these areas were developed into indicators based upon the input from seniors, existing literature, and interviews with planners and experts.

1.1.1.1 Neighborhood walkability

Neighbourhood walkability is seen to be good for the health of ageing populations, as it reduces isolation, encourages physical activity, and enables social engagement (Corporation, 2008). A study by Leyden (2003) looked at the effects of social networks and interactions among people and the correlated importance of walkable neighborhoods. Results showed that residents living in walkable neighborhoods were more likely to participate in social activities, know their neighbors, and to be politically engaged. More recently, support for the claim that neighborhood walkability enhances health was provided by Talen & Koschinsky (2013) in a comprehensive literature review focusing on walkable neighborhoods.

Under the study by the CMHC (2008), neighbourhood walkability was reviewed. Findings were that age-friendly streetscape planning for seniors needed to include small details such as, availability of sidewalks, and resting places along pedestrian routes in order to encourage walkability among residents. The checklist that was formed to measure neighbourhood walkability included features such as sidewalk conditions, annual number of pedestrian injuries, proportion of streets with sidewalks, proportion of housing within walkable distances to public transportation, the number of walks per week taken by residents, and the average distance between resting locations.

1.1.1.2 Transportation options

Transportation options were highlighted as essential to meet the needs of ageing populations and to facilitate stress-free, reliable services (Corporation, 2008). Kochera et al. (2005) also identified transportation and mobility as a main component to creating environments for successful ageing. They argue that transportation enhances independence of ageing individuals, whether it be provided by a private means of transportation or public.

Key transportation areas that were addressed under the CMHC study, were to understand the frequency of travel by individuals 65 years and older and mode choice. Additional areas of inquiry dealt specifically with understanding the average number of trips taken on public transportation and the number of individuals who reported staying at home because of a lack of transportation.

1.1.1.3 Safety

Another indicator was *safety*, both on a personal and community level. By increasing the perception of safety, individuals are more likely to increase walking, and public transit use (Corporation, 2008). Similarly, Feldman & Oberlink (2004) created an indicator list for age friendly communities and also suggested neighborhood livability and safety as basic needs for individuals. Safety is seen as having significant impacts on an individual's health and well-being (Lowe et al., 2013).

The indicator safety was reviewed by CMHC, and findings were that many seniors had concerns about crime and personal safety when walking or using public transportation. During the evenings, the fear of falling on poorly maintained surfaces increased. Some of the age-friendly strategies proposed to aid in alleviating these concerns were to provide better lighting and safer crossings, and as well to encourage high levels of pedestrian activity. With guidance from these findings, the following checklist was created by the researchers at the CMHC to address specific concerns of safety: proportion of senior residents who report feeling safe or unsafe and reasons for why, evidence of adequate lighting, the number of slip-and-fall injuries, the number of reported crimes, and the availability of wayfinding systems (crossing times that allow seniors to cross the streets, clear signage, visible sight lines, audible crossing signal for visually impaired, safe design) (CMHC, 2008).

2.2.5.1 Housing options

Offering diversified *housing options* was also identified as being a key component to addressing the challenges of an ageing population. Housing can be a major barrier for ageing individuals looking to reside in a healthy, comfortable environment. The criteria that the CMHC addressed within the checklist with regards to housing included questions pertaining to what type of housing ageing individuals lived in (i.e. single-family, townhouse, row house, mobile house, granny suite, etc.), what the occupancy rates were in existing lifestyle communities (i.e. senior residences,

retirement housing, etc.), and what terms of occupancy were available (i.e. condominium, co-operative housing, co-housing, life leases, etc.). Additional questions had to do with the overall condition and upkeep of accommodations. Questions asked were to investigate the proportion of individuals 65 years and older who spent 30% or more on their before-tax household income on housing, to know the proportion of individuals who were living in housing with unmet home modification needs (such as, unsafe stairs, inadequate lighting, etc.), and the proportion of individuals living in acceptable housing according to the affordability, adequacy, and suitability standards in the community.

2.2.5.2 Access to services

Additionally, *access to services* was identified as being an important component to allowing seniors to live comfortably at home. Services include the grocery store, health care, community facilities, and recreational opportunities (CMHC, 2008). In order for seniors to be able to take full advantage of these services, they are required to be in proximity to their primary place of residence or situated nearby transportation nodes. Criteria that was allocated towards a checklist to measure access to services criteria was, to identify the proportion of housing within walking distance to basic services, the proportion of individuals who require assistance to access basic services, and number of individuals who have access to home delivery of retail goods.

2.2.5.3 Community engagement

Community engagement was the last indicator identified by the CMHC study. Findings were that isolation due to lack of mobility has negative impacts on an individual's wellbeing. Designing a community that is supported with age-friendly planning will alleviate isolation through encouraging mobility. This increased mobility should, in turn, lead to seniors being able to take more active roles in their communities. An example of possible adjustments that can be made to the built environment include making public transportation schedules more legible for individuals with vision difficulties and ensuring there are adequate amounts of resting places. Additionally, incorporating seniors in the planning process when developing future, or re-developing existing communities is a proven approach that ensures programs are inclusive to that demographic. The following were items present on the checklist that monitored community engagement: identifying the proportion of seniors who engaged in social activities, proportion of seniors who were able to access a dedicated senior centre,

and whether local government has land-use policy and planning programs that specifically engage seniors.

Livability can prove to become a promising measure in assessing environments for those of all ages, in particular ageing, and those with ADMRD populations. The point of interest that should be valued, is to further understand how the criteria developed for each indicator can sufficiently address the objective and subjective needs of a given population. One of the rising needs for ageing populations is to have accommodating home and neighborhood environments so they can effectively remain at home for as long as possible. Another growing need, specifically for those with ADMRD is to have access to livable day programs.

2.3 Alternative Solutions to Institutionalized Care

2.3.1 “Ageing in place”

Ageing people are increasingly expressing a preference for prolonging moving to institutionalized types of care and to age at home in the care of their community (Fields, Anderson, & Dabelko-Schoeny, 2014; Hodge & Gordon, 2013). The term “ageing in place” is regularly used to capture this idea of ageing populations remaining in their home and community for as long as possible (Federal/Provincial/Territorial Ministers Responsible for Seniors, 2015). A natural progression of ageing is to lose overall mobility and have reduced activity spaces (Rosenberg, Huang, Simonovich, & Belza, 2012). As a result of this, many seniors develop an enhanced sense of attachment with their own homes because of the sense of security they provide, the experiences and memories they hold, the vicinity to friends, and the familiarity of neighbourhoods and services (Hodge & Gordon, 2013).

One of the main benefits to “ageing in place” is that people are able to maintain independence, autonomy, and connection to social support networks (Wiles et al., 2012). An additional benefit to “ageing in place” is that individuals are provided financial relief by prolonging, or avoiding the more expensive option of institutional care (Wiles et al., 2012).

Some key factors that contribute to successful “ageing in place” are when populations have access to services and health and social supports, when a person’s home environment is built to accommodate the needs of an elderly person (i.e., installing mobility aids and accessible entranceways), and the existence of accessible and age-friendly neighborhoods and communities (Federal/Provincial/Territorial Ministers Responsible for Seniors, 2015). Planners play a vital role in looking to ensure these factors to assist “ageing in place” are addressed (Hodge & Gordon, 2013).

Age-friendly neighborhoods, communities, and cities are receiving growing recognition as being one of the greatest supports for encouraging “ageing in place”.

Although there have been efforts to improve environments so that they are more age-friendly, certain age related disorders present additional challenges. In particular, ailments that need some form of additional care, in particular dementia, hypertension/high blood pressure, and physical disabilities (Fields et al., 2014). Dementia is proving to be one of the major debilitating ailments. Because of the increase in numbers of people suffering with dementia, it has begun and will continue to impose significant capacity constraints on international nursing home care environments and result in increased associated costs (Marie et al., 2014). Thus, there have been recent developments in care programs for elderly populations to offer an alternative that bridges the gap between ageing at home and institutionalized types of care. The proposal is for adult day programs to bridge this gap and fill this social need (Anderson, Dabelko-Schoeny, Fields, & Carter, 2015).

2.3.2 Adult day programs: filling a social need

According to a recent study by Anderson, Dabelko-Schoeny, & Johnson (2013) adult day programs are considered the most suitable provider of dementia care among home and community-based options. They are described as being a non-residential facility that supports health, nutritional, social, and daily living needs of adults in a professionally staffed group setting (Fields et al., 2014). Although they are considered to be a viable option to institutional care, they are not recognized within a number of zoning by-laws as an official type of land use (City of Toronto, 2013; City of Waterloo, 2012b). For example, within the City of Toronto zoning by-law, the closest definition to a day program is a day nursery. Day nurseries are defined by the Day Nurseries Act (Province of Ontario, 1990) as:

a premises that receives more than five children who are not of common parentage, primarily for the purpose of providing temporary care, or guidance, or both temporary care and guidance, for a continuous period not exceeding twenty-four hours, where the children are,

- (a) under eighteen years of age in the case of a day nursery for children with a developmental disability, and
- (b) under ten years of age in all other cases,

but does not include,

- (c) part of a public school, separate school or private school within the meaning of the *Education Act* or part of a school continued or established under section 13 of the *Education Act*, (“garderie”). (pg. 1-2).

By not having specific zoning that references day programs, difficulties may arise through obtaining approval for this type of use and through clearly being able to define where these uses may be acceptable. As well, there is a general consensus in a number of countries (Norway, New Zealand, & United States) that there is a lack of evaluation and knowledge on the effectiveness of day programs (Anderson et al., 2013; Marie et al., 2014; Weir & Fouche, 2015). Further understanding and increased data collection specific to day programs would facilitate policy makers involved in formulating policy, designing, and improving programs (Bea van Beveren & Hetherington, 1997). In Norway, researchers are currently analyzing components of adult day programs, to determine whether they in fact increase the QoL for patients with dementia, relieve care-giver burden, and postpone nursing home admittance (Marie et al., 2014). Comparisons will be made between patients who attend a day program and those who do not. Projected results from this study are guided by results achieved from two previous studies (Engedal, 1989 & Taranod, 2011). They are estimating that 45% of the patients attending a day program will be admitted to a nursing care home within 24 months, whereas 62% of the patients not attending a day program are anticipated to be admitted to a nursing care home (Marie et al., 2014). These anticipated findings imply that day programs are beneficial in delaying the progress of the memory-related disease and thus prolonging the need for individuals to be institutionalized.

1.1.1.4 Perceived benefits of those with dementia

These programs offer an environment for participants to socialize with individuals from a similar age group and to develop friendships. Fields et al., 2014 conducted a literature review, including 61 articles from 2000 to 2011 that analyzed the effectiveness of adult day programs. Findings suggested that the social support provided by the group environments of the programs had a positive impact on the physical and mental well-being of participants (Fields et al., 2014). Social connections have also been shown to play a critical role in reducing feelings of anxiety and loneliness (Dabelko-Schoeny & King, 2010). Baumgarten et al., 2002 also discovered that individuals' attendance at day programs aided in alleviating feelings of loneliness.

Another recent study by Weir & Fouche (2015), discovered that social and physical activities offered at these programs reduce social exclusion, raise self-confidence and self-esteem, and minimize the risk of depression. On days that participants attended adult day programs, they expressed fewer signs of agitation and depression (Fields et al., 2014). Most of the activities offered at these programs were arts focused, music, games, or exercise. Participants appreciated the variety of

activities and valued the opportunities to learn and participate in the given activities (Dabelko-Schoeny & King, 2010).

In a pilot project guided by (Rentz, 2002), an outcomes-based evaluation of ‘Memories in the Making’ was conducted. This is an art program for those individuals struggling with dementia. It was administered, with the intent of understanding the participants overall sense of well-being following participation in weekly sessions at the program. The program offers participants an opportunity to use acrylics and watercolours to paint. Goals of this program are to provide the participants with an opportunity for sensory stimulation, to allow them to be a part of a creative process, to develop a sense of well-being, and to aim at providing increased self-esteem through the art of creating (Rentz, 2002). Evidence of well-being was obtained through a number of indicators. 83% of participants displayed sustained engagement in the art activity for 30-45 minutes (Rentz, 2002). Additionally, 80% of participants demonstrated signs of being calm and showed enjoyment through smiles and laughter (Rentz, 2002). 78% had expressed through verbal or nonverbal indices that they were content having completed art work (Rentz, 2002).

The indicators suggested that participants at the ‘Memories in the Making’ program are reaping positive benefits from the experience. Findings from the ‘Memories in the Making’ program, along with studies by Weir & Fouche (2015) and Fields et al. (2014) support the belief that day programs are capable of enriching the lives of persons with dementia (Gústafsdóttir, 2011). Within these day programs, types of care are camouflaged through purposefully created physical or social activities that are easily carried out by an individual (Gústafsdóttir, 2011). It is important for attendees to be provided with opportunities to express their independence, and to have the confidence in successfully doing so because arguably, many individuals with ADMRD have had some part of their independence recently stripped from them. Individuals are also granted a sense of normality through encouraging autonomy in the activities provided (Gústafsdóttir, 2011). These day programs are designed and directed to provide accessibility for members through adopting dementia-friendly principles.

1.1.1.5 Care-giver benefits

Caring for individuals with dementia can be particularly difficult. Caregivers notably play a critical role in keeping an older individual in their home environment for as long as possible (Schulz & Beach, 1999). This often has negative implications for the caregiver and can affect their personal health and financial obligations (Schulz & Beach, 1999). Recent findings from the Alzheimer’s

Society of Canada (Meandro, 2012), bring attention towards the pressures on family caregivers for those with dementia. In 2011, all caregivers combined spent an estimate of 444 million unpaid hours caring for someone with dementia. The projections for 2040 are a staggering 1.2 billion unpaid hours per year.

A number of researchers have found that one of the core elements of day programs is that they provide caregivers with important relief (Fields et al., 2014; Schulz & Beach, 1999; Weir & Fouche, 2015). Baumgarten et al. found that “caregiver burden decreased substantially among caregivers of high attendees” of adult day programs (Baumgarten et al., 2002, pg. 251). Utilizing day programs can increase the amount of free time for caregivers. Because of this, they can engage in activities that positively influence their physical and emotional well-being. Caregivers may also choose to remain active in the workforce (Fields et al., 2014). By allowing the caregiver to remain engaged in work-related activities, this promotes a healthy separation from caregiving responsibilities (Anderson et al., 2013). Caregivers are able to better afford the costs of utilizing a day program, and also those costs of caring for an elderly individual at home. Frequency in attendance of a day program can be variable depending on the associated need of the caregiver and patient, but also of an individual’s financial flexibility.

2.4 Age-Friendly Environments

During the 1970’s, researchers found that there was increasing empirical investigation into the influence of the environment of older adults (Lawton & Nahemow, 1973). A number of professionals (gerontologists, architects, planners, and engineers) were intrigued by this new wave of thought. Planners in particular would and do benefit by furthering how to better achieve a match between individuals and their environments (Lawton & Nahemow, 1973; Walmsley & Lewis, 2014). There is necessary cause for understanding how people can have different experiences with the physical environment and what their environmental preferences may be. As a response to this shift in thinking, the concept of age-friendly environments emerged.

Age-friendly environments are said to be all-inclusive and consider initiatives of healthy cities, are kid-friendly, and are dementia-friendly (Fitzgerald & Caro, 2014). In particular, these environments promote active ageing and enhance quality of life through ensuring that individuals have access to built environment features and social services that promote a healthy lifestyle, that there are social supports, and that security is optimized (Ball & Lawler, 2014; World Health Organization, 2007).

An age-friendly cities framework was developed by the WHO (2007) and has been widely adopted by many Canadian communities (Hodge & Gordon, 2013). The following categories were included under the “Checklist of Essential Features of Age-friendly Cities” (WHO, 2007): transportation, housing, social participation, respect and social inclusion, civic participation and employment, communication and information, community support and health services, and outdoor spaces and buildings (see Figure 1: Eight age-friendly city criteria). Transportation, housing, and outdoor spaces and buildings encompass features of the physical environment and can affect an individuals’ mobility, sense of security, along with overall comfort in the environment. Social participation, respect and social inclusion, and civic participation and employment are primarily focused on addressing the social environment, and of including areas that involve social inclusion and mental wellbeing. This may include addressing community attitudes towards ageing populations to be accommodating, creating opportunities for socialization, through cultural, recreational, or other types of activities, and offering avenues for ageing populations to work- either paid, or unpaid. The last two categories are communication and information, along with community support and health services. These are highlighting needs of social and health and service environments.



Figure 1 Eight age-friendly city criteria (WHO, 2007)

Since the development of the WHO age-friendly checklist, a number of cities, states/provinces, municipal governments and civil society organizations in many countries have become involved in promoting these objectives (Plouffe & Kalache, 2011). Within Canada, the federal, provincial, and territorial governments have encouraged communities to adopt policies that

are in support of age-friendly environments (Plouffe & Kalache, 2011). During 2007-2011, over 560 communities in eight Canadian provinces initiated involvement in becoming more age-friendly (Plouffe & Kalache, 2011).

2.5 Dementia-Friendly Environments

Understanding the specific environmental limitations, needs, and wants of those with ADMRD has become a national priority for many countries (Alzheimer Society of Canada, 2010). The concept of “dementia-friendly communities” evolved as part of an initiative to aid in defining, and achieving acceptable environments for those with dementia. “Dementia-friendly communities” encompass environments that... *“focus on stigma reduction and the inclusion of people with dementia. People are educated about dementia and know that a person with dementia may sometimes experience the world differently. In a dementia-friendly community, people living with dementia feel supported by their community members whether they are at post offices, retail outlets, using transportation or enjoying hobbies out in the community”* (Alzheimer’s Society of Canada, 2015). The main rationale for creating dementia-friendly communities is to provide community-based assistance to those with dementia and their caregivers, so that individuals may feel empowered to live well, and confidently carry out daily tasks and activities (Green & Lakey, 2013). Offering assistance to those with dementia soon after diagnosis has been suggested to increase their overall wellbeing, resulting in reduced hospital visits, and making it feasible to remain in their own home for longer (Green & Lakey, 2013). The Alzheimer’s Society (2013) demonstrated that if a person living with dementia is able to live at home for one year, rather than moving to residential care, the individual would save £11, 296 (\$18,231 CAD) per year, or £941 (\$1,519 CAD) per month (using June 2016 conversion rate of 1£ to \$1.88 CAD) (Green & Lakey, 2013). The Alzheimer’s Society (2013) created a table labelling 10 key areas that communities should focus on in order to become dementia-friendly (see Figure 2: Empowering people with dementia to have high aspirations, confidence and know they can contribute) (Green & Lakey, 2013).

Dementia-friendly environments should accommodate the needs of care for those with the disease. Individuals should receive timely diagnosis and have the opportunity to access community-based services. As well, these environments should acknowledge that there may be individuals with dementia residing outside of institutionalized care, and to educate the general population on how to interact and engage those with the disease.

The physical environment should be built in such a way that promotes ease when individuals with dementia use public transport and navigate throughout their immediate surroundings. Lastly, dementia-friendly environments should empower individuals with dementia and to challenge the prevalence of disease related stigma.



Figure 2 Empowering people with dementia to have high aspirations, confidence and know they can contribute (Green & Lakey, 2013)

2.5.1 Suitable public space design considerations for persons with dementia.

According to Sheehan, Burton, & Mitchell (2006), there have been very few studies conducted on how to conceptualize and design the public outdoor environment for people with dementia, and the resulting link between the quality of the built environment and QoL of this demographic (Fleming, Goodenough, Low, Chenoweth, & Brodaty, 2014). Specifically, there is very little understanding on how to ensure that environments are accessible and legible, “meaning their function is evident through their size, proportion, materiality, and furnishing” (Marquardt & Schmieg, 2009, p. 339) and also familiar, distinctive, comfortable, and safe (Mitchell & Burton, 2010). The six design principles: accessibility, legibility, familiarity, distinctiveness, comfort, and safety have been outlined in various recent research studies as being the primary areas of focus when designing public spaces for this demographic (Keady et al., 2012; Mitchell et al., 2010).

Sheehan et al. (2006) felt that the most effective way to enhance understanding of public space design for those with dementia, was through direct contact with people living with dementia and their caregivers. In their study, one of the techniques used is an emerging qualitative research method called a walking interview (Keady et al., 2012). Walking interviews are used to obtain participants' attitudes and knowledge about a designated walking environment (Evans & Jones, 2011). This research method involves the researcher accompanying interviewees and prompting them with questions about the place that they are in (Evans & Jones, 2011). During the walking interviews in the study conducted by (Sheehan et al., 2006), researchers were looking for an indication of what techniques participants used when wayfinding, and how they perceived various features of the built environment. Findings from their study indicated that those with dementia were significantly worse at wayfinding than in comparison to the control group (free of dementia, 60 years or over, void of any physical disability). Despite this claim, the participants with dementia in the study were just as likely as the control group to use features of the built environment and signs to assist in wayfinding. According to a previous study by Passini et al. (1998), signs were known to cause confusion and disorientation. Sheehan et al. (2006) noted that signs should still be utilized as a simple means of enhancing wayfinding for individuals with dementia, and that including a particular design, or colour feature may enhance clarity for this population.

An important Act in Ontario that mandates accessible public space design is the Accessibility for Ontarians with Disabilities Act (AODA). The AODA became law in 2005 (Accessibility for Ontarians with Disabilities Act [AODA], 2005). This Act incorporated *The Design of Public Spaces Standard*, that became law in 2013. Under this standard, design modifications apply to all public, private, and not-for-profit organizations. When an organization is either constructing, or redeveloping a public space, they must comply with the requirements. An example of one of the regulations from this Act is with specific reference to recreational trails. Each trail must have a trail head sign indicating the length of trail, the type of surface used to construct the trail, the average and minimum width of the trail, the average and maximum running slope, and location of nearby amenities. As well, there needs to be additional consideration for rest areas, passing areas, viewing points, and amenities on the trail.

2.5.1.1 Familiarity and comfort

A recent study was conducted to specifically capture the experience of participants regarding accessibility and public space (Brorsson, Ohman, Lundberg, & Nygard, 2011). Recruitment criteria

for this study was: Swedish adults 55 years or older with early progressions of the disease, and still currently living in their household environments. Findings revealed that the behavior and approach towards accessing outdoor spaces began to change for participants who prioritized features of familiarity and comfort. This has been shown in a previous study by Mitchell et al. (2003). Individuals would commonly visit spaces that had a recognizable appearance that was displayed through the facades, paving, or use of street furniture. Changes to pre-existing landmarks would reduce the familiarity of the environment, for example exterior house renovations or new house construction (Brorsson et al., 2011).

Participants also planned all outings in order to avoid the potential of feeling vulnerable and not feeling secure (Brorsson et al., 2011). For instance, highly crowded spaces were cited as being undesirable spaces. Crowded spaces may encompass factors such as, background noise from cars, music in the stores, or people talking, all of which can have a negative influence on one's ability to concentrate (Brorsson et al., 2011; Brorsson et al., 2013; Mitchell et al., 2003; Phillips et al., 2013). As well, individuals ensured familiarity by going to a local grocery store or bank that they would have gone to prior to their diagnosis, or one that was within walking distance to their homes (Brorsson, et al., 2011; & Brorsson et al., 2013).

2.5.1.2 Legibility and accessibility

In keeping with the observations made by (Brorsson, et al., 2011; Brorsson, et al., 2013), individuals are more likely to walk to a neighboring public facility if the built environment is both legible and accessible. Elements of design have been examined to help with the overall legibility and accessibility of outdoor spaces. According to Mitchell, et al. (2003) individuals should not live further than 500 meters from the most relevant public facility (e.g., grocery store, bank, health centre, & transit stops). In a later study by Mitchell, Burton, & Raman (2004), they inferred that street layouts that are short, narrow, and gently winding are easier to navigate as opposed to long, wide, straight streets. As well, varied building forms that incorporate unique design features and colours assist in keeping things interesting and more memorable (Mitchell et al., 2004). Road signage should be made explicit and contain only relevant information in order to avoid confusion (Mitchell et al., 2004; Phillips, Walford, Hockey, Foreman, & Lewis 2013). Directional information along with descriptive information that can help an individual distinguish the function of buildings or other objects in the environment also proved to be beneficial (Blackman, Van Schaik, & Martyr, 2007).

2.5.1.3 Safe and distinctive features

Addressing concerns of safety along with ensuring that the environment has distinctive features are also key areas to keep in mind when designing public spaces for individuals with dementia. Certain barriers identified by Sheehan et al., (2006) that could potentially compromise the well-being of individuals with dementia are elements such as potholes, broken fences, blocked views, derelict areas, and graffiti. Building and spaces that fail to provide shelter from sunlight or are dark and shadowy are also not inviting for individuals because they obstruct their vision (Mitchell et al., 2003). Similarly, White (2007) and Mitchell et al. (2003) outlined that poor lighting and obscured sightlines lead to perceived safety and security concerns among the elderly. Poor visibility when navigating through spaces can cause both physical harm as well as lead to stress and disorientation (Brorsson, et al., 2013). Adding distinct design features to the built environment can have a positive effect on how an individual approaches outdoor public spaces. Using texturized and coloured sidewalk strips or having different types of paving materials are some suggestions made by both Lovering (1990) and Mitchell et al. (2003). Other types of natural or built urban features that act as cues for individuals are flowers, trees, landmarks such as hospitals, churches, and playgrounds or the use of traffic-calming measures, handrails, and ramps (Sheehan et al., 2006; Mitchell et al., 2003).

2.5.2 Wayfinding

Wayfinding was first conceptualized in the late 1970's by Passini (1977), and is recognized as being one's ability to spatially orient him or herself in a given environment, and to be able to successfully navigate to either a familiar, or unfamiliar destination (Passini, 1984, 1996). Additional components of wayfinding include: (1) processing environmental information from past, and present experiences, (2) decision making and developing action plans, and (3) executing the action plans (Passini, 1981). Research on wayfinding, with particular focus on individuals with dementia, has increased over the last few decades, although information on this matter still remains to be quite limited. The importance of this line of research is that there are varying degrees of navigation impairment only commonly experienced by those with dementia (Davis & Ohman, 2016; Delpolyi, Rankin, Mucke, Miller, Gorno-Tempini, 2007). Through the earlier progressions of the disease, the regions of the brain that play vital roles in human navigation are those said to be initially affected (Delpolyi, Rankin, Mucke, Miller, Gorno-Tempini, 2007).

To bring light to an understudied topic, (Caspi, 2014) published a study, entitled "Wayfinding difficulties among elders with dementia in an assisted living residence". This was a qualitative study,

which incorporated the use of participant observations and semi-structured interviews. Twelve residents from two care facilities agreed to participate in the study along with thirteen staff and managers. Of the twelve participants, the researcher only captured spatial disorientation data from six (Caspi, 2014). General wayfinding difficulties found were that participants had difficulty locating their own apartments, public or private bathroom facilities, main activity rooms, dining rooms, and dining room table and seats. It was noted that if staff did not effectively intervene, the participant would have difficulty meeting their basic needs, such as going to the bathroom (Caspi, 2014). Additional wayfinding difficulties experienced by those with dementia are, the ability to locate objects in an observable pathway (Nguyen, Chubb, & Huff, 2003), the ability to discriminate colour, depth, and contrast (Day et al., 2000; Torrington & Tregenza, 2007), the ability to keep a sense of direction and position (Blackman et al., 2003), the ability to stay focused (i.e. attentional impairment (Perry & Hodges, 1999), and the ability to resist memory distortions, which may lead to the increased likelihood of repeating an error (Budson, Sullivan, Mayer, Daffner, Black, & Schacter, 2002). Those with severe cognitive decline may begin to notice decline in their perceptual skills, decision-making skills, and mental mapping (Blackman et al., 2003).

In an attempt to ameliorate wayfinding difficulties, a number of studies have analyzed the importance and role of architectural design and wayfinding in environments specifically for those with dementia. A greater understanding of how environments may disable individuals with dementia may help provide insight into developing and actively promoting design standards and guidelines for these individuals (Blackman et al., 2007).

1.1.1.6 Suitable care facility design considerations for persons with dementia

Care facility design plays a critical role in encouraging wayfinding. Through design, it is possible to incorporate features that enhance movement throughout a facility and to provide guidance on the use and purpose of the space. As well, the physical environment can have a large influence on the well-being of individuals with dementia in care facilities (Fleming et al., 2014; Garre-Olmo et al., 2012).

Recently, Marquardt (2011) conducted a literature review of over 60 studies, all of which focused on various supportive wayfinding design features for those in care home facilities. Findings were synthesized, and the researcher proposed four guidelines that would effectively support wayfinding abilities for people with dementia. Firstly, environments should incorporate elements of simplicity, and should not require skills such as reading or interpreting signage. Secondly, individuals

should be able to visually access all areas of their immediate environment. Thirdly, environments should be designed in such a way that decision making is reduced. Fourthly, the function of a space should be clear, as in the purpose it serves, and what behavior is expected by residents.

The following were some of the main elements that were identified as supportive features of building structures and environmental design that led to the findings proposed by Marquardt (2011). Small-scale environments were marked as an important feature as they are more inviting for those with dementia and encourage wayfinding because of the size (Caspi, 2014; Faith et al., 2015; Marquardt & Schmieg, 2009; Marquardt, Bueter, & Motzek, 2014). The environment is presented as being less challenging and vast for an individual to navigate (Faith et al., 2015). As well, these environments are believed to reduce depression, and improve mobility levels (Passini, Pigot, Rainville & Tetreault, 2000; Skea & Lindsay, 1996).

Having a supportive layout in a care facility was also deemed essential to wayfinding success. Marquardt and Schmieg (2009) conducted a study of 30 different German care facilities, in which nurses rated the residents' ability to perform five wayfinding tasks. Residents were given familiar routes to navigate within the care facility. The degree to which they were able to reach their desired destination was an indication of their wayfinding ability. Findings were that there was more success in straight circulation systems, as shown below (figure 3: Straight circulation system), rather than ones that had one shift in direction (figure 4: L-shaped circulation system), or a continuous path (figure 5: Continuous path) (Marquardt & Schmieg, 2009; Passini, Pigot, Rainville, & Tetreault, 2000). With linear design, this helps to reduce the need for decision-making among individuals with dementia (Marquardt, 2011).

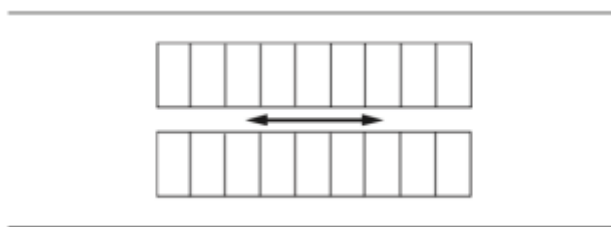


Figure 3 Straight circulation system (Marquardt et al., 2009)

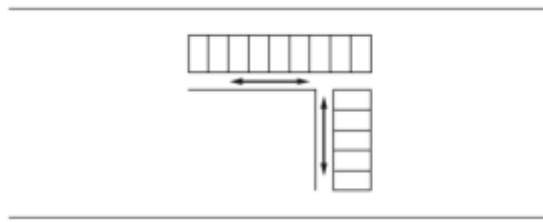


Figure 4 L-shaped circulation system with a change in direction (Marquardt et al., 2009)

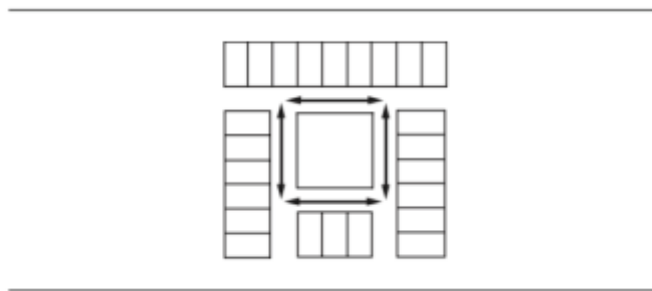


Figure 5 Continuous path around an inside courtyard (Marquardt et al., 2009)

As well, the utilization of signage (i.e. pictograms, photographic labels, and graphics) along with the use of bold colours, colour contrasts, and good lighting have been shown to enhance wayfinding abilities amongst those with dementia (Faith et al., 2015; Marquardt, 2011; Marquardt et al., 2014; Torgrude, 2006). As dementia primarily affects ageing populations, those who are diagnosed will also be vulnerable to additional ageing ailments such as declining eyesight. Some of the difficulties inherent with declining eyesight are difficulties with colour discrimination, depth perception, and sensitivity to contrast (Day et al., 2000; Torrington & Tregenza, 2007). Effective utilization, and placement of signage proved to be helpful for individuals with dementia when wayfinding (Day, Carreon, & Stump, 2000; Passini et al., 2000). For instance, Namazi & Johnson (1991) noted that signs along with pictograms were useful in enhancing identification of the bathroom. Signage should also be clear and explicit so an individual may easily interpret or read without additional prompts (Marquardt, 2011). Appropriate lighting may also eliminate shadows, reduce glare, and increase contrast (Day et al., 2000).

Environments should also be architecturally legible, meaning that the function of a space is clearly evidenced through the size, proportion, materiality, and furnishings (Marquardt & Schmiege, 2009). Furniture, murals, and artwork were useful features to provide information about a space (Faith et al., 2015). By creating a space that is distinct, this stimulates memory through not only the

physical features, but associating these features with the purpose of the space (Marquardt, 2011). Providing direct visual access to these environments also improves wayfinding (Faith et al., 2015; Marquardt, 2011). Individuals with dementia cannot begin to mentally represent spatial situations when they have difficulties seeing the space (Marquardt, 2011).

As well, individuals with dementia tended to react negatively towards environments that were over stimulating and thus, often had a debilitating effect on their ability to navigate to and from a destination (Brawley, 1992; Marquardt, 2011; Marquardt, Bueter, & Motzek, 2014). High levels of background noise or clustered environments were considered to be distracting (Faith et al., 2015). Some of the recommendations made to specifically reduce noise were acoustical ceiling tiles and sound proofing techniques (Brawley, 1992).

2.5.2.1.1 Accessible design

Individuals with dementia should be encouraged to be active participants in everyday life and not simply recipients of care (Davis, Byers, Nay, & Koch, 2009). According to Brawley (1992) and Fleming & Purandare (2010), functional design should encourage both communication and exercise, minimize hazards that may lead to falls and injury, and provide spaces that are secure and safe. Residents should also have the opportunity to access a variety of spaces and to choose where they want to spend their time throughout the day (Barnes, 2002). It was also argued by Day, Carreon, & Stump (2000) that interior spaces should foster non-institutional, familiar environments. Some examples on how to achieve this were noted as personalizing rooms, including household furnishings, and incorporating natural elements (Day et al., 2000; Marquardt, Bueter, & Motzek, 2014; Lee, Chaudhury, & Hung, 2014). As well, favourable items such as lamps and chairs within the care facility environment should be formed in shapes and sizes that are familiar to the residents (Brawley, 1992). Spaces within care facilities should replicate an environment that is consistent and authentic (Torrington & Tregenza, 2007). For example, a residents' room should have home-like features, sounds, and smells rather than have attributes of an institutional space (Fleming & Purandare, 2010).

2.5.2.1.2 Therapeutic landscapes

Additionally, Chalfont & Rodiek (2005) recommended that the design of care facility environments should start to encompass a more ecological approach, that can be achieved through incorporating therapeutic landscapes (i.e., delicately balancing people, plants, and place). Therapeutic landscapes have been identified as physical, psychological, and social environments that are associated with treatment and health benefits (Finlay, Franke, McKay, & Sims-gould, 2015). Traditional therapeutic landscapes that have these effects included "green spaces," that encompass

parks, gardens, forest and “blue spaces,” that include oceans, lakes, rivers, as well a smaller features like fountains (Finlay et al., 2015; Gesler, 1992). Exposure to “green spaces” have been linked to enhancing health and wellbeing, and actively participating in the outdoors (e.g. gardening, hiking) has proven to increase physical and mental health conditions (Finlay et al., 2015). These spaces have also been noted as being critical in enhancing community interactions and social wellbeing (Finlay et al., 2015). In reference to “blue spaces”, they have been recognized as enhancing an individual's tranquility, aiding spiritual restoration, and improving mental health. Other physical environment elements that support therapeutic landscapes, particularly in indoor environments, include lighting, colour, food quality, and air conditioner (Curtis, Gesler, Fabian, Francis, & Priebe, 2007).

‘Wander gardens’ were also another manner to incorporate ecological features into the design of care facilities for those with dementia. These gardens are specifically designed for those with dementia. A number of design features embedded within the ‘wander garden’ include, walking paths that promote movement, a variety of plants that promote visual and tactile stimulation, and protected areas for sitting and socializing (Detweiler, Murphy, Myers, & Kim, 2008). A study was conducted, where 34 male residents with dementia were observed in a care facility for 12 months both before and after a ‘wander garden’ was implemented. The ‘wander garden’ provided residents the opportunity to leave the indoor environment to exercise and stimulate all senses (Detweiler et al., 2008). Family members and staff perceived that the garden decreased inappropriate behavior and improved the mood and QoL of residents with dementia (Detweiler et al., 2008). Other studies also support the finding that having access to outdoor spaces had a positive influence on residents with dementia (Innes, Kelly, & Dincarslan, 2011; Cioffi, Fleming, Wilkes, Sinfield, & Le Miere, 2007).

Despite these findings, there exists a gap when trying to identify the applicability of livable community indicators to a community-based adult day program, and how these findings apply to larger-scale community, or city settlements. It is especially important to understand the livability of spaces for those with dementia outside of residential care and hospital environments to better inform future design.

2.6 Summary

Those with Alzheimer’s disease and other memory-related disorders (ADMRD) constitute a growing population both nationally and internationally. Recognizing the needs of this population poses to be a major challenge for many professional bodies including urban planners. Three major areas of study have been addressed in this literature review and will be further addressed throughout

this thesis: livability, ageing in place and adult day programs, and age/dementia-friendly environments and suitable public and care facility design.

The concept of livability was defined in relation to urban planning, with specific reference made to livable communities: new urbanism and smart growth. Ways to measure livability were also presented. Following the description of livability, attention was drawn to the newly growing movement for elderly populations – ageing in place. Some of the benefits discussed of ageing in place included maintaining independence, autonomy, and connection to social support networks. Adult day programs were also highlighted as being the most suitable type of care for those with dementia among home and community-based options. Specific awareness was also discussed about the rise in age-friendly and dementia-friendly environments and their defining characteristics. Further, various barriers experienced by those with AD/MD were brought forward and consideration was given to identifying wayfinding capabilities and specific care facility and public space design considerations.

The following gaps in literature were discovered throughout this review.

1. Given the increasing numbers of those with dementia, a new culture of care should be developed which is sensitive to the needs of this segment of the population. Feedback from those with the disease should be included in the development of their environments and shaping their care (Blackman et al., 2003; Brorsson et al., 2011; & Keady et al., 2012).
2. The connection between livability and the physical indoor and outdoor environment for individuals with dementia needs to be studied (Fleming, Goodenough, Low, Chenoweth, & Brodaty, 2014).
3. There has been a described lack of evaluation and knowledge on the effectiveness of day programs. The purpose and services that they offer remain quite unknown to the public (Moore, Geboy, & Weisman, 2006).
4. There is a lack in literature that connects ageing in place and livability objectives (CMHC, 2008).

This thesis will attempt to address parts of these gaps in literature through measuring the livability of an adult day program for those with AD/MD. Findings will provide insight into the built and social environment of the space, whether livability is an appropriate measure for adult day programs made for those with AD/MD, and whether adult day programs are an effective solution for mitigating rising care needs for those with AD/MD. The intent is to better inform planning and zoning strategies that encourage this type of development.

Chapter 3 Research Methods

3.1 Introduction

A mixed methods case study of The Dotsa Bitove Wellness Academy (DWBA)- a program for individuals with ADMRD and while not the same, comparable to an Adult Day Program (ADP) was used for this study to inform how these spaces encompass livability. Specifically, the main research question guiding this study was *how do physical and social environmental characteristics influence livability of the academy for individuals with ADMRD?*

Additional areas of inquiry focused on the following three research objectives:

Objectives

1. What factors in the physical and social environments contribute to the livability of the academy?
2. Is livability an appropriate measure of small-scale environments such as the DBWA and is the concept appropriate for ADMRD populations?
3. Are day programs an effective solution for mitigating rising care needs for those with ADMRD?

The following chapter describes the research methodology used for this study through an overview of the following areas: (1) theoretical underpinnings (2) rationale for research approach, (3) research setting and sample, (4) research design, (5) methods for data collection, (6) data analysis, (7) ethical considerations, and (8) research rigour.

3.2 Theoretical Underpinnings

The theoretical underpinnings of this research are represented through the combined views of Torsten Hägerstrand's theory of 'time geography' along with a 'human ecology' perspective on ageing proposed by Lawton & Nahemow (1973). Research conducted under a 'time geography' lens includes a "...detailed dissection of individuals' movements over very short time periods, looking at the paths in space that people traverse over time, including daily or weekly space-time paths" (Hubbard, Kitchin, & Valentine, 2004, pg. 150). Interesting perspectives on an individuals' spatial-temporal movement may be observed, along with inferences to what factors may be enabling or inhibiting their movement (Shoval et al., 2011). Torsten Hägerstrand (1970) outlined three constraints

that are typically present when analyzing ones' ability to move from one location to the next. These three constraints were proposed as: capability constraints, coupling constraints, and authority constraints (Torsten, 1970). A recent proposal by Shoval et al. (2011) was made to modify the three constraints by adding a fourth: cognitive constraint. This adjustment proved to be relevant for this study. 'Time geography' was effectively used to provide empirical evidence that guided discussion on how the physical environment was utilized and navigated by members at the DBWA. A limiting factor to this theory is that it does not incorporate human experience and meaning of the chosen study environment. Supplementary information on the social aspects of the study were required in order to properly investigate areas of livability at the day program; thus 'human ecology' was also critical to the development of this research.

'Human ecology' has been defined as "...the study of the dynamic interrelationships between human populations and the biotic, cultural, and social characteristics of their environment and the biosphere" (Lawrence, 2001, pg. 676). Integrating ageing in the general form of 'human ecology' simply views the interrelationships between ageing populations and their environment. Specifically, researchers have focused on ageing populations and the connection between functional capacity, adaptation, and their physical and social environment (Lawton & Nahemow, 1973). More recently, there have been a number of studies that use the ecology of ageing to guide planning related research. Examples of this research have focused on out-of-home mobility of older adults with differing cognitive functioning and fostering active ageing in cities (Beard & Petitot, 2011; Shoval et al., 2011). Additionally, there is evidence of this theoretical approach in New Urbanism and Smart Growth models of urban development (Vine, Buys, & Aird, 2012). This theoretical approach was used to inform the specific role both the physical and social environment influenced behavior of members at the DBWA. Ecology of ageing was also important when looking to better understand the participants' experiences with their environment.

3.3 Rationale for Research Approach

This study followed a case study with a convergent parallel mixed methods design (Creswell, 2014). Mixed methods research is recognized as the third major research approach, alongside that of qualitative and quantitative inquiry (Johnson, Onwuegbuzie, & Turner, 2007). Generally speaking, mixed methods research is the integration of both qualitative and quantitative data collection measures to aid in generating knowledge from multiple viewpoints (Johnson et al., 2007). Analysis of

findings take place separately upon completion of data collection, followed by a comparison and integration between these findings to convey both differences and similarities (Creswell, 2014).

In areas of research that often include humans and analysis of human behavior (e.g. public health, environmental gerontology, and urban planning), there is a recognized need for mixed methods (Ewing & Handy, 2009; Vine, Buys, & Aird, 2012; Zhang, Yang, & Singh, 2014). Prevailing criticisms of quantitative methods are that they typically exclude the meaning, purpose, and subjective indicators of an area of inquiry (Guba & Lincoln, 1994; Mollenkopf, Hieber, & Wahl, 2011), whereas qualitative data is typically recognized as providing insight into human behavior (Guba & Lincoln, 1994). Baum (1995) highlighted significant gaps in community and health research when either quantitative or qualitative information was observed alone. For example, when assessing a community's health needs, attempts to do so conventionally utilized quantitative measures to take note of demographic structures and mortality and morbidity patterns, and to outline accessibility and satisfaction with local services (Baum, 1995). These "needs assessments" rarely took into account socio-environmental or equity issues. Criticisms to this approach were abundant (Duhl & Sanchez, 1999; Rifkin, Muller, & Bichmann, 1988), and since then, public health approaches have identified the importance of using both qualitative (understanding) and quantitative (describing) measures when assessing the needs of a community. The combination of the two methodologies enhances the breadth of investigation and allows a more complete perspective of participants' experiences to be obtained (Coyle & Williams, 2000; Ewing & Handy, 2009). For example, when investigating urban walkability, measuring both the objective and subjective features of an environment would effectively capture people's overall perceptions of their environment and thus better predict their walking behavior (Ewing & Handy, 2009).

More recently, mixed method research has proved to be valuable when exploring ageing and the environment (Vine et al., 2012). The methods utilized in the study by Vine et al., 2012 were time-use diaries, Global Positioning Systems (GPS), and in-depth qualitative interviews. Participants were requested to carry their GPS unit everywhere outside of their home for one week, and to record each activity using the diary. Following one week, the researcher conducted a follow-up semi-structured interview with participants to gain further insight on their trip behaviors and experiences. The two major findings from this study were that most participants avoided using local amenities in their neighborhoods, and that most of their time was spent indoors. Evidence proved that the local amenities were inaccessible and unavailable to the elderly population. Despite these claims, the participants were in support of their neighborhoods, and believed that they met their needs. The

researcher deemed that the positive perception that participants had towards their neighborhoods was likely due to the fact that the majority of them chose to regularly drive. By simultaneously analyzing both objective and subjective data, Vine et al. (2012) discovered that the participants subjectively state the importance of having facilities and activities in their neighborhoods, although their regular travel behaviors extend beyond that of their local areas. Therefore, attention was raised about the issue of car dependence among seniors, and the need to understand how policies could be shaped in order to allow accessibility and availability of amenities for those without a license.

A mixed methods research approach was considered to be an ideal platform to answer the research questions for this study. Quantitative and qualitative measures were used, and findings will be analyzed in conjunction with one another to understand the physical and social environmental features of the DBWA. Additionally, observational inquiry and interviews will be conducted with participants to gain information pertaining to their lived experiences at the day program.

3.4 Methodology

The Case study methodology looks to produce context-dependent knowledge (Flyvbjerg, 2006). According to Yin (2014), one of the selection criteria for utilizing a case study design for research is when the focus of the study is to answer “how” and “why” questions. There are a number of different types of case-study designs. For instance, there are explanatory cases, exploratory, descriptive, multiple-case studies, intrinsic, instrumental, and collective (Baxter & Jack, 2008). Due to the nature of this thesis, an exploratory case study approach was utilized. An exploratory approach is used when the topic being investigated has no clear outcomes. Exploratory was the most fitting for this study because the selected case had not been previously subjected to this form of inquiry. Under this approach, research focuses on understanding the dynamics of one setting, while concurrently generating theory (Eisenhardt, 1989).

Researchers utilizing case studies have been commonly criticized for addressing questions that encompass too large of scale and time frame (Baxter & Jack, 2008). Recommendations have been made to “bind the case”, which in other words means to place boundaries on the scope of the project (Baxter & Jack, 2008). Case studies may be bound by time and activity (Stake, 1995), or by time and place (Creswell, 2014). The spatial boundary of this study was the DBWA (time and place).

As well, multiple data sources are regularly used in case study research to enhance data credibility (Patton, 1990; Yin, 2003). These sources may be qualitative, quantitative, or both. Examples of data sources used are: documents, archival records, interviews, direct observations,

participant observation, and physical artefacts (Yin, 2014). Triangulation of multiple data sources are regularly conducted to increase validity and data credibility (Yin, 2014). It is important to recognize how quality can be achieved while conducting case study research due to the number of critiques towards the validity of this methodology. Case studies have, however, proven to be important methods of social science research and are seemingly regarded as more generalizable than once thought (Flyvbjerg, 2006).

3.5 Research Setting

This case study is of the Dotsa Bitove Wellness Academy (DBWA), located 1929 Bayview Ave, Unit G30, Toronto, Ontario, embedded in the Canadian Institute of the Blind (CNIB) building. This Academy is a Canadian first teaching and learning centre that opened in late 2013 and is geared towards those with ADMRD. It is an innovative hub that provides members with a number of opportunities for personal growth and development. These opportunities may be creative, educational, transgenerational, artistic, conversational, or health focused. The academy is grounded in a relational arts-based curriculum, which encourages relationships and human expression of self through movement and art, where everyone is viewed as a teacher and learner. All activities are assessment and judgement free, and support compassionate relational caring.

The academy is affiliated with University Health Network and York University. In addition to providing services for members, families, and care givers, the academy conducts research that looks to enhance the health and quality of life for those with ADMRD and their families. Caring for this population includes understanding the effects of both physical and social environments, and how to best modify these in order to contribute to high quality of life, which makes this a suitable case for this research. The following images of the interior of the DBWA are provided for context. Figure 6 conveys the media room, figure 7 illustrates the East wall of the program in the main room, and figure 8 is of the art room.



Figure 6 Media Room



Figure 7 Main Room



Figure 8 Art Room

3.6 Research Methods

This study utilized the following four stages of research:

1. **Stage 1** included an audit of the built environment whereby the researcher collected inventory of built environment features.
2. **Stage 2** involved a time-lapse mapping technique, which has been widely used in human geography to help establish trends of spatio-temporal activity (Hay, 2010; Shapcott & Steadman, 1978; Walmsley & Lewis, 2014).
3. **Stage 3** involved incorporating arts-based analysis, a subset of the emerging arts-based methods in health research (Fraser & Sayah, 2011). Drawings and paintings have been used as an effective method of data collection when trying to gain insight into a participant's world (Broadbent, Petrie, Ellis, Ying & Gamble, 2004; Guillemin, 2004; Knowles & Cole, 2008).
4. **Stage four** entailed covert-overt participant observation by the researcher of members attending the DBWA.

3.7 Research Sample and Recruitment

Random sampling was initially used to select participants for stage 3 (drawings) of the study. Under this sampling procedure, all individuals in a selected population (either finite or infinite universe) have an equal opportunity of being selected to partake in the study (Kothari, 2004). The study sampling unit was all members of the program and was recognized as a finite universe because the number of members at the DBWA was certain. This sampling procedure was administered in this study because the researcher wanted to be as inclusive as possible to all members. After acquiring ethics approval from both the UHN and UW REB, the Director of the program sent out the study information letter with the attached consent form via e-mail to potential participants, family members, and staff members to inform them of the research. Both forms were also available in hard copy at the front desk of the academy for one week. Throughout this short time frame no consent forms were returned, therefore a purposeful sampling technique was employed. The Director of the DBWA received confirmation from one of the artists that they would be agreeable to incorporate the art activity into a pre-arranged art session. All members who were at the academy that day and were able to provide consent, or have a substitute decision maker consent on their behalf, were approved to partake in the study.

Researcher bias was avoided by ensuring that all members at the DBWA that morning had an opportunity to decide whether they wanted to participate. The morning of data collection the Director of the academy and researcher met with the academy members and family members who dropped off the members for the day. The members who agreed to be in the study provided verbal assent. The

family members were asked if they had the opportunity to read the study information form and consent form. The researcher walked through and explained the details of the study to the family member. Consent was received from three family members who were able to act as a substitute decision maker for the participant. Receiving consent meant that members of the DBWA agreed to describe their illustrations and to allow the researcher to take photos of their art to include as part of the final study. Following completion of the study, participants were provided an adult colouring book and pencil crayons valued at \$20 in appreciation for their time and commitment spent on the project. As well, participant appreciation letters were provided in hard copy to all participants.

Final inclusion criteria for participation was:

1. All participants had to be members of the academy.
2. All participants were identified as living with Alzheimer’s disease and/or other memory-related disorders.
3. All participants were able to understand and speak English.

The inclusion criteria were justified because all members of the DBWA live with memory loss due to dementia and have ADMRD and are all English speaking. A total of three participants successfully completed the drawing and discussion component of the research study.

There were roughly 25-30 members that were observed over three days of data collection while carrying out a blend of covert-overt observation and time-lapse mapping.

3.8 Research Design

Table 2 Data collection schedule

Wednesday June 22nd, 2016	Thursday June 23rd, 2016	Friday June 24th, 2016	Tuesday July 19th, 2016
Built Environment Audit (stage 1)	Covert-Overt Observation (stage 4)	Covert-Overt Observation (stage 4)	Art Activity (stage 3)
Time-lapse Mapping (stage 2)	Time-lapse Mapping (stage 2)	Time-lapse Mapping (stage 2)	

3.9 Data Collection Methods

The following outlines the mixed methods used for data collection.

3.9.1 Audit of the Built Environment

For stage 1, an audit was conducted to quantify attributes of the built environment. The purpose of conducting the audit was to gain insight into a number of livability indicators being measured for the study, such as, walkability, safety, community engagement, and access to services. Audits are used in a number of studies that focus on urban design and the connection to various themes of livability (Forsyth, Jacobson, & Thering, 2010; Rundle, Bader, Richards, Neckerman, & Teitler, 2012), along with areas of health, and investigating health and health services (Bowling, 2002). They have been recognized as being a useful and reliable method of quantitative data collection (Harvey et al., 2015). This method is often used to weigh the advantages and disadvantages of how a current environment is functioning for users, and to also evaluate the performance against other benchmark designs, or standards (Bowling, 2002). Despite the inherent benefits of audits, there are a number of challenges that accompany this method. The conventional way of conducting an audit is by hand and uses paper forms. Consequently, depending on how large the study site is, audits can prove to be quite time consuming and costly (Brownson, Ross, Hoehner, Day, Forsyth, 2010; Harvey et al., 2015). Controlling the consistency of data collection may also prove to be difficult if there are a number of auditors (Harvey et al., 2015).

Selection of the audit tool was informed by a study conducted by O'Malley, Innes, & Wiener, (2015), that recently reviewed a number of papers and audit tools that address dementia friendly design guidelines specific to navigation. There were a number of dementia friendly design guidelines available, but few spoke to the importance of alleviating disorientation and design-led improvements (O'Malley et al., 2015). Many of the guidelines available offered advice with very little evidence of supportive empirical data (O'Malley et al., 2015). Out of all of the audit tools reviewed, this study used the enhancing and healing environmental (EHE) assessment tool- "Is your ward dementia friendly?" (The King's Fund, 2014). This tool had criteria that emphasized the users' and their carer's perspectives and viewed how they interact with the environment. It was developed through amalgamating research evidence, best practices, and over 300 survey responses from those that had used the tool in practice (The King's Fund, 2014). Over 70 care organizations have field tested this tool.

The EHE assessment tool has seven distinct sections, all of which have sub-questions adding up to 55 questions. These questions are ranked based upon a Likert scale of 1= barely met to 5= totally met. Following completion of the assessment, a summary page is provided at the end of the audit tool to add the scores of each criterion. According to the audit, if the numerical value is low, this

could mean that there is sufficient room for improvement, and alternatively, if the numerical value is high, this could imply that the environment is effectively meeting the needs of the population. An immediate revision was made to the audit tool prior to beginning data collection. The Likert scale was deemed to be relatively difficult to consistently designate, therefore, the following revised measurement was proposed. Each criterion was judged based upon the rating system of: yes, needs improvement, and no. This rating system had been used in other older audits, such as the one proposed by Moore, Geboy, & Weisman, 2006 – Adult Day Center Environmental Design Assessment. This audit tool had eleven categories, with a total of 164 questions that displayed considerable overlap with the EHE tool. The evaluator was responsible for marking either a Y (for yes) if the statement held true and was applicable to the day center, or a N (for no) if the statement was untrue. Unlike other research studies, Likert scales are beneficial when receiving respondents feedback on a given scenario, and can accommodate neutral or undecided feelings (LaMarca, 2011). These scales are generally used to measure attitude (Jamieson, 2004). Following a review of the questions allocated for this audit, it was clear that each question was feasibly answered through using the proposed revision.

1. *The environment promotes meaningful interaction between patients, their families, and staff*
2. *The environment promotes well-being*
3. *The environment encourages eating and drinking*
4. *The environment promotes mobility*
5. *The environment promotes continence and personal hygiene*
6. *The environment promotes orientation*
7. *The environment promotes calm, safety, and security*

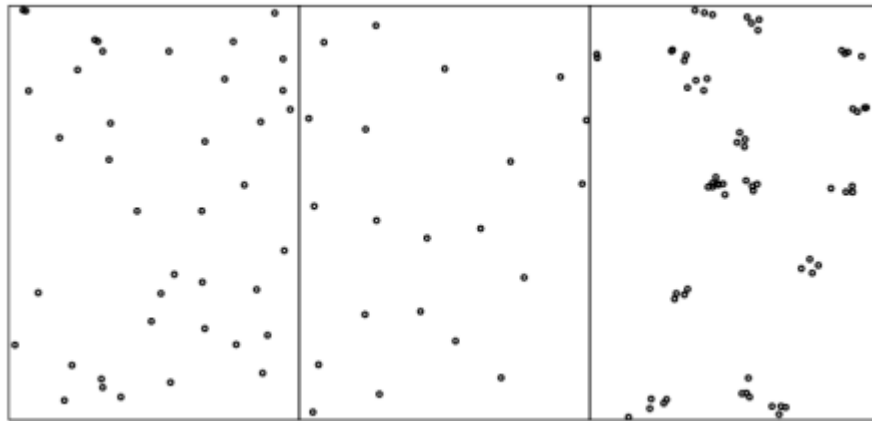
The audit was conducted over one day in the summer by the researcher. The assessment tool was printed off in hard copy in order to facilitate data collection. Data collection took most of the day to complete due to controlled interruptions (conducting the time-lapse mapping) and uncontrolled interruptions (interactions with members, staff, and volunteers). The researcher was able to manoeuvre throughout the DBWA in a manner that was unobtrusive to the daily flow of activities.

3.9.2 Time-lapse Mapping

Spatial point data collection and analysis techniques have been widely used in various disciplines such as human geography, geographical epidemiology, and ecology (Dacey, 1962; Gahlmann & Moerner, 2014; Gatrell, Bailey, Diggle, & Rowlingson, 1996; Law et al., 2009). Repetitive mapping is a form of spatial point data collection and was selected as an appropriate

method to observe the spatio-temporal activity of members at the DBWA (Illian, Penttinen, Stoyan, & Stoyan, 2008). This method is used when the chosen study area is observed over a number of different time intervals. An example of this technique being used is through the smartphone application EdmoTrack. With this application, users are able to track their location and time information. Information from this application has been used by the City of Edmonton to further understand traveler information such as: where people travel, when, and by what mode. This data is consulted when considering making a transportation investment. Due to the lack of resources, and the fact that the space of inquiry is confined, using an application like EdmoTrack was not consulted for this study. Instead, the proposed data collection technique was to simply have the researcher observe the movement of members and to record findings on corresponding maps.

Spatial point data collection using *Cartesian coordinates* (x,y) has been deemed time consuming and laborious (Illian et al., 2008). An alternative to *Cartesian coordinate* data collection is *quadrat counting*. By using *quadrat counting*, only information that states in which quadrant each



data point is located is recorded (Illian et al., 2008). For the purpose of this study, neither the *Cartesian coordinates* (x,y) or the *quadrat counting* were chosen, rather a hybrid approach was selected. *Point referenced data* (i.e. data that has specific locational information) was used, with each point referenced in accordance to furniture objects in the study area (Perry, Liebhold, Rosenberg, Dungan, & Miriti, 2002). Perry et al. (2002) found that point referenced data is useful when recording the spatial patterns of individuals. Under this approach, each individual is recognized as identical to all others and the only information recorded is the location (Perry et al., 2002). Outlined in figure 9 are the three common statistical representations of point data: random, regular, and clustered. Representing patterns of objects or individuals on a point map can shed light to preliminary patterns

Figure 9 Three simulated point patterns: (left) random, (centre) regular, (right) clustered (Illian, Penttinen, Stoyan, & Stoyan, 2008)

and trends.

A formal floor plan of the program was unavailable prior to arriving for data collection. As a result, the researcher estimated the layout of the facility based upon their observation of the space from a previous visit. Once arriving at the program, all furniture elements were placed on the map with relative spatial accuracy. The general layout of furniture remained the same over the course of the three days. Mild changes to table layouts occurred over lunch time and as well when there were certain activities taking place such as yoga. Relative location of the members was needed with regards to the various furniture items.

Twenty-one floor plans were printed of the DBWA to utilize when illustrating the point referenced data (dot location) of members. Data collection took place over the course of three days in July. Daily programming at the DBWA began at 9:00 a.m. and finished at 4:00 p.m., with activity intervals generally scheduled for every hour (ex: 9:00 a.m. coffee conversations, 10:00 a.m. bocce/walking club, 11:00 a.m. visual arts, 12:45 p.m. yoga, 2:00 p.m. theatre improv, 3:00 p.m. dancing). Seven data collection control times were selected in order to reflect periods where individuals were settled and engaged in a given activity, rather than in transition. These selected times were: 9:30 a.m., 10:30 a.m., 11:30 a.m., 12:20 p.m., 1:30 p.m., 2:30 p.m., and 3:30 p.m. The researcher moved throughout each of the three rooms of the program to gain the best vantage point to accurately locate each member as a dot on a map. When recording the dots, the researcher made sure that they were easily distinguishable from one to the next by not overlapping. Data collection took on average 5 minutes for each control time.

On the third day, the researcher additionally collected point data for four members. These members were placed on the map using the following identifiers: A,B,C, and D. The selection of these members was arbitrary and was done to potentially gain insight to the movement of members at the DBWA on an individual level. All identifying information or personal characteristics of members at the day program were not recorded to ensure confidentiality and anonymity.

3.9.3 Drawings

Stage 3 incorporated participant drawings, which has been recognized as an emerging form of participatory arts-informed research (Knowles & Cole, 2008; Mitchell, Theron, Stuart, Smith, & Campbell, 2011; Rolling, 2013). Arts-informed research is defined as “research informed by the aesthetic characteristics of works of art and/or design, artistic methods, or a specific artist but not

stemming directly from a researcher's artistic practice or creative world view" (Rolling, 2013, pg. 17). This type of research may involve a number of artistic tools (oral, visual, written, or performance) to gain additional information and meaning from human data (Rolling, 2013). Support for this technique can be found in a number of studies, where drawings and paintings have been used as an effective method of data collection when trying to gain insight into a participant's world that may not normally be accessible to academic researchers (Broadbent, Petrie, Ellis, Ying, & Gamble, 2004; Guillemin, 2004; Knowles & Cole, 2008).

Using an arts-informed method to achieve findings was sensitive to the culture the DBWA is fostering; the program design centralizes much of its focus around relationships and human expression of self through movement and art (see <http://www.dotsabitove.com/program>). As well, it is invaluable to include those who have ADMRD throughout the research process. Persons living with ADMRD have often been judged as incapable of communicating their experiences due to the nature of the disease. Although, in recent developments there seems to be a more inclusive research culture and has thus resulted in improved understanding of competence among ADMRD (Clare, 2003; Dupuis et al., 2012; Ekman, Robinson, & Giorgi, 2012; Gillies, 2000; Pearce, Clare, & Pistrang, 2002).

The aim of this stage was to consult members of the academy to understand what their favourite space was at the academy and landscape or place outside. Examples of spaces within the DBWA were the art room, the main room, the media room, and the reading room. Whereas landscapes outside the program were less specific and could be in reference to a specific countryside, a body of water, a farmer's field, etc., and places could include a specific neighbourhood, a family home, a vacation spot or other significant setting to the participant.

The following script was created to guide the initial introduction of the activity to participants:

"By using the art supplies provided, please illustrate your favourite space at the Dotsa Bitove Wellness Academy (DBWA) and landscape or space outside the DBWA that you may have recently visited, or one that you remember from when you were young. If you are not able to think of a specific space at the DBWA, or landscape or space outside the DBWA, try to illustrate various features that you find attractive when you are either indoors or outdoors. Please use any assortment of colours but try to incorporate those that you particularly prefer."

Participants were asked to begin the activity by using the art supplies provided, which included pencil crayons, pastel crayons, and two pieces of paint appropriate paper roughly 4 X 6 inches. The size of papers were kept within a reasonable range to avoid the potential of overwhelming

the participants. The Director of the DBWA coordinated with one of the artists to incorporate the research activity into an already programmed session. This enhanced a sense of familiarity for participants because the instructor had already established a long standing relationship with those at the DBWA. In order to ensure consistency with other events scheduled at the program, the time allocated for this activity was one hour. The art activity took place from 11:00 a.m. – 12:00 p.m.

All members of the academy were invited to take part in this activity. Out of four academy members participating in the art activity, written consent was obtained by three substitute decision makers for three of the members. Abbreviated descriptions of the study were provided to the study participants. The fourth member arrived to the art class later and was not dropped off by a potential substitute decision maker. The member still participated in the drawing session, however, the researcher did not include the final products, or any of the discussions as part of the data inventory. While the participants were drawing, the artist, the Director of the DBWA, and the researcher assisted in guiding the session by also participating, and providing examples of what sort of features may be included in the drawings. They also carried out informal discussion with the participants in order to gain an understanding of what was being drawn. The discussion component was important to continue as it provided a means of gaining context and enhanced understanding of the drawings (Guillemin, 2004b; Mitchell et al., 2011). Conversations were aided by the following interview guide:

- What is in your illustration? Can you tell me about specific parts?
- How did you decide what to draw? Is this a place you are able to/or used to visit?
- What makes this your favourite space, landscape, or place?
- What is your favourite colour?
- Why did you choose the selected colours?
- Can you attribute a feeling with this place (i.e., a sense of calmness, or excitement)? OR What does this place make you feel when you are there? When you think about it now?

After the completion of the art session, participants left the art room for lunch. A short debriefing session took place with the art instructor, the Director of the DBWA, and the researcher following the activity. The researcher remained in the room to write down findings from the conversations and to take photos of all four art pieces.

Arts-informed research is a relatively new form of qualitative data collection. It was an effective way to engage individuals with ADMRD in the research and was in line with the types of activities that regularly took place at the DBWA. Even with three participants, the main themes that

were extracted from this component of research matched those that are discussed in the literature on therapeutic landscapes.

3.9.4 Covert-Overt Participant Observation

Participant observation is a commonly used qualitative data collection method (Creswell, 2014; Green & Thorogood, 2014). This method normally entails researcher involvement or exposure to events, people, and setting of a study area (Kawulich, 2005). There are a number of advantages to observational techniques such as: viewing the nonverbal expressions of participants, noticing their level of interaction and with who, and taking note of how time is spent on activities (Kawulich, 2005). Creswell (2014) also emphasized that observations allow the researcher to gain information on a topic that may be uncomfortable for participants to talk about, the researcher is collecting the information as it happens, and any unusual occurrences may be noted. However, there are some limitations to this data collection method. Depending on the study area, and whether the researcher will be adopting a covert or overt role, the researcher may be regarded as intrusive to the environment in focus (Creswell, 2014). Additionally, collecting thorough observation notes is quite labor intensive, and requires a lot of clarity and consistency in note taking (Green & Thorogood, 2014). There may also be instances where the researcher will observe information that is confidential and thus cannot be reported (Creswell, 2014). This was not the case in this study.

In order to conduct observational research at the program, the researcher gained access to the site through the formal gatekeeper, the Director of the DBWA (Green & Thorogood, 2014). Observational data collection occurred for two consecutive days during the following seven time intervals: 9:30 a.m., 10:30 a.m., 11:30 a.m., 12:20 p.m., 1:30 p.m., 2:30 p.m., and 3:30 p.m. Each interval was half an hour. These time intervals were purposefully made to coincide with those of the spatial point data collection (stage 2) so that direct comparisons could be made. Prior to beginning observation on observational data collection day two and three, the Director of the academy introduced the researcher to all members, staff, and other volunteers. The researcher's name was written on a name tag, as all members of the community have a name tag. As well, the role as researcher was explained, although some details of their observational work remained undisclosed, such as what four members were noted on the plot. All questions by academy members were answered honestly about the researcher's role. A covert-overt role as an observer was adopted in order to leave the natural environment undisturbed (Green & Thorogood, 2014; Patton, 2002).

The researcher used the observation stance- *observer-as-participant*, whereby, they participated in activities as desired, yet their stance as a researcher was known, and their main focus

was to collect data (Creswell, 2014; Kawulich, 2005). Observation took place within the constraints of the facility. Areas of observation focused on human-environment interactions among members, members' use of open space, and interactions with other members and staff within the academy. Appendix B illustrates the guidebook that was formulated to help focus observations. The categories for observation were based upon the strategic orientation- *life as activity* developed for adult day centers by Moore, Geboy, & Weisman (2006). Under *life as activity*, the idea was to present opportunities for members to carry out set programming at a day center in a purposeful and meaningful manner. There were five main focus areas that aimed to accommodate the proposed strategic orientation: 1. coming and going, 2. walking and exploring, 3. daily life activities, 4. cooking and dining, and 5. being outside. The criteria used to measure each of these categories were developed through combining information from Moore et al. (2006) and by introducing applicable questions suitable to the DBWA environment.

The researcher recorded notes while observing and extended any short form notes and added additional comments following each interval in the office space provided by the program. They paid careful attention to ensure that observations were empirical in nature in order to gain a thorough description of what was happening at the academy, which is accordingly the ethnographers' responsibility (Green & Thorogood, 2014). Due to the variability of daily member attendance at the academy, members observed from one day to the next were not all the same. Confidentiality of all members was maintained at all times by not recording identifying information or personal characteristics.

3.10 Data Analysis

A number of techniques were used to analyze data collected from each method. The approach to data analysis was a convergent parallel mixed methods approach (Creswell, 2014). Under this approach, each data collection method was analyzed separately, and then findings were compared throughout the synthesis and discussion. As well, the results from the built environment audit and covert-overt observations were broken down for analysis into four indicator categories borrowed from the CMHC (2008) study.

The initial stage was the audit of the built environment. Questions in the audit tool were separated into four main categories: neighbourhood walkability, safety, community engagement, and access to services. Every question from the audit was placed under these categories accordingly, with a select few omitted because they were irrelevant to the research site. All of the "yes's", "needs

improvement”, and “no’s” were tabulated. Percentages were then applied to convey to what degree the program effectively addressed the criteria in the audit. Supporting commentary was also provided for each question to add further rationale. Findings were to indicate components of the physical environment that may be enhancing or impeding the livability within the academy.

The next stage was time-lapse mapping. Analysis of the maps were conducted through consolidating findings into a table that outlined the numbers of individuals in each space of the DBWA per data collection time segment. Following this, the researcher was able to readily identify the most prominent patterns and trends of the spatio-temporal activity of members. An additional analysis took place of the data received from tracking four random members at the program for one day. Four separate maps were created to present a visual depiction of their movement over the same controlled time intervals used in the previous segment. Time-lapse mapping was used to identify the spatio-temporal activity of individuals and to note how these findings provide insight on the use of physical and social environments.

For stage 3, thematic analysis was used and is recognized as a method for dissecting qualitative information into an organized and detailed fashion (Braun & Clarke, 2006). Coding is typically used to aid with categorizing data (Basit, 2003). This process entails subdividing data and assigning categories (Basit, 2003). When coding data, the researcher analyzes various words, sentences, or paragraphs, to extract areas that may show signs of commonality, or dissimilarity (Basit, 2003). Software such as NVivo has been created to aid sorting through data. Although, given the small number of interviews and data collected through observations, the researcher conducted the coding manually. Initially, the researcher became familiar with the data from stage 3 prior to generating codes. All of the data from the interviews with participants was transcribed. Initial codes were created for analysis. Latent themes were chosen, meaning they were aimed at identifying the underlying ideas, patterns, and assumptions (Braun & Clarke, 2006). Under latent analysis, further interpretation was achieved that went beyond the surface meanings of the drawings. Once the data was coded, themes were extracted. Themes are described in research as a set of data that conveys some level of patterned response or meaning in relation to the overarching research question(s) (Braun & Clarke, 2006). The purpose of the art analysis was to gain understanding of the members’ experiences with the spaces within and outside the program.

With regards to the final stage of data collection, findings from the covert-overt observations were categorized based upon the indicators used for the built environment audit: neighbourhood walkability, safety, community engagement, and access to services. A combination of both the

researcher's notes and the summary of findings were outlined per category. Observations were to provide further context to findings from the audit, the time-lapse mapping, and the art analysis.

3.11 Ethical Considerations

For this study, approval was required and granted from two ethics review boards: The University Health Network Research Ethics Board (UHN REB) and the University of Waterloo Research Ethics Board (UW REB). Approval from UW was conditionally received within three weeks based upon approval from UHN.

Obtaining approval from the UHN REB was a lengthy process and took four and half months. Upon the initial submission to the UHN REB, this study was deemed greater than minimal risk. Therefore, it required full board review. Fairly stringent revisions were required to fulfill the ethics requirement from the health REB that included changes to the original protocol. The study underwent two revisions and one amendment. Near the end of the process, complications arose when trying to match the demands being made from both REBs. Approval was granted with both REBs eventually satisfied, however; the concept of *ethics creep* was relevant to the experience here (Haggerty, 2004). This term has been characterized by the notion that REB's have become increasingly bureaucratic and are expanding the scope of review. An unfortunate consequence for researchers looking to study vulnerable populations, or to carry out a study that is regarded as high risk, is that there are enormous barriers needing to be breached in order to successfully receive approval. This is deemed problematic, especially for a Master's degree where students have limited time to complete their studies. As a result, students will often opt for selecting the route that incorporates unproblematic and predictable research methodologies, rather than challenging the status quo (Haggerty, 2004). While protection of research participants is a significant concern, there is a need to balance that with the benefits of novel methods that have the potential to produce important findings that can benefit future populations.

Once ethics approval was received, in order to secure informed consent from the participants, an information letter, along with a consent form to participate in stage 3 was sent through e-mail to the families of all members (inclusive of the members) at the DBWA. A hard copy of these two documents were also placed at the front desk. Participants that required a substitute decision maker to provide consent were successfully received. Obtaining consent for stages 2 and 4 was deemed unnecessary because these two stages were identified as being of minimal risk according to the Tri-Council Policy Statement 2: Ethical Conduct for Research Involving Humans (2014).

Following the completion of data collection, researchers must also ensure that confidentiality of participants is respectfully protected when incorporating findings into study reports and presentations. In this regard, the confidentiality of all members at the DBWA during stages 1, 2, and 4 was maintained at all times by not recording identifying information or personal characteristics. For stage 3 (drawings), the participants' names were collected. Information collected for this portion of the study was to remain in a secure and confidential location with the Director of the DBWA for 10 years, after which time it will be destroyed. A list linking the study number with the participant's name will be kept by the Director of the academy in a secure place, separate from the study file. Original data was only seen by the research team.

3.12 Ensuring Rigour in Mixed Methods Research

When conducting qualitative, quantitative, or mixed methods research, it is necessary to address research rigour. This involves ensuring that the accuracy of findings have been checked, that the researcher's approach is consistent with different researchers, that there is an absence of researcher bias, and that the research is believable (Baxter & Eyles, 1997; Creswell, 2014; Gibbs, 2008). The following four criterion were used for evaluating rigour in this mixed methods research study: *credibility*, *transferability*, *dependability*, and *confirmability* (Baxter & Eyles, 1997).

3.12.1 Credibility

Firstly, credibility was ensured in this research through a number of different reputable strategies. Credibility is regarded as the most important principle in research, founded on the notions of honesty and truthfulness (Baxter & Eyles, 1997). The most prominent strategy used for ensuring credibility in this study was triangulation. Triangulation of data sources is conducted by converging data sources and extracting similar findings (Creswell, 2014). Data sources used for triangulation were the audit tool, spatial point data collection, covert-overt observations, interviews with participants from stage 4, and photographs of the art pieces. An additional technique used for credibility was prolonged engagement. It is particularly important for the researcher to gain an understanding of the research site, how it operates on a day-to-day basis, and to observe details of the people occupying the space (Creswell, 2014). Prolonged engagement at the academy led to a more accurate depiction of member activity observed in stage 3 and also allowed the researcher to build rapport with participants involved in the art component. An additional complimentary strategy used in conjunction with prolonged engagement was persistent observation. Persistent observation adds depth to observational work by focusing on only pertinent areas. The final strategy adopted to enhance

credibility was peer debriefing. Consultation took place with a research supervisor, prior to beginning the study, during the study, and throughout the analysis, and conclusion segments. Specifically, feedback regarding the use of data collection techniques along with follow up analysis was requested to avoid misguiding the research.

3.12.2 Transferability

Although the primary objective of the research was to obtain information in a specific setting, it was felt that the findings could be extended to larger scale communities. By using community indicators for an ageing population provided from the CMHC (2008) report to guide this research, findings were considered to be generalizable to Canadian environments. Although, one of the challenges with completely asserting that findings are transferable to other communities, is that the DBWA is a unique academy for teaching-learning. However, efforts were made to provide detailed descriptions of all stages of research so that the outside community may decide the extent to which they may transfer the proposed hypotheses to other contexts (Baxter & Eyles, 1997).

3.12.3 Dependability

Dependability (reliability) of the research study was achieved by implementing three different techniques. The underlying foundation of establishing dependability in research is to convey how a similar type of research would elicit similar kinds of themes, that is can the study be repeated with comparable results (Green & Thorogood, 2014). One of the strategies adopted for this study was an inquiry audit (Baxter & Eyles, 1997). As described by Baxter & Eyles (1997), an inquiry audit entails the researcher having a peer or supervisory personnel provide feedback on the trajectory and decision making of the research process. Both committee members of this research project played a critical advisory role for the researcher. An additional strategy used was to incorporate consistency over time and samples for stages 2 (time-lapse mapping) and 3 (covert-overt observations). Five parallel time intervals were used for both stages and data collection took place in a routine and timely fashion over the five days in order to align with these intervals. Finally, the study used low-inference descriptors (i.e. recorded information in terms that were as concrete as possible) for stages 3 (covert-overt observations) and stage 4 (art-based analysis) the interview component (Seale, 1999). For stage 3, verbatim accounts of a member's use of space, what activities they were participating in, and the setting of the DBWA were addressed. Additionally, while conducting the interviews for stage 4, the researcher wrote down verbatim participant responses.

3.12.4 Confirmability

Confirmability states that the researchers' biases, motivations, interests or perspectives are not influential to the findings (Lincoln and Guba, 1985, pg. 290). The researcher managed confirmability throughout the duration of the study by incorporating a few techniques.

Subjectivity in qualitative research exists from the beginning of the study when a topic of research is selected, all the way to the end when the researcher is interpreting data (Ratner, 2002). In particular, Guillemin (2004b) outlined that image analysis has been regularly deemed as "subjective and riddled with ambiguity" (pg. 286). A recommended approach to counteract subjectivity in image analysis has been to include the participants' interpretation of their drawings (Guillemin, 2004b). For stage 3, by obtaining both the drawing and affiliated commentary from the participant, this enabled the researcher to interpret the drawings by way of cross-comparison. Analysis was not based on the image alone. Moreover, the researcher kept a detailed journal with notes on research findings (Baxter & Eyles, 1997). The journal was created the week of data collection and was then later used to reinforce information throughout the analysis process.

During covert-overt observations, the researcher consulted an observation guidebook to ensure observations were focused in order to record the most important criteria. Supporting quotations from members at the program were also recorded verbatim to add an alternate perspective to the findings.

Both the built environment audit and the time-lapse mapping data collection techniques were quantitative in nature. Support was provided for the audit by including a thorough explanation of the findings. Each response category was discussed at length with examples. Similarly, the time-lapse mapping only addressed the location of members, at the chosen time intervals without using any personal identifying characteristics.

The researcher strived for transparency and honesty in the research methodologies and representations of the collected data. Table 3 provides a summary of the strategies used in this study to adopt research rigour.

Table 3 Ensuring research rigour in mixed methods research

Types of Validity	Definition	Strategies used in study	Used at what stage(s)?
1) Credibility	<ul style="list-style-type: none"> • “Authentic representations of experience” (Baxter & Eyles, 1997, pg. 512). 	a) Triangulation → b) Prolonged engagement → c) Persistent observation → d) Peer debriefing →	<ul style="list-style-type: none"> • Stage 1 (audit of the BE) Stage 2 (time-lapse mapping) Stage 3 (covert-overt observations) Stage 4 (art-based analysis) • Stage 3 (covert-overt observations) Stage 4 (art-based analysis) • Stage 3 (covert-overt observations) • Stage 1 (audit of the BE) Stage 2 (time-lapse mapping) Stage 3 (covert-overt observations) Stage 4 (art-based analysis)
2) Transferability	<ul style="list-style-type: none"> • “Fit within contexts outside the study situation” (Baxter & Eyles, 1997, pg. 512). 	a) Thick description→	<ul style="list-style-type: none"> • Stage 1 (audit of the BE) Stage 2 (time-lapse mapping) Stage 3 (covert-overt observations) Stage 4 (art-based analysis)
3) Dependability (Reliability)	<ul style="list-style-type: none"> • “Minimization of idiosyncrasies in interpretation, variability tracked to identifiable sources” (Baxter & Eyles, 1997, pg. 512). 	a) Inquiry audit→ b) Consistency over time and samples→	<ul style="list-style-type: none"> • Stage 1 (audit of the BE) Stage 2 (time-lapse mapping) Stage 3 (covert-overt observations) Stage 4 (art-based analysis) • Stage 2 (time-lapse mapping) Stage 3 (covert-overt observations)

		c) Low-inference descriptors →	<ul style="list-style-type: none"> • Stage 3 (covert-overt observations) • Stage 4 (art-based analysis)
4) Confirmability	<ul style="list-style-type: none"> • “Extent to which biases, motivations, interests or perspectives of the inquirer influence interpretations” (Baxter & Eyles, 1997, pg. 512). 	a) Journal/notebook →	<ul style="list-style-type: none"> • Stage 1 (audit of the BE) • Stage 2 (time-lapse mapping) • Stage 3 (covert-overt observations) • Stage 4 (art-based analysis)

3.13 Summary

A set of community livability indicators were put forward by the study *Community Indicators for an Ageing Population* in attempt to quantify how Canadian communities can aim to meet the needs of an ageing population (CMHC, 2008). The aim of this research was to attempt to reformulate and apply these indicators to be well fitted in a small-scale setting. Findings from this research were to then inform a larger discussion about sensitive design of communities.

Guided by the theoretical underpinnings of time geography and human ecology, a convergent parallel mixed methods case study approach was employed to illustrate whether livability can effectively be measured on a small-scale level. Research took place at the DBWA, in Toronto, Ontario over a four-day period. There were four data collection tools used for this study: a built environment audit, time-lapse mapping, arts-based analysis, and covert-overt observations. Explicit consent from participants was only needed for the arts-based piece. Data analysis took place through statistical analysis, coding findings into major themes, and by mapping visual trends. Key ethical considerations were examined through the process of obtaining approval from two REB's. There was also assurance provided that proper measures were achieved in this research that addressed features of credibility, transferability, dependability, and confirmability.

Chapter 4 Findings

4.1 Introduction

This chapter outlines an analysis of the data collected when addressing the main objective of this thesis: *how do physical and social environmental characteristics influence livability of the academy for individuals with (ADMRD)*. A more thorough discussion of how the findings relate to the research question and research objectives will take place in the next chapter. The research objectives of the study were:

1. What factors in the physical and social environments contribute to the livability of the academy? (Audit, time-lapse mapping, covert-overt observation)
2. Is livability an appropriate measure of small-scale environments such as the DBWA and is the concept appropriate for ADMRD populations? (Audit, time-lapse mapping, covert-overt observation, art-based analysis)
3. Are day programs an effective solution for mitigating rising care needs for those with ADMRD? (Audit, covert-overt observation)

Findings are sequenced by data collection method. For each data collection method, key components are brought forward that relate the findings back to the research objectives. The four main indicators that were used to measure livability were chosen from the CMHC study (2008) on community indicators for an ageing population. These indicators were: neighbourhood walkability, safety, community engagement, and access to services. There were two other indicators proposed by CMHC. These were housing and transportation, but they were omitted from this research because they were outside of the scope of inquiry, which dealt with livability of a day program.

4.2 Built Environment Audit

In this data collection strategy, the built environment was assessed using the tool developed by The King's Fund in 2014 called "*Is your ward dementia friendly?*". This tool was initially organized by the creators into seven different topic categories. In order to ease discussion in the following chapter, and to enable comparison between data collection methods, major themes were generated using the livability indicators from CMHC to re-categorize the assessment criteria. These major themes are neighborhood walkability, safety, community engagement, and access to services.

Under these major themes, there are additional sub-themes. Tables have been compiled, and are shown below, including all audit questions relevant to each section, along with the results. A copy of the original audit tool can be found in Appendix A.

4.2.1 Neighbourhood walkability

Neighborhood walkability is concerned with how accessible the environment is for someone to walk. The sub-themes for neighborhood walkability that were addressed within this audit were flooring material, spaces to walk, spaces to rest, and points of interest.

4.2.1.1 Wayfinding

Wayfinding was deemed as an important measure of walkability because it had the greatest number of criterion. Under wayfinding, aspects that were confirmed present in the Dotsa Bitove Wellness Academy (DBWA) were transparent doors so that members were able to see where the doorway led, signs that were contrasting colours to the doorway or backdrop where they were being placed so they were easily visible, and the use of varied visual and textual features (i.e., female and male images, writing, along with braille) to indicate which washroom was which. The academy also avoided the use of really prominent colourings and textures on the walls and curtains. As has been shown in research, these can be misinterpreted by those with dementia, as an inaccurate or distorted piece of information. For example, red may be associated with something dangerous, or a shadow on the floor may be viewed as a hole (Feddersen & Ludtke, 2014). As well, in each of the three main rooms (the media room, the art room, and the main room) there was a clock visibly located on the walls and there was clear signage on the exterior and interior of the DBWA labelling the name of the facility. Furthermore, there were pictures and objects that aided in differentiating one room to the next and the use of each room. For example, there was a piano in the media room, along with a video projector, whereas the art room was distinguishable by the fact that there was art work displayed on the walls and there were signs on the cabinetry that indicated the location of art supplies. There were also numerous artistic points of interest throughout the academy, a lot of which was work that members had previously created such as origami shapes hanging from the ceiling, circular paper-mache balls located on one of the window sills, and paintings on the wall. Other art was also present from external artists. At the beginning of each month, a calendar of events is distributed to members and family members of those attending the DBWA and a copy of the calendar is always available and displayed at the front desk as people walk through the door of the academy. Immediately outside the limits of the DBWA, the corridors that led individuals to the washrooms and to other parts of the

CNIB building had handrails to provide balance assistance. However, they were somewhat difficult to distinguish because similar colourings were used with the handrails and walls.

4.2.1.2 Flooring material

The flooring material of the academy was a beige colour with a matt finish, whereas the walls were a soft wood brown colour and light blue.

4.2.1.3 Spaces to walk

Members of the DBWA demonstrated that there were spaces available to walk around independently both inside, and immediately outside the entrance doors in the shared entranceway lounge for the program and the Canadian National Institute for the Blind (CNIB).

4.2.1.4 Spaces to rest

There were multiple points where members could rest if needed. These resting points were found in tandem with the most walkable spaces- throughout the program and outside the doors into the entranceway lounge.

Table 4 Neighbourhood Walkability Audit Results

Major Themes	Sub-themes	Criteria	Yes	Needs Improvement (NI)	No
Neighborhood Walkability	Wayfinding	<ul style="list-style-type: none"> Do doors have clear or transparent vision panel to show where they lead to? Are signs of a good size and a contrasting colour to the door so as to be seen easily? Do signs on doors e.g. for toilets or day rooms use both pictures and words and are they hung at a height (approximately 4 foot/1.2m) that makes viewing them easy? Are pictures/objects 	<p>Yes</p> <p>Yes</p> <p>Yes</p>		

		<p>and/or colours used to help patients find their way around?</p> <ul style="list-style-type: none"> • Have strong patterns been avoided in wall coverings, curtains, and furnishings and screens? • Is there a large face clock easily visible from each room? • Are members able to see a calendar in the day program? • Is there clear signage showing the name of the day program? • Are there points of interest e.g. photographs or tactile artworks? • Are the handrails in the corridors in a colour that contrasts with the walls? • Is it possible to grasp the handrails properly? 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>			No
	Flooring material	<ul style="list-style-type: none"> • Is the flooring matt rather than shiny and of a consistent colour i.e. does not have speckles, pebble effects or stripes? • Is the flooring in a colour that contrasts with the walls and furniture? 	<p>Yes</p> <p>Yes</p>			
	Spaces to walk	<ul style="list-style-type: none"> • Is there space for members to walk around independently? 	Yes			
	Spaces to rest	<ul style="list-style-type: none"> • Are there small seating areas for people to rest 				

		along corridors and/or by the reception desk?	Yes		
Total		• 15 Questions	14 Yes's	0 NI	1 No's

4.2.2 Safety

Embedded under safety were the constructs of interior and exterior safety, noise levels, lighting, and clutter and distractions.

4.2.2.1 Interior and exterior safety

With reference to interior and exterior safety, the program has taken a unique approach when addressing perceived needs as outlined in the audit. Within the DBWA, there was one room that staff frequented to use one of the two computers, to keep their belongings, and to sometimes have meetings or to make phone calls. Despite this being identified as a staff only environment, there was no evidence of labelling this as such, and the door was kept open unless privacy was needed. There was also no evidence of safety locks on windows or on the doorways. The windows were not installed with the ability of being opened, whereas the doors entering into, and within the DBWA were kept open throughout the day so that members were able to manoeuvre throughout as they preferred. All hazardous materials were kept out of reach from members and staff; cleaning staff were responsible for handling these items. As well, all personal items of members were either kept on their persons, kept in a cupboard, or on a countertop so that they were easily accessible. Members were provided a non-restrictive environment to spend their time at the DBWA without being in any perceived danger or without having their safety compromised.

4.2.2.2 Noise levels

Individuals with dementia typically experience a lesser capacity to rationally process external stimuli, such as noise and light (Hayne & Fleming, 2014). As a result, within the program, there were many techniques incorporated to keep noise levels down to avoid disturbing or annoying members with the exception of playing music. Ideal noise levels were forty decibels for common areas, staff work areas, and corridors and lobbies, whereas forty-five decibels were deemed acceptable for toilets and bathrooms and kitchen and service areas (Hayne & Fleming, 2014). To provide context, forty

decibels are considered comparable to a library, bird calls, or the lowest limit of urban ambient sound, fifty decibels were compared to a quiet suburb or a conversation at home, and seventy decibels are often identified as being too loud for people (Purdue Education, 1992).

Within the academy, there was no use of an intercom system, or paging system to make announcements. The flooring was made from material that did not accentuate noises of footsteps or of walkers. In order to alleviate any potential noise from moving chairs when rearranging them for lunch time, or different activity sessions, tennis balls had been placed on the bottom of each leg to ease sliding.

Music is considered to have many short-term benefits for those with AD/MD, such as mood and reduction in behavioural disturbances (Mcdermott, Crellin, Ridder, & Orrell, 2013). Playing music at the DBWA was a regular occurrence. Members were generally in control when it came to picking out what music they listened to. Activity instructors came in with a fixed idea of the activity and associated music, but members were free to make requests for songs. If a member was not interested in participating in the activity, they had access to a computer monitor and speaker to watch and listen to music of their choice. The DBWA created its own YouTube channel that featured a lot of commonly requested music. Well-known artists and bands from roughly 30-40 years ago were present, such as, Julie Andrews, Janis Joplin, Santana, Joe Cocker, Earth Wind and Fire, and The Who.

4.2.2.3 Lighting

Other points of safety identified by the audit were lighting features. There was clear evidence that the academy took into account components of how lighting can influence a space throughout the design process. Windows and doorways were created with large panes of glass letting in a lot of natural light and providing exposure to nature. In fact, just over one quarter of the walls were made from glass. The interior lighting in each room of the program was adjusted accordingly in order to match the need of a given activity. And the lighting provided was evenly distributed so there were no shadowed or dark areas.

4.2.2.4 Clutter and distractions

Finally, the last criteria addressed under safety were clutter and distractions. The DBWA managed to create and maintain a clutter free space, whereby all accessories used for activities were

only brought out for the activity and placed back in storage cabinets following use. Members' belongings, such as a purse, were also placed in allocated cabinet space if so desired. Some members preferred to keep their personal belongings with them. Walkers and other movement aids were stacked off to the side near the entranceway, avoiding any major pedestrian traffic space.

Table 5 Safety Audit Results

Major Themes	Sub-themes	Criteria	Yes	Needs Improvement (NI)	No
Safety	Interior & exterior safety	<ul style="list-style-type: none"> Are doors to exits clearly marked but 'staff only' areas disguised e.g. by painting the door handles in the same colours as the walls/continuing the handrail across the door? (Exits were clearly marked, however, marking and disguising 'staff only' areas were deemed as unneeded). 	Yes		
		<ul style="list-style-type: none"> Are all hazardous liquids and solids e.g. cleaning materials, locked away? 	Yes		
		<ul style="list-style-type: none"> Are personal objects, including self-care items, situated where members can find them? 	Yes		
		<ul style="list-style-type: none"> Are members cared for in the least restrictive environment possible while maintaining the appropriate level of safety and security? 	Yes		
		<ul style="list-style-type: none"> Are safety and security measures e.g. baffle locks, window restrictors and alarms, as discreet as possible? 	Yes		
	Noise levels	<ul style="list-style-type: none"> Are notices kept to a minimum to avoid distraction and confusion? 	Yes		

		<ul style="list-style-type: none"> • Have noise absorbent surfaces been used e.g. on floors and ceilings to aid noise reduction? • Do members have any control over the sounds they hear e.g. can they listen to their own choice of music? 	Yes		
			Yes		
	Lighting	<ul style="list-style-type: none"> • Is there good natural light in social spaces? • Is the level of light comfortable and appropriate and can it be adjusted to suit care needs? • Is the lighting and natural light from windows even e.g. without pools of light and/or dark areas, stripes or shadows? 	Yes		
			Yes		
	Clutter & Distractions	<ul style="list-style-type: none"> • Are spaces clutter free? 	Yes		
Total		<ul style="list-style-type: none"> • 12 Questions 	12 Yes's	0 NI	0 No's

4.2.3 Community engagement

Under community engagement, there were three suitable sub-categories identified, an accessible built environment, a welcoming environment (based upon the physical features of the DBWA), and social activities. These categories were identified as being relevant to community engagement because they were related to making spaces amenable for groups of individuals and encouraging social interaction.

4.2.3.1 Accessible built environment

At the DBWA, staff could be observed by members from any location in the space in order to provide care if need be, or to act as an avenue of conversation. As well, the three main rooms (the media room, the art room, and the main room) were all designed to successfully support social

interaction. For instance, each of the three main rooms were large enough to accommodate a number of individuals, with the art room being the smallest and comfortably designed to accommodate ~10-15 people, whereas the media room was sizable enough to accommodate ~30 people, and the main room ~40 people. Within these rooms, there was a selection of seating provided to members. There were recliner armchairs, lounge chairs, and traditional chairs with arm rests. The recliner chairs were often moved into the media room to support members who needed them. In the reading room and the lounge (located immediately outside the entranceway doors to the DBWA) had arm chairs facing one another to encourage conversation. However, not all activities warranted this sort of chair arrangement. For example, during an educational session in the media room, chairs were arranged in a staggered row formation so that members were able to visually see the display, and in the main room, seating was predominantly set around three tables used for eating and morning coffee conversations.

4.2.3.2 Welcoming environment

The second sub-category looked at whether or not the academy provided a welcoming environment. As members arrived in the morning and/or afternoon, they were welcomed warmly with greetings and hugs from staff and volunteers. Moreover, the academy kept the main doors open and ensured that there was sufficient lighting to keep it as an inviting place to enter. Every evening, following the departure of all members, staff and volunteers tidied up the DBWA to make sure all accessories were put back where they belonged. It was clear that there was a high standard of cleanliness and tidiness to keep the program well maintained and inviting. There was also an obvious reception desk at the entranceway. At the reception desk, there was a staff member situated there to assist anyone coming in, to take phone calls, and to answer to e-mails. Furthermore, there were information pamphlets available for pick-up, highlighting current events at the program, nametags were also situated at the reception desk for members when they came in (all members of the community, including the research, wore a name tag), along with a hand sanitizer, and a garbage bin.

4.2.3.3 Social activities

Thirdly, the activities at the DBWA are very social. For instance, the majority of activities encouraged were inclusionary of everyone and avoided passively watching T.V. Examples of some of the common activities at the program were: singing, yoga, dancing, exercise, art, crosswords, puzzles,

theater improv, bocce ball, and karaoke. As well, seating was arranged around the three major tables, two circular and one rectangular in the main room for lunch time to encourage members to eat and socialize together.

Table 6 Community Engagement Audit Results

Major Themes	Sub-themes	Criteria	Yes	Needs Improvement (NI)	No
Community Engagement	Accessible built environment	<ul style="list-style-type: none"> • Are there obvious social areas such as day rooms? 	Yes		
		<ul style="list-style-type: none"> • Is there a choice of seating provided including chairs with arms? 	Yes		
		<ul style="list-style-type: none"> • Are the chairs in social areas arranged in small clusters to encourage conversation? 	Yes		
		<ul style="list-style-type: none"> • Can staff observe and be seen in all areas of the ward? 	Yes		
	Welcoming environment	<ul style="list-style-type: none"> • Does the approach to the day program look and feel welcoming? • Is there an obvious reception desk? • Does the ward give a good first impression i.e. does it look clean, tidy, and cared for? 	Yes Yes Yes		
	Social activities	<ul style="list-style-type: none"> • Are other activities encouraged rather than just passively watching TV? • Is there space where members can eat together? 	Yes Yes		
Total		<ul style="list-style-type: none"> • 9 Questions 	9 Yes's	0 NI	0 No's

4.2.4 Access to services

Access to services as defined by the CMHC study focused on features outside of the immediate home environment of an individual and targeted exterior community-level supports (ex: grocery store, bank, hospital, and pharmacy). For this study, the categories allocated towards access to services were accessible within and immediately outside the DBWA - personal hygiene, views and access to nature, and access to food/drinks.

4.2.4.1 Personal hygiene

Members of the DBWA used public washrooms at CNIB. Personal hygiene addressed the condition and availability of certain features within washrooms and bathing facilities. For instance, the toilet doors were all painted the same distinctive colour. As well, the toilet seats and flush buttons were of contrasting colours to other features in the washroom such as the walls and flooring. This was designed to make them more visually clear and therefore easier to use. There was one shower room area that had distinguishable hot and cold controls and was built large enough to have staff assist members when the door was closed. Additionally, there was one toilet big enough to accommodate more than one person, so that staff or family members would be able to assist members if they need. This criteria, however, was marked as needing improvement based upon the aimed standard from the audit. The question pertaining to this section was specific to include that *all* toilets and showers should be large enough for more than one person (The King's Fund, 2014). The lighting throughout the washroom was controlled with a switch, with the exception of the shower area that was controlled by sensor lighting. An additional area identified as needing improvement was enhanced signage directing individuals to the toilets. From the hallway, immediately outside the entranceway of the DBWA, signs to the washroom were visible. However, when members were inside the academy, there was a lack of signs guiding them to the washroom and there were times when the members required direction. Another point where the space did not meet the needs of the audit, was that in the washroom it was not possible to cover the mirrors. The reasoning behind wanting to have this capacity, was that individuals with dementia typically begin to experience perceptual changes that may lead to poor recognition of reflections. Individuals potentially may not recognize their own reflections in the mirror and become irritated (van Hoof, Kort, van Waarde, & Blom, 2010). Although, most often severe perceptual complications arise in individuals who have acute dementia, and therefore, this experience would not be assumed for all members of the academy (van Hoof et al., 2010).

4.2.4.2 Views and access to nature

The second sub-theme under access to services was views and access to nature. Questions that were asked in the audit and identified as evident at the academy were that flower planting had been chosen to be colourful, and that the views of nature were maximized from indoors through the use of low windows. One area that was identified as needing improvement, was that members did not have independent access to the outside courtyard space. In addition, there was very minimal sheltered seating available for members to use in the outdoor space. However, providing un-restricted access to the outdoors was identified as a potential safety concern, due to the manner in which the outdoor setting was arranged. For the most part, there was a buffer of treed landscaping from the courtyard to the adjacent road. Due to the unpredictable nature of decision-making (Sinz, Zamarian, Benke, Wenning, & Delazer, 2008) and wandering behavior (Logsdon et al., 1998) or an exploratory nature of some individuals with dementia, a treed buffer was not sufficient to allow members to freely maneuver outdoors on their own.

4.2.4.3 Food and drinks

The last criteria under access to services was access to food and drinks. During lunchtime, there was more than enough space for staff to sit alongside members and assist them if they needed. With the exception of one individual, members were sufficiently able to eat on their own. As well, the dishware and glassware utilized familiar colourings and design to avoid imposing institutionalized-type features. Having familiar items in a space for those with dementia often enhances comfort levels.

Offering members independent access to food and drinks were two areas of inquiry from the audit that were potentially deemed as needing improvement at the DBWA. Members did not have access to food or drinks on their own accord. Despite this, members were offered a snack and drink upon their arrival in the mornings, during lunchtime hot and cold selections were provided and seconds were offered, and water was passed around in the mid-afternoon for refreshment. The environment was receptive for members to ask for food or beverages at any time.

Table 7 Access to Services Audit Results

Major Themes	Sub-themes	Criteria	Yes	Needs Improvement (NI)	No
Access to services	Personal hygiene	<ul style="list-style-type: none"> Can the signs to the toilets be seen from all 			

		<p>areas?</p> <ul style="list-style-type: none"> • Are all toilet doors painted in a single distinctive colour and do they have the same clear signage? • Are the toilet seats, flush handles and rails in a colour that contrasts with the toilet/bathroom walls and floor? • Are the taps and shower controls clearly marked as hot and cold and are they and the toilet flushes of traditional design? • Are showers and toilet roll holders of familiar design? • Are all of the toilets and showers large enough for staff to assist members when the door is closed? • If sensor lights have been installed do they allow sufficient time for completion of toileting or washing? • Is it possible to cover mirrors if required? 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>NI</p> <p>NI</p>	<p>No</p>
	Views and access to nature	<ul style="list-style-type: none"> • Are links to and views of nature maximized e.g. by having low windows and using natural materials and colours? • Is there independent access to a pleasant, safe outside space e.g. garden, courtyard or terrace? • Have sheltered seating areas been provided in the outside space? • Has planting been chosen to be colourful and non- 	<p>Yes</p> <p>Yes</p>	<p>NI</p> <p>NI</p>	

		toxic?			
	Access to food/drinks	<ul style="list-style-type: none"> Do members and/or their relatives have constant independent access to hot and cold drinks? Do members have independent access to snacks and finger food? Is there enough space and chairs for staff and carers to help with eating and drinking? Is the crockery and glassware of familiar design and in a distinctive colour that contrasts with tables and trays? 	<p>Yes</p> <p>Yes</p>	<p>NI</p> <p>NI</p>	
Total		<ul style="list-style-type: none"> 16 Questions 	9 Yes's	6 NI	1 No

4.2.5 Questions omitted from the audit

There were a number of questions that were not included in the overall analysis because they were not applicable to a day program setting. These questions investigated whether there were areas to eat other than the members' beds, if bedrooms were personalized, and if staff call systems were designed to alert the staff but not to alarm the members. The DBWA was open during the day like an Adult Day Program. Members were not provided access to overnight accommodations. As well, the program did not incorporate the use of call systems or sensor alarms to alert staff, and there was no need for security measures such as door alarms throughout the day. The main entranceway door was always kept open for members to freely walk in and out and supervision was always provided for those who may explore beyond the academy area.

Table 8 Omitted Audit Results

Major Themes	Sub-themes	Criteria	Yes	Needs Improvement (NI)	No
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		<ul style="list-style-type: none"> • Is there somewhere for members to eat other than by their beds? 	N/A		
		<ul style="list-style-type: none"> • Are bedrooms/bed spaces personalized e.g. through the use of numbers, accent colours, memory boxes, or personal photographs? 	N/A		
		<ul style="list-style-type: none"> • Are the staff call system and machine/sensor alarms designed to alert staff but not to disturb patients? 	N/A		
Total		<ul style="list-style-type: none"> • 3 Questions 	3 N/A's		

In general, findings from the built environment audit showed that the day program was well suited to address the concerns of livability. There were 55 total questions in the audit and 52 that were deemed relevant for the DBWA. Out of all responses, 85% were Yes's, 11% were Needs Improvement, and only 4% were No's. The majority of items identified within the audit had specific connection to how members within the academy were able to actively move throughout the structure, feeling safe, socially engaged, or that their basic needs were being met.

4.3 Time-lapse Mapping

Time-lapse mapping was the second stage of data collection conducted for this research project. The movement of members at the program was recorded on maps for three consecutive days, over a series of seven separate time points. This section included a general analysis of these maps, by looking at features that indicate the busiest times of day at the DBWA, the quietest times of day, what activity had the most involvement, and what members did when they had opted out of the organized activity. Additionally, there are four maps included that were created following data collection. These maps illustrate the movement of four separate individuals throughout the day at the program. These individuals had varying degrees of ability and symptoms that would have made them more or less responsive to engage in the activities offered for the day. Findings from this portion of the study will be further discussed as to how they provide insight to the four key themes: neighbourhood walkability, safety, community engagement, and access to services.

4.3.1 Calendar at the Dotsa Bitove Wellness Academy

The following is the calendar of the Dotsa Bitove Wellness Academy for the three days that data collection took place.

Table 9 Calendar of Activities at the Dotsa Bitove Wellness Academy

	June 22 nd	June 23 rd	June 24 th
9:00 a.m.	Coffee Conversations (main room)	Coffee Conversations (main room)	Coffee Conversations (main room)
10:00 a.m.	Crossword, current events, scrabble OR other table activities (main room)	Crossword, current events, Scrabble OR other table activities (main room)	Karaoke* (outdoors)
11:00 a.m.	Sing and Write (media room)	Art and conversation (art room)	Theater Improv (media room)
12:00 p.m.	Lunch (main room)	Lunch (main room)	Lunch (main room)
12:45 p.m.	Let your yoga dance (media room)	Movement (media room)	Let your yoga dance (media room)
2:00 p.m.	Jazz time (media room) & Ukulele class (art room)	Exploring something new (main room)	Music time (media room)
3:00 p.m.	Dancing w/ the DJ (media room)	Dancing w/ the DJ* (main room)	Dancing (media room)
Amendments to calendar*		<ul style="list-style-type: none"> At this time, the DJ was not available. General conversation in the main room took place. 	<ul style="list-style-type: none"> At 10:00 a.m., the weather was nice so staff decided to play Bocce ball outdoors rather than Karaoke.

This calendar will be referenced and utilized to provide further understanding of the time-lapse mapping analysis.

4.3.1.1 Busiest times of day

According to the maps, the busiest times of day at the academy on the first day of data collection, June 22nd (Wednesday), were at 12:20 p.m. (24 members), 1:30 p.m. (26 members), and

2:30 p.m. (25 members). On June 23rd (Thursday), the busiest times were at 11:30 a.m. (10 members), 12:20 p.m. (11 members), and 1:30 p.m. (21 members). And finally, on June 24th (Friday), the busiest times were at 12:20 p.m. (17 members), 1:30 p.m. (20 members), and 2:30 p.m. (21 members). June 22nd and June 24th had the largest number of members present during the three same time intervals, whereas June 23rd had one of the busier sessions an hour earlier, at 11:30 a.m. As noted in the findings, the busiest times of day were early to mid-afternoon, including lunch time. Members were provided a meal as part of their full, or half day fee whether they arrive in the morning or afternoon.

4.3.1.2 Quietest times of day

In contrast to the busiest times at the DBWA, the quietest times of day were also noted. From the analysis, the three days of data collection had the same times of day that had the least number of members. These time intervals were at 9:30 a.m., 10:30 a.m., and at 3:30 p.m. On June 22nd, at 9:30 a.m. there were 6 members, at 10:30 a.m. 13 members, and at 3:30 p.m. 12 members. June 23rd at 9:30 a.m. there were 5 members, 10:30 a.m. 6 members, and at 3:30 p.m. 5 members. Lastly, on June 24th at 9:30 a.m. there were 7 members, at 10:30 a.m. there were 11 members, and at 3:30 p.m. there were 12 members.

4.3.1.3 Most utilized and underutilized rooms

Based upon the data, it was also worth exploring what room was the most utilized and underutilized and during what time and activity. This information was to provide insight on the spaces where members preferred and disliked to frequent. On June 22nd at 1:30 p.m., the media room had 20 members participating in the yoga activity. June 23rd, the main room was the busiest at 12:20 p.m. for lunch time with 11 members, and June 24th, the media room was the busiest at 1:30 p.m. with 19 members participating in the yoga activity. Some of the most underutilized rooms within the academy were identified as the reading room, the art room, along with the outdoors. At most, the reading room had no more than one member at one time. On June 22nd at 2:30 p.m. and June 23rd at 2:30 p.m. there was one member and no members visited the reading room on June 24th. The art room on June 22nd had 6 members who participated in a ukulele class from 2:30 p.m. to 3:30 p.m. On June 23rd, there were 8 members who participated in an art and conversation class held during 11:30 a.m. until 12:20 p.m. The art room was not utilized during June 24th by any members of the DBWA. June

24th there was an organized activity held outdoors. The activity was Bocce ball and took place at 10:30 a.m. until 11:30 a.m., 8 members participated.

4.3.1.4 Alternatives to partaking in the organized activity

An additional point of interest provided by the maps, was to identify what members were doing if they had opted out of the organized activity. Questions that could be answered through this are: is it possible that members are not being physically or mentally stimulated, what are the alternate activities being chosen, and how do these differ from those that are organized, and are there certain activities that could be modified to retain engagement? Throughout all three days of data collection, a few members were observed engaging in six different activities other than those that were planned. Members were listening to music in the media room, watching and listening to music videos in the main room on a computer monitor, talking to staff and other members in the main room, reading, doing a puzzle, and exploring the space. Those observed did not seem to mind deviating from the structured activities and in fact choice and movement between activities is encouraged. What was important was to ensure members were engaged in something that interested them. Previous research showed evidence that it was important for individuals with dementia to be involved in activities, whether they were everyday activities such as gardening, cooking, and sewing, mentally stimulating, or physical activities (Menne, Kinney, & Morhardt, 2002). In particular, individuals with relatively new diagnosis attempted to retain some continuity with their pre-dementia behavior (Menne et al., 2002). This could be improved upon, however, members at the academy were provided opportunities for engaging in new activities and new learning.

4.3.2 Member Maps

Map one outlines the interior and exterior space of the Dotsa Bitove Wellness Academy.

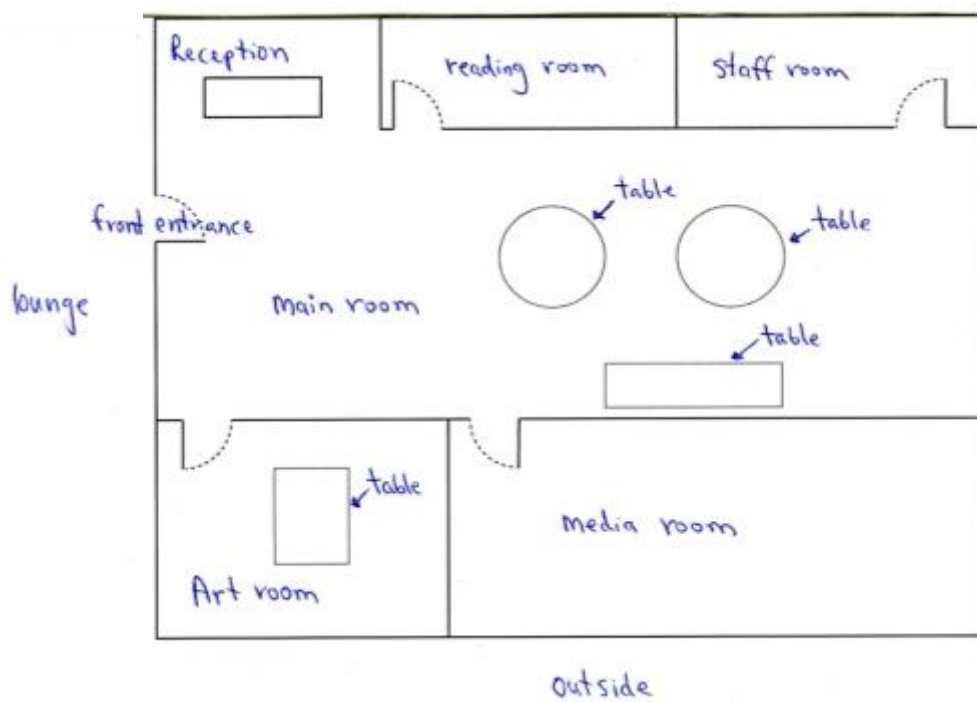


Figure 10 Map 1 Layout of the Dotsa Bitove Wellness Academy

The first map illustrated below identifies member A and their movement throughout the day on June 24th. The designated rooms for the activities for that day were: 9:30 a.m. main room, 10:30 a.m. outside, 11:30 a.m. media room, 12:20 p.m. main room, 1:30 p.m. media room, 2:30 p.m. media room, and 3:30 p.m. media room. From between 9:30 a.m. until 1:30 p.m., this member was present in all rooms where the main activities were being held. During 2:30 p.m. and 3:30 p.m., member A decided to spend time in the main room rather than the media room.

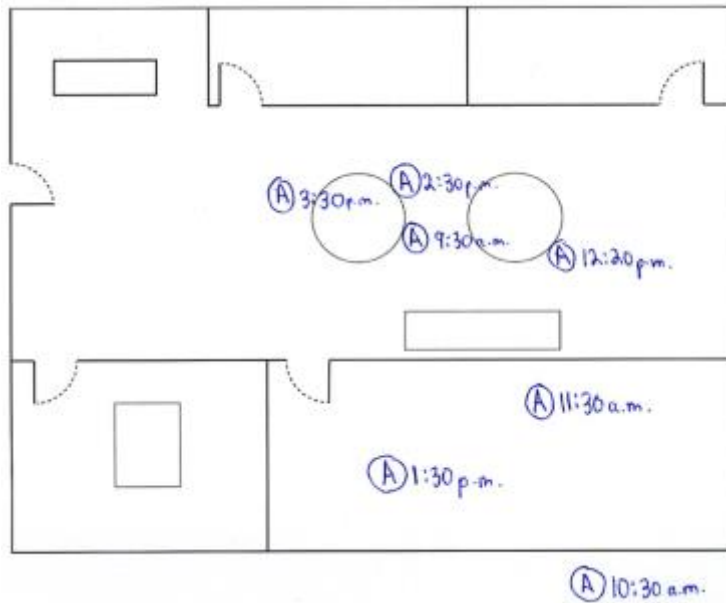


Figure 11 Map 2 Movement from Member B

The second map illustrates movement on June 24th from member B. Member B moved to all the desired rooms where activities were being held except for during 1:30 p.m., where they decided to stay in the main room, rather than the media room.

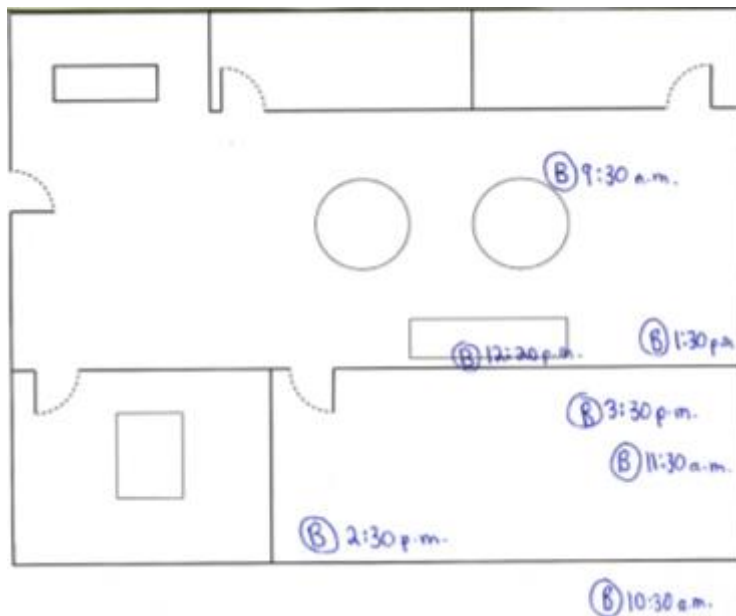


Figure 12 Map 3 Movement from Member C

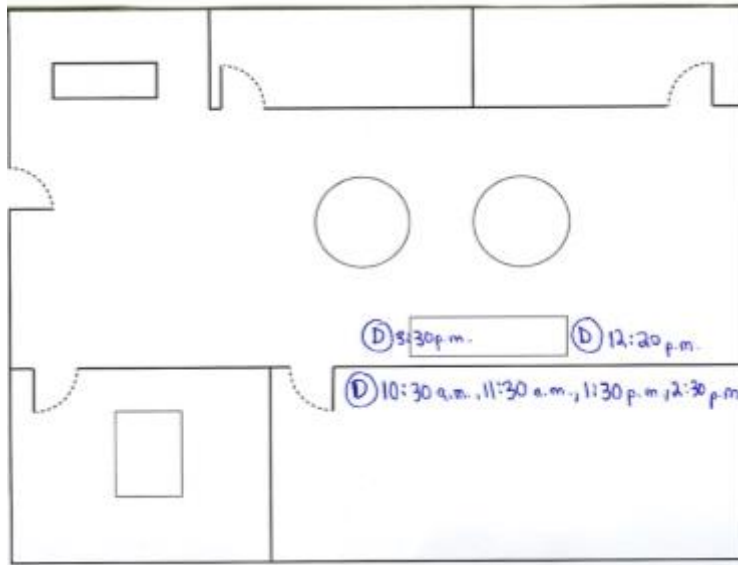


Figure 14 Map 5 Movement from Member D

In consulting the DBWA calendar, the anticipated movement from room to room was encouraged, with activities only remaining in the same room for a maximum of two hours for June 22nd, and 23rd, and a maximum of 3 hours for June 24th. For members A, B, C, and D on June 24th, they only had one segment of the day where they were in the same room for 2 hours. All other times throughout the day there was movement from room to room.

Findings from the time-lapse mapping led to further understanding of which elements in the physical and social environments enhanced the livability of the DBWA. Lunchtime and early to mid-afternoon were the busiest times of day during all three days of data collection. Over lunchtime, all members actively engaged in eating their food at the arranged tables. The environment was clearly comfortable and accessible for individuals. A yoga class was also a popular activity; members were able to successfully take part even if they had mobility constraints. The instructor was also competent in engaging members through conversation and physical movements. Some of the more underutilized rooms were the smaller spaces within the program such as the reading room and art room. The main room and the media rooms were the most utilized, indicating that members rarely sought the need to be in a more confined space. It was also evidenced through members A, B, C and D that they often migrated towards the location of an activity or where people were gathered. The underlying theme from these results is that members of the academy sought to be in spaces where other people were, in order to be engaged in relationship.

4.4 Art-Based Analysis

Findings from the third stage of data collection, arts-based analysis, are conveyed through visual image as well as associated descriptions. During the art session at the DBWA, a shared analysis technique was used in order to obtain information pertaining to the participants' drawings. Discussions took place between the participant, the researcher, the Director of the academy, and an artist in order to thoroughly understand what was being drawn by the participants. A colour thematic analysis also took place. The researcher, the Director of the academy, and the artist sat down at the table in the Art room staggered alongside the participants. One piece of paper was placed in front of the participants and the three individuals guiding the session. This approach was keeping with the philosophy of the academy where everyone works alongside one another rather than having a hierarchical approach where one individual is supervising or directing over another. Details about the art material and the purpose of the art session were initially delivered by the art instructor, and were then reiterated by the researcher and Director of the DBWA. It was made clear to participants that they could stop participating at any time. Participants were asked to draw their favourite space at the academy and to include key features that would provide reason why this was their favourite space. Once the session had reached halfway, or if participants had finished their first piece, a second blank piece of paper was provided with a new set of directions. The art instructor explained that the art was now to include images of the participant's favourite landscape or place outside the DBWA. Findings are discussed below from one image to the next, with an explanation of the participant's thoughts, as well as the researcher's interpretations.

4.4.1 Image 1

The first image was illustrated by participant number one. They had mentioned that their favourite time and space at the DBWA was lunch time in the main room. The image displays grapes in a basket and with more time the participant would have included bananas and apples as well. Comments were made by the participant about what made this their favourite time and place. The participant appreciated eating with everyone and really enjoyed the food. Grapes were identified as their favourite food, and the colour purple was their favourite colour. Brown was chosen for the basket because they felt that it was the most suitable. During data collection, the participant had difficulty recognizing what colour they had while drawing (Wijk, Berg, Sivik, & Steen, 1999). The participant also felt somewhat insecure about their drawing abilities as evidenced by them speaking and questioning whether or not they had in fact drawn a basket.



Figure 15 Grapes in a basket by participant 1

4.4.2 Image 2

The second image was drawn by the same participant. This participant was the only one out of the three participants to complete both images requested by the researcher. Below is an image of the setting sun and ocean on an island in the Caribbean Sea. The participant decided to draw this because it was their favourite place to visit. Most years, their family had been able to visit this place twice a year. There were apparently many things to do on this island, such as shopping, and dining, although the preferred spot for this participant was to be in, and by the ocean. This participant stated that they would stay in the water for hours. They mentioned that the key features that made this an idyllic place were the light blue ocean water, the beautiful sand, the variety of sea shells, and the warmth from the sun. The participant chose to use a lighter blue for the top layer of water and made the water below a darker tone. Orange was mixed in with the yellow of the sun to illustrate the sun setting. For the participant, this place was associated with feelings of being relaxed and at peace.

Additional notes were conveyed through discussion. This participant enjoyed gardening and flowers. They used to have access to a garden plot but had since moved and no longer had access to such a space.

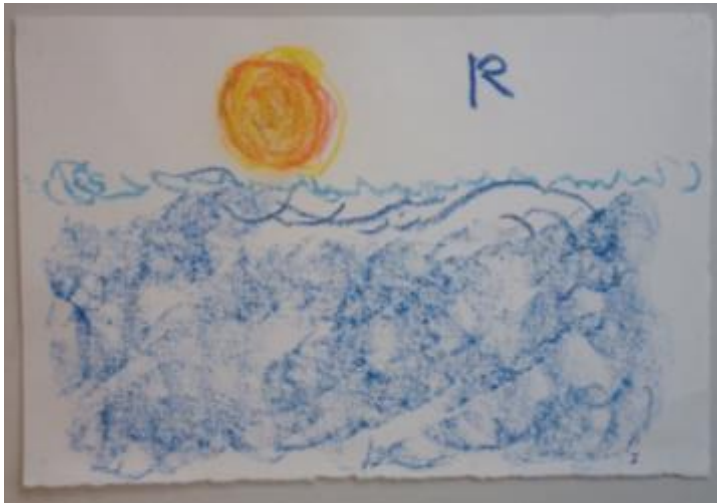


Figure 16 Setting sun and the ocean by participant 1

4.4.3 Image 3

The third image was drawn by the second participant. This participant was able to complete the first assigned task, which was to draw their favourite space at the DBWA. The second question was to draw one's favourite landscape or place outside the program. The participant preferred to talk and visit with the staff and members rather than draw the second piece. In image 3 below, there are two figures, one representative of a man and the other of a woman. There was a table with two chairs and a mug of beer that says "beer". The caption in the image stated "*Lunch for father & mother the children are cooking*". What the participant shared with the Director of the academy and researcher was that their favourite time and place at the academy was lunch time. They mentioned that they enjoyed having the meals prepared and eating in the company of others. It was unclear what was the participant's favourite colour as there was an array of colours used. A dark blue was drawn to outline the man in the image, whereas pink was used to outline the female. Brown was used for the chairs, and a dark blue was used for the table. Other colours that were present and used primarily as accents to the females' attire were green, red, and brown. The female was smoking a yellow cigarette. The beer mug was orange. Although this participant chose not to draw a second picture, they did mention that their favourite places in the world, outside of the DBWA, were Israel and Australia. Further explanation as to why was not received.



Figure 17 Father and mother figure at lunchtime by participant 2

4.4.4 Image 4

The fourth image was drawn by the third, and last participant. Similar to participant two, participant three only finished one of the images that the researcher had requested. This participant drew an image that pertained to the second question concerning one's favourite landscape or place outside the DBWA. The image included the sun and flowers. A butterfly was drawn on the side of the paper by the Director of the academy, who was assisting the participant by doing the activity together so that they would feel more comfortable. According to the participant, they used to love gardening. Now they enjoy visiting gardens and nature. They mentioned that the smells and colours are so captivating. In discussion, the participant had also mentioned that they really liked dogs. Yellow was used to draw the sun and the sun rays. Purple and pink were used as part of colours emitted by the sun, and were also used to draw the two flowers. Green was used for the stems of the flowers. There was one streak of light blue unidentifiable to any specific feature.



Figure 18 Flowers and the sun by participant 3

4.4.5 Thematic analysis

Thematic analysis was conducted in order to extract any commonalities among the four images. Key themes that emerged from the images and subsequent discussion were the outdoors and nature (this included water, flowers and gardening, and sun), eating (lunchtime), and people. Images 1 and 3 addressed the first component of the activity: “what is your favourite space at the DBWA” and both conveyed lunchtime themes, with either food, or people getting ready to eat. Discussion related to Image 1 revealed that this participant enjoyed lunchtime because they were eating amongst people and they really enjoyed the food. Images 2 and 4 were related to the second portion of the study, which addressed an environment outside the DBWA and included features from the outdoors and nature. Commonalities between the two were that they both included a sun. The second image from participant one included ocean waters, whereas the fourth image included flowers, and both participants 1 and 3 mentioned that they loved gardening and flowers. It is possible to conclude from this that features that are connected to nature would be important to consider when designing spaces for individuals with ADMRD.

An individual's ability to perceive colour changes as they age. Commonly, 8% of men are considered to be “colour blind”, which means they have a hard time distinguishing between reds and greens (Judd, 1943). As the eye ages, the lens thickens and becomes yellow making it difficult to differentiate between colours in green and blue shades (Calkins, 2010). Research explains that yellowing eyes absorb more blue light, which means the environment for an elderly person is quite

yellow in comparison to a younger individual (Calkin, 2010). The top three preferred colours among individuals across the lifespan are blue, red, and green (Wijk, 2001; Reeves, 1985).

Understanding colours, and how individuals with dementia perceive them is helpful when designing a space. Specifically, when using colour to assist with orientation. Individuals with dementia can have a difficult time distinguishing between cooler colours: blues and greens. When emphasizing certain landmarks, objects, or rooms, it is recommended to use colours that are brighter, that include a higher contrast with the background, and are light (i.e. white is added to the colour) (Calkins, 2010). Yellow is a highly visible colour for those with dementia. Colours are also recognized as having psychological effects. For instance, blue is regarded as a calming colour, red can increase adrenalin, green is one of the most restful colours, violet typically has a neutral effect on individuals, and orange is said to share similar properties with red and green (Calkins, 2010).

Below table 10 illustrates the colours used in the four images. There were nine colours in total. Yellow showed up in three of the four images, whereas red only showed up in one of the four images. All of the other colours (brown, purple, light blue, dark blue, orange, green, and pink) were evident in two of the four images. As mentioned in literature, yellow was recognized as being highly visible, which could reasonably be why it was the colour that was most widely used. The calm demeanor of the participants could have detracted from them using the colour red. Red typically enhances adrenalin and excitement. A particular point of emphasis was that blues and greens represented 33% of the colours used. These colours have been shown to encourage calming and tranquil feelings (Calkins, 2010).

Table 10 Colour usage in drawings

	Colour	Frequency (# of images the colour is used in)	Percentage (%)	Evidence of calming/restful colours (blues & greens)
1	Brown	2	11%	
2	Purple	2	11%	
3	Light Blue	2	11%	2
4	Dark Blue	2	11%	2
5	Orange	2	11%	

6	Yellow	3	17%	
7	Green	2	11%	2
8	Red	1	6%	
9	Pink	2	11%	
	Total	18		6 (33%)

4.5 Covert-Overt Observations

Covert-overt observations were the fourth method of data collection. Under this method, key areas of focus were aided by the observation guidebook created as shown in Appendix B. The guidebook was created with reference to the strategic orientation- *life as activity*, which included the following categories: 1. Coming and going, 2. Walking and exploring, 3. Daily life activities, 4. Cooking and dining, and 5. Being outside (Moore, Geboy, & Weisman, 2006). Observations were to provide further insight about the physical environment and social environment of the DBWA, as well as the participants' perceived experiences in this place. Tables were made by compiling information into the following proxies used for livability: neighbourhood walkability, safety, community engagement, and access to services. This was similar to the categories used in the audit of the built environment. There was no distinct need to maintain data that was collected in the time segments that were used for data collection. As a result, the researcher decided to consolidate the data.

4.5.1 Neighbourhood walkability

Neighbourhood walkability was addressed by looking into two major sub-themes, one being whether members demonstrated signs of personal control when maneuvering throughout the day program, and the other was to note whether members seemed to be well oriented. As outlined in the comments, there was clear evidence that members were freely able to ambulate throughout the DBWA. Members made decisions such as going to the washroom, or leaving an organized activity without having to consult anyone. If members wanted to go outside the immediate doorway of the academy, they were also free to do so, but staff generally kept a closer eye to ensure they did not explore beyond the academy area. Within the DBWA, members did not experience any signs of frustration when trying to get from one space to the next. Most of the pathways to move throughout the day program were linear and vision of the space was enhanced by having windows between each room as section barriers. There was a strong sense of familiarity when members were at the DBWA,

which was demonstrated through the absence of members expressing confusion about their whereabouts and what was happening in their environment. Members were also aware of how to get from one room to the next, where to find the washrooms, where to take a seat for lunch time, and who to talk to if they needed assistance.

The outside environment was much different. Members did not have independent access to this space, and it was not designed to be overly conducive to walking. There were sidewalks that ran adjacent to the building near the entranceway, but they went a limited distance. There was no access to walking pathways.

Table 11 Neighbourhood Walkability Observations Results

Neighbourhood Walkability	Sub-themes	Comment
	<i>Signs of personal control</i>	<ul style="list-style-type: none"> • There were numerous accounts of members getting up and freely walking to the washroom, from room to room, and to just simply stand and visit with staff or another member. Members did not need to ask permission, or inform anyone that they were leaving to go to the washroom or going for a walk. Though, staff were aware of everyone’s whereabouts at all times. • Members were also noticed leaving the academy to sit in the foyer, and walk down the hallways to the bathroom. Outside the DBWA, staff still continued to let members choose where they wanted to go, but they accompanied them to ensure they remained safe.
	<i>Wayfinding</i>	<ul style="list-style-type: none"> • Members were able to find the washroom on their own or with minimal assistance, understanding where, and how to arrange oneself for lunch time, and where to go and find seating for scheduled activities in the main room, the media room, and the art room at the academy. • There was one instance where a male member went to the women’s washroom. Staff took note of his need for additional guidance.

4.5.2 Safety

Generally speaking, there were very few points of concern when it came to addressing this criterion. There was one area that emerged that could become problematic. Members were able to freely leave the DBWA. The academy is situated within the CNIB building, and there are two sets of doors that one would need to exit in order to leave the DBWA and the CNIB building. Because the entranceway doors to the academy do not lead immediately outdoors, there is less of a concern of losing members. However, this removes independent access to the outdoors by members. As well, once members leave the academy, they have access to hallways within the CNIB building that may lead the member to unknown territory.

Table 12 Safety Observation Results

Safety	<i>Potential perceived safety problems</i>	<ul style="list-style-type: none">• Members are freely able to leave the academy. There were no instances where this caused a problem, although, a possible scenario could be that the member leaves the DBWA unnoticed, and further leaves the CNIB building.
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4.5.3 Community engagement

The next area of observation was community engagement. There are many different ways individuals may feel engaged. For instance, at the academy, staff and volunteers were well versed in knowing how to greet and say goodbye to members. Upon arrival, there was always someone (either volunteer or staff), who was immediately available to welcome an incoming member. Staff or volunteers initiated discussions with members by using their names, everyone wore name tags, they were offered coffee or tea upon arrival, and were made comfortable by ensuring they made their way to the activity that was taking place. Similar to the arrival, leaving was also well organised. The staff and volunteers greeted the caregiver, driver, or family member, and would offer any information about what happened that day and would make sure members had all of their belongings.

When moving from one activity to the next, staff, artists, and volunteers were also competent and made it so that members did not feel rushed, hurried, or disrupted at any point. Regularly those who were guiding the activity would introduce the new activity while members were finishing the current activity. Artists made a point of spending time and building rapport with the members through actively asking what they had been doing, how their day had been, and sharing personal thoughts about the activity or topic of conversation. Social interaction among members-to-staff, members-to-

members, and staff-to-staff also were excellent. Staff in particular demonstrated strong communication skills and thorough understanding of how to address individuals with ADMRD. For example, they were keenly aware of the importance of using the person's name, of using simple sentences, of making eye contact, of listening actively, of using open-ended questions appropriately, and of using one-step instructions. These have all been shown to be effective strategies for engaging individuals with dementia (Eggenberger, Heimerl, & Bennett, 2013).

Members also quite readily showed evidence of participation and sustained engagement in the activities taking place. Sustained engagement was displayed through eye contact with the artists, following the artists of the guided activity, and keeping conversations and other distracting movements to a minimum. When members began to show signs of disinterest, or disengagement, staff were quick to provide them with an alternate activity, or to move them to another room offering a change of scenery. Some examples of what members did when they were not interested in participating in the chosen activity were to watch music videos (ex. the sound of music) in the main room, to visit with staff and other members, to explore the space, or to do jigsaw puzzles, art, or crosswords at the table. During lunch time, social dining was supported, although in groups larger than 2-4. Seating ranged from 4-10 individuals at one table and they were seated in either a circular or rectangular form. The diameters and lengths of the tables were not large enough to impede audible conversations.

An area that was indicated as needing improvement, was that members were rarely provided with opportunities to be responsible for something, such as watering plants, setting the table, etcetera. This is seen as a means of providing individuals with additional types of activities in which to engage. Members were, however, acknowledged for their contributions when completing an activity, successfully participating, and for continual engagement. Current artwork from members was displayed throughout the DBWA as part of an initiative to acknowledge those for their work. As well, during activities it was noticeable that the artists would use the members' names, and would congratulate and encourage them throughout the activity and upon completion of the activity. An example of one of the activities is that members were asked to draw a personal coat of arms. Near the end of the activity session, the instructor went around the room and asked if members would like to share their piece. Once the member shared, feedback and encouraging words were said by the instructor.

On a number of occasions, members clearly announced that they were having fun and demonstrated signs of calmness. A number of quotes were gathered from members at the academy

that reflected their perception of the space. For example, one member stated... “*Have you ever felt more alive?*” immediately following a dancing activity. Further quotes were transcribed below in the table. Another indication that members were comfortable, and enjoyed the space, was through the lack of instances where members became distressed, upset, or restless.

Table 13 Community Engagement Observation Results

Community Engagement	<i>Social exchange upon arrival</i>	<ul style="list-style-type: none"> • Staff acknowledged members as they came in and would engage in conversation with the member and either the caregiver, driver, or family member. • “You look beautiful today! I love your pants!” • Members were offered coffee or tea upon arrival. • If a member had a walker, they were assisted and walker was placed off to the side.
	<i>Social exchange at the end of the day</i>	<ul style="list-style-type: none"> • Caregivers, drivers, or family members came in to the DBWA to take the member home. Staff acknowledged anyone coming in, had conversations with them if they inquired about the members’ day, and helped to make sure the member took all of their belongings.
	<i>Soft transitions when moving from one activity to the next</i>	<ul style="list-style-type: none"> • During the morning, staff introduced additional activities to crosswords. Staff would introduce the new activity by engaging in the activity and would then ask a member if they wanted to join. • When an artist would come in, time would be spent with members in their current setting. • An artist introduced their activity and proposed to the members that “we’ll do it together”, making it a team effort. • There was clear emphasis on building relationships from artists to staff, and members. • Activities were already set up prior to members entering the room.
	<i>Social interaction</i>	<ul style="list-style-type: none"> • There was a lot of observed social interaction between member-to-member, member-to-staff, and staff-to-staff. In the morning when members were doing the

		<p>daily crossword, staff would provide clues to members but invited them to complete the crossword on their own.</p> <ul style="list-style-type: none"> • When the artists came in, they were really careful to ensure they were engaging all individuals. They were really notable at using the members' names and specifically asking them questions during a given activity. • During lunch time, staff sat amongst the members to engage with them in conversation. • Members were rarely left on their own. • One member really enjoyed music, and would walk and clap while listening. Staff ensured that this member had access to music. This was mainly played on a computer in the main room. • Staff demonstrated strong communication skills with each other. It was important that staff took breaks from caregiving. Staff took time to eat lunch and to sit away from members for short periods of time.
	<p><i>Evidence of sustained engagement in activities</i></p>	<ul style="list-style-type: none"> • Members actively participated in crosswords, painting, jewellery making, art discussion, collage, karaoke, music, singing, group chair exercises, bocce ball, music and theater improv session, dancing, and listening and watching someone speak about a topic of interest through the use of PowerPoint. • It was clear that there was sustained engagement in activities by members. During one of the activities, all members were facing the instructor, nodding their heads, and doing the instructed movements. • Music was a continual source of engagement at the DBWA. • In the event that members were beginning to show signs of disinterest or boredom, staff would actively ask members questions or introduce a new activity for them.
	<p><i>Members choosing not to participate in scheduled activities</i></p>	<ul style="list-style-type: none"> • Members who decided not to participate in the scheduled activities were provided with alternative options. One member

		<p>chose to watch music videos on a computer in the main room, other members were interested in visiting with staff and other members, and others chose to explore the space to do puzzles, or crosswords.</p>
	<i>Social dining</i>	<ul style="list-style-type: none"> • Social dining was supported. Group seating was larger than 2-4 members, there were roughly 9-10 per table. The tables were circular and one table was rectangular. Members and staff were able to speak to one another easily enough in the way the seating was arranged.
	<i>Provided opportunities to be responsible for something</i>	<ul style="list-style-type: none"> • Members are not provided opportunities to be responsible for something such as watering plants, setting the table, etc.).
	<i>Members recognized for their contributions</i>	<ul style="list-style-type: none"> • Members were recognized for their contributions throughout the day. For example, when members and staff went outside to play bocce ball, everyone clapped and cheered when a participant went up to throw a ball. Staff in particular were really effective in encouraging everyone to play and to really ensure that everyone felt comfortable in doing so. • Another form of recognition within the academy was displayed through the members' art work. Each room was comprised of various art pieces from numerous members. Admiring comments about the art pieces were made by staff, volunteers, and visiting family members.
	<i>Members verbally express having fun</i>	<ul style="list-style-type: none"> • A number of members verbally expressed their positive feelings about the DBWA. <ul style="list-style-type: none"> ○ "It's true, I do feel more comfortable here." ○ "Oh, what a wonderful day we've had, with lots of laughter and food." ○ "This is a wonderful place. Great people." ○ "Have you ever felt more alive?" ○ "Look out through there, there's nothing on the wall. The colours in here are great!" (in reference to the entranceway lounge shared by CNIB and the DBWA.

		<ul style="list-style-type: none"> ○ “It’s great, the windows, that’s what counts, yah!” ● One of the staff went around asking members... “when you think of this place, what word comes to mind?” Some of the responses were the following: <ul style="list-style-type: none"> ○ Fabulous! ○ Fun! ○ Warm and cozy ○ Good quality ○ Bright place ○ Full of life and love ○ Best place!
	<i>Signs of calmness, smiles, laughter</i>	<ul style="list-style-type: none"> ● Members participating in the activities had smiles and were talking throughout. There were no signs of members feeling upset, sad, or restless.

4.5.4 Access to services

The final area of observation concerned the access to services. The major themes to be investigated were whether members were able to readily use outdoor spaces, to note if members verbally expressed their contentment, to see signs of calmness, and to also record whether there were spaces where members could actively seek privacy if needed. Throughout the two days of observation, there was only one instance where members and staff went outdoors. Aside from that, outdoors was not regularly used freely as there was no enclosed environment that safely allowed individuals to explore without being closely monitored. There was a scent garden near the front of the CNIB building, roughly 75 meters (246 feet) from the DBWA. This garden was designed specifically for those who were visually impaired. It was also noted that there was a shortage of spaces that included both shade and resting spots.

Members were able to actively seek privacy if needed. The reading room was often utilized for this purpose.

Table 14 Access to Services Observation Results

Access to services	<i>Are members using the outdoors</i>	<ul style="list-style-type: none"> ● Bocce ball took place outdoors. There was no formal seating available in the space where members and staff were playing. Shade was visible directly beside the building and the surrounding trees. ● Near the front of the CNIB building, there was a scent garden, specifically designed
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		<p>for those who were visually impaired. Within this garden there were guiding pathways, along with benches, and scented flowers. However, there was no space immediately adjacent to the academy that was enclosed similar to the scent garden to allow members to freely roam.</p> <ul style="list-style-type: none"> • There was a garden located in view from the windows at the DBWA and there were herbs growing indoors.
	<i>Actively seek privacy</i>	<ul style="list-style-type: none"> • The reading room was used by one member quite regularly who enjoyed knitting, reading, and having one-on-one conversations away from the noise. This room was also used by a family member.

Covert-overt observation data added additional support to the livability indicators specifically identified in the built environment audit. The physical environment was constructed in such a way that supports orientation for members. There are no major safety concerns, members are continually engaged through the various activities provided, and they have the flexibility to change and find something that may be more suitable at the time. Staff are supportive of everyone within the facility and are able to effectively communicate with the members. Having access to an enclosed green space outside would further enhance the livability of this academy.

4.6 Conclusion

Day academies for those with Alzheimer’s disease and other memory-related disorders (ADMRD) have been recognized as being a realistic solution to lessening the constraints on long-term care facilities and to also support individuals to age-in-place. However, in Canada, the design intricacies of these environments is not well understood. There is a necessary level of design for these environments in order to appropriately accommodate those with dementia. Through the data collection methods carried out in this study, a wide range of information was received that contributes to the overall discussion on the livability of the program setting.

Primary findings indicated that the DBWA effectively encourages walkability, which plays an important role in the physical wellbeing of members. As well, there were minimal concerns with safety in the environment. Community engagement was heavily supported and access to services was sufficiently addressed. Members at the DBWA are aided by the physical and social features, meaning there are no major imposing constraints.

The busiest times of day at the program occurred around lunchtime and mid-afternoon. During these times members were highly motivated to enjoy their meals and engage in social conversations. Through the art-analysis, findings also indicated that lunchtime was preferred by a number of members because they particularly enjoyed food and being around people. *Being around people and engaging in activities was a major finding conveyed through the daily movements.* Most members participated in the organized activities throughout the day, and for those with alternate interests, they equally found opportunities to stay engaged. There was no evidence of individuals seeking complete isolation. An additional finding from the art analysis was that members enjoyed themes of outdoors and nature. Colours used to convey these findings were calming colours such as blues and greens.

The results from this portion of the study will guide the discussion in the next chapter. In particular, focus will be placed on how the DBWA demonstrated aspects of livability, what adjustments can be made to existing livability indicators to improve large-scale analysis, how planning for specific health needs is important, and the value of community-based adult day programs. Use of these findings will be important to see how communities may in unison adopt livability objectives and encourage individuals to age-in-place. They will also be helpful in providing detailed insight on the design of effective livable spaces for those with dementia through the specific physical and social environmental features identified within the audit, and other elements that were reinforced through the observations, time-lapse mapping, and art analysis.

Chapter 5 Discussion

5.1 Introduction

This study examined an example of a small-scale environment in order to generate a better understanding of the relationship between the physical and social design features and the subsequent livability of the environment.

The purpose of this research was threefold. The first objective was to understand how the physical and social environmental features contributed to the livability of the academy. Secondly, the study looked at whether the concept of livability could be a) appropriately used in small-scale environments such as the Dotsa Bitove Wellness Academy (DBWA), and b) whether the concept is appropriate for those with Alzheimer's disease and other memory-related disorders (ADMRD) populations. The third objective was to gain insight into whether day programs can be an effective option to support ADMRD communities age-in-place.

In this chapter, the initial research objective is discussed, followed by study limitations, and the remaining two research objectives. Embedded within this discussion are key areas for future research.

5.2 How does the Dotsa Bitove Wellness Academy specifically address livability?

Findings of this study revealed that there was clearly careful consideration of both physical and social environments at the DBWA that would accommodate those with ADMRD. The academy is an excellent example of what academic literature and design experts suggest is beneficial for both older adults and those with ADMRD. While the majority of livability indicators and sub-criteria were met at the academy, this study identified areas for improvement in all four categories. Overall, there were more areas for improvement in the physical environment rather than the social environment.

Within the program, many concerted efforts were made to incorporate physical features that cater specifically to those with ADMRD. Of particular notice, there were elements that supported the walkability of members, such as wayfinding features and spaces to rest. Members were noticed maneuvering over the course of the day without additional support and were well aware of their surroundings. This is significant to this demographic since it generates a sense of normalcy by allowing members the opportunity to make decisions on where to move throughout the environment

on their own (Gústafsdóttir, 2011). Insight to these findings were achieved through the use of observational inquiry. Observations allow the researcher to gain enhanced understanding of the physical space, to view the expressions of verbal and non-verbal cues from individuals, and to notice the meaning behind what is being observed from an individual's perspective (Hoepfl, 1997).

There were also additional elements that specifically contributed towards the safety of the space. Noise levels were kept to a minimum by placing tennis balls on the base of each chair leg and avoiding the use of intercom systems. Noise levels can have a debilitating effect on those with dementia, as they generally lose the capacity to process external stimuli (Hayne & Fleming, 2014). The program also had sufficient natural and artificial lighting, making all spaces easily visible for members in order to enhance wayfinding and the perceived safety of spaces (White, 2007; Mitchell et al., 2003; Faith et al., 2015; Marquardt, 2011; Marquardt et al., 2014; Torgrude, 2006).

Community engagement was the next livability indicator that was assessed in this study. Some of the important physical features that aided with socialization within the program were providing adequate clustered seating and having accessible rooms where activities took place. An area that was defined as needing improvement was that members were not given many opportunities to have domestic routines such as watering plants and setting the table. This idea is supported by research that suggests interior spaces for those with dementia, whether it is a home environment, a day program, or a care facility, should adopt a home-like atmosphere and include a sense of familiarity (Day et al., 2000; Marquardt, Bueter, & Motzek, 2014; Lee, Chaudhury, & Hung, 2014; Fleming & Purandare, 2010). Providing members an opportunity to be responsible for these routines would allow them to experience events familiar to them in their normal setting (Gústafsdóttir, 2011).

The last criterion recognized throughout this study was access to services. Areas of focus were personal hygiene, views of and access to nature, and access to food/drinks. The washroom facilities were accessible and were well designed for members. Studies indicated that individuals with ADMRD spoke positively about having access to outdoor spaces, and access was also shown to have a positive effect on their wellbeing (Innes, Kelly, & Dincarslan, 2011; Cioffi, Fleming, Wilkes, Sinfield, & Le Miere, 2007). Evidence from the drawings of the members seemed to support this finding. Greater physical access outdoors would have been beneficial. The final area of focus for this section was whether or not the members had independent access to food and drinks. Safety considerations were paramount in this case and consequently individuals were generally not provided independent access. Some individuals with dementia have been noted to increase their food consumption rates, through eating larger meals and snacks in-between and to also exhibit other

changes in eating habits such as eating non-edible substances, and using hands to pick up food rather than utensils (Ikeda, Brown, Holland, Fukuhara, & Hodges, 2002; Morris, Hope, & Fairburn, 1989).

Traditional and recent efforts in defining livability have specifically focused on the physical environment and have overlooked the importance of the social environment (Chazal, 2010; Newman, 1999; Pacione, 1990; Partners for Livable Communities, 2016), although this appears to be a growing focus area within age-friendly literature (Public Health Agency of Canada, 2016). A separate distinction between the two types of environments has been difficult to describe, as social environments are embedded within ‘places’ (Soja, 1980). Elements of social environments include physical surroundings, social relationships, and cultural milieus which refer to the setting and environment in which a person lives (Barnett & Casper, 2001).

Within this study, the researcher was able to effectively extract social environmental sub-criteria that proved to have great value within the DBWA. Examples of the more prominent findings were that members actively moved from one location to another because the programming within the DBWA was purposefully designed with that intent, and walkability was greatly enhanced by providing a purpose for members to move. Activities were arranged, and for those that chose to explore the space, there were people to talk to, puzzles to work on, areas for reading, and music to listen to. As well, staff and volunteers were well informed about the progression of ADMRD and how to assist those with the disease. Members also showed evidence of sustained engagement in activities at the DBWA, with very few signs of agitation, boredom, and distraction. This suggest that members were receptive to engaging and participating with other individuals at the DBWA and speaks to the importance of enhancing interactions and social well-being when considering environments for ageing populations (Finlay et al., 2015). Feedback from the members would suggest that they found the space to be an enjoyable experience. One member expressed this sentiment by saying, “Oh, what a wonderful day we’ve had, with lots of laughter and food”, while another exclaimed, “This is a wonderful place. Great people.”

Quantitative results from the audit suggest that the day program was a livable space, with 85% of the criteria on the audit being present at the academy, whereas only 11% needed improvement, and 4% was not addressed. This, coupled with the added support from the other three data collection techniques reinforced this finding.

This academy would be a good model to be used to assist in guiding development for other similar spaces. Results of this study highlight the success of the DBWA in incorporating accommodating physical and social environments, which together formed a supportive cohesive

space. Both environments were complimentary to one another and neither was shown to take precedence. This implies that when designing spaces, both physical and social aspects need to be taken into account by urban planners to have a more holistic approach to decision-making. This approach would be relevant to the construction of both small and large-scale environments, and also both indoor or outdoor spaces.

Current design for age and dementia-friendly environments lack coordination between physical and social environment objectives, and as a result there is a tendency to prioritize physical environmental features as they are clearly outlined within urban design guideline standards. Specifically, within Ontario, there is currently the Accessibility for Ontarians with Disabilities Act (AODA) that is law for all development within the province (Accessibility for Ontarians with Disabilities Act [AODA], 2005). Planners may perceive that embedded within these standards are elements that are addressing the needs of those with dementia (Przydatek, 2014). However, AODA solely focuses on the barriers individuals may experience with physical disabilities. Meeting the needs of individuals with ADMRD does not simply entail providing a location to live and an accommodating physical environment. Greater cultural and social needs need to be taken into account. There is importance in understanding the role of urban planning, and how this discipline may play an influential role in unifying both physical and social environmental objectives within policy for those with ADMRD.

5.3 Limitations

There were a number of limitations that are important to consider when evaluating the study as a whole. An initial limitation was connected to the sampling and recruitment of participants. The researcher had intentions of recruiting between 5 and 7 participants for stage 3 of the study using a random sampling technique. There was very little time for recruitment and in one week there were no responses from interested members and family members when invitations were sent out regarding the study. As a result, an alternate recruitment technique was adopted. A total of three participants were eventually recruited and only one completed both portions of the task. Two recent studies with different populations adopted a drawing technique, which had much greater sample sizes; however, in these studies this was the only source of data collection. One study was looking to uncover lupus patient's perceptions and experiences with the disease where 38 women were recruited (Nowicka-Sauer, 2007), and the other focused on gaining insight from 35 hospitalized children on what they believed to be an ideal hospital environment (Pelander, Lehtonen, & Leino-Kilpi, 2007). Inductive

qualitative content analysis was completed for the drawings in the study by Pelander, Lehtonen, & Leino-Kilpi (2007). Under this analysis, emergent themes, shapes, expressions, colours, and activities were recorded. Additional participants would have enhanced the art analysis for this thesis by providing support for emerging themes and trends. As well, the recruitment strategies used for the other studies were not disclosed. This would have aided the researcher throughout the design for sampling and recruitment.

Further, the researcher was unable to conduct a pilot study due to time constraints. Ethics approval took longer than anticipated and restricted the researcher to a specific time frame where data collection could take place. Pilot studies can be beneficial for a number of reasons. Through conducting a pilot study, the researcher would have been able to determine whether or not effective recruitment strategies were proposed (van Teijlingen & Hundley, 1998). A pilot study would have also aided in determining whether any component of the research procedure needed to be modified (van Teijlingen & Hundley, 1998). Even though the researcher was unable to conduct a pilot study, the appropriate modifications were made for the recruitment strategies and to the research procedure in order to ensure accuracy and consistency. Random sampling was initially used to select participants for the study, however, a purposeful sampling technique was employed following one week after the study information letter was sent out via e-mail.

An additional limitation was that the researcher was only able to spend limited time in the DBWA conducting the time-lapse mapping and covert-overt observations. Through longer engagement in the field, the researcher would have been able to establish emerging patterns with greater accuracy. As well, a level of trust would have been firmly established with members and staff through extended observation time (Bernard, 1994; Guba & Lincoln, 1994). One week spent in the culture of inquiry was a proposed benchmark by Guba and Lincoln (1994) in order to enhance the credibility of the findings. Additional insight into how members felt about the physical and social space would have been achieved. Because member attendance at the DBWA varies from day to day, future studies of this nature should be longer and extended over two weeks. This way, the researcher would become familiar with all members and a thorough observation of all livability indicators would be achieved. Moreover, the researcher was unable to assess the QoL of members directly. The DBWA is regarded as an assessment free environment, whereby members are granted confirmation that they will not be individually assessed while being in the space. Detailed information could be achieved through this type of assessment, such as the quality of relationships, sense of purpose, pain and discomfort, negative feelings, activities of daily living, and positive feelings, etc. (Logsdon,

1999). Future studies may look to exploring how the quality of the built environment influences the QoL of individuals with dementia. There are extensive studies that exist with regards to this area of inquiry, specifically, for those with dementia living in nursing homes and residential care settings (Barnes, 2002; Davis, Byers, Nay, & Koch, 2009; Zimmerman et al., 2005). Although, this sort of analysis has not yet become established within the larger, urban built environment commonly addressed by urban planners.

5.4 Is livability an appropriate measure of the Dotsa Bitove Wellness Academy?

To date, livability has only been used to assess large-scale spaces such as communities as a whole and it has only recently seen its scope modified to be inclusive of ageing populations (CMHC, 2008). Livability is already a concept that is widely addressed in the planning realm (Town of Oakville, 2015; Region of Waterloo, 2015; City of Winnipeg, 2011; City of Vancouver, 2015). Recent indicators used to assess livability address areas of neighbourhood walkability, transportation options, safety, housing choice, access to services, and community engagement (CMHC, 2008). As livability looks to assess the quality of living of a given environment, there is no inherent reason why this concept may not also be utilized to assess small-scale environments.

Through using the concept of livability to assess an environment that has been designed with an age-friendly lens to assist those with ADMRD age in place, this initiates the process of combining both livable community concepts and age-friendly communities. Because livability is so widely used in planning, integrating age-friendly concerns into existing livability metrics would make for an inclusive planning approach. Planners would be able to consult the OP and make decisions in compliance with the document under the assumption that age-friendly initiatives are already embedded. Age-friendly objectives are complimentary to livability objectives. Currently, a recent study conducted in Canada illustrated that "...the planner key informants interviewed had little depth of knowledge regarding impending demographics, the dynamics of creating age-friendly urban form or how the elderly might adapt to it" (Colangeli, 2010, pg. 163). Planners should not be expected to be specialists with this ageing demographic, but they should actively engage with them and look to approach other experts that may provide additional insight to the needs of this population. In practice, adopting age-friendly trends into livability objectives would streamline the process for making environments more accommodating for all populations. There is already evidence in a number of livability policies that address the concerns of ageing populations (ex: new buildings should be "*fully*

accessible by incorporating universal design principles to ensure barrier-free pedestrian circulation” (Town of Oakville, 2015, section 6.9.12).

The concept of livability would also be an appropriate measure in order to begin to bridge the gap between urban planning and public health disciplines. Public health generally focuses on individual level needs and assessments (Corbun, 2004). Within the existing framework for livability, minor adjustments would be required in order to integrate criteria to evaluate an individual’s personal health assessment. For instance, measuring positive affect of an individual would simply mean reviewing questions such as: is the individual cheerful, are they content, are they capable of enjoying things in daily life, are they in a good mood, is there evidence of smiling, and can mood be influenced in a positive sense (Ettema, Droes, de Lange, Mellenbergh, & Ribbe, 2007). Many of the livability indicators used for the study extracted findings that would indicate the positive affect of members at the DBWA. Explicitly integrating quality of life components into existing livability measures would further the understanding of how urban planning and public health objectives could borrow from each other in order to create a more unified approach.

5.4.1 Is livability an appropriate measure for ADMRD populations?

While assessing the livability of the DBWA, there were multiple findings that provided insight towards elements concerning age and dementia-friendly environments. These two urban design concepts are particularly important to assist individuals age-in-place. There was evidence that while measuring livability of the academy, the needs of ageing individuals were addressed and information was collected to inform ageing in place criteria specific to ADMRD populations. Incorporating features of dementia specific criteria into existing livability indicators may be a step towards making more age-friendly and dementia-friendly environments.

Within the analysis, there were findings that were directly applicable to the criteria used to assess age-friendly and dementia-friendly environments such as: accessible transportation, housing, outdoor spaces, and buildings, having opportunity for social participation, having respect and social inclusion, having civic participation and employment, having communication and support within the community, and having available health services (Green & Lakey, 2013; World Health Organization, 2007). Through making this preliminary comparison between community-level design concepts (age and dementia-friendly) and small-scale spaces, evidence of the overlap between the two emerged. For example, data collection results displayed findings that the DBWA addressed physical environmental concerns that enhance an individual’s mobility, such as walkability, wayfinding, and safety features. There were also extensive findings that related to social inclusion and mental wellbeing of individuals

with ADMRD. Within the program there were opportunities for conversation, exercise, creative pastimes, puzzles and games, music, and reminiscing. Furthermore, aspects of communication and support, and health services were addressed within the space. The DBWA had established relationships with the members, along with their family members to ensure that information was easily relayed regarding health status or daily updates. And finally, there was transparency to the services offered to members, such as washroom, and shower room, along with the outdoors, and food and drinks.

Four suggestions were made to improve livability indicators to better accommodate those with ADMRD.

5.4.1.1 Wayfinding

In some tools that measure livability, wayfinding has been categorized under “safety” and explicitly deals with wayfinding systems and safety features at crosswalks (CMHC, 2008). In these tools, common wayfinding elements for crosswalks were clear signage, visible sight lines, audible crossing signals for the visually impaired, and safe design. The importance of wayfinding for those with dementia extends beyond crossing aids. Individuals with dementia have difficulty meeting their basic needs as there are many factors that impede their ability to navigate the built environment. Their loss of cognitive structure means that they may have difficulties discriminating between colours and depth, maintaining a sense of direction, minimizing memory distortions, and decision-making skills and mental mapping (Blackman et al., 2003; Day et al., 2000; Torrington & Tregenza, 2007).

In this study, wayfinding was analyzed by identifying whether signs throughout the program were of a good size and if they had contrasting colours, if there were pictures, and/or objects to help guide members around, if doors were transparent to show where they led to, and if there was a clock visible to assist individuals tell time. The space was also assessed to note whether it was small-scale, and if there were straight walkways so that individuals were able to see their desired destination. Overall, the DBWA was a supportive environment for wayfinding. Members were able to freely move throughout without encountering prohibitive barriers.

5.4.1.2 Noise levels

Noise levels play a key role in enhancing the livability of a given space and should be incorporated into all livability tools. This is an important criterion to take into account because of the

resulting impact on safety, especially for those with ADMRD. For this population, noise levels can be debilitating, distracting, and cause confusion (Faith et al., 2015). They are also said to be distressing for those without dementia (Evans, 2003). Within this study environment there were purposeful efforts to minimize noise levels. By maintaining low noise levels, the overall comfort level of members at the program improved, which in turn, minimized the likelihood of restlessness and angry reactions (Marquardt, Bueter, & Motzek, 2014). This is also proven to alleviate stress from those without dementia and that accommodating low noise levels for all populations would be beneficial.

5.4.1.3 Welcoming environments

Assessing how welcoming an environment is needs to be incorporated into future livability tools regarding dementia-friendly spaces. Welcoming environments can be created in a number of different ways. Some of the key areas that address this criterion and were identified through the built environment audit and observations were that staff, volunteers, and artists made explicit efforts to warmly welcome members upon arrival and to send well wishes at the end of the day. They demonstrated care when members completed an activity and recognized them for their efforts, and they successfully incorporated soft transitions from one activity to the next. All of these components added significant value to the experience of members at the program throughout the day. Wanting to belong is an essential need of the human condition (Maslow, 1954). Creating meaningful relationships has proven to be an important part of human functioning and overall well-being.

A proposed way to encourage welcoming environments within the community-level would be to adopt a program like the Blue Umbrella Project, designed and implemented by the Alzheimer's Society of Canada (2016b). This project entails training business owners and workers to better understand how to assist someone with dementia. Once the business has become certified, they receive a blue umbrella decal to place on the front window of the business. By doing so, the intent is to make the business more inviting and dementia-friendly.

This measure will be a critical step towards addressing the social needs of those with ADMRD and more broadly, ageing populations. Community support, engagement, and integration are evidenced as being prominent factors contributing towards the positive health and health-related aspects of ageing (Thompson, Tomaka, & Palacios, 2006). Because of this, the role of social planning has an established part in helping ageing populations and should become a more regarded component of planning practice.

5.4.1.4 Access to nature

Access to nature was the last criteria deemed important to include in livability tools. According to the art-analysis component of data collection, there were a few common themes that emerged with regards to the area of inquiry: outdoors and nature, eating, and people. As well, the most common colours prevalent in the drawings were blues and greens, which are considered to be calming and restful colours (Calkins, 2010).

These findings were in line with findings from the other data collection methods. For example, the time-lapse mapping technique illustrated that individuals were more apt to spend time around people rather than on their own. Covert-overt observations added additional support and found that members were really socially active, and also spent time looking out the windows and commenting on nature. And the built environment audit identified that views to nature were maximized within the DBWA and flower plantings were colourful, access to food was important, along with creating an accessible and socially engaging environment. These themes are also prominent within the literature on therapeutic landscapes. This area of research encompasses places that consist of physical and social environments associated with healing, and maintaining an individual's health and well-being (Williams, 1998). An example of these environments would include elements such as water fountains, decorative flowers, garden plots that grow herbs or vegetables, parks, and bodies of water. Other features that support these environments indoors include colour use and food quality (Curtis et al., 2007). Providing visual access to "green" and "blue" spaces can be equally as significant. Within the DBWA, one wall included full length window panes of glass that provided visual access to a green forested area. One of the members spoke to the importance of these when they said, "It's great, the windows, that's what counts!".

5.4.1.5 Planning education and professional practice

Through retrofitting the concept of livability to encompass entire community needs, this will alleviate the pushback that may emerge from residents, planners, and political representatives when making initiatives simply guided towards senior's groups (Colangeli, 2010). However, planners still need to take a more proactive role in combatting stigma and ageism. There are a number of strategies that can be incorporated to address this problem in practice. With regards to public engagement, planners need to arrange community meetings in accessible spaces and perhaps during earlier, daytime hours (Hodge & Gordon, 2013) As well, the materials used for information dissemination

should be easily legible or have adequate audio in order to accommodate those with vision and hearing impairments.

There should also be opportunities for planners to learn more about the processes of ageing and the implications this may have on planning through continuous professional learning credits. Recently, in the United States, an innovative, online conference took place titled “Creating age-friendly communities” (Lehning, Scharlach, & Santo, 2010). This conference was held completely online and incorporated presentations by experts on age-friendly communities and strategies for community change. Participants were provided access to a wide range of resources and there were opportunities for peer interaction and knowledge sharing. Online learning has become an increasingly popular manner for teaching and learning (Anderson, 2008). Through this teaching forum, there may be enhanced outreach to planners, the public, and particularly ageing populations. Online teaching enhances accessibility for all populations to learn and to provide their input on planning processes and discussions (Lehning, Scharlach, & Santo, 2010).

Additional types of knowledge dissemination could be to create a documentary on the lives of persons living with dementia, in particular in environments such as the DBWA in order to convey that even with dementia, quality of living can be experienced. As well, within the classroom setting, there is a significant need to educate the myths of ageing that are directed at youth, college and graduate programs (Nelson, 2016). Specific teachings in planning should emphasize knowledge on gerontology. Through this, planners will be better equipped to understanding the implications ageing populations have on the fabric of communities and what decisions can be made to improve their quality of living. Education about ageing is also critical for populations looking to become geriatric workers, policymakers, and politicians.

5.5 Are day programs an effective solution for mitigating rising care needs for those with ADMRD?

New principles of urban design that are emerging through smart growth and new urbanism movements are projected to enhance the ability of an individual to age-in-place. A number of the initiatives embedded within these movements are mixed-use street ways, increased active transportation infrastructure, higher densities, and aesthetically pleasing urban designs.

Despite these movements towards smart growth and new urbanism, the reality of many Canadian cities is quite different. One of the primary concerns is that they are considered to be low-

density and feature extensive areas of urban sprawl. In 2001, nearly half of the Canadian population was living in low-density neighbourhoods (Statistics Canada, 2014). This factor alone makes it economically difficult to implement more mixed-use streetways and promote an infrastructure allowing more active transportation. The extreme cold climate of some North American cities can also prove to be a problematic factor towards implementing these design movements. Overall, the cost implications of completely retrofitting urban environments would be difficult to oversee. It is also difficult to harness the political will (Colangeli, 2010).

There are many local initiatives that take place focusing on creating more age-friendly environments, however, if these are to ever become instituted in policy, there needs to be a large-scale reform (Ball & Lawler, 2014). New development is still predominantly following old patterns, with extensive sprawl making environments automobile dependent, unaffordable housing, and the separation of services and supports (Ball & Lawler, 2014; CMHC, 2008). In attempt to alleviate this problem within Ontario, the Ontario Ministry of Municipal Affairs and Ministry of Housing (2015) has put forward *The Smart Growth for Our Communities Act, 2015 (Bill 73)* which should initiate change in development trends.

Change needs to focus on long-term strategic planning. Planners are still quite heavily reliant upon strong political figures to initiate any sort of policy level adjustment. Due to the duration of electoral terms (~4 years), political leaders typically focus on short-term small-scale projects that can have immediate impact (Colangeli, 2010). Not only do planners need to enhance their understanding of ageing populations, they also need to become visionaries, engage various stakeholders and community groups in decision-making, and establish a strong rapport with political leaders (Colangeli, 2010). Planners, political leaders, and other members of the public should work towards pushing Smart Growth and livability goals to the forefront of development and policy and to ensure that there is long-term buy-in. However, even with *The Smart Growth for Our Communities Act, 2015 (Bill 73)*, a complete paradigm shift from the way streets are planned, transportation systems are implemented, and where services are located will not happen immediately. In the meantime, programs such as the DBWA have the potential to mitigate many ageing in place challenges.

They provide a solution for those at home with dementia and who are delaying the move to institutionalized care. Additionally, they offer caregivers with important relief (Weir & Fouche, 2015). Implementing these types of programs is beneficial to keeping individuals mentally and physically stimulated throughout the day. They are a safe space where individuals can socially engage and be physically active (Fields et al., 2014).

Placement and integration of these programs within the surrounding community are critical. One way to facilitate this would be to widely adopt this use within zoning by-laws. They should be specifically recognized as a stand-alone use with defining terms that clearly state hours of operation, how many people the space is allowed to accommodate, and acceptable sizes and locations. As well, accessibility for members with ADMRD is important, along with proximity to services, and supportive social networks (CMHC, 2008; Leyden, 2003). These day programs should not be designed where they are operating as a stand alone unit and where the outdoor environment is completely disconnected from the indoor environment. Blending day programs with the outside environment is an integral part of the success of these spaces. In order to better comprehend how to integrate these two environments, it is important to understand the differences between indoor and outdoor spaces, in particular how they address wayfinding strategies.

Indoor spaces differ from the larger urban built environments in a number of ways. They are generally identified as being smaller in size, they often offer an individual the ability to move between different floors and are therefore usually seen as being three-dimensional, and the landmarks used to facilitate wayfinding are often only visible from a short distance (Kray et al., 2013). In comparison, the urban built environment is much larger in size, is commonly two-dimensional, and the sightlines to help wayfinding are much less constrained (Kray et al., 2013).

These differences have implications on the types of wayfinding structures that prove to be effective. For example, landmarks such as hospitals, churches, and skylines are helpful in outdoor environments (Mitchell et al., 2004), whereas landmarks within indoor spaces are much smaller in scale, and can be identified as features such as a reception desk or a lounge area (Marquardt, 2011). Another wayfinding feature that differs from indoor to outdoor spaces, is that familiarity in design is conveyed through favorable items such as home-like lamps, chairs, sounds and smells for indoor spaces (Brawley, 1992), whereas familiarity is recognized in outdoor spaces through the use of facades, paving, or street furniture (Mitchell et al., 2003). Therefore, the items that individuals normally consult to navigate indoor environments are different than those used for outdoor environments, potentially adding confusion to the individual. By offering greater consistency in these items, individuals would not be required to readjust their perceptions of space every time they enter, or exit an indoor or outdoor space.

5.5.1 Transitional spaces

Transitional space can play an important role in assisting transitions from indoor to outdoor spaces. These spaces usually have properties of both indoor and outdoor spaces. To date, transitional

spaces have been difficult to describe because there is often no clear difference from when one type of space has been left and another has been entered (Kray et al., 2013). This in turn leads to difficulty in explaining to individuals how to navigate through them. By further understanding these spaces, this will enhance the cohesion between environments that effectively use both indoor and outdoor spaces and thus lend to greater integration of the two. When individuals are moving from an indoor space to an outdoor space, there should be no uncertainty associated with orientation and navigation. Some of the criteria that is used to define transitional spaces are: varying access to such spaces (unrestricted, regulated, or often gated); individual movement is usually along defined paths; visible landmarks from close proximity and signage; and usually limited sight line (Kray et al., 2013).

At the academy, there was an evident point of division between the indoor and outdoor spaces which was observed through a number of criteria. Often outdoor spaces encourage unrestricted access to the environment, whereas indoor spaces are usually regulated. Within the academy, access to the space was only available during hours of operation (9:00 a.m. – 4:00 p.m.). During this time members, family members, staff, volunteers, along with individuals from outside the immediate academy community were welcome into the space. Contrary to the indoor environment, there were few opportunities for members to spend time outside and to access the outdoors independently. In a transitional type of space, access can be varied, it may be unrestricted, regulated, or often gated. Due to wandering tendencies from the population at the program, adopting a transitional type approach to access the outdoors would be a feasible solution. This would entail providing unrestricted access from members moving in-between outdoor and indoor environments, but would also incorporate some form of enclosure outside to prevent members from wandering too far.

As well, movement of individuals indoors is usually along defined pathways. The pathways from one activity room to the next in the DBWA were designed as straight circulation systems, meaning the pathway to traverse was linear. This was identified as being the most effective form of interior layout for those with dementia (Marquardt & Schmieg, 2009; Passini, Pigot, Rainville, & Tetreault, 2000).

In contrast to this, the outdoor environment usually offers free movement of individuals. At the academy, there are a few sidewalks that run adjacent to the building near the entranceway to guide individuals, although once one deviates from the entranceway path, there are no pathways.

Incorporating a garden would be effective for those with ADMRD, as it provides direction through the built environment using pathways. In these spaces, there are also a variety of plants that promote visual and tactile stimulation, and protected areas for sitting and socializing (Detweiler et al., 2008)

Access to nature has shown to improve the mood of those with ADMRD and enhance their overall wellbeing (Detweiler et al., 2008; Finlay, Franke, Mckay, & Sims-gould, 2015).

5.6 Summary

Within the academy, equal consideration was given to both physical and social environmental features that contributed towards the livability of the space. Results from both quantitative and qualitative data collection techniques indicated that the program was a livable space and would be a great model to assist in guiding similar development. Livability proved to be an appropriate measure for the DBWA, along with for those with ADMRD. Using the concept of livability that has been retrofitted to accommodate age-friendly design initiatives would alleviate planners having to consult two separate documents to guide development and decision-making. Planners should not be expected to be experts on ageing populations, and therefore, using a metric that encompasses quality of living standards for all ages would be more effective. Despite this, planners need to be educated on the basic elements of gerontology and the implications the built environment has on ageing populations. In order to effect change to the built environment, there has to be a shift in political will to not solely focus on short-term small-scale projects, but to extend the vision to long-term initiatives (Ball & Lawler, 2014; Campbell, 1996). Adult day programs should be recognized in zoning by-laws as a separate, stand-alone use. These programs should be designed with the intent to mitigate the rising care needs for ADMRD populations, as a complete paradigm shift from the way streets are planned will not happen immediately. Completely retrofitting built environment spaces and increasing the availability of long-term care facilities prove to be costly alternatives.

Chapter 6 Conclusion

Recently in Canada, there has been a rapid increase in the numbers of those affected by Alzheimer's disease and other memory-related disorders (ADMRD) (Alzheimer's Society of Canada, 2016). This trend is mainly a result of the changing demographics of the country and is to continue an upward trajectory in the near future (Alzheimer's Society of Canada, 2016). In light of this trend, it will be increasingly important for planners to consider this segment of the population with ADMRD in future urban developments. Many ageing individuals are looking to age-in-place and to live within their home community for as long as possible (Fields et al., 2014). With that in mind, the surrounding built environment needs to become more supportive, which is why there have been recent developments with age and dementia-friendly communities. In connection with this, the rationale for this study was to investigate ways in which environments may be created for those with ADMRD.

There have been two responses to this challenge to finding non-institutionalized types of care and environments to this point. One has focused on small-scale programs within a community such as adult day programs, while the other has looked at communities as a whole and considers how they might be made more accommodating for populations with dementia. It was the purpose of this study to strengthen the dialogue between these two areas of response; through viewing how the concept of livability - which is widely used in urban planning objectives - applies to an adult day program.

In order to carry out this research, a mixed-methods case study approach was adopted. Findings were separated in accordance to relevance of each livability indicator. There were many physical and social environmental features that contributed towards the livability of the DBWA. Unlike development trends proposed by the AODA that simply focus on physical built environment features, there was successful coordination of both environments within the academy (Accessibility for Ontarians with Disabilities Act [AODA], 2005). The few areas of improvement that would have enhanced the livability of the space were specifically related to the physical environment. As a whole, both environments were well established and played a large role in making the space desirable for those with ADMRD.

Further, this research examined the concept of livability, and whether it was appropriate to use within the context of the DBWA and for populations with ADMRD. The criteria used to measure livability within the academy were scaled down to appropriately match the size of the study space. Gathering data that was relevant to the four main livability indicators used for this study was

completed with ease. Since this term is so widely used within urban planning, there is value extending the concept to also be applicable to small-scale environments and for those with ADMRD to further the depth of decision-making and development recommendations (Town of Oakville, 2015; Region of Waterloo, 2015; City of Winnipeg, 2011; City of Vancouver, 2015). Rather than proposing age-friendly community designs, there will likely be greater uptake of these age-specific designs if age-friendly concerns are embedded within the existing concept of livability. There is often stigma and ageism connected to ageing populations, and planners need to market the development and ensure implementation of more accessible and accommodating environments so that they are appealing for all populations. Planners should not be expected to become experts on ageing populations, however, they should become generally informed about the processes of ageing and the implications for age-friendly planning. They should be provided opportunities for continuous learning credits that are specifically geared towards ageing and planning, and in the classroom setting, teachings in planning should emphasize gerontology. As well, planners should look to better engage this demographic in the planning process, like ensuring community engagement sessions are accessible, or sharing personal anecdotes from ageing individuals about their perceptions of a certain design feature, or use of the built environment.

Findings from this study also conveyed that the concept of livability can appropriately capture the needs of ADMRD populations. There were many similarities between age and dementia-friendly community criteria with those used for reviewing the livability of the DBWA (Green & Lakey, 2013; World Health Organization, 2007). Four suggestions were made to improve livability indicators to better accommodate those with ADMRD. These included wayfinding techniques, noise levels, welcoming environments, and access to nature. Adopting these changes would improve livability assessments and ensure that they are more inclusive for this demographic based upon numerous research findings. Those with ADMRD would benefit from wayfinding elements as they experience significant navigation difficulties, and have a hard time remembering a chosen route, along with maintaining a sense of direction, and mental mapping (Blackman et al., 2003; Day et al., 2000; Torrington & Tregenza, 2007). As well, noise levels can be extremely debilitating for those with ADMRD, and cause distraction, and confusion (Faith et al., 2015). Creating welcoming environments is also important for this population to encourage a sense of normalcy and sense of belonging (Maslow, 1954). And access to nature is key to the overall wellbeing of those with dementia (Finlay et al., 2015). Natural environments have shown to enhance tranquility, promote

visual and tactile stimulation, and improve mental health (Detweiler et al., 2008; Finlay et al., 2015). Adopting these measures would enhance the built environment for all populations.

Finally, findings identified that adult day programs, similar to the DBWA, could be an effective solution to mitigate rising care needs for those with ADMRD. Adopting recommended changes to the physical and social environments within community or city-level settings, however, is not without problems (Canadian Medical Association, 2015). Initially it will take time, money, and political will. As well, given that the majority of urban environments in Canada are geographically sprawling spaces they may never become accommodating for those with dementia (Statistics Canada, 2014). A number of options are being discussed, such as retrofitting existing homes (CMHC, 2015), developing nursing homes with special memory care (The Care Guide- Source for Seniors, 2016), and adult day programs (Anderson et al., 2013). Adult day programs particularly look to fill the void in both short and long term care (Marie et al., 2014). They will play an ever growing role of care for this population.

This thesis contributes to the field of planning, through displaying that the concept of livability can effectively be used with reference to small-scale spaces. This would be in addition to its current use in large-scale communities (Town of Oakville, 2015; Region of Waterloo, 2015; City of Winnipeg, 2011; City of Vancouver, 2015). Further to this, the concept of livability was also shown to exhibit potential in reuniting urban planning and public health disciplines. This concept currently addresses quality of living, whereas public health focuses on quality of life concerns (Corbun, 2004). There is considerable overlap between quality of living and quality of life objectives and therefore, professionals would easily be able to integrate criteria to measure both.

6.1 Recommendations

The recommendations from this study are based upon the findings, analysis, and conclusions. Information was extracted on how the concept of livability may be used to measure small-scale dementia-friendly environments and whether these findings can provide insight to future large-scale developments. Additionally, further understanding of adult day programs was achieved. The recommendations are divided into two categories: a) recommendations for future planning policy & practice, and b) for future research.

6.1.1 Recommendations for future planning practice:

- Livability in its expanded form can be an effective tool for measuring the urban planning focus of quality of living, particularly for those with ADMRD, and should be further used to

implement features that would address the public health focus of individual-level, quality of life.

- Municipal urban planners need to consider what inputs are being used for decision-making. With regards to age-friendly and dementia-friendly communities, drawing insight from the livability of small-scale community-based services will enhance a more focused decision-making approach to other environments.
- There needs to be an active push from urban planners to understand and bring attention to the importance of ageing in place initiatives for the elderly. This is inclusive of the alternatives to institutionalized types of care, such as community-based adult day programs.
- Attention should be given to ways in which urban planners can change policy to accommodate adult day programs within existing zoning regulations. For example, there are many cities and communities that are experiencing a shift towards an ageing demographic. A by-product of this shift is that there are many school closings. Potentially retrofitting these schools to accommodate elderly populations may be a creative solution.
- As well, efforts to include ageing populations and those with ADMRD within planning processes need to be adopted (Hamilton Council on Aging & City of Hamilton, 2014). Generally, populations with ADMRD are rarely consulted for feedback during the design of specific built environments and types of care (Blackman et al., 2003; Brorsson et al., 2011; & Keady et al., 2012). Under the Ontario Planning Act, it is law that council regards any written submissions about what revisions may be required and provides any person who attends the special meeting an opportunity to be heard on that subject (2006, c. 23, s. 13). However, there is no specific mention to ensure populations are adequately explained the proposed subject, and there is no assurance that individuals will be informed about planning processes if they need assistance (i.e. individuals may not have access to the public meetings and may not have access to information outlets to apprise them of an upcoming meeting).

6.1.2 Recommendations for future research:

- Continued efforts need to be made to engage those with dementia in the research process. Currently, there seem to be quite a few barriers imposed by ethics review boards, potentially due the vulnerable nature of these people and the fact that this is generally unfamiliar territory.

- Nevertheless, gaining insight from those with the disease would be invaluable to future progress in developing accommodating environments.
- Policy analysis should take place by urban planners and public health professionals to see what policies exist that either encourage or inhibit adult day programs and to identify what can be done to make them more readily adopted within zoning regulations. Going forward in this discussion, further integration and placement of these day programs is essential.
- It would be helpful to speak to staff, volunteers, and family members about their perceptions of adult day programs. Future research should include interviews with these personnel, with the intent of discovering avenues that may be improved, and those that are functioning within this type of care model.
- According to research, few Canadian cities and communities have been able to reach smart growth and livability goals, where emphasis is primarily on physical environments (CMHC, 2008). Improvements should be made through initiating the coordination between physical and social environments to enhance a more cohesive approach. And investigative efforts should be made to understand how the concept of livability is being used and applied in urban planning practice. Perhaps more stringent evaluative frameworks need to be implemented, similar to those used in public health. An example from the public health field that could be helpful in this regard is a health impact assessment.
- There would be added benefit to further understand the differences between indoor and outdoor spaces in order to unify wayfinding strategies, and to further investigate the role that transitional spaces can play in design.

6.2 Summary

Understanding the applicability of the concept livability to small-scale environments for those with ADRMD can provide extensive insight as to how to better create spaces for this population. Livability is a common measurement and goal used in planning, although, findings suggest that there are apparent gaps within the current indicators to ensure they are amenable to populations with dementia. Through using a similar metrics for measuring both large-scale and small-scale environments, this will enhance cohesion between these two spaces and generally create more supportive environments. Adult day programs or academies, like the Dotsa Bitove Wellness Academy are a critical type of care that need to be considered to facilitate individuals to age-in-place.

Bibliography

- Accessibility for Ontarians with Disabilities Act. (2005). Retrieved from <http://www.aoda.ca/the-act/>
- Alzheimer's Society of Canada. (2016a). Dementia numbers in Canada. Retrieved from <http://www.alzheimer.ca/en/About-dementia/What-is-dementia/Dementia-numbers>
- Alzheimer's Society of Canada. (2016b). Blue Umbrella project. Retrieved from <http://www.alzheimer.ca/en/thunderbay/We-can-help/Public-awareness/Blue%20Umbrella%20Project>
- Alzheimer's Society of Canada. (2010). Rising tide: The impact of dementia on canadian society. Executive Summary. *Dementia*, 1–24. <http://doi.org/9780973352221>
- Anderson, T. (2008). Towards a theory of online learning. *Theory and practice of online learning*, 2, 15-44. Canada: Athabasca University Press.
- Anderson, K. A., Dabelko-Schoeny, H. I., Fields, N. L., & Carter, J. R. (2015). Beyond respite: the role of adult day services in supporting dementia caregivers. *Home Health Care Services Quarterly*, 34(2), 101–112. <http://doi.org/10.1080/01621424.2015.1040939>
- Anderson, K. A., Dabelko-Schoeny, H., & Johnson, T. D. (2013). The state of adult day services: Findings and implications from the MetLife National Study of Adult Day Services. *Journal of Applied Gerontology: The Official Journal of the Southern Gerontological Society*, 32(6), 729–748. <http://doi.org/10.1177/0733464812447284>
- Ball, M. S., & Lawler, K. (2014). Changing practice and policy to move to scale: A framework for age-friendly communities across the united states. *Journal of Aging & Social Policy*, 26, 19–32. <http://doi.org/10.1080/08959420.2014.856706>
- Balsas, C. J. L. (2004). Measuring the livability of an urban centre: an exploratory study of key performance indicators. *Planning Practice and Research*, 19(1), 101–110. <http://doi.org/10.1080/0269745042000246603>
- Banister, D. (2008). The sustainable mobility paradigm. *Transport Policy*, 15, 73–80. <http://doi.org/10.1016/j.tranpol.2007.10.005>
- Barnes, S., D. in C. E. S. G. (2002). The design of caring environments and the quality of life of older

- people. *Aging & Society*, 22, 775–789. <http://doi.org/10.1017/S0144686X02008899>
- Barnett, E., & Casper, M. (2001). A definition of “social environment.” *American Journal of Public Health*, 91(3), 465. <http://doi.org/10.2105/AJPH.91.3.465a>
- Basit, T. N. (2003). Manual or electronic: The role of coding in qualitative data analysis. *Educational Research*, 45(2), 143–154. <http://doi.org/10.1080/0013188032000133548>
- Baum, F. (1995). Researching public health: Behind the qualitative-quantitative methodological debate. *Social Science Methods*, 40(4), 459–468.
- Baumgarten, M., Lebel, P., Laprise, H., Leclerc, C., & Quinn, C. (2002). Adult day care for the frail elderly: Outcomes, satisfaction, and cost. *Journal of Aging and Health*, 14(2), 237–259. <http://doi.org/10.1177/089826430201400204>
- Baxter, J., & Eyles, J. (1997). Establishing qualitative research in social geography: Evaluating “rigour” in interview analysis. *Transactions of the Institute of British Geography*, 22(4), 505–525. <http://doi.org/10.1111/j.0020-2754.1997.00505.x>
- Baxter, P., & Jack, S. (2008). Baxter, P., & Jack, S. (2008). Qualitative case study methodology. Study design and implementation for novice researchers. *The qualitative report*, 13(4), 544–559., 13(4), 544–559.
- Beard, J. R., & Petitot, C. (2011). Ageing and urbanization: Can cities be designed to foster active ageing? *Public Health Reviews*, 33(2), 427–450.
- Berrigan, D., Pickle, L. W., & Dill, J. (2010). Associations between street connectivity and active transportation. *International Journal of Health Geographics*, 9, 20. <http://doi.org/10.1186/1476-072X-9-20>
- Blackman, T., Mitchell, L., Burton, E., Jenks, M., Parsons, M., Raman, S., & Williams, K. (2003). The accessibility of public spaces for people with dementia: A new priority for the “open city.” *Disability & Society*, 18:3, 357–371. <http://doi.org/10.1080/0968759032000052914>
- Blackman, T., Van Schaik, P., & Martyr, A. (2007). Outdoor environments for people with dementia: An exploratory study using virtual reality. *Ageing & Society*, 27, 811–825. <http://doi.org/10.1017/S0144686X07006253>
- Bowling, A. (2002). Research methods in health investigating health and health services. *Health San Francisco*, 171–172.

- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 77–101. <http://doi.org/10.1191/1478088706qp063oa>
- Brawley, E. (1992). Alzheimer's disease: designing the physical environment. *The American Journal of Alzheimer's Care and Related Disorders & Research*, (January/February), 3–8.
- Broadbent, E., Petrie, K. J., Ellis, C. J., Ying, J., & Gamble, G. (2004). A picture of health - Myocardial infarction patients' drawings of their hearts and subsequent disability: A longitudinal study. *Journal of Psychosomatic Research*, 57(6), 583–587. <http://doi.org/10.1016/j.jpsychores.2004.03.014>
- Brorsson, A., Ohman, A., Lundberg, S., & Nygard, L. (2011). Accessibility in public space as perceived by people with Alzheimer's disease. *Dementia*, 10, 587–602. <http://doi.org/10.1177/1471301211415314>
- Brownson, Ross C., Hoehner, C., Day, K., Forsyth, A., S. J. (2010). Measuring the built environment for physical activity: State of the science. *American Journal of Preventive Medicine*, 36, 53. <http://doi.org/10.1016/j.amepre.2009.01.005>.Measuring
- Calkins, M. P. (2010) Using color as a therapeutic tool. Retrieved from http://www.ideasinstitute.org/article_021103_b.asp
- Campbell, S. (1996). Green Cities, Growing Cities, Just Cities? Urban planning and the contradictions of sustainable development. *Journal of the American Planning Association*, 62(3), 296-312.
- Canadian Medical Association. (2015). A policy framework to guide a National Seniors Strategy for Canada, (August), 33. Retrieved from https://www.cma.ca/Assets/assets-library/document/en/about-us/gc2015/policy-framework-to-guide-seniors_en.pdf
- Canadian Mortgage Housing Corporation (2015). *Housing options for people living with dementia* (Vol. 3). Retrieved from <https://www.cmhc-schl.gc.ca/odpub/pdf/60967.pdf>
- Canadian Mortgage Housing Corporation (2008). *Community indicators for an aging population*. Retrieved from <https://www.cmhc-schl.gc.ca/odpub/pdf/66099.pdf>
- Caspi, E. (2014). Wayfinding difficulties among elders with dementia in an assisted living residence. *Dementia*, 13(4), 429–450. <http://doi.org/10.1177/1471301214535134>

- Chazal, J. De. (2010). A systems approach to livability and sustainability: Defining terms and mapping relationships to link desires with ecological opportunities and constraints, *27*, 585–597. <http://doi.org/10.1002/sres>
- Ciegis, R., Ramanauskiene, J., & Startiene, G. (2009). Theoretical reasoning of the use of indicators and indices for sustainable development assessment. *Engineering Economics*, *3*(63), 33–40. <http://doi.org/10.5755/j01.ee.63.4.11642>
- City of Toronto. (2015). Official Plan. Retrieved from <http://www1.toronto.ca/planning/chapters1-5.pdf>
- City of Toronto. (2013). Zoning by-law. Retrieved from http://www.toronto.ca/zoning/bylaw_amendments/ZBL_NewProvision_Chapter1.htm
- City of Waterloo. (2012a). Official Plan. Retrieved from http://www.waterloo.ca/en/contentresources/resources/government/OP_Consolidated_Version.pdf
- City of Waterloo. (2012b). Zoning by-law. Retrieved from http://www.waterloo.ca/en/contentresources/resources/government/1108_zoning_bylaw.pdf
- City of Winnipeg. (2011). Municipal development plan. Retrieved from <http://www.winnipeg.ca/interhom/CityHall/OurWinnipeg/pdf/OurWinnipeg.pdf>
- City of Vancouver. (2015). Vancouver's local area downtown eastside plan. Retrieved from <http://vancouver.ca/files/cov/downtown-eastside-plan.pdf>
- Clare, L. (2003). Managing threats to self: Awareness in early stage Alzheimer's disease. *Social Science and Medicine*, *57*(6), 1017–1029. [http://doi.org/10.1016/S0277-9536\(02\)00476-8](http://doi.org/10.1016/S0277-9536(02)00476-8)
- Colangeli, J. A. (2010). Planning for age-friendly cities: Towards a new model.
- Corbun, J. (2004). Confronting the challenges in reconnecting urban planning and public health. *American Journal of Public Health*, *94*(4), 541–546.
- Coyle, J., & Williams, B. (2000). An exploration of the epistemological intricacies of using qualitative data to develop a quantitative measure of user views of health care. *Journal of Advanced Nursing*, *31*(5), 1235–43. <http://doi.org/10.1046/j.1365-2648.2000.01381.x>
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches*

(4th ed.). Thousand Oaks: SAGE Publications: SAGE Publications.

- Curtis, S. E., Gesler, W., Fabian, K., Francis, S., & Priebe, S. (2007). Therapeutic landscapes in hospital design: A qualitative assessment by staff and service users of the design of a new mental health inpatient unit. *Environment and Planning C: Government and Policy*, 25(4), 591–610. <http://doi.org/10.1068/c1312r>
- Dabelko-Schoeny, H., & King, S. (2010). In their own words: participants' perceptions of the impact of adult day services. *Journal of Gerontological Social Work*, 53(2), 176–92. <http://doi.org/10.1080/01634370903475936>
- Davis, S., Byers, S., Nay, R., & Koch, S. (2009a). Guiding design of dementia friendly environments in residential care settings: Considering the living experiences. *Dementia*, 8(2), 185–203. <http://doi.org/10.1177/1471301209103250>
- Davis, S., Byers, S., Nay, R., & Koch, S. (2009b). Guiding design of dementia friendly environments in residential care settings: Considering the living experiences. *Dementia*, 8(2), 185–203. <http://doi.org/10.1177/1471301209103250>
- Day, K. (2003). New urbanism and the challenges of designing for diversity, 83–95. <http://doi.org/10.1177/0739456X03255424>
- Day, K., Carreon, D., & Stump, C. (2000). The therapeutic design of environments for people with dementia: A review of the empirical research. *The Gerontologist*, 40(4), 397–416. <http://doi.org/10.1093/geront/40.4.397>
- Day, K., Carreon, D., & Stump, C. (2000). The therapeutic design of environments for people with dementia: a review of the empirical research. *The Gerontologist*, 40(4), 397–416. <http://doi.org/10.1093/geront/40.4.397>
- Delpolyi, A. R., Rankin, K. P., Mucke, L., Miller, B. L., Gorno-Tempini, M. L. (2007). Spatial cognition and the human navigation network in AD and MCI. *Neurology*, 69, 986–997.
- Detweiler, M. B., Murphy, P. F., Myers, L. C., & Kim, K. Y. (2008). Does a wander garden influence inappropriate behaviors in dementia residents? *American Journal of Alzheimer's Disease and Other Dementias*, 23(1), 31–45. <http://doi.org/10.1177/1533317507309799>
- Downs, A. (2005). Smart growth: Why we discuss it more than we do it. *Journal of the American Planning Association*, 71(4), 367–378. <http://doi.org/10.1080/01944360508976707>

- Dupuis, S. L., Whyte, C., Carson, J., Genoe, R., Meshino, L., & Sadler, L. (2012). Just dance with me: an authentic partnership approach to understanding leisure in the dementia context. *World Leisure Journal*, *54*(3), 240–254. <http://doi.org/10.1080/04419057.2012.702454>
- Eggenberger, E., Heimerl, K., & Bennett, M. I. (2013). Communication skills training in dementia care: a systematic review of effectiveness, training content, and didactic methods in different care settings. *International Psychogeriatrics / IPA*, *25*(3), 345–58. <http://doi.org/10.1017/S1041610212001664>
- Eisenhardt, K. M. (1989). Building theories from case study research, *14*(4), 532–550.
- EIU. (2014). A summary of the liveability ranking and overview August 2014 The Economist Intelligence Unit's liveability survey. *The Economist Intelligence Unit Limited*, (August 2014), 16.
- Ekman, S.-L., Robinson, P., & Giorgi, B. (2012). The lived experience of early-stage Alzheimer's disease: A three-year longitudinal phenomenological case study. *Journal of Phenomenological Psychology*, *43*(2), 216–238. <http://doi.org/10.1163/15691624-12341236>
- Ellis, C. (2002). The new urbanism: Critiques and rebuttals. *Journal of Urban Design*, *7*(3), 261–291. <http://doi.org/10.1080/1357480022000039330>
- Engedal, K. (1989). Day care for demented patients in general nursing homes. Effects on admissions to institutions and mental capacity. *Scandinavian Journal of Primary Health Care*, *7*(3), 161–166. <http://doi.org/10.3109/02813438909087234>
- Ettema, T. P., Droes, R. M., de Lange, J., Mellenbergh, G. J., & Ribbe, M. W. (2007). Qualidem: development and evaluation of a dementia specific quality of life instrument--validation. *International Journal of Geriatric Psychiatry*, *22*(5), 424–430. <http://doi.org/10.1017/CBO9781107415324.004>
- Evans, G. W. (2003). The built environment and mental health. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, *80*(4), 536–55. <http://doi.org/10.1093/jurban/jt063>
- Evans, J., & Jones, P. (2011). The walking interview: Methodology, mobility and place. *Applied Geography*, *31*(2), 849–858. <http://doi.org/10.1016/j.apgeog.2010.09.005>
- Ewing, R., & Handy, S. (2009). Measuring the unmeasurable: Urban design qualities related to walkability. *Journal of Urban Design*, *14*(1), 65–84.

<http://doi.org/10.1080/13574800802451155>

- Faith, V., Rooney, C., Hadjri, K., McAllister, K., & Craig, C. (2015). Finding a way: long-term care homes to support dementia. *Urban Design and Planning*, 168(4), 204–217.
- Feddersen, E., & Ludtke, I. (Eds.). (2014). *Lost in space: Architecture and dementia*. Switzerland: Birkhauser.
- Federal/Provincial/Territorial Ministers Responsible for Seniors. (2015). Thinking about your future? Plan now to age in place. Retrieved from <http://www.seniors.gc.ca/eng/working/fptf/pdf/paip-cl.pdf>
- Feinstein, C. H. (1998). Economic history association pessimism perpetuated: Real wages and the standard of living in Britain during and after the Industrial Revolution, 58(3), 625–658.
- Feldman, P. H., & Oberlink, M. R. (2004). A tale of two older americas: 2003 National survey of adults aged 65 and older. *AdvantAge initiative*, (April).
- Fields, N. L., Anderson, K. a, & Dabelko-Schoeny, H. (2014). The effectiveness of adult day services for older adults: a review of the literature from 2000 to 2011. *Journal of Applied Gerontology: The Official Journal of the Southern Gerontological Society*, 33(2), 130–63. <http://doi.org/10.1177/0733464812443308>
- Filion, P. (2003). Towards smart growth? The difficult implementation of alternatives to urban dispersion. *Canadian Journal of Urban Research*, 12(1), 48–70.
- Finlay, J., Franke, T., Mckay, H., & Sims-gould, J. (2015). Health & place therapeutic landscapes and wellbeing in later life: Impacts of blue and green spaces for older adults. *Health & Place*, 34, 97–106. <http://doi.org/10.1016/j.healthplace.2015.05.001>
- Fitzgerald, K. G., & Caro, F. G. (2014). An Overview of Age-Friendly Cities and Communities Around the World, 1–18. <http://doi.org/10.1080/08959420.2014.860786>
- Fleming, R., Goodenough, B., Low, L.-F., Chenoweth, L., & Brodaty, H. (2014). The relationship between the quality of the built environment and the quality of life of people with dementia in residential care. *Dementia*, 1471301214532460-. <http://doi.org/10.1177/1471301214532460>
- Fleming, R., & Purandare, N. (2010). Long-term care for people with dementia: environmental design guidelines. *International Psychogeriatrics*, 22(7), 1084–1096. <http://doi.org/10.1017/S1041610210000438>

- Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative Inquiry*, *12*(2), 219–245. <http://doi.org/10.1177/1077800405284363>
- Forsyth, A., Jacobson, J., & Thering, K. (2010). Six assessments of the same places: Comparing views of urban design. *Journal of Urban Design*, *15*(1), 21–48. <http://doi.org/10.1080/13574800903429274>
- Gahlmann, A., & Moerner, W. E. (2014). Exploring bacterial cell biology with single-molecule tracking and super-resolution imaging. *Nature Reviews Microbiology*, *12*(1), 9–22. <http://doi.org/10.1016/j.surg.2006.10.010>.Use
- Gatrell, A. C., Bailey, T. C., Diggle, P. J., & Rowlingson, B. S. (1996). Spatial point pattern analysis and its application in geographical epidemiology, *21*(1), 256–274.
- Gibbs, G. R. (2008). *Analysing qualitative data*. Retrieved from <https://us.sagepub.com/en-us/nam/analysing-qualitative-data/book225075>
- Gillies, B. A. (2000). A memory like clockwork: accounts of living through dementia. *Aging & Mental Health*, *4*(4), 366–374. <http://doi.org/10.1080/13607860020010538>
- Godschalk, D. R. (2004). Land use planning challenges: Coping with conflicts in visions of sustainable development and livable communities. *Journal of the American Planning Association*, *70*(1), 5–13. <http://doi.org/10.1080/01944360408976334>
- Gough, M. Z. (2015). Reconciling livability and sustainability: Conceptual and practical implications for planning. *Journal of Planning Education and Research*, *35*(2), 145–160. <http://doi.org/10.1177/0739456X15570320>
- Green, G., & Lakey, L. (2013). Building dementia-friendly communities: A priority for everyone. *Alzheimer's Society*, 96. Retrieved from http://www.alzheimers.org.uk/site/scripts/download_info.php?fileID=1916 \n http://www.alzheimers.org.uk/site/scripts/download_info.php?fileID=1918
- Green, J., & Thorogood, N. (2014). *Qualitative methods for health research* (3rd ed.). SAGE publications.
- Guba, E. C., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. *Handbook of Qualitative Research*. <http://doi.org/http://www.uncg.edu/hdf/facultystaff/Tudge/Guba%20&%20Lincoln%201994.pdf>

- Guillemin, M. (2004a). Embodying heart disease through drawings. *Health (London, England : 1997)*, 8, 223–239. <http://doi.org/10.1177/1363459304041071>
- Guillemin, M. (2004b). Understanding illness: Using drawings as a research method. *Qualitative Health Research*, 14(2), 272–289. <http://doi.org/10.1177/1049732303260445>
- Gústafsdóttir, M. (2011). Beneficial care approaches in specialized daycare units for persons with dementia. *American Journal of Alzheimer's Disease and Other Dementias*, 26, 240–246. <http://doi.org/10.1177/1533317511402315>
- Haggerty, K. D. (2004). Ethics creep: Governing social science research in the name of ethics, 27(August), 391–414. <http://doi.org/10.1023/B>
- Hamilton Council on Aging, & City of Hamilton. (2014). Hamilton's plan for an age-friendly city. Retrieved from <http://coahamilton.ca/wp/wp-content/uploads/2014/03/HPAFC-final-clerk.pdf>
- Harvey, C., Aultman-hall, L., Harvey, C., Measuring, L. A., Streetscapes, U., Harvey, C., & Aultman-hall, L. (2015). Measuring urban streetscapes for livability: A review of approaches. *The Professional Geographer*, 68(1), 149–158. <http://doi.org/10.1080/00330124.2015.1065546>
- Hayne, M. J., & Fleming, R. (2014). Acoustic design guidelines for dementia care facilities. *43rd International Congress on Noise Control Engineering: Internoise2014, 2014*, 1–10.
- Hodge, G., & Gordon, D. L. A. (2013). *Planning Canadian communities: An introduction to the principles, practice, and participants* (6th ed.). Toronto: Nelson Education.
- Hubbard, P., Kitchin, R., & Valentine, G. (Eds.). (2004). *Key thinkers on space and place*. Thousand Oaks: SAGE Publications.
- Hwang, E., Glass, A. P., Gutzmann, J., & Shin, K. J. (2008). The meaning of a livable community for older adults in the United States and Korea. *Journal of Housing For the Elderly*, 22(3), 216–239. <http://doi.org/10.1080/02763890802232055>
- Ikeda, M., Brown, J., Holland, A. J., Fukuhara, R., & Hodges, J. R. (2002). Changes in appetite, food preference, and eating habits in frontotemporal dementia and Alzheimer's disease. *J. Neural. Neurosurg Psychiatry*, 73, 371–376.
- Illian, J. (2008). *Statistical Analysis and Modelling of Spatial Point Patterns*. *International Statistical Review* (Vol. 76). http://doi.org/10.1111/j.1751-5823.2008.00062_23.x
- Innes, A., Kelly, F., & Dincarslan, O. (2011). Care home design for people with dementia: What do

- people with dementia and their family carers value? *Aging & Mental Health*, 15(5), 548–556.
<http://doi.org/10.1080/13607863.2011.556601>
- Jamieson, S. (2004). Likert scales: How to (ab)use them. *Medical Education*, 38(12), 1217–1218.
<http://doi.org/10.1111/j.1365-2929.2004.02012.x>
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research, 112–133. [http://doi: 10.1177/1558689806298224](http://doi:10.1177/1558689806298224)
- Judd, D. B. (1943). Facts of Color-Blindness. *Journal of the Optical Society of America*, 33(6), 294.
<http://Ldoi:10.1364/josa.33.000294>
- Kaal, H. (2011). A conceptual history of livability. *Taylor & Francis*, 15(5), 532–547.
<http://doi.org/10.1080/13604813.2011.595094>
- Kamp, I. Van, Leidelmeijer, K., & Marsman, G. (2003). Urban environmental quality and human well-being. Towards a conceptual framework and demarcation of concepts; a literature study, 65, 5–18. Retrieved from
[http://www.tlu.ee/~arro/Happy% 20Space% 20EKA% 202014/env% 20quality% 20and% 20wellbei
ng.pdf](http://www.tlu.ee/~arro/Happy%20Space%20EKA%202014/env%20quality%20and%20wellbeing.pdf)
- Kawulich, B. B. (2005). Participant observation as a data collection method. *Forum: Qualitative Research Method*, 6(2).
- Keady, J., Campbell, S., Barnes, H., Ward, R., Li, X., Swarbrick, C., ... Elvish, R. (2012). Neighbourhoods and dementia in the health and social care context: a realist review of the literature and implications for UK policy development. *Reviews in Clinical Gerontology*, 22(2), 150–163. <http://doi.org/10.1017/S0959259811000268>
- Knowles, J. G., & Cole, A. L. (2008). Handbook of the arts in qualitative research: perspectives, methodologies, examples, and issues. *Qualitative Research*, 700.
<http://doi.org/10.4135/9781452226545>
- Kochera, A., Straight, A., Clemmer, E., Ginzler, E., Bright, K., Callahan, J., ... Murray, M. (2005). *Beyond 50.05: A report to the nation on livable communities: Creating environments for successful aging*.
- Kothari, C. R. (2004). *Research Methodology: Methods & Techniques*. New Age International Ltd.
- Kray, C., Fritze, H., Fechner, T., Schwering, A., Li, R., & Anacta, V. J. (2013). Transitional spaces:

- Between indoor and outdoor spaces. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 8116 LNCS, 14–32. <http://doi.org/10.1007/978-3-319-01790-7-2>
- LaMarca, N. (2011, December 5). The likert scale: Advantages and disadvantages. Retrieved August 14, 2016, from <https://psyc450.wordpress.com/2011/12/05/the-likert-scale-advantages-and-disadvantages/>
- Lanarc, H., & Canadian Institute of Planners. (n.d.). Healthy communities practice guide. Retrieved from https://www.cip-icu.ca/Files/Healthy-Communities/CIP-Healthy-Communities-Practice-Guide_FINAL_lowre.aspx
- Law, R., Illian, J., Burslem, D. F. R. P., Gratzner, G., Gunatilleke, C. V. S., & Gunatilleke, I. A. U. N. (2009). Ecoogical information from spatial patterns of plants: Insights from point process theory. *Journal of Ecology*, 97(4), 616–628. <http://doi.org/10.1111/j.1365-2745.2009.01510.x>
- Lawrence, R. J. (2001). Sociocultural dimensions of sustainable development. In M. K. Tolba (Ed.), *Our fragile world: Challenges and opportunities for sustainable development, volume 1*. Retrieved from https://books.google.ca/books/about/Our_Fragile_World.html?id=bkMmAQAAMAAJ&redir_esc=y
- Lawton, M. P., & Nahemow, L. (1973). Ecology and the aging process. *The Psychology of Adult Development and Aging*, 619–674. <http://doi.org/10.1037/10044-020>
- Lehning, A. J., Scharlach, A. E., & Santo, T. S. D. (2010). A web-based approach for helping communities become more “aging friendly .” <http://doi.org/10.1177/0733464809340156>
- Ley, D. (1980). Liberal ideology and the postindustrial city. *Annals of the Association of American Geographers*, 70(2), 238–258.
- Leyden, K. M. (2003). Social capital and the built environment: The importance of walkable neighborhoods, 93(9), 1546–1551.
- Litman, T. (2008). Developing indicators for comprehensive and sustainable transport planning. *Transportation Research Record*, 2017(1), 10–15. <http://doi.org/10.3141/2017-02>
- Logsdon, R. (1999). Quality of life-AD. *Journal of Mental Health & Aging*, 5(1), 21–32. <http://doi.org/10.1007/BF02251064>

- Logsdon, R. G., Teri, L., McCurry, S. M., Gibbons, L. E., Kukull, W. a, & Larson, E. B. (1998). Wandering: a significant problem among community-residing individuals with Alzheimer's disease. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, 53(5), P294–P299. <http://doi.org/10.1093/geronb/53B.5.P294>
- Lovering, M. J. (1990). Alzheimer's disease and outdoor space: Issues in environmental design. *The American Journal of Alzheimer's Care and Related Disorders & Research*, (June), 33–40.
- Lowe, M., Whitzman, C., Badland, H., & Davern, M. (2013). *Liveable, healthy, sustainable: What are the key indicators for Melbourne neighbourhoods. Research Paper*. Retrieved from <http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Liveable,+Healthy+,+Sustainable+:+What+Are+the+Key+Indicators+for+Melbourne+Neighbourhoods?#0\http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Liveable,+healthy,+sustainable:+What>
- Marie, A., Rokstad, M., Marie, A., Rokstad, M., Halse, I., Tretteteig, S., ... Selbæk, G. (2014). Effects and costs of a day care centre program designed for people with dementia-A 24 month controlled study. *Journal of Clinical Trials*, 4(4). <http://doi.org/10.4172/2167-0870.1000182>
- Marquardt, G. (2011). Wayfinding for people with dementia: a review of the role of architectural design. *HERD*, 4(2), 75–90. Retrieved from <http://europepmc.org/abstract/med/21465436>
- Marquardt, G., Bueter, K., & Motzek, T. (2014). Impact of the design of the built environment on people with dementia: An evidence-based review. *Health Environments Research & Design Journal*, 8, 127–157.
- Marquardt, G., & Schmiege, P. (2009). Dementia-friendly architecture: environments that facilitate wayfinding in nursing homes. *American Journal of Alzheimer's Disease and Other Dementias*, 24(4), 333–40. <http://doi.org/10.1177/1533317509334959>
- Marquardt, G., & Schmiege, P. (2009). Dementia-friendly architecture. Environments that facilitate wayfinding in nursing homes. *Zeitschrift Fur Gerontologie Und Geriatrie : Organ Der Deutschen Gesellschaft Fur Gerontologie Und Geriatrie*, 42(5), 402–407. <http://doi.org/10.1177/1533317509334959>
- Mcdermott, O., Crellin, N., Ridder, H. M., & Orrell, M. (2013). Music therapy in dementia: A narrative synthesis systematic review, 781-794. <http://doi.org/10.1002/gps.3895>
- Meandro, R. (2012). Dementia's rising numbers spell trouble for Canada's health-care system

- Alzheimer Society of Canada releases new study “A new way of looking at the impact of dementia in Canada.” *Press Release, Alzheimer Society of Canada*, 2. Retrieved from November 7, 2014
- Menne, H. L., Kinney, J. M., & Morhardt, D. J. (2002). “Trying to continue to do as much as they can do” Theoretical insights regarding continuity and meaning making in the face of dementia. *Dementia*, 1(3), 367–382.
- Miller, H. J., Witlox, F., & Tribby, C. P. (2013). Developing context-sensitive livability indicators for transportation planning: a measurement framework. *Journal of Transport Geography*, 26, 51–64. <http://doi.org/10.1016/j.jtrangeo.2012.08.007>
- Mitchell, C., Theron, L., Stuart, J., Smith, A., & Campbell, Z. (2011). Drawings as research method. *Picturing Research: Drawing as Visual Methodology*, 19–36. http://doi.org/10.1007/978-94-6091-596-3_2
- Mitchell, L., & Burton, E. J. (2010). Designing dementia-friendly neighbourhoods: Helping people with dementia to get out and about. *Journal of Integrated Care*, 18(6), 12–19. <http://doi.org/10.5042/jic.2010.0647>
- Mitchell, L., Burton, E., & Raman, S. (2004). Dementia-friendly cities: designing intelligible neighbourhoods for life. *Journal of Urban Design*, 9(February 2015), 89–101. <http://doi.org/10.1080/1357480042000187721>
- Mitchell, L., Burton, E., Raman, S., Blackman, T., Jenks, M., & Williams, K. (2003). Making the outside world dementia-friendly: Design issues and considerations. *Environment and Planning B: Planning and Design*, 30(4), 605–632. <http://doi.org/10.1068/b29100>
- Mollenkopf, H., Hieber, A., & Wahl, H.-W. (2011). Continuity and change in older adults’ perceptions of out-of-home mobility over ten years: a qualitative–quantitative approach. *Ageing and Society*, 31(5), 782–802. <http://doi.org/10.1017/S0144686X10000644>
- Moore, K. D., Geboy, L. D., & Weisman, G. D. (2006). *Designing a better day: Guidelines for adult and dementia day service centers*. United States: The Johns Hopkins University Press.
- Morris, C. H., Hope, R. A., & Fairburn, C. G. (1989). Eating habits in dementia. A descriptive study. *British Journal of Psychiatry*, 154(JUN.), 801–806. <http://doi.org/10.1192/bjp.154.6.801>
- Morton-Chang, F. M. (2015). Tipping points to institutional care for persons living with dementia:

- Analyzing the policy trajectory in Ontario. *ProQuest Dissertations and Theses*. Retrieved from <http://search.proquest.com.ezproxy.lib.ucalgary.ca/docview/1711729908?accountid=9838>
- Myers, D. (1988). Building knowledge about quality of life for urban planning. *Journal of the American Planning Association*, 54(3), 347–358. <http://doi.org/10.1080/01944368808976495>
- Nations, U. (2002). World population ageing 1950-2050. *New York: United Nations*, 26(26), 11–13. Retrieved from <http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:World+Population+Ageing+1950-2050#1>
- Nelson, T. D. (2016). Promoting healthy aging by confronting ageism. *American Psychologist*, 71(4), 276–282. <http://dx.doi.org/10.1037/a0040221>
- Nguyen, A. S., Chubb, C., & Huff, F. J. (2003). Visual identification and spatial location in Alzheimer’s disease. *Brain and Cognition*, 52(2), 155–166. [http://doi.org/10.1016/S0278-2626\(03\)00031-9](http://doi.org/10.1016/S0278-2626(03)00031-9)
- Nowicka-Sauer, K. (2007). Patients’ perspective: lupus in patients’ drawings. *Clinical Rheumatology*, 26(9), 1523–1525. <http://doi.org/10.1007/s10067-007-0619-9>
- O’Malley, M., Innes, A., & Wiener, J. M. (2015). Decreasing spatial disorientation in care-home settings: How psychology can guide the development of dementia friendly design guidelines. *Dementia (London, England)*, 1471301215591334-. <http://doi.org/10.1177/1471301215591334>
- Ontario Ministry of Infrastructure. (2006). Growth plan for the greater golden horseshoe. Retrieved from <https://www.placestogrow.ca/content/ggh/2013-06-10-Growth-Plan-for-the-GGH-EN.pdf>
- Ontario Ministry of Municipal Affairs and Ministry of Housing. (2015). The smart growth of our communities act, 2015 (Bill 73). Retrieved from http://www.ontla.on.ca/web/bills/bills_detail.do?locale=en&Intranet=&BillID=3176
- Ontario Ministry of Municipal Affairs and Ministry of Housing. (2014). Provincial policy statement, under the planning act. Retrieved from <http://www.mah.gov.on.ca/AssetFactory.aspx?did=10463>
- Organization, W. H. (2007). Checklist of essential features of age-friendly cities. *Training*, 1–4. Retrieved from http://www.who.int/ageing/publications/Age_friendly_cities_checklist.pdf
- Passini, R. (1981). Wayfinding: A conceptual framework. *Urban Ecology*, 5(1), 17–31.

[http://doi.org/10.1016/0304-4009\(81\)90018-8](http://doi.org/10.1016/0304-4009(81)90018-8)

- Passini, R. (1996). Wayfinding design: Logic, application and some thoughts on universality.
- Passini, R., Pigot, H., Rainville, C., & Tetreault, M.-H. (2000). Wayfinding in a nursing home for advanced dementia of the Alzheimer's type. *Environment and Behavior*, 32(5), 684–710.
<http://doi.org/10.1177/00139160021972748>
- Patton, M. Q. (1990). *Qualitative evaluation and research methods* (8th ed.). United States: Sage Publications.
- Patton, M. Q. (2002). *Qualitative research & evaluation methods: Integrating theory and practice* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Pearce, A., Clare, L., & Pistrang, N. (2002). Mangaging sense of self: Coping in the early stages of AD. *Dementia*, 1(2), 173–192.
- Pelander, T., Lehtonen, K., & Leino-Kilpi, H. (2007). Children in the hospital: Elements of quality in drawings. *Journal of Pediatric Nursing*, 22(4), 333–341.
<http://doi.org/10.1016/j.pedn.2007.06.004>
- Perry, A. J. N., Liebhold, A. M., Rosenberg, M. S., Dungan, J., & Miriti, M. (2002). Illustrations and guidelines for selecting statistical methods for quantifying spatial pattern in ecological data. *Ecography*, 25(5), 578–600.
- Perry, R. J., & Hodges, J. R. (1999). Attention and executive deficits in Alzheimer's disease. A critical review. *Brain*, 122(3), 383–404.
- Plouffe, L. A., & Kalache, A. (2011). Making communities age friendly: state and municipal initiatives in Canada and other countries. *Gaceta Sanitaria*, 25, 131–137.
<http://doi.org/10.1016/j.gaceta.2011.11.001>
- Przydatek, M. (2014). Remembering community settings: Exploring dementia-friendly urban design in British Columbian municipalities. *University of Victoria*.
<http://doi.org/10.1017/CBO9781107415324.004>
- Purdue Education. (1992). Noise sources and their effects. Retrieved from <https://www.chem.purdue.edu/chemsafety/Training/PPETrain/dblevels.htm>
- Ratner, C. (2002). Forum: Qualitative social research subjectivity and objectivity in qualitative

methodology, 3(3), 1–7.

- Region of Waterloo. (2015). Official Plan. Retrieved from http://www.regionofwaterloo.ca/en/regionalGovernment/resources/Consolidated_ROP_2015/Chapter_3_consolidated_rop_2015-access.pdf
- Rentz, C. A. (2002). Memories in the making: Outcome-based evaluation of an art program for individuals with dementing illnesses. *American Journal of Alzheimer's Disease and Other Dementias*, 17(3), 175–181. <http://doi.org/10.1177/153331750201700310>
- Rifkin, S. B., Muller, F., & Bichmann, W. (1988). Primary health care: On measuring participation. *Social Science and Medicine*, 26(9), 931–940. [http://doi.org/10.1016/0277-9536\(88\)90413-3](http://doi.org/10.1016/0277-9536(88)90413-3)
- Rolling, J. J. H. (2013). *Arts-based research Primer*. Retrieved from <https://www.amazon.ca/Arts-Based-Research-Primer-Haywood-Rolling/dp/1433116499>
- Rosenberg, D. E., Huang, D. L., Simonovich, S. D., & Belza, B. (2012). Outdoor built environment barriers and facilitators to activity among midlife and older adults with mobility disabilities. *The Gerontologist*, 0(0), 1–12. <http://doi.org/10.1093/geront/gns119>
- Rundle, A. G., Bader, M. D. M., Richards, C. A., Neckerman, K. M., & Teitler, J. O. (2012). Using Google Street View to audit neighborhood environments, 40(1), 94–100. <http://doi.org/10.1016/j.amepre.2010.09.034>. Using
- Ruth, M., & Franklin, R. S. (2013). Livability for all? Conceptual limits and practical implications. *Applied Geography*, 1–6. <http://doi.org/10.1016/j.apgeog.2013.09.018>
- Scott, J. W. (2007). Smart growth as urban reform: A pragmatic “recoding” of the new regionalism, 44(1), 15–35.
- Seale, C. (1999). Quality in qualitative research. *Qualitative Research Practice*, 5(4), 465–478. <http://doi.org/10.4135/9781848608191>
- Sheehan, B., Burton, E. J., & Mitchell, L. (2006). Outdoor wayfinding in dementia. *Dementia*, 271–281. <http://doi.org/10.1177/1471301206062254>
- Shoval, N., Wahl, H.-W., Auslander, G., Isaacson, M., Oswald, F., Edry, T., ... Heinik, J. (2011). Use of the global positioning system to measure the out-of-home mobility of older adults with differing cognitive functioning. *Ageing and Society*, 31(5), 849–869.

<http://doi.org/10.1017/S0144686X10001455>

- Sinz, H., Zamarian, L., Benke, T., Wenning, G. K., & Delazer, M. (2008). Impact of ambiguity and risk on decision making in mild Alzheimer's disease. *Neuropsychologia*, *46*(7), 2043–2055. <http://doi.org/10.1016/j.neuropsychologia.2008.02.002>
- Smeets, E., & Weterings, R. (1999). Environmental indicators: Typology and overview. *European Environment Agency*, *25*(25), 19. Retrieved from <http://www.eea.europa.eu/publications/TEC25>
- Soja, E. W. (1980). The socio-spatial dialectic. *Taylor & Francis*, *70*(2), 207–225.
- Talen, E., & Koschinsky, J. (2013). The Walkable Neighborhood : A Literature Review, *1*(1), 42–63.
- The King's Fund. (2014). *Is your ward dementia friendly? The EHE environmental assessment tool*. Retrieved from <http://www.kingsfund.org.uk/sites/files/kf/EHE-dementia-assessment-tool.pdf>
- Thompson, S., Tomaka, J., & Palacios, R. (2006). The relation of social isolation, loneliness, and social support to disease outcomes among the elderly. *Journal of Aging and Health*, *18*(3), 359–384. <http://doi.org/10.1177/0898264305280993>
- Torrington, J. M., & Tregenza, P. R. (2007). Lighting for people with dementia. *Lighting Research and Technology*, *39*(1), 81–97. <http://doi.org/10.1177/1365782806074484>
- Torsten, H. (1970). What about people in regional science? *Ninth European Congress of the Regional Science Association*, 7–24.
- Town of Oakville. (2015). Official Plan. Retrieved from <http://www.oakville.ca/assets/2011%20planning/LivableOakvillePlan.pdf>
- van Beveren, A. J. B., & Hetherington, R. W. (1997). The feasibility of conducting a group-based progressive strength training program in residents of a multi-level care facility. *Activities, Adaptations & Aging*, *22*(4), 55–63. <http://doi.org/10.1300/J016v22n04>
- van Hoof, J., Kort, H. S. M., van Waarde, H., & Blom, M. M. (2010). Environmental interventions and the design of homes for older adults with dementia: an overview. *American Journal of Alzheimer's Disease and Other Dementias*, *25*(3), 202–232. <http://doi.org/10.1177/1533317509358885>
- van Teijlingen, E., & Hundley, V. (1998). The importance of pilot studies. *Nursing Standard: Official Newspaper of the Royal College of Nursing*, *16*(40), 33–36.

<http://doi.org/10.7748/ns2002.06.16.40.33.c3214>

Vine, D., Buys, L., & Aird, R. (2012). The use of amenities in high density neighbourhoods by older urban Australians residents. *Landscape and Urban Planning*, *107*(2), 159–171.

<http://doi.org/10.1016/j.landurbplan.2012.05.013>

Wagner, F., & Caves, R. (Eds.). (2012). *Community livability: Issues and approaches to sustaining the well-being of people and communities* (1st ed.). New York: Routledge.

Walmsley, D. J., & Lewis, G. J. (2014). *People and environment: Behavioural approaches in human geography* (Second Edition ed.). New York: Routledge.

Weir, A., & Fouche, C. (2015). Community-based dementia day programmes: Common elements and outcome measures. *Dementia (London, England)*, *14*(12), 1471301215590504-.

<http://doi.org/10.1177/1471301215590504>

White, R. (2007). Older people hang out too. *Journal of Occupational Science*, *14*(2), 115–118.

<http://doi.org/10.1080/14427591.2007.9686592>

Wijk, H., Berg, S., Sivik, L., & Steen, B. (1999). Colour discrimination, colour naming and colour preferences among individuals with Alzheimer's disease. *International Journal of Geriatric Psychiatry*, *14*(12), 1000–1005. doi:10.1002/(sic)1099-1166(199912)14:12<1000::aid-gps46>3.3.co;2-5

Wijk, H. (2001). Color perception in Alzheimer's disease with implications in the environment. In B. Vellas, L. Fitten, H. Feldman, E. Giacobini, M. Grundman & B. Winblad (Eds) *Research and Practice in Alzheimer's Disease*, Vol 5. Paris: Serdi Publisher.

Wiles, J. L., Leibing, A., Guberman, N., Reeve, J., & Allen, R. E. S. (2012). The meaning of “aging in place” to older people. *Gerontologist*, *52*(3), 357–366. <http://doi.org/10.1093/geront/gnr098>

Williams, A. (1998). Therapeutic landscapes in holistic medicine. *Social Science and Medicine*, *46*(9), 1193–1203. [http://doi.org/10.1016/S0277-9536\(97\)10048-X](http://doi.org/10.1016/S0277-9536(97)10048-X)

World Health Organization. (2007). *Global age-friendly cities: A guide*. *Global Age-Friendly Cities: A guide*. Retrieved from

http://www.who.int/ageing/publications/Global_age_friendly_cities_Guide_English.pdf

Zhang, S., Yang, H., & Singh, L. (2014). Revisiting the quantitative-qualitative debate: Implications for mixed-methods research. *CEUR Workshop Proceedings*, *1225*(1), 41–42.

<http://doi.org/10.1023/A>

Zimmerman, S., Sloane, P. D., Williams, C. S., Reed, P. S., Preisser, J. S., Eckert, J. K., ... Dobbs, D. (2005). Dementia care and quality of life in assisted living and nursing homes. *Gerontologist*, *45 Spec No(1)*, 133–146. http://doi.org/10.1093/geront/45.suppl_1.133

Appendix A EHE Environmental Assessment Tool

TheKingsFund>

Ideas that change
health care

Is your ward dementia friendly?

EHE Environmental
Assessment Tool



Third edition

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Date

Ward

Assessment carried out by

The EHE assessment tools

In order to help as many health and care organisations as possible to develop more supportive design for people with dementia, The King's Fund has developed a suite of dementia friendly assessment tools for use in care settings. Tools are available for wards; areas of hospitals where patients are ambulatory such as clinics; care homes; extra care housing and health centres.

How to use the ward assessment tool

The assessment tool can be used by a single individual but involving others who have a different perspective, for example; people with dementia or a family member; clinical, managerial or estates staff; or dementia specialists, can offer valuable opportunities for gaining different views on the care environment and how to improve it. Completing the tool together can also encourage constructive conversations about the philosophy and purpose of care.

The assessment tools contain seven sections and a set of questions to prompt discussions and should be completed in full. Walk around the area being assessed and consider each of the questions in turn. Give each question a score out of five, where five indicates that it is met completely and one indicates it is not met at all.

A summary sheet has been provided at the end of the assessment tool which should help pinpoint the areas that might be considered for initial improvement. Notes about how others have used the results, together with The Fund's overarching design principles for dementia friendly design, are reproduced at the end of the tool.

How the tool was developed

The first assessment tool for the ward environment was developed in collaboration with NHS trusts participating in The King's Fund's Enhancing the Healing Environment (EHE) programme. Since then over 70 care organisations have been involved in field testing the tools.

The tools have been informed by research evidence, best practice and over 300 survey responses from those that have used the tools in practice. Each of the sections draws on this evidence to develop a rationale for effecting change in care environments. These rationales also address the visuospatial problems often associated with dementia.

For further details go to www.kingsfund.org.uk/dementia

Before using the tool

Before carrying out the assessment please ensure that all relevant management backing has been secured to build support and commitment to the results.

It may also be useful to take photographs as these can be used to mark progress and act as a record of improvements. If photographs are taken all relevant permissions need to be obtained.

If you would like to provide any feedback on the tool or to contact us please email eh@kingsfund.org.uk

1 The environment promotes meaningful interaction between patients, their families and staff

Rationale

Uncared for and unwelcoming spaces can cause anxiety and provoke concerns in patients and their relatives about the standards of care. The arrangement of furniture provides clues as to the purpose of the space. There should be a choice of seating, older people are likely to need chairs with arms, and arranging chairs in clusters will encourage conversation. Participation in age appropriate activities can help to relieve anxiety.



Questions

Please score each answer from 1 - 5
(1=barely met, 5=totally met)

- A** Does the approach to the ward look and feel welcoming?
- B** Is there an obvious reception desk?
- C** Does the ward give a good first impression i.e. does it look clean, tidy and cared for?
- D** Are there obvious social areas such as day rooms?
- E** Is there a choice of seating provided including chairs with arms?
- F** Are the chairs in social areas arranged in small clusters to encourage conversation?
- G** Are other activities encouraged rather than just passively watching TV?
- H** Can staff observe and be seen in all areas of the ward?

Please give examples of good practice/ areas of concern

2 The environment promotes well-being

Rationale

Older people need higher light levels and people with dementia may interpret shadows or dark areas as holes in the floor and try to step over them. Stripes on flooring could be confusing and disorientating. Appropriate light levels can help promote normal patterns of waking and sleeping. Personal objects are reassuring and help promote self-care. Views and access to the outside are essential for well-being.



Questions

Please score each answer from 1 - 5
(1=barely met, 5=totally met)

- A** Is there good natural light in bed areas and social spaces?
- B** Is the level of light comfortable and appropriate and can it be adjusted to suit sleep/wake patterns and care needs?
- C** Is the lighting and natural light from windows even e.g. without pools of light and/or dark areas, stripes or shadows?
- D** Are personal objects, including self-care items, situated where the patient can find them?
- E** Are links to and views of nature maximised e.g. by having low windows and using natural materials and colours?
- F** Is there independent access to a pleasant, safe outside space e.g. garden, courtyard or terrace?
- G** Have sheltered seating areas been provided in the outside space?
- H** Has planting been chosen to be colourful and non-toxic?

Please give examples of good practice/ areas of concern

3 The environment encourages eating and drinking

Rationale

Having a choice of where to eat, e.g. with others or by themselves, may encourage people to eat and drink as will the provision of nutritious drinks and snacks. For people with dementia crockery, cutlery and drinking glasses should be chosen to look familiar (hospital beakers and specially shaped plates may not be recognised). People may not be able to distinguish white food presented on a white plate so crockery needs to offer a colour contrast to food and drink.



Questions

Please score each answer from 1 - 5
(1=barely met, 5=totally met)

- A** Do patients and/or their relatives have constant independent access to hot and cold drinks?
- B** Do patients have independent access to snacks and finger food?
- C** Is the crockery and glassware of familiar design and in a distinctive colour that contrasts with tables and trays?
- D** Is there somewhere for patients to eat other than by their beds?
- E** Is there a space where patients can eat together?
- F** Is there enough space and chairs for staff and carers to help with eating and drinking?

Please give examples of good practice/
areas of concern

4 The environment promotes mobility

Rationale

Being able to walk independently is important. Safety can be enhanced by providing handrails and small seating areas where people can rest. People with dementia may interpret shiny floors as being wet or slippery and changes in flooring colour as something to step over. Speckles or pebble effects in flooring could look like pieces of litter. Interesting artworks will encourage mobility as well as helping people find their way around.



Questions

Please score each answer from 1 - 5
(1=barely met, 5=totally met)

- A** Is there space for patients to walk around independently?
- B** Is the flooring matt rather than shiny and of a consistent colour i.e. does not have speckles, pebble effects or stripes?
- C** Is the flooring in a colour that contrasts with the walls and furniture?
- D** Are the handrails in the corridors in a colour that contrasts with the walls?
- E** Is it possible to grasp the handrails properly?
- F** Are there small seating areas for people to rest along corridors and/or by the reception desk?
- G** Are there points of interest e.g. photographs or tactile artworks?

Please give examples of good practice/
areas of concern

5 The environment promotes continence and personal hygiene

Rationale

Not being able to find the toilet provokes anxiety and using the same signs and door colours to denote all toilets will help people find them more easily. Ensuring good colour contrast on sanitary fittings will make toilets and basins easier to see and use. Traditional and familiar designs will help ease anxiety and promote self-care. Being plunged into darkness if sensor lights go out can be very frightening. People may not recognise themselves in a mirror and this can cause distress.



Questions

Please score each answer from 1 - 5
(1=barely met, 5=totally met)

- A** Can the signs to the toilets be seen from all patient areas?
- B** Are all toilet doors painted in a single distinctive colour and do they have the same clear signage?
- C** Are the toilet seats, flush handles and rails in a colour that contrasts with the toilet/bathroom walls and floor?
- D** Are the taps and shower controls clearly marked as hot and cold and are they and the toilet flushes of traditional design?
- E** Are basins, baths and toilet roll holders of familiar design?
- F** Are all of the toilets and showers large enough for staff to assist patients when the door is closed?
- G** If sensor lights have been installed do they allow sufficient time for completion of toileting or washing?
- H** Is it possible to cover mirrors if required?

Please give examples of good practice/
areas of concern

6 The environment promotes orientation

Rationale

People with dementia are likely to become agitated in unfamiliar surroundings. Providing visual clues and prompts, including accent colours and artworks, to help them find their way around is particularly important. Signs using both pictures and text need to be placed at a height where they can easily be seen. Personalising bed spaces and providing clocks and calendars will help with orientation. Strong patterns on wall coverings or furnishings can be misinterpreted.



Questions

Please score each answer from 1 - 5
(1=barely met, 5=totally met)

- A** Do doors have a clear or transparent vision panel to show where they lead to?
- B** Are signs of a good size and a contrasting colour to the door so as to be seen easily?
- C** Do signs on doors e.g. for toilets or day rooms use both pictures and words and are they hung at a height (approximately 4 foot/1.2m) that makes viewing them easy?
- D** Are pictures/objects and/or colours used to help patients find their way around?
- E** Are bedrooms/bed spaces personalised e.g. through the use of numbers, accent colours, memory boxes, or personal photographs?
- F** Have strong patterns been avoided in wall coverings, curtains, furnishings and screens?
- G** Is there a large face clock easily visible from the bedside?
- H** Are patients able to see a calendar in the ward?
- I** Is there clear signage showing the name of the hospital and the ward?

Please give examples of good practice/
areas of concern

7 The environment promotes calm, safety and security

Rationale

Clutter and distractions, including notices, can cause added confusion and should be avoided. Noise can make concentration difficult and can increase anxiety. Locked doors and window restrictors can lead to frustration and anger when they cannot be opened. All staff should be familiar with current statutory and regulatory requirements for Deprivation of Liberty Safeguards.



Questions

Please score each answer from 1 - 5
(1=barely met, 5=totally met)

- A** Are notices kept to a minimum to avoid distraction and confusion?
- B** Are spaces clutter free?
- C** Have noise absorbent surfaces been used e.g. on floors and ceilings to aid noise reduction?
- D** Are the staff call system and machine/sensor alarms designed to alert staff but not to disturb patients?
- E** Do patients have any control over the sounds they hear e.g. can they listen to their own choice of music?
- F** Are doors to exits clearly marked but 'staff only' areas disguised e.g. by painting the doors and handles in the same colours as the walls/ continuing the handrail across the door?
- G** Are patients cared for in the least restrictive environment possible while maintaining the appropriate level of safety and security?
- H** Are safety and security measures e.g. baffle locks, window restrictors and alarms, as discreet as possible?
- I** Are all hazardous liquids and solids e.g. cleaning materials, locked away?

Please give examples of good practice/
areas of concern

Summary

Please add your scores for each criterion here

A B C D E F G H I

1 The environment promotes meaningful interaction between patients, their families and staff

2 The environment promotes well-being

3 The environment encourages eating and drinking

4 The environment promotes mobility

5 The environment promotes continence and personal hygiene

6 The environment promotes orientation

7 The environment promotes calm, safety and security

How the results might be used

Scores can be benchmarked against other similar areas in the organisation or more widely to look at comparisons and to highlight particular priorities for improvement. Remember it is often the simple things that can make a big difference such as de-cluttering spaces or providing small seating areas. Similarly a local photographic competition can produce stunning artworks.

If there are low scores in a particular area, think what action can be taken immediately and what actions need to be addressed with others. If the scores are low overall this should help inform discussions on the need for environmental improvements with senior management in the organisation.

How others have used their results

Evaluations of the tools indicate that people have already used their results to:

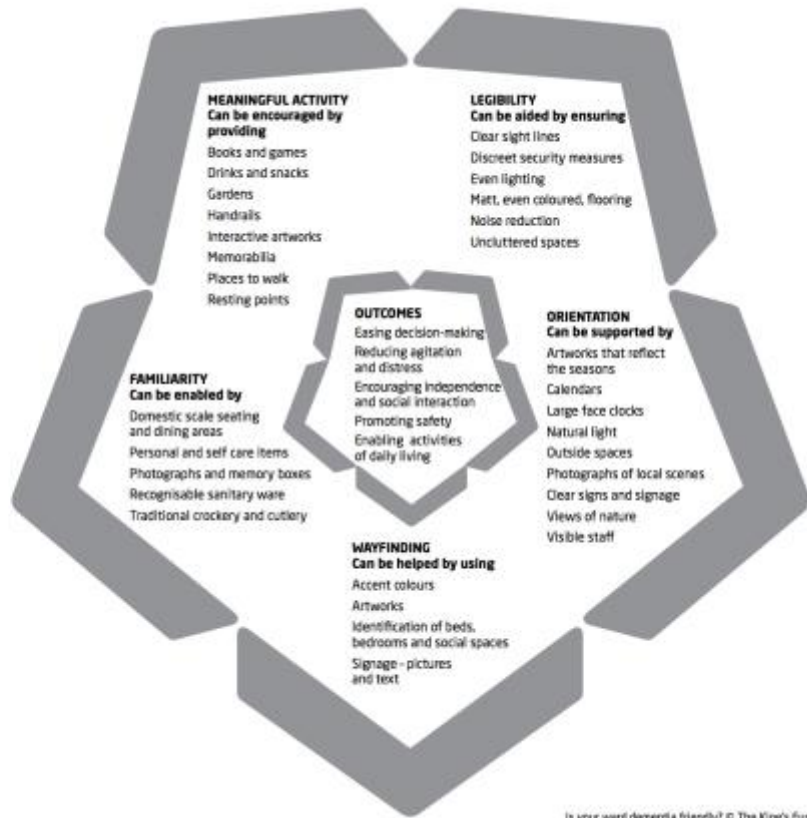
- secure finance from their boards to improve the care environment
- influence their managers and estates colleagues to support change
- educate staff and help change attitudes
- improve signage, flooring and colour schemes as part of maintenance programmes
- redesign dining areas and change crockery.

Is your ward dementia friendly? © The King's Fund 2014

Overarching design principles

The design principles focus on promoting well-being and independence rather than providing detailed room by room guidance. They have been developed as a result of the EHE programme and bring together best practice in creating more supportive care environments for people with cognitive problems and dementia. The principles are drawn from a number of sources, including research evidence and the learning gained from changes tested in a range of care environments. www.kingsfund.org.uk/sites/files/kf/EHE-developing-supportive-design-for-people-with-dementia-bibliography1.pdf

Each of the five sections contains a list of design elements that are known to support, encourage and enable people with dementia in care settings. It is unlikely that all the elements can be addressed at the same time unless a new build or comprehensive refurbishment is being planned. However, many of the principles are simple, can be introduced with very little financial outlay and are known to be helpful in creating a more supportive physical environment for people with dementia and those that care for them.



Is your ward dementia friendly? © The King's Fund 2014

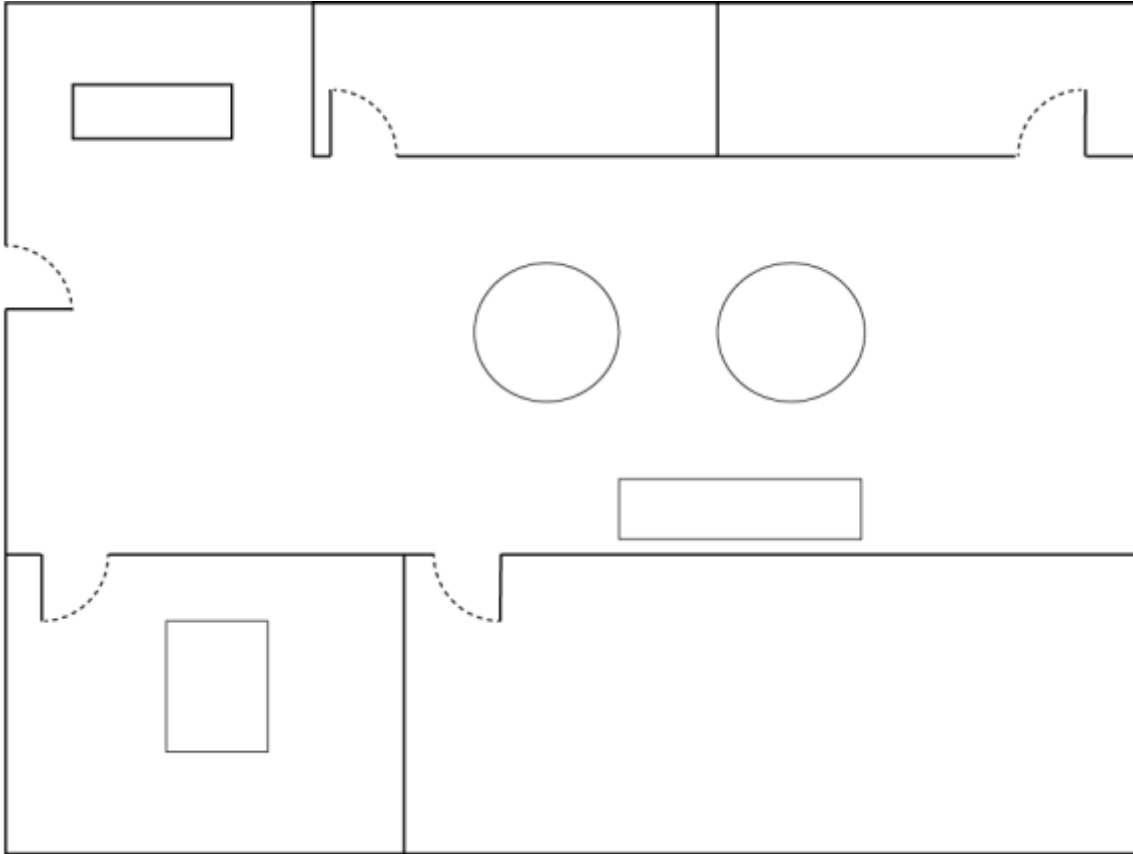
Appendix B Covert-Overt Observation Guidebook

Key focus areas: walkability, safety, and community engagement

		YES	COMMENTS	NO	COMMENTS
Coming & Going	<ul style="list-style-type: none"> • Upon arrival is there one-on-one social exchange between member and either staff, caregiver, or other member? <ul style="list-style-type: none"> ○ Do members look at ease? 				
	<ul style="list-style-type: none"> • At the end of the day is there one-on-one social exchange between member and either staff, caregiver, or other member? <ul style="list-style-type: none"> ○ Do members look at ease? 				
	<ul style="list-style-type: none"> • Do “soft transitions” exist when moving from one activity to the next? <ul style="list-style-type: none"> ○ How are members guided to move to the next activity? ○ Do staff play an active role? 				
Walking & Exploring	<ul style="list-style-type: none"> • Individuals exhibit signs of personal control (no need for staff assistance) 				
	<ul style="list-style-type: none"> • Individuals seem to be well oriented (understand where the washroom and other facilities are) 				
	<ul style="list-style-type: none"> • Are there any potential perceived safety problems? 				
	<ul style="list-style-type: none"> • Can individuals actively seek privacy? 				

	<ul style="list-style-type: none"> • Evidence of social interaction? <ul style="list-style-type: none"> ○ Member-to-member ○ Member-to-staff 				
Daily Life Activities	<ul style="list-style-type: none"> • Evidence of members participating in activities? What type? <ul style="list-style-type: none"> ○ Group sizes? 				
	<ul style="list-style-type: none"> • Are members provided opportunities to be responsible for something? (ex. watering plants, setting the table, etc.) 				
	<ul style="list-style-type: none"> • Are members recognized for their contribution or for their participation in activities? 				
	<ul style="list-style-type: none"> • Are there active conversations happening? <ul style="list-style-type: none"> ○ Are members being socially included? ○ Group sizes? 				
	<ul style="list-style-type: none"> • Are there individuals choosing not to participate in scheduled activities? If so, what are they doing? 				
Cooking & Dining	<ul style="list-style-type: none"> • Is social dining supported? (arrangement of chairs and seating, 2-4 people) 				
Being Outside	<ul style="list-style-type: none"> • Is there a 'wander garden'? 				
Well-being	<ul style="list-style-type: none"> • Is there evidence of sustained engagement in activities? 				
	<ul style="list-style-type: none"> • Do members verbally express that they're having fun? 				
	<ul style="list-style-type: none"> • Are there signs of calmness? <ul style="list-style-type: none"> ○ Smiles? ○ Laughter? 				
Other					

Appendix C Floor Plan



Appendix D Art-based Analysis Discussion Script



Sample Art-based Analysis Discussion Script

- The student researcher will ask the following questions to help guide, and initiate the art-based analysis session.
 - By using the art supplies provided, please illustrate your favourite space at the Dotsa Bitove Wellness Academy (DBWA) and landscape or space outside the DBWA that you may have recently visited, or one that you remember from when you were young. If you are not able to think of a specific space at the DBWA, or landscape or space outside the DBWA, try to illustrate various features that you find attractive when you are either indoors or outdoors. Please use any assortment of colours, but try to incorporate those that you particularly prefer.

- Upon completion of the art-piece, the researcher will take the opportunity to discuss with each participant (for 10-20 minutes) their piece by asking the following:
 - What is in your illustration? Can you tell me about specific parts?
 - Why did you choose to draw this piece? Is this a place you are able to/or used to visit?
 - What makes this your favourite space, landscape, or place?
 - What is your favourite colour?
 - Why did you choose the selected colours?
 - Can you attribute a feeling with this place (i.e., a sense of calmness, or excitement)?
OR What does this place make you feel when you are there? When you think about it now?

Appendix E Study Information Letter



INFORMATION LETTER FOR A RESEARCH STUDY BEING CONDUCTED AT THE DOTSA BITOVE WELLNESS ACADEMY

Study Title: Examining how physical and social environments influence livability for individuals with memory-related disorders : A case study of the Dotsa Bitove Wellness Academy.

Principal Investigator: Christine Jonas-Simpson, RN; PhD

Contact Information: christine.jonas-simpson@uhn.ca* (416-340-4800 x5083)

Student Researcher: Stephanie Lacey-Avon, Masters in Planning Candidate, University of Waterloo (supervised at the DBWA by Christine Jonas-Simpson, RN; PhD)

Faculty Supervisor: Jennifer Dean, PhD, Assistant Professor, School of Planning, University of Waterloo

Dear potential participant, family member, and staff,

The research team would like to inform you of an upcoming study that will take place at *The Dotsa Bitove Wellness Academy* (DBWA). We are looking to investigate the relationship between the built environment and quality of life for those living with Alzheimer's disease and other memory-related disorders. Specifically, this research will examine the physical and social environments of the DBWA, and explore how they influence the experience of members attending day programs. This research is part of an emerging body of research and professional practice that aims to better design environments for aging populations and those with memory-related disorders.

A student researcher from the University of Waterloo will be here for one week observing the physical and social environments at the Academy. She will also be running an art activity on **July 19th, 2016**. This stage of the study requires informed consent from interested members at the DBWA. This stage is described below.

Art-analysis: as a participant, you will be asked to illustrate your favourite space at the DBWA and an additional space outside the DBWA. The research team will provide the art supplies and you will be asked to draw using any colours or designs that you prefer. There is no right or wrong way to make these two illustrations. You will have up to one hour to complete your pictures and afterwards, the student researcher will ask you to describe your illustrations. This portion will take 10-20 minutes. The following is a sample of the questions that will be asked:

- What is in your illustration? Can you tell me about specific parts?
- Why did you choose to draw this piece? Is this a place you are able to/or used to visit?
- What makes this your favourite space, landscape, or place?
- What is your favourite colour?
- Why did you choose the selected colours?
- Can you attribute a feeling with this place (i.e., a sense of calmness, or excitement)? OR What does this place make you feel when you are there? When you think about it now?

Confidentiality:

If you agree to join this study, you will be asked to share your first name and email address so that a letter of appreciation can be sent to you. Your participation in this study will otherwise be confidential, this means that your identify will not be revealed alongside your artwork or the subsequent discussion. The research team will NOT be requesting your personal health information as it is not required for this study. The information that is collected for the study, will be kept in a locked and secure area by the study investigator for 5 years, after which time it will be destroyed. Only the research team of the people or groups listed above will be allowed to look at the study information. Representatives of the University Health Network Research Ethics Board may look at the study records to check that the information collected for the study is correct and to make sure the study follows proper laws and guidelines. Your decision to participant in this study will not impact your ability to access services at either DBWA or University of Waterloo.

If you agree to participate in this research study, please read, and sign the attached consent form. The consent form will also be made available in hard copy at the front desk of the Academy ~June 20th, 2016. Please contact *Christine Jonas-Simpson* 416-0340-4800 x 5083 or christine.jonas-simpson@uhn.ca* if you have any questions or concerns.

If you have any questions about your rights as a research participant or have concerns about this study, call the Chair of the University Health Network Research Ethics Board (UHN REB) or the Research Ethics office number at 416-581-7849. The REB is a group of people who oversee the ethical conduct of research studies. The UHN REB is not part of the study team. Everything you discuss will be kept

confidential. You may also contact Dr. Maureen Nummelin, Chief Ethics Officer, University of Waterloo, [519-888-4567 ext. 36005](tel:519-888-4567) or maureen.nummelin@uwaterloo.ca.

Yours sincerely,

Principal Investigator: Christine Jonas Simpson, PhD
Director, York-UHN Academy, Director, Dotsa Bitove Wellness Academy, Associate Professor, Faculty of Health, School of Nursing, York University 416-0340-4800 x5083 or christine.jonas-simpson@uhn.ca

Student Researcher: Stephanie Lacey-Avon, Masters in Planning Candidate, University of Waterloo

Faculty Supervisor: Jennifer Dean, PhD, Assistant Professor, School of Planning, University of Waterloo

Appendix F Participant Consent Form



UNIVERSITY OF
WATERLOO

CONSENT FORM TO PARTICIPATE IN A RESEARCH STUDY FOR PARTICIPANT WITH MEMORY LOSS

Study Title : Examining how physical and social environments influence livability for individuals with memory-related disorders : A case study of the Dotsa Bitove Wellness Academy.

Principal Investigator : Christine Jonas-Simpson, RN; PhD

Contact Information : christine.jonas-simpson@uhn.ca* (416-340-4800 x5083)

Student Researcher : Stephanie Lacey-Avon, Masters in Planning Candidate, University of Waterloo (supervised at the DBWA by Christine Jonas-Simpson, RN; PhD)

Faculty Supervisor: Jennifer Dean, PhD, Assistant Professor, School of Planning, University of Waterloo

Please note that the security of email is not guaranteed. Messages may be forged, forwarded or kept indefinitely by others using the internet. Do not use the e-mail to discuss information you think is sensitive. Do not use e-mail in an emergency since e-mail may be delayed.

Introduction:

You are being asked to take part in a research study. Please read the information about the study presented in this form. The form includes details on study's risks and benefits that you should know before you decide if you would like to take part. You should take as much time as you need to make your decision. You should ask the study staff to explain anything that you do not understand and make sure that all of your questions have been answered before signing this consent form. Before you make your decision, feel free to talk about this study with anyone you wish including your friends and family. Participation in this study is voluntary.

Background/Purpose:

The purpose of this study is to investigate the relationship between the built environment and quality of life for those living with Alzheimer's disease and related dementia (ADRD). Specifically, this research will examine the physical and social environments of *The Dotsa Bitove Wellness Academy (DBWA)*, and explore how they influence the experience of members attending day programs. This research is part of an emerging body of research and professional practice that aims to better design environments for aging populations and those with memory-related disorders. Approximately 5-7 participants will be included in this study.

Study Visits and Procedures:

As part of the study, you will be asked to illustrate your favourite space at the DBWA and an additional space outside the DBWA. The research team will provide the art supplies and you will be asked to draw using any colours or designs that you prefer. There is no right or wrong way to make these two illustrations. You will have up to one hour to complete your pictures and afterwards, the student researcher will ask you to describe your illustrations. This portion will take 10-20 minutes. The following is a sample of the questions that will be asked:

- What is in your illustration? Can you tell me about specific parts?
- Why did you choose to draw this piece? Is this a place you are able to/or used to visit?
- What makes this your favourite space, landscape, or place?
- What is your favourite colour?
- Why did you choose the selected colours?
- Can you attribute a feeling with this place (i.e., a sense of calmness, or excitement)? OR What does this place make you feel when you are there? When you think about it now?

If you require more time, the student researcher can arrange to follow up with you in the next day or so. As part of the research study, we would like to take a picture of your illustrations and incorporate them into study reports and presentations.

Prior to beginning research, the PI of the study will introduce the student researcher to all participants each morning prior to beginning data collection. The student researcher will be wearing a name tag to facilitate recognition. All other regular proceedings of the day will take place. Individuals are under no obligation to interact with the student researcher if they do not wish.

Risks:

There are no known risks if you take part in this study. You may feel uncomfortable during the discussion of your artwork but you may pause or stop the session at any time if there is any discomfort.

Benefits:

You may or may not receive any direct benefit from being in this study. Information learned from this study will help us to better comprehend how to better design physical and social environments for those with memory-related disorders.

Alternatives to Being in the Study:

You do not have to join this study to participate in this art activity. Anyone can draw and share their favourite space at the DBWA, and space outside the DBWA.

Confidentiality:**Personal Information**

If you agree to join this study, the principal investigator and his/her study team will look at your personal information and collect only the information they need for the study. Personal information is any information that could identify you and includes your:

- name, &
- email address

The following people may come to the DBWA to look at the study records and at your personal information to check that the information collected for the study is correct and to make sure the study is following proper laws and guidelines:

- Representatives of the University Health Network (UHN) including the UHN Research Ethics Board
- Representatives of the University of Waterloo (UW) including the UW Research Ethics Board

The principal investigator will keep any personal information about you in a secure and confidential location for 10 years. A list linking your study number with your name will be kept by the principal investigator in a secure place, separate from your study file.

All information collected during this study, including your personal health information, will be kept confidential and will not be shared with anyone outside the study unless required by law. You will not be named in any reports, publications, or presentations that may come from this study.

Voluntary Participation:

Your participation in this study is voluntary. You may decide not to be in this study, or to be in the study now, and then change your mind later. You may leave the study at any time without affecting your ability to participate at the DBWA. We will give you new information that is learned during the study that might affect your decision to stay in the study.

Withdrawal from the Study:

Due to time constraints, you will be withdrawn from the study if you are unable to be present during the scheduled day of the activity. If you decide to leave the study, you have the right to request withdrawal of information collected about you. Let your principal investigator know.

Costs and Reimbursement:

You will not have to pay for your participation in this study. As a token of appreciation for your time and effort, you will be provided an opportunity to select a gift valued at \$20. The gift will be selected at the end of the art discussion.

Rights as a Participant:

By signing this form you do not give up any of your legal rights against the investigators, sponsor or involved institutions for compensation, nor does this form relieve the investigators, sponsor or involved institutions of their legal and professional responsibilities.

Conflict of Interest:

The research team is interested in seeing the study to completion. These interests should not influence your consent to participate in the study.

Questions about the Study:

If you have any questions, concerns or would like to speak to the study team for any reason, please call:
Christine Jonas-Simpson 416-0340-4800 x5083

If you have any questions about your rights as a research participant or have concerns about this study, call the Chair of the University Health Network Research Ethics Board (UHN REB) or the Research Ethics office number at 416-581-7849. The REB is a group of people who oversee the ethical conduct of

research studies. The UHN REB is not part of the study team. Everything you discuss will be kept confidential. You may also contact Dr. Maureen Nummelin, Chief Ethics Officer, University of Waterloo, [519-888-4567 ext. 36005](tel:519-888-4567) or maureen.nummelin@uwaterloo.ca

You will be given a signed copy of this consent form.

Consent:

This study has been explained to me and any questions I had have been answered. I know that I may leave the study at any time. I agree to the use of my information as described in this form. I agree to take part in this study.

I agree to participate in the art analysis and to discuss my art piece with the student researcher following completion.

YES NO

I agree to the use of, or to take photos of the completed art work by the student researcher to include as part of the final study (in any thesis or publication that comes from this research).

YES NO

Print Study Participant's Name

Signature

Date

My signature means that I have explained the study to the participant named above. I have answered all questions.

Print Name of Person Obtaining Consent

Signature

Date

(continue if applicable)

Was the participant assisted during the consent process? YES NO

If YES, please check the relevant box and complete the signature space below:

The person signing below acted as an interpreter for the participant during the consent process and attests that the study as set out in this form was accurately interpreted has had any questions answered.

Print Name of Interpreter

Signature

Date

Relationship to Participant

Language

The consent form was read to the participant. The person signing below attests that the study as set out in this form was accurately explained to, and has had any questions answered.

Print Name of Witness

Signature

Date

Relationship to Participant

Appendix G Participant Appreciation



Date

Dear (*Insert Name of Participant*),

The study team would like to thank you for your participation in the study entitled “Examining how physical and social environments influence livability for individuals with memory-related disorders: A case study of *The Dotsa Bitove Wellness Academy*”. As a reminder, the purpose of this study is to achieve a greater understanding of how to enhance physical and social environments created for those with memory-related disorders.

The data collected during the art analysis will contribute to a better understanding of the physical and social environments at DBWA and also of the preferred key landscape features and colours for those with Alzheimer’s disease and related dementia. Findings will provide insight on how one perceives and utilizes their environment. This research will inform policies and programs specific to Alzheimer’s and other memory-related disorders that will enhance the relationship between the environment and ones’ use of the environment.

Please remember that any data pertaining to you as an individual participant will be kept confidential. Once all data are collected and analyzed for this project, the study team plans on sharing this information with the research community through seminars, conferences, presentations, journal articles, and with DBWA. If you are interested in receiving more information regarding the results of this study, please provide your email address, and the study team will send you information when the study is complete. In the meantime, if you have any questions about the study, please do not hesitate to contact the study team by email or telephone as noted below. Should you have any comments or concerns resulting from your participation in this study, please call the Chair of the University Health Network Research Ethics Board (UHN REB) or the Research Ethics office number at 416-581-7849. The REB is a group of people who oversee the ethical conduct of research studies. The UHN REB is not part of the study team. Everything

you discuss will be kept confidential. You may also contact Dr. Maureen Nummelin, Chief Ethics Officer, University of Waterloo, [519-888-4567 ext. 36005](tel:519-888-4567) or maureen.nummelin@uwaterloo.ca.

Christine Jonas-Simpson (RN, PhD)
Director, York-UHN Academy
Director, Dotsa Bitove Wellness Academy
Associate Professor, Faculty of Health, School of Nursing,
York University
Tel. 416-340-4800 x5083
Email: christine.jonas-simpson@uhn.ca

Stephanie Lacey-Avon
Masters Candidate, School of Planning
University of Waterloo

Jennifer Dean (PhD)
Assistant Professor, School of Planning, University of Waterloo

Glossary

The following terms were used throughout this study:

1. **Livability:** Livability as it relates to urban environments refers to “the sum of the factors that add up to a community’s quality of life—including the built and natural environments, economic prosperity, social stability and equity, educational opportunity, and cultural, entertainment and recreation possibilities” (Partners for Livable Communities, 2016).
2. **Quality of Life:** “It is a broad-ranging concept, incorporating a person’s physical health, psychological state, level of independence, social relationships, personal beliefs and relationship to salient features in the environment. As people age, their quality of life is largely determined by their ability to access needed resources and maintain autonomy, independence, and social relationships” (World Health Organization, 2004, p.48).
3. **Smart Growth:** Smart growth is a relatively new urban planning theory that looks to counteract suburban sprawl and lessen environmental damage through making settlements more compact, providing more mixed land uses, and encouraging more transit-oriented, walkable, and bicycle-friendly land use (Downs, 2005).
4. **Age-friendly environments:** Age-friendly environments... “encourage active ageing by optimizing opportunities for health, participation, and security in order to enhance quality of life as people age” (World Health Organization [WHO], 2007b, pg. 1).
5. **Dementia-friendly environments:** Dementia-friendly environments focus on reducing stigma associated with the disease and making sure that individuals feel included. Individuals living with dementia should feel supported by the social and physical built environment within their community (Alzheimer Society of Canada, 2015).
6. **Ageing in place:** The term “ageing in place” is regularly used to capture this idea of ageing populations remaining in their home and community for as long as possible (Federal/Provincial/Territorial Ministers Responsible for Seniors, 2015).