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**Allowing the experiences of older adults to be heard: Interpreting senior centre
accessibility**

By

Fallon R. Mitchell

A Thesis
Submitted to the Faculty of Graduate Studies
through the Department of Kinesiology
in Partial Fulfillment of the Requirements for
the Degree of Master of Human Kinetics
at the University of Windsor

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Allowing the Experiences of Older Adults to be Heard: Interpreting Senior Centre
Accessibility

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DECLARATION OF ORIGINALITY

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ABSTRACT

Senior centres aim to support and improve the health of older adults by offering a wide variety of services and activities tailored to their needs, yet there is little known about accessibility of senior centres. Inaccessible environments can negatively impact participation and health potentially leading to increased sedentary behaviour and morbidity. This study explores the accessibility experiences of older adults through a case study of a senior centre in Southwestern Ontario. This study utilizes a hermeneutic phenomenological approach to ascertain a deeper understanding of the participants' lived experiences. Six older adult members (m = 2, f = 4; $M_{age} = 72$ years) at the participating senior centre volunteered to complete semi-structured interviews. Exploration of data requires each interview to be transcribed verbatim, then analyzed using inductive thematic analysis. Emerging from the data were three themes: *ideological perspective*, *aging identity*, and *barrier dismissal*. Upon further analysis, it was revealed that all themes individually, and collectively, contributed to barrier normalization. If participants have been engaging in barrier normalization, they may fail to notice accessibility issues leading them to believe challenges experienced are minor or that few-to-no barriers exist at the senior centre. Normalizing barriers within the environment may indicate to older adults that they are responsible for overcoming challenges, as barriers are a product of their declining bodies. Thus, perpetuating victim-blaming ideologies and potentially hindering environmental approaches to accessibility that target external factors to create environments that are accepting and inclusive to a diversity of individuals.

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LIST OF ABBREVIATIONS

ADA: Americans with Disabilities Act

AODA: Accessibility for Ontarians with Disabilities Act

COVID-19: Coronavirus

CSEP: Canadian Society for Exercise Physiology

ICAA: International Council on Active Aging

NCOA: National Council on Aging

NPT: Normalization Process Theory

OAs: Older adults

PAL: Physically active leisure

PE fit: Person-environment fit

PHAC: Public Health Agency of Canada

RE fit: Recreationist-environment fit

UNICEF: United Nations Children's Fund

WHO: World Health Organization

NOMENCLATURE

Accessibility: Defined as a relative and multidimensional concept concerning the interactions between an individual's functional abilities and the design or demands of the environment. Accessibility is comprised of three components: the personal (i.e., the functional capacities of an individual), the environmental (i.e., the physical environment with which the individual interacts), and the comparison (i.e., the description of accessibility issues or person-environment fit).

Americans with Disabilities Act (ADA): A federal law in the United States established in the year 1990 that prohibits discrimination based on disability.

Accessibility for Ontarians with Disabilities Act (AODA): Enacted in the year 2005 by the government of Ontario with the intent to improve the accessibility standards of services, programs, buildings, and employment for Ontarians with disabilities. The goal is to produce a fully accessible Ontario by the year 2025.

Built Environment: Also known as the physical environment, built environment refers to human-made structures that may positively or negatively influence human behaviour. The built environment encompasses urban design (i.e., the arrangement, functionality, and appearance of physical elements), land use (i.e., the distribution of various activities), and transportation (i.e., the physical infrastructure of roads, sidewalks, railways, biking and walking paths).

Functionality: The interaction between human function (i.e., an individual's skills and abilities) and the physical form (i.e., the design of an object). The interactions between human function and physical form exert demand to afford or inhibit engagement in a variety of activities.

Objective Accessibility: Focuses on objective and quantifiable characteristics that are determined by norms or guidelines, such as those put forth by the ADA and the Web Accessibility Initiative, among other environmental assessments.

Older Adult (OA): For the purposes of this study, an older adult will be defined as any individual who is 50 years of age or older. Older adults may be typically defined as any individual that is 65 years of age or older. However, the minimum age to participate within most senior centres is 50 years.

Person-environment (PE) fit: The match between an individual's functional capacity and environmental demands. Personal (i.e., individual abilities or characteristics) and environmental factors (i.e., physical design, demand of performing a task) are interrelated and may interact with one another to facilitate or restrict human behaviour.

Physical Activity: Any bodily movement that results in energy expenditure, including grocery shopping, housework, exercise, or sport.

Sedentary Living: Defined as a lifestyle that requires minimal physical activity and prolonged time spent sitting or lying down during waking hours.

Senior Centre: A type of recreational facility that specifically targets the needs of OAs. Common programs and services include nutrition (e.g., meal programs), recreation (e.g., exercise classes, physically active leisure opportunities), health (e.g., referrals, health education), and social programs (e.g., bingo, cards, volunteering).

Social Environment: Encompasses the immediate physical surroundings, interpersonal relationships, and cultural characteristics within which individuals live and interact.

Subjective Accessibility: Individuals subjectively perceive and experience the environment around them. Focuses on accessibility as a subjective experience, thus, experts on accessibility are the users themselves.

Vulnerable Populations: Social groups who experience limited resources (e.g., healthcare and quality of care) resulting in increased risk for adverse health outcomes (e.g., morbidity and premature death). Examples of vulnerable populations are women, children, minorities, immigrants, OAs, individuals with a disability, individuals who are homeless, and individuals who are members of the LGBTQ+ community.

Universal Design: A social movement aimed at creating physical spaces and attitudes that anyone, regardless of disability or impairment, can easily access and use (Imrie, 2012). Universal design incorporates seven principles: equitable use, flexibility in use, simple and intuitive use, perceptible information, tolerance for error, low physical effort, and size and space for approach and use. Through the application of the seven principles, universal design aims to prevent discriminatory design that draws attention to disability in a stigmatizing manner.

Usability: Refers to subjective evaluations of effectiveness, efficiency, and satisfaction. Usability expands on accessibility by incorporating a fourth component: activity (i.e., a description of the activity to be performed within the given environment).

REVIEW OF LITERATURE

Accessibility

Accessibility has become a topic of interest within society as it relates to equal rights for individuals with a disability (Iwarsson & Ståhl, 2003). Partially responsible for this increased interest in accessibility is the disability rights movement, which was initiated in the 1950s and 1960s (Pfeiffer, 1993). The first wave of the movement was led by parents and providers of individuals with a disability. Primarily, they opposed the poor treatment of individuals with a disability (Pfeiffer, 1993). Additionally, they advocated for improvements in service delivery for individuals with a disability and their caregivers (Pfeiffer, 1993). For example, prior to the disability rights movement in North America, it was common for an individual with a disability, particularly a cognitive disability, to be sterilized without their consent, and even without their knowledge (Pfeiffer, 1993). Additionally, individuals with a disability were often institutionalized, segregating them from mainstream society (Pfeiffer, 1993). As a result of the disability movement, institutionalizing and sterilizing individuals with a disability became outlawed (Pfeiffer, 1993). The second and current wave of the disability rights movement began in the 1970s advocating for choice, participation, and the removal of environmental, political, and social barriers to increase autonomy and reduce segregation among individuals with a disability (Donoghue, 2003; Kennedy & Minkler, 1998). The modern disability rights movement opposes prevailing ideologies by suggesting society needs to change or be 'fixed', not the individual with a disability (Donoghue, 2003); it posits that problems encountered by individuals with a disability are a result of external factors (Donoghue, 2003). Increased awareness of accessibility and the modern disability rights movement may be beneficial, as it advocates for the

inclusion of a marginalized population without blaming individuals with a disability for the barriers they encounter.

Although accessibility is especially pertinent to individuals with a disability, it is a concept that could and should be applied to all individuals regardless of ability. Associating accessibility exclusively with disability may stigmatize the concept of accessibility (Iwarsson & Ståhl, 2003), as individuals with a disability are often perceived as weak, helpless, burdensome, and undesirable (Huang & Brittain, 2006; Pfeiffer, 1993; Taub et al., 1999). Arguably such perceptions of disability are outdated and individuals with a disability should not be stigmatized. However, many stigmatizing perceptions of disability are informed by the medical model (e.g., disability is unwanted, abnormal, and should be fixed, hidden, or removed), which has traditionally been widely accepted throughout society (Donoghue, 2003). Consequently, negative perceptions of disability are widespread and may be transferred to concepts closely associated with disability, such as accessibility (Iwarsson & Ståhl, 2003). If negative attitudes are directed towards accessibility, progress towards more inclusive environments may be hindered. To prevent negative perceptions of accessibility, or perhaps worse – no consideration of accessibility at all, it may be important to emphasize that all individuals are susceptible to accessibility barriers, even if temporarily. For example, anyone could break a leg, which would reduce their functional capacity, increasing susceptibility to environmental barriers (e.g., steep/narrow stairs) and creating a need for accommodating environments (e.g., elevators and/or ramps). Thus, while accessibility is often discussed in the context of disability, it should be a concern among all individuals. Stressing accessibility as a universal concern may reduce the stigma surrounding individuals with a disability, by emphasizing the role the environment can play in impeding ability among individuals of varying functional capacities. As environmental

barriers are reduced and accessibility is improved, individuals with a disability will be afforded more opportunities to participate in a range of activities (e.g., social, physical, vocational; Ephraim et al., 2006).

In response to the disability rights movement, accessibility has become a term with which many individuals are familiar (Iwarsson & Ståhl, 2003). However, accessibility is rarely explicitly defined in day-to-day communication, disability movement material, or research reports (Iwarsson & Ståhl, 2003). Several definitions of accessibility exist within the literature and appear to vary by research discipline. Within transportation and regional research, accessibility is defined as the potential for reaching geographically distributed activities (vocational, recreation, social, etc.; Páez et al., 2012). Accessibility may be viewed as an outcome produced by a transportation network and the spatial distribution of activities and is measured in terms of travel distance (Páez et al., 2012). Alternatively, care and disability studies define accessibility as a concept, wherein physical and social environments are adapted to include individuals with a disability (Kelly, 2013). In the context of health and societal participation, accessibility may be defined as a relative and multidimensional concept concerning the interactions between an individual's functional capacity and the design or demands of the environment (Iwarsson & Ståhl, 2003). This can also be loosely referred to as a Systems Theory approach that considers the interactions between and within three factors: the individual, the task, and the environment (Jansen & Kristof-Brown, 1998). To more fully understand this multidimensional construct, it is imperative to know that accessibility is comprised of three components: the personal (i.e., the functional capacities of an individual), the environmental (i.e., the physical environment with which the individual interacts), and the comparison (i.e., the description of accessibility issues or person-environment fit (PE fit); Iwarsson & Ståhl, 2003). In

other words, personal abilities and environmental barriers are interrelated and may influence one another in what is known as PE fit to impede or facilitate accessibility (Eronen et al., 2014; Lawton & Nahemow, 1973, as cited in Iwarsson, 2005). Environmental barriers may impede an individual's ability to access a wide variety of settings, yet research examining accessibility has focused on only a few areas. To date, most research examining accessibility has focused on facets of housing, transportation, and the World Wide Web.

In an attempt to increase the availability of accessible housing, scholars have been dedicating their efforts to identifying environmental barriers within the home environment, as well as raising awareness and educating individuals about the advantages of accessible housing. Homes that contain environmental barriers have been associated with increased dependence among older adults (OAs) especially with performing activities of daily living (e.g., bathing, feeding, ambulating, dressing) and instrumental activities of daily living (e.g., transportation and shopping, meal preparation, cleaning; Iwarsson, 2005). The most commonly reported barriers in the home include high and/or deep shelving and cupboards, steep steps at entrances (Iwarsson et al., 2006), and narrow doorways (Smith et al., 2008). Moreover, individuals with mobility devices have demonstrated the greatest susceptibility to environmental barriers in the home (Granbom et al., 2016). According to the environmental docility hypothesis derived from ecological theory, which is the primary theoretical foundation used in accessibility research, there is an inverse relationship between an individual's functional capacity and their vulnerability to environmental demand (Iwarsson & Ståhl, 2003). Individuals who are dependent on mobility devices often have more complex functional profiles (i.e., poor functional ability) amplifying demand imposed by environmental conditions (Granbom et al., 2016; Yang & Sanford, 2012). Thus, they are more likely to experience accessibility issues (Granbom et al.,

2016). When OAs are perceived to be too dependent, they may lose their opportunity to age in place (i.e., to dwell in the place of their choosing, typically their own home). In addition to improving physical, social, and mental well-being, as well as improved quality of life, enabling OAs to age in place can reduce socioeconomic costs (e.g., caregiver burden, cost of healthcare or long-term care facilities) associated with an aging population (Smith et al., 2008; Vanleerberghe et al., 2017). Thus, designing homes with few-to-no environmental barriers may help OAs maintain their independence.

Arguments made by homebuyers, planners, and homebuilders that support inaccessible housing, such as those suggesting accessibility features are too expensive, are visually unpleasant, or unnecessary, could be resolved with increased knowledge and awareness (Smith et al., 2008). Informing homebuyers of the value of accessibility features may encourage them to actively look for accessible homes, subsequently expanding the demand for accessible housing (Smith et al., 2008). Homebuyers may avoid accessible housing due to a lack of interest, poor awareness of the benefits, misconceptions about cost, failure to consider future accessibility needs, and belief that it will ruin aesthetic (Smith et al., 2008). Among individuals with mobility impairments, reasons for not searching for accessible housing may include a fear of being stigmatized, determination to overcome barriers, beliefs that accessibility features will reduce resale value, or a lack of knowledge, organizational skills, and finances (Smith et al., 2008). Concerns about cost may be resolved by incorporating accessibility features during construction, as well as promoting assistive programs (e.g., tax incentives, grants, loans, equipment, or services; Maisel, 2006; Smith et al., 2008). When accessibility features are included during construction, costs can be minimal, or at least less than the cost of retrofitting or renovating (Smith et al., 2008). For individuals who wish to add accessibility features to an existing

structure, to help offset the costs there are several assistive programs available (e.g., grants, loans, assistive equipment; Smith et al., 2008). However, many of these programs are directed towards specific groups, such as veterans, OAs, or low-income households and are limited in the number of individuals who can receive them (Smith et al., 2008). Therefore, many individuals who would benefit from such programs do not receive the help they need. Regardless of an individual's personal need for accessibility features, having an accessible home can accommodate the needs of others such as visits by friends and family who have, or may develop, mobility limitations (Maisel, 2006; Smith et al., 2008).

Although accessible housing could benefit any individual, the literature focuses primarily on OAs. This focus on the OA population is likely a resultant of population aging (Iwarsson et al., 2006), wherein individuals are living longer, but with greater morbidity (i.e., disease and disability; World Health Organization [WHO], 2011). To illustrate, 33% of Canadians 65 years of age or older and 43% of Canadians 75 years of age or older had a disability in the year 2012 (Arim, 2015). A disability in this context could range from a physical disability such as limb paralysis or balance impairment to a cognitive disability such as dementia or delusion. As a result of increased morbidity and age-related decline, OAs have reduced functional capacities (Chodzko-Zajko et al., 2009) placing greater demand on environmental accommodation and the need for accessible housing. However, there is a substantial imbalance between the availability of accessible housing and the number of individuals that are in need (Smith et al., 2008). Most housing is not constructed or modified to optimize accessibility potentially producing dangerous outcomes. Despite declining health, many OAs will continue to live in inaccessible homes (Granbom et al., 2016), potentially increasing their risk of injury (e.g., fall related injuries), isolation, and loneliness (Smith et al., 2008). By impeding OAs' daily activities (e.g., cooking,

dressings, bathing) and restricting their participation in activities outside the home, environmental barriers (i.e., features that do not follow norms for accessible housing; Iwarsson et al., 2006) can negatively affect an individual's well-being and quality of life (Granbom et al., 2016). Solutions with notable success that can be implemented to improve accessibility in the home, include zero step entrances, wider doorways, and entry level bathrooms (Kovacs Burns & Gordon, 2010; Maisel, 2006; Smith et al., 2008). Although housing plays a central role in many individuals' lives, accessibility research needs to expand beyond the home environment. Accessibility must be examined within a variety of environments, ranging from one's home to the broader community, to optimize activity and community participation (Yang & Sanford, 2012). Typically, to live a full and satisfying life, OAs must be able to access environments outside the home to carry out instrumental (e.g., grocery shopping, medical appointments), as well as desired activities (e.g., attending church events, recreational activities).

A key factor facilitating engagement in activities outside of the home is transportation, as it is required to get from place-to-place. Transportation facilitates access to employment, education, healthcare, and a plethora of other social and physical activities (Levy et al., 2004; Novek & Menec, 2014; Sabella & Bezyak, 2019). Therefore, maximizing accessible transportation may play a fundamental role in enhancing individuals' quality of life, as well as mental and physical well-being (Novek & Menec, 2014). Unfortunately, inadequate transportation continues to be a commonly reported barrier among many individuals, particularly individuals with a disability, across North America (Sabella & Bezyak, 2019). Individuals with a disability may encounter problems with inoperable lifts, attitudinal barriers among transit drivers, steep ramps, and failure to make destination announcements (Bezyak et al., 2017). In the context of transportation, accessibility is often determined according to guidelines (e.g., the

Americans with Disabilities Act [ADA]), as well as spatial distribution (e.g., distance from residential areas to activity centres, medical facilities, grocery stores, etc.), travel time (e.g., time it takes to reach desired destination), and activity attractiveness (e.g., the size of a park or swimming pool; Giles-Corti & Donovan, 2002; Handy & Niemeier, 1997; Páez et al., 2012). Enhanced accessibility is achieved in cities that minimize physical barriers, distance, and travel time, while maximizing the number, diversity, and quality of activities (Handy & Niemeier, 1997). However, attempting to measure accessibility using strictly objective methods may not reflect residents' perceptions of the transportation system (Handy & Niemeier, 1997) potentially producing conflicting results between the objective measure and residents' evaluations of accessibility (Páez et al., 2012).

To gather perceptions and identify barriers experienced by individuals with a disability, transportation research examining accessibility has typically distributed surveys (Bezyak et al., 2017; Sabella & Bezyak, 2019). Some of the most commonly identified barriers pertain to inadequate training of transit employees, stigmatizing and discriminatory attitudes, inadequacies within the physical environment, and poor information communication (Bezyak et al., 2017; Sabella & Bezyak, 2019). All of these barriers may be difficult, if not impossible, to reveal by measuring spatial distribution, travel time, and activity attractiveness. Consulting members of the community, such as OAs and individuals with a disability, to ascertain their perceptions of accessibility and identify aspects they deem important may better inform measures of accessibility (Handy & Niemeier, 1997; Kovacs Burns & Gordon, 2010). However, analyzing perceptions solely through the use of a survey may be limited. Surveys typically consist of a fixed, pre-determined set of questions leaving minimal to no opportunities to ask probing questions, which may limit the depth and accuracy of data obtained, subsequently limiting the

researcher's ability to identify and understand the problems faced by community members (Groves et al., 2011). Alternatively, interviews provide ample opportunities to ask probing questions and are not restricted to a fixed list of topics. Thus, interviews may be better suited to assess the perceptions and lived experiences of individuals within a community. Furthermore, interviews may be the first step in gathering relevant information regarding accessibility; subsequent studies could involve surveys and objective measurements. Given the potential disparities between objectively measured accessibility and perceived accessibility, it may be beneficial to conduct qualitative research, such as interviews, prior to quantitative research. Interviews can be used to gather detailed information about accessibility issues. From the participants' descriptions of accessibility issues, the most influential or important characteristics of an accessible environment may be identified. The results of the qualitative research can then be used to inform the items that should be included in objective measurements. This approach would be valid when wanting to learn more about transportation accessibility, but also about accessibility in general, especially for understudied groups such as vulnerable populations.

Individuals with a disability, advocates, researchers, and policymakers have dedicated attention to the area of transportation as it plays a central role in many individuals daily lives. Without adequate and accessible transportation individuals may be restricted from various services and activities outside of the home. To enhance the accessibility of public transportation and paratransit services, modifications to the physical environment, system, and attitudes are necessary (Bezyak et al., 2017). The physical environment may be modified to include assistive technology (Bezyak et al., 2017), such as visual and automated announcements, which can alert individuals with visual and hearing impairments of their stop. Additionally, increased training and knowledge of disability among employees may help remove physical and attitudinal barriers

(Bezyak et al., 2017). Doing so could subsequently reduce frustrating and embarrassing situations as drivers would be able to adequately and appropriately assist individuals with diverse abilities. Although attitudinal barriers are less easily removed than physical barriers, continuous education and advocacy may help reform negative attitudes (Bezyak et al., 2017). Barriers to public transportation and paratransit services may hinder active participation in the community among disadvantaged populations, such as individuals with a disability and OAs (Bezyak et al., 2017). The inability to participate in a variety of services, activities, and programs due to environmental barriers may produce feelings of confinement and social isolation. Thus, research needs to consider the accessibility of the locations linked to the reason for transportation, not just the mode of travel and the individuals involved.

Accessibility pertains to more than physical spaces; it involves providing appropriate access to information and resources, which in modern society often includes the Internet. Throughout the past 20 years, attention has been directed to the accessibility and usability of the World Wide Web (herein referred to as the Web). As a key source of information (Sullivan & Matson, 2000), the Web may be imperative to accessing various services and resources (Aizpurua et al., 2016). However, it appears to be common for websites and web designers to seemingly disregard issues of accessibility and usability (Aizpurua et al., 2016; Sullivan & Matson, 2000). As a result, individuals with a disability (e.g., someone who requires assistive technologies) may be excluded due to inaccessible information (Aizpurua et al., 2016). Web accessibility implements technical solutions to website design to improve accessibility for users; whereas, usability refers to user experience when interacting with a website (Brophy & Craven, 2007). Although individuals with and without a disability have reported problems navigating websites, individuals with visual impairments, hearing impairments, learning difficulties (e.g.,

dyslexia), and physical disabilities affecting hand dexterity have the most to gain from accessible web design (Brophy & Craven, 2007). Assistive technology, such as video magnifiers, electronic readers, and speech output systems, can help individuals navigate barriers to Web accessibility (Aizpurua et al., 2016; Brophy & Craven, 2007). However, assistive devices are only one part of the solution, as websites must incorporate accessible design to allow assistive technology to operate effectively (Brophy & Craven, 2007). Failure to provide an accessible design may result in pixelated text for individuals using magnification technologies or missed information for individuals using screen readers (Brophy & Craven, 2007).

To improve Web accessibility, Web designers need to be made aware of different user experiences, as well as have access to clear guidelines (Brophy & Craven, 2007). Examples of barriers to Web accessibility include difficulty navigating websites, poor content organization, inappropriate and unhelpful descriptive text, and poor use of language (Brophy & Craven, 2007). In the year 1999, the Web Accessibility Initiative released guidelines (i.e., Web Content Accessibility Guidelines) and checkpoints to aid web designers (Brophy & Craven, 2007; Sullivan & Matson, 2000). These guidelines encourage designers to incorporate alternative methods of obtaining information (e.g., providing descriptive text for images to enable the use of audio browsers) to make content available to diverse users (Sullivan & Matson, 2000). Despite the information provided within the guidelines and accessibility research, many Web designers are unaware or disregard suggestions to improve accessibility; they lack awareness of how diverse users interact with and navigate the Web (Aizpurua et al., 2016; Brophy & Craven, 2007). Consequently, individuals with a disability, in particular visual impairments, struggle to use web-based services and resources (Aizpurua et al., 2016; Brophy & Craven, 2007). Poor implementation of the guidelines may be partially explained by difficulties understanding the

guidelines (Brophy & Craven, 2007). A second version of the guidelines was released in the year 2008 to address clarity issues (Aizpurua et al., 2016; Brophy & Craven, 2007). However, the second version still has concerns, for example, it only addresses about half the barriers encountered by individuals who are blind (Aizpurua et al., 2016). While providing clear guidelines may be a good start, increased awareness regarding Web accessibility and its benefits is needed to develop an accessible and inclusive Web. Moreover, the target population of research examining Web accessibility has been individuals with a disability, specifically visual impairments (Aizpurua et al., 2016; Brophy & Craven, 2007), creating a gap in knowledge. The development of guidelines and research regarding the Web and individuals with a disability, should consider the perceptions of diverse populations to ensure their viewpoints are part of the development and improvement process.

While improvements to Web accessibility are ongoing, the year 2020 introduced an unexpected urgency. With the WHO announcing that the coronavirus (COVID-19) had reached pandemic levels, many cities in countries across the globe introduced shelter-in-place mandates (i.e., restrictions for interacting in-person; Son et al., 2021). Restricting in-person contact produced an increased need for individuals to use the Web for information, communication and socialization, work or school, recreation and physical activity, medical appointments, among many other activities that once occurred in-person (Seifert et al., 2021; Son et al., 2021). However, vulnerable populations, specifically OAs, are disproportionately excluded, as they may not be able to access or afford the Internet and necessary technologies (e.g., smartphones, tablets; Seifert et al., 2021; Son et al., 2021). Thus, OAs may be physically and digitally isolated posing a greater risk to their health and well-being (Seifert et al., 2021; Son et al., 2021). Efforts should be directed towards improving Web accessibility, thus better enabling OAs to obtain needed

information and remain physically and socially active, while maintaining safe physical distancing.

Although there has been research published throughout the past 30 years, the work related to accessibility is still in its infancy (Aizpurua et al., 2016; Brophy & Craven, 2007; Kovacs Burns & Gordon, 2010). This is reinforced and compounded by the demographic shift wherein a greater proportion of the population consists of OAs, a vulnerable population, who may have increasing concerns and needs for accessibility. Greater attention to accessibility may be paramount to the social, mental, and physical health of Canadians as the population continues to age (Novek & Menec, 2014). Age-related decline may result in reduced functional capacity, mobility limitations, social isolation, loneliness, and poor quality of life. However, OAs' well-being and quality of life may be strongly associated with their environment and not just their personal characteristics (e.g., functional decline; Rantakokko et al., 2010). In the presence of environmental barriers, individuals will likely experience reduced well-being and quality of life (Rantakokko et al., 2010). Environmental modifications may increase engagement in physical and social activities potentially counteracting age-related decline and its associated health consequences (Rantanen et al., 2012). To encourage participation in physical and social activities among OAs, researchers have been identifying barriers and potential methods to promote participation. A recurring theme in the literature is the presence of environmental barriers, as they have the potential to facilitate or restrict participation in activities – in other words, they may be an accessibility concern (Novek & Menec, 2014; Rantanen et al., 2012). Moreover, individuals with a mobility limitation or who were inactive reported the highest number of environmental barriers to physical activity (Deneau et al., 2019a; Eronen et al., 2014; Rantakokko et al., 2010). Fewer environmental barriers may relate to improved accessibility,

thus, increasing opportunities for diverse individuals to participate in various activities (Ephraim et al., 2006).

Usability

To facilitate physical activity among individuals with diverse abilities, typical recommendations include that service providers need to enhance the accessibility of their facilities and programs (Rimmer et al., 2016). While enhancing accessibility is a noteworthy suggestion, it fails to convey the importance of usability. Without distinguishing between the two terms (i.e., accessibility and usability), it may be assumed that accessibility accounts for usability, or that the terms are reciprocal. Accessibility and usability are often used interchangeably (Fänge & Iwarsson, 2003), when they should be considered distinct concepts that complement one another. Whereas accessibility refers to the interaction between an individual's functional capacity and the environment; usability refers to subjective evaluations of effectiveness, efficiency, and satisfaction (Iwarsson & Ståhl, 2003). Usability expands on accessibility by incorporating a fourth component: activity (i.e., a description of the activity to be performed within the given environment; Iwarsson & Ståhl, 2003). To illustrate, an individual with a disability may be able to access a recreational facility by physically entering and moving around or navigating the building (Calder & Mulligan, 2014). However, if they cannot safely and effectively use the equipment (i.e., perform the activity), then the facility would not be usable to the individual (Calder & Mulligan, 2014).

The subtle nuances between the two terms may only become evident to individuals when they experience reductions in their functional capacities (e.g., age-related decline, injuries; Fänge & Iwarsson, 2003). Hindered functional capacities can bring increased attention to environmental barriers. As individuals experience this heightened awareness, their subjective

evaluation of usability begins to match objective assessments of accessibility (Fänge & Iwarsson, 2003). For example, someone may find a building easy to navigate until they experience a mobility impairment (e.g., broken leg) that introduces barriers that they previously did not encounter. The absence of an accessible entrance (e.g., elevator or ramp) would be noted in an objective assessment of accessibility, but may not be noticed by an individual without a mobility impairment who can use the building. If the same individual breaks their leg reducing their functional capacity, their perceptions of usability may change to match the objective assessment, as they would no longer be able to access and use the building without an accessible entrance. Although there are scenarios in which people may experience a heightened awareness regarding their environments, whether temporary or more permanently, younger adults more easily adapt to environmental demands due to greater functional capacities; whereas, OAs rely on accommodating environments to compensate for their reduced functional capacity (Fänge & Iwarsson, 2003). As younger adults can easily adapt to their environments they are less likely to bring attention to any barriers to accessibility. However, the absence of perceived environmental barriers does not necessarily mean the environment is objectively accessible; it simply means the barriers did not exceed the individual's functional capacity. Once the functional capacity is no longer able to overcome the barriers, perceptions of usability may change to match accessibility (i.e., barriers are noticed).

The differences between accessibility and usability may become important when conducting environmental accessibility assessments. Accessibility is often measured according to norms and guidelines that address structural features of the environment put forth by policies, such as the ADA (Iwarsson & Ståhl, 2003; Rimmer et al., 2016); whereas, literature on measures of usability is sparse. The literature that is available suggests usability is more difficult to

measure than accessibility (Hornbæk, 2006), as it is largely dependent on users' subjective experiences and feelings when they perform specific activities (Rimmer et al., 2016). Some accessibility studies hint at usability but do not explicitly define or address it, potentially limiting the practical applicability of the research. Bringing attention to the issue of usability may require knowledge regarding subjective evaluations of the activities to be performed in the specific environment by the target population (Prellwitz & Skär, 2007). Due to the subjective nature of usability, it may be important to consult individuals from the target population to ascertain their experiences and perceptions. The individuals with the most expertise on barriers to accessibility may be the users themselves (Iwarsson & Ståhl, 2003), as they have lived experience pertaining to the problem at hand. However, the opinions of users are often excluded or not sought after. Thus, environments are constructed to meet objective standards of accessibility (i.e., norms and guidelines), but fail to consider users' perceptions and experiences (Iwarsson & Ståhl, 2003). Strictly objective measures may be unable to identify a comprehensive report of perceived barriers to accessibility and usability. Even though accessibility of the physical environment may be accurately determined by objective assessments, to acquire a comprehensive understanding of accessibility and usability the subjective evaluations among users should be obtained (Fänge & Iwarsson, 2003).

The existing literature measuring usability for the most part appears in disciplines such as human factors and ergonomics, and focuses on human-computer interactions and Web design (Hornbæk, 2006). To accommodate users with diverse abilities, Web designers attempt to enhance accessibility (Powlik & Karshmer, 2002). However, assuming accessibility equates to usability is an oversimplified perspective (Powlik & Karshmer, 2002). Although complying with Web accessibility guidelines is important, compliance with guidelines may not align with users'

perceptions of the website (Powlik & Karshmer, 2002). Poor Web usability has become a concern among the aging population, as positive experiences with the Web may improve OAs quality of life and well-being, subsequently allowing them to maintain independence (Becker, 2004; Rodrigues et al., 2018). OAs may use the Web to connect with friends and family, play games, and seek information, specifically health-related information (Rodrigues et al., 2018). Although a plethora of health resources are available online, their existence does not imply that they are usable (Becker, 2004). The needs of OAs are often overlooked in Web design as websites are often tailored to the needs of young adult users (Becker, 2004; Rodrigues et al., 2018). In particular, OAs may experience difficulties accessing and using online health resources due to age-related decline (i.e., impaired vision, hearing, dexterity, cognition) and poor web design (i.e., hard to read fonts, small text size, poor navigation; Becker, 2004). Guidelines have been provided by the National Institute on Aging and the National Library of Medicine to help Web designers develop age-friendly websites (Becker, 2004; Rodrigues et al., 2018). When implemented, the guidelines have resulted in improved Web design by removing barriers for individuals with impaired vision, hearing, and physical abilities (Becker, 2004). However, the majority of websites demonstrated low compliance with the age-friendly guidelines (Becker, 2004). Websites had small font sizes and required mouse technology, which would inhibit usability among individuals with visual and physical impairments (Becker, 2004). Although newer generations of OAs may struggle less with technology due to increased familiarity, they are still susceptible to age-related decline, which requires websites to be well-designed (e.g., age-friendly fonts, large text) to ensure usability (Rodrigues et al., 2018). Thus, further research may be needed to enhance the specificity of Web usability guidelines and improve awareness of OAs'

usability needs among Web designers (Becker, 2004), especially as technology evolves producing new barriers to usability (Rodrigues et al., 2018).

Advancements in Web operations, technology, and medicine afforded the emergence of novel healthcare modalities (e.g., eHealth and telemedicine; De Cola et al., 2020) and relevant aspects of usability. Telemedicine enables individuals to receive individualized care from any location, which may reduce burden on the healthcare system, as well as increase access to healthcare for vulnerable populations (e.g., OAs, individuals with chronic illnesses) and individuals living in rural areas (Becker, 2004; De Cola et al., 2020; Mitzner et al., 2017). However, the effectiveness and adoption of eHealth services need to consider usability for the target population (De Cola et al., 2020). Despite the importance, eHealth technologies are rarely assessed for usability (De Cola et al., 2020). This lack of consideration may be a result of the difficulty in assessing usability for eHealth technologies, especially when the target population is OAs. As a result of limited experience compounded by age-related decline, OAs often struggle with new technology (Becker, 2004; De Cola et al., 2020). However, eHealth technologies may be particularly beneficial for OAs (Becker, 2004), as they often struggle with physically accessing healthcare services or rely on caregivers (Mitzner et al., 2017). There is evidence to suggest frail OAs expressed high satisfaction with telemedicine that used video-conferencing software (De Cola et al., 2020). Although some usability issues were reported (e.g., complexity, perceived uselessness), most of the OAs appreciated the availability, courtesy, and attention of the health professionals when using the teleassistance service (De Cola et al., 2020). Given the heterogeneity of the OA population, more research regarding usability is warranted to ensure OAs with diverse needs are accommodated.

To improve public health and community participation, usability research has begun to examine the role of useable outdoor spaces, as they can provide individuals across the lifespan opportunities to engage in physical and social activities (Perry et al., 2018; Prellwitz & Skär, 2007). Specifically, playgrounds and parks are important for the physical and social development of all children (Prellwitz & Skär, 2007). Although legislation has resulted in improved accessibility, to develop parks and playgrounds that are truly inclusive more attention is needed regarding usability (Prellwitz & Skär, 2007). Parks and playgrounds are often not useable by all children discriminating against children with a disability (Prellwitz & Skär, 2007). Accessibility should be considered a precursor to usability, rather than the only factor affecting participation in outdoor activities among children with a disability. If an environment is not useable, accessibility may be rendered unimportant or ineffective at increasing participation in outdoor activities. Several barriers to usability have been identified in the design, environment, and safety of playgrounds and parks, including issues with accessible parking, path surfaces, usability of play equipment, fencing, and lighting (Perry et al., 2018). As children with a disability continue to be excluded from parks and playgrounds despite improved accessibility, achieving the minimum standards for accessibility may not be sufficient for developing inclusive environments (Perry et al., 2018). To gain societal recognition of the importance of usability, knowledge regarding functional limitations, environmental accessibility, and users' perceptions of the activities are needed (Prellwitz & Skär, 2007). Moreover, individuals of all ages engage in physical activity outside, extending the importance of useable environments beyond just children. Future research should expand to study usability among understudied and vulnerable populations, as well as other environments that may facilitate physical and social development (e.g., recreational facilities, gyms, senior centres).

Although some accessibility studies briefly discuss usability, it is frequently overlooked in the literature, thus, creating considerable gaps in knowledge. Particularly, usability among OAs and recreational facilities is understudied. Recreational facilities, such as senior centres may facilitate engagement in physical and social activities among OAs improving their overall health and well-being. Despite the positive effects OAs may experience by participating in senior centre activities (e.g., physical activities, personal connections or social leisure activities, skill development), the physical buildings and spaces are the focus of little accessibility and usability research. In a study by Arbour-Nicitopoulos & Ginis (2011), it was revealed that universal accessibility (i.e., structural and attitudinal access) of fitness and recreational facilities was low. Although overall accessibility scores were low, facilities owned and funded by the municipality had greater accessibility than non-profit and commercial facilities (Arbour-Nicitopoulos & Ginis, 2011). Many senior centres are privately owned and receive little-to-no public funding. Thus, senior centres would be considered non-profit or commercial facilities, as such it may be expected that they would have poor accessibility. As senior centres offer adapted programs for OAs, which can be difficult to find, limited accessibility may drastically hinder usability of the programs. If OAs cannot access the facility, then adapted programs may be rendered useless (Arbour-Nicitopoulos & Ginis, 2011). Future studies should explore usability in various domains to help promote accessible and useable environments for all individuals. As accessibility precedes usability (Iwarsson & Ståhl, 2003), understanding perceptions of accessibility within senior centres should be completed before assessing usability. Thus, exploring perceptions of usability is beyond the scope of this Master's thesis. However, it may be expected that barriers to accessibility and usability co-exist within senior centres.

Accessibility, Usability, and Functionality

Accessibility and usability are closely connected concepts (Iwarsson & Ståhl, 2003).

Although they are distinct from one another (Iwarsson & Ståhl, 2003), it is difficult to completely isolate just accessibility or just usability. Due to their close connection, much of the literature on accessibility contains results that may be pertinent to usability. However, few studies explicitly define accessibility and usability (Iwarsson & Ståhl, 2003). To clearly differentiate between the two concepts, it is important to understand functionality, as well as the relationship that activity demands have with person environment (PE) interactions.

Functionality may be assessed to determine the extent to which the environment or object is able to perform desired and intended operations (Bertot et al., 2006; i.e., does the object/environment function properly). Assessments of accessibility determine the extent to which an environment provides diverse individuals the ability to interact with the object/environment (Bertot et al., 2006; i.e., does the object/environment meet the needs/abilities of a diversity of individuals). Usability assessments determine the extent to which individuals can comprehend and efficiently and effectively use the object/environment (Bertot et al., 2006; i.e., is the object/environment satisfying to use across all individuals). Used together, assessments of functionality, accessibility, and usability can provide a comprehensive understanding of the ability of an environment or object to meet the needs of diverse individuals (Bertot et al., 2006).

The degree to which something is accessible and useable is dependent on the compatibility between human function (i.e., an individual's skills and abilities) and the physical form (i.e., the design of an object; Sanford, 2012). The interactions between human function and physical form exert demand to afford or inhibit engagement in a variety of activities (Sanford,

2012). This concept is referred to as functionality (i.e., usability and inclusivity of the physical form; Sanford, 2012). The design of an object cannot independently exert demand; an individual must be present and interact with the object to produce demand and determine the functionality of the physical form (Sanford, 2012). The magnitude of demand, resulting from interactions between an individual and the physical form, corresponds with the level of influence the environment has on functionality (Sanford, 2012). Minimizing demand across diverse abilities will improve functionality of the physical form (Sanford, 2012). For example, doors that are made of a heavy material (the physical form) may be replaced with a lighter material to improve the functionality of opening a door. By installing lighter doors individuals who may have reduced strength (e.g., frail OAs, individuals who use mobility devices, or individuals who have upper extremity impairments) will be afforded the opportunity to engage in the activities hosted within the environment, as the demand produced when the individual interacts with the physical form (i.e., the door) would be reduced. Alternatively, installing an automatic door opener could eliminate the demand imposed by the physical form, as the individual would no longer need to interact with the door improving its functionality. Thus, functionality can be improved by altering the physical form (i.e., door) or characteristics within the environment (i.e., building) to complement an individual's abilities (i.e., human function).

Similar to accessibility, the concept of functionality is grounded in PE interactions that link physical form with human behaviour (Sanford, 2012). The degree of fit, which may be conceptualized as the balance between an individual's abilities and the demands of the environment, will influence functionality to facilitate (balanced, high functionality) or restrict (imbalance, low functionality) an individual's engagement with various activities and people (Sanford, 2012). When PE interactions are conceptualized in this manner, they are reflective of

the environmental press model. PE fit, which underpins accessibility and functionality, is derived from the environmental press model (also known as the competence-press model; Iwarsson & Ståhl, 2003; Sanford, 2012; Slaug et al., 2015). When an environment is conducive to an individual's abilities, it may be construed as having fit. The form has functionality enabling the environment to facilitate human function. The environmental press model posits behaviour as an outcome of the interactions between an individual's competence (i.e., skills and abilities) and environmental demand (i.e., press). Thus, engagement in activity may be perceived as an outcome of fit between an individual and their environment facilitated by designs that exhibit high functionality (Sanford, 2012). Accessible environments may be produced through design strategies, such as universal design, that prioritize functionality for a broad spectrum of individuals. Although previous research has clearly illustrated the influence PE fit has on human behaviour, the environmental press model and accessibility are restricted to personal and environmental factors; they do not explicitly account for demands imposed by activities or tasks. This is where accessibility and usability become distinct, as usability expands on accessibility (i.e., personal, environmental, comparison) to incorporate a fourth component – activity (Iwarsson & Ståhl, 2003).

In terms of functioning and performance, activity is a critical aspect of human behaviour (Iwarsson & Ståhl, 2003). Activity, as it relates to usability, may be conceived of as a description of the activities that an individual will perform in a given environment (Iwarsson & Ståhl, 2003). The activity with which an individual is engaging produces demands, which can interact with their abilities and the environment to further constrain or facilitate functioning and performance (Iwarsson & Ståhl, 2003; Law et al., 1996; Sanford, 2012). The addition of activity may be representative of the person environment occupation (PEO) model. Akin to usability and

accessibility, the PEO model is an adaptation of the environmental press model that encompasses occupation (i.e., groups of tasks and activities in which an individual will engage to satisfy their needs for self-maintenance, expression, and fulfillment across the lifespan; Law et al., 1996; Sanford, 2012). Unlike the environmental press model and accessibility, which focus on demand imposed by the environment or physical form, the PEO model and usability account for demand imposed on an individual by the environment and a specified activity (Sanford, 2012). According to the PEO model, the outcome of interactions between a person, the environment, and an occupation is occupational performance (Law et al., 1996; Sanford, 2012). Greater compatibility among an individual, the demands of the environment, and the occupation with which they will engage improves occupational performance (Law et al., 1996). Environments and activities that are designed to minimize demand and complement diverse abilities may foster perceptions of satisfying, efficient, and effective activity performance among diverse individuals, thereby producing a useable environment.

In relation to developing accessible and useable environments, functionality (i.e., usability and inclusivity of the physical form; Sanford, 2012) may be an important concept to consider, as it brings into focus the role of design in PE interactions. Design attributes can mediate PE fit, subsequently influencing functionality (Sanford, 2012). Everyday design primarily accommodates individuals who have moderate to high levels of ability and fall within the 'norm' for various anthropometric characteristics (e.g., height; Sanford, 2012). However, individuals who fall within the norm for one characteristic (e.g., height) may not for other, potentially more influential, characteristics (e.g., strength, vision, hearing, perception; Sanford, 2012). Consequently, a portion of the population, particularly individuals with low levels of ability (e.g., OAs, individuals with a disability, children), are excluded from engaging in a

variety of activities by everyday design (Sanford, 2012). Accessible and useable environments should be designed to minimize demand and enhance functionality for all individuals, thus, fostering greater inclusion and participation among otherwise excluded populations (e.g., OAs, individuals with a disability). As this study focuses on OAs, a population that often experiences obstacles to community participation and resources, an intended outcome (i.e., future objective) is to develop solutions to barriers at the senior centre and inform policies and procedures that facilitate access among OAs by enhancing functionality and optimizing PE interactions. Although functionality will not be directly assessed, it will be considered when providing the senior centre with potential solutions to the barriers experienced by OAs.

Person-Environment (PE) Fit

Another concept that has gained attention, in relation to accessibility and usability, is universal design (Prellwitz & Skär, 2007). An approach to design that aims to develop products and building features that can be used by everyone (Iwarsson & Ståhl, 2003), universal design is part of a broader social movement aimed at creating places that anyone, regardless of disability or impairment, can easily access and use (Imrie, 2012; Sanford, 2012). Seven principles have been developed to facilitate the application of universal design: equitable use, flexibility in use, simple and intuitive use, perceptible information, tolerance for error, low physical effort, and size and space for approach and use (Iwarsson & Ståhl, 2003). Through the application of the seven principles, universal design aims to prevent discriminatory design that draws attention to disability in a stigmatizing manner (Imrie, 2012; Sanford, 2012). Overall, the intention of universal design is to change societal attitudes and promote equity, democracy, and citizenship (Iwarsson & Ståhl, 2003). The objective is to design societies that are inclusive and facilitate access for everyone (Imrie, 2012).

To more fully understand the concept of universal design, it is important to define the concept of built environment and understand the impact it can have on human behaviour. The built environment refers to human-made structures (i.e., the physical environment), which may positively or negatively influence human behaviour (Brownson et al., 2009; Handy et al., 2002; Gray et al., 2012). The built environment encompasses urban design (i.e., the arrangement, functionality, and appearance of physical elements), land use (i.e., the distribution of various activities), and transportation (i.e., the physical infrastructure of roads, sidewalks, railways, biking and walking paths; Handy et al., 2002). To increase physical activity behaviours within a neighbourhood or community, pedestrian-oriented designs may be applied to the built environment (Handy et al., 2002). By designing a built environment that has many sidewalks, paths, and a variety of activities (e.g., grocery stores, restaurants, recreational facilities) within a short distance, active transport (e.g., walking and biking) may increase (Handy et al., 2002). Modifying the built environment can enhance the attractiveness and feasibility of active transport by reducing physical barriers (Handy et al., 2002). The built environment interacts with an individual's functional capacity to restrict or facilitate access to various resources and activities (Carr et al., 2013; Gray et al., 2012; Slaug et al., 2015) influencing human behaviour in what is known as PE fit.

Broadly defined, PE fit occurs when the characteristics of an individual are well-matched to a work environment (Kristof-Brown et al., 2005). The work environment does not specifically relate to an occupational setting, but rather to the environment within which tasks are performed. There are several types of PE fit that have been explored in management research, such as person-vocation fit, person-organization fit, person-job fit, person-group fit, and person-supervisor fit (Kristof-Brown et al., 2005). Regardless of the environment under study, the basis

for fit is an individual's characteristics (e.g., skills, preferences, needs, values, etc.; Kristof-Brown et al., 2005). The primary objective of all types of fit is to assess how various aspects of the environment influence individuals' attitudes and behaviours (Kristof-Brown et al., 2005). In addition to identifying the target individual/group and environment, research needs to consider what attributes will be examined (i.e., abilities-demands or needs-supplies) and how they will be analyzed (i.e., supplementary or complementary).

Two approaches to fit may be implemented depending on the attributes of interest: abilities-demands or needs-supplies (Kristof-Brown et al., 2005; Tsaur et al., 2014). Abilities-demands fit refers to the compatibility between an individual's knowledge, skills, abilities and the demands of the task or organization, such as time and effort requirements; whereas, needs-supplies refers to the compatibility between an individual's needs, desires, preferences and their alignment with the task they perform (Kristof-Brown et al., 2005; Tsaur et al., 2014). The degree of PE fit produces a positive (good fit) or negative outcome (poor fit), referred to as the fit-outcome relationship (Kristof-Brown et al., 2005). To illustrate, a study examining person-organization fit may adopt a needs-supplies approach to examine employee satisfaction (i.e., the fit-outcome). Level of satisfaction is influenced by the compatibility, or lack thereof, between an individual's needs (i.e., person) and organizational supplies, such as financial, physical, psychological resources, and growth opportunities (i.e., environment; Kristof-Brown et al., 2005; Tsaur et al., 2014). An organization that provides employees with physical and psychological support, as well as opportunities to develop, may complement the employee's needs and values, thereby increasing satisfaction with the organization (i.e., positive fit-outcome relationship). However, if an employee feels they are underpaid, overworked, and lack the potential to advance through the company, this would be a negative fit-outcome relationship. To more fully appraise

and optimize the fit-outcome relationship, determining the way in which fit will be categorized may prove beneficial.

During analysis, fit may be categorized as supplementary or complementary (Kristof-Brown et al., 2005). Supplementary fit refers to similarities between an individual and their environment; whereas, complementary fit encompasses abilities-demands fit and needs-supplies fit (Kristof-Brown et al., 2005). When an individual's perspectives are validated by peers, supervisors, organizations, or other environments, supplementary fit is achieved (Kristof-Brown et al., 2005). For example, an organization that emphasizes the importance of physical and psychological health (e.g., organizes events for physical activity, provides free counselling) may attract individuals who share the same perspective, as they perceive similarities between themselves and the organization. The validation of an individual's perspectives, values, and beliefs can positively influence their attitudes and behaviours towards the organization (Kristof-Brown et al., 2005). By validating the individual's beliefs and providing opportunities to improve physical and mental health, the organization may encourage individuals to engage in healthy behaviours potentially increasing job satisfaction. Alternatively, complementary fit is achieved when the characteristics of an individual fill a gap in the environment or the characteristics of the environment compensate for a gap in an individual's abilities (Kristof-Brown, 2005). For example, in the context of person-job fit, excellent time management skills may be required to fill the needs of a job. When an employee who has sufficient time management skills is hired to complete that job, the individual's abilities may be perceived as fulfilling or complementing the demands of the job. A well-balanced PE fit (e.g., an individual's skills meet job demands) should result in positive behavioural outcomes and attitudes (e.g., enjoyment at work, increased productivity and satisfaction; Kristof-Brown et al., 2005). If PE fit

is unbalanced, attitudes and performance will suffer potentially leading to poor performance by the employee and high turnover in the workplace (Kristof-Brown et al., 2005). PE fit research examining the work environment has clearly demonstrated the influence environments can have on employees' attitudes and behaviours. The conceptualization and operationalization of PE fit in management research has provided the foundational knowledge needed to explore PE fit in domains other than the workplace. Optimizing fit in various environments (e.g., transportation, recreational facilities, medical buildings, parks and playgrounds) could facilitate healthier communities.

Beyond management research, PE fit has been applied in a community context to explore well-being and satisfaction with residential environments (Kahana et al., 2003; Kristof-Brown et al., 2005; Tsaur et al., 2014). While research examining residential environments does not differentiate between different types of PE fit, the basic premise remains the same - to examine the relationship between an individual's characteristics and the characteristics or demands of their environment. Features of the residential environment that may influence satisfaction range from the individual's local environment (e.g., apartment or living unit) to the broader environment (e.g., building, neighbourhood, community; Kahana et al., 2003). Problems arise when there is a discrepancy between an individual's personal preferences or needs and environmental supplies (Kahana et al., 2003). For example, an individual may rely on public transportation to carry out daily activities (e.g., commute to work), but if the transit system runs infrequently, is unreliable, or is unavailable, then a mismatch occurs between the individual's needs and the environmental supplies. Consequently, that residential environment would render poor PE fit producing dissatisfaction and potentially reducing well-being for the individual. Although examining the fit of whole communities and residential environments is important, it

may be difficult to influence change on such a broad level. Focusing on achieving PE fit in specific settings or buildings that are valuable to individuals or groups, such as churches, parks and playgrounds, schools, or recreational facilities, may more effectively improve PE fit within a community.

The adaptable nature of PE fit derived from the variations used in management research (e.g., person-organization fit, person-job fit, person-supervisor fit) and studies examining residential environments has allowed the concept of PE fit to be extended to outdoor recreational settings (Tsaur et al., 2012; Tsaur et al., 2014). In at least one instance, PE fit was conceptualized as recreationist-environment (RE) fit; wherein recreationist assumes the person component of PE fit referring to the individuals who use recreational facilities and the physical recreational setting or recreational managers fill the environment component (Tsaur et al., 2014). Three categories of fit were proposed: supplementary (i.e., similarity between recreationists' and recreation managers' values), requirements-abilities (i.e., demands-abilities; compatibility between a recreationist's capabilities and environmental characteristics), and needs-supplies (i.e., compatibility between the recreationist's needs and supplies provided by the recreational setting; Tsaur et al., 2014). Ensuring sufficient fit in recreational settings may be important to increase physical activity behaviours and reduce health consequences associated with physical inactivity, such as chronic diseases and premature death (Kärmeniemi et al., 2018). When recreationists' abilities matched the demands of the recreational activities enabling them to optimize the use of their skills, a good fit between abilities and demands was perceived (Tsaur et al., 2014). A balanced RE fit produced feelings of satisfaction and positive experiences with other recreationists and activities among participants, leading to recurrent visits to the recreational facility (Tsaur et al., 2014). Therefore, enhancing PE fit for outdoor recreational settings encouraged individuals to engage in greater

social and physical activity, which may improve their overall health and well-being. The adaptation of RE fit has further demonstrated that PE fit can be extended to a variety of environmental contexts, as well as to specific groups (e.g., recreationists). This may be particularly important for behaviour change interventions aimed at improving population health, as well as for strategies aimed at improving the well-being of vulnerable groups, such as children, OAs, and individuals with a disability.

As rooted in the management research, and from studies involving community and outdoor recreational settings, it has been demonstrated that environments can influence the behaviours and attitudes of individuals, thus emphasizing the importance of PE fit (Tsaour et al., 2012). The influence of PE fit may have increased consequences for vulnerable populations (e.g., individuals with a disability and OAs) as their reduced abilities may make them more susceptible to barriers within the environment. Considering the impact of the environment on behaviours and activities, it may be important to examine PE fit and its role in facilitating or restricting accessibility among OAs. The concept of accessibility closely mirrors complementary fit, more specifically demands-abilities fit, and thus, is underpinned by PE fit (aka the competence-press model or ecological theory of aging; Slaug et al., 2015). In the context of accessibility, PE fit is defined as the match between an individual's functional capacity or capabilities (i.e., the person's abilities) and the demand imposed by the design of the environment (i.e., environmental demands or requirements; Slaug et al., 2015). Individuals with lower functional capacities are more susceptible to environmental demands; whereas, individuals with greater functional capacities can withstand greater environmental demand (Lawton & Nahemow, 1973, as cited in Iwarsson, 2005; Slaug et al., 2015). This relationship between an individual's functional capacity and environmental demands is known as the environmental docility hypothesis and may be of

concern to vulnerable populations. Moderate-to-high environmental demand may pose a threat to vulnerable populations, such as OAs, as they often have low functional capacities which prevent them from overcoming barriers in their environment. The inability to overcome environmental demand may subsequently restrict behaviours and activities, such as engaging in physical activity, grocery shopping, and attending medical appointments. In other words, whether or not an individual performs a task or activity may be dependent on the balance between that individual's functional capacity and the demands of the built environment (Iwarsson, 2005). Unless the individual can increase their functional capacity or the environment can be modified to achieve a balanced PE fit, vulnerable individuals may be restricted (unnecessarily and unintentionally) from engaging in a variety of activities (Iwarsson, 2005).

Traditionally, a balanced PE fit was achieved by modifying the individual's functional capacity through biomedical approaches (Carr et al., 2013), which interpret inaccessibility as a personal problem resulting from an individual's disability (Scullion, 2010). Individualistic perspectives of disability are derived from the medical model, which refers to disability as a deficiency that limits an individual's ability to perform various activities (Donoghue, 2003). The medical model places undue emphasis on clinical diagnoses (Brisenden, 1986), focusing on disadvantage in terms of an individual's impairments and limited abilities (Ephraim et al., 2006; Hyde, 2000); treating disability akin to illness or disease (Scullion, 2010). From medicalized perspectives, it may be suggested that it is the responsibility of an individual to overcome or fix their disability. Individuals with a disability are expected to seek assistance from health professionals to relieve them of their undesirable situations and 'flaws' (Brisenden, 1986; Donoghue, 2003). Such perspectives reinforce barriers to physical and social participation as a personal problem resulting from an individual's limited functional capacity. Employing the

medical model to determine treatment and quality of life for the individual heavily emphasizes their inabilities, rather than their abilities (Brisenden, 1986). Interventions derived from the medical model aim to rehabilitate individuals to ‘normal’ by ‘curing’ them of their disability (Brisenden, 1986; Reindal, 2000). In the cases where rehabilitation may not be possible, doctors may recommend hospitalization and institutionalization, or worse (Brisenden, 1986). Frequent medical treatment and hospitalization can be debilitating, discriminatory, and may negatively impact the individual’s quality of life (Brisenden, 1986; Reindal, 2000). Focusing on the individual’s functional capacity to improve PE fit suggests that the individual needs to change to gain access to the physical environment (Carr et al., 2013). Through the lens of the medical model, if change cannot be accomplished, then the individual’s life may be perceived as not worth living (Reindal, 2000). Although there is extensive literature in the area of disability studies that advocates for the adoption of more inclusive and accepting perspectives of disability, the medical model remains one of the most popular models and therefore still informs many programs and policies today.

Despite the adverse messages promoted by the medical model, it continues to be upheld throughout society (Donoghue, 2003). The dominance of the medical model has resulted in resources being dedicated to impairment-related research and interventions, rather than to social change and inclusion (Reindal, 2000). Although institutionalization and hospitalization are less popular interventions in modern time, rehabilitation is still many professionals first solution to accessibility issues, in particular physical activity has become a popular method of rehabilitation among health professionals. Several campaigns, such as the Canadian 24-Hour Movement Guidelines (Canadian Society for Exercise Physiology [CSEP], 2020), the Canadian Physical Activity Guidelines (CSEP, 2011; Tremblay et al., 2011), and the Physical Activity Guidelines

for Americans (US Department of Health and Human Services, 2018), have been developed to promote physical activity in an attempt to improve functional capacity. For example, the Canadian 24-Hour Movement Guidelines provide details such as engaging in 150 minutes of moderate-to-vigorous aerobic exercise, at least two days of muscle strengthening activities per week, as well as several hours of light physical activities (e.g., standing; CSEP, 2020). Individuals who abide by the guidelines may experience many benefits, such as improved cognitive functioning and mental health (Tam-Seto et al., 2016), increased independence and mobility, better quality of life, and increased longevity (Bornstein & Davis, 2014; Tremblay et al., 2011). However, approximately only 3.5% of adults in the United States of America (Bornstein & Davis, 2014) and 15% of adults in Canada achieve the recommended physical activity guidelines (Colley et al., 2011). Of all age groups, OAs demonstrate the lowest adherence to physical activity guidelines (de Rezende et al., 2014; Du et al., 2019). A potential reason for this may be that the environment is not accessible. If individuals cannot access gyms, outdoor spaces, online information, or transportation due to environmental barriers, their ability to know about and act on physical activity guidelines may be drastically inhibited. Moreover, individually-oriented interventions for health promotion and disease prevention, such as physical activity guidelines, may support the victim-blaming ideology promoted by the medical model (McLeroy et al., 1988). Interventions targeting functional capacity places responsibility on the individual (Carr et al., 2013), even as their health declines and it becomes more difficult for them to make behaviour changes (Iwarsson, 2005; McLeroy et al., 1988). Rather than using physical activity, environmental modifications should be made to achieve a balanced PE fit (Carr et al., 2013). As accessibility issues often arise from declining functional capacities, preventative interventions should focus on the environmental component of PE fit (Iwarsson, 2005).

Environmental barriers (physical, attitudinal, and policy) are considered to have a greater impact on activity limitations, participation restrictions, and worsening health than individuals' functional capacities (Whiteneck et al., 2004). Consequently, research has begun to target the removal of environmental barriers (physical and attitudinal) for improving PE fit – leading towards revised (i.e., improved) policies. This perspective employs aspects of the social model of disability and critical gerontology. While there is a large body of research related to critical theory, it is beyond the scope of this thesis to discuss it at length. In general, the social model of disability and critical gerontology acknowledges that a disability (e.g., amputation, blindness, deafness, etc.) cannot (and do not need to) be fixed; disability and old age are viewed as social, political, and environmental constructs (Turner, 2004; Stamou et al., 2016; van Dyk, 2014). Rather than asking individuals to change something that might not be 'curable' (e.g., a disability, the aging process), environmental factors that impede an individual's abilities should be changed to improve PE fit (Ephraim et al., 2006; Whiteneck et al., 2004). Universal design principles can be integrated with accessibility and usability features to produce built environments that are barrier free and therefore accessible to individuals with diverse functional capacities (Carr et al., 2013; Imrie, 2012; Iwarsson & Ståhl, 2003). Environments that can be used by everyone afford individuals with diverse abilities more opportunities to engage in activities, thus enhancing accessibility (Iwarsson & Ståhl, 2003). The more environmental barriers are removed, the more opportunities an individual with a disability will have to participate in social, physical, employment, and educational activities (Ephraim et al., 2006).

It is expected that accessibility issues will become increasingly important, as the population continues to age (Slaug et al., 2015). However, a paucity of PE fit research has specifically examined OAs (Kahana et al., 2003). The OA population typically has lower

functional capacities causing OAs to expend a significant amount of energy trying to overcome barriers in the built environment (Iwarsson, 2005). As individuals progress through the aging process, many will experience age-related decline (i.e., reduced functional capacities) and increased risk of morbidity (i.e., disease and disability; Chodzko-Zajko et al., 2009; Slaug et al., 2015). The personal component of PE fit is not stagnant; the abilities of individuals will fluctuate throughout the lifespan (Afacan & Erbug, 1979). As the frailty of an individual increases, the demands imposed by their environments will be amplified (Fänge & Iwarsson, 2003; Iwarsson & Ståhl, 2003) creating a greater number of barriers and further challenging an individual's already declining abilities (Iwarsson, 2005). When individuals are unable to overcome environmental demand, they become at risk for isolation, exclusion, and further reductions in their abilities, once again starting the deleterious cycle. While individuals' abilities will change across the lifespan, their desire to access and use built environments in an efficient, effective, and satisfying manner will not (Afacan & Erbug, 1979). Using interventions that target the individual's abilities will only render the aging population more disabled, as the services and resources needed by OAs will continue to neglect barriers in the built environment (Reindal, 2000). To ensure a balanced PE fit across the lifespan, environments should be designed to accommodate diverse abilities. Even minor improvements within the environment can significantly influence frail individuals' activity levels (Iwarsson, 2005).

There is evidence to suggest that individuals are more inclined to use recreational facilities that are accessible, provide a supportive environment (Giles-Corti & Donovan, 2002), and are perceived as irreplaceable (Tsaur et al., 2014). Constructing recreational facilities that uphold the principles of universal design may result in increased physical and social activity among vulnerable populations (e.g., OAs), simultaneously improving personal and

environmental components of PE fit. However, a dearth of research has examined PE fit in recreational and leisure contexts (Tsaour et al., 2012), especially pertaining to OAs. Instruments that have been used to examine the built environment for walking, biking, and recreation typically focus on general topics such as street accessibility (e.g., curb cuts and height), amenities (e.g., accessible bathrooms, fountains, sinks), signage, and ADA guidelines (Gray et al., 2012). Some barriers to buildings that may be applicable to recreational facilities include steep stairs, heavy doors, and icy entrances (Novek & Menec, 2014). As the instruments are used to examine the general built environment, they often fail to consider more detailed aspects of a building's interior, such as equipment that may be present in recreational facilities, or the perceptions of individuals who use the facility. It is through more detailed appraisals and qualitative methods (e.g., interviews, focus groups) that subtle barriers, such as negative attitudes among employees, may be revealed. Thus, there is a need for research to evaluate PE fit within recreational settings from the perspective of vulnerable individuals, such as OAs.

Evaluating the accessibility of fitness and recreational facilities would provide useful information to users, health professionals, and facility owners (Calder & Mulligan, 2014). Vulnerable populations such as individuals with a disability and OAs would have access to information that can help inform their decisions regarding the facility that best meets their needs (Calder & Mulligan, 2014). Health professionals would gain knowledge that could be used to guide patients towards a facility that fits their unique capabilities (Calder & Mulligan, 2014; Dauenhauer et al., 2006). Owners of recreational facilities could use evaluations to determine compliance with accessibility guidelines and to identify areas of improvement (Calder & Mulligan, 2014). Creating environments that meet the needs and abilities of a diversity of individuals (i.e., are accessible) will improve PE fit potentially increasing use of the environment

(Tsaour et al., 2014). By enabling greater access to recreational facilities (e.g., gyms, recreational centres, senior centres), an individual may be more inclined to engage with and use the services offered, thus increasing physical activity, and potentially improving their functional capacities.

Sedentary Behaviour & Physical Activity

Defined as a lifestyle that requires minimal physical activity (Chodzko-Zajko et al., 2009) and prolonged time spent sitting or lying down (Owen et al., 2011), sedentary living has become a major public health concern. Sedentary lifestyles have been associated with adverse health outcomes, such as an increased risk of chronic conditions (e.g., obesity, metabolic syndrome), premature death, and all-cause mortality (de Rezende et al., 2014; Kärmeniemi et al., 2018). Home environments, leisure time, transportation, and occupation have been identified as four domains associated with extensive amounts of time spent in a sedentary state (Owen et al., 2011). As a result of technological advances, a larger proportion of leisure time and time at home is spent engaged in sedentary activities, such as watching television, playing video games, and using computers, tablets, or smartphones (Owen et al., 2011; Prince et al., 2020). Reliance on automobiles has led to increased time spent in passive transport (Prince et al., 2020). Additionally, occupations are becoming increasingly screen-based requiring prolonged sitting at work (Owen et al., 2011). Overall, sedentary living is encouraged through limited choices, disincentives, and structural or financial barriers (Chodzko-Zajko et al., 2009). In an effort to reduce sedentary living and improve public health, several initiatives have been developed to encourage physical activity (Lord et al., 2011).

The development of physical activity and sedentary behaviour guidelines are examples of public health initiatives to combat sedentary living. To achieve optimal health benefits the Canadian 24-hour Movement Guidelines and the Physical Activity Guidelines for Americans

recommend 150 minutes of moderate-to-vigorous aerobic exercise per week for adults (CSEP, 2020; US Department of Health and Human Services, 2018). Individuals who are primarily sedentary, should gradually increase their physical activity to eventually meet the guidelines while avoiding injury (Trembaly et al., 2011). Sedentary behaviour guidelines recommend eight hours or less of sedentary behaviour per day with no more than three hours engaged in recreational screen use (CSEP, 2020). Any progress towards achieving the physical activity and sedentary behaviour guidelines can result in improved health (CSEP, 2020; Trembaly et al., 2011). By replacing sedentary activities with active ones, individuals can yield greater health benefits than simply increasing physical activity or reducing sedentary behaviour (CSEP, 2020). Adhering to the physical activity and sedentary behaviour guidelines can lower risk of adverse weight gain, chronic diseases (e.g., type 2 diabetes, obesity, cardiovascular disease, cancer), mental illness (e.g., anxiety, depression), cognitive impairments (e.g., dementia), and premature death (Chodzko-Zajko et al., 2009; CSEP, 2020). Moreover, increased physical activity can improve quality of life, cognitive functioning, bone health, and physical function (Chodzko-Zajko et al., 2009; CSEP, 2020).

While increased physical activity and reduced sedentary behaviour is beneficial for everyone in general, OAs may have more to gain from adhering to the guidelines than their younger counterparts. Age is a primary risk factor for most chronic degenerative diseases (Chodzko-Zajko et al., 2009). Physiological changes associated with the aging process, such as increased fat deposition and sarcopenia (i.e., loss of muscle mass and strength), alter body composition and reduce functional capacity (Chodzko-Zajko et al., 2009). Consequently, OAs have to expend greater energy in comparison to their younger counterparts to complete various activities (Chodzko-Zajko et al., 2009). In other words, OAs have a poorer metabolic economy

than younger adults. For example, playing baseball may be more taxing for OAs due to reduced strength, speed, and reaction time, among other declining attributes. The demand of playing baseball may be further amplified for OAs who have begun to experience age-related physiological changes, have been affected by one or more chronic diseases, or have been primarily sedentary. However, not all OAs may perceive playing baseball to be taxing. OAs who have regularly engaged in physical activity or have been involved in training (e.g., elite athletes, Masters athletes, senior Olympians) will likely experience less demand than their inactive counterparts. Although the biological aging process cannot be prevented, consistent physical activity can minimize the health risks associated with aging and sedentary lifestyles. Furthermore, what may seem more impactful to OAs is that consistent physical activity can improve, or at least maintain, physical functioning and performance of daily activities, thus, preserving independence (Chodzko-Zajko et al., 2009).

Despite widespread knowledge regarding the benefits, OAs continue to engage in low levels of physical activity (Crombie et al., 2004) comprising the most sedentary and physically inactive age group (de Rezende et al., 2014). Although there are OAs who are regularly active and elite athletes, they account for a small proportion of OAs (Dionigi, 2017). Physical functioning among OAs operates on a continuum ranging from needing ongoing assistance (i.e., does not engage in physical activity) to athlete (i.e., engages in physical activity most days; International Council on Active Aging [ICAA], n.d.). To more effectively encourage OAs across the continuum to partake in physical activity, their perspectives should be considered during the development of public health strategies (Tam-Seto et al., 2016). In addition to providing general guidelines, initiatives should promote and facilitate physical activities that may be of greater interest to OAs (e.g., bowling or dancing; Crombie et al., 2004; Deneau, 2019a). Typically,

physical activity is associated with strenuous exercise, such as running or lifting weights, which the majority of OAs may perceive to be uninteresting or intimidating (Deneau, 2019b; Dionigi, 2017). However, there is evidence to suggest physical leisure activities (or physically active leisure; PAL), such as gardening, cleaning, and walking, are sufficient for OAs to experience the benefits of physical activity (Deneau, 2019b; Dionigi et al., 2011). PAL pursuits may be better suited towards the physical ability of OAs potentially encouraging greater physical activity levels, particularly among frail OAs who require assistance (Crombie et al., 2004). When the least active individuals become even slightly more active, they can experience substantial health benefits (Bornstein & Davis, 2014). Providing more specific activities, including PAL pursuits, may help OAs increase their physical activity by addressing individual determinants of physical activity (e.g., enjoyment). However, there are a variety of other factors contributing to physical activity behaviours among OAs.

Various individual and environmental factors may promote or discourage physical (in)activity and sedentary behaviours among OAs (Giles-Corti & Donovan, 2002; Tam-Seto et al., 2016). Individual determinants, such as enjoyment, motivation, and mental stimulation may discourage sedentary behaviours and encourage physical activity (Tam-Seto et al., 2016). Conversely, physical health (e.g., joint pain, shortness of breath), poor attitudes, monetary cost, program awareness, and a lack of motivation, enjoyment, energy, and companionship may promote sedentary behaviours among OAs (Crombie et al., 2004; Tam-Seto et al., 2016). Environmental determinants encompass factors in the built and social environment that are beyond the control of the individual (Giles-Corti & Donovan, 2002; Owen et al., 2011; Tam-Seto et al., 2016). Environmental factors discouraging sedentary behaviours include access to program information, encouragement by peers and physicians, transportation, and neighbourhood

walkability (Owen et al., 2011; Tam-Seto et al., 2016). Environmental determinants encouraging sedentary behaviours are cultural norms, feelings of acceptance (when sedentary; e.g., sitting in a meeting), as well as limited program availability, awareness, and accessibility (Crombie et al., 2004; Deneau et al., 2019a; Tam-Seto et al., 2016). Knowledge of individual and environmental determinants, as well as the ways in which they interact (i.e., PE fit) are important to understand when developing physical activity initiatives (Rhodes et al., 2018). As demonstrated by the physical functioning continuum, OAs do not conform to one mold. The heterogeneity of the OA population may significantly limit the effectiveness of ‘one size fits all’ or general strategies that target individual determinants of behaviour (e.g., physical health). Physical activity initiatives should promote developing environments that enable OAs with diverse functional capacities (i.e., built environments that are universally designed; Kärmeniemi et al., 2018; Tam-Seto et al., 2016). Thus, strategies for increasing physical activity among OAs should target the removal of environmental barriers to improve environmental determinants of physical activity (e.g., availability, awareness, accessibility). Better understanding of the factors influencing physical activity among OAs may aid in the development of programs that are adapted to OAs’ needs. Designing effective and inclusive active aging programs can improve OAs health and reduce economic burden associated with population aging (Deneau et al., 2019a).

To assist in the development of physical activity programs, the seven ‘A’s of active aging have been recommended. Programs being developed for OAs should be affordable, available, accessible, adapted, alternative, accompanied, and prioritize awareness (i.e., greater availability of program information; Deneau et al., 2019a). In particular, accessibility may be a key factor to consider when targeting OAs. Poor accessibility has been repeatedly identified as facilitating sedentary behaviours and discouraging physical activity throughout the literature (Crombie et al.,

2004; Deneau et al., 2019a; Novek & Menec, 2014; Tam-Seto et al., 2016). To counteract health consequences associated with sedentary living, policies and programs need to modify the built environment to improve accessibility and facilitate physical activity (Bornstein & Davis, 2014). Factors, such as the accessibility and reliability of transportation, information or program awareness, barriers to buildings, and options for adapted or alternative activities, may be modified to increase accessibility creating environments that are conducive to physical activity for OAs with diverse abilities (Deneau et al., 2019a). By acquiring comprehensive knowledge regarding modifiable factors of the built environment, effective environmental interventions may be developed to increase physical activity (Kärmeniemi et al., 2018).

Current environmental interventions aim to enhance infrastructure to increase opportunities for active transport (e.g., walking, biking) and public transportation, which have been cited as major contributors to physical activity (Bornstein & Davis, 2014; Kärmeniemi et al., 2018). Research examining the relationship between accessibility and physical activity has focused on land use, transportation, and outdoor spaces (i.e., parks and playgrounds). To remove barriers, pedestrian-oriented designs may be implemented, which have been positively associated with physical activity among OAs (Rantanen et al., 2012). The number of destinations, land use mix, public transit and facility availability, and/or distance to parks may be optimized through pedestrian-oriented designs to enhance accessibility and increase physical activity (Kärmeniemi et al., 2018). Improvements to the built environment, such as signage, outreach and support for group activities, recreational areas, walking paths, play equipment, seating, safety surfacing, and waste facilities, may effectively increase physical activity (Kärmeniemi et al., 2018). Moreover, modifications to the built environment and providing activities during the day may increase transportation-related and overall physical activity (Crombie et al., 2004; Kärmeniemi et al.,

2018). However, environmental factors, such as hills and uneven terrain, or a lack of wide well-lit pathways, bathrooms, and rest areas, pose barriers to outdoor physical activity among OAs (Eronen et al., 2014; Rimmer, 2005). Additionally, perceptions of an unsafe area may deter individuals from engaging in physical activity in the evening or alone (Crombie et al., 2004; Kärmeniemi et al., 2018). Thus, environmental barriers may restrict OAs from participating in activities outside of their home potentially reducing their quality of life (Rantakokko et al., 2010).

The potential of encountering barriers in outdoor settings may amplify the importance of providing accessible and useable indoor recreational environments (Rimmer et al., 2005). Recreational centres may be operationalized as public facilities that offer a variety of activities to individuals of all ages. Despite offering activities to all ages, recreational centres are often designed with young adults in mind. Consequently, OAs encounter barriers in the built environment (e.g., lack of adaptive equipment), information, staff training, and policies and procedures of recreational facilities (Nary et al., 2000; Rimmer, 2005). The inability to access recreational centres restricts OAs options for physical activity potentially encouraging sedentary activities rather than active ones. Restricting OAs from using recreational centres may negatively impact their physical activity levels potentially leading to adverse health outcomes. However, improving the accessibility of recreational centres may counteract the negative health consequences. Similar to outdoor spaces, improving the built environment of recreational centres may encourage OAs to engage in physical activity by producing an accessible environment. Access often precedes use (Iwarsson & Ståhl, 2003); by providing accessible recreational centres it is likely that more OAs would take advantage of the facilities and programs offered. Knowing to identify and remove environmental barriers may be the first step towards designing accessible

spaces and could play a critical role in community health (Rantakokko et al., 2010). Enhancing environmental accessibility may help individuals with reduced functional capacities access recreational facilities, which has been positively associated with physical activity among OAs (Crombie et al., 2004; Rantanen et al., 2012; Rhodes et al., 2018). Gaining access to recreational facilities may help OAs increase social and physical activity potentially leading to improvements in endurance, strength, and flexibility, and increasing functional capacity (Nary et al., 2000).

A type of recreational facility that may be of particular interest to OAs is senior centres, as they specifically target the needs of OAs, while still providing the option to be physically active indoors. Senior centres play an important role in supporting healthy aging, particularly for individuals who cannot participate in other community contexts due to limited income or physical abilities (Hutchinson & Gallant, 2016). Serving more than five million OAs in Canada and 46 million OAs in the USA (Kadowaki & Mahmood, 2018), senior centres have become a critical resource for delivering services to the OA population (Casteel et al., 2013). Designed to promote physical, mental, and social well-being among OAs, senior centres offer a wide array of services to accommodate the diverse needs of the aging population (Kadowaki & Mahmood, 2018; Pardasani & Thompson, 2012; Tang, 2017). The most common services provided are nutrition (e.g., meal programs), recreation (e.g., exercise classes, physically active leisure opportunities), health (e.g., referrals, health education), and social programs (e.g., bingo, cards, volunteering; Casteel et al., 2013; Krout, 1985; Tang, 2017; Turner, 2004). Through the array of services offered by senior centres, OAs have been able to increase physical activity, exercise (Li et al., 2008), physical and psychosocial functioning (Wallace et al., 1998), healthy eating behaviours (e.g., eating more fruits and vegetables; Hendrix et al., 2008), and reduce falls and injuries (Li et al., 2008; Reinsch et al., 1992), as well as improve their ability to self-manage

chronic diseases, such as diabetes (Speer et al., 2008). Senior centres may increase interest in physical activity by highlighting non-health benefits of physical activity, such as socialization and enjoyment (Crombie et al., 2004). Additionally, senior centres offer activities, such as board games, arts and crafts, and card games, which have protective effects on OAs mental health (i.e., reduces the risk of dementia; de Rezende et al., 2014). The available research on senior centres provides overwhelming evidence for their role in promoting positive outcomes for the health and well-being of OAs (Pardasani & Thompson, 2012; Tang, 2017). Despite the importance of senior centres for OAs, especially in the context of an aging population, they are the subject of limited research (Hutchinson & Gallant, 2016; Kadowaki & Mahmood, 2018).

A review conducted by Kadowaki & Mahmood (2018) revealed that no Canadian studies were available on the socio-physical environment, organizational models, programming, or policy and advocacy of senior centres. Of the research that has been conducted, most of it occurred between the years 1970 and 1990 (Kadowaki & Mahmood, 2018) and focused on the types of services offered, demographics of senior centre users (mostly Caucasian females and 75-84 years of age), as well as strategies for recruiting young OAs and baby boomers (Krout, 1985; Pardasani & Thompson, 2012; Pardasani & Sackman, 2014; Tang, 2017; Turner, 2004). To the best of the author's knowledge, no research has focused specifically on the needed improvement to the physical environment or examined the accessibility of senior centres. The paucity of research is particularly concerning, as initiatives targeting OAs should consider accessibility to ensure effective delivery of services and maximize positive health outcomes (Novek & Menec, 2014). Although senior centres may play an important role in delivering services and promoting physical and social health among OAs (Casteel et al., 2013), poor accessibility may significantly reduce the effectiveness of senior centres. Common barriers to participating in activities hosted

by senior centres include long distances to the centre and need for improvements in the physical environment (e.g., facility maintenance, equipment upgrades, more options for programs and services; Pardasani & Sackman, 2014). Providing inclusive programming via accessible physical and social environments is essential for supporting independent living and meaningful engagement among OAs with diverse abilities (Hutchinson & Gallant, 2016). Accessible and supportive environments are characteristics of an age-friendly community that promote health, well-being, and independent living among OAs (Novek & Menec, 2014). To facilitate participation in physical activities among OAs, environmental modifications need to be prioritized to ensure buildings, transportation, and information are accessible (Novek & Menec, 2014).

Older Adults (OAs)

Ensuring accessible environments may be of particular importance among vulnerable populations. Women, children, minorities, immigrants, OAs, individuals with a disability, individuals who are homeless, and individuals who are members of the LGBTQ+ community are among the social groups labelled as vulnerable populations (Flaskerud & Winslow, 1998; Lehning et al., 2017; Sefiert et al., 2020). Compared to the majority of individuals, vulnerable populations often have limited resources resulting in increased risk for morbidity and premature death (Flaskerud & Winslow, 1998). Access to healthcare and quality of care (i.e., environmental resources) can be difficult for vulnerable populations to acquire increasing their risk for adverse health outcomes (Flaskerud & Winslow, 1998). In addition to limited access to resources, members of vulnerable populations frequently experience marginalization, stigmatization, and discrimination hindering social connectedness and integration, which may further reduce their health (Flaskerud & Winslow, 1998). To help protect the health of vulnerable populations

‘friendly’ initiatives have been developed. ‘Friendly’ initiatives place responsibility for access to resources and opportunities for participation among vulnerable populations on environmental (physical and social) factors within a community. In other words, ‘friendly’ initiatives address the needs of various populations (e.g., OAs, children, immigrants) by focusing on the role of the community in optimizing health and well-being (Lehning et al., 2017). Such initiatives may encourage existing communities to become more accommodating and supportive towards vulnerable populations (Lehning et al., 2017) by enhancing PE fit (Novek & Menec, 2014).

In general, ‘friendly’ initiatives aim to modify physical and social environments via policies and programs to promote the physical, mental, social, and financial well-being of certain social groups (Lehning et al., 2017). The three most well-established initiatives are child-friendly, immigrant-friendly, and age-friendly initiatives (Lehning et al., 2017). Child-friendly initiatives advocate for the rights of children to grow up in safe and secure environments with access to a variety of services and resources (e.g., social, educational, leisure; United Nations Children’s Fund [UNICEF], 2018). Immigrant-friendly initiatives focus on providing accessible and inclusive services, information, and economic and cultural activities by removing physical and policy barriers (City of Toronto, 2014). Age-friendly initiatives encourage active aging and enhanced quality of life among OAs with diverse needs and capacities through the provision of accessible and inclusive opportunities for health, participation, and security (WHO, 2007). Of all the initiatives, age-friendly initiatives have become particularly popular with several initiatives being launched in the mid-2000s (Lehning et al., 2017). One specific initiative that brought considerable attention to key aspects of age-friendly communities was the Global Age-Friendly Cities program developed by the WHO (Lehning et al., 2017; WHO, 2007). Eight key aspects, or domains, of age-friendly communities were identified: outdoor spaces and buildings,

transportation, housing, social participation, respect and social inclusion, civic participation and employment, communication and information, and community support and health services (WHO, 2007). Although social environments are important and should be extensively examined in future studies, this study will primarily focus on the physical environment. The physical accessibility of a community influences the well-being and quality of life among OAs (Novek & Menec, 2014). Dedicating attention to OAs and accessible communities is warranted due to the exponential growth of the OA population and associated increases in morbidity.

In the year 2019, the global population consisted of 703 million individuals at least 65 years of age; this is expected to increase to 1.5 billion individuals by the year 2050 (WHO, 2011; Department of Economic and Social Affairs, 2019). Within Canada, the OA population is expected to increase from 6,602,000 (17.6%) in the year 2019 to 11,436,000 individuals (25.0%) in 2050 (Department of Economic and Social Affairs, 2019). A critical public health concern accompanying the expansion of the OA population, is that individuals may be living longer with increased morbidity (WHO, 2011). Approximately 80% of OAs have at least one chronic disease and 77% have two or more (National Council on Aging [NCOA], 2018). As the OA population continues to expand, morbidity is expected to increase. OAs living with a disease or disability are more vulnerable to their environments increasing their risk for secondary conditions and declining health (Chodzko-Zajko et al., 2009; Flaskerud & Winslow, 1998). To counteract increasing morbidity associated with population aging, encouraging active lifestyles and discouraging sedentary behaviours among OAs has become a primary goal. Increasing physical activity and reducing sedentary behaviours can lower the risk of developing chronic diseases and disability, while improving social, cognitive, and physical well-being among OAs, ultimately enhancing quality of life (Chodzko-Zajko et al., 2009; CSEP, 2020). However, OAs

continuously encounter environmental barriers (e.g., limited program availability, awareness, and accessibility) that may prevent engaging in physical activity and encourage sedentary living (Crombie et al., 2004; Deneau et al., 2019a; Tam-Seto et al., 2016).

Characteristics of the environment have the ability to influence OAs' health behaviours and perceived quality of life (Abeles, 1991) by facilitating or restricting opportunities to participate in activities (Public Health Agency of Canada [PHAC], n.d.; WHO, 2007). For example, when hosting physical activity programs for OAs, the built environment needs to be considered, as an inaccessible building may prevent OAs with mobility impairments from participating in a program. If accessible physical activity programs are unavailable, OAs' options may be restricted to sedentary activities further reducing physical activity levels and increasing functional decline and risk of developing chronic diseases. In an attempt to encourage physical activity via accessible and inclusive environments, the seven 'A's may be applied during the development of active aging programs (Deneau et al., 2019a). In other words, applying the seven 'A's could encourage physical activity among OAs by promoting (i.e., greater awareness) and providing more diverse options for physical activity (i.e., greater availability, alternative or accompanied activities) that have been designed specifically for the needs and abilities of OAs (i.e., affordable, adaptable, accessible). One setting in which the seven 'A's should be encompassed is senior centres.

To accommodate the diverse needs and abilities of OAs, senior centres offer a wide array of services and programs specific to OAs, such as fall prevention (Li et al., 2008; Reinsch et al., 1992), chronic disease management (Speer et al., 2008), meal programs, and (physical and social) recreational activities (Pardasani & Thompson, 2012; Tang, 2017). As a vulnerable population, OAs are more susceptible to poor social and physical well-being. However,

participation in senior centres can have beneficial health outcomes for OAs by increasing the resources available to them, subsequently reducing their vulnerability to poor health. The activities and services offered at senior centres afford OAs companionship, emotional support, and socialization, all of which may facilitate social well-being (Hutchinson & Gallant, 2016). Additionally, providing OAs with a wide range of activities to choose from, that are adapted for age and ability, has been positively associated with physical activity (Deneau et al., 2019a). Incorporating all seven 'A's may aid in the development of well-rounded senior centres that effectively improve quality of life among OAs. However, accessibility should be the first 'A' to be addressed.

Accessibility has been reported within the literature as a determinant of OAs' engagement in a variety of activities, services, and resources (e.g., housing, healthcare, communication, transportation, recreational activities). Senior centres typically afford OAs access to multiple activities and services in one location (Tang, 2017) - potentially reducing their need to access several buildings wherein they may encounter environmental barriers. As OAs often have lower functional capacities making it difficult to overcome environmental barriers (Iwarsson, 2005; Spirduso et al., 2005), providing one location at which OAs can access multiple services and participate in diverse activities may encourage them to be more active and reduce sedentary behaviours. The diversity of services and convenience of one location may make senior centres critical in promoting and supporting healthy aging and quality of life among the OA population (Tang, 2017). Thus, in addition to offering activities that can encourage physical and mental well-being, accessible senior centres may be particularly beneficial for OAs who encounter barriers in other community contexts due to reduced functional capacities (Hutchinson & Gallant, 2016).

Nonetheless, little research has examined senior centres (Kadowaki & Mahmood, 2018), specifically within Canada and with respect to accessibility. The lack of knowledge pertaining to the accessibility of senior centres may be problematic, as a recurrent theme in active aging literature is the need for accessible environments (Deneau et al., 2019a; Novek & Menec, 2014; PHAC, n.d.; WHO, 2007). OAs are less likely to engage in activities when the environment is inaccessible. Given the role of senior centres in facilitating healthy and active aging among OAs (typically 50 years of age and older), accessible environments should be a top priority (Novek & Menec, 2014). By providing adapted and accessible physical activity programming, senior centres can address concerns OAs have within other community settings, thereby encouraging participation in physical activity at senior centres. The potential benefits of participating in activities at senior centres may be severely restricted if the physical environment is inaccessible and restricts OAs. Evaluating the accessibility of senior centres within Canada may be especially relevant given the trends towards a larger proportion of OAs within the population, increased morbidity among OAs, and forthcoming government policies, such as the Accessibility for Ontarians with Disabilities Act (AODA), which aims for Ontario to be fully accessible by the year 2025. If the accessibility of senior centres is not prioritized, the health of the OA population may continue on the same trajectory towards increased morbidity, sedentary living, physical inactivity, and poor quality of life. Thus, there is a need for research to examine accessibility within the senior centre environment. The purpose of this study is to explore the needs and perceptions of accessibility among OAs with respect to the senior centre environment.

RESEARCH ARTICLE

Introduction

Inaccessible environments may pose a major threat to an individual's social and physical well-being. It is important for individuals to interact and engage with a wide variety of activities (e.g., social, physical, vocational, educational) to live fulfilling and satisfying lives (Ephraim et al., 2006; Sabella & Bezyak, 2019). Before an individual can interact and engage with (i.e., use) various activities, services, and resources, the environments in which the activities are hosted must be accessible (Sabella & Bezyak, 2019), as accessibility precedes use (Iwarsson & Ståhl, 2003). Accessibility is a relative and multidimensional concept defined as the balance between an individual's functional capacity (i.e., ability to complete daily tasks, such as walking, dressing, cooking) and the design or demands of the environment (e.g., stairs, ramps, elevators, narrow pathways; Iwarsson & Ståhl, 2003). The multidimensionality of accessibility is comprised of three components: the personal (i.e., individuals' functional capacities), the environmental (i.e., the physical environment with which the individual interacts), and the comparison (i.e., person-environment (PE) fit or the description of accessibility issues; Iwarsson & Ståhl, 2003).

To more fully understand the multidimensional construct, it is imperative to understand that PE fit underpins accessibility (Iwarsson & Ståhl, 2003; Slaug et al., 2015). PE fit refers to the interrelationship between personal and environmental components, which influence one another to afford individuals access or produce barriers (Eronen et al., 2014; Lawton & Nahemow, 1973, as cited in Iwarsson, 2005; Slaug et al., 2015). For an activity, service, resource, or facility to be accessible, the personal and environmental components must be balanced (Rantanen et al., 2012). However, achieving a balance may be complicated when

environmental barriers are present (e.g., physical obstacles, architectural barriers, or discriminatory attitudes, policies, and practices; Anaby et al., 2013; Rimmer et al., 2004; Whiteneck et al., 2004) and/or when an individual has a compromised functional capacity (e.g., individuals with a disability, disease, or age-related decline; Fänge & Iwarsson, 2003; Moran et al., 2014; Slaug et al., 2015).

The interplay between personal and environmental components may be illustrated by the environmental docility hypothesis. According to the hypothesis, individuals with lower functional capacities are more susceptible to environmental demands; whereas, individuals with greater functional capacities can withstand greater environmental demands (Iwarsson & Ståhl, 2003). For example, an individual who uses a mobility device (e.g., wheelchair, walker) is more susceptible to the demands that stairs impose than an individual who does not have a functional disability. Consequently, the individual using a mobility device may not be able to overcome the barrier in the environment (i.e., stairs); whereas, the individual without a disability has sufficient functional capacity to overcome the demand imposed by stairs. Due to their increased susceptibility to the environment, individuals with compromised functional capacities may perceive accessibility issues to be a greater concern than their able-bodied counterparts. However, anyone can experience reductions in their functional ability (e.g., broken leg, age-related decline; Afacan & Erbug, 1979) rendering them more susceptible to the environment. Thus, accessibility should not merely be a concern for individuals with a disability; it is a universal issue.

The notion that accessibility is a concern for all may be reflected by the principles of universal design, which suggest there is a single population of human beings consisting of diverse individuals with a range of abilities (Iwarsson & Ståhl, 2003). Universal design is an

approach to design that aims to produce barrier-free buildings, products, and communication that can be used by all individuals, regardless of ability (Imrie, 2012; Iwarsson & Ståhl, 2003). The objective is to produce accessible environments that foster accepting and inclusive communities (Imrie, 2012; Iwarsson & Ståhl, 2003). The underlying notion of universal design is that environmental designs that enable access among individuals with a disability (i.e., low functional capacities) can accommodate everyone (Imrie, 2012). Thus, an environment that is universally designed affords engagement for all individuals (i.e., design for all; Iwarsson & Ståhl, 2003). Accessible environments may be key to ensuring that everyone can participate within society and experience independence and inclusion (Donoghue, 2003; Iwarsson & Ståhl, 2003; Kennedy & Minkler, 1998). Applying universal design may reduce environmental demand experienced by individuals with compromised functional capacities, thereby balancing PE fit and enabling access to previously inaccessible resources. Although universal design employs the perspective that there is only one population (Iwarsson & Ståhl, 2003), it is the sub-populations with lower functional capacities (e.g., individuals with a disability, older adults (OAs)) who will have the most to gain from universally designed facilities (Iwarsson, 2005). The concept of universal design may be particularly interesting to vulnerable populations, as even minor improvements in the environment can significantly benefit vulnerable populations (Iwarsson, 2005).

The presence of environmental barriers (physical and attitudinal) may disproportionately exclude vulnerable populations from obtaining a variety of resources (e.g., healthcare), which places them at a greater risk for adverse health outcomes (e.g., morbidity and premature death; Flaskerud & Winslow, 1998). Vulnerable populations are sub-populations that are at a greater risk for morbidity due to shared social characteristics (Frohlich & Potvin, 2008). Examples include women, children, minorities, immigrants, OAs, individuals with a disability, individuals

who are homeless, and individuals who are members of the LGBTQ+ community (Flaskerud & Winslow, 1998; Lehning et al., 2017; Sefiert et al., 2020). Given the worldwide demographic shift towards an aging population, the vulnerability of the OA population may be of particular concern. The global population consisted of 703 million individuals at least 65 years of age in the year 2019 which is expected to increase to 1.5 billion individuals by the year 2050 (Department of Economic and Social Affairs, 2019; WHO, 2011). Similar to global trends, the Canadian OA population is expected to increase from 6,602,000 (17.6%) in the year 2019 to 11,436,000 individuals (25.0%) in the year 2050 (Department of Economic and Social Affairs, 2019). In addition to the expansion of the population, morbidity is increasing among OAs with approximately 80% reporting at least one chronic disease (NCOA, 2018). Greater morbidity, compounded by age-related decline (i.e., physiological changes associated with aging), reduces OAs' functional capacities (Chodzko-Zajko et al., 2009). Thus, compared to their younger counterparts, OAs are less capable of adapting to environmental demands (Fänge & Iwarsson, 2003).

To improve the functional capacities, and subsequently the health of OAs, researchers typically employ a biomedical approach, which targets the personal component of PE fit. In other words, responsibility for improving health is placed on the individual. Several campaigns have been developed to promote physical activity in attempt to improve functional ability, quality of life, and independence. For example, guidelines have been released in Canada and the United States to increase physical activity and reduce sedentary behaviour among North Americans (CSEP, 2020; Tremblay et al., 2011; US Department of Health and Human Services, 2018). Physical activity guidelines recommend engaging in at least 150 minutes of moderate-to-vigorous aerobic physical activity per week (US Department of Health and Human Services,

2018), in addition to at least two days of muscle strengthening activities each week (CSEP, 2020). Within sedentary guidelines, individuals are encouraged to engage in eight hours or less of sedentary behaviour per day (CSEP, 2020). Increasing physical activity and decreasing sedentary behaviours can have several benefits for OAs, such as reducing adverse weight gain, chronic diseases (e.g., type 2 diabetes, obesity, cardiovascular disease, cancer), mental illness (e.g., anxiety, depression), cognitive impairments (e.g., dementia), and premature death (Chodzko-Zajko et al., 2009; CSEP, 2020). Despite the general knowledge that physical activity is beneficial, the OA population is the most sedentary age group (de Rezende et al., 2014). The prevalence of sedentary behaviour among OAs may be due to the guidelines failing to consider external determinants of behaviour (e.g., accessibility).

Environmental barriers are considered to have a greater impact on activity limitations, participation restrictions, and worsening health than reduced functional capacities (Whiteneck et al., 2004). Individuals may not be able to engage in physical activity and act on the recommendations provided within the guidelines, if the surrounding environment is inaccessible. Current design practices (i.e., everyday design) often fail to accommodate individuals with lower functional capacities. By producing environments that do not adequately accommodate the abilities of all individuals, a negative consequence is the potential exclusion of people from participating in various activities that they may otherwise wish to engage (Sanford, 2012). Environmental barriers can impose demands that OAs cannot overcome, thereby restricting their ability to engage in physical activity and encouraging sedentary behaviours. Researchers examining PE fit in organizational and residential environments have established that environmental characteristics can influence an individual's social and physical well-being (Tsaour et al., 2012). Moreover, age-friendly initiatives, which target the community environment, may

increase access to and participation in the community among OAs, thereby improving their quality of life (Lehning et al., 2017). Thus, a more effective approach for increasing physical activity among OAs may be to focus on environmental factors that impede OAs' abilities (Whiteneck et al., 2004). Removing environmental factors and improving accessibility can foster environments that are conducive to active living among OAs (Deneau et al., 2019a; Tam-Seto et al., 2016).

To facilitate participation in physical activity programs, the buildings, transportation, and information must be available and accessible to OAs (Deneau et al., 2019a; Novek & Menec, 2014). Moreover, active aging programs should incorporate adaptable, accompanied, alternative, and affordable activities to effectively encourage participation among OAs (Deneau et al., 2019a; Moran et al., 2014). By enabling greater access, OAs may be more likely to engage with active aging programs, thus reducing sedentary living and increasing physical activity. Several studies exploring the perspectives of OAs have confirmed that accessibility may be a key determinant of physical activity and sedentary behaviour (Deneau et al., 2019a; Novek & Menec, 2014; Pardasani & Sackman, 2014; Tam-Seto et al., 2016). However, the specific elements of accessibility (i.e., physical, social, policy) that OAs deem important are not highlighted within these studies. There is a need for research that identifies the environmental barriers with which OAs struggle, especially at a community level. Without knowledge of the barriers that impede access among OAs, it may be difficult to develop strategies that address the accessibility needs of OAs to facilitate active aging. One context in which this knowledge may be beneficial is senior centres, as they often aim to support and improve the health and well-being of OAs.

Common programs offered at senior centres include nutrition (e.g., meal programs), recreation (e.g., exercise classes, physically active leisure opportunities), health (e.g., referrals,

health education), and social programs (e.g., bingo, cards, volunteering; Casteel et al., 2013; Krout, 1985; Tang, 2017; Turner, 2004). By offering diverse activities that are tailored to the needs and abilities of OAs, senior centres have been able to increase physical activity, exercise (Li et al., 2008), physical and psychosocial functioning (Wallace et al., 1998), healthy eating behaviours (e.g., eating more fruits and vegetables; Hendrix et al., 2008), and reduce falls and injuries (Li et al., 2008; Reinsch et al., 1992), as well as improve OAs' abilities to self-manage chronic diseases, such as diabetes (Speer et al., 2008). The diversity of services and convenience of one location may make senior centres critical in promoting and supporting healthy active aging and quality of life (Tang, 2017), particularly among OAs who encounter barriers in other community contexts due to reduced functional capacities (Hutchinson & Gallant, 2016).

Senior centres have been the focus of limited research, however (Kadowaki & Mahmood, 2018). The literature that is available focuses on senior centres in the United States, despite similar demographic trends in Canada, and little to no research examines accessibility within the senior centre environment. The paucity of knowledge pertaining to accessibility is concerning, as OAs are less likely to engage in activities when the environment is inaccessible. Imbalances between the person (i.e., OAs) and the environment (i.e., senior centres) may leave the services offered by senior centres unused and ineffective at improving the well-being of the OA population. Thus, to maximize the effectiveness of senior centres, it may be important to consult OAs to obtain their perspectives of accessibility. The individuals with the most expertise on potential barriers to accessibility are the users themselves (i.e., OAs; Iwarsson & Ståhl, 2003), as they have lived experience pertaining to the problem at hand. Nonetheless, the opinions of OAs are often omitted from PE fit and accessibility research (Kahana et al., 2003). To understand and identify the unique environmental needs and opinions of OAs, implementing qualitative research

methods (e.g., interviews, focus groups) may be necessary (Moran et al., 2014). Thus, this study implemented interviews with OAs to explore and understand their needs, perceptions, and lived experiences with accessibility through a case study of an urban senior centre in Southwestern Ontario, Canada. From the information obtained during the interviews, potential barriers, facilitators, and recommendations for enhancing accessibility have been identified and will be shared with researchers, policymakers, and stakeholders to improve the accessibility at the senior centre. For the purpose of this paper, the focus is on the voices and experiences of OAs, which are reflected within themes that emerge from interview data. Overall, the findings of this study will be used to advance knowledge regarding OAs, accessibility, and senior centres, as well as to inform senior centres about effective accessibility practices and features.

Research Questions

1. How do Canadian OAs experience and perceive the accessibility of a senior centre in Southwestern Ontario?
2. What are the common environmental barriers and facilitators of accessibility from the perspectives of OAs?

Methodology

On March 11th of the year 2020, the WHO declared that COVID-19 is a pandemic (WHO, 2020). Following this announcement, reducing the spread of COVID-19 has become the primary goal for many countries across the globe (Cucinotta & Vanelli, 2020). To achieve this goal, mandates have been launched worldwide resulting in the closure of non-essential buildings (e.g., research labs, schools, senior centres), restricted gatherings, physical distancing protocols, and shelter-in-place mandates (Dodds & Hess, 2021; Le Couteur et al., 2020; Seifert et al.,

2021). As a result of the mandates, COVID-19 has created an interesting challenge for researchers to reinvent the ways in which they conduct research. In particular, research involving OAs must consider the increased vulnerability of the OA population, specifically OAs with pre-existing conditions (e.g., cardiovascular disease) to the virus (Cucinotta & Vanelli, 2020; Le Couteur et al., 2020). The potential health consequences of contracting COVID-19 (e.g., fever, pneumonia, hospitalization, organ damage, death; Cucinotta & Vanelli, 2020) are not outweighed by the benefits of conducting research in-person, especially when the research is not related specifically to COVID-19. Thus, researchers have been conducting research that originally would have occurred face-to-face via online or virtual methods (Dodds & Hess, 2021).

Online research allows physical distancing protocols and shelter-in-place mandates to be upheld, while also removing the risk of contracting COVID-19, thus, keeping the researchers and participants safe. To abide by COVID-19 protocol and protect everyone involved, this study has adapted the methods to be online. To administer the demographic questionnaires and interviews, online video-conferencing software (e.g., Zoom) have been utilized. Although face-to-face interviews may be considered ideal by many researchers, as they more effectively foster rapport and may render more detailed information compared to other modes (Johnson et al., 2019), in-person face-to-face interviews are not feasible (i.e., COVID-19). Thus, a viable alternative to in-person face-to-face interviews that has gained popularity as a mode of interviewing is video-conferencing (Oltmann, 2016; Sullivan, 2012). Programs, such as Skype, Zoom, or FaceTime, closely mimic in-person face-to-face interviews by enabling interviewers to see and hear the interviewee via webcams and microphones (Sullivan, 2012).

Qualitative Approach

Qualitative research aims to explore and understand the experiences, opinions, perceptions, and meanings participants ascribe to a problem (Barbour, 2001; Creswell, 2014). As this study aims to explore and understand (i.e., interpret) OAs' perceptions of and experiences with accessibility, an interpretive approach to qualitative research is used. This study implements a relativist ontology (i.e., multiple realities exist and they are intangible, subjective constructions; Barbour, 2001) with a constructionism epistemology (i.e., meaning is derived from the interplay between the subject and object; the subject constructs reality of the object; Moon & Blackman, 2014). The theoretical perspective, interpretivism, aims to understand the subjective interpretation of reality and experiences from the perspective of the participants (e.g., OAs; Moon & Blackman, 2014). Interpretivism assumes that the meaning individuals ascribe to certain experiences is subjectively developed (Creswell, 2014; Scotland, 2012). Due to the subjectivity of meaning, the same experience, concept, or object may elicit various meanings across different individuals (Creswell, 2014; Scotland, 2012).

Interpretive qualitative research may be useful when the important variables to examine are unknown (Creswell, 2014). From the experiences described by participants, the researcher can interpret meanings from the participants' perspectives and identify the variables that are most important to examine. To ascertain participants' perspectives, experiences, and perceptions about a phenomenon of interest (i.e., the study topic), a phenomenological research design may be employed (Creswell, 2014). This study incorporates phenomenological overtones, informed by Heidegger's interpretive (hermeneutic) approach to phenomenology (Pascal, 2010), within semi-structured interviews. Through interpretive phenomenological interviews, a greater understanding of the meanings and perceptions of another individual's experiences can be

obtained (Pascal, 2010; Scotland, 2012; Wojnar & Swanson, 2007). Therefore, this study explores OAs' perceptions and meanings of lived experiences with accessibility to better understand the environmental factors that may impede participation in senior centres.

Phenomenological research can contribute to a greater understanding of poorly understood phenomena (Pascal, 2010), such as OAs, accessibility, and the senior centre environment. To date, accessibility research has primarily been conducted in transportation (Bezyak et al., 2017; Handy & Niemeier, 1997; Sabella & Bezyak, 2019), housing (Fänge & Iwarsson, 2003; Iwarsson et al., 2006; Smith et al., 2008), and Web environments from the perspectives of individuals with a disability (e.g., visual impairments, physical disabilities, mobility impairments; Brophy & Craven, 2007; Kovacs Burns & Gordon, 2010; Sullivan & Matson, 2000). As the OA population is increasing in numbers, along with morbidity, it may be important to expand beyond individuals with a disability and focus on OAs' perceptions of accessibility barriers that hinder their ability to engage in healthy behaviours (e.g., reduced sedentary behaviour, increased physical activity). OAs have repeatedly cited accessibility as a key determinant of participation in a variety of activities (e.g., active aging programs, community events, activities of daily living; Deneau et al., 2019a; Lehning et al., 2017). However, a paucity of research attempts to identify the specific barriers that hinder accessibility as perceived by OAs. The majority of research that examines barriers to accessibility focuses on objective and quantifiable characteristics, such as the presence of accessible entrances (e.g., ramps, elevators, zero-step entrances; Smith et al., 2008), travel time or distance, land use mix (Handy & Niemeier, 1997), font style and size, and the presence of text descriptions for online images (Brophy & Craven, 2007; Sullivan & Matson, 2000). Moreover, to the author's knowledge, no research examines accessibility in the senior centre context. Senior centres may

play an important role in facilitating healthy, active aging. There is a need for qualitative research that explores accessibility from the perspectives of OAs to better understand subjective perceptions and experiences with barriers in senior centre environments. Incorporating qualitative methods, such as semi-structured interviews, into accessibility research may capture OAs' experiences with accessibility and identify specific barriers within the senior centre environment, subsequently addressing several gaps in the literature. Thus, implementing an interpretive research approach using phenomenological interviews is an appropriate strategy for addressing the objectives of this Master's thesis, which are to (1) explore and develop an understanding of OAs' lived experiences with accessibility and senior centres; (2) identify the specific environmental barriers and facilitators that OAs encounter; and, (3) use OAs' perspectives and opinions to develop solutions to barriers and inform policies and procedures at a local senior centre.

Although this study is not a dedicated (i.e., pure) phenomenological study, the methodology implements an interpretive paradigm and phenomenological overtones. Qualitative research methods are fluid permitting theories to emerge and change throughout the study based on the data collected (Creswell, 2014). Thus, incorporating overtones of phenomenology within semi-structured interviews may be considered an acceptable approach to qualitative research. OAs have been asked to share and discuss their experiences with accessibility and environmental barriers during an interview conducted by the researcher. From their shared experiences, the research team has attempted to interpret the meanings and perceptions of environmental barriers from the perspectives of OAs. Ultimately, contributing to a better understanding of the environmental factors that are important to OAs and that significantly hinder or facilitate participation at the senior centre.

Interpretations derived from interpretive qualitative studies are influenced by the interactions between the researcher's understanding of the phenomena, participant generated information, and data obtained from other sources (Creswell, 2014; Wojnar & Swanson, 2007). Interpretive phenomenology explains the meaning or understanding of an experience as a cocreation between the individual who lived through the experience and the researcher (Høffding & Martiny, 2016; Pascal, 2010; Scotland, 2012; Wojnar & Swanson, 2007). The researcher's own beliefs are considered a legitimate component of the research process (Pascal, 2010) that influence interpretations of the data collected (Creswell, 2014; Høffding & Martiny, 2016; Scotland, 2012; Wojnar & Swanson, 2007). Thus, a key characteristic of interpretive phenomenology is the acknowledgement of the researcher's background, experiences, and preconceptions (Creswell, 2014; Pascal, 2010; Scotland, 2012). In the interest of only identifying barriers perceived by the OAs, I intentionally have not attended the senior centre involved with this study, thus I have no pre-existing knowledge of the barriers that may exist at this specific senior centre. Although I am not an OA and have not attended a senior centre, I have previously attended other recreational and community centres. Additionally, I have acquired knowledge pertaining to OAs, as well as accessibility and environmental barriers through past educational experiences (i.e., courses at the undergraduate and graduate level). Consequently, I may interpret the findings of this study to align with the knowledge that I have already acquired about OAs and accessibility. To reduce biased interpretations, techniques have been implemented to improve validity, such as peer debriefing (i.e., regular quality control meetings with the research team; Deneau, 2019b) and member checking (i.e., returning data to the participants to confirm, disconfirm, or add data; Birt et al., 2016). Through semi-structured interviews, this study aims to

contribute to a better understanding of OAs' perspectives regarding environmental barriers within senior centres.

Participants

This study seeks to understand experiences with accessibility and environmental barriers among OAs who participate at a local senior centre. A technique often used in qualitative research is purposeful sampling, which involves identifying and selecting participants who are knowledgeable about or have experience with the research topic (Patton, 2002). Thus, participants have been purposefully sampled for this study to ensure information collected during the interviews is reflective of the local senior centre. Inclusion criteria have been developed according to the senior centre's membership requirements (i.e., members must be 50 years of age and older) and study parameters. Eligible participants must be a member of the senior centre as of January 2019 or earlier, to ensure the participant had the opportunity to physically visit the centre before COVID-19 restrictions, as well as experience different weather conditions throughout an entire calendar year. Participants must have attended the senior centre at least twice to ensure they can speak to accessibility at the centre. Eligible participants have to participate in activities at the senior centre involved with this study to ensure participants are referring to the same facility and allow comparisons across interviews. Additionally, participants have to be 50 years of age or older, able to speak and comprehend English, and have access to a device compatible with video-conferencing software and the internet. It is acknowledged that not every member may have access to a device and the internet. However, to work within the parameters of COVID-19 and attempt to closely mimic in-person face-to-face interviews, these are the factors associated with the eligibility criteria.

Studies that implement qualitative methods, such as interviews, for data collection often use small sample sizes, as the transcription and analysis of interviews can be time intensive (McCawley, 2009; Oltmann, 2016); a single interview can take hours to transcribe and analyze. Using purposeful sampling allows researchers to ascertain a few in-depth and detailed accounts about the individuals' experiences with the research topic (DeJonckheere & Vaughn, 2019). Thereby, answering the research questions while reducing the time needed for data collection and analysis. It is generally recommended that studies using a phenomenological research design obtain a sample of three to ten participants (Creswell, 2014). Thus, similar to other studies who interviewed groups of OAs (e.g., Deneau et al., 2019a), this study aims for a sample size of six or seven OAs who are willing to share their experiences with accessibility at the local senior centre. To select participants, purposeful sampling was used, which continued until saturation was achieved when analyzing interview data. Continuous review of the data was completed by the researcher to detect potential emerging themes and to determine when saturation was met. As long as new themes continued to emerge, more participants were continually recruited. Upon the cessation of new codes emerging, it was assumed that saturation was reached, and thus, data collection terminates.

Typically, it is recommended that interviews be conducted within an environment that is comfortable and convenient for the participant to encourage them to share more information by reducing feelings of restriction or discomfort (McGrath et al., 2019; Turner III, 2010). However, due to COVID-19, the interview location is left to the discretion of each participant. Participants have been advised to select a location that is comfortable, has a good internet connection, and is free of potential noise, disruptions, or distractions to reduce the risk of technical difficulties (e.g.,

loud noises interfering with voice and audio clarity, freezing or skipping video and audio from poor internet, etc.).

As interviews have been conducted outside of the senior centre, the information obtained during the interviews may be subject to recall bias (i.e., inaccurate recollection of experiences), further compounded by memory loss associated with age-related decline and cognitive impairment (Small, 2002). While difficulties with memory and recall bias may be perceived as a limitation to this study, it is not practical to conduct in-person interviews during the ongoing COVID-19 pandemic. Any method relying on reflection, including phenomenological interviews, is accompanied by the risk of fallible or inaccurate data (Høffding & Martiny, 2016). Although fewer experiences or barriers may be reported due to recall bias and memory loss, the experiences that are reported should be the most significant to the OA, as salient events are more easily and accurately recalled (Bell et al., 2019). Conducting the interviews outside of the senior centre may require the OAs to report their most salient experiences with accessibility. Thus, the interview data may be representative of the most important and prominent aspects of accessibility, as perceived by OAs.

Data Collection Procedures

Within qualitative research, and specifically interpretive methods, semi-structured interviews are among the most popular methods for data collection (Rowley, 2012; Scotland, 2012). Interviews are verbal exchanges between two people (i.e., interviewer and interviewee) that attempt to gather in-depth information about subjective experiences, perceptions, beliefs, and attitudes about various phenomena (DeJonckheere & Vaughn, 2019; McGrath et al., 2019; Rowley, 2012; Turner III, 2010). This study utilizes two one-on-one interviews with each participant (Gray et al., 2020; Pal et al., 2021). The initial interview obtains informed consent

and demographic information. The second interview is used for data collection. All interviews have been audio and video recorded using the recording feature in Zoom.

The rationale behind conducting two interviews serves two primary purposes: to build rapport and to familiarize with the video-conferencing software. Repeated contact with participants can help to develop rapport, which can increase participants' comfort disclosing information to the researcher (Creswell & Miller, 2000). By beginning to build rapport prior to data collection, participants are more likely to be comfortable interacting with the researcher, subsequently encouraging more open and detailed discussions (McGrath et al., 2019; Oltmann, 2016). Moreover, the opportunity to familiarize with video-conferencing software affords participants, as well as the researcher, the chance to become more proficient using the software, which can help overcome potential technical difficulties during data collection (Gray et al., 2020). Common problems include poor sound quality, webcam and microphone malfunctions, poor internet connection, and lagging/buffering video or audio (Sullivan, 2012). Technological issues may arise at any point during an interview and researchers should be prepared for such occurrences (Sullivan, 2012). While video-conferencing may pose greater concern, technological problems can arise during telephone (e.g., poor sound quality, dropped calls) and in-person face-to-face interviews as well (e.g., malfunctioning recorders, dead batteries, interviewer forgets to record; Oltmann, 2016; Sullivan, 2012). By conducting an initial interview, the researcher is able to address concerns with video and audio clarity live and in the recordings prior to data collection.

Increased familiarity with video-conferencing software may be beneficial for participants, as well. OAs may not be familiar with or comfortable using video-conferencing programs (Seifert et al., 2021; Sullivan, 2012). Moreover, OAs are often assumed to have aversions to

adopting new technology (Wu et al., 2016). However, research conducted within the past decade provides evidence to suggest that OAs have open and positive attitudes towards video-conferencing programs, as they see the potential benefits of using these programs for socialization and mobility (e.g., Wu et al., 2016). Regardless of the advantages or disadvantages of virtual interviews, the ongoing COVID-19 pandemic renders in-person interviews impractical, as the health risks imposed are not outweighed by the benefits of conducting in-person research. To ensure anyone who is interested and eligible to participate in the study is not excluded due to the interviews being conducted online, steps have been taken to educate OAs about Zoom. To reduce the constraint of unfamiliarity, the author has composed videos and instruction manuals to assist OAs with downloading and using Zoom. Additionally, the initial interview has allowed the researcher to provide participants with information to help setup their video cameras, microphones, or headsets. The procedures for obtaining consent, as well as conducting the interviews, are further discussed below.

Consent

Prior to the initial interview, participants have been provided with a letter of information to review via email. During the initial interview the letter of information is reviewed, and participants are reminded that any information they provide will remain confidential, be deidentified after data collection, and that they have the right to withdraw from the study at any point during the interview and up until the completion of the second interview, when data is deidentified. Time has been allotted during which participants could ask questions and address potential concerns regarding the study. Following the review of the letter of information, participants are asked for oral consent. To avoid potential technical issues (e.g., inability to

digitally sign the form, no email was available), oral consent has replaced the need to physically sign the consent form.

Demographic Information

Following consent, participants are asked to complete a questionnaire to obtain demographic information (Appendix A). Demographic information has been collected during the initial interview to reduce time and potential fatigue during the second interview. Through the questionnaire, information collected includes details on age, gender, place of residence, ethnicity, education, employment/retirement history, marital status, level of physical activity, sedentary time, history of chronic disease, ability to exercise independently, and functional status (e.g., the participant identified as having a disability, impairment, mobility limitations, or fully independent). At the end of each initial interview, arrangements are made for a follow up interview for data collection. For the start of the second interview, each participant is briefly reminded about key points of the study, and ongoing consent is confirmed.

Interviews

To begin the second interview, the letter of information is reviewed, participants are given the opportunity to discuss questions or concerns regarding the study, then recording begins, and consent is documented. Following consent, the semi-structured interview begins. Semi-structured interview guides incorporate pre-determined, open-ended questions with opportunities to ask contextualized probing (i.e., follow-up) questions making them versatile and flexible (Kallio et al., 2016; Mueller & Segal, 2015). The opportunity during semi-structured interviews to ask probing questions and adapt the wording of questions ensures participants grasp the intended meaning of the question. Moreover, pre-determining some interview questions helps keep discussions on topic and provides consistency between interviews (Mueller

& Segal, 2015). The flexibility of semi-structured interview guides allows researchers to obtain rich, detailed data for analysis (Mueller & Segal, 2015; Rowley, 2012; Turner III, 2010). Thus, a semi-structured interview guide has been developed for this study focusing on topics related to accessibility and the senior centre environment (Appendix B). The interview questions have been developed with phenomenological overtones to procure information regarding OAs perceptions and lived experiences.

To ensure the interview guide is pertinent to the research question(s) and addresses gaps in the literature, thorough literature reviews of the research topic and interview methods should be completed (Jacob & Furgerson, 2012; McGrath et al., 2019). Following a thorough review of the literature, the interview guide for this study has been developed. The interviews begin with a discussion regarding the participant's current involvement with the senior centre and progress to discuss their experiences, opinions, perceptions, and knowledge of accessibility in the senior centre environment. The interview guide encompasses several key subheadings including a) OAs' experiences with and opinions of the senior centre; b) knowledge and understanding of accessibility and the environment; c) OAs' perceptions of accessibility and experiences with barriers at the senior centre; and, d) recommendations or ideas that may help enhance equitable access to the senior centre. Participants have been encouraged to describe and justify their points as best as possible. Additionally, the interview guide incorporates probes that have been used to gather greater detail from participants regarding accessibility issues.

The author has conducted all interviews. A comprehensive interview protocol developed by the research team has been used to guide questions and document answers during the interviews (Creswell, 2014). Using the recording feature available in Zoom, the interviews have been audio and video recorded. During the interviews, notes are made regarding body language

and non-verbal cues that may not be apparent through audio recordings. Additionally, the primary researcher has recorded thoughts prior to and after each interview.

Data Analysis and Interpretation

Following each interview, data have been transcribed verbatim for subsequent data analysis. This has occurred simultaneously with data collection to explore and connect emerging themes, monitor the data for saturation (i.e., redundant information, a paucity of new information), and note key information or significant statements to include in the manuscript (Creswell, 2014; Deneau, 2019b). Interview data have been analyzed via thematic analysis, which refers to a standard coding and comparison procedure (Corbin & Strauss, 2008; Deneau, 2019b). Thematic analysis begins following verbatim transcription of the interview data and a review of the transcripts. In total, three individuals have coded the transcripts. After receiving coding training from individuals experienced with qualitative methods, the author and two undergraduate students have coded two transcripts independently. All coders have met to discuss the emerging codes. Then two more transcripts have been independently coded by the three individuals. After meeting to discuss codes, discrepancies in coding have been discussed and a coding framework for the remaining two transcripts has been established. All transcripts have been reviewed a second time to ensure coding aligns with the developed coding framework.

Inductive thematic analysis detects patterns, themes, and categories within the transcribed datasets in a process referred to as open coding (Burnard, 1991). To begin, all transcripts are reviewed to acquire a general impression of the data and develop preliminary themes. Short and simple codes are then assigned to ideas and meanings about accessibility and barriers that seem significant across participants (i.e., open coding; Burnard, 1991; Deneau, 2019b). After all data have been coded, similar codes are grouped into categories representative of higher order themes

to condense the number of codes produced through open coding (Burnard, 1991; Creswell, 2014). Thus, the condensed codes are then translated into sub-headings within the higher order themes (Burnard, 1991). Once saturation has been achieved and no new themes emerge from the data, the themes are analyzed to identify variations or similarities in meanings of accessibility, environmental barriers, and the senior centre environment among OAs. Thematic analysis concludes with an interpretation of the emergent themes, supported by representative quotes, aimed at explaining and drawing broad conclusions about accessibility, aging, and senior centres (Burnard, 1991).

Interpretation guided by Heidegger's interpretive (hermeneutic) phenomenology enhances the understandings of the phenomena and explains why the phenomena has been experienced in a particular way (Wojnar & Swanson, 2007). As context can help readers acquire a greater understanding of the results, the social, political, and historical context has been considered during analysis (Creswell, 2014). The findings of this study have been interpreted with the intent to provide researchers, policymakers, and stakeholders information regarding areas of needed improvement and potential solutions that may be used to aid in the development of more accessible senior centres for OAs.

As part of the ongoing data analysis process, participants who agreed to participate further have been contacted by email for member checking. This process involves providing each participant a cover letter along with a summary report of the results (Appendix C). The cover letter contains an explanation of member checking and emphasizes that the results presented are based on an analysis of all the interviews (Birt et al., 2016). Thus, the presented results are intended to be representative of most participants' experiences (Birt et al., 2016). The cover letter also contains information as to how the participants complete the member checking

process. It has been reiterated to participants that this process is an opportunity for them to influence data analysis, and that the results provided are not the final version (Birt et al., 2016).

Results

Six OAs have volunteered to participate in this study. Interviews have occurred between March 16th and April 1st, 2021. Data analysis has begun mid-May and member checking has occurred between June 25th and July 2nd, 2021. For member checking, five out of six participants have completed the process. One participant did not check her email prior to the cut-off (i.e., July 2nd) for feedback to be incorporated. Interview one, used to gather demographic information, ranges from approximately 7-to-13 minutes ($M = 10$ minutes); whereas, the second interview ranges from approximately 40-to-105 minutes ($M = 66$ minutes).

The mean age of participants is 72 years (see Table 1 for demographic information). Four participants have been diagnosed by a doctor with chronic health conditions including high blood pressure, high cholesterol, asthma, arthritis, transient ischemic attacks (i.e., ministrokes), or cancer. Two participants identify as having a disability or impairment. Most participants identify as fully independent ($n = 5$) meaning they could complete all activities without assistance. One participant identifies as somewhat independent meaning they may require assistance for strenuous activities (e.g., exercise or manual labor). On average, the participants are sedentary for 5.6 hours per day during waking hours and engage in physical activity five days per week. All participants exercise independently. Participants have been members of the senior centre between three and 16 years ($M = 7.5$ years). Prior to the COVID-19 pandemic, participants attended the senior centre between once a month and four times per week ($M = 2.3$ times per week). Most participants have not physically visited the centre since the beginning of the pandemic (i.e., March 2020; $n = 3$) or earlier (i.e., February 2020; $n = 1$). During the past year

(i.e., March 2020 – March 2021), two participants have not attended any programs (physically or virtually), one participant attended rarely (approximately two-to-four times), one attended at least once per month, and two participants continue to attend at least twice per week.

Table 1

Participant Demographic Information

Pseudonym	Gender	Ethnicity	Age	Education	Employment Status	Marital Status
Amy	F	Canadian	64	Master's degree	Retired ^b	Single
Dina	M	Canadian	76	Bachelor's degree	Retired	Married
Glenn	M	Irish Canadian	73	Master's degree	Retired	Single
Kelly	F	Canadian	74	College	Retired	Married
Jonah	F	Canadian	70	Bachelor's degree	Retired	Widowed
Cheyenne	F	British	74	Grade 9 ^a	Retired	Divorced

^a Completed some university courses. ^b Identifies as retired, but works part time.

Following each interview, data have been transcribed verbatim. Thematic analysis has been employed to detect patterns, themes, and categories within the interview data. Several participants have noted during the interviews that they do not believe they can contribute to the study, as they lack experience with accessibility because they are independently mobile (i.e., not reliant on others). In other words, participants identify as having an adequate functional capacity, and therefore, do not perceive themselves as experiencing accessibility issues. When asked why they have volunteered to participate, participants stated they do not think other members at the senior centre would volunteer. Therefore, they agreed to participate because they want to help the researcher and to help provide a positive report of the senior centre. Overall, participants report positive experiences at the senior centre crediting the social environment as one of, if not the best, aspect of their involvement at the centre. Dina (*m*, 76 years) summarizes this sentiment:

But the the major thing that I've found with all the activities, is that when people come in, you don't bring any baggage. Everybody's accepted for whom they are, um, no

questions asked pretty much. I mean there's always an exception to the rule, but o-on the whole, no matter their situation... mentally, physically, um, socially, they're accepted in just as one of the group.

Dina (*m, 76 years*) reiterates and adds to these perceptions during the member checking portion by stating:

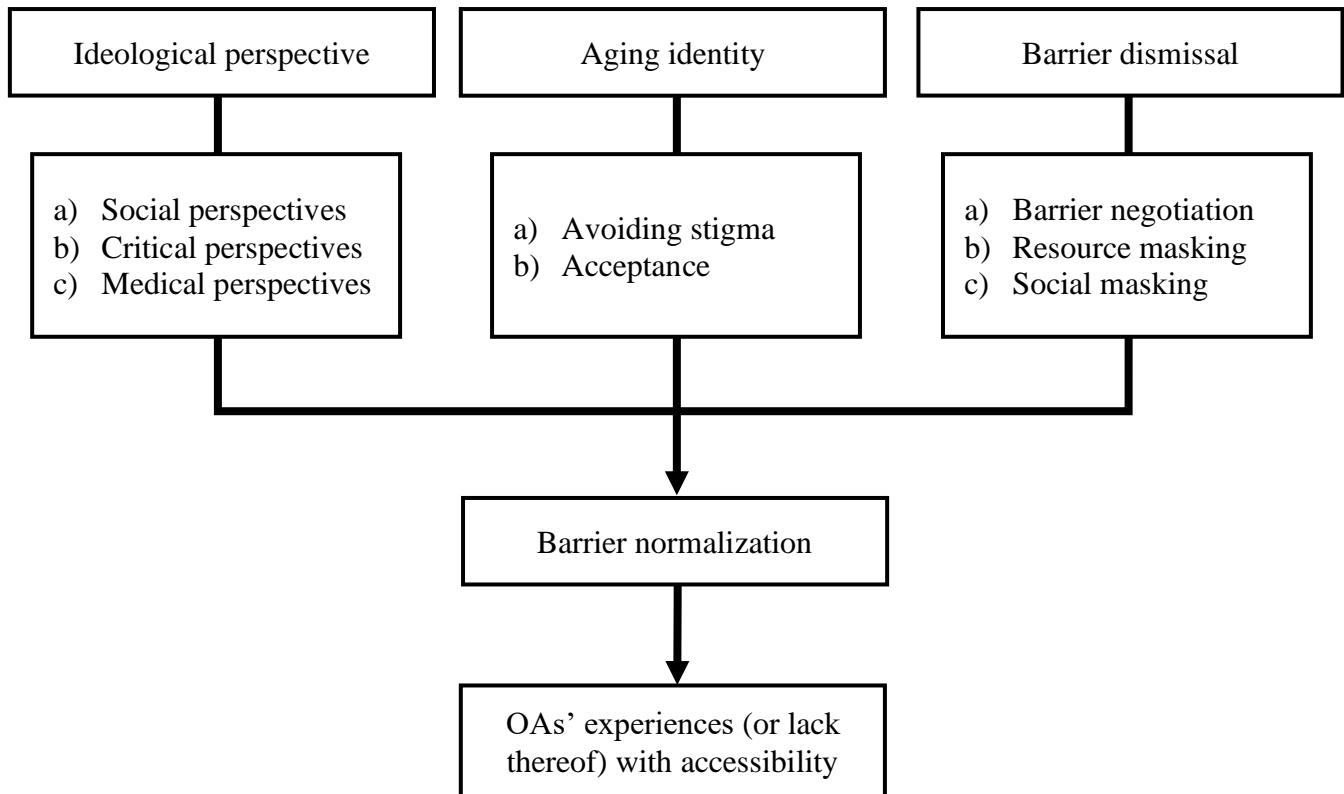
In my mind, one of the greatest features of [senior centre] is that whomever comes through the door--the well off, not so well off, downright poor, healthy, challenged, alert, not so alert--regardless of their status, background, attitude, their work, etc., are treated with kindness, respect, dignity and an air of welcome acceptance. The community needs to know that atmosphere exists and that they should have the opportunity to be part of it.

Participants express adoration and respect for the organization, staff, and other members.

However, some common barriers have emerged from the data, such as restricted parking, limited functionality within the cafeteria, conflicting program schedules, uneven pathways, poor public awareness, and limited funding (for the senior centre). Although on the surface there appear to be few barriers discussed by participants, further analysis of the interview data has permitted a deeper understanding of participants' experiences revealing processes of barrier normalization. Various methods have been employed to cover up, rationalize, or dismiss barriers within the senior centre leading to the normalization of environmental barriers. Barrier normalization manifests through three themes relating to aging and accessibility that emerged from the data: *ideological perspective*, *aging identity*, and *barrier dismissal* (Figure 1). Each theme is further discussed below. Pseudonyms have been assigned to maintain participant confidentiality.

Figure 1

Flow Diagram Connecting Emerging Themes to Barrier Normalization



Ideological Perspective

A variety of ideological perspectives have emerged from the interview data. Each perspective has been identified to create three subthemes: *social perspectives*, *critical perspectives*, and *medical perspectives*. Understanding the perspectives through which OAs view aging, disability, and barrier construction may help to interpret how they experience accessibility.

Social perspectives

Social perspectives are evident among participants when discussing what accessibility means to them. Participants' definitions of accessibility focus on social, environmental, or

political factors. These descriptions align with the social model of disability which emphasizes the role that social, environmental, and political constructs play in producing barriers shifting the cause of barriers from the individual to the environment (Stamou et al., 2016). Upon examination of Cheyenne's (*f*, 74 years) definition of accessibility, it is evident that she perceives accessibility in relation to environmental factors focusing on aspects of the built environment, such as space and stairs:

Accessibility means that, uh, you can get in and out of the place, the washrooms are accessible, um, the, you know, there isn't any, a lot of stairs, that sort of thing.

Similarly, Dina (*m*, 76 years) highlights environmental factors when defining accessibility, then moves beyond the built environment to encompass the importance of safety and information availability in producing accessible environments (Crombie et al., 2004; Deneau et al., 2019a; Kärmeniemi et al., 2018):

Um, the obvious the obvious understanding is, are people able to get in and out of the door, is the parking lot clear in the wintertime, how safe is it, etc. The the other part of accessibility is... who in the city... could benefit from the service, but either doesn't know about it, or doesn't know how to get there, or is apprehensive about going, and I think those are the bigger, uh, the bigger obstacles to accessibility.

For Jonah's (*f*, 70 years) response, social factors of accessibility are highlighted when she discusses feeling welcome:

...it's being able to join and, um, being able to choose what you want to do without, um... and feel welcome, I guess you know, and feel welcome.

The social model of disability shifts responsibility for disability and barriers away from the individual towards a collective (i.e., society). Freeing individuals of responsibility for their

disability may afford them the opportunity to be included and accepted within their community through the production of accessible environments. Employing social perspectives could foster a culture of accessibility normalization (i.e., accessible environments are the norm, not the exception), as opposed to barrier normalization (i.e., barriers are a normal part of any environment). For this cultural change to be sustained social perspectives may need to be incorporated within practices that are then implemented, embedded, and integrated over time (May et al., 2009; Wood, 2017). Thus, normalizing practices that address accessibility from an environmental standpoint.

Critical perspectives

Critical disability studies distinguish between disability (i.e., social, environmental, political construct) and impairment (i.e., physical properties of the individual) highlighting the corporeality of the body, while acknowledging social constructions of the body used to interpret difference (Goodley, 2013). By incorporating impairment, critical disability studies challenge binary understandings of ability (i.e., abled vs. disabled) and demand inclusive responses from others (Goodley, 2013). Amy (*f, 64 years*), Glenn (*m, 73 years*), and Kelly (*f, 74 years*) employ critical perspectives in their definitions of accessibility by discussing environmental factors in relation to impairment. Amy (*f, 64 years*) illustrates this by defining accessibility in the following way:

It-It means making whatever activity a person is involved in, um, easy for them to fully participate, like to fully [emphasis on fully] engage and fully participate... For example, if someone is in a wheelchair, that they can still do a fitness class there's enough room for them to to participate in a class that might be full of of other people. I don't want to use able-bodied, but people who are not in, um, in wheelchairs. Um, and, um, yeah, I mean

anyone who has any kind of, um, disability or special needs that they are able to participate.

Kelly (*f, 74 years*) further demonstrates a critical perspective by discussing environmental factors of accessibility in relation to her artificial knees, as well as individuals who use wheelchairs or walkers:

Uhh, being able- not having to worry about climbing a lot of stairs and getting into a place. Because, yeah, I have artificial knees, so if I had to climb a lot of stairs to get there and then a lot to come back down. It would be maybe more bothersome. You know, ground level, um, anybody with wheelchair or walker, you can go into it. Um, they're, I mean, they're more than willing to help you...

Participants also demonstrate critical perspectives when describing a social, political, or environmental barrier at the senior centre, then contextualizing that barrier in relation to impairment or corporeal characteristics. Cheyenne (*f, 74 years*) articulates this perspective when discussing parking at the senior centre:

Well, there's a church, I think about maybe three or four buildings down and you can park in their back back, um, when there's nobody there, but the thing with that is, is if it's anybody who's got any kind of a disability, that's going to be a long way to walk. - I think somebody with a walker or a cane, if it's raining or if it's, uh, the roads, it's bad outside, or if the sidewalks are not perfect, um, it it can be I think a bit harrowing for them. I don't have that problem, but I can foresee where somebody who did, it it would be a problem.

Critical perspectives are also demonstrated when participants blame an impairment for a barrier, then acknowledge that they could be wrong, as they only know accessibility from an able-bodied perspective. Jonah (*f, 70 years*) provides an example:

No, I think it's all- I think it's- I think it's okay, like I- it's not, they're not huge aisles or anything like that by any means, but, umm, I think it's- I think it's okay. Like I said, I can't be sure. Again, I'm not... I'm... I can walk, I'm ambulatory, so it seems like it's okay for most people.

Discussing accessibility in relation to impairment may help deconstruct binary understandings of ability. Rather than an individual having an able or disabled body, one's experience of disability and/or accessibility is relative to their impairment. Therefore, the ways in which individuals experience barriers should be relative to their specific impairments. However, this focus on impairment may be reflective of the widespread integration and normalization of victim-blaming ideologies. Critical perspectives may maintain that responsibility for encountering and overcoming barriers is the individual's responsibility. As environmental factors are related back to individuals' impairments, critical perspectives may maintain an emphasis on bodily difference and inability. Thus, potentially leading OAs to dismiss or normalize barriers to avoid associations with impairment.

Medical perspectives

Unlike social and critical perspectives, medical perspectives do not consider environmental constructions of disability. Medical models of disability and aging promote victim-blaming ideologies (McLeroy et al., 1988), which place responsibility for barriers on the individual's impairments (Ephraim et al., 2006; Hyde, 2000). In essence, blame the person and their disability, and then shame them for their situation. The medical model is widely accepted within society (Donoghue, 2003). Consequently, it is unsurprising medical perspectives emerge from the interview data. However, medical perspectives are not apparent in the participants' definitions of accessibility; they underpin participants' descriptions of barriers. When discussing

barriers to activity participation at the senior centre, Jonah (*f, 70 years*) describes how it is the individual's responsibility to overcome the barrier of conflicting schedules and inadequate space by registering early or signing up on the waitlist:

Umm, I know for instance, that the thing about the sewing group is that everybody wants to do it. A lot of people do want to do it, and you have to kind of go on a waiting list... And then some of the computer stuff, if there was a computer, um, like I said a class on how to do, how to use your, um, your phone or your iPad or whatever. Um... That was limited by the space in the room... So, but again, you'd have to, um, make sure you signed up... on time, or I mean, you know, that I- an- early so that you could get into that.

Dina (*f, 76 years*) and Kelly (*f, 74 years*) further demonstrate medical perspectives by suggesting it is their own responsibility to overcome barriers in the built environment. Rather than questioning the source of the barrier (e.g., unpaved or uneven pathways, sitting only options), they internalize responsibility for overcoming their respective barriers. Dina believes he needs to avoid or exert greater caution when walking across unpaved areas of grass:

...I-I fell one day just going up the grass. So that's why I don't go up the grass as often as we used to before and when I do I go very slowly.

Furthermore, Kelly (*f, 74 years*) speaks about the barrier as a personal problem resulting from her impairments:

I'll get up every so often 'cause I don't like to sit for a long time. Your- my my knees get stiff. So, but that's just probably arthritis, too, but it would be something I get up and walk around for a little bit.

This focus on the individual heavily emphasizes individuals' inabilities (Brisenden, 1986). Glenn (*m, 73 years*) and Cheyenne (*f, 74 years*) further illustrate the barrier as the person by assuming other members at the senior centre could not complete tasks for themselves, as the individual has an impairment or limitation preventing them from being 'able'. Glenn (*m, 73 years*) provides an example of the person being the reason for the barrier when he shares his observations of a fellow member failing to properly use a coffee urn:

...she was having a little trouble with it because she couldn't get the- she couldn't get the, uh, the spout puller thing down, you know.

In another example, Glenn (*m, 73 years*) describes how a person's ability to multi-task and perform what may be assumed is a typical activity of daily living is compromised by their own mobility limitations:

...Well, they were just they were just very slow to move. And also, um, one time there was a person with a cane, so they could only – they had a cane in one hand and a tray in the the other - that was that was starting to be difficult for them.

Cheyenne (*f, 74 years*) speaks about another member who may be able to participate in some activities, but a cognitive impairment impedes their ability to participate in activities with more complex rules:

I, I th- I don't know, well anything else I'm not sure th-, I mean, they probably could do-go for the exercising, but they couldn't play pickleball or, uh, anything like that because, um, I, I, they wouldn't know how to follow the rules or whatever. If they did, I'm sure they would be okay, but I, I would have to say I don't think so.

Cheyenne (*f*, 74 years) also infers that any individual who falls or hurts themselves while at the centre would be to blame, as there must be something abnormal about them. She justifies blaming the individual by suggesting that the senior centre environment is accessible:

So, I I think what they've got- I think what they've got is good and I think the way in which they have it set up, that you really wouldn't, uh... you know, you wouldn't be in a way to get hurt or fall or stuff like that. I mean that happens, but I think that's not the fault of the center. It's probably just something with the person themselves.

Through a medical perspective lens, it is the responsibility of an individual to overcome barriers and seek solutions to their undesirable situations or 'flaws' (Brisenden, 1986; Donoghue, 2003). Supporting perspectives that promote victim blaming may lead to the perpetuation of stereotypes about disability and aging (e.g., unwanted, burdensome, abnormal; Donoghue, 2003), which could hinder progress towards inclusive environments. Therefore, normalizing barriers is viewed as the fault of the individual.

Medical and critical perspectives reflect a historical and stereotypical way of framing barriers as the individual and/or their impairment; whereas, social perspectives employ the opposite suggesting barriers are environmental constructs. This latter perspective acknowledges that aging, and any age-related concerns one may experience as a result, are normal. It should be expected that individuals will come across barriers as they age. However, barriers should not be normalized as the individual experiencing aging and disability; there needs to be greater awareness and acceptance that those barriers result from social, environmental, and political constructs. Increasing awareness of social perspectives may initiate processes of change within individual and collective practices that may then be embedded and integrated at a larger scale.

Therefore, PE fit and accessibility should be achieved through modifications reducing environmental demand, rather than through rehabilitation of an individual's abilities.

Aging Identity

Considering participants express perspectives rooted in the medical model it may not be surprising that they also at times subscribe to aging stereotypes emphasizing decline and physical functioning. The discussions that have occurred pertaining to aging stereotypes may be separated into two subthemes: *avoiding stigma* and *accepting the aging process*.

Avoiding stigma

Aging stereotypes relate to concepts of decline and dependence stemming from literature examining frail or ill OAs (Dionigi, 2006). The findings that emerged from research on frail or ill OAs have been used to guide beliefs about aging and old age potentially reinforcing physical functioning as necessary for successful aging (Dionigi, 2006). Therefore, to be perceived as successfully aging, OAs may feel pressure to avoid physical decline. Participants in this study clearly express a desire to maintain physical functioning and avoid age-related decline. For example, Glenn (*m, 73 years*) cites his internal motivation for remaining healthy as his driving force to stay active:

Yeah, they don't have to keep me interested to go. That's my own inertia, making me go because I want to stay healthy.

Dina (*m, 76 years*) spoke of making a deal with his spouse that encompasses neither of them becoming victims of lost physical functioning and age-related declines. That they basically need to make the conscious choice to avoid one simple foul move that may leave them dependent:

Um, like, my wife and I have made a pact, no one will trip. We can't afford to fall.

Anybody, anybody that's at the center, whether they just turned 50 or they're 96. Um, one fall can put them in a wheelchair for the rest of their life. It's it's really that simple. You, we cannot afford to fall, we have to keep our wits about us. We can't lose track of where we're going, or why we can't jump up from the table and run over, uh, um, we just cannot afford to fall.

Participants actively try to prevent associating themselves with physical decline and disengagement stating they keep busy or active lives within the senior centre and broader community. Dissociation from stigma manifests as participants making a distinction between themselves and the stereotypical OA. Cheyenne (*f, 74 years*) illustrates this manner of dissociation in the following quote:

Like I said, I think, with with, um, the age group that's there, and I would say the greatest majority of the age group, group is probably 65-to-70 and over, and we don't have a whole lot to do with our days, most of them don't. I do. I like I said I am a... busy person. And so, but for some of them that is their day. That's that's where they go for their socializing and to get out and to be with people.

Here, Cheyenne (*f, 74 years*) seems to indicate a hopelessness or wasting away of individuals in their later years. At first, she lumps herself in with that group, but then quickly attempts to dissociate herself from decline by stating she is a busy person. Although Cheyenne (*f, 74 years*) indicates the socializing aspects (i.e., interacting with others) of the senior centre, other participants use this space and membership as a preventative measure to avoid decline by improving or maintaining physical and mental functioning, and maintaining community involvement. It was common among participants to assume most OAs would just sit at home (be

disengaged, sedentary) increasing their health risks if they do not have engagements, such as senior centre involvement. As Glenn (*m, 73 years*) indicates, he began attending the senior centre to maintain an active lifestyle and prevent age-related decline:

...that's the reason I started to do those activities I needed to keep my body going you know. I didn't I didn't want to seize up, so.

Kelly (*f, 74 years*) further illustrates the senior centre as a site for maintaining social and physical activity counteracting assumptions of inactivity in later years of life:

I enjoy the, um, the company, the socializing. Uh, some of the people I've known from before. So, it's just staying in contact and it's giving me something to do since I've retired and not just sitting at home. So, your brain is still functioning and like learning new things, you know.

Accepting the aging process

Although there are individuals who are attempting to avoid age-related decline, whether they are consciously aware of these aversions or not, there are other participants who employ the opposite viewpoint; accepting the aging process. For example, Amy (*f, 64 years*) discusses how the senior centre is geared towards OAs as other establishments, such as a gym or fitness centre, would be for individuals with higher levels of physical functioning. While Amy (*f, 64 years*) recognizes that senior centres are for OAs, she positions herself as too high functioning, dissociating herself from old age and senior centre activities:

Um, I, because, um, being on the board, and and being over 50, I said that this would be my support of [the senior centre], um, rather than giving a donation, I donated I paid as a member, but I don't use the facilities, so it's a way of of a donation. I'm not a crafty person. Um, and I, I'm not a card playing person. And I'm really not I don't- I'm not the

kind of person who would go to a place to socialize. I-I just I don't do that... I have a group of friends and we're all very active. Um, I belong to a gym... and it's high level, and I just, I-I have seen the fitness class there, and it's not high level enough for me.

This quote demonstrates Amy (*f, 64 years*) is denying the aging process for herself, but welcomes others to accept the aging process through senior centre involvement. This denial became even more evident during member checking when Amy (*f, 64 years*) states, "I do not consider myself old." However, most participants acknowledge their age and/or the likelihood that they may one day experience decline ascribing in some way to an aging stereotype. Participants expect to one day experience the stigma of aging and old age, yet they are only contemplating the possibility of age-related decline not preparing for the associated changes. Glenn (*m, 73 years*) articulates the likelihood of age-related decline when discussing the built environment of the senior centre and the notion that he will one day need accessibility features:

Well, you know, again I I don't see any features there, um, you know the building is, uh, I think the building is well laid out for, for, uh, people who, who, who, at some point in their life and that means me as well, would need to be able to move around with some amount of freedom.

Dina (*m, 76 years*) echoes Glenn's (*m, 73 years*) acknowledgement of age-related decline, then highlights that, although aware of the future possibility, he is not yet prepared for this transition:

Uh, we have our own cars, so we drive. Th-that is not a problem at this point. We, we, we both understand the day is going to come when, we either can't go or won't be able to drive, and things like that, we... we haven't made any plans at all for what... alternatives might be.

There are also participants who have already begun experiencing decline or disability. In these cases, OAs may adopt complacent attitudes accepting that they are experiencing age-related decline and, as a result, cannot participate in certain activities. Jonah (*f, 70 years*) demonstrates an acceptance of activity limitations due to decline when discussing why she cannot play pickleball at the senior centre:

Yeah, pretty well, I think most other like they I know people they- one thing that I always wanted to do, but my knees are not that good anymore, and, uh, from too much, I don't know, volleyball and stuff years ago, so but, um, pickleball.

Dina (*m, 76 years*) further demonstrates acceptance of activity limitations resulting from the aging process when explaining why he no longer plays pickleball:

Um, I don't play pickleball anymore because I can't maintain my balance.

Assumptions that old age is associated with decline or disability and results in activity limitations appears to be accepted by participants. Acceptance of decline or disability may contribute to OAs' preparedness to negotiate or dismiss barriers for themselves or others, as they perceive barriers to be part of the aging process. Thus, potentially reinforcing medical perspectives suggesting to OAs that their or others' bodies are the problem causing barriers. As suggested by Glenn's (*m, 73 years*) description of another member, wherein he assumes the member has an impairment creating a barrier:

So, you know, sometimes I noticed like one lady, really I suppose she had arthritis or something and she really, really just couldn't seem to get a grip on the coffee urn.

Maintaining physical functioning is not the only determinant for successful aging, however. Several other environmental factors, such as social connection, activity enjoyment, and civic engagement, may contribute to one's perception of successful aging. Focusing on bodily

function communicates to others, and in particular OAs, that barriers they may begin to experience as they age are a result of their body failing. Thus, ignoring social, environmental, and/or political constructs that produce barriers. Maintaining this way of thinking may lead to barrier normalization among OAs, as they perceive the only way to avoid the stigma associated with aging is to suggest barriers do not exist for them, subsequently portraying themselves as independent and 'able'. Participants may engage in negotiation and dismissal to gain a greater sense of control over their own identity and counter associations with old age, decline, or dependence. Consequently, individual practices (e.g., avoiding activity) may integrate medical perspectives resulting in the normalization of barriers within various environments. In sum, medical perspectives, compounded by poor awareness about environmental construction of barriers, may lead OAs to negotiate or dismiss barriers they encounter; illustrated by the final theme: barrier dismissal.

Barrier Dismissal

Participants dismiss environmental barriers through various means, which have evolved into three subthemes: *barrier negotiation*, *resource masking*, and *social masking*.

Barrier negotiation

Although some participants identify barriers to accessibility, they often follow barrier identification with an explanation to justify or negotiate and then dismiss its existence. This is being referred to as barrier negotiation. Participants often describe barriers as '[not] really an issue', 'a teeny tiny drawback', or accepted/normalized them as part of life. Dina (*m*, 76 years) demonstrates barrier negotiation when discussing the senior centre's need for funding:

...but they they need money. They were dropped by United Way... So, I mean that's just a fact of life...

Dina (*m, 76 years*) is dismissing any barriers within the senior centre as a result of not having the funding to do anything to fix or modify them. The tendency to downplay or negotiate barriers may result in the adoption of complacent attitudes among participants. In addition to lack of funding, participants demonstrate complacency and negotiation when discussing barriers to participation (i.e., conflicting program schedules, waitlists, wait times), and parking (i.e., difficult navigation, restricted parking spots). Complacency is highlighted by Jonah (*f, 70 years*) when she discussed how members of the senior centre navigate conflicting program schedules:

...Umm... well... you ha- it's it's a matter of picking and choosing. I mean you either say okay I want to do sewing or I want do yoga- or whatever. And the thing is sewing is only two days a week, okay. Umm, and then, Yoga and all those other things are usually one day a week, so you could probably... decide that you're going to miss something one day, if you want it- like the sewing you could miss in order to do whatever. And that's just what people end up doing and and they're... even the people that are in the sewing class except for the fact that you're taking up a space but if you want to leave and say I'm going to Zumba... And it was no problem.

The ability to make modifications has also led participants to negotiate barriers. When modifications are made that enable the desired outcome, participants adopt complacent attitudes, even though the root cause of the barrier is left unattended. This is apparent within Glenn's (*m, 73 years*) comment about parking anywhere if the senior centre's designated parking spots are unavailable:

And, and the and the part that we're allowed to use is full. So, I'll just park anywhere. No one has ever bothered me. I'll put my pass on and that's it.

Amy (*f, 64 years*) addresses the parking issue as well. She highlights the fact that one of the options has various barriers associated with it, but that she also just chooses an alternative option in the hopes to avoid navigating the obstacles:

So, we are allowed to park in the Shoppers Drug Mart parking lot. I stopped doing that because, um, it-it's not always easy going in and out of that parking lot 'cause some people take up two spots, and even the parking lot in the back is really Shoppers Drug Mart, so I try as much as possible to park on the street. I have a very small car... I'm able to find a spot on the street, which actually is much easier than having to go all the way to the back row, o-or in the Shoppers Drug Mart parking lot.

Further illustrating the adoption of a complacent attitude in the presence of 'acceptable' modifications is Amy (*f, 64 years*). She describes how losing funding led to a community outreach program being downgraded to a telephone assurance program. Modifying the type of program is viewed as an acceptable solution, but leaves the barrier of funding unaddressed:

Um... and they have programs outside where they go to isolated home, uh, isolated seniors, which actually that funding, they lost that funding a couple of years ago, so yeah, it's it's it's pretty horrible, so they can't do that anymore, but they still do outreach through telephone assurance, um, which is what I do, when I call people.

Part of the barrier negotiation process for participants involves implementing their own modifications to overcome challenges experienced as a result of an impairment. Kelly (*f, 74 years*) spoke frequently about the modifications she makes to overcome challenges. For example, she describes asking her family for help when she encounters barriers at home:

Or, um, sometimes I think, oh well, if you can't open up a jar, but you want a jar opened up ahead of time, then you, "Oh, I know when you come to the house, can you open up

the jar for me”... I think, oh, I could go for some pickles, say some dill pickles, I can't open it sometimes. Oh, okay, well the next time my daughter or my son or somebody comes, I get them to open it for me, and then I just put it in the fridge and then I have it.

Kelly's (*f, 74 years*) modifications often involve adapting something about herself or relying on others, rather than targeting the barrier at its source (i.e., design or environment). This process of modification may lead the participant to believe barriers are not an issue because they can be overcome as they negotiate the source to be directed at the individual level. Alternatively, when participants cannot think of a modification for a barrier, they perceive it as unsolvable and adopt a complacent attitude to negotiate the barrier. Amy (*f, 64 years*) demonstrates this when discussing parking at the senior centre:

Well, we can't do anything about the parking lot, 'cause it's not our parking lot. Um, 'cause I think having their own parking lot would be really great for seniors who, you know, it's not that it's a busy street, but you're allowed to park on both sides of the street on McEwan and if there are cars coming, I mean people do have to watch getting out of their cars. Um... [pause] But I, I, I can't see how they could do that...

Although parking was an often-discussed obstacle to navigate, the majority of participants stated they do not see any barriers at the senior centre acknowledging that their functional capacities are adequate and as a result they may just be unaware of barriers, as demonstrated by Jonah (*f, 70 years*):

Like this part of it seems to be more about my definition of accessibility and maybe I'm not the person that should have been asked because I have, you know, like I said I'm mobile.

Glenn (*m, 73 years*) reiterates this idea by suggesting he is unaware of barriers because he does not need to rely on accessibility features:

I mean if I saw that, you know, people trying to get in with a wheelchair and there was no buttons to push I certainly would have discussed it. I would have complained. But I I wouldn't have, I mean, unless I saw that, I probably wouldn't have noticed it because I don't, uh, when I go to malls, and stores, and stuff, no, I don't push, I see the button, but I don't push it, you know. It's not there for me, so. [clears throat] So, uh, I probably wouldn't have noticed it, you know, unless just somebody who needs, who needs it, and it wasn't one there then I'd make a complaint.

Glenn (*m, 73 years*) claims he would advocate for changes should he be aware of more existing. He continues by directly acknowledging that his knowledge of existing barriers is limited due to the fact that he does not perceive that he experiences any himself:

...again, you know, I don't. I don't notice the barriers really... that's the, that's the, the issue for me.

Therefore, it is possible that individuals do not notice barriers as a result of their level of ability and movement performance. However, it is also possible that participants either negotiate what they perceive to be a barrier, or even at times dismiss barriers as a result of focusing on other aspects deemed more important. Negotiating barriers could contribute to barrier normalization, as participants may be consciously or unconsciously choosing to uphold current practices which position barriers as personal problems.

Resource masking

Participants may dismiss barriers due to their perception of the senior centre. Participants may be unknowingly inclined to overlook barriers at the senior centre because its value as a

resource outweighs the minor barriers that are present. A sentiment that has been expressed by many participants, but is articulated by Jonah (*f, 70 years*), “It’s a great place to be, but it’s also a resource.” The senior centre provides multiple services in a single convenient location, potentially acting as a solution to barriers OAs encounter within the community and at home (Hutchinson & Gallant, 2016; Tang, 2017). Dina (*m, 76 years*) highlights the importance of the meal program offered at the senior centre as a resource for various individuals:

There’s there’s there’s a few people who rely heavily on the center, being able to sell them frozen dinners that they can take home because they’re single, they’re in a wheelchair, and that’s something that they can prepare at home...

Glenn (*m, 73 years*) also highlights the senior centre as a resource for individuals without computers at home, while noting the membership is inexpensive:

...it’s so inexpensive; I can’t believe how little they ask for membership fees for all that is available to people who want to take advantage of all that’s there. I mean people that don’t have computers at home, they can go there. There’s always someone there to help them with the computer...

Furthermore, the senior centre may be perceived as irreplaceable. Kelly (*f, 74 years*) discusses this sentiment:

I’d have to start looking for other places to go for cards and to meet people and yeah, and there isn’t a lot, there isn’t a lot. I mean if you belong, if you belong to retirement homes or seniors’ homes may have it. You know, they have the socializing, and they have the, uh, going out for dinner, and they have games and stuff like that, but you can’t just walk into those places and do that, unless you live there, you know. So, this fills that, um, hole

be-before you go from say your residence to a retirement. If you you get older and you can't stay in your own residence, yeah. So, this fills a hole for a lot of people, you know.

Cheyenne (*f, 74 years*) and Dina (*m, 76 years*) further promote the senior centre in this study as a valued and irreplaceable resource. Cheyenne (*f, 74 years*) highlights how her senior centre is superlative to others she has visited:

...when I go on vacations or do anything, I always go to whatever their senior center is.

And, um, none of them have touched this one. I haven't found *any* that are was good.

Dina (*m, 76 years*) imparts that he thinks the senior centre is not recognized enough for the contributions it provides to OAs, and how it is a facilitator for prolonged health and wellness:

Um, it's it's an understated in my mind, a very understated organization. It probably provides a better quality of life catalyst than most of the organizations that are out to try and help people.

In later life, many OAs value having a place to go to develop and maintain social connection. Senior centres may facilitate social well-being among OAs by offering a place for companionship, emotional support, and socialization (Hutchinson & Gallant, 2016), as Dina (*m, 76 years*) indicates:

Um [pause] I find it's a place where people who have [pause] for for a variety of reasons, become single. They've lost a spouse through illness or accident or whatever. Um, and people can come in and meet, play cards, Mahjong, shuffleboard.

Jonah (*f, 70 years*) reinforces the senior centre as a place for social connection and support when discussing the loss of her spouse:

Well, for the people, for the friendship, umm... actually [pause] Think I was going-okay... I went for about five years, and then my husband died. And, uh... I think... if I hadn't been going to the centre, it would have been... r- way rougher than it was.

Individuals are more likely to use facilities that are perceived as accessible, supportive (Giles-Corti & Donovan, 2002), and irreplaceable (Tsaour et al., 2014). Consequently, participants may be willing to justify overcoming a few barriers to acquire a supportive social network. When individuals have positive perceptions of an organization, their perceptions of other attributes of that organization may be positively altered, even if the individual has enough information or knowledge to make an independent assessment of the attribute (Nisbett & Wilson, 1977). Simply stated, individuals may transfer their positive perceptions of something as a whole to independent aspects, in what is referred to as the halo effect (Nisbett & Wilson, 1977). The participants' positive perceptions of the senior centre, as well as other members, may influence their perceptions of senior centre accessibility leading to the dismissal of barriers. Thus, facilitating barrier normalization, while hindering the implementation, embedding, and integration of ecological approaches to accessibility that could foster environments inclusive to a diversity of individuals.

Social masking

Through the halo effect, positive aspects of the senior centre's social environment (i.e., the staff and other members) may mask participants' acknowledgment of barriers to accessibility. The halo effect may explain participants' positive perceptions and experiences of accessibility as minimizing physical and social barriers. Terms like "family", "friendship inducing", "community", "welcoming", and "accommodating" were frequently used to describe the senior centre's social environment. The amount of admiration that participants have for the

organization and the staff minimizes negative perceptions of the barriers they do experience, potentially making them easier to navigate and easier to forget. In addition to the halo effect, the willingness of other members and staff to assist anyone experiencing a challenge may cause participants to overlook barriers. Several participants described a willingness to provide assistance among members and staff, leading to assistance becoming a method for overcoming barriers. For example, Kelly (*f, 74 years*) discusses how members help each other overcome barriers to participation when playing cards:

...pepper you have partners, so it's okay well, I'll pull them in and you deal, or one of the other ladies on either side would say, well here I'll shuffle for you and then you can deal it out because one woman couldn't do it. Um, so, you just, uh, you just help each other and if one can't do it then the other- and that way it keeps you going.

Dina (*m, 76 years*) demonstrates the ways in which members help each other by explaining how he assists members with questions about computers, when no one else is available:

I do also volunteer in the computer area, so if anybody has any computer questions, typically I'm there on a Tuesday morning from like 10 to 11 or 10:30 to 11:30. But I've made it known that, uh, anytime I'm in the hall, if you've got a computer question and the computer person is not there, give me a shout and I just excuse myself from the snooker tables and go over and help them out a few minutes.

Furthermore, Jonah (*f, 70 years*) explains how she assists members who may experience challenges with transportation:

Um, I've given people rides home. I don't think I've driven- taken taken anybody there yet, but I have given people rides home, like people in the sewing group, some of, not all, not all of them drive, so I I've done that many a time.

Glenn (*m, 73 years*) describes how members and staff assist individuals experiencing barriers in the cafeteria:

And usually there's somebody around to help people if they need help pouring the coffee or pouring the water, whatever it is and and people help each other too, you know, like if I'm standing there, and I see a person is having some trouble operating the coffee the coffee pull down thing, um, the urn, you know, I'll, uh, I'll help them, and they're appreciative, and other people do the same thing. So, and then they just take their tray, and on the very rare occasion, I've said, "let me take the tray to the table for you" and I'll say "where are you sitting", so they'll go ahead, and I'll I just bring it for them, or a staff person will. So, you know, again it's, it's not inaccessible that's for sure. It may take a little time, but you know it's not inaccessible.

Relying on assistance to overcome barriers to carrying one's own meal tray or using the coffee urn may suggest the environment is accessible (i.e., OAs can access the cafeteria and put their food on a meal tray), but it indicates the objects (i.e., trays and coffee urns) are not useable or functional for OAs. In the absence of assistance, the individual could still access the cafeteria. However, they may not be able to use the tray or coffee urn safely and effectively. Thus, the physical form (i.e., tray or coffee urn) cannot be used for its intended and/or desired purpose.

Social masking, as well as barrier dismissal as a whole, may lead participants to perceive the senior centre as accessible, or more accessible than other assessments may indicate. However, perceiving a place to be accessible because assistance is available neglects important

aspects of accessibility, functionality, and usability. While someone can still achieve the same end with assistance, the means by which they achieve the end are altered, and may present problems in the future that could have been otherwise avoided if the barrier had been properly addressed rather than dismissed or masked. Therefore, participants' perceptions of the senior centre as accessible is based on assistance being available. In the absence of assistance, individuals have to rely on their own functional capacities to overcome environmental barriers and, as a result, may not be able to overcome barriers rendering the environment inaccessible. Moreover, relying on assistance ignores functionality (i.e., the object/environment can perform desired or intended operations) and usability (i.e., individuals can comprehend, efficiently and effectively use the object/environment; Bertot et al., 2006), which may be important considerations when determining if an environment is truly accessible and inclusive.

Through barrier dismissal, OAs and the senior centre may normalize barriers. When barriers are perceived as a fact of life, unsolvable, or less important than an outcome, OAs may adopt complacent attitudes leading to barrier acceptance and normalization. Moreover, OAs may perceive the benefits of the organization to outweigh (a few minor) barriers, subsequently leading to the masking or dismissal of those barriers. Normalization also occurs when assistance is readily available to help individuals overcome barriers. Assistance may make barriers irrelevant to achieving a desired outcome leading OAs to normalize and dismiss the presence of barriers. Ultimately, barriers may be normalized through the implementation, embedding, and integration of negotiation, resource masking, and social masking into everyday practices of the OAs and the senior centre.

Member Checking

Upon responding to the presented themes, a mix of responses from participants was received; from completely agreeing, to not believing their personal experiences align with the information provided. The interesting aspect among participants was that when indicating their experiences do not align with the presented themes some of the quotes provided to illustrate the concepts came directly from those participants. For example, Cheyenne (*f, 74 years*) indicates *ideological perspective* does not align with her experiences, despite three of five sample quotes belonging to her. No explanation has been provided as to why she believes the theme does not match her experiences. However, participants who do not feel that they align with the results also provide potential explanations for this occurring. When indicating one of the themes does not align with her experiences, Amy (*f, 64 years*) writes, "...I do not have any accessibility issues, perhaps I am dismissing barriers that I have not detected" acknowledging that she may be partaking in barrier dismissal. At times participants provide additional comments to strengthen what has been presented to them. For example, Dina (*m, 76 years*) further comments on the welcoming and accepting environment at the senior centre, which has been incorporated earlier in the results section when summarizing participants' overall experiences at the senior centre.

In general, the majority of participants state in their responses that the result themes capture their thoughts and experiences; there have been no requests for any changes or additions they would like to see made. However, it has been common for participants to include additional recommendations for the centre to consider with respect to enhancing accessibility. These recommendations have been incorporated into the feedback document that will be presented to the senior centre (Appendix D).

Overall, the majority of participants indicate the results match their experiences with accessibility at the senior centre. Thus, the member checking data may provide increased confidence that the interpreted results are representative of participants' experiences (Birt et al., 2016).

Discussion

Encouraging an inclusive and universal design, or more generally – accessibility, should involve an engaging process. By interviewing OAs to ascertain their lived experiences, this study attempts to explore the voices and perceptions of members from a single senior centre prior to investigating aspects from an organizational and objective standpoint (e.g., physical building, policies). In general, the participants in this study have a strong sense of appreciation and indebtedness for the senior centre they attend. At one point and in one way or another, each participant has expressed gratitude to have a place to gather, whether it be for social interests, physical maintenance, or sense of civic duty. Although on the surface participants regard the senior centre and surrounding area to have little-to-no existing barriers, it is possible that these perspectives have been indoctrinated, thus revealing a concept seen throughout aging milieus time-and-time again. During discussions with the participants, and again when conducting a deeper analysis of the data, a phenomenon seems to emerge. That is, participants seem to reject the idea of barriers existing through normalizing their presence. Although the initial intent of this study was to gain a better understanding of the participant's lived experiences with accessibility it was assumed that the discussions may steer towards concepts of usability and functionality. However, the story that emerges from the data is the existence of barriers that become embedded in the routine, which is then integrated into the typical experience, thus, necessitating the need to

employ the Normalization Process Theory (NPT; May et al., 2009) lens to more fully understand and potentially explain the relationship of barriers (and accessibility) and the participants.

Normalization may be viewed as a natural and cyclical process. Normalization, or more specifically NPT, is typically concerned with three core aspects: implementation, embedding, and integration (May et al., 2009). When interpreting the data from this study in order to relate it to barrier normalization, there appears to be themes that relate practices and perspectives of how a barrier may be recognized or normalized (e.g., ideological perspectives), how aging practice and the relationship to barriers is stereotyped or accepted (e.g., aging identity), and how human agency (i.e., choice) is utilized to operationalize barriers (e.g., barrier dismissal). What follows is a discussion about how the emergent themes provide potential explanations as to how barrier normalization has been internalized across the participants.

Pressures to divert from the ‘norm’ and reduce disparities across social groups may encourage innovative thinking, potentially leading to change (Bentley, 2010). However, dominant perspectives may pose a threat to the normalization of new ways of thinking or change (Wood, 2017). In relation to accessibility, the medical model may be the most widely accepted perspective (Donoghue, 2003). Thus, it is reasonable to postulate that medical perspectives may be implemented, embedded, and integrated (i.e., normalized; Wood, 2017) throughout all levels of society and public policy. The normalization of medical perspectives may foster resistance to perspectives that afford greater acceptance and inclusion, such as the social model of disability, as these new perspectives challenge the ways in which individuals subscribing to medical perspectives understand the world. Resistance to changing perspectives could act as a barrier to the creation of more accessible societies, as medical perspectives position the individual as responsible for their own misfortune (Brisenden, 1986; Donoghue, 2003) positioning

inaccessibility as a personal problem resulting from disability (Scullion, 2010). In other words, an embedded barrier among participant responses is the perspective that barriers are not environmental or external concerns, but rather a result of the failure of an individual to remain medically stable. This mindset is demonstrated by Glenn (*m, 73 years*) when he states:

...when I go to malls, and stores, and stuff, no, I don't push, I see the button, but I don't push it, you know. It's not there for me...

Acknowledging that there may be accessibility devices in place to help those in need, but also directly dissociating the personal need to use them, illustrates this desire to present oneself as a perfect or ideal image of health and ability. However, as anyone who has had their hands full with bags or boxes knows, the use of the automatic door opener does not always relate to permanent disability. The implied association to disability or aging by using an accessibility device seemingly promotes gerascophobia (i.e., fear of aging) and the dominance of a medical model mindset. Kelly (*f, 74 years*) further demonstrates an aversion to accessibility features when she explains why she does not use accessible parking spaces:

...there are handicap sections on both si- uh, east and west side. So, the ones who need it park there, like I have a handicap, but I don't park there. I always park down. Um, I I don't use it unless I really have to use it. I I try not to use them, but, yeah.

Individuals may have been led by medical perspectives to believe needing accessibility features to overcome barriers translates to disability. This association may transfer stigmatizing perceptions of disability to accessibility (Iwarsson & Ståhl, 2003). As a result, an individual using accessibility features may be perceived as weak, helpless, burdensome, and undesirable; characteristics often attributed to individuals with a disability (Huang & Brittain, 2006; Pfeiffer, 1993; Taub et al., 1999). By using an accessibility feature, OAs may fear they will be perceived

as too dependent and lose their opportunity to age as they wish (e.g., to age in place). In the context of housing, fear of being stigmatized and a determination to overcome barriers are reasons that individuals with mobility impairments do not search for accessible homes (Smith et al., 2008). It may be reasonable to assume this fear and determination could hinder the use of accessible devices in any context, such as the senior centre. As demonstrated by Glenn (*m*, 73 years) and Kelly (*f*, 74 years), individuals may avoid accessibility features to prevent associations with stigmatizing perceptions of disability and dependence. This avoidance may reinforce medical perspectives normalizing barriers as a personal problem, rather than a construct of the social, physical, or political environment.

Avoiding stigmatization may be of particular importance among OAs; a population regularly subjected to negative stereotypes based on bodily decline and medicalized views on aging (e.g., burdensome, dependent, frail; Dionigi, 2006). Given the widespread adoption of medical perspectives, responsibility for physical functioning, health, and independence is often placed on the OA (Dionigi, 2006). However, similar to the medical model of disability, medical perspectives on aging fail to consider environmental constraints potentially creating an issue for OAs experiencing age-related decline or disability (Dionigi, 2006). Thus, as individuals age, they may need to negotiate their identity, or aging identity, within the context of dominant views on aging potentially creating a continuum on which OAs fall between denying and accepting medicalized conceptions. Amy (*f*, 64 years) regularly denies aging; stating that she does not consider herself to be old, even though numerical categorizations of age suggest individuals 60 or 65 years of age and older are in their old age. She may negotiate her aging identity by positioning herself as “too high functioning” to be old. Resistance to aging and stigmatization may explain why some OAs report minimal barriers at the senior centre. Perhaps, OAs who deny

aging also deny or overlook the existence of barriers to maintain their identities as independent and healthy unsubscribing from negative stereotypes of aging. Additionally, these individuals' may not experience significant barriers as their functional capacities enable them to overcome environmental demands with relative ease creating a balanced PE fit (Iwarsson & Ståhl, 2003) and fostering perceptions of accessible environments. Thus, the absence of perceived environmental barriers may not indicate the senior centre is accessible, instead the barriers present may simply not exceed participants' functional capacities.

Alternatively, OAs on the other end of the continuum who accept aging and identify as experiencing decline, may demonstrate complacency rather than resistance. Participants who acknowledge they may need to change their behaviours due to declining abilities internalize individual ability as the reason for barriers, instead of pointing to environmental factors. Consequently, they normalize barriers as part of the aging process and blame aging bodies for activity limitations. Behaviour, and subsequently (in)activity (i.e., an aspect of behaviour), arise from interactions between a person, their environment (Swann Jr & Bosson, 2008), and/or the activity with which they are engaging (Iwarsson & Ståhl, 2003; Law et al., 1996; Sanford, 2012). Thus, when an OA's abilities can no longer overcome the demand of an environment and/or activity, they may believe they can no longer engage in those activities leading to a potentially negative change in behaviour (e.g., increased sedentary behaviour). Dina (*m*, 76 years) illustrates this when he suggests he can no longer play pickleball due to poor balance. Accepting barriers as a result of bodily decline may reinforce medical perspectives by insinuating the individual's functional capacity is the cause of the barrier, instead of inaccessible environments and activities. Therefore, OAs may internalize barriers as an intrinsic 'flaw' leading them to normalize barriers within the environment as part of their aging identity. Ultimately, aging identity may contribute

to barrier normalization by encouraging OAs to avoid stigmatization through the denial of aging or by accepting barriers as a resultant of declining bodies, which is assumed to be part of the aging process.

The ways in which barriers have been negotiated or masked, both resource masking and social masking, illustrates human agency in normalizing barriers. Participants engage in normalization by dismissing barriers as part of life, unsolvable, or irrelevant as long as the outcome or activity can be completed. When barriers are negotiated as part of life, participants classify the barrier as beyond their control or unsolvable and external to the individual, yet still the individual's responsibility to overcome. For example, Amy (*f, 64 years*) discusses barriers to parking at the senior centre, deems them unsolvable, and then takes it upon herself to park elsewhere. Street parking may be perceived as an acceptable alternative to parking lots at the senior centre; dismissing the barrier of not having adequate and accessible parking. The parking barrier is a common topic of discussion. However, there is also a continual active choice to adopt alternative options rather than advocating or clearly identifying parking as an accessibility barrier. As Jonah (*f, 70 years*) highlights:

Uh, the parking is, uh, not the greatest... Um, so, sometimes you have to walk a fair way. And, uh, like if you go for sewing, you bring a lot of stuff with you... you have your this that and the other thing, um, a million things, so it's a little, um... it would be nice to have bigger parking lot- where it would go I don't know. But, um, anyway, that's that's a little teeny tiny drawback...

Although there are admirable attitudes towards individuals who willingly choose to modify their interactions with barriers, dismissing that they exist may unintentionally create issues when barrier normalization occurs. OAs with lower functional capacities may not be able

to negotiate and dismiss barriers as easily fostering conflicting perceptions of accessibility. When integrating the more predominant medical perspective, overcoming barriers are the individual's problem and they need to find their own solutions (Brisenden, 1986; Donoghue, 2003). However, the establishment of social perspectives could change this narrative shifting the focus to the environment and other external factors. Whereas not all functional capacities can meet the demands of an inaccessible environment; an accessible environment may be able to meet the needs of all abilities (Carr et al., 2013; Imrie, 2012; Iwarsson, 2005; Iwarsson & Ståhl, 2003). Thus, accessible environments could facilitate positive outcomes by balancing the PE fit between individual's abilities and environmental demands (Kristof-Brown et al., 2005).

Furthermore, barrier normalization may prevent participants from identifying and accepting barriers for themselves and others in order to preserve positive perceptions of the senior centre. When individuals have positive perceptions of organizations or the people they interact with, they are more likely to transfer positive perceptions to other aspects of the environment (Nisbett & Wilson, 1977), such as accessibility. Participants perceive the senior centre to be a resource for OAs experiencing constraints in their personal lives. Glenn (*m, 73 years*) acknowledges the senior centre as a resource for OAs without computers at home:

I mean people that don't have computers at home, they can go there. There's always someone there to help them with the computer...

Dina (*m, 76 years*) reinforces the perception of the senior centre as a resource for OAs experiencing personal constraints:

There's there's there's a few people who rely heavily on the center, being able to sell them frozen dinners that they can take home because they're single, they're in a wheelchair, and that's something that they can prepare at home...

Whereas one may expect the services offered by senior centres to go unused in the presence of accessibility barriers (Arbour-Nicitopoulos & Ginis, 2011); this study found OAs may be willing to dismiss and normalize barriers if the services are perceived as beneficial or valuable. Resources obtained through the senior centre may outweigh the barriers experienced by the participants. In other words, the risks are outweighed by the rewards. Perhaps further contributing to barrier normalization, is the availability of assistance at the senior centre. When participants encounter barriers themselves, or observe someone else struggling, they often dismiss the barrier by explaining that staff or other members are available to help. Therefore, the barrier is perceived as not being an issue. However, relying on assistance to overcome environmental demand may be interpreted as a band-aid solution. If assistance became unavailable, an OA may be excluded from activities potentially causing them to internalize the barrier as a personal problem reinforcing medical perspectives and stigmatization. In reality the barrier has always existed in the environment but has been continuously dismissed or unnoticed. Consequently, perceptions of accessibility based on the availability of assistance overlooks aspects of functionality (i.e., desired or intended function of the object/environment) and usability (i.e., efficient and effective use of an object/environment; Bertot et al., 2006) potentially leading to false claims of accessibility.

For this reason, my study may not have been able to truly explore accessibility concerns and rendered the ones identified as being only minimal, surface level barriers. Future research should consider conducting in-person observations and objective assessments of the environment to evaluate senior centre accessibility. However, for studies examining novel or unknown concepts, such as senior centre accessibility, interviews should be conducted first to elicit an understanding of influential and important factors among the study population. The depth and

accuracy of data obtained through methods, such as surveys, may be constrained by limited flexibility in questioning. Subsequently limiting the researcher's ability to identify and understand problems faced by participants (Groves et al., 2011), potentially resulting in conclusions that suggest barriers are not present. Therefore, using predetermined questions to explore accessibility issues may be ineffective at eliciting accurate measures of accessibility. The use of semi-structured interviews in this study affords a deeper understanding of participants' experiences at the senior centre allowing the author to uncover barriers that may have been normalized by participants, and thus may not have emerged through less in-depth methods. Future studies should consider using open-ended questions and methods that permit probing to assess and inform measures of accessibility.

Additionally, this study focuses on the perspective of OA members at the senior centre. It may be interesting to learn the perspectives of others (e.g., staff, volunteers, policy makers) within the organizational structure to determine if their perceptions of accessibility are comparable to OAs'. Future studies should assess accessibility from an organizational perspective, as staff may more directly observe and address accessibility issues across diverse members at the senior centre.

Although many OAs may be uninterested or unfamiliar with technology, virtual interviews have to be employed for this study to accommodate COVID-19 restrictions. Thus, the sample has been limited to OAs who are familiar with and have access to their own technology that affords teleconference (i.e., video) or telephone calls. Moreover, recordings of the virtual interviews have been limited by the quality of the Internet. If the Internet connection was weak, the audio and video quality are reduced resulting in audio recordings that are difficult to transcribe, as well as skipping/lagging video, and dropped calls. Future research should conduct

interviews in person or using less technologically advanced methods that are better suited for the OA population and offer greater control over the quality of recordings. However, similar themes emerged among the first few interviews, and after the sixth interview, it has been deemed that saturation is met.

The functional status of the participants in this study (i.e., primarily able and independent) may also act as a limitation. As the participants do not have restricted functional capacities (i.e., although two self-identify as having a disability, none claimed to be dependent), they may not notice barriers, as they can easily overcome environmental demands. Future research should modify the eligibility criteria used in this study to specifically include OAs who identify as dependent.

Despite the predominant themes of this study relating to medical perspectives, and subsequently barrier normalization, social and critical perspectives have emerged from the data. The emergence of opposing perspectives may suggest a shift away from medical ideologies indicating the potential for a redirection through the normalization of perspectives that encourage acceptance and inclusion through environmental modification. However, to achieve this stream of normalization, these perspectives must be implemented, embedded, and integrated throughout society (i.e., individuals, organization, communities, and public policy). In addition to individual participants responses, the willingness of the senior centre to participate in this study may imply support for continual identification and improvement of the environment to assist in the day-to-day activity of OAs. Thus, social perspectives focusing on environmental factors may be embryonically embedded at individual and organizational levels.

To further advance the normalization of environmentally focused perspectives (or accessibility normalization), and reduce barrier normalization, individuals and organizations

should work together to develop communities that promote individual abilities and accessible environments. For example, hosting webinars, health fairs, or workshops that discuss barriers as a resultant of the environment, instead of biological failure, may help reform dominant perspectives by educating others. Once knowledge is acquired, it may be easier for individuals and organizations to implement, embed, and integrate diverse perspectives into practices and policies. Thus, normalizing accessibility from the standpoint of the environment. Furthermore, focusing on the environment may enable greater PE fit across individuals with diverse functional capacities. Resolving imbalances between individuals and their environments may enhance accessibility affording everyone greater opportunities to use a wide variety of activities, services, and resources (Ephraim et al., 2006; Sabella & Bezyak, 2019) within environments that function as desired and intended (Bertot et al., 2006). Ultimately, greater accessibility, usability, and functionality may lead to improved social and physical well-being by permitting diverse individuals to lead fulfilling and satisfying lives (Ephraim et al., 2006; Sabella & Bezyak, 2019).

Conclusion

Overall, OAs' lived experiences with accessibility at the senior centre have been positive; facilitated by a single-level building design (negating the use of stairs), wide pathways, accessible washrooms, low countertops, adaptive programming, and a welcoming social environment. Although overall perceptions are positive, a few barriers have been identified including restricted parking, limited functionality within the cafeteria, conflicting program schedules, uneven pathways, limited funding, and a lack of public awareness of the senior centre. Potential solutions to these barriers, derived from participants' responses and the author's own knowledge, can be found in Appendix D. The aforementioned barriers are not perceived as major issues by participants, which may be a resultant of barrier normalization. To avoid stigmatization

and preserve positive perceptions of an organization, OAs may normalize experiencing barriers. Thus, *ideological perspective*, *aging identity*, and *barrier dismissal* may have led participants to normalize barriers. Future research should aim to develop evidence-based strategies for reducing barrier normalization, subsequently fostering more accurate understandings of barrier construction and perceptions of accessibility.

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APPENDICES

Appendix A: Demographic Questionnaire

What gender do you identify as?

What is your ethnicity?

What is your postal code?

What is your highest level of education?

What is your marital status?

What is your employment status?

On average, how many hours per day do you spend sitting or lying down?

On average, how many days per week do you engage in physical activity?

Do you exercise independently? (i.e., without health professional supervision)

Has a doctor diagnosed you with any chronic health conditions? Please list all that apply.

Do you identify as having a disability or impairment? Please list and explain all that apply.

Which of the following options do you most identify with?

- a) Fully Independent (able to complete all activities without assistance)
- b) Somewhat Independent (require assistance for strenuous activities such as exercise or manual labor – but not daily activities)
- c) Somewhat Dependent (able to complete basic daily activities [ADLs], but require assistance for other activities and instrumental activities [IADLs])
- d) Fully Dependent (require assistance to complete most or all activities)
- e) Other (please explain)

When was the last time you physically visited the senior centre?

Typically, pre-COVID, how frequently did you visit the senior centre? E.g., every other week, weekly, daily

How many times have you visited the senior centre in the past year (physically or virtually due to COVID-19)?

What are the programs that you use at the senior centre?

Appendix B: Semi-Structured Interview Guide

Introduction

1. Describe a typical day when you would go to the senior centre.
 - *Probe: Describe what you do from the time you arrive in the parking lot until the time you leave the senior centre.*
 - *Probe: Describe your routine while at the senior centre - what do you do, what do you use, what do you see?*
 - *Probe: What are some things that you see or notice as you navigate through your typical day? From the time you arrive at the parking lot, go to your activity/program, until you leave.*
2. What are some of the reasons you go to the senior centre and what keeps you going?
 - *Probe for specifics about the resources they use (nutrition vs physical activity vs sedentary activity), perceptions of the centre, staff, etc.*
3. How would you describe your experiences with the senior centre (the facility, programs, staff/volunteers)?
 - *Probe for overall perceptions of the senior centre (facility, programs, staff/volunteers).*

Meanings of accessibility

4. What does accessibility mean to you?
 - Then provide definition of accessibility, which is:
 - o Accessibility is the interactions between an individual's functional capacity and the design or demands of the environment. Or in other words, how does the environment impact your ability to perform activities such as entering or leaving a building, participating in an exercise class, climbing the stairs, playing a game of cards, or making a cup of tea.

Experiences with accessibility

5. Describe the accessibility of your transportation to and from the local senior centre?
 - *Probe: Think back to your typical day... tell me more starting from when you leave your home, to parking your car, to walking into the building.*
 - *Probe: Tell me how you get home from the senior centre. Describe the accessibility.*
 - *Probe: What about in different weather conditions or seasons?*
6. Describe the accessibility of the physical building of the local senior centre?
 - *Probe: As you walk from the parking lot into and throughout the building, describe the accessibility.*
 - *Probe: Tell me about the entrances, hallways, rooms, change rooms/bathrooms...*
 - *Probe: how do you feel or what are your thoughts as you navigate...*

- *Probe: how does the physical environment impact your ability to participate in activities (does it facilitate or restrict participation)?*
 - *Probe: What about in different weather conditions or seasons?*
7. Describe the accessibility of the programs or activities offered at the senior centre?
- *Probe: what do you do during the program? What do you use?*
 - *Probe: how do you feel or what are your thoughts as you navigate the environment and engage in activities?*
 - *Probe: how does the physical environment impact your ability to participate in activities (does it facilitate or restrict participation)?*
8. Can you tell me about any times you may have discussed the accessibility of the senior centre with others?
- *Probe: or maybe you have heard comments that other people have made?*
 - *Probe: beyond the other members, do the staff or volunteers talk about the accessibility?*
 - *Probe: have you observed accessibility impacting other members?*
 - *Probe (if speaking primarily about others): you have told me about others, do you experience any issues? Do you ever have to change your routine or do something differently due to the environment (physical or social)?*

Suggestions to improve accessibility

9. Can you describe any modifications that have been made by yourself or others, to reduce barriers?
- *Probe: or what modifications may be needed?*
10. What features do you think are most effective at enhancing accessibility?
- *Probe: physical building, equipment, furniture, other people, etc.?*
11. Based on your experiences, what are some ways that you think the accessibility of the senior centre could be improved for yourself or for others?
- *Probe: what changes need to be made to the physical environment?*
 - *Probe: what changes would you suggest for the programming and equipment?*
 - *Probe: is there anything about the social interactions with others that you would change?*

Conclusion

12. Are there any questions that you felt were missing?
13. Is there anything else you would like to tell me?
14. Why did you want to participate in this study?

Appendix C: Member Checking Documents

June 25, 2021

Dear [Participant name],

Thank you for participating in member checking. Attached you will find a summary of the results for you to review. As the results are based on all interviews, some of the themes may not be representative of your experiences. The results are meant to summarize the experiences important to most people.

The results provided within this document are not final. The purpose of member checking is to provide you with the opportunity to influence data analysis by adding to, changing, or providing feedback about the results. Your feedback is greatly appreciated and will ensure the results are clear, accurate representations of experiences with accessibility at [the senior centre]. Please see below for instructions on completing member checking.

Description

In the document labelled “Themes”, you will find the three themes that make up the results (Perspective, Aging Identity, and Barrier Dismissal). Each theme has a brief description, followed by examples of quotes, then a section with questions to which I would like you to respond.

Instructions

1. Open the document labelled “Themes”
2. Read the description and quotes for the first theme
3. Respond to the questions listed under “Responses”
 - a. Responses may vary in length from one word to one page
4. Repeat steps 2 and 3 for the remaining two themes
5. Email the document and your responses to [the author]

Once you have reviewed the documents, please email your responses to me [author email] by July 2, 2021. Thank you in advance for your time and feedback.

Sincerely,
[Author name]

First Theme: Perspective

Description: There were three ways that participants typically described “accessibility”. The first, is considered a “social perspective”. This includes examples such as providing enough space to move around in a wheelchair, not requiring the use of stairs, providing information to increase public awareness, and feeling welcome.

Example Quotes:

1] “Accessibility means that, uh, you can get in and out of the place, the washrooms are accessible, um, the, you know, there isn’t any, a lot of stairs, that sort of thing.”

2] “The the other part of accessibility is... who in the city... could benefit from the service, but either doesn't know about it, or doesn't know how to get there, or is apprehensive about going, and I think those are the bigger, uh, the bigger obstacles to accessibility.”

Description: The second viewpoint is called a “critical perspective.” This is for when participants emphasized environmental factors or barriers in relation to an impairment or disability. For example, parking further away from the senior centre may not be seen as a barrier, unless the person uses a wheelchair. Additionally, participants acknowledged that they may not notice barriers because they are mobile or ambulatory.

Example Quote:

1] “Well, there's a church, I think about maybe three or four buildings down and you can park in their back back, um, when there's nobody there, but the thing with that is, is if it's anybody who's got any kind of a disability, that's going to be a long way to walk. - I think somebody with a walker or a cane, if it's raining or if it's, uh, the roads, it's bad outside, or if the sidewalks are not perfect, um, it it can be I think a bit harrowing for them. I don't have that problem, but I can foresee where somebody who did, it it would be a problem.”

Description: The last is called the “medical perspective”. This is when participants recognize other people’s inabilities, or impairments, caused barriers.

Example Quotes:

1] “... Well, they were just they were just very slow to move. And also, um, one time there was a person with a cane, so they could only – they had a cane in one hand and a tray in the the other - that was that was starting to be difficult for them.”

2] “I, I th- I don't know, well anything else I'm not sure th-, I mean, they probably could do-go for the exercising, but they couldn't play pickleball or, uh, anything like that because, um, I, I, they wouldn't know how to follow the rules or whatever. If they did, I'm sure they would be okay, but I, I would have to say I don't think so.”

Responses:

1. Does this theme match your experiences?
2. Do you want to change anything?
3. Do you want to add anything?

Second Theme: Aging Identity

Description: Stereotypes about aging, decline, and physical functioning often relate to discussions of accessibility. For example, discussing desires to avoid physical or cognitive decline and to maintain active lives through involvement in the community and the senior centre.

Example Quotes:

1] “So, it's just staying in contact and it's giving me something to do since I've retired and not just sitting at home. So, your brain is still functioning and like learning new things”

2] “I wanted to do something for the community. And there was an opportunity, so I joined [the senior centre]...”

Description: Additionally, participants acknowledged that they currently do, or expect to one day, experience old age and/or decline. The participants already experiencing age-related decline discussed how they accepted it and were unable to participate in certain activities.

Examples Quotes:

1] “Um, the people running it s-seem to take into consideration that we are old people. Whether we want to admit it or not, we are the old people...”

2] “Well, you know, again I I don't see any features there, um, you know the building is, uh, I think the building is well laid out for, for, uh, people who, who, who, at some point in their life and that means me as well, would need to be able to move around with some amount of freedom.”

3] “...a couple of us would leave for an exercise class, and, uh, so that was another hour. And they were they were good. Um... I mean, we would actually work up a sweat. And I mean, not that we're in the greatest of shape, I suppose if we were doing it at at your age, we'd probably be like “oh my god, it's too easy [rolling eyes]”, but we could work up a sweat...”

Responses:

1. Does this theme match your experiences?
2. Do you want to change anything?
3. Do you want to add anything?

Third Theme: Barrier Dismissal

Description: Participants may have downplayed barriers to accessibility, at times by providing excuses or placing blame on other factors.

Example Quotes:

1] “Um... and they have programs outside where they go to isolated home, uh, isolated seniors, which actually that funding, they lost that funding a couple of years ago, so yeah, it's it's pretty horrible, so they can't do that anymore, but they still do outreach through telephone assurance...”

2] “Well, we can't do anything about the parking lot, ‘cause it's not our parking lot. Um, ‘cause I think having their own parking lot would be really great for seniors who, you know, it's not that it's a busy street, but you're allowed to park on both sides of the street on McEwan and if there are cars coming, I mean people do have to watch getting out of their cars. Um... [pause] But I, I, I can't see how they could do that...”

Description: Another reason participants may have dismissed barriers is that they saw the senior centre as a valued and irreplaceable resource. As a result, some participants may unknowingly overlook barriers or the senior centre compensated for what may otherwise be a barrier.

Example Quotes:

1] “...it's so inexpensive; I can't believe how little they ask for membership fees for all that is available to people who want to take advantage of all that's there. I mean people that don't have computers at home, they can go there. There's always someone there to help them with the computer...”

2] “Um, it's it's an understated in my mind, a very understated organization. It probably provides a better quality of life catalyst than most of the organizations that are out to try and help people.”

Description: Participants had very positive perceptions of the social environment (i.e., the staff and other members) at the senior centre, which may have masked participants’ awareness of barriers. Assistance acted as a method for overcoming and/or avoiding barriers.

Example Quote:

1] “And if you do have a difficulty with anything there's always somebody there to give you a hand. Be it another be it another patron, or somebody from staff. Yeah, I’ve never seen anybody struggling with something by themselves. If they're if they're in a wheelchair and they need help getting their meal tray to a table, somebody will pick it up for them.”

Responses:

1. Does this theme match your experiences?
2. Do you want to change anything?
3. Do you want to add anything?

Appendix D: Summary Report of Barriers and Recommendations

Overview of Findings:

Overall, participants seemed to have very positive perceptions and experiences with accessibility at the senior centre. It was frequently stated that the social environment was very welcoming, accepting, and accommodating. A variety of programs are accessible to anyone who is interested, whether they are fully functional, have a physical disability, or an intellectual impairment. Participants perceived the senior centre to be great and catering to the needs of older adults. The senior centre provided a source for social support, friendship, and acted as an affordable and accessible resource (e.g., foot care, computer classes, meal program).

In terms of the physical environment, the participants reported few-to-no barriers. Features, such as the single level building, multi-level reception desk, accessible entrances, accessible washrooms with wide stalls, low counters and mirrors, and touchless toilets and sinks, were perceived as effective at enhancing accessibility by the participants. Some barriers were identified, which are further discussed along with potential recommendations below.

Parking Barriers:

Parking was described as hectic or needing improvement due to limited availability and/or poor snow removal.

Recommendations:

- Valet parking
- Build a new lot for the senior centre *
- Use the church's parking lot *
- Make an arrangement with the other businesses to use more spaces
 - Perhaps, this could be done in accordance with the centre's busiest programs to not always be taking parking spots from the other businesses
- Clarify parking options for members of the centre
 - There seemed to be some confusion as to where members are permitted to park: street parking, Shopper's Drug Mart, Adie Knox, and/or behind the church.
- Contact the City of Windsor to inquire about street parking
 - Most participants park on the street, so it may be beneficial to ask about designated street parking, even if just during business hours

** These suggestions may not be feasible, but they reflect a desire to have better parking options.*

Pathway Barriers:

Increased fear of falling was linked with inclement weather (e.g., snow) navigating into the centre from their cars. In poor conditions, the participants would only follow the sidewalk into the building, instead of cutting across the grass (i.e., shorter path).

Recommendations:

- Install a railing(s) along the pathway into the building
- Replace the grass with pavement
- Inquire about having a curb cut added at the edge of the sidewalk
 - Participants mentioned they did have to navigate curbs on their way inside

Cafeteria Barriers:

Participants noted that members often require assistance carrying their lunch trays or using beverage dispensers (e.g., water jugs, coffee urns), especially members who have an impairment or use mobility devices.

Recommendations

- Have more staff or volunteers available to assist people
- Replace the current dispensers with more accessible options
 - E.g., jugs with levers easy for members with arthritis or restricted dexterity to use
- Provide carts for members to place meal trays on and wheel to their table
- Buy meal trays that can be attached to wheelchairs or walkers

Program Barriers:

Participants reported having to choose between programs they want to participate in, as they are interested in multiple programs offered at the same time.

Recommendations:

- Building modifications: A new centre could be built, existing rooms could be expanded (specifically the sewing room), or additions could be made on to the existing facility
 - The same programs could be offered at different times of the day and/or the program capacity could be increased.
- Program schedules could be changed on a cyclical basis (e.g., bi-weekly, monthly, etc.) *
 - There may still be conflicts every cycle, but rotating the schedule would ensure that members are not missing out on the same programs every time.

** The researcher is unaware if this is something that may already be done*

Awareness (Informational) Barriers:

Participants learned about the senior centre through word of mouth, community events, or by chance. A concern for greater public awareness among older adults was expressed.

Recommendations:

- Reaching out to local newspapers (e.g., Windsor Star)
- Host charity golf tournaments
- Advertise on billboards
- Distribute flyers in the mail, particularly to older adults in isolated areas or the county.

Funding Barriers:

The senior centre was reported to need funding. Participants indicated the centre has been dropped by United Way and as a result of limited funding needed to cut or modify programs.

Recommendations:

- Develop a grant/funding committee
- Add board positions designated for people who will search for and apply to funding opportunities (e.g., Enabling Accessibility Fund)

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