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Perceptions of walkability and determinants of walking behaviour among urban seniors in Toronto, Canada

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ABSTRACT

Research has indicated the built environment strongly influences active transportation, though the specific mechanisms through which active transport occurs differ in findings. This study investigated the relationship between objective and subjective measures of walkability for seniors living in Toronto through a multi-phased, mixed-methods approach. Two neighbourhoods within the city were selected as case study areas. Wychwood represented a high walkability neighbourhood and Edenbridge-Humber Valley represented a neighbourhood lower in walkability. The walkability audit, the Senior Walking Environmental Assessment Tool – Revised (SWEAT-R), served as the objective measure. Subjective measures included the use of focus groups, go-along interviews, and traditional interviews with twenty-eight seniors across both neighbourhoods. The findings of this research highlighted the efficacy of objective measures existing in literature, but these did not adequately capture the holistic relationships between seniors and their surrounding environments. The subjective measures of walkability proved especially important for understanding perceptions of walkability and walking behaviour. Additionally, the findings echo recent study findings that recommend theory-based approaches to walkability research may be more effective in accounting for human behaviour in active transportation. This study concludes with practical and theoretical recommendations for planners, public health specialists, and other experts interested in promoting active transportation for seniors.

1. Introduction

Since the World Health Organization introduced its Age-Friendly Cities initiative in 2007, cities across the globe have actively planned their communities for the growing aging population to lead healthy and active lives right where they are (World Health Organization, 2007). Aging-in-place policies allow seniors to live independently in their long time residence or community where they have existing social networks and familiarity with the physical environment (Black, 2008; Gilroy, 2008). Accordingly, communities that seek to designate themselves as 'age-friendly' consider how the infrastructure and services can improve quality of life for all of its senior citizens, regardless of their health status, mobility level or physical and cognitive abilities (World Health Organization, 2007). Ensuring that seniors can maintain a healthy and active lifestyle is of social and economic benefit to communities, and to the physical and mental well-being of seniors.

To date, there is an extensive body of research that examines how urban planning and community design can support walking as a utilitarian physical activity (i.e., active transportation) (Dannenberg and Wendel, 2011; Frumkin, 2003). Accordingly, the concept of walkability – how supportive a built environment is to active modes of transportation such as walking or cycling – has gained

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widespread attention from researchers, practitioners and policy-makers alike (World Health Organization, 2007). This is especially true in the North American context where the historical dominance of urban sprawl and the automobile resulted in a lack of planning for pedestrians (Forsyth and Southworth, 2008; Gehl, 2010; Saelens et al., 2003). Streets primarily served as service roads for automobiles while accessible and walkable routes between destinations were a rarity (Kerr et al., 2012) resulting in public spaces devoid of public life (Forsyth and Southworth, 2008) and rarely able to safely support pedestrians.

A recent systematic review of literature found that there is a strong and consistent association between neighbourhood walkability and walking for transport throughout adulthood (Cerin et al., 2017). However, the health benefit of active transportation is greatest for older adult populations (Mueller et al., 2015). In particular, walking has been known to decrease risks of obesity, depression, and other chronic diseases in older adult populations (Takano et al., 2002). Furthermore, older adults who regularly walk for exercise have slower onset of cognitive decline compared to those who do not walk regularly (Liu-Ambrose et al., 2016). The strong relationship between active transportation and older adult health and well-being is underscored in WHO's Age-Friendly Cities initiative which acknowledges the importance of accessible and walkable physical environments (World Health Organization, 2007).

To date, there is strong evidence that the built environment influences active transportation, yet there is great heterogeneity in the findings of the specific mechanisms through which this occurs (Cerin et al., 2017). In their systematic review, Cerin and colleagues (2017) conclude that these relationships are unlikely to be elucidated through exploratory and ecological studies that have dominated in the past; rather future research needs to take a theory-driven approach that accounts for “human behaviour [as] a complex phenomenon that can seldom be accurately explained by simple additive models of exposures and individual characteristics” (pg. 17). To that end, this study aims to explore the complex relationship between older adults and their built environment in order to propose a theoretical framework to assist in understanding the relationship between older adult walking behaviour and built form.

2. Walking and walkability

Walkability is the underpinning characteristic of complete, sustainable, and healthy cities. Walkable environments are capable of promoting physical activity through purposeful or recreational walking, subsequently adding social value into a community in addition to incurring health benefits (Black, 2008; Leyden, 2003). Further, walkability contributes towards all eight domains for age-friendly communities identified by the World Health Organization (World Health Organization, 2007). An issue with assessing walkability, however, is that there is no standard approach to do so. Walkability has traditionally been evaluated by looking at three major indicators: land use mix, street connectivity, and residential density (Dannenberg and Wendel, 2011). These capture an objective semblance of community walkability that are neighbourhood specific though they do not account for individual interpretations of neighbourhood environments that are typically influenced by multiple layers of environmental factors (Sallis et al., 2006). Indeed, research and policy involving walkability have prioritized the physical relationship between people and their immediate environment with respect to housing, transportation and the public realm with little attention to know economic or social factors influence how built environments are used (Hockey et al., 2013; Phillips et al., 2013).

Objective measures (e.g., walk score, walkability audits/indices) have been predominantly used in walkability research until the fairly recent shift towards subjective (e.g., observation, interviews) as well as mixed approaches (Curry et al., 2009; Leslie et al., 2005; Millington et al., 2007; Montemurro et al., 2011; Phillips et al., 2013) in order to account for varying perceptions of built form and community environments that determine walking behaviour (Ewing and Handy, 2009; Phillips et al., 2004). Objective tools do not offer much information regarding path contexts such as neighbourhood sense of community, social capital, perceived safety, as well as general feelings experienced during a walk.

Yet, a growing body of research has acknowledged that perceptions of walkability are equally (Brown et al., 2007; Ewing and Handy, 2009; Lynch, 1980) if not more important when considering drivers of walking behavior (Millington et al., 2007). For instance, experiential data derived from conversing with residents regarding personal experiences of space shed light onto the likelihood that an individual or specific sub-populations such as seniors will actually use the available environment for walking (Millington et al., 2009; Walford et al., 2017). An experiential approach to subjectively understand walkability is imperative for planners and others involved in the decision-making process to develop built environments that reflect why and where residents actually choose to walk. UK-based researchers Hockey, Philips and Walford (2013) have highlighted that when gathering subjective and experiential data on walking in place, it is important to engage the range of older adult demographics. There has been a tendency in research to recruit members of senior populations that are more active and healthier than others within the age cohort and thus policy responses do not accurately meet the needs of those who had not been engaged (Hockey et al., 2013). This particular study has a sample population of seniors with varied mobility, ranging from individuals who are very limited in physical capabilities as well as those who are physically active and independent. It was important to include seniors with a wider range of health statuses in order to more accurately represent the very diverse senior demographic prevalent in most major urban areas.

From a theoretical standpoint, the objective and subjective approaches above represent dichotomous (though complementary) perspectives. The objective ecological model relies on objective measures to assess the environment independent of individuals and their actions (Sallis et al., 2008; Sallis et al., 2006). This contextual focus on the physical and social aspects of neighborhood is helpful for researchers and policy-makers that utilize research findings to formulate decisions when assessing active transportation. In contrast, the subjective approach to understanding walking aligns with more of a behavioural model. This model favours individual values and beliefs shaped by social contexts as well as personal experiences (Cerin et al., 2017; Ewing and Handy, 2009; Phillips et al., 2004), meaning perspectives and experiences of environments are unique between individuals particularly between those living in different spaces. While the necessity and complementarity of both approaches to understand active transportation was noted almost a decade ago (Sallis et al., 2008), the recent review by Cerin and colleagues (2017) highlights that the bulk of the research on active