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The influence of the built and social environment on elderly's wellbeing in an activity-travel context

Caroline Beckers [a] [*], Frank Witlox [ab], Greet Cardon [a] , Long Cheng [ac]

[a]*Ghent University, Belgium*
[b]*University of Tartu, Estonia*
[c]*Southeast University, China*

This work addresses the following topic(s) from the Call for Contributions:
(Please check at least one box)

☐ Placemaking to integrate urban spaces and mobility
☐ Promoting sustainable mobility choices in metropolitan regions
☐ Governing responsible mobility innovations
☒ Shaping the transition towards mobility justice
☐ System analysis, design, and evaluation
☐ other: _____

Extended Abstract

Problem statement

Demographic ageing has become a pervasive societal phenomenon. The proportion of population aged over 65 years old is growing substantially, projected to grow from 10 % in 2022 to 16 % in 2050 (United Nations, 2022). Because of the sustained low birth rate and increasing life expectancy, the population in Belgium is also ageing at a notably high rate. The share of people aged 65+ in Belgium was 19.2% in 2020 and is projected to reach 33.3% in 2050 (Statistics Belgium, 2020). Ageing often implies declined functional capacities and hence declined capacity for travel. As travel is imperative to live independently and maintain social ties, declined travel capacity is likely to adversely affect wellbeing of older adults (Curl & Mason, 2019; Schwanen et al., 2012).

"Ageing in place" is a key strategy for coping with these challenges (UN, 2015). It is defined as the ability of elderly to live safely and comfortably in their own neighbourhood (without relocation). It is acknowledged that resources of the living environment are closely associated, from a geographical perspective, with individual's lifestyle, activity participation, travel behaviour and quality of life (Cheng et al., 2019; Liu et al., 2017). However, current urban developments are not prioritising the desires and needs of an ageing population.

The COVID-19 pandemic has created awareness to create more liveable, human-centred neighbourhoods which are adapted to the inhabitant's daily needs. A popular concept is the 15-Minute City, developed by Carlos Moreno. Moreno defines this as "an urban set-up where locals are able to access all of their basic essentials at distances that would not take them more than 15 min by foot or by bicycle" (Moreno et al., 2021, p. 100). In addition to accessibility in terms of proximity, this model should also consider the needs and access to essential services for all groups of society regardless of their abilities, demographic characteristics, socio-economic or cultural background. Against this background, it is important to understand how living environments contribute to the mobility and wellbeing of older adults to propose effective "ageing in place" interventions and create liveable neighbourhoods for all inhabitants.

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[*] *Corresponding author. Tel.: +32 (0)9 264 46 95; fax: +32 (0)9 264 49 85.*
E-mail address: caroline.beckers@ugent.be

The role of land use and the physical aspect of the living environment – i.e., built environment – in shaping travel demand has been a topic of great interests in travel behaviour analysis. Ewing and Cervero (2010) suggest that the 5Ds of the built environment affect travel: density, diversity, design, destination accessibility and distance to public transport. The relationships between built environment and elderly's activity-travel behaviour are well documented (e.g., Cheng et al., 2019; Cheng et al., 2020; Feng, 2017; Figueroa et al., 2014; Liu et al., 2020; Nordbakke & Schwanen, 2015; Perchoux et al., 2019).

Notwithstanding the substantial body of literature on the built environment, very few studies examine the effects of social aspects of the living environment – i.e., social environment – on elderly's activity-travel behaviour. Social environment refers to the neighbourhood socio-demographic composition and social ties of people living in the neighbourhoods (Wang & Lin, 2013). Sociologic research suggest that social environments have strong impacts on individual's behaviour (Zastrow & Kirst-Ashman, 2006). Studies in public health show that people residing in an environment with social interactions tend to gather more frequently with friends and neighbours (Leyden, 2003). Moreover, the type of built environment may determine the type of social ties and community connections (Freeman, 2001; Leyden, 2003).

The importance of travel on quality of life and wellbeing for older people has been well acknowledged (Gabriel & Bowling, 2004; Li, 2020; WHO, 2002). The ability to be mobile is crucial for independent ageing. It allows older people to access facilities and services, and people or places they desire. Furthermore, travel provides physical and psychological benefits of movement, satisfies social needs and generates a sense of being in control of one's own life (Hjorthol, 2013; Nordbakke & Schwanen, 2014). The literature reveals multiple perspectives on wellbeing of elderly, e.g., health-related quality of life, satisfaction with life, subjective wellbeing (Siren et al., 2015). Studies on the relationships between travel behaviour and elderly's wellbeing show that the interpretation of wellbeing is insightful and diverse. However, there is a lack of research into the spatial heterogeneity of the relationship. A stronger context-related orientation can help to unravel the links between wellbeing and travel behaviour of older adults in more nuanced ways (Cheng et al., 2021).

Research objectives

It is important to understand why and how the built and social environment (BSE) is related to wellbeing of older adults in an activity-travel context to propose and implement effective interventions to build an inclusive society. However, the complex relationships among these variables have not yet been fully examined. In addition, elderly's built environment-travel studies and travel-wellbeing studies have mainly been conducted independently. By unravelling the linkages between the built and social environment and elderly's activity-travel behaviour and wellbeing, policy interventions can be discussed for building an age-friendly society.

Methodological approach

Data are collected using a survey in the city of Ghent (Belgium) from September 2023 until December 2023. This survey contains questions on travel behaviour, living environment, health-related quality of life, subjective wellbeing, social participation, and socio-demographic characteristics. The built and social environment are researched on the neighbourhood-level. These data are supplemented with GIS-data. After exploring latent variables by factor analyses and associations by regression analyses, structural equation modelling (SEM) will be used to model the complex linkages between the multiple variables (see Figure 1). SEM is used to simultaneously capture the causal relationships of BSE on activity-travel behaviour, and activity travel behaviour on wellbeing. Moreover, with the distinction between total, direct and indirect effects, SEM also can estimate the relationships through mediating variables, such as the effects of built environment on travel behaviour through the social environment (De Vos et al., 2020).
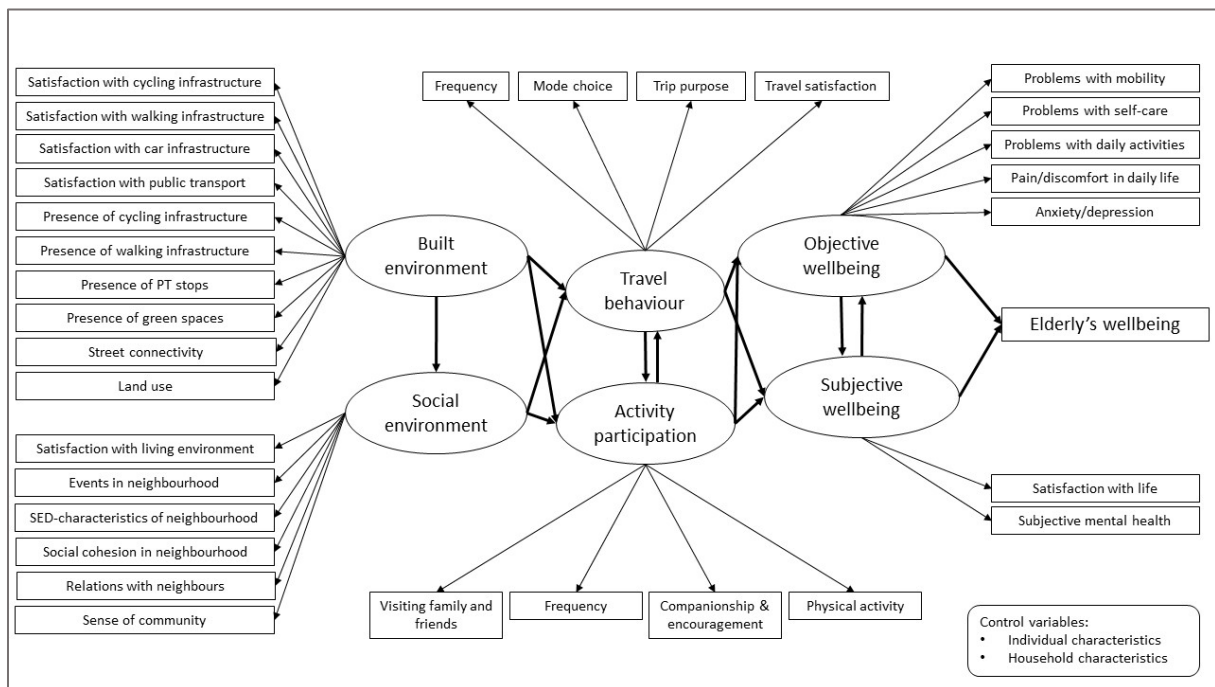
Figure 1: Theoretical model Structural Equation Modelling

(Expected) results

Based on the linkages between the built and social environment and elderly's activity-travel behaviour and wellbeing, policy interventions in terms of urban and transportation planning/design, and social participation can be discussed for building an age-friendly society.

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