



Research Paper

Green spaces in the direct living environment and social contacts of the aging population



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HIGHLIGHTS

- A Bayesian belief network shows the relationship between green spaces and social contacts.
- The perception of green plays a moderating role between green spaces and social contacts.
- Higher levels of green are associated with more social contacts among aging neighbors.
- For participation in outdoor activities people need a large green space such as a park.
- Safe and well maintained green spaces support social contacts in the living environment.

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ABSTRACT

Green spaces in the living environment may provide a meeting place and support social contacts. When people get older they, in general, are less mobile and have more limited activity spaces. At the same time they are faced with smaller social networks due to social and health related changes. Green spaces in their direct living environment are therefore important to support their needs. The aim of this study was to better understand the nature of the relationship between various types of green spaces in the direct living environment and the extent and nature of social contacts of the aging generation, taking into account socio-demographics and other physical and social environmental characteristics. Data for this study were obtained from a survey about living surroundings from a national representative sample of 1501 persons in the age category of 60 years and over in the Netherlands conducted in 2009. The survey included both subjective and objective measurements of the direct living environment of the respondents. Specifically, a Bayesian belief network was used to formulate and estimate the direct and indirect relationships between the selected variables. Results show that social contacts among neighbors are mainly influenced by the availability of trees and grass and the perceived level of green. Green spaces support social contacts in the neighborhood. However, the safety and maintenance of the green spaces are also important; high quality green spaces support social contacts between neighbors and strengthen communities for the aging population.

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1. Introduction

Green spaces in the living environment make an essential contribution to the quality of life of urban residents (e.g., Bedimo-Rung, Mowen, & Cohen, 2005; Kaczynski & Henderson, 2007), particularly for older people who, on average, are less mobile and have more limited activity spaces than other age groups (e.g., Lavery, Davey, Woodside, & Ewart, 1996; Rantanen et al., 2012; Schwanen, Hardill, & Lucas, 2012; Schwanen & Paez, 2010). Facilities in their direct

living environment, such as green spaces, are therefore important to support their needs (e.g., Kweon, Sullivan, & Wiley, 1998; Maas, Verheij, Groenewegen, de Vries, & Spreeuwenberg, 2006; Orsega-Smith, Mowen, Payne, & Godbey, 2004; Payne, Mowen, & Orsega-Smith, 2002).

Moreover, their social networks often have grown smaller due to social and health-related changes (e.g., Lang, 2001; World Health Organization, 2011). Maas, Dillen van, Verheij, and Groenewegen (2009) have shown that people with more green spaces in their living environment feel less lonely and experience less shortage of social support. Bedimo-Rung et al. (2005) concluded that parks or other green spaces may provide a meeting place where people can develop social ties. However, research about the exact relationship

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between green spaces in the direct living environment and social contacts, specifically for the older generation, is still rather limited (Kazmierczak, 2013).

The objective of this study, therefore, is to better understand the nature of the relationship between various types of green spaces in the direct living environment and the extent and nature of social contacts of the aging population, taking into account socio-demographic characteristics and perceived and objective measures describing the living environment. The central research questions are: (1) do green spaces in the direct living environment support social contacts of the aging population and (2) do socio-demographic characteristics of people and subjective and objective characteristics of the living environment affect the strength of the associations between green spaces and social contacts of the older generation? To investigate these questions data from 1501 persons in the age category of 60 years and over from a national representative sample who participated in a survey about living surroundings in the Netherlands in 2009 were selected. This survey includes both subjective and objective measurements of the direct (within a 100 m radius of the respondent's dwelling) living environment.

In particular, a Bayesian belief network (BBN) is proposed that derives and represents the relationships between all variables included. A major advantage of a BBN is that the network structure takes direct and indirect relationships between the variables into account (e.g., Arentze & Timmermans, 2007; Keuleers, Wets, Arentze, & Timmermans, 2001). The findings may provide urban planners and local government information on how to improve the planning and development of green spaces that contribute to stimulating social contacts and well-being of the aging population.

2. Literature

The aim of this study is to investigate the relationships between various types of green spaces in the direct living environment and the social contacts of the aging population in their neighborhood. The relationship between green spaces and social contacts in the living environment cannot be analyzed and discussed without taking into account other aspects that may influence the social contacts of the aging population. In this study, we have adopted human ecological theory (Bronfenbrenner, 1979) that assumes that various forms of human behavior are strongly correlated with various factors at multiple levels of the environment, from household, neighborhood, district to wider geographic scales (e.g., Giles-Corti & Donovan, 2002; Ward Thompson, 2013). The idea is that the environment influences human behavior and humans also influence the environment as a result of their activities. The relationship is thus considered to be two-directional. Ecological models thus suggest that various factors such as individual and household characteristics, social, cultural, and physical environments influence human behavior (Sallis et al., 2006). In the paragraphs to follow, the existing literature is discussed and interpreted under the different components of this framework.

2.1. Social contacts

Social contacts with neighbors include a number of different aspects such as the number of actual contacts between neighbors, how often people talk to each other, but also how close someone feels to their neighbors, and whether there is social support from neighbors (e.g., Maas et al., 2009). Henning and Lieberg (1996) defined two types of neighborhood social ties: strong ties (e.g., friendships) and weak ties (e.g., people recognizing and greeting) (Kazmierczak, 2013). In their study on the role of neighbors in personal networks in the Netherlands, Volker and Flap (2007) stated with regard to their quantity that, neighbors are an

important relational category in a personal network. However, they also concluded that neighbor relations are usually weak.

To start social contacts in a living environment people have to meet; opportunities for interaction are thus a prerequisite for the emergence of social contacts. Volker and Flap (2007) concluded that the area where people live is a particularly important meeting setting. This is not only because people spend a lot of time there, but also because they cannot avoid meeting those who live next door. Research has shown that green spaces in the living environment can promote social contacts as they provide places where people can meet, greet and talk with other people (e.g., Kabisch & Haase, 2013; Kuo, Sullivan, Coley, & Brunson, 1998; Martin, Warren, & Kinzig, 2004; Peters, Elands, & Buijs, 2010).

The benefits of social interaction for the aging population are well documented (Sugiyama & Ward Thompson, 2006). Social contacts are positively associated with better health, well-being and quality of life (e.g., Bonsang & Van Soest, 2012; Netuveli, Wiggins, Hildon, Montgomery, & Blane, 2006; Sugiyama & Ward Thompson, 2006). However, older people, in general, have fewer social support networks due to changes in their life cycle stage (e.g., retirement), or age-related losses and critical events (e.g., death of partner) (e.g., Oh, 2003; Tang & Lee, 2011). Along with a declining health and increasing mobility limitations (e.g., Rantanen et al., 2012; Schwanen & Paez, 2010) people tend to spend increasingly more time inside their house and its immediate surroundings. The majority of older adults prefer to live as long as possible in their own house or community (World Health Organization, 2011) and social support from family and neighbors will help older adults to live independently in their familiar surroundings.

However, the World Health Organization (2011) stated that in countries with very low birth rates, future generations will have fewer, if any siblings. The global trend toward having fewer children induces less potential family care and support for the elderly. Gardner (2011) showed that although the family has been identified as the most important source of informal support there is increasing awareness of the important role of non-family support. In particular, friends and neighbors increasingly contribute to the well-being of older adults. Moreover, Volker, Flap, and Lindeberg (2007) indicated that social contacts in the neighborhood are more likely to emerge if residents have few alternatives. Furthermore, they concluded that a typical living environment that affects an individual's social contacts consist of no more than two or three streets in the direct vicinity of the home. Therefore, this research focused at this scale, the direct living environment of the aging population.

2.2. Outdoor activities

As said in the introduction, compared to other age groups older people are more often mobility-impaired and have limited activity spaces (e.g., Lavery et al., 1996; Rantanen et al., 2012; Schwanen et al., 2012; Schwanen & Paez, 2010). Activity space can be defined as that part of the environment a person uses in conducting daily activities (Golledge & Stimson, 1997; Schonfelder & Axhausen, 2003; Wong & Shaw, 2011). As the older generation is more likely to be sensitive to environmental constraints, green spaces within the direct living environment are relevant for their outdoor activities (e.g., Joseph & Zimring, 2007; Sugiyama & Ward Thompson, 2006; Ward Thompson, 2011). Increasingly, research has identified links between various types of green spaces and outdoor activity participation (e.g., Humpel, Owen, & Leslie, 2002; Kaczynski & Henderson, 2007; Lenthe, Brug, & Mackenbach, 2005; Owen, Leslie, Salmon, & Fotheringham, 2000; Sallis, 2009).

Specifically, Koohsari, Kaczynski, Giles-Corti, and Karakiewicz (2013) examined the effects of proximity to public open spaces on walking. They did not find any significant associations between

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