

Beyond Green Spaces: Relating Specific Types of Urban Green Infrastructure to Neighborhood Satisfaction

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Extended Abstract

In a context of intensifying urbanization, the concept of urban livability has received considerable academic interest [1-2]. In order to develop successful housing policies and improve urbanites' quality of life, urban planners and policy makers need to understand how the urban environment influences health and well-being [1-3]. Among various livable city initiatives, greening of the urban landscape is a key dimension that has been consistently embraced and promoted [4]. The existing literature has proposed three pathways through which residential green space has beneficial health effects: reducing harm of environmental stressors, increasing opportunities for physical activity and social interaction, and fostering psychological restoration [5-6]. However, urban nature is diverse and not all types of urban nature can be expected to contribute to human health through each of those three pathways. Green spaces such as parks and gardens can be visited and used for various purposes, such as exercising or meeting up with friends or family. Smaller-scale greenery, such as street trees and green façades, does not lend itself to these types of activities. Nonetheless, theory suggests that simply being able to view greenery could be sufficient to benefit human well-being through psychological restoration [7-9].

Until recently, empirical research on the association between urban nature and residents' well-being has focused on green spaces, rarely considering the various types of vegetation that urban spaces may host [10]. To broaden our understanding of how various types of urban nature may contribute to residents' well-being, this study aims to quantify the association between ten types of urban green infrastructure, ranging from street trees to urban forests, and urbanites' neighborhood satisfaction. Neighborhood satisfaction is a cognitive measure of urban livability at the neighborhood scale [1], represents a domain of general life satisfaction [11], and is associated with respondents' subjective well-being [12].

In May-June 2021, an online questionnaire was distributed by a panel company (BPact) among residents of 13 major cities in the Flanders region of Belgium. The population of these cities ranges from 45,435 inhabitants (Turnhout) to 530,032 inhabitants (Antwerp). The questionnaire asked respondents to report on their neighborhood satisfaction, their access to green space at the residence, the overall greenness of the neighborhood, and the presence of ten types of urban green infrastructure in their neighborhood. To be able to statistically control for the relation of other neighborhood characteristics to neighborhood satisfaction, respondents also reported on their overall neighborhood environment, nuisance in the neighborhood, neighborhood safety, and access to various types of services in the neighborhood. Lastly, respondents were asked about their personality and attitudes, and about their socio-demographic information. The questionnaire was filled out by 1,091 respondents, resulting in a sample of 1,002 observations after data cleaning. The strength of association between the different types of urban green infrastructure and neighborhood satisfaction will be studied using ordinary least squares regression.

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Because green spaces such as private gardens, parks, or forest area can be visited and used in various ways [13], we hypothesize that these types of green infrastructure are more strongly positively associated with neighborhood satisfaction than the types of urban green infrastructure that mostly have an aesthetic function (namely building envelope greenery, small-scale street greenery, and street trees; these types of green infrastructure are referred to as “aesthetic urban green infrastructure” in the remainder of the abstract). Nonetheless, we still expect to find a positive association between aesthetic urban green infrastructure and neighborhood satisfaction, based on the aforementioned theoretical support for green views as a mechanism for psychological restoration. Furthermore, we hypothesize that the strength of association of each of the 10 urban green infrastructure types with neighborhood satisfaction will depend on the overall level of greenness of the neighborhood: in neighborhoods that are generally less green, the relation between a specific urban green infrastructure type and neighborhood satisfaction may be stronger than in neighborhoods with ample greenery. We expect that this moderation effect may be especially relevant for the aesthetic urban green infrastructure types. These may go unnoticed in neighborhoods with abundant greenery, but because they can flexibly be installed even in densely built-up urban areas, they may be the primary type of nature exposure for the residents living in such areas. Figure 1 presents the conceptual model of the study.

By quantifying how strongly different types of urban green infrastructure are associated with urbanites’ neighborhood satisfaction, this study explores how specific types of greenery may support the well-being of urban residents. The results of this study may help urban planners and landscape designers to create livable neighborhoods by informing them on which types of urban green infrastructure to incorporate into their designs.

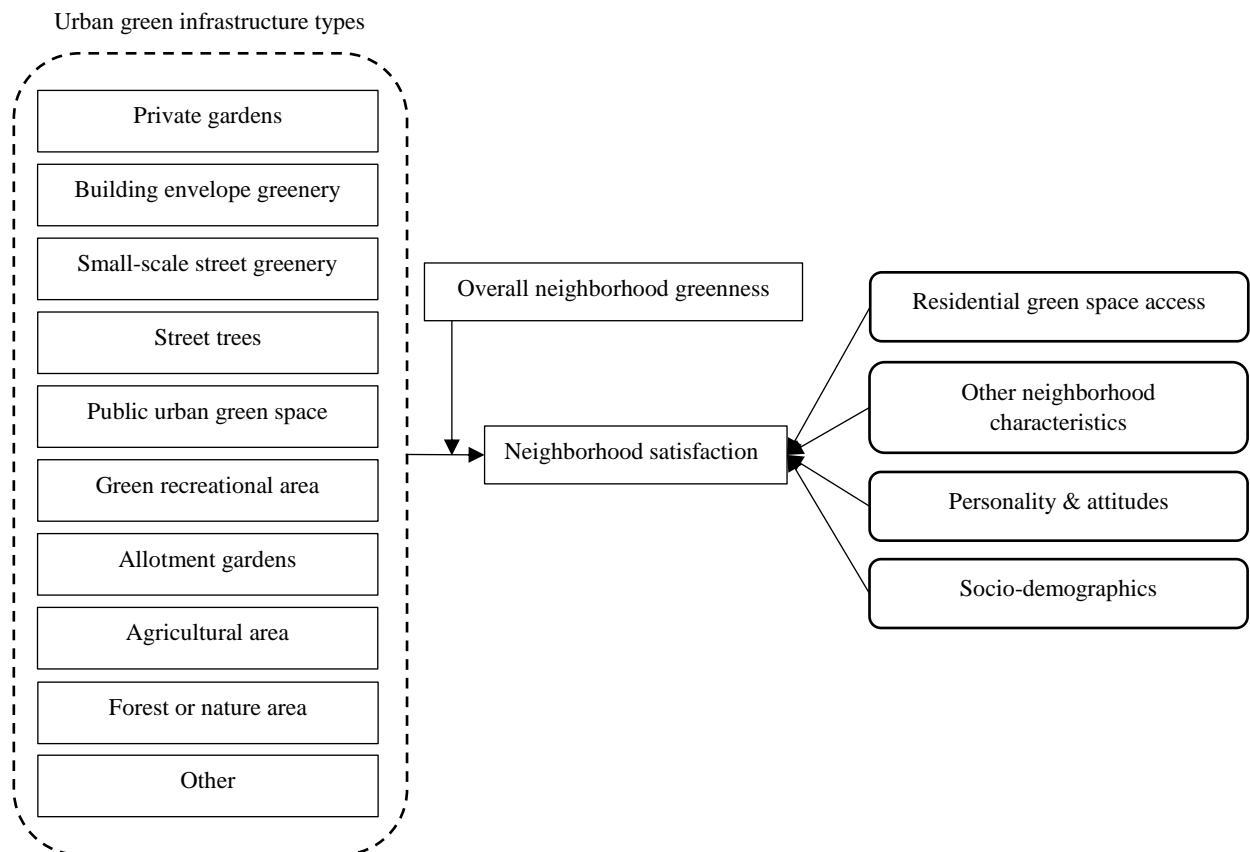


Figure 1: Conceptual model.

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