



Review

Perceived personal safety in relation to urban woodland vegetation – A review

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ARTICLE INFO

Keywords:

Fear
 Fear of crime
 Landscape design
 Landscape planning
 Vegetation development

ABSTRACT

Urban woodland vegetation provides people with many aesthetic, ecological and psychological benefits, but can also generate problems concerning people's perception of safety. This paper reviews existing knowledge about perceived personal safety in relation to vegetation, particularly woodland vegetation, in urban green spaces such as parks and residential areas. Individual and social factors, but also vegetation character, maintenance and design, proved to be important for perceived personal safety. Vegetation-related aspects identified as being of particular importance include landscape design, possibilities for overview and control, vegetation density, and vegetation character and maintenance. Vegetation of an open character with low density undergrowth might have positive effects on perceived personal safety without reducing other benefits. Issues for future research include context-based studies to consider several aspects of vegetation and their interactions.

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Introduction

Woodland vegetation is common in urban green spaces such as parks and residential areas today. One reason is the naturalistic “ecological woodland style” common within landscape design in the 1970s–1980s in the UK, the Netherlands and Sweden (Jorgensen et al., 2007). Such vegetation includes a mixture of trees and shrubs of various species, with one or more layers of understory vegetation. The ideal was nature and old cultural landscapes (Gustavsson, 2004), but insufficient maintenance can lead to dense, untidy vegetation. According to Jorgensen et al. (2007), woodland plantings in the UK are in need of development to increase perceived safety. This paper reviews existing knowledge regarding the influence of natural and naturalistic urban woodland vegetation on people's perceived personal safety.

Woodland vegetation in urban areas provides many benefits, e.g. for human wellbeing and health (Hartig et al., 2003; Berman et al., 2008). Through adding biodiversity in urban environments, vegetation can improve mental health (Fuller et al., 2007) and add pedagogic and social benefits (Miller and Hobbs, 2002). Areas with trees by multi-family housing may become meeting places, improving social connections between residents (Coley et al., 1997; Kuo et al., 1998; Sullivan et al., 2004). Woodlands close to housing are also important for children's everyday play (Florgård and Forsberg, 2006).

People tend to find natural-looking woodlands attractive (Schroeder and Anderson, 1984; Burgess et al., 1988; Jorgensen et al., 2007). Europeans generally prefer forest vegetation with diversity in tree species, variation between areas and naturalistic forest edges (Edwards et al., 2011). Moreover, natural green areas need to be easily accessible, within a few minutes' walk (Coles and Bussey, 2000), to increase use and limit stress-related diseases (Grahn and Stigsdotter, 2003, 2010). However, there are differences in people's experiences and needs, indicating that although green space with a natural or wild character is important close to residential areas, there is also a need for variation to promote individual choice (Jorgensen et al., 2007), safety and preference for all users (Schroeder and Anderson, 1984; Burgess et al., 1988).

Perceived personal safety is an experienced feeling, distinct from actual safety, security or risk, and therefore needs to be approached differently. Feeling unsafe outdoors is often connected to the fear of crime, but also other factors. However, “fear of crime” is commonly used as a concept concerning unsafe perceptions in a wider sense. For example Pain (2001, p. 902) defines fear of crime as “the wide range of emotional and practical responses to crime and disorder made by individuals and communities”. Sparks et al. (2001) connect fear of crime to worries about, e.g. the behaviour of young people outdoors, while Day et al. (2003) describe it as the result of complex relations between factors such as reactions to violence and crime, myths about crime, and the construction of male and female identities. Perceived personal safety must be considered a complex phenomenon, affected by much more than the environment.

Fear associated with the presence of woodland vegetation in parks and residential areas has been described by, e.g. Jacobs

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Table 1
Summary of the initial literature search.

Search word	Search word	Number of articles found	Number of relevant articles found	Articles found. Numbers correspond to titles in Table 2	
Safety	AND	Parks	1168	3	2, 4, 10
Fear	AND	Parks	153	4	1, 2, 7, 10
Safety	AND	Vegetation	622	4	3, 4, 5, 6
Fear	AND	Vegetation	62	4	3, 5, 6, 9
Safety	AND	Woodland	74	4	2, 3, 4, 8
Fear	AND	Woodland	19	2	2, 3
			2098	21	

(1961), Burgess et al. (1988), Madge (1997) and Jorgensen et al. (2007). Such low perceived safety has many negative consequences, possibly affecting people more than actual risk and crime. Women in particular may be limited in choosing their desired lifestyle (Keane, 1998) and the elderly may lose the possibilities for a physically active life (Li et al., 2005). Fear of crime has been linked to low levels of physical and mental health and low quality of life (Chandola, 2001; Strafford et al., 2007; Jackson and Stafford, 2009).

The character of vegetation can be an important factor affecting perceived personal safety. Madge (1997) found that park users, particularly women, avoided areas with poor lighting, dense understory vegetation or a high density of trees. Studies have shown that lawns and trees in residential areas may be associated with high perceived personal safety (Kuo et al., 1998; Kuo and Sullivan, 2001; Kuo, 2003), while a more natural and wild character in certain situations has been described as frightening (Burgess et al., 1988; Bixler and Floyd, 1997; Jorgensen, 2004; Jorgensen et al., 2007). However, aiming for more simple concepts such as lawns and limbed-up trees risks a reduction of the many benefits of woodland vegetation. Furthermore, if vegetation is cut down, increased maintenance problems might emerge. Woodland vegetation, with several layers and free-growing ground vegetation, is often both preferred and feared (Schroeder and Anderson, 1984; Burgess et al., 1988; Jorgensen, 2004; Jorgensen et al., 2007). Despite completely different green space characters being described as the safest (urban parks) and the most attractive (dense forests), it might be possible to combine these two qualities through developing woodland vegetation into more open characters (Schroeder and Anderson, 1984).

Urban settings have often been the study object in the vast research field of perceived personal safety and fear of crime. However, few studies have examined perceived personal safety in parks and other green areas, particularly in residential green areas. The complex dual role of urban woodland vegetation, as valuable but also threatening, shows the need for knowledge on how it can be planned, designed and managed to improve perceived personal safety without reducing other benefits.

In order to identify possibilities for combining safety aspects with other benefits of urban woodland vegetation, existing knowledge on perceived personal safety in urban green spaces first needs to be reviewed. Therefore this paper examined aspects affecting perceived personal safety in relation to vegetation in general, and urban woodlands in particular. The overall focus was on vegetation and woodlands in urban green spaces such as parks and residential areas. Two specific questions studied throughout the analysis were: What overarching factors affect people's perception of personal safety outdoors? and What qualities connected to woodland vegetation have been found to affect the perception of personal safety?

Methods

A literature review on perceived personal safety in urban woodland vegetation was conducted in March 2012. The starting

point was a literature search using the search engine Scopus (www.scopus.com) and combining the search words 'safety' and 'fear' with 'vegetation', 'woodland' and 'parks' (Table 1). This yielded a total of 2098 articles, but after assessment of the relevance of these articles for the two research questions, only 10 remained (Table 2). As a second step, the reference lists of these 10 articles were used to locate additional relevant literature, using the so-called snowballing method. This process yielded 46 sources of direct interest to the present study, of which nine concerned perceived personal safety in residential open spaces and 37 personal safety in public areas such as parks and urban forests. The relevant literature found was analyzed for information on aspects of fear or safety in urban green spaces with particular focus on woodland vegetation qualities for increased perceived personal safety. The literature review was also used to identify factors reported to have an impact on perceived personal safety outdoors.

Factors affecting people's perception of personal safety outdoors

Among the theories and models describing the factors behind perceived safety and fear, three types of factors are commonly described: individual, social and environmental. Studies of how the physical environment affects personal safety must therefore be conducted with awareness of all these factors. However, it may be difficult or even impossible to separate the effects of the different types of factors from each other. Models for individual (psychological) and social (social-demographic) factors in fear of crime have been developed by Van der Wurff et al. (1989) and refined by Farrall et al. (2000). The psychological model contains four components: attractivity (seeing oneself or one's possessions as a possible victim or target), evil intent (view of other people's intentions), power (between oneself and others) and criminalizable space (situation in time and space). The social factors identified by Van der Wurff et al. (1989) were: age, gender, level of income and education, household size, professional or study activity, and number of acquaintances within the local area. Farrall et al. (2000) proposed combining individual and social variables, adding e.g. time lived in the neighbourhood, owning one's own dwelling and health during the past year, to account for more of the individual variance.

The cultural and environmental context is a social aspect of importance for perceived personal safety, although most studies within the research field have examined large-scale urban areas with socio-economic problems in the USA or the UK. However, culture, level of urbanization and type of urban area may affect perceived personal safety. For example, Maas et al. (2009) found that green areas were associated with low social safety mainly in highly urbanized areas. What is perceived as acceptable concerning other people's behaviour and vegetation maintenance level can be more limited in semi-public residential green areas than in public parks (Westover, 1985; Lindgren and Nilsen, 2012) and the distance to the home may also have an influence (Jorgensen et al., 2007). The Nordic countries are commonly described as safe. For example,

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