



## Research paper

# Crime, greenspace and life satisfaction: An evaluation of the New Zealand experience



Christopher M. Fleming<sup>a,\*</sup>, Matthew Manning<sup>b</sup>, Christopher L. Ambrey<sup>c</sup>

<sup>a</sup> Griffith Business School, South Bank Campus, Griffith University, 226 Grey Street, South Bank 4101, QLD, Australia

<sup>b</sup> ANU Centre for Social Research and Methods, College of Arts and Social Sciences, Australian National University, Beryl Rawson Building, Acton 2601, ACT, Australia

<sup>c</sup> Urban Research Program, Gold Coast Campus, Griffith University, Parklands Drive, Gold Coast 4222, QLD, Australia

## HIGHLIGHTS

- Greater access to greenspace is associated with higher levels of life satisfaction.
- The strength of this association, however, is strongly dependent on fear of crime.
- Those between 50 and 59, and males are more adversely impacted by fear of crime.

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## ABSTRACT

In this study we explore the relationship between the benefits of greenspace and fear of crime in New Zealand neighbourhoods. To ensure that the full benefits of investment in greenspace are realised, it is important to understand the complex interactions that occur within natural environments and the effect of these interactions on individual wellbeing within different populations (in this case New Zealand). Employing an ordered logit model, this study uses data on self-reported life satisfaction, fear of crime and access to greenspace from the New Zealand General Social Survey. In line with existing evidence, results suggest that greater access to greenspace is associated with higher levels of life satisfaction. The strength of this association, however, is strongly dependent on fear of crime. That is, when residents report that they feel 'unsafe' or 'very unsafe' in their neighbourhood, the psychological benefits of access to greenspace disappear almost entirely. This relationship is conditioned further by age and gender, with residents between 50 and 59 years of age and males being less likely to report being very satisfied with their lives. Given the considerable level of public investment in providing and maintaining greenspace, there is a clear need to address fear of crime in the neighbourhood in order to ensure that the full benefits of policies directed at promoting the use of neighbourhood greenspace for health and well-being can be realised.

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## 1. Introduction

The belief that exposure to nature can promote psychological well-being in urban environments dates as far back as the earliest large cities. As noted by Ulrich et al. (1991), residents of ancient Rome were recorded as valuing interaction with nature as a contrast to the noise, congestion and other stressors of the city. Similarly, in the United States Olmsted (1865), one of the co-designers

of New York's Central Park, notes the stresses associated with cities and argues that viewing nature is effective in producing restoration or recovery from such stresses (Ulrich, 1979). Olmsted's contribution formed an important part of the justification for providing parks and other forms of greenspace in America's cities, and for preserving wilderness for public use. This reasoning has also been used to justify investment in the provision of public greenspace in other cities around the world.

The health and well-being effects of nature or greenspace occur through a number of channels. These include the promotion of greater physical activity (Giles-Corti & Donovan, 2002; Giles-Corti & Donovan, 2003; Jones, Hillsdon, & Coombes, 2009; Sugiyama, Francis, Middleton, Owen, & Giles-Corti, 2010; Sugiyama, Leslie, Giles-Corti, & Owen, 2008), the support of longevity (Takano,

\* Corresponding author. Tel.: +61 7 3735 7061.

E-mail addresses: [chris.fleming@griffith.edu.au](mailto:chris.fleming@griffith.edu.au) (C.M. Fleming), [matthew.manning@anu.edu.au](mailto:matthew.manning@anu.edu.au) (M. Manning), [c.ambrey@griffith.edu.au](mailto:c.ambrey@griffith.edu.au) (C.L. Ambrey).

Nakamura, & Watanabe, 2002) and the encouragement of social interaction (Francis, Giles-Corti, Wood, & Knuiiman, 2012; Kuo, Bacaicoa, & Sullivan, 1998a). Detailed reviews of the evidence are provided by Bell et al. (2008), Croucher, Myers, and Bretheron (2007a), Croucher, Myers, Jones, Ellaway, and Beck (2007b), Lee and Maheswaran (2011) and Sunderland (2012). A recent review in a New Zealand context is provided by Blaschke (2013).

Although there are substantial (monetary and non-monetary) benefits associated with the provision and maintenance of greenspace, there are also considerable costs. In a New Zealand context, the Department of Conservation, who manage all New Zealand's conservation land and waters, including recreational opportunities in those areas, have an annual budget of approximately NZD 330 million (EUR 218 million) (New Zealand Government, 2013). Expenditure on greenspace also occurs at the local government level. In the financial year ended June 2012, New Zealand's 78 local authorities spent approximately NZD 67 million (EUR 44 million) on capital expenditure in the category of 'environmental protection' and NZD 92 million (EUR 61 million) in the category of 'recreation and sport' (Department of Internal Affairs, 2012a). This capital investment was accompanied by operating expenditures of NZD 294 million (EUR 194 million) and NZD 662 million (EUR 437 million) respectively (Department of Internal Affairs, 2012b). Although all of this expenditure is unlikely to be directly attributable to greenspace, these figures nonetheless give an indication of the significant investment by New Zealand governments in this area.

To ensure that the full benefits of investment in greenspace are realised, it is important to understand the complex interactions that occur within natural environments and the effect of these interactions on individual wellbeing. Sociological models have been developed to assist in understanding the dynamic interrelationships between a diverse range of personal and environmental factors. The goal of these models is to bridge the gap between behavioural theories, which focus on narrowly defined contexts, and anthropological theories, which focus on broad contexts.

Bronfenbrenner's (1979) ecological framework for human development argues that in order to understand human development an entire ecological system needs to be taken into account. In terms of a system, we define this as a comparatively bounded structure consisting of interacting inter-related and inter-dependent elements of a much larger whole. Important to this framework, individuals are key agents in their ecological system; from an ecological perspective the individual is both a postulate (a basic entity whose existence is taken for granted) and a unit of measurement. As a postulate, an individual has several characteristics—first he/she requires access to an environment, upon which he/she is dependent for their wellbeing; and second he/she is interdependent with other humans; that is, is always part of a population and cannot exist otherwise.

In terms of Bronfenbrenner's framework, each system within his socially organised subsystems (the individual, the microsystem, the mesosystem, the exosystem and the macrosystem) depends on the contextual nature of a person's life. Importantly, within and between each system are bidirectional influences, these influences have an impact both from and towards the individual. For example, the rate of crime may influence the individual but the individual may also influence the rate of crime.

Underpinned by Bronfenbrenner's framework, the purpose of this study is to investigate the links between greenspace, fear of crime and life satisfaction, how fear of crime may moderate the link between greenspace and life satisfaction, and, in particular, what factors may further condition the relationship between greenspace and fear of crime and life satisfaction. We are thus trying to better understand the bidirectional interaction between the individual and his/her environment in the context of greenspace, crime and

wellbeing. To the extent of our knowledge, this study provides the first such investigation in a New Zealand context—providing a distinct contribution to the literature amid a paucity of studies from outside the US and UK (Sreetheran & van den Bosch, 2014). This is an important contribution because it represents a different cultural context to these earlier studies. For those seeking a wider discussion on the determinants of life satisfaction in a New Zealand context, see Brown, Woolf, and Smith (2012).

### 1.1. Greenspace and well-being

Social scientists have advanced a number of perspectives that explain the link between greenspace and well-being. The most prominent perspectives include cultural, arousal, evolutionary and attention restoration. The cultural, or learning-based, perspective suggests that modern Western-based cultures tend to condition their inhabitants to revere nature and dislike urban environments (Tuan, 1974). Further, learned positive associations with natural environments can be acquired; for example, during holidays and other recreational experiences. The arousal perspective (Berlyne, 1971; Mehrabian & Russell, 1974) implies that recuperation from excessive arousal or stress occurs more rapidly in settings with low levels of arousal-increasing properties such as complexity, intensity and movement. Since natural settings tend to have lower levels of complexity and other arousal properties than urban environments (Wohlwill, 1976), nature should have a restorative influence. Evolutionary perspectives argue that because human evolution occurred in natural environments, people are physiologically, and perhaps psychologically, adapted to natural, as opposed to urban, settings. Although this perspective is subject to significant debate, a common theme is that humans have an unlearned predisposition to pay attention and respond positively to settings that were favourable to survival or ongoing well-being during evolution (Appleton, 1975; Driver & Greene, 1977; Kaplan & Kaplan, 1989; Orians, 1986; Stainbrook, 1968; Ulrich, 1983). Finally, attention restoration theory views nature as restorative in terms of rejuvenating directed attentional capacity. This perspective maintains that nature is restorative where it: offers an opportunity to rest one's directed attention; is fascinating; provides effortless attendance, freeing up the mind to rest; provides a sense of extent, being rich and coherent enough to constitute a whole other world without imparting an endless stream of stimuli; and is compatible with the individual, where functioning seems relatively effortless (Kaplan, 1995).

While these theories offer different perspectives on the understanding of the restorative or recuperative influences of nature, they fall short of considering nature as a source of well-being in and of itself. The biophilia hypothesis contends that human beings have an innate emotional affiliation to other living organisms. This affiliation stems from the long evolutionary history of humans in the natural world. Only in more recent history have humans been separated from the natural world, and as such it is unlikely that all of the learning about nature's value embedded in our biology has been lost (Wilson, 1984).

Recent empirical evidence also supports the notion that access to nature or greenspace provides psychological benefits to individuals. For example, Wells and Evans (2003) find that the impact of life stress was lower among children with high levels of nearby nature than among those with little nearby nature. Mayer and Frantz (2004) observe that an individual's affective, experiential connection with nature is positively associated with their self-reported life satisfaction. Further, Mayer, Frantz, Bruehlman-Senecal, and Dolliver (2008) observe that exposure to nature increases connectedness to nature, attentional capacity, positive emotions and the ability to reflect on a life problem. Bowler, Buyung-Ali, Knight, and Pullin (2010) conduct a systematic review of 25 studies, finding

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