



The role of urban neighbourhood green space in children's emotional and behavioural resilience



Eirini Flouri ^{a, *}, Emily Midouhas ^a, Heather Joshi ^b

^a Department of Psychology and Human Development, Institute of Education, University of London, UK

^b Department of Quantitative Social Science, Institute of Education, University of London, UK

ARTICLE INFO

Article history:

Available online 27 June 2014

Keywords:

Emotional and behavioural problems
Green space
Millennium Cohort Study
Neighbourhoods
Socio-economic disadvantage

ABSTRACT

This study explored the role of relative quantity of green space in urban English neighbourhoods in predicting parent-reported emotional and behavioural problems from early to middle childhood (ages 3, 5, 7) and in buffering the effects of multiple risk factors (neighbourhood disadvantage, family poverty and adverse life events) on child adjustment. We modelled data from 6384 Millennium Cohort Study children using multilevel growth curve modelling. Neighbourhood green space was measured with the percentage of green space within a standard small area. We found that access to garden and use of parks and playgrounds were related to fewer conduct, peer and hyperactivity problems. Neighbourhood green space was generally unrelated to child adjustment, but poor children in urban neighbourhoods with more greenery had fewer emotional problems from age 3 to 5 than their counterparts in less green neighbourhoods. Neighbourhood green space may promote emotional well-being in poor urban children in early childhood.

© 2014 Elsevier Ltd. All rights reserved.

1. Introduction

Green neighbourhood environments have been found to confer benefits to individual health and well-being (Ward Thompson & Aspinall, 2011). Neighbourhood green space is known to have a restorative effect (Kaplan & Kaplan, 2011), reducing stress and fatigue, and improving mood through nature immersion or mere 'views' of green space (Kinnafick & Thøgersen-Ntoumani, 2014). Recent evidence suggests that the association between green space and adult health is a complex one (Cummins & Fagg, 2012), explained by social connections (Maas, Verheij, Groenewegen, De Vries, & Spreeuwenberg, 2006), and modified by urbanity, neighbourhood socio-economic status, perceptions of area (particularly safety), especially among women, and quality of green space. For example, in the UK, Mitchell and Popham (2007) reported poorer adult self-rated health with increasing percentage of green space in

suburban low-income areas but not in more central urban or rural low-income areas. They suggested that this may be due to poorer quality green space in low-income suburban areas.

Natural environments are important for children, too. Although there is more evidence for the role of neighbourhood green space in children's physical rather than mental health, there are several reasons why neighbourhood green space may be related to children's emotional and behavioural adjustment. First, children's preferred environments include natural elements (Evans, 2006). Second, access to natural, outdoor settings improves a number of child outcomes that are related to adjustment, including attention (Faber Taylor, Kuo, & Sullivan, 2001; Faber Taylor, Kuo, & Sullivan, 2002; Kuo, Sullivan, Coley, & Brunson, 1998; Wells, 2000), self-regulation (Faber Taylor et al., 2002; Kaplan, 2001), and motor skills (Fjortoft, 2004). For example, Faber Taylor et al. (2002) showed that girls living in social (i.e., subsidized) housing closer to green space had better attentional abilities and emotional self-regulation, and both boys and girls played more, as well as more creatively, in green settings than in barren spaces. Third, access to neighbourhood green space might encourage physical activity, which has been associated with mental health (Wells, 2000). Fourth, green space is associated with air quality which promotes

* Corresponding author. Department of Psychology and Human Development, Institute of Education, University of London, 25 Woburn Square, London WC1H 0AA, UK. Tel.: +44 20 7612 6279; fax: +44 20 7612 6304.

E-mail address: e.flouri@ioe.ac.uk (E. Flouri).

physical health (Schwartz, 2004), another correlate of behavioural adjustment. Finally, green space may impact on children via their parents (Maas et al., 2006; Sugiyama, Leslie, Giles-Corti, & Owen, 2008; White, Alcock, Wheeler, & Depledge, 2013). For example, parents who have greater access to or utilise open space may be healthier and more physically active (Coombes, Jones, & Hillsdon, 2010; Giles-Corti et al., 2005), which could be related to higher levels of activity (and thereby better mental health) in their children. Furthermore, the mental health benefits of green space to parents (through, for example, views of nearby nature) may be related to better adjustment in their children through better parenting (Goodman & Gotlib, 1999).

Immersion in or views of green space in one's neighbourhood may also be related to children's resilience to risk. In other words, neighbourhood green space may be especially important for children experiencing risk, such as family or neighbourhood adversity. Many children who experience family adversity or neighbourhood disadvantage appear to suffer emotionally and behaviourally as a result, but many of them do not. The latter children exhibit emotional and behavioural resilience (Rutter, 2013), or fewer than expected emotional and behavioural problems given the risks they face. Various child and family factors have been associated with such resilience, including self-regulation, cognitive ability and parental warmth (Kim-Cohen, Moffitt, Caspi, & Taylor, 2004). There is also some evidence for the role of neighbourhood characteristics, such as collective efficacy (Odgers et al., 2009), in promoting children's behavioural resilience. Yet there is little research about the role of neighbourhood green space in the emotional and behavioural adjustment of children facing family adversity or disadvantaged localities. What little there is has some important limitations (Bowler, Buyung-Ali, Knight, & Pullin, 2010; for a review), but is also promising, especially in the US context. For example, a number of US studies have shown that nearby nature is beneficial for the well-being of children in disadvantaged urban neighbourhoods (Faber Taylor et al., 2001; Kuo et al., 1998). Studies focusing on cognitive outcomes tend to report similar results. For example, in a premove/postmove longitudinal study, Wells (2000) showed that American children whose homes improved the most in terms of greenness following relocation tended to have the highest post-move levels of cognitive functioning. More recent US studies have shown that nearby nature can promote positive outcomes in other groups of at-risk children, too. Wells and Evans (2003) found that the impact of life stress on child self-worth and psychological well-being was lower among children with greater proximity to nature. Although that study was carried out in a rural setting and measured greenery in the child's immediate residential surroundings rather than at the neighbourhood level, it suggests the potential for more vegetated urban areas to buffer risk effects on child mental health, including emotional and behavioural adjustment. However, no study has examined the role of green space in child well-being and resilience in the early years in the UK, a different context from the US (Konijnendijk, Ricard, Kenney, & Randrup, 2006). There is some research about the role of neighbourhood green space in health (rather than mental health) outcomes in UK children, but the evidence is mixed. For example, a study in a large Welsh city showed that children in deprived neighbourhoods had greater access to parks and play-ground facilities. Their health outcomes were poor despite this access (Rodgers, Demmler, Dsilva, & Lyons, 2012). Like Mitchell and Popham (2007), Rodgers et al. (2012) suggested the lower quality of playgrounds and parks as a reason.

Our study had two main aims: 1) To examine longitudinally the potential for urban green space in England to promote child adjustment in early to mid childhood, and 2) to assess whether

urban green space 'protects' children from the negative consequences of family adversity and neighbourhood disadvantage. To meet our first aim, we modelled the main effects of urban green space on children's trajectories of emotional and behavioural problems from early to middle childhood (ages 3, 5 and 7), while accounting for selective sorting into neighbourhoods. We excluded rural (but not suburban) areas because neighbourhood green space may be confounded with levels of rurality (Mitchell & Popham, 2007; White et al., 2013). We hypothesized that green space would influence children's adjustment above and beyond their families' social and economic backgrounds associated with selection into neighbourhoods. To meet our second aim, we examined the role of urban neighbourhood green space in buffering (i.e., 'moderating') the effects of family poverty, adverse life events and neighbourhood disadvantage on children's trajectories of problems. We also tested a series of potential pathways (i.e., 'mediators') of any protective (i.e., 'moderator') effects that were identified. Based on previous research cited above, we hypothesized that green space would build resilience in children via their parents' mental and physical health, and via their own physical health and level of physical activity.

2. Methods

2.1. Participants and procedure

The Millennium Cohort Study (MCS; www.cls.ioe.ac.uk/mcs) is a longitudinal survey drawing its sample from all births in the UK over a year, beginning on 1 September 2000 (Plewis, 2007). The MCS sample design effectively under-represents rural areas, which account for 20% of the re-weighted sample of families. Ethical approval for the MCS was gained from NHS Multi-Centre Ethics Committees, and parents gave informed consent before interviews took place. Sweeps (i.e., waves) 1–4 took place when the children were around 9 months, and 3, 5, and 7 years, respectively. Emotional and behavioural problems were measured at Sweeps 2–4. We used data on families in England whose children had emotional and behavioural problem data in at least one of Sweeps 2–4 and who were living in urban English neighbourhoods, consistently over Sweeps 2–4 ($n = 6348$). We excluded 66 England families missing data on children's emotional and behavioural problems in all three of Sweeps 2–4, and 1394 England families living in rural neighbourhoods in at least one of Sweeps 2–4. Two of these families met both criteria. We confined our analysis to families in England because comparable measures of green space are not available from the devolved governments of Wales, Scotland and Northern Ireland. 'Neighbourhoods' were Lower layer Super Output Areas (LSOAs). LSOAs are built from groups of Census Output Areas (typically 4–6), and are constrained by the boundaries of the Standard Table wards used for 2001 Census outputs. They have, on average, 1500 residents. Urban settlements, including suburban areas, are defined as having a population of over 10,000 (Bibby & Shepherd, 2004).

2.2. Measures

The following were measured at ages 3, 5 and 7, unless otherwise noted.

Neighbourhood green space was measured using the 2001 Generalised Land Use Database (GLUD; Office of the Deputy Prime Minister, 2005). The GLUD classifies land use at high geographical resolution across England into nine categories: green space, domestic gardens, fresh water, domestic buildings, nondomestic buildings, roads, paths, railways, and other (largely hard standing). The data are presented in thousands of square metres (1000 m²), to

Download English Version:

<https://daneshyari.com/en/article/7246086>

Download Persian Version:

<https://daneshyari.com/article/7246086>

[Daneshyari.com](https://daneshyari.com)