Landscape and Urban Planning 148 (2016) 139–148

Contents lists available at ScienceDirect

Landscape and Urban Planning

journal homepage: www.elsevier.com/locate/landurbplan

Research Paper

Staying in touch with nature and well-being in different income groups: The experience of urban parks in Bogotá

M. Scopelliti[a,d,*], G. Carrus[b], C. Adinolfi[c], G. Suarez[e], G. Colangelo[c], R. Lafortezza[c], A. Panno[b], G. Sanesi[c]

[a] Department of Human Studies, LUMSA University, Rome, Italy
[b] Department of Education, Roma Tre University, Rome, Italy
[c] Department of Agricultural and Environmental Science (DISAAT), University of Bari, Bari, Italy
[d] Interuniversity Research Centre on Environmental Psychology (CIRPA), Italy
[e] Department of Botany, Faculty of Pharmacy, University of Granada, Granada, Spain

HIGHLIGHTS

- Higher-, middle-, and lower-income individuals showed differences in terms of well-being experiences in urban parks in Bogotá.
- Middle-income individuals in Bogotá reported higher levels of well-being from park experience.
- Use of urban parks and psychological variables were relevant predictors of well-being in an integrated model.
- Different psychological mechanisms linking park experience to well-being emerged across the three income groups.

ARTICLE INFO

Article history:
Received 29 January 2015
Received in revised form 8 November 2015
Accepted 14 November 2015

Keywords:
Green spaces
Urban forestry
Psychological restoration
Urban stress
Well-being
Urban ecosystem services

ABSTRACT

Studies on the positive effects of contact with nature have been mainly conducted in European countries, North America, and Australia, whereas the experience of nature for people living in other countries is still to be adequately investigated. Investigation of the beneficial effects of nature is particularly important in dense urban areas characterized by heavy environmental stress-related problems, like crowding and noise, and for people suffering from income-related well-being inequalities. To contribute to filling this gap, the present study investigated the effects of contact with urban parks on well-being among residents in Bogotá, Colombia. A questionnaire was administered to an opportunistic sample of 398 respondents (300 of which were completed and used in the analyses) in parks located in three districts differing in socio-economic status. The residents of these districts were representative of the upper, middle, and lower income groups. The questions asked about the use of green areas and related psychological variables, such as human-nature interdependence, connectedness to nature, perceived restorative and affective qualities attributed to the park, emotions experienced, and overall well-being derived from the park experience. The results showed higher levels of well-being for people in the middle-income group and a relevant role of nature-related activities and psychological variables in explaining such beneficial outcomes. Differences in the mechanisms leading to well-being also emerged for the three income groups. Theoretical and practical implications of the study are discussed.

1. Urban experience and environmental stressors: The positive role of contact with nature

The role of environmental stressors in the urban experience has been extensively studied because of its impact on individuals' quality of life and well-being (Baldassarre, 1979; Pacione, 2003; Wandersman & Nation, 1998). In addition, the literature has demonstrated the harmful effects of environmental stressors on the social aspect, as these can lead to increased aggression and

* Corresponding author at: Department of Human Studies, LUMSA University, Piazza delle Vaschette, 101, 00193 Rome, Italy. Tel.: +39 06 68422910.
E-mail addresses: m.scopelliti@lumsa.it (M. Scopelliti), giuseppe.carrus@uniroma3.it (G. Carrus), cristiano.adinolfi@gmail.com (C. Adinolfi), gina.suarez.ca@gmail.com (G. Suarez), giu.colangelo@gmail.com (G. Colangelo), raffaele.lafortezza@uniba.it (R. Lafortezza), angelopanno@yahoo.it (A. Panno), giovanni.sanesi@uniba.it (G. Sanesi).

http://dx.doi.org/10.1016/j.landurbplan.2015.11.002
0169-2046/

decreased pro-social behavior and motivation (Cohen, 1980; Evans & Cohen, 2004; Evans & Stecker, 2004).

Within a social ecology framework emphasizing human–environment interdependence, Stokols (1992) pointed out that the physical and social dimensions of environments can lead to individual and collective well-being in many different ways through cognitive, emotional, and behavioral modifications. Among the key physical dimensions of environments promoting these benefits, different authors over the last decades have provided evidence of the positive effects of Urban Green Spaces (UGS) and greenery in urban settlements (Björk et al., 2008; Groenewegen, Van Den Berg, De Vries, & Verheij, 2006; Maller, Townsend, Brown, & Leger, 2002; Takano, Nakamura, & Watanabe, 2002). UGS are defined as all accessible areas with green elements (lawn, flowers, brushes or trees) in the urban or peri-urban residential environment. In terms of the urban ecosystem, these benefits are promoted, among the other mechanisms, through the mitigation of atmospheric pollution (McPherson & Simpson, 1998), the reduction of noise (Fang & Ling, 2005; Gidlöf-Gunnarsson & Öhrström, 2007), the provision of a healthier microclimate (Lafortezza, Carrus, Sanesi, & Davies, 2009), and the support of biodiversity (Alvey, 2006; Sanesi, Padoa-Schioppa, Lorusso, Bottoni, & Lafortezza, 2009). UGS also play a central role in promoting healthy lifestyles, with reference to both physical activity (Kaczynski, Potwarka, & Saelens, 2008; Pretty, Peacock, Sellens, & Griffin, 2005; Takano et al., 2002) and well-being in general (Brymer, Cuddihy, & Sharma-Brymer, 2010; Sanesi, Gallis, & Kasperidus, 2011), and contribute to reducing income-related health inequalities (Mitchell & Popham, 2008). In very recent years, some authors have begun to take a closer look at the associations between residential greenery and fetal development, especially in terms of birth weight (Dadvand et al., 2012a, 2012b; Donovan, Michael, Butry, Sullivan, & Chase, 2011; Laurent, Wu, Li, & Milesi, 2013; Markevych et al., 2014).

UGS also play an important role from a social perspective by promoting a sense of safety, social support and cohesion, and integration (Coley, Kuo, & Sullivan, 1997; Jay & Schraml, 2009; Kuo, 2003; Maas, Van Dillen, Verheij, & Groenewegen, 2009; Peters, Elands, & Buijs, 2010). Moreover, nature can help reduce negative emotions and associated anti-social behavior in urban settings. For example, Cackowski and Nasar (2003) found that nature-dominated roadways contribute to reducing some emotional antecedents of aggressive driving, such as frustration. Kuo and Sullivan (2001) showed that residents living in green compared to barren spots of the same residential area experienced lower levels of fear and reported less aggressive behavior.

Psychological restoration has been identified as a key mechanism explaining the positive outcomes of contact with nature (Berman, Jonides, & Kaplan, 2008; Hartig, 2004; Kaplan, 1995; Kaplan & Kaplan, 1989; Ulrich, 1983). There is consistent evidence that nature is restorative because it reduces stress, increases positive emotions, and recovers depleted attentional capacities (Berman et al., 2008; Grahn & Stigsdotter, 2003; Hartig, Evans, Jamner, Davis, & Gärling, 2003; Kaplan, 2001; Laumann, Gärling, & Stormark, 2003; Scopelliti & Giuliani, 2004; van Den Berg, Hartig, & Staats, 2007). The restorative effects of human-nature relationships have been analyzed in many different settings, ranging from completely wild or natural (Hartig et al., 2003) to mixed built-natural environments, especially in the urban context, such as residential neighborhoods with parks (Grahn & Stigsdotter, 2010), hospitals with greenery (Ulrich, 1984), and workplaces with plants (Chang & Chen, 2005; Kaplan, 1993; Larsen, Adams, Deal, Kweon, & Tyler, 1998). More recently, Carrus et al. (2013, 2015) also addressed the issue of the positive psychological effects of contact with different typologies of green spaces in urban and peri-urban areas. A recent bulk of literature has investigated the role of individual dispositions towards nature and how these influence cognitions, emotions, and behavior; in particular, the belief about the interdependence between nature conservation and human progress, which is conceived as a dynamic process of incorporation of human needs into natural processes (New Human Interdependence Paradigm, NHIP, Corral-Verdugo, Carrus, Bonnes, Moser, & Sinha, 2008), and the feeling of emotional connection to the natural world (Connectedness to Nature, Mayer & Frantz, 2004). Empirical research has shown that higher levels of these individual dispositions towards the natural environment are associated with more positive emotions and behaviors (e.g. environmentally sustainable and altruistic behaviors), and increase well-being (Cervinka, Röderer, & Hefler, 2012; Corral-Verdugo et al., 2008; Howell, Dopko, Passmore, & Buro, 2011; Mayer, Frantz, Bruehlman-Senecal, & Dolliver, 2009; Nisbet, Zelenski, & Murphy, 2011; Zelenski, Dopko, & Capaldi, 2015).

2. The urban experience in South America: The case of Bogotá

Most of the studies on urban ecosystem services have been conducted in European countries and North America (Haase et al., 2014). Research on the relationships between the experience of UGS (also in terms of urban forests) and individual well-being, expressed in terms of positive physical and psychological outcomes, is still limited in South America (e.g., Fermino, Reis, Hallal, & Júnior, 2013; Wright Wendel, Zarger, & Mihelcic, 2012), despite a growing interest in this geographical area in terms of planning UGS and their benefits (Breuste, Schnellinger, Qureshi, & Faggi, 2013; Correa, Ruiz, Canton, & Lesino, 2012; Dickie et al., 2014; Escobedo et al., 2008; Grau et al., 2008; Momm-Schult et al., 2013; Oprea, Mendes, Vieira, & Ditchfield, 2009).

The South American population today is concentrated mainly in urban areas (83% of the population). The decrease in infant mortality and the migration flow from peripheral areas have led to a growth of the urban population (United Nations, 2013) with negative consequences on crowding, noise and other types of pollution. Understanding how to reduce the negative impact of environmental stressors and promote healthier life conditions within these complex urban systems is thus an issue worthy of investigation.

In this perspective, Bogotá, the capital city of Colombia, extending about 33 km from north to south and 16 km from east to west (4°35′56″N and 74°04′51″W), represents an ideal case study. A recent exploratory study by Ordóñez and Duinker (2014) has shown that urban dwellers attribute a variety of ecological, environmental, socio-cultural, aesthetic, psychological, and health-related values to urban forests. But much still needs to be understood with reference to residents' experience of UGS, and urban parks in particular.

According to recent estimates (United Nations, 2013), the number of inhabitants in Bogotá has doubled in the last 24 years, reaching a total of about 9.4 million while Colombia numbers a total of about 48.3 million inhabitants. Since the second half of the last century, the metropolitan area has registered a growth of unregulated chaotic urban planning. The Eastern hills have been largely involved in the development of the city, especially from south to north, parallel to the Guadalupe and Monserrate mountain ranges. On the Western edge of the city lies the Bogotá River, south of Sumapaz Paramo and north of the municipalities of Chia and Sopo.

Bogotá is divided into 20 administrative units, which are conceived to reflect the socio-economic status (SES) of the population (see Fig. 1). According to municipality statistics, the city population can be divided into six socio-economic strata ("*estratos*", in Spanish). This administrative organization is conceived to identify areas with different infrastructure, costs of property and public services.