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Planning safer suburbs: Do changes in the built environment influence residents' perceptions of crime risk?

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ABSTRACT

A growing body of evidence has reiterated the negative impacts that crime and perceptions of insecurity can have on the health and wellbeing of local residents. Strategies that reduce residents' perceived crime risk may contribute to improved health outcomes; however interventions require a better understanding of the neighbourhood influences on residents perceptions of crime and safety. We examined the impact of changes in the objective built environment following relocation on changes in residents' perceived crime risk for participants in a longitudinal study of people moving to new neighbourhoods in Perth, Western Australia ($n = 1159$). They completed a questionnaire before moving to their new neighbourhood, and again 36 months after relocation. Individual-level objective environmental measures were generated at both time points using Geographic Information Systems, focussing on the characteristics that comprise a 'walkable neighbourhood'. Linear regression models examined the influence of objective environmental changes between the two environments on perceived crime risk, with progressive adjustment for other change variables (i.e., perceptions of the physical and social environment, reported crime). We found that increases in the proportion of land allocated to shopping/retail land-uses increased residents' perceived crime risk ($\beta = 11.875$, $p = 0.001$), and this relationship remained constant, despite controlling for other influences on perceived crime risk ($\beta = 9.140$, $p = 0.004$). The findings highlight an important paradox: that the neighbourhood characteristics known to enhance one outcome, such as walking, may negatively impact another. In this instance, the 'strangers' that retail destinations attract to a neighbourhood may be interpreted by locals as a threat to safety. Thus, in areas with more retail destinations, it is vital that other environmental strategies be employed to balance any negative effects that retail may have on residents' perceptions of crime risk (e.g., minimising incivilities, improved lighting and aesthetics).

Introduction

The importance of living in a safe community has been reiterated by the numerous studies linking residents' perceptions of safety to social connectedness (Ross & Jang, 2000) and participation (Stafford, 2007), physical and mental health (Blackman, Harvey, Lawrence, & Simon, 2001; Green, Gilbertson, & Grimsley, 2002; Lorenc et al., 2012; Ross, 1993; Stafford, 2007; White, Kasl, Zahner, & Will, 1987; Whitley & Prince, 2005), and health behaviours, such as physical activity (Carver, Timperio, & Crawford, 2008; Foster & Giles-Corti, 2008; Foster, Giles-Corti, & Knuiman, 2013). Some attributes of the built environment are well established influences on residents' perceptions of safety, such as physical incivilities and neighbourhood upkeep (Hale, 1996). However, far less is known about the neighbourhood planning attributes that might inflame or alleviate residents' perceptions of safety. Given the potential for improved safety to affect health gains (Blackman et al., 2001), there is a need for greater knowledge of the impact that neighbourhood planning and design characteristics might have on residents' perceptions of crime-related safety. As summarised by Schneider and Kitchen (2007, p.233), 'if planning is about making places better for people, then it has to address those elements that make places problematic for people, and crime and fear of crime are high up this list'.

One of the challenges in urban planning is that initiatives intended to promote one outcome may have other unintended

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consequences. For example, there is considerable evidence that environments characterised by higher residential densities, street connectivity and mixed land-uses can promote walking (Durand, Andalib, Dunton, Wolch, & Pentz, 2011; Giles-Corti et al., 2013; Ogilvie et al., 2007; Owen, Humpel, Leslie, Bauman, & Sallis, 2004; Saelens & Handy, 2008), leading to advocacy to affect changes to the planning, transport and urban design policies and regulations that dictate the location and proximity of activities required for daily living (CDC, 2007; Gebel, Bauman, Owen, Foster, & Giles-Corti, 2009; Kopelman, Jebb, & Butland, 2007; National Heart Foundation, Planning Institute of Australia, & Australian Local Government Association, 2009; National Institute for Health and Clinical Excellence, 2008; National Preventive Health Taskforce, 2009). However, the drive to create more active environments may have implications for local crime levels, as evidence from criminology suggests the attributes of a more walkable neighbourhood may increase the incidence of crime (Cozens, 2008; Cozens & Hillier, 2008).

Many criminal offences are opportunistic, committed as opportunities arise while people carry out their daily activities, or travel to and from these activities (Brantingham & Brantingham, 1993). Consequently, criminologists conceive the safest neighbourhoods are characterised by residential housing, with few local shops or businesses to draw people to the neighbourhood, and curvilinear street layouts (Brantingham & Brantingham, 1993; Cozens, 2008; Greenberg, Rohe, & Williams, 1982; Poyner, 1983; Schneider & Kitchen, 2007). Moreover, despite some exceptions suggesting that destinations providing sites for positive social interaction might mitigate against crime (e.g., recreation centres) (Kurtz, Koons, & Taylor, 1998; Peterson, Krivo, & Harris, 2000); numerous studies suggest that non-residential land-uses actually increase the incidence of crime. For instance, property crime tends to occur near destinations frequented by residents and visitors, such as shopping centres, recreation facilities and transport nodes (Beavon, Brantingham, & Brantingham, 1994; Bowes, 2007; Brantingham & Brantingham, 1993; Brown, 1982) and violent crime is associated with drinking venues and alcohol sales (Gorman, Speer, Gruenewald, & Labouvie, 2001; Peterson et al., 2000; Popova, Giesbrecht, Bekmuradov, & Patra, 2009). While this evidence is well established in the criminology literature, Cozens (2008) has commented that urban planners appear largely unaware of the association between mixed-use neighbourhood design and the incidence of crime (Cozens, 2008).

Fear of crime is generally disproportionate with actual crime rates (Ditton, Farrall, Bannister, & Gilchrist, 1998; Hale, 1996), and is a more difficult concept to define and measure (Schneider & Kitchen, 2007). Lorenc et al. (2012) usefully conceptualise fear of crime as one overarching concept that encapsulates both a cognitive dimension (i.e., perceived risk of victimization) and an affective dimension (i.e., an emotional response to crime or the symbols associated with crime) (Lorenc et al., 2012). In contrast to the evidence linking the attributes of a walkable neighbourhood and crime, less is known about how neighbourhood design impacts residents' fear of crime. Cross-sectional studies examining the association between access to retail or commercial land-uses and feelings of safety have produced mixed results (Foster, Giles-Corti, & Knuiman, 2010; McCord, Ratcliffe, Garcia, & Taylor, 2007; McCrea, Shyy, Western, & Stimson, 2005; Schweitzer, Kim, & Macklin, 1999; Wood et al., 2008), although most indicate that non-residential land-uses detract from residents' feelings of safety. Indeed, Wood et al. (2008) found that, consistent with the criminology literature, residents in a conventionally designed suburb (i.e., curvilinear street layouts) felt safer than those in a traditionally planned (i.e., grid street layout) or hybrid suburb (i.e., a mix of grid and cul-de-sacs). However, there is also evidence that residents in neighbourhoods with more retail land are less fearful of crime (Foster et al., 2010). Retail land may have a different association with residents' 'fear of crime' depending on whether the outcome focuses on the emotional (i.e., fear or anxiety about crime) or cognitive dimension (i.e., perceived risk of victimization) of fear of crime.

When neighbourhoods are genuinely unsafe, fear of crime can be an important protective mechanism, however it can be problematic when neighbourhoods are relatively safe, yet residents still exhibit unnecessary levels of fear (Schneider & Kitchen, 2007). This is most pertinent when fears induce people to restrict their physical and social activities (Skogan & Maxfield, 1981), with potential consequences for mental wellbeing and physical health (Lorenc et al., 2012). In situations of disproportionate fear, identifying and targeting the underlying causes for this fear, with a particular focus on public perceptions is warranted (Schneider & Kitchen, 2007). Thus, improved understanding of the environmental influences on residents' safety perceptions is necessary to better design safe, active and healthy environments.

This study examined the influence of changes in the objective built environment on residents' perceptions of crime risk for a sample of individuals who moved house. While other studies have examined the impact of neighbourhood relocation or renewal on health and wellbeing outcomes (Anderson et al., 2003; Gibson et al., 2011), these studies typically investigate perceived environmental changes, usually with regard to micro-level features (e.g., local problems, physical disorder), rather than changes to macro-level neighbourhood design and planning characteristics. Moreover, the focus is seldom on residents' perceived crime risk. To our knowledge, this is the first study to examine the influence of changes in the objective built environment resulting from neighbourhood relocation on residents' perceptions of crime risk. Furthermore, the analyses focus on the environmental attributes that contribute to more walkable environments in order to advance understanding of any negative effects that increased walkability might have on local residents.

Methods

Study context

The RESIDential Environments (RESIDE) Project is a longitudinal natural experiment of people building houses and relocating to 73 new housing developments across Perth, Western Australia. The state government's Department of Planning classified these new developments as: 'liveable' (i.e., complying with the 'Liveable Neighbourhoods Guidelines' – a subdivision design code based on new urbanism principles) ($n = 18$); 'hybrid' (i.e., having *some* liveable neighbourhood attributes) ($n = 11$); or 'conventional' (i.e., not complying with the guidelines) ($n = 44$). The Liveable Neighbourhoods Guidelines aimed to create safe, pedestrian friendly neighbourhoods, and objective measures (e.g., street connectivity, residential density and land-use mix) indicate these developments are more supportive of walking, although to date, this has not been reflected in significantly higher levels of walking (Christian et al., 2013).

All people building new homes in the study areas were invited to participate by the state water authority following the land transfer transaction (response rate 33.4%). Participants completed a self-report questionnaire before they moved into their new home, and on three subsequent occasions after they relocated (at 12, 36 and 48 months). Geographic Information Systems (GIS) were used to generate individual-level objective built environment measures for each participant's 'neighbourhood' (defined as a 1600 m road network distance from each participant's house) at each time-point. RESIDE was approved by The University of Western