



Neighbourhood design and fear of crime: A social-ecological examination of the correlates of residents' fear in new suburban housing developments

Sarah Foster*, Billie Giles-Corti, Matthew Knuiman

Centre for the Built Environment and Health, School of Population Health, The University of Western Australia, 35 Stirling Highway, Crawley WA 6009, Australia

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ABSTRACT

This study explored the relationship between neighbourhood design and residents' fear of crime in new suburban housing developments. Self-report and objective data were collected as part of the RESIDENTIAL Environments (RESIDE) Project. A neighbourhood form index based on the planning and land-use characteristics that draw people into public space, facilitate pedestrian movement and ensure the presence of 'territorial guardians' was developed for each participant ($n=1059$) from objective environmental data. With each additional index attribute, the odds of being fearful reduced (trend test p value=0.001), and this persisted even after progressive adjustment for demographics, victimisation, collective efficacy and perceived problems. The findings support the notion that a more walkable neighbourhood is also a place, where residents feel safer, and provides further evidence endorsing a shift away from low density, curvilinear suburban developments towards more walkable communities with access to shops, parks and transit.

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1. Introduction

Fear of crime is more prevalent than actual victimization (Hale, 1996), yet relatively few studies have explored the environmental correlates of fear. Fear has a pervasive association with health, with studies indicating that fear can heighten feelings of anxiety and unease to the detriment of psychological wellbeing and mental health (Whitley and Prince, 2005; Stafford, 2007; Green et al., 2002; White et al., 1987; Ross, 1993). Furthermore, to alleviate their fears, people may constrain their social and physical activities to avoid certain places or situations they perceive to be unsafe (Skogan and Maxfield, 1981; Liska et al., 1988). This withdrawal can affect the formation of social ties (Ross and Jang, 2000), social participation (Stafford, 2007) and physical activity levels (Foster and Giles-Corti, 2008). Moreover safety concerns can induce parents to constrain their children's physical activities (Carver et al., 2010). There is also evidence of a direct association between fear of crime and physical health, whereby frequent stimulation of physiological stress mechanisms can cause these responses to malfunction, leading to a range of disease outcomes (McEwen, 1998). Thus, improved knowledge of the neighbourhood characteristics that minimise fear could benefit both mental and physical health.

Recent research has focused on the capacity for characteristics of the built environment to encourage physical activity (Owen et al., 2004; Saelens and Handy, 2008). Many of these physical attributes also have links to crime and perceived safety, suggesting some commonalities between those environments that encourage walking and those that influence neighbourhood safety. For example, physical disorder (e.g., litter, graffiti and vandalism) and 'suburban incivilities' (e.g., presentation and upkeep of properties) (Brown et al., 2004) can amplify feelings of insecurity (Lewis and Maxfield, 1980; Austin et al., 2002; Wood et al., 2008) and these negative visual cues can deter residents from engaging in physical activity (Ellaway et al., 2005; King, 2008; Mendes de Leon et al., 2009; Miles, 2008; Nagel et al., 2008; Shenassa et al., 2006; Sugiyama and Ward-Thompson, 2008).

Broader neighbourhood design and planning attributes (e.g., street connectivity, residential density and retail destinations) demonstrate positive associations with utilitarian walking (Frank et al., 2005; Owen et al., 2007; Lund, 2003; McCormack et al., 2008; Saelens et al., 2003); however, evidence suggests many walkability characteristics are associated with more crime (Cozens, 2008; Schneider and Kitchen, 2007), and that homogenous neighbourhoods with restricted vehicular and pedestrian access are safer (Poyner, 1983; Greenberg et al., 1982). The association between neighbourhood planning and perceptions of safety is more ambiguous, and may be confused by the distinction between actual crime and fear of crime. These are separate, but related constructs: crime is a tangible event (Schneider and Kitchen, 2007), whereas fear of crime is an 'emotional reaction of dread or anxiety to crime or symbols that a person associates with

* Corresponding author. Tel.: +61 8 6488 8730; fax: +61 8 6488 1199.

E-mail addresses: Sarah.Foster@uwa.edu.au (S. Foster),

Billie.Giles-Corti@uwa.edu.au (B. Giles-Corti), Matthew.Knuiman@uwa.edu.au (M. Knuiman).

crime' (Ferraro, 1995, p. 8). Thus, the neighbourhood attributes that reduce crime may not be the same as those that minimise residents' fears about crime. Many environmental characteristics have assumed associations with perceived safety through their capacity to generate natural surveillance (Jacobs, 1961); however, there is little empirical evidence supporting this. Indeed, evidence that neighbourhood design can promote or inhibit residents' feelings of safety is somewhat elusive.

1.1. Neighbourhood design and crime

Many crimes are opportunistic, committed as people go about their daily activities (including travel between activities), when they discover potential targets (Brantingham and Brantingham, 1993). Routine activity theory suggests three elements are necessary for a crime to occur: (1) an offender; (2) a target; and (3) the absence of a capable guardian (Clarke and Felson, 1993; Cohen and Felson, 1979). This theory supports the notion that walkable neighbourhoods, which ensure the presence of guardians, will restrict crime. However, the effectiveness of guardians to prevent crime remains contingent on the type of crime. Capable guardians may prevent serious offences, yet large volumes of people can serve to mask low-level offences (e.g., pick pocketing, drug sales) (Loukaitou-Sideris, 1999).

In general, property crime occurs near destinations that attract both local residents and visitors (e.g., shopping centres, recreational facilities, transport nodes) (Beavon et al., 1994; Brantingham and Brantingham, 1993; Brown, 1982; Bowes, 2007), whereas crimes against the person occur in the home or close to drinking venues (Peterson et al., 2000; Gorman et al., 2001). Numerous studies have reiterated this association between non-residential land-uses and crime (Schweitzer et al., 1999; Greenberg et al., 1982; Smith et al., 2000; Gruenewald et al., 2006; Roncek and Lobosco, 1983; Wilcox et al., 2004). However, studies also suggest that some non-residential land-uses can be protective against crime. Peterson et al. (2000) found that certain destinations (e.g., recreation centres), which provide sites for positive resident interaction, were associated with less violent crime in disadvantaged neighbourhoods, while other land-uses (e.g., small businesses, churches) can augment the number of 'legitimate users' (Kurtz et al., 1998). This highlights the complexity of land-use and suggests that analyses that distinguish between business and resident oriented land-uses may be pertinent to the incidence of crime (Wilcox et al., 2004).

Permeable street layouts that facilitate walking appear to increase crime by improving access (Cozens, 2008). For example, gridded street networks have been associated with household burglary, as logical layouts make navigation and exploration easier (Brantingham and Brantingham, 1993). Doyle et al. (2006) generated a county-level indicator of walkability from block sizes and street connectivity, and identified a moderate positive correlation with crime (Doyle et al., 2006). Such links between connectivity and crime appear to be the consensus of much of the literature (Cozens, 2008; Schneider and Kitchen, 2007); however, there is some evidence to the contrary associating cul-de-sacs with property crime (Shu, 2000). Nonetheless, connectivity alone may not impact crime unless other elements are present that make the neighbourhood appealing to potential offenders (e.g., destinations, suitable targets) (Brantingham and Brantingham, 1993).

1.2. Neighbourhood design and fear

Fewer studies have examined direct effects between land-uses and perceived safety, and the findings are mixed. Living in close

proximity to a grocery or convenience store was found to correlate with higher fear of crime (Schweitzer et al., 1999); however, other research found distance to the nearest commercial or industrial land-use had no bearing on fear (McCrea et al., 2005). Wood et al. (2008) found that as the number of destinations within 800 m of participants increased, feelings of safety diminished; however, this association attenuated after adjusting for neighbourhood design (i.e., gridded vs. curvilinear layout). The authors proposed that a threshold may exist, where an optimal number of destinations could promote feeling safe; and both the quality and type of destinations needs consideration (Wood et al., 2008).

Furthermore, Wood et al., 2008 hypothesised that suburbs designed to be more conducive to walking, thus encouraging interaction between neighbours, would be positively associated with social capital and feeling safe. New Urban planning also draws on the premise that building designs that promote natural surveillance and public spaces that facilitate social interaction will create safe, inviting streets for pedestrians (Congress for the New Urbanism, 2001). However, contrary to expectations, Wood et al. (2008) found residents in a conventional suburb (i.e., curvilinear street layout) felt safer than those in a hybrid (i.e., mix of grid and cul-de-sacs) or traditionally planned (i.e., grid layout) suburb.

The presence of green space has also generated some conflicting evidence. Vegetation can conceal perpetrators as they select a target, commit an offence and flee the scene (Nasar and Fisher, 1993) and promote fear by limiting visibility in the immediate vicinity (Nasar and Jones, 1997). However, green space with well-maintained grass and widely spaced high canopy trees does not impede visibility nor provide cover for criminal acts. Indeed, some studies suggest vegetation may promote safety. In residential settings, the presence of vegetation has been associated with less fear of crime (Nasar, 1982), a greater sense of safety among residents (Kuo et al., 1998a; Maas et al., 2009) and lower reported crime (Kuo and Sullivan, 2001).

1.3. Pathways connecting land-use, crime and fear

Researchers have proposed various mechanisms to explain the associations between non-residential land-uses and crime. The central premise is that these land-uses interfere with informal social control via two pathways: (1) for each non-residential land-use there is an absence of guardians exercising territorial behaviours (e.g., surveillance, maintenance) and (2) non-residential land-uses draw outsiders to the area, making it more difficult for residents to distinguish strangers from locals (Taylor et al., 1995). Consequently, a breakdown of resident-based social control could be anticipated, where there are territorial gaps (e.g., vacant lots, schools). This notion is supported by the association between non-residential land-uses, incivilities and crime (Wilcox et al., 2004; Taylor et al., 1995; Kurtz et al., 1998). For instance, Kurtz et al. (1998) identified that residents in streets with more non-residential land-uses reported lower levels of perceived resident-based control (e.g., knowing their neighbours, monitoring suspicious activity).

Other studies suggest local residents withdraw in response to the visitors that businesses attract. Baum et al. (1978, p.266) found blocks with a market or pharmacy had more pedestrian traffic; however, residents on these streets were less likely to interact in the street environment and more likely to report 'excessive unwanted contact'. The authors suggest this withdrawal into the private realm is a means of regulating exposure to strangers (Baum et al., 1978). Similarly, Appleyard and Lintell (1978) proposed that residents in streets with greater volumes of

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