



Perceived neighborhood walkability and physical exercise: An examination of casual communication in a social process



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ABSTRACT

Despite the accumulated evidence for the environmental correlates of physical activity, social processes underlying this association are not entirely clear. This study positions communication characterized by weak ties as a social mechanism linking neighborhood walkability with physical exercise. Data from a survey of Chicago residents show that perceived neighborhood walkability is positively related to frequency of weak-tie communication. Frequency of weak-tie communication is related positively to perceived social cohesion and negatively to anonymity, both of which are significantly related to frequency of physical exercise in the neighborhood. Data also show a sequential indirect relationship involving perceived neighborhood walkability, weak-tie communication, anonymity, and physical exercise. Implications are discussed in terms of the role of communication in promoting locality-based physical exercise.

1. Introduction

Extant literature in public health, environmental psychology, and other disciplines indicates that neighborhood environments conducive to walking and exercising, such as the presence of sidewalks clearly separated from vehicles, trails and parks, recreational facilities within walking distance, beautiful scenery, and green surroundings, allow residents to be less dependent on automobiles, avoid sedentary lifestyles, and be more physically active, thereby resulting in positive health outcomes (Ferdinand et al., 2012; Owen et al., 2004; Renalds et al., 2010). A number of studies have established that neighborhood walkability fosters residents' engagement in various forms of physical activity (Humpel et al., 2002; Owen et al., 2007; Sugiyama et al., 2009; Sundquist et al., 2011). As regular and moderately intense physical activity helps reduce an individual's chances of having obesity, diabetes, cardiovascular disease, stroke, and mental illness (Bauman, 2004), building walkable neighborhoods is a key agenda for health professionals and policy makers to achieve individual health and well-being.

While the existing evidence indicates the value of walkable neighborhoods, several studies have turned their attention to underlying social mechanisms, such as social capital, that may link neighborhood walkability with physical exercise (Freeman, 2001; Leyden, 2003; Lund, 2002; Maas et al., 2009; Rogers et al., 2011). These studies suggest that building walkable neighborhoods is important but may not be enough to encourage physical exercise in the neighborhood. Not all

residents, even if they live in walkable neighborhoods, are willing to be physically active outside, and such variations may be related to locality-based social processes. It is important to think about social dimensions of the neighborhood that enable or inhibit residents' decisions to be physically active.

The purpose of the present study is to extend the existing understanding of the relationship between neighborhood walkability and physical exercise (i.e., walking, jogging, and bicycling in the neighborhood), with a focus on the mediating role of communication among residents. The role of communication in promoting physical exercise in a neighborhood context has been implicitly theorized (Leyden, 2003), yet has not been directly tested. Communication is a central social process that enables residents to make sense of residential neighborhoods and become part of neighborhood social life (Jeffres et al., 2002; Kim and Ball-Rokeach, 2006a, 2006b; Matsaganis, 2015; Matsaganis and Wilkin, 2015), particularly casual communication characterized by weak ties in contemporary neighborhoods (Forrest and Kearns, 2001; Henning and Lieberg, 1996; Kleinhans, 2009). Drawing on theoretical insights provided by Leyden (2003), we position casual, weak-tie communication as mediating the relationship between perceived neighborhood walkability and physical exercise through its influence on social dimensions of a neighborhood. Consistent with the ecological model of health behavior (e.g., Sallis et al., 1998, 2008), we argue that a resident's health-related decision is shaped by not only social and physical but also communicative dimensions of a neighborhood.

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1.1. Neighborhood walkability and physical exercise

A long tradition of work indicates that neighborhood structural conditions, such as socioeconomic status and ethnic diversity, influence residents' attitudes and behaviors (e.g., Sampson, 2012), including physical exercise (e.g., Owen et al., 2007; Sundquist et al., 2011). Neighborhood walkability, or the degree to which the characteristics of a neighborhood's built environment affect walking for varied purposes such as transportation, exercise, and recreation, is another key structural factor that shapes residents' willingness to exercise in the neighborhood (Cerin et al., 2009; Owen et al., 2004). It features various aspects of a neighborhood's built environment, such as proximity to nonresidential land uses, street pattern and connectivity, mixed land uses, traffic volume and street speeds, aesthetics, and the presence of pedestrian facilities and open spaces (Cerin et al., 2009; Owen et al., 2004; Sallis, 2011).

Research shows that neighborhood walkability promotes physical exercise in a few important ways. First, access or convenience to destinations, which can be measured by the presence of pedestrian facilities (e.g., sidewalks, crosswalks), residential density, proximity to destination sites within walking distance, and street connectivity, encourages transport-related walking (Cervero and Duncan, 2003; Cervero and Gorham, 1995; Hoehner et al., 2005; Owen et al., 2007; Sundquist et al., 2011). Second, beautiful scenery, green surroundings, proximity to recreational facilities (e.g., parks, plazas), and pleasant architectural design make walking experience in the neighborhood attractive and enjoyable (Ball et al., 2001; Hoehner et al., 2005). Third, neighborhood walkability fosters feelings of safety from traffic and crime. Residents living in walkable areas with such characteristics as well-maintained and well-lit streets feel safer and more comfortable going out for a walk than those who live in less walkable areas (Carver et al., 2008; McGinn et al., 2008; Weir et al., 2006). While the literature supports the importance of neighborhood walkability in physical activity (e.g., Ferdinand et al., 2012; Owen et al., 2004), research shows that different features of neighborhood environments can foster different types of physical activities (Hoehner et al., 2005; Humpel et al., 2004). For example, places that are aesthetically pleasing and have walking facilities (e.g. pedestrian trails) may facilitate walking for exercise, whereas street connectivity and mixed land use may promote walking for transport (Humpel et al., 2004; McCormack and Shiell, 2011), suggesting a need for behavior-specific or context-specific examinations.

The present study focuses on residents' perceptions of neighborhood walkability in relation to physical exercise in the neighborhood. While the extent to which people become physically active or inactive is affected by psychological factors such as attitudes, enjoyment, and motivation (Bauman et al., 2002; Handy et al., 2006), research has demonstrated that perceived neighborhood walkability influences physical exercise independent of personal preferences (Handy et al., 2006; Sugiyama et al., 2009). Furthermore, perceived neighborhood walkability has been found to account for the association between objectively measured walkability and physical exercise (Giles-Corti et al., 2013; Jack and McCormack, 2014; Van Dyck et al., 2013), suggesting that it is likely residents' perceptions of how walkable or not walkable their neighborhood is that explain their willingness to exercise outside. In this respect, what matters may be perceptual barriers and constraints residents feel and experience in daily living that are not fully captured by objective measures of neighborhood walkability (Hoehner et al., 2005).

1.2. Neighborhood walkability and physical exercise: potential mediating mechanisms

A theoretical explanation for why some residents are more physically active in the neighborhood and others are not is proposed by Leyden (2003), who hypothesized the role of casual communication in

lubricating locality-based social relationships and resources. Leyden (2003) contended that casual, spontaneous, and seemingly trivial and effortless communicative interaction, such as waving at and saying hello to neighbors, promotes working trust in neighbors and mutual familiarity that allow residents to be more comfortable being physically active in the neighborhood. Leyden's (2003) account involves three factors rooted in neighborhood research – social cohesion, anonymity, and communication. Social cohesion refers to the extent to which residents are trusted and share common values (Sampson, 1991; Sampson et al., 1997). It is a glue that connects residents, allows them to co-exist, and work well together.

Anonymity is defined as the extent to which residents are known or unknown by neighbors in the neighborhood (Sampson, 1991). When levels of anonymity are high in the neighborhood, residents do not know each other. When levels of anonymity are low, they know each other well and are mutually familiar. As such, anonymity and familiarity can be seen as different ends of the same continuum with respect to the capacity of residents to recognize and identify each other. When mutual familiarity is high, residents can predict what likely happens and who they likely encounter when they go outside, which may help promote feelings of safety (Sampson, 1991).

Communication is defined as the dynamic and reciprocal process by which people exchange messages, negotiate meaning, and reach mutual understandings (Barnlund, 1970). The formation of a social relationship is not automatic. It involves communication. Whether verbal or nonverbal, communication is a fundamental means by which people form and develop a social relationship. Leyden's (2003) account noted above is consistent with the communication scholarship that views locality-oriented communication as a central social process that enables residents to connect with other residents, feel a sense of belonging, and be part of neighborhood activities (Jeffres et al., 2002, 1987; Kim and Ball-Rokeach, 2006a, 2006b; Matsaganis, 2015; Matsaganis and Wilkin, 2015).

Notably, Leyden (2003) focused on casual forms of communication, which are conceptually grounded in weak forms of social ties (Granovetter, 1973). Social ties refer to dyadic links that connect each pair of individual social actors that make up a social network (Wasserman and Faust, 1994). According to Granovetter (1973), the strength of a social tie is characterized by a "combination of the amount of time, the emotional intensity, the intimacy (mutual confiding) and reciprocal services that characterize the tie" (p. 1361). Drawing from these aspects, weak ties can be viewed as the ones that demand little commitment along these dimensions. Henning and Lieberg (1996) viewed weak ties with neighbors as "unpretentious everyday contacts" (p. 6). Communication scholars have examined communicative aspects of ties, such as exchanging greetings and chatting about miscellaneous topics, to understand how interpersonal communication helps people form and develop relationship with others (Jeffres et al., 2002, 1987).

An emphasis on casual forms of communication, or hereafter termed as weak-tie communication, seems to be warranted given the changing nature of social relationships in contemporary neighborhoods. Prior research has shown that locality-based social ties have become increasingly more anonymous, transient, and superficial (Guest and Wierzbicki, 1999; Paxton, 1999; Sampson, 2012). Walkable neighborhoods likely increase frequency of casual, weak-tie communication. Neighborhoods with, for example, stores and facilities within easy walking distance and safe and wide sidewalks promote a sense of safety from traffic and enable residents to stroll around the areas (e.g., go to a coffee shop, walk with a baby in a stroller, play outside with a child) (Handy et al., 2006; Sallis et al., 2015). Although residents may or may not intend to do so as exercise, the increased chances of pedestrian activities lead them to encounter neighbors who they might not otherwise meet, which presents the opportunities for casual communication among residents. In contrast, casual communicative interaction may not be frequent in automobile-dependent, non-walkable neighborhoods, as such areas likely decrease the chances

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