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To cite this article: Meridith Sones, Caislin L. Firth, Daniel Fuller, Meg Holden, Yan Kestens & Meghan Winters (2021): Situating social connectedness in healthy cities: a conceptual primer for research and policy, Cities & Health, DOI: 10.1080/23748834.2021.1926657

To link to this article: https://doi.org/10.1080/23748834.2021.1926657

Published online: 19 Jul 2021.

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Situating social connectedness in healthy cities: a conceptual primer for research and policy

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ABSTRACT
In response to growing levels of social isolation and loneliness in cities, the promotion of social connectedness has come to the forefront of urban health, sustainability, and resiliency agendas. Despite policy attention locally and internationally, social connectedness is not consistently defined, conceptualized, or measured in population health and urban planning research. This term has also been used interchangeably with various other concepts in research on social environments and health, particularly social cohesion, social capital, and social inclusion. These discrepancies create confusion for planners and policymakers looking for evidence-informed guidance on the implementation and evaluation of urban interventions designed to promote social connectedness. Further, it presents a challenge for intervention researchers interested in investigating possible causal pathways between urban change, social connectedness, and health. Drawing from contemporary public health and urban planning literature, this paper aims to delineate the concept of social connectedness, including its meaning, measurement, and relationship to neighbourhoods and health. Clarifying social connectedness for urban health research and policy is crucial to interpreting and advancing evidence on its role—both its determinants and impacts—in the development of healthy, sustainable, and resilient cities.

Introduction

In an era of unprecedented urbanization, evidence suggests that people in cities are becoming more socially disconnected. One in three people in industrialized countries experiences loneliness (Cacioppo and Cacioppo 2018). Further, levels of social participation, civic engagement, and sense of belonging in urban areas appear to be deteriorating (Turcotte 2015, Vancouver Foundation 2017, Cudjoe et al. 2018), triggering policy attention from the international to the local level. While improving the social environment has long been recognized as a core objective of healthy cities (Hancock and Duhl 1988), major global policy initiatives like the New Urban Agenda and Sustainable Development Goals now explicitly acknowledge social inclusion and cohesion as fundamental to a more sustainable future (United Nations 2017, World Health Organization and UN-Habitat 2016). Japan recently appointed a Minister of Loneliness, following a similar move in 2018 by the UK, where a national strategy has also been established to target the issue in part through more accessible and inclusive transportation, housing, and community spaces (Government of the United Kingdom 2018). Today, attention to the importance of a strong social fabric for cities’ health and resilience continues to intensify in the wake of the COVID-19 pandemic (City of Vancouver 2015, City of Minneapolis Department of Community Planning and Economic Development 2018, City of Sydney 2018, Bohrer-Kaplan et al. 2019).

Social connections are vital to our health. At an individual level, a meta-analysis of mortality studies found that being more socially connected (e.g. stronger network ties, social participation, and sense of belonging) is associated with a 50% increased likelihood of survival—an effect comparable to leading risk factors like obesity (Holt-Lunstad et al. 2010). Conversely, social isolation and loneliness are associated with increased risk for depression and anxiety, physical inactivity, and poor cardiovascular and immune function (Masi et al. 2011, Holt-Lunstad et al. 2015, Giles-Corti et al. 2016). At the group level, evidence suggests that collective social ties and values may influence health beyond individual-level effects. For example, neighbourhood-level trust and reciprocity have been linked to lower risk of depression and higher self-rated health (Kawachi et al. 2008, Roux and Mair 2010, Murayama et al. 2012). Despite mounting evidence of the associations between social connections and multiple health outcomes, this

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research area is still challenged by conceptual, measurement, and study design challenges.

Social connectedness is one of the many terms that has emerged to conceptualize the powerful influence of individual and collective social relationships on health. While increasingly present in policy and planning contexts, the concept of social connectedness has not been clearly or consistently adopted in public health and urban planning research – often appearing interchangeably with the terms social cohesion, social capital, and social inclusion, among others. The variety of definitions, constructs, and measures used to operationalize these concepts, and the unclear relationships between them, are a major barrier to building consistent evidence on their determinants and health effects (Holt-Lunstad et al. 2017, Cordier et al. 2017, Carrillo Álvarez and Riera Romani 2017, Mazumdar et al. 2018). With respect to designing healthier cities, the lack of standardized data on the impacts of the built environment on social connectedness (among other health-related outcomes) limits the scale-up of effective interventions across settings (Tam 2017).

In response to heightened policy interest and calls for conceptual rigour, this paper aims to clarify the concept of social connectedness as it pertains to healthy cities research and policy – including its meaning, measurement, and relationship to neighbourhoods and health. This primer serves as a pragmatic reference tool for urban health researchers looking to understand and operationalize the concept of social connectedness, while offering city planners and policymakers a clear vocabulary and set of metrics to inform ongoing dialogue, action, and evaluation in cities. Applying a multifactorial definition of social connectedness, we begin by outlining a framework of key concepts, constructs, and measures relevant to its investigation in a population health and urban planning context. Our approach draws predominantly from scholarly literature published (in English only) over the past 10 years, along with a selection of older seminal publications. Literature was initially identified through a search on Medline, Web of Science, and PsychINFO. Search terms were broadly defined, given the varied terminology and synonyms used in public health and urban planning research on social connectedness and health. Additional articles were identified through snowball methods and reviewed and incorporated as relevant. Our objective is not to reflect the deep conceptual and theoretical debates surrounding social connectedness and related concepts. Rather, with an aim to advance applications for population health research, we take a pragmatic approach by presenting a set of definitions and constructs that delineate key terms and situate a multifactorial understanding of social connectedness within the broader study of neighbourhoods and health. We then build on an existing conceptual model to explore potential pathways between neighbourhood environments, social connectedness, and health. We conclude with a discussion on challenges and opportunities for advancing investigations of social connectedness in cities and implications for urban health research and policy.

Defining social connectedness

Social connectedness has evolved into an umbrella term encompassing the various ways that individuals connect emotionally, cognitively, behaviourally, and physically (Holt-Lunstad et al. 2017, Holt-Lunstad 2018). The concept has taken on different meanings over decades of research spanning the fields of sociology, psychology, anthropology, and epidemiology. Within the broader health literature, early epidemiological studies on social connectedness largely focused on objective aspects of an individual’s ties, such as marital status, number of close friends, and group affiliations (Berkman et al. 2000). Over time, definitions of social connectedness shifted to characterize both the quantity of social relationships and cognitive aspects such as sense of belongingness and perceptions of support (Lee and Robbins 1995, Holt-Lunstad et al. 2010).

While there is no consensus on a precise operational definition, recent work by Holt-Lunstad (in the field of psychology) describes social connectedness as a multifactorial construct encompassing the structure, function, and quality of social relationships (Holt-Lunstad et al. 2017, Holt-Lunstad 2018). Following this description, structural aspects include the existence of social relationships and their roles, including characterizing the extent of an individual’s social integration and participation; the functional domain captures the sense of connection, purpose, or values derived from an individual’s social relationships, for example, perceptions of loneliness and belonging; and finally, quality aspects include perceptions of the positive and negative qualities of social connections separate from the functions they serve (Holt-Lunstad 2018). Broadly conceptualizing and operationalizing social connectedness across these three domains is important from a health research standpoint given evidence of their independent and possibly synergistic effects on morbidity and mortality (Holt-Lunstad et al. 2017, Holt-Lunstad 2018).

A multifactorial definition of social connectedness, enabling the investigation of influences across its structural, functional, and quality components, is particularly fitting to an urban context given the mechanisms through which cities may influence social connectedness and subsequent health. For example, urban built environments are theorized as influencing social connectedness both through facilitating activity (Kim and Kaplan 2004) (e.g. opportunities for social interaction – a structural indicator of connectedness)
and through the social meanings and feelings we attach to places (e.g. sense of belonging – a functional indicator of connectedness) (Mazumdar et al. 2018). In the absence of a unifying definition of social connectedness for urban health research and policy, we extend the scope of Holt-Lunstad’s definition to a population health context and apply it as a framework for operationalizing social connectedness in the study of healthy and sustainable cities.

**Related concepts**

Aligning with a population health perspective, Holt-Lunstad discusses the importance of conceptualizing social connectedness from a system’s perspective that considers the ‘ecological niche’ of social relationships – that is, how social connectedness operates at the level of individuals, families, communities (e.g. networks, neighbourhoods, workplaces), and society (Holt-Lunstad 2018). When approached from this ecological standpoint, social connectedness is closely related to the overlapping (and often conflated) concepts of social cohesion, social capital, and social inclusion. Social connectedness is used inconsistently and interchangeably in these bodies of work (Putnam 1995, Harpham 2002, Carpiano 2006, Haslam et al. 2015, Cordier et al. 2017, Saeri et al. 2018), making it challenging to reconcile the concept with contemporary research on healthy cities. Theoretical and conceptual approaches to social capital, cohesion, and inclusion also vary, driven in part by extensive debate on whether they represent individual or collective (e.g. neighbourhood) attributes. While acknowledging these conceptual debates and inconsistencies, we present a lexicon of current definitions (Table 1) to distinguish key concepts and discuss their relationships to social connectedness. The definitions are grounded in contemporary literature that conceptualizes social connectedness, cohesion, capital, and inclusion as complex, multilevel phenomena that necessitate consideration at both an individual and group level (Murayama et al. 2012, Hanibuchi et al. 2012, Kawachi and Berkman 2014, Carrillo Álvarez and Riera Romani 2017, Moore and Kawachi 2017, Holt-Lunstad 2018, Fonseca et al. 2019).

**Social cohesion**

Social cohesion refers to the extent of social connectedness and solidarity among groups in society (Manca 2014, Carrillo Álvarez and Riera Romani 2017). While social cohesion is not always tied to place, the concept of neighbourhood social cohesion was first pioneered by Buckner in an attempt to represent psychological sense of community at a collective, geographic level (Buckner 1988). In doing so, he proposed that neighbourhoods high in cohesion feel a strong sense of community, report a high degree of attraction to the neighbourhood, and engage in frequent acts of neighbouring (Buckner 1988). In this context, neighbourhood social cohesion relates to the concept of place attachment in the field of environmental psychology – defined as the emotional bonds between people and places based on social factors (e.g. social connectedness, generational rootedness) and physical characteristics (e.g. nature, recreational opportunities, use of local amenities) (Talen 1999, Lewicka et al. 2017).

Contemporary research defines social cohesion more broadly, incorporating two elements: (1) the absence of underlying features, such as economic inequality or inter-ethnic tension that can polarize communities and fracture society; and (2) the presence of strong social bonds, indicated by the degree of trust, reciprocity, and civic or network ties that bridge divisions in society (Kawachi and Berkman 2014, Carrillo Álvarez and Riera Romani 2017, Moore and Kawachi 2017). Practice-based definitions similarly conceive social cohesion as a value-laden concept linking the presence of positive social relationships with notions of social equity, inclusion, and collective action (Bohrer-Kaplan et al. 2019). In both research and practical contexts, social connectedness is an inherent component of the broader concept of social cohesion.

**Table 1. Key concepts related to the study of social connectedness.**

<table>
<thead>
<tr>
<th>Terms</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social connectedness</td>
<td>An umbrella term for the various ways that individuals connect emotionally, cognitively, behaviourally, and physically; operationalized as a multifactorial construct encompassing the structure, function, and quality of social relationships (Holt-Lunstad et al. 2017, Holt-Lunstad 2018).</td>
</tr>
<tr>
<td>Social cohesion</td>
<td>The extent of social connectedness and solidarity among groups in society; a broad concept encompassing (1) the absence of latent social conflict and (2) the presence of strong social bonds (i.e. trust, reciprocity, social ties that bridge divisions in society) (Kawachi and Berkman 2014, Moore and Kawachi 2017).</td>
</tr>
<tr>
<td>Social capital</td>
<td>The resources to which individuals and groups have access through their social networks (Moore and Kawachi 2017, Bourdieu 1986).</td>
</tr>
<tr>
<td>Negative social capital</td>
<td>Adverse effects (or “dark sides”) of social capital, including: exclusion of others, excessive claims on group members, restrictions on individual freedoms, downward-levelling norms (Portes 1998).</td>
</tr>
<tr>
<td>Social inclusion</td>
<td>The process of improving the terms on which individuals and groups take part in society, with an emphasis on enhancing opportunities, access to resources, and rights among groups who are disadvantaged and at risk of poverty and social exclusion (Lemnir 1974, United Nations 2016).</td>
</tr>
<tr>
<td>Social exclusion</td>
<td>A complex and multi-dimensional process involving the lack or denial of resources, rights, goods and services, and the inability to participate in the normal relationships and activities, available to the majority of people in a society, whether in economic, social, cultural or political arenas (Levitas et al. 2007).</td>
</tr>
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</table>
Social capital

Social capital represents the resources that are accessible to individuals and groups through their social relationships and networks (Bourdieu 1986, Kawachi and Berkman 2014, Moore and Kawachi 2017). Two predominant approaches to the conceptualization and measurement of social capital have emerged in public health research, centred around the divergent theories of Bourdieu (1986) and Putnam (1995). Bourdieu emphasizes the actual or potential network-based resources that can be drawn upon for personal benefit, the distribution of which is dependent upon enduring social structures (e.g. class) that ultimately influence the formation of social identities and networks (Bourdieu 1986). Departing from this classical sociological perspective, Putnam’s conceptualization is analogous to social cohesion by characterizing social capital as the ‘networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit’, with an emphasis on social capital as a public good (Putnam 1995). Further distinctions are made between bridging social capital (resources accessed within open networks that connect people across different social or demographic divides) and bonding social capital (resources flowing within closed and potentially exclusionary networks of people with similar social identities) (Putnam 2000, Kawachi and Berkman 2014). This distinction is relevant to investigating social capital’s so-called dark side (or negative social capital), as strong bonding ties in particular may have damaging consequences on health in certain settings (Kawachi and Berkman 2014, Villalonga-Olives and Kawachi 2017).

While less prevalent in health studies, scholars have argued that Bourdieu’s conceptualization of social capital has more utility for population health research by distinguishing social capital from its causes and consequences, and explicitly linking it to the socioeconomic conditions in which people live (Portes 1998, Muntaner and Lynch 2002, Carpiano 2006). Drawing on Bourdieu’s theory, Carpiano proposes a model of neighbourhood social environments and health that specifically conceptualizes neighbourhood social capital as the resources rooted in community social networks and used for action, which can take the form of social support, social leverage, informal social control, or neighbourhood organization participation (Carpiano 2006). In this context, social connectedness and the broader concept of social cohesion are conceived as distinct antecedent constructs that lead to neighbourhood social capital – an approach echoed in subsequent research on neighbourhood effects and health inequalities (Bernard et al. 2007).

Social inclusion

Social inclusion is defined as the process of improving the terms on which individuals and groups take part in society, with a particular emphasis on enhancing opportunities, access to resources, and rights for people who are disadvantaged (Lenoir 1974, United Nations 2016). Social inclusion and social exclusion are explicit in some of the earliest works on the social determinants of health and continue to be used in social policy discourse to represent the notion of participation and engagement as fundamental to societal well-being and sustainable development that ‘leaves no one behind’ (Wilkinson and Marmot 2003, Raphael 2010, United Nations 2015, Cordier et al. 2017). While conceptualizations vary and can overlap with the meanings of social capital and social cohesion, social inclusion is often delineated from these related concepts through its framing as both a process and outcome. A systematic review by Cordier et al. (2017) identified three overarching domains of social inclusion: (1) participation (whether economic, social, or spiritual); (2) connectedness (to family, friends, neighbours, and community – both physical and cognitive, and actual and perceived); and (3) citizenship and rights (including civic and community engagement, altruism, and access to services).

Measuring social connectedness

The lack of clarity and consensus on the meaning of social connectedness and related concepts in the fields of public health and urban sociology has resulted in diverse approaches to measurement. In many cases, these concepts have been conflated and operationalized using the same measures. Researchers recognize these inconsistencies as a major research and policy limitation, hindering our understanding of the relative effect and importance of different aspects of social relationships and environments on health (Valtorta et al. 2016, Mazumdar et al. 2018, Holt-Lunstad 2018). While acknowledging the complexities inherent in the measurement of social connectedness, we aim to provide an overview of measures and methods relevant to investigations in an urban health and planning context, while highlighting the relative strengths, weaknesses, and uncertainties of these approaches.

Measures

We summarize constructs and measures used in population health and planning research to operationalize different domains of social connectedness using Holt-Lunstad’s definition as an organizing framework (Table 2). While their previous work outlines a selection of measures used to operationalize the
<table>
<thead>
<tr>
<th>Construct</th>
<th>Description</th>
<th>Example measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structural: Connections to others via the existence (or absence) of social ties and roles</strong></td>
<td>Participation in a broad range of social ties (Holt–Lunstad et al. 2017, Berkman et al. 2000): including family cohesion; network size and diversity, relationship type (e.g. spouse, parent), social contact frequency.</td>
<td>• Number of close friends (strong ties), acquaintances (weak ties) (Turchette 2015) • Diversification of social networks (bridging ties) (Turchette 2015) • VERTAS, a map-based socio-spatial survey (Kestens et al. 2016) (ego-centred name generator) • Social Network Interaction Index (Orth-Gamér and Johnson 1987)</td>
</tr>
<tr>
<td><strong>Social integration</strong></td>
<td>A person’s involvement in activities that provide interaction with others in society or the community, along four levels from informal to formal: 1) interacting with others without doing a specific activity with them, 2) doing an activity with others, 3) helping others, and 4) contributing to society (Levasseur et al. 2010).</td>
<td>• Informal/neighbourhood social interaction (Nguyen 2010, Van Holle et al. 2016) • Group membership (Daoud et al. 2016, Statistics Canada 2013) • Volunteerism (Nguyen 2010, Rogers et al. 2011) • Electoral/political participation (Islam et al. 2008, Blomgren et al. 2004, Leyden 2003)</td>
</tr>
<tr>
<td><strong>Social participation</strong></td>
<td>A physical separation from others marked by a pervasive lack of social relationships and participation (Cudjoe et al. 2018).</td>
<td>(deficit of above measures)</td>
</tr>
<tr>
<td><strong>Social isolation</strong></td>
<td>Combining indicators of multiple structural constructs</td>
<td>• Berkman–Syme Social Network Index (Berkman and Syme 1979) • Cohen Social Network Index (Cohen et al. 1997) • People to confide in (Statistics Canada 2013, Brueckner and Largay 2008) • Generalized trust (Carpiano and Fitterer 2014) • Particularized trust (Carpiano and Fitterer 2014) • Trust Index (Leyden 2003) • Neighbouring (Wood et al. 2008) • Sense of community belonging (single-item) (Carpiano and Hystad 2011) • Sense of Community Index (Long and Perkins 2003) • Neighbourhood Cohesion Index (Buckner 1998, Hooper et al. 2018) • Three-item Loneliness Scale (Hughes et al. 2004)</td>
</tr>
<tr>
<td><strong>Functional: the sense of connection, purpose, or values derived from social relationships</strong></td>
<td><strong>Perceived social support</strong> Perception of access to emotional, informational, tangible support if needed (Holt-Lunstad et al. 2010)</td>
<td>• Social cohesion scale (Sampson et al. 1997) • Satisfaction with social relationships, interactions, participation, community belonging, citizenship, ethnic diversity (SCOPE-short) (Huyer et al. 2012) • Satisfaction with frequency of connections (Statistics Canada 2013)</td>
</tr>
<tr>
<td><strong>Trust</strong></td>
<td>Perceptions of trust in the overall social environment (generalized trust) and extent of trust in specific interpersonal relationships, e.g. neighbours (particularized trust)</td>
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<tr>
<td><strong>Reciprocity</strong></td>
<td>Number and type of favour exchanges with neighbours (Wood and Giles-Corti 2008)</td>
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<tr>
<td><strong>Community belonging</strong></td>
<td>Feeling that members have of belonging and being important to each other and a shared faith that members’ needs will be met by the commitment to be together (McMillan and Chavis 1986)</td>
<td></td>
</tr>
<tr>
<td><strong>Loneliness</strong></td>
<td>Negative feeling associated with people’s perception of the quantity and quality of their relationships (Valtorta et al. 2016); feelings of isolation, disconnectedness, not belonging (Hughes et al. 2004).</td>
<td></td>
</tr>
<tr>
<td><strong>Multifaceted measures</strong></td>
<td>Combining indicators of multiple structural constructs</td>
<td></td>
</tr>
<tr>
<td><strong>Quality: perceptions of positive and negative aspects of social connections</strong></td>
<td>An individual's self-report of the quality of his or her relationship with other people, the neighbourhood, and community (Keys et al. 2004)</td>
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</tbody>
</table>
structural, functional, and qualitative components of social connectedness in individual-level studies of mortality risk (Holt–Lunstad et al. 2010, Holt–Lunstad 2018), we expand this by considering its operationalization from a population health perspective, concerned with measuring and analyzing social connectedness at both individual and community (or group) levels (Moore et al. 2013, Kawachi and Berkman 2014).

Structural, functional, and quality approaches capture different constructs of social connectedness. Structural approaches quantify the degree of connectedness through measures of social integration and participation, or inversely, social isolation. Several measures and instruments have emerged to capture social integration, from basic individual-level indicators of family cohesion used in early mortality studies (e.g. marital status, living arrangement) to more sophisticated measures of social networks and social contact frequency (Berkman et al. 2000, Berkman and Krishna 2014). Social participation can be operationalized along a continuum from informal (e.g. interactions with neighbours) to formal (e.g. volunteerism), with informal types absent in most measurement approaches (Moore and Kawachi 2017). While some researchers would argue that more formalized social participation (for example, in recognized civic associations and events) is a dimension of social capital (Moore and Kawachi 2017, Mazumdar et al. 2018), we distinguish it here as a structural measure of connectedness and a precursor to the collective resources or activities possibly stemming from such participation (Carpiano 2006). Structural indicators are recognized for their predictive validity and utility in mortality studies, but as described by Berkman and Krishna, they fail to shed light on the mechanisms underlying their effects, or the role and quality of social connections (Berkman and Krishna 2014).

Functional approaches operationalize connectedness through measures of perceptions of support, loneliness, and sense of community belonging, in addition to measures of reciprocity and trust (used extensively in studies of social cohesion) (Moore and Kawachi 2017). While some research considers social support as a construct of social connectedness, we distinguish between perception of availability of support (e.g. people to confide in) – presented here as a measure of connectedness – and received support, which we consider to be a measure of social capital. Finally, an important distinction can be made between sense of community (one’s emotional relationships with people, including neighbours or community groups) and the complementary construct of place attachment (one’s emotional relationship to places, including neighbourhoods or locations within it) (Manzo and Perkins 2006).

Less common than structural and functional approaches are measures of the quality of social connectedness, for example, satisfaction with social relationships, interactions, and participation. In this context, social connectedness intersects the concept of social well-being, defined as an individual’s self-report of the quality of their relationship with other people, the neighbourhood, and community (Keyes and Shapiro 2004).

Methods of measurement

Public health and urban planning research have primarily used survey-based approaches to measure constructs presented in Table 2. While numerous survey instruments have been developed, the majority only measure single dimensions or constructs, limiting the ability to measure comparative or synergistic health effects of the structural, functional, and quality components of social connectedness (Valtorta et al. 2016, Holt–Lunstad 2018). Attempts to develop more comprehensive survey-based instruments take a multidimensional approach, combining structural questions about social participation with cognitive measures of trust and belonging (e.g. Social Capital Assessment Tool) (Carrillo Álvarez and Riera Romani 2017). The validity of instruments developed to operationalize the constructs presented in Table 2 is mixed, indicating the need for measures that are multidimensional in scope and also more rigorously designed (Cordier et al. 2017).

Most public health studies on social connectedness rely on brief survey assessments (e.g. living arrangement, perceptions of belonging and trust, volunteering, voter turnout). In contrast, more intensive network-based approaches use social network analysis tools to map social relationships and resources. For example, name generators enable respondents to identify people they are connected to by a relational dimension (e.g. with whom they can discuss important matters), data which can be used to characterize the level of social resources accessible to an individual (Kawachi and Berkman 2014). New tools are integrating spatial considerations into social network analysis, and may be particularly relevant for neighbourhoods and health research (Kestens et al. 2016). While studies have a tendency to deploy a single approach, combining traditional survey assessments and network approaches can be complementary, bringing potential to better assess the interplay between individuals and environments (Kestens et al. 2016, Carrillo Álvarez and Riera Romani 2017, Moore and Kawachi 2017).

The question of appropriate levels of analysis in research on social connectedness and health is also a point of contention, stemming from conceptual debates on whether related constructs like social cohesion and social capital are individual or collective attributes. Recent literature illustrates how social
connectedness and related constructs operate at multiple levels – across individuals, communities (networks or neighbourhoods), and broader society – with pathways to health varying across these scales (Villalonga-Olives and Kawachi 2017, Holt-Lunstad 2018). However, most measures in use (including those in Table 2) are not exclusive to a specific level and have been employed as both individual and group metrics, a limitation to advancing research (Holt-Lunstad 2018). Measurement of community social connectedness has largely relied on individual survey responses (either of individual connectedness, or individual perceptions of community connectedness) aggregated to the group-level. While this approach has been met with criticism, alternative attempts to use purely ecological measures (e.g. observational data on whether sidewalks are cleared after a snowstorm) are often not feasible to implement at the neighbourhood level (Harpham 2002, Araya et al. 2006).

**Social connectedness and healthy cities**

Social connectedness has long been recognized as fundamental to the notion of healthy cities. Over 30 years ago, Hancock and Duhl characterized healthy cities as going beyond basic physical parameters like clean water, safe housing, and healthy food to also include improvement of the social environment – including the promotion of connectedness, equity, and inclusion (Hancock and Duhl 1988). The pursuit of this decades-old vision of healthy cities, although laudable, has also revealed new challenges when health promotion interventions have unintended consequences. For example, investments in new parks and placemaking can facilitate social connectedness for some residents while eroding it for others, inadvertently deepening health inequities. In confronting current challenges, including racial and economic inequality, cities must pay attention to unintended impacts of their planning and policy decisions in order to close the gap. Understanding how changes to the built and social environment affect social connectedness and subsequent health – for better or worse – is one way cities can measure progress.

**State of evidence for health impacts**

Individual-level effects of social connectedness on health are well-established. Meta-analyses of prospective studies have found that people who are more socially connected live longer (Holt-Lunstad et al. 2010), while those who are socially isolated are more susceptible to premature mortality, depression, cognitive decline, physical inactivity, and poor cardiovascular health (Masi et al. 2011, Holt-Lunstad et al. 2015, Giles-Corti et al. 2016). Furthermore, people with more family and friends and a greater sense of belonging report higher levels of self-rated mental health, physical health, and life satisfaction (Carpiano and Hystad 2011, Hystad and Carpiano 2012, Sinha 2014). The protective effects of social connectedness appear to operate along a dose–response continuum, pointing to the need for interventions at a population level (Hystad and Carpiano 2012, Yang et al. 2016, Holt-Lunstad et al. 2017, Cudjo et al. 2018). Neighbourhood effects of social connectedness are not as well-established. Cross-sectional studies have found that greater neighbourhood-level trust and reciprocity are protective against depression and cardiovascular disease, while the inverse are associated with poor self-rated health (Roux and Mair 2010). Evidence from mortality studies is less consistent; a systematic review of multilevel studies on mortality found that the effects of community cohesion were no longer significant after controlling for individual perceptions (Murayama et al. 2012, Kawachi and Berkman 2014). Multi-level analysis points to possible interactions between individual and collective influences of social connectedness on health. For example, low-trust individuals report worse self-rated mental health in high-trust environments, illustrating how social connections can have both positive and negative impacts, depending on context (Subramanian et al. 2002, Campos-Matos et al. 2016).

The potentially adverse health effects of social connectedness can arise in multiple ways. Tight-knit communities can potentially lead to the exclusion and discrimination of ‘outsiders’, place excessive demands on under-resourced communities, and enforce harmful norms and behaviours (Portes 1998, Villalonga-Olives and Kawachi 2017). For example, positive health behaviour change like smoking cessation has been found to spread through social networks, yet so has obesity, depression, and patterns of substance use (Christakis and Fowler 2007, 2008, Campos-Matos et al. 2016, Carrillo Álvarez and Riera Romání 2017, Holt-Lunstad 2018). Research suggests that adverse consequences are more likely to emerge within closed networks that more easily reinforce negative social norms and restrict access to resources from outside the community (Murayama et al. 2012, Moore and Kawachi 2017). This may have particularly damaging consequences in disadvantaged settings, where bonding social capital may be both helpful (e.g. supporting resiliency) and harmful (e.g. reinforcing existing health inequities) (Kawachi and Berkman 2014, Villalonga-Olives and Kawachi 2017).

While much has been learnt on the health impacts of social connectedness, the mechanisms underlying these associations are not fully understood. Much of the population health evidence is based on cross-sectional studies. This research has also been criticized for lacking theoretical rigour, further hindering our understanding of the processes linking social connectedness and health at different levels (Carpiano 2006, Roux and Mair 2010). As we explore in the next section, multi-level studies guided by a socioecological
Perspective are necessary for assessing causal linkages at multiple levels.

**Pathways between social connectedness and health**

We build on a model of neighbourhood social capital and health originally developed by Carpiano (2006) (Figure 1) to present the multilevel pathways through which social connectedness could influence health in an urban context. The utility of Carpiano’s model for furthering our understanding of neighbourhood social processes as health determinants and guiding research on neighbourhood effects are discussed in depth in previous publications (Carpiano 2006, 2007). Importantly, Carpiano’s model draws a clear distinction between social cohesion and social capital – concepts often conflated in other models (Solar and Irwin

![Figure 1. Conceptual model of neighbourhood social environments and health (adapted from Carpiano 2006).](image-url)
environmental behaviours, residential mobility, and individual well-being (Manzo and Perkins 2006, Lewicka 2011, Clark et al. 2017). Further, neighbourhood contexts (such as crime and violence) may mediate the effect between the built environment and social connectedness (Wood and Giles-Corti 2008).

Moving downstream, social connectedness can influence individual health directly, or indirectly through the mediating influence of social capital. While direct pathways were not explicit in Carpiano’s model, he acknowledged the potential for feelings of connectedness among neighbours to impact health beyond the resources (or social capital) for which it gives rise (Carpiano 2006). For example, social participation has been associated with health outcomes such as cognitive ability and reduced mortality, independent of the provision of social support (Kawachi and Berkman 2001, Moore and Kawachi 2017).

Finally, at an individual or micro level, evidence suggests that psychological and physiological mechanisms underpin the link between social connectedness and health (Holt-Lunstad et al. 2017). For example, the extent to which social support buffers stress may be moderated by developmental and genetic factors that predispose individuals to social sensitivity (Mitchell et al. 2013, Holt-Lunstad 2018). Community belonging is also related to changes in health behaviour, potentially through psychosocial mechanisms such as self-esteem (Hystad and Carpiano 2012). Importantly, the model incorporates individual-level characteristics and contextual factors known to be important in an urban context, such as neighbourhood perceptions (Hassen and Kaufman 2016).

Conclusion

This paper clarifies the meaning, measurement, and potential mechanisms of social connectedness as a key determinant of healthy cities, a topic of increasing interest to urban research and policy made all the more urgent in the context of COVID-19. The variety of definitions, constructs, and measures inconsistently used to operationalize social connectedness creates a challenge for building consistent evidence on its determinants and effects, and identifying and scaling effective interventions. Calls have been made for conceptual clarity and more standardized, comprehensive measurement of social connectedness and related concepts (Kent and Thompson 2014, Cordier et al. 2017, Carrillo Álvarez and Riera Romani 2017, Tam 2017, Moore and Kawachi 2017, Mazumdar et al. 2018, Holt-Lunstad 2018). We address this challenge by exploring how a multifactorial definition of social connectedness (encompassing the structure, function, and quality of social relationships) (Holt-Lunstad et al. 2010, Portes 1998, Schulz and Northridge 2004, Carpiano 2006) – making it a valuable framework to build upon given our aim for conceptual clarity.

The model conceptualizes social capital and social cohesion as intermediary (meso-level) determinants between broader societal (macro-level) factors and individual (micro-level) health outcomes. Consistent with Carpiano’s framework (2006) and the definitions previously discussed (see Table 1), social connectedness is distinguished as a component of social cohesion and a precursor to social capital. Reflecting our focus on social connectedness in cities, we have modified Carpiano’s model by (1) adding the neighbourhood built environment as an intermediary determinant (using an established framework of characteristics associated with social connectedness in the literature – destination accessibility, density, diversity, design, and desirability) (Ewing and Cervero 2010); (2) integrating bonding and bridging ties; and (3) explicitly operationalizing social connectedness as a broad multifactorial construct encompassing the structural, functional, and quality dimensions of social relationships.

At a macro level, upstream determinants establish societal conditions that promote or prevent social connectedness. For example, social and cultural norms may influence the desirability of certain living arrangements, social roles, and expected levels of social interaction and participation, depending on gender, ethnicity, or socioeconomic status (Holt-Lunstad 2018). Furthermore, macro-level policies can shape social connectedness indirectly through influence the socioeconomic conditions and resources of neighbourhoods (Pickett and Wilkinson 2015, Carrillo Álvarez and Riera Romani 2017). Following Carpiano’s model, inter-neighbourhood determinants capture how socioeconomic factors like income inequality can segregate and isolate residents and communities, and contribute to increased social and physical disorder, while intra-neighbourhood factors represent predictors of connectedness identified in community sociology literature (such as residency length and home ownership) (Carpiano 2006).

The physical features (or built environment) of neighbourhoods can also influence social connectedness at a meso level. Neighbourhoods with walkable destinations, green spaces, and higher quality public spaces can encourage social interactions and sense of belonging (Wood et al. 2010, Hassen and Kaufman 2016, Mazumdar et al. 2018, Jennings and Bamkole 2019), in turn shaping the capacity of residents to advocate for policies and investments that lead to neighbourhood improvements (Roux and Mair 2010). Both physical and social environments – including social connectedness – play a role in the emotional bonds people form with places around them (i.e. place attachment), which can influence pro-
can be applied as a pragmatic framework for operationalizing the concept in the study of healthy cities. The adoption of comprehensive measurement approaches is becoming increasingly essential as public health measures implemented in response to the COVID-19 pandemic compel a deeper interrogation of aspects of social connectedness that can be maintained in spite of physical distancing. The review conducted in this article predated the COVID-19 pandemic, but we acknowledge the newfound need for closer scrutiny on the impacts of strategies being undertaken within cities to support social connectedness during this unprecedented time (e.g. street reallocations, new designs of parks and public spaces, as well as connecting via digital media and across physical barriers). Further, in advancing measures of social connectedness in an urban context, there is an opportunity to tap into emerging methods and tools, such as ecological momentary analysis (Bakolis et al. 2018), socio-spatial questionnaires (Kestens et al. 2016), or the use of big data to assess social integration in cities (Phillips et al. 2009).

While standardized measures of social connectedness can facilitate benchmarking, there is a danger in relying exclusively on them for policymaking. Kent and Thompson caution on how standardized metrics can mask the diversity of people and places, including potential inequities in cities – context that shapes whether interventions to promote social connectedness are effective (Kent and Thompson 2014). Pinoe et al. (2018) highlight a number of principles for selecting strategic indicators for healthy cities, for example, that they be developed in collaboration with citizens and end users to support valuable participatory governance processes (Pinoe et al. 2018). Further, as argued by Alvarez, there is utility in agreeing on a minimum set of measures on neighbourhood social environments, upon which context adaptation could be done if appropriate (Carrillo Alvarez and Riera Romani 2017). The importance of context points to the need for mixed methods and qualitative approaches in the study of social connectedness and healthy cities.

With more systematic and comprehensive measurement of social connectedness in place, population health and urban planning research can further advance the study of causal pathways between urban environments, social connectedness, and health. Given the multiple, interacting levels through which social connectedness may operate, multilevel models and prospective studies are needed to tease apart individual and area-level effects, addressing cross-level interactions and confounding (Murayama et al. 2012). To guide this work, we present a conceptual model – adapted from Carpiano’s framework of neighbourhood social processes – to help disentangle pathways between neighbourhood environments, social connectedness, and health, including positive outcomes and the unintended ‘dark side’ that may arise. Clarifying social connectedness for urban health research and policy is a crucial step towards interpreting and advancing evidence on its role – both its determinants and impacts – in the development of healthy, sustainable, and resilient cities.

**Disclosure statement**

YK holds shares in Polygon Co. (www.polygon.company) which markets the VERITAS application, a tool referenced in this paper.

**Funding**

MS, CF, DF, YK, and MW of the Interventions, Research, and Action in Cities Team (INTERACT) are supported by the Canadian Institutes of Health Research under the Team Grant Environments and Health: Intersectoral Prevention Research [grant number IP2-1507071C]; MW is supported by a Michael Smith Foundation for Health Research Scholar Award; DF is supported by a Canada Research Chair in Population Physical Activity; and MH is supported by the Ministry of Education of the Republic of Korea and the National Research Foundation of Korea [grant number NRF-2016S1A3A2924563].

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**References**


Bernard, P., et al., 2007. Health inequalities and place: a theoretical conception of neighbourhood. Social science & medicine, 65 (9), 1839–1852. doi:10.1016/j.socscimed.2007.05.037


City of Minneapolis Department of Community Planning and Economic Development, 2018. Minneapolis 2040 —
the city’s draft comprehensive plan. Minneapolis. Available from: https://minneapolis2040.com/


