Stores and mores: Toward socializing walkability

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ABSTRACT

Walkability remains a guiding framework for practitioners to design vibrant and healthy communities through urban planning interventions. While associations between travel behavior and physical factors in urban form have been confirmed through numerous studies, recent research underscores that focusing on the built environment poorly accounts for the sociodemographic factors bracketing amenity and route choices across space and time. As transportation planning turns toward strategies associated with maximizing accessibility over minimizing travel time, this epistemological gap is problematic for practitioners tasked with reducing structural inequalities in access to opportunity across society. Using participant testimony from a neighborhood in transition, as grounded in a qualitative geographic information system, we develop a user-oriented walkability framework which incorporates social and personal factors mediating pedestrians' spatial engagement. We advance from this framework to propose non-engineering interventions necessary to facilitate spatial engagement and, in turn, maximize walkable opportunities available to residents.

1. Introduction

Walkability has proven to be a useful framework to foster pedestrian realms that promote physical activity, improve environmental outcomes, and fuel economic development. Yet while there is wide agreement that built factors alone cannot shift pedestrian behavior and, equally important, that pedestrians' social characteristics impact travel behavior independent of the built environment (Adkins et al., 2017; Hirsch et al., 2017), there has been little attempt to incorporate these factors directly into walkability. By representing walkability through strictly physical spaces, practitioners risk ignoring generalizable social circumstances as much as resident- and neighborhood-specific particularities grounded in walkable space. These omissions have implications for planning practice to such an extent that they may perpetuate structural inequalities in society (Lucas, 2012; Zavestoski and Agyeman, 2014). Schwanen (2016a, 2016b) notes that contemporary theory and methods offer rich opportunities to broaden the horizon of transport geography such that policies can be driven by space in all its overlapping scales (neighborhood, street, body) and scopes (built, social, psychological). We can therefore privilege both the physical and social relationships encountered by the pedestrian in determining what constitutes walkable space.

We propose that walkability can, and should, be conceptually adjusted to include social factors shaping travel behavior for two reasons: to more precisely account for travel behavior in the city, and; to maximize the number of potential opportunities for residents to meet their needs on foot, voluntarily and satisfactorily, regardless of their socioeconomic constraints. We review the development of walkability over the past two decades before describing our own user-oriented assessment as implemented in a socially-heterogeneous neighborhood. We outline our formative framework with a case example, which we follow with implications for practice applicable not only to pedestrian planning practitioners, but a broader scope of professions associated with urban governance and social inclusion.

2. Background

Walkability signifies any assemblage of built features whose components statistically associate with the propensity to walk. Amenity access—a latent variable including residential density, land use diversity, and street grid design—explains the greatest variation in mode share (Frank et al., 2008; Handy et al., 2006). Traffic safety factors like pedestrian infrastructure and roadway characteristics play a smaller though significant role (Brown et al., 2007; Giles-Corti et al., 2013). Safety from crime has been linked to walking behavior, though its explanatory power varies depending on pedestrians' characteristics and experiences (Cerin et al., 2006; Doyle et al., 2006; Foster and Giles-Corti, 2008). Urban design elements that make walking more pleasurable, such as trees for shade and benches for rest, marginally associate with walking behavior (Adkins et al., 2012; Giles-Corti et al., 2005;

Owen et al., 2004). Our understanding of these built features continues to evolve as researchers use innovative approaches and data to examine behavior and perceptions (Ewing and Handy, 2009; Neatt et al., 2017).

Geospatial indices and audit instruments incorporating these features have been found to validly predict travel behavior and associated outcomes, e.g., moderate physical activity (Carr et al., 2010; Clifton et al., 2007; Day et al., 2006; Frank et al., 2010), yet their performance varies depending on pedestrians' socioeconomic characteristics. Adkins et al. (2017) review seventeen empirical studies comparing walking behavior between "advantaged" and "disadvantaged" groups to conclude that walkability, as currently conceived, is half as effective at predicting the walking behavior of disadvantaged groups as their advantaged counterparts. They relate these results to factors such as disadvantaged areas being less walkable, household resource constraints preventing car ownership, and the notion that disadvantaged areas have social networks conducive to delegating or pooling tasks, reducing the number of walking trips per person. These variations extend beyond socioeconomic disadvantage to age and residential characteristics. Among middle-aged and older residents in British Columbia, for example, the impact of the built environment on travel behavior is marginal after controlling for physical ability, cognitive ability, and social interaction (Hirsch et al., 2017). In validating geospatial measures, Hajna et al. (2013) discover significant mismatch between residents' own perceptions of crime and the conclusions derived from walkability algorithms. While some attribute the mismatch between user-based and algorithmic assessments to misperception on the part of pedestrians (Gebel et al., 2009), the recurring behavioral differences among sociodemographic groups, ceteris paribus, illustrate a need to refine the conceptual underpinnings of walkability such that pedestrian planning interventions can be more flexibly tailored to various socio-spatial contexts.

Transport scholars increasingly consider both built and social factors as they frame what motivates travel behavior. Overarching socioeconomic structures shape users' destinations and mobility choices, from how cultural norms shape gender roles and, by extension, their everyday behavior in the public realm (Law, 1999) to how inclusionary social policies counter behavioral differences emerging from market inequalities to offer more activity and mobility choices for politically-marginalized groups (Lucas, 2012; Zavestoski and Agyeman, 2014). Van Acker et al. (2010) underscore the importance of psychological factors, such as attitudes and preferences, which mediate residential choices and travel behavior. Riggs (2016), for instance, notes that racial inequalities in residential walkability throughout metropolitan San Francisco stem in part from racial minorities' preferences for affordable housing in close proximity to existing social networks. Gentrification alters long-time residents' perceived right to navigating their neighborhoods, compelling them to adapt by changing their destinations and routes (Pierce and Lawhon, 2017). Lord et al. (2011) argue that *déprise,* i.e., proactively reorganizing one's activities and expectations as one ages, allows seniors in suburban neighborhoods to maintain their perceived quality of life despite increasing dependence on others for transportation and homecare needs. Alfonzo (2005) situates the decision to walk within a hierarchy of socio-ecological factors, from one's physical abilities and household resources to the attractiveness of the built environment for walking—an approach which continues to inform the refining of walkability indices for specific populations, e.g., the inclusion of eldercare and provincial healthcare clinics in an audit for Quebec seniors (Negron-Poblete and Lord, 2014).

These advances in framing walking behavior continue, for the most part, to envision "space" as represented in earlier behavioral studies: physically static; socially sterile, and; topologically disembodied from the rhythms of everyday life. Decoupling the built attributes of space from the social and psychological relationships which mediate individuals' engagement with space reinforces the notion that urban form primarily and independently determines walking behavior. Riggs (2014) critiques the physical determinism which prevails in active

mobility research as biased toward generalizable trends at the expense of unique environmental contexts and participant activities, masking unforeseen causal pathways which are not easily quantifiable. Contending with diminishing returns to attributing travel behavior to the built environment, Andrews et al. (2012) advocate moving beyond walkability by turning to the "different forms of embodiment, movement activities…and the experiences, agencies, and cultures" that broadly influence physical activity (p. 1925). Yet as innovations in geographic analysis prove increasingly capable of managing multiple genres and scales of data to investigate complex phenomena (Schwanen, 2016b), it seems premature to throw the baby out with the bathwater. But how can we complement the empirical foundations of built walkability with pedestrians' social and psychological factors to more effectively assess spaces for walking?

We turn to social space, a decades-old geographic ontology that relates physical and social features in comparable terms such that one can more comprehensively observe the processes shaping everyday life. Lefebvre (1991) noted that space is primarily social, as its physical features are conceived and perceived through a human lens while, concurrently, our actions and ideas constitute a third space there social relations play out. Pierce and Martin (2015) advance that relational place-making, i.e., determining the qualities of a space from multiple and oftentimes contradictory perspectives, illustrates that an area or feature can have overlapping meanings contingent on social debates and personal beliefs. Massey (2005) blurs the boundaries of physical and social features by altogether delocalizing them, asserting that "space" is not an objective realm but rather the messy aggregate of countless physical and social differences [i.e., the space between them] and, as a result of these extensive topologies, that any examination of a feature's attributes will only partially reveal its relation to other features and attributes.

Walking has featured prominently in social space scholarship since its inception, typically as a means to demonstrate the complexity of space at ground level (e.g., de Certeau, 1984), yet it is only recently that social space has been featured in pedestrian planning research. Zavestoski and Agyeman (2014) anthologize numerous studies denoting how pedestrian planning prioritizes physical investments without taking into account socioeconomic externalities, such as the gentrification and displacement which often accompanies neighborhood investment. At the user scale, several studies harness sensory perceptions through multimedia or pedestrians' own words to demonstrate how physical and social factors influence the mobility of individuals, including pedestrians and joggers (Cook et al., 2016; Middleton, 2011). Degen and Rose (2012) complement these sensory perceptions with participant testimony about the past to underscore how one's perception of urban design features may depend on place-based memories. While not directly incorporating social space, Manaugh and El-Geneidy (2013) find that attitudes regarding the environment and health associate with walking further while commuting. Our growing understanding of the social factors shaping walking behavior opens a window to incorporate them into contemporary assemblages of walkability features.

3. Method

In designing an approach, we sought to examine social factors shaping pedestrian behavior while retaining the evidence-based conclusions behind contemporary walkability instruments. We developed a two-stage interview procedure whose themes were structured by an existing audit (Negron-Poblete and Lord, 2014): a one-hour sedentary interview at a location of the participant's choosing followed by a one-hour walking interview along a path chosen primarily by the participant with the understanding that the researcher could suggest diversions, with the participant's permission, to more closely examine features discussed during the participant's sedentary interview. These diversions preclude our drawing conclusions about participants' travel