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Review article

Illuminating the lifecourse of place in the longitudinal study of neighbourhoods and health

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ABSTRACT

Place and health are inextricably entwined. Whilst insights have been gained into the associations between places, such as neighbourhoods, and health, the understanding of these relationships remains only partial. One of the reasons for this relates to time and change and the inter-relationships between the dynamic nature of both neighbourhoods and health. This paper argues that the lifecourse of place can be used as a conceptual framework to understand the evolution and ongoing development of neighbourhoods, and their impact on the geographies of health, past, present and future. Moreover, this paper discusses the capacity of a longitudinal form of enquiry – latent transition analysis – that is able to operationalise conceptual models of the lifecourse of place. To date, latent transition analysis has not been applied to the study of neighbourhoods and health. Drawing on research across a range of disciplines including developmental psychology, sociology, geography and epidemiology, this paper also considers praxis-based implications and recommendations for applications of latent transition analysis that aim to advance understanding of how neighbourhoods affect health in and over time.

1. Introduction

Time and change complicate the evident associations between neighbourhoods and health with longitudinal methods providing an apparatus to inform these relationships. In considering neighbourhoods from a longitudinal perspective, there is often a sense that they are constantly evolving. In many respects they are. But neighbourhoods can also display persistent qualities. This durability of character can function to pattern and shape health disparities in space and over time. For example, using an ecological analysis, Dorling et al. (2000) observed that within inner London, at the level of local government wards, poverty for many localities remained invariant between 1896 and 1991. Moreover, mortality attributable to diseases such as lung cancer and stroke in 1991, was predicted more strongly by the spatial distribution of a historic 1896 measure of poverty than a more contemporaneous expression of this exposure.

Noteworthy as this analysis is, it only affords a disjointed view having compared neighbourhood contexts at junctures distant to each other. Moreover, it does not capture changes in the nature of areas temporally proximate to the experiences and lives of current dwellers; though such studies are beginning to emerge. For example, using the US-situated Geolytics Neighborhood Change Database (NCDB), Do (2009) observed historic multiple-year measures of census tract poverty (three time points, each ten years apart) to be stronger predictors of self-rated health than single-point-in-time measures. Critically, these historic exposures also explained a greater amount of the identified racial disparities in health status. More recently, Mair et al. (2015), used data from the Multi-Ethnic Study of Atherosclerosis to explore changes in neighbourhood social cohesion, stress, violence, safety and aesthetic environment in a sample of 103 US-based census tracts across a 2.5-to-4 year period. Although estimated associations were imprecise and non-significant following statistical adjustment for covariates, changes in neighbourhood contextual conditions were

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implicated in corresponding changes in levels of depressive symptoms.

Whilst there is an interest in the health impacts of exposure to changes in neighbourhood attributes, research needs to delve into the dynamics of neighbourhoods and the associated "dynamics of person/place experiences" (Kemp, 2011, p.4). Some time ago Pred (1984) contended that studies of human settlements were at risk of reducing analysed contexts to fragmented and frozen scenes, arguing that settlements, such as neighbourhoods, never materialise fully formed. Nor do they lay dormant. Rather, neighbourhoods are spatiotemporal products. This perspective has been echoed (Cummins et al., 2007; Pearce, 2015; Robert et al., 2010; Tunstall et al., 2004), with a call for enquiries to assess the developmental history and temporal progression of neighbourhoods, and the impact of these dynamics on the geographies of health, past, present and future (Pearce, 2015).

Explicating the temporal ebb and flow of neighbourhoods, and identifying if and how this evolution gets under the skin to influence population levels of health is integral to strengthening the evidence-base concerned with neighbourhood effects. In addition, by considering how structural and socio-political determinants function to prime and condition residential contexts over time, prospective place-based interventions may be grounded in an enriched understanding. Longitudinal enquiry can benefit these purposes. Focusing on neighbourhoods, this paper has two broad aims. The first is to advance the lifecourse perspective to the lifecourse of place. The second, is to introduce and discuss latent transition analysis (LTA); a longitudinal method of analysis able to operationalise conceptual models of the lifecourse of place in order to inform the study of neighbourhoods and health.

2. Lifecourse of place

The lifecourse perspective provides an organising framework for the study of health and its development over time (Ben-Shlomo and Kuh, 2002). A central aim of the lifecourse approach is to inform understandings of how health at later time points, or periods of life, is impacted by earlier experiences, such as during gestation, childhood, adolescence, or adulthood. In this manner, time, timing, and sequencing are instrumental factors in lifecourse analyses (Kuh et al., 2003). Furthermore, the lifecourse approach draws attention to the macro-historical circumstances and periods which shape people, places and health.

Neighbourhood-health enquiries have been informed by the lifecourse approach. In a panel study (11-years, across 3-waves), using cross-classified multi-level models, Wheaton and Clarke (2003) observed that neighbourhood (US-Zip Codes) socioeconomic circumstances (SES) in childhood had a significant lagged and cumulative impact on mental health in early adulthood independent of individual and family-level influences. Moreover, mental health in early adulthood was not influenced by the contemporaneous neighbourhood expression of SES after controlling for childhood neighbourhood. Analogously, Murray et al. (2013), in a British study, also using cross-classified hierarchical models, reported associations between childhood exposure to a measure of local government district deprivation, and aspects of physical capability in midlife, that remained significant after adjustment for individual-level childhood SES (40-years, across 3-waves).

Though such research reinforces the contribution of lifecourse considerations to place-health knowledge, as Cummins et al. (2007, p.1832) expressed, "it may be just as important for contextual studies to begin to understand not just the lifecourse of individuals [and their residential histories], but also the social and economic trajectories of the places which they inhabit". To enable this, a fruitful approach may be to extend the lifecourse paradigm to the lifecourse of place. This is not to anthropomorphise neighbourhoods as their development does not proceed through anthropomorphic phases of life. However, neighbourhoods – in which ever way they are defined, and for any given set of attributes – can be theorised to remain stationary, transition across, or cycle through various states or levels. For example, one formulation identifies stages of the neighbourhood life-cycle as: stable and viable, minor decline, clear decline, heavily deteriorated, and unhealthy and nonviable (Downs, 1981). Furthermore, in this schema, neighbourhood transitions, from one stage to another, are accompanied by changes in the population make-up, and the local built environment (inclusive of housing).

Neighbourhood transitions can also be tied to, and embedded within, neighbourhood trajectories, mirroring the notions of transitions and trajectories that are a hallmark of lifecourse theory (Elder, 1994). Importantly, longitudinal analyses examining exposure to neighbourhood trajectories (for example, persistently high or low, stabilising, declining, or increasing material disadvantage) have highlighted impacts on health not evident in cross-sectional observations (Do, 2009; Riva and Curtis, 2012). This is salient, as point-in-time analyses, which often characterise neighbourhoods as similar, may mask underlying processes of change or durability that structure and embed health disparities within these localities.

Lifecourse perspectives, as such, encompass more than a longitudinal view (Kuh et al., 2003). Applied to neighbourhoods, a lifecourse approach should systematically consider factors that impact their developmental profile and, in turn, how this spatiotemporal imprinting influences health in place. For example, a lifecourse of place lens could aim to uncover the basis of the enduring covariation evidenced by Dorling et al. (2000, p.1550) between poverty and mortality in the neighbourhoods of inner London; an association which persisted "despite constant changeover of the resident individuals" across the 150 years of observation. Enquiry of this nature would also function to recast issues such as neighbourhood selection, with attention drawn from individual agency to the manner in which "[n]eighbourhoods attract, repel, and indeed *select*, metaphorically speaking, the people who live there" (Fischer, 2013, p.11).

A major theme of the lifecourse perspective is 'the interplay of human lives and historical times' (Elder, 1994). Within the lifecourse framework birth year and cohort membership are proxies often called upon to aid the examination of historical influences (Elder, 1994, p.6). Neighbourhoods, and aspects of their development, can be explored in an analogous fashion. For example, prevailing patterns of neighbourhood design and planning have differed over time, with variations including the gridiron scheme, garden suburb and new urbanist forms (Harris and Larkham, 1999). As both temporal and design attributes, these features, therefore, directly lend themselves to classifying neighbourhoods in a way that would enable ecological cohort and period analyses.

Path dependence is a construct concerned with prior conditions and the sequential patterning of subsequent events or circumstances. Moreover, it is concerned with the probabilistic manner in which temporal ordering and affiliated processes influence distal outcomes or long-run equilibria (Page, 2006). On this basis, path dependence can be considered the natural analogue of the lifecourse notion of 'chains of risk', and can be applied in the same manner to inform neighbourhood-level analyses. For example, Robertson et al. (2010) used path dependence as a sensitising tool to understand the socio-historic evolution of neighbourhood identities. In this study, the sequence of three factors influenced the path of the social identities of neighbourhoods: the initial planning ambitions, a policy initiative aimed at enticing the purchase of social housing by established tenants, and a neighbourhood