Future Directions in Spatial Demography

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Operationalizing the concept of “neighborhood” has proven to be a particularly vexing problem. Analyses of neighborhood effects on youth risk behavior—an area of rapid development in the neighborhood literature—often assume equivalent exposure to the neighborhood aggregate chosen (e.g., census tracts). However, to date, few studies have offered empirical evidence to support this assumption. Given the inherent ambiguity of the concept of neighborhood, some have argued that activity space approaches—where activity spaces consist of all of the locations that individuals come into contact with as a result of their routine activities—are likely better measures of “neighborhood” exposure. The extant literature also largely omits an additional potentially important source of contextual variation—non-residential neighborhood exposures. For example, a recent study that tracked youth travel paths over the course of a day found that “half of the subjects spent 91.5% or more of their outside-the-home time in a census tract other than the census tract where their home was located” (Basta et al 2010). Consequently, theoretical approaches to contextual effects (and measurement strategies) that consider the intersection of individuals and actual behavior settings are likely to yield more insight into the processes by which contexts shape outcomes.

From Neighborhoods to Communities

Tracking individual activity spaces offers an advance over the typical assumption of equivalent neighborhood exposure characterizing the vast majority of neighborhood research. However, individually defined activity spaces do not offer information on the embeddedness of activity space locations in larger systems of interconnected places. Just as individuals may be influenced by the larger social networks to which their specific alters are tied, the system of interconnection among places (as measured by overlapping routine activity locations) may be relevant for structuring the pattern of social exposures individuals are likely to encounter. Indeed, this is one of the typical assumptions behind conventional neighborhood effects research—measures of neighborhood are seen as encompassing an actual or potential exposure space. We argue that this space may be more accurately captured by conceptualizing links between subjects and the spatial locations of their key activities as dyads in a larger actor-setting affiliation network. We hypothesize that activity spaces are patterned across key sociodemographic groups and geography, the aggregated structure of which captures what we term “communities”—i.e., the network of actors and settings to which individuals are tied through routine exposure.

Although, in some cases, residential and community contexts may overlap considerably, we take the degree of overlap to be an empirical question. In some instances, youth from the same residential area will exhibit overlapping activity spaces that are also contained largely within the
residential boundary. However, we hypothesize that this scenario is likely to be relatively rare. More critically, we argue that characteristics of the communities of residentially proximate youth may vary considerably with potentially important developmental implications. Aspects of communities including structural resources (e.g., the affluence level of network members) and informal social control (e.g., the level of supervision characterizing youth behavioral settings in the network; the average proportion of time spent in structured vs. unstructured settings) may be highly influential in the lives of youth independent of residential neighborhood contexts. Moreover, the effects of setting characteristics (peers, supervision, activity structure) may depend on the characteristics of the communities in which those settings are embedded. For instance, a given setting characterized by unstructured socializing may be less likely to lead to risk behavior when tied mostly to more structured settings in a larger community context. Behavior in unstructured settings within such a community may be influenced by the more conventional normative orientations of typically encountered settings in the network.

By allowing community and neighborhood to be distinguished, research may shed light on “mixed” findings regarding the role of typically operationalized neighborhoods in children’s lives. Children who reside in economically disadvantaged neighborhoods may nonetheless tap into highly resourceful communities. For example, Small (2009) finds that child care centers in high poverty neighborhoods maintained extensive ties to other organizations. Access to organizationally brokered resources such as referrals to other youth programs and beneficial activity settings (and associated communities) by some mothers in poor neighborhoods may result in better outcomes for their children when compared with other geographically proximate residents. Significantly, Small argues that ties to extracommunity resources through organizational affiliations are rarely a result of informed, instrumental action. Rather, consequential organizational ties often occur as a by-product of more mundane social transactions. Thus the origins of community affiliations are unlikely to be straightforwardly determined by the purposive actions and resources of individuals (i.e., a selection model of community membership). At the same time, community affiliations may confer significant benefits. In the absence of effective measurement of community, divergent outcomes among youth who share the same neighborhood will be spuriously attributed to individual or family characteristics.

Current Projects
I am currently working with a number of colleagues, including Mei-Po Kwan at Ohio State University and Kathleen Cagney at the University of Chicago, to collect activity space data that will allow these ideas to be tested and refined. A recent grant from NIH/NIDA (“Adolescent Health and Development in Context”) will involve collection of data on 4–5,000 youth ages 11–17 and their caregivers. The study will gather one week’s worth of GPS data on the locations of youth activities and real-time information on mood, behavior, and social interaction using Smartphone-based “ecological momentary assessment.” The objective of the study is to understand how residential neighborhoods, “communities,” social networks, schools, and families shape mental and behavioral health during adolescence. The project will gather
two waves of data on youth, replicating the GPS/Smartphone protocol at wave 2. We have also received funding from the WT Grant Foundation to supplement the NIH award. This related project will oversample youth from a low-income region of Columbus in order to gather more precise information on how adolescents from economically disadvantaged areas use their (potentially quite variable) communities to promote successful development. This project will be among the first, large-scale probability studies to combine detailed, longitudinal information on the geographic locations of youth activities with real-time data on youth social interactions, mental health, and behavioral outcomes.

Initial pilot data demonstrate the feasibility of constructing communities from precise address data offered by youth. Figures 1 and 2 show the actor-setting affiliation networks (actors in red; locations in blue) for a high- and low-income census tract in Columbus, OH. Although the data are constrained by census tract boundaries, they indicate that even with self-report data on 4-5 typical activity addresses from adolescents, the data still yield sufficient overlap in locations to generate an affiliation network. We weight nodes in the network (both youth and activity locations) by eigenvector centrality to illustrate one of the many ways these socio-spatial affiliation network data may be used to shed light on how places are linked more or less tightly to larger clusters of places (communities).

An abstract for the project may be found at the following URL:
http://projectreporter.nih.gov/project_info_description.cfm?aid=8210117&icde=0

Figure 1. High Income Actor-Setting Affiliation Network (Nodes Sizes Proportional to Eigenvector Centrality)
Figure 2. Low Income Actor-Setting Affiliation Network (Nodes Sizes Proportional to Eigenvector Centrality)