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Perceived neighborhood characteristics predict severity and emotional response to daily stressors

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ABSTRACT

Rationale: Neighborhood characteristics may influence health and well-being outcomes through stressors in daily life.
Objectives: This study tested whether a varied set of perceived characteristics of neighborhood (i.e., social cohesion, safety, aesthetic quality, violence) predicted stressor frequency and severity as well as negative emotional responses to stressors. We predicted greater reported cohesion and safety and less violence would be associated with less frequent stressor exposure and severity and less intense negative affect following stressors; we conducted subsequent tests of neighborhood aesthetic quality as a predictor.
Methods: Participants (n = 233, age 25–65 years) were residents in a socio-economically, racially, and ethnically diverse zip code in Bronx, New York, most who participated in the Effects of Stress on Cognitive Aging, Physiology and Emotion study between 2012 and 2013. They provided demographic information and neighborhood ratings, then participated in the EMA protocol in which they completed brief smartphone surveys of current negative affect and stressor exposure, severity, and recency, five times daily for 14 days.
Results: No coded neighborhood characteristic was related to the frequency of stressors. Individuals who reported greater neighborhood violence, however, rated their stressors as more severe. Individuals rating their neighborhood lower in safety or aesthetic quality, or higher in violence, had greater negative affect following stressors.
Conclusion: Even among people living within the same zip code, individual differences in perceptions of neighborhood predict how stressful they appraised stressors in daily life to be and how much negative affect they reported following stressors.

1. Introduction

Neighborhoods function as contexts in which the experiences of daily life unfold, and may serve as both persistent risks and resources to well-being. Theorists have described neighborhoods as the social context of the stress process (Aneshensel, 2010; Elliott, 2000). For example, a neighborhood's physical attributes, such as poorly maintained streets, may promote exposure to daily hassles and difficulty accessing resources (Matheson et al., 2006). Neighborhood characteristics may not only be associated with more frequent daily stressors, but also elevated distress from the threat of additional stressors – individuals who live in neighborhoods with high violence may persistently worry about their safety and thus experience greater psychological distress (Augustin et al., 2008; Choi and Matz-Costa, 2017; Cutrona et al., 2006). Furthermore, neighbors with poor social connections may not benefit from the stress-buffering effects of social support (Kubzansky et al., 2005; Mair et al., 2010b). Neighborhood characteristics, then, may impact well-being not only through exposure to actual stressors and general distress, but also through the resources available to an individual to emotionally respond to stressors.

A neighborhood's geographic location provides information about the structural hazards that individuals are exposed to but the

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psychological contexts related to the perceptions of neighborhoods helps us better understand variability in health outcomes (e.g., Goldman-Mellor et al., 2016). The present study examines perceived neighborhood characteristics (safety, violence, social cohesion, aesthetic quality) as predictors of individual differences in frequency of stressor exposure in daily life, subjective severity of these stressors, and negative emotional responses to these stressors. We leverage data from a socio-economically, racially, and ethnically diverse sample of adults all residing in the same urban zip code; that is, individuals live in a circumscribed geographic area but their perceptions and experiences within this context may vary. We first present relevant theoretical models, then discuss neighborhood characteristics as potential risk and protective factors in the stress process, and then overview empirical studies of neighborhood factors and stressors and emotional responses in daily life.

1.1. Theorized pathways

Exposure and response to stressors occurring in daily life have been proposed as one of the pathways through which wear-and-tear on physical and mental health develops across the lifespan (Almeida et al., 2011). For example, Cutrona et al. (2006) incorporated stress processes into their model of neighborhood effects on well-being. They proposed that neighborhood characteristics (i.e., lack of resources and threats to safety) may (1) increase exposure to stressors in daily life, (2) increase post-stressor vulnerability to depression, and by extension negative affective (NA) states, and (3) interfere with social bonds within the neighborhood, further exacerbating risk to reduced well-being. Similarly, cumulative disadvantage theories propose a role for environment in the associations among socio-economic status (SES), stress, and poor health outcomes. These theories propose that early SES results in later health disparities by channeling people into more stressful environments (Dannefer, 2003; Ferraro and Shippee, 2009; Schafer and Ferraro, 2012) resulting in increased exposure to both major events and to stressors in daily life. These and other models (Chen and Miller, 2012; Ferraro and Shippee, 2009; Geronimus et al., 2010; Myers, 2009; Taylor et al., 1997) posit that macro-level risks exert their effects on long-term health and well-being outcomes through day-to-day experiences in context.

As noted, a neighborhood context may confer both resources (i.e., transportation, public services, social connections) as well as risks (i.e., lack of safety, violence). Because of SES-related clustering of residency (Diez Roux and Mair, 2010; Geronimus et al., 2001) – in which individuals are more likely to live near others of similar SES – the role of neighborhood factors may have been confounded with SES in prior work. Indeed, neighborhoods vary in the socioeconomic composition of the residents (Kaiser et al., 2016; Diez Roux and Mair, 2010). Compared to communities with a large composition of high SES residents, communities with a large composition of low SES residents tend to have fewer beneficial (e.g., access to healthy foods, green spaces, and social organizations) and higher hazardous (e.g. fast food restaurants, limited space for physical activity, and violence) environmental resources (Hughey et al., 2016; Kaiser et al., 2016). The Reserve Capacity Model (Gallo et al., 2005; Gallo and Matthews, 1999) proposes that lower SES results in worse health outcomes because of increased daily stressor exposure and limited reserve capacity – which includes interpersonal resources such as social support – to manage stressors. Although not explicitly discussing neighborhood context, in this model the increased risk of exposure and lower protective resources from which to respond to stressors result in increased negative and decreased positive emotions, which over time lead to physiological changes and eventual disease.

In addition to the socioeconomic composition of a neighborhood, the racial/ethnic composition of a neighborhood may further explain how neighborhood characteristics relate to stressors in daily life, particularly the unique daily stressors faced by racial/ethnic minorities.

A high proportion of racial and ethnic minorities reside in racially segregated, often disadvantaged communities with limited access to educational, occupational, health and social service resources that promote social mobility (Freeman Anderson, 2017; Williams and Collins, 2001). These obstacles incurred by minorities can be attributed to discriminatory acts, such unfair housing policies, which prevented commercial investment and homeownership within or near racially and ethnically segregated neighborhoods (Gee and Payne-Sturges, 2004). Thus, stressors in daily life, particularly among minorities, may also be attributed to past and/or current discriminatory actions or policies (Gee and Payne-Sturges, 2004). Identifying neighborhood characteristics related to physical and mental health outcomes may improve our understanding of racial and socioeconomic health disparities (Kaiser et al., 2016; Smith and Easterlow, 2005).

In summary, neighborhoods may serve as a context that increases risk of exposure (i.e., greater frequency of stressors in daily life, exposure to more severe stressors in daily life) but may also provide resources to buffer (i.e., less intense negative emotional response to stressors) or exacerbate (i.e., more intense response) the impact of stressors. We know little, however, about the aspects of neighborhood context which are particularly noxious or beneficial; additionally, there are relatively few studies testing these predictions as they unfold in daily life, rather than relying solely on global retrospections.

1.2. Neighborhood characteristics as sources of risk & resource

A neighborhood can be defined both as a geographic location as well as a social context. Much of the epidemiological work on “neighborhood effects” uses census tracts as proxies for neighborhoods and then compiles aggregated socio-economic position (SEP) measures from census data (Singh and Siahpush, 2002). Recent work similarly focused on objective characteristics has integrated geographic information systems (GIS) to measure residence proximity to, for example, food stores (Michimi and Wimberly, 2010) and reported crimes (McCoy et al., 2016). Another form of objective assessment is for research staff to conduct structured observations and ratings of neighborhoods (Mair et al., 2010a).

From a stress perspective, however, the objective features of a neighborhood – average education of census block, precise walking distance to nearest library, observer counts of graffiti and abandoned cars – may not be the only or most relevant information to the individual. Appraisal, an individual's subjective assessment of the environmental threat and his or her own resources to deal with this threat, is central to classic stress theories (Lazarus and Folkman, 1984). Subjective neighborhood measures have been linked to health outcomes; for example, perceived neighborhood safety predicted allostatic load even when accounting for objective differences in neighborhood SES (Robinette et al., 2016). Similarly, perceived neighborhood quality mediated the effects of objective indicators of neighborhood disadvantage and affluence on health in a nationally representative study (Weden et al., 2008). Neighborhood characteristics may be more salient for some individuals. For example, Schieman and Meersman (2004) proposed that older adults may be more susceptible to stress in a disadvantageous neighborhood because of functional limitations and/or health ailments that reduce mastery and control and increase vulnerability perceptions.

To better understand the subjective aspects of neighborhoods which relate to health, Mujahid et al. (2007) developed a measure based on Roux's (2003) conceptual model of physical and social environmental factors. Stress features prominently as a pathway through which neighborhood physical and social characteristics affect outcomes (Diez Roux and Mair, 2010). Diez Roux proposed that a neighborhood's “aesthetic quality (e.g., the presence of green spaces, interesting features, and pleasant surroundings) may also be related to the experience of stress [i.e., frequency of stressor exposure, severity] or the ability to recover after exposure to stressors [i.e., increased NA following a