



Neighborhood socioeconomic conditions are associated with psychosocial functioning in older black and white adults[☆]

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ABSTRACT

We examined neighborhood socioeconomic status (NSES) in relation to depressive symptoms, perceived stress, and hostility in 5770 community-dwelling older black and white adults (mean age = 73 years; 62% female) from 3 contiguous neighborhoods covering 82 census block groups in Chicago, IL. NSES was an average of z-scores of four Census 2000 block-group variables: % public assistance, % households earning < \$25,000 annually, % with > college degree, and % owner-occupied dwellings valued > \$200,000. NSES was inversely related to hostility (beta = −0.305), stress (beta = −0.333), and depressive symptoms (beta = −0.223) ($p < 0.001$) in multi-level mixed-effects regression models adjusted for age, sex, race, and the number of years in the neighborhood. With further adjustment for education, income, marital status, and health conditions, NSES remained associated with depressive symptoms (beta = −0.078) and hostility (beta = −0.133) ($p < 0.05$); the association with hostility was strongest in non-black neighborhoods. Neighborhood social conditions contribute to the psychosocial well-being of older residents; research is needed to investigate pathways through which neighborhoods influence health outcomes in an aging population.

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1. Introduction

It is well-known that persons of lower socioeconomic position, whether assessed by educational attainment, income, occupation, or other markers of socioeconomic status (SES), experience poorer psychosocial functioning and worse health outcomes, relative to their more advantaged peers (Harper et al., 2002; Kaplan et al., 2007). Recently, more attention has been paid to contextual and environmental factors, including neighborhood characteristics, and their influence on health and well-being. Most of this work has focused on indicators of physical health and functioning outcomes. For example, living in disadvantaged neighborhoods is related to higher rates of cardiovascular disease (Diez Roux et al., 2001; Diez Roux et al., 1997), poorer survival following myocardial infarction (Tonne et al., 2005), higher asthma prevalence (Cagney and Browning, 2004), poorer physical functioning (Feldman and Steptoe, 2004), poorer cognitive function in old

age (Wight et al., 2006), and increased mortality risk in middle-aged and older adults (Martikainen et al., 2003; Wight et al., 2010; Yen and Kaplan, 1999). Most of this work suggests that living in disadvantaged neighborhoods is associated with poorer health outcomes, independent of individual-level risk factors, including individual-level SES.

The recent growth of neighborhood research has spurred an increasing interest in the causal pathways that link neighborhood-level influences with human behavior and health (Berkman et al., 2000; Geronimus, 1992; Gibbons et al., 2007; Glass and McAtee, 2006). A useful conceptual framework defines social conditions at the level of society (macro-level) and at the immediate social environment (mezzo-level, e.g., as neighborhood, school) as contextual regulators of individual-level behavior that are contingent on biological risks and reactions and lead to downstream health (Glass and McAtee, 2006). Although this “risk-regulator” model has focused on behavior as the primary embodiment of contextual influences in health and disease, it appears likely that similar “ecosocial” pathways affect human emotional responses as well. In fact, others have postulated that reduced mental health and psychosocial function may be a primary way through which living in adverse neighborhood conditions may increase risk

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for poor physical health outcomes (Browning and Cagney, 2003; Wen et al., 2006). Although such a pathway is both theoretically and biologically plausible, compelling evidence for this pathway is still scarce, despite the rapidly growing literature on neighborhoods and health.

Three recent reviews suggest that poorer neighborhoods contribute negatively to depression and mental health in the general adult population (Kim, 2008; Mair et al., 2008; Truong and Ma, 2006). However, firm conclusions are difficult to draw because there is substantial variability in the measures used, including covariates assessed, and the populations studied (Mair et al., 2008). Furthermore, the majority of published studies have focused only on depression and related mental health problems. We know little about the role of neighborhood conditions in other aspects of psychosocial function that are equally important for health. In addition, findings tend to be considerably weakened when properly adjusted for individual-level risk factors (Kim, 2008; Truong and Ma, 2006).

The conceptual framework for this study derives from the literature in aging and health that documents the importance of neighborhood environments to the health and well-being of older adults (Glass and Balfour, 2003; Satariano, 1997). Compared with younger adults, older adults tend to spend a greater portion of their daily activity patterns within the boundaries of their residential neighborhood, suggesting that neighborhood conditions may have particular salience to their psychosocial function, including perceptions of and vulnerability to stress (Glass and Balfour, 2003; Wen et al., 2006; Yen et al., 2009). Neighborhood conditions have been associated with depression in older age (Bierman, 2009; Kubzansky et al., 2005), but other aspects of psychosocial function have not been considered. For example, hostility has been linked to several health outcomes (Everson-Rose and Lewis, 2005), and although some studies have found that reported hostility declines somewhat with age (Barefoot et al., 1993), it remains significantly related to health and well-being in old age (Barnes et al., 2009). Moreover, although stress and personality factors contribute to psychosocial function and well-being, prior studies of older adults largely have failed to address contextual influences on these psychosocial characteristics. This is a significant gap in the literature. A fuller understanding of contextual factors contributing to the psychosocial function and well-being of older adults is needed. This study was designed to address these gaps in the literature, particularly by expanding the range of psychosocial characteristics assessed than in previous studies of neighborhood effects on mental health in older adults. We examined neighborhood socioeconomic status (NSES) in relation to depressive symptoms, hostility, and perceived stress, characteristics that are clearly documented to affect health in the elderly, in a sample of older adults residing in Chicago, IL, USA. We hypothesized that higher NSES would be related to better psychosocial functioning in our elderly cohort, and that these relations would be independent of individual-level SES.

2. Methods

2.1. Study population

Participants were from the Chicago Health and Aging Project (CHAP), an ongoing longitudinal study of risk of Alzheimer's disease and age-related chronic conditions. Details of the CHAP study design have been reported (Bienias et al., 2003; Evans et al., 2003). Briefly, between 1993 and 1997, CHAP conducted a complete census of three adjacent community areas on the south side of Chicago, which encompass 20 census tracts including 82

census block groups. At that time, residents in these areas were largely African-American or non-Hispanic white, with a range of socioeconomic backgrounds within each racial group; <1% reported another race category or Hispanic ethnicity. All age-eligible (≥ 65 years old) residents identified through the census were invited to participate; 6158 (78.9% of eligible) agreed and provided informed consent. This group is the CHAP study Original Cohort. All participants received an in-home, baseline interview, conducted simultaneously with the census. Follow-up interviews have been conducted in three-year cycles, from 1997–1999, 2000–2002, 2003–2005, and 2006–2008. Data for the current analyses come from the third interview cycle, i.e., 2000–2002, with one exception as noted below.

With the third interview cycle (i.e., beginning in 2000), CHAP has newly enrolled residents from the same community areas who have turned 65 years old since study inception and who were identified through the earlier Census and commercially available lists. These “Successive Aging” cohorts follow the same three-year interview cycles and complete the same measures as the CHAP Original Cohort. In-home interviews include assessment of depressive symptoms, hostility, perceived stress, medical history, medication usage, anthropometric measurements, health behaviors, socioeconomic factors, self-rated health status, cognitive activities in adulthood and childhood, and a battery of cognitive tests. Data on neighborhood SES are derived from the 2000 U.S. Census (see below). Analyses were limited to 5770 participants (2467 Original Cohort subjects; 3303 Successive Aging cohort subjects) who had valid neighborhood SES data from a completed interview after 01/01/2000. All psychosocial data were obtained at the same interview as the neighborhood SES data with one exception: among Original Cohort participants, data on hostility and perceived stress were obtained only at the second interview cycle (conducted between 1997–1999); therefore, data for these two outcomes predate the 2000 Census for Original Cohort participants by just 1–3 years. The study was approved by the Institutional Review Board of Rush University Medical Center. All participants provided written, informed consent at each assessment.

2.2. Measurement of neighborhood SES

Addresses of all CHAP participants have been geocoded, providing information on census tract and census block group. The high density of participants from a relatively small geographic area made it feasible to use Census block group as our definition of neighborhood. Census block groups in US urban areas tend to represent relatively small residential areas with a population of approximately 1000 people, and therefore provide a more homogeneous definition of neighborhood areas than larger geographic units such as census tracts or zip codes (Krieger et al., 2002). The NSES measure was created using Census information on four indicators of the block-group population: percent on public assistance, percent of households earning \$25,000 per year or less, percent with a college degree or higher, and percent of owner-occupied dwellings valued at \$200,000 or higher. We previously selected these indicators because they provide information on the entire spectrum of SES and because they represent four aspects of social position—i.e., social service use, income, education, and wealth (Cagney et al., 2009). A z-score transformation was computed for each indicator across block groups; the resulting four z-scores were averaged for each block group to create the measure of NSES, with higher scores indicative of better neighborhood socioeconomic conditions. All 82 census block groups within the CHAP neighborhoods were included in analyses.

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