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RESEARCH ARTICLE

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Multiple vulnerabilities: The effects of neighborhood structural changes upon older residents' mental health and perceptions of the broader community

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Abstract

Neighborhoods' structural conditions are consequential for their social circumstances and residents' well-being. Neighborhood effects might be accentuated among older residents because their daily activities and social lives are more confined to their immediate communities. This study examines how changing neighborhood socio-economic disadvantage affects older residents' depression and stress, as well as perceptions of neighborhood context. This study employed waves 2 (2010–2011) and 3 (2015–2016) of the National Social Life, Health, and Aging Project survey ($N = 2357$) and fixed-effects linear regression models to study these relationships. While rising neighborhood socioeconomic disadvantage was associated with more depression and stress, it was negatively associated with overall neighborhood social capital and neighborhood social cohesion, and was only associated with lower perceptions of neighborhood safety among respondents who relocated to new neighborhoods. Beyond cross-sectional associations, changing neighborhood socioeconomic disadvantage is associated

with changes in mental health and perceptions of neighborhood social context.

KEYWORDS
aging, depression, residence characteristics, safety, social capital, social environment, social problems

1 | INTRODUCTION

Much scholarship over the past two decades emphasizes the consequentiality of neighborhoods for their residents' physical, mental, and social well-being (e.g., Blair et al., 2014; Dawson et al., 2019; Kim & Ross, 2009; Matheson et al., 2006; Van Eijk, 2010). In particular, neighborhood social cohesion, trust, and support are important influences upon health and quality of life (Cramm et al., 2013; Feldman & Oberlink, 2003; Putnam, 2001). Dawson et al. (2019), for example, show through cross-sectional analyses the significant and complex relationships between adolescents' depressive symptoms and neighborhood structural disadvantage, safety, and social cohesion.

Neighborhood effects upon health and well-being might be accentuated among older residents because their daily activities and social lives are more confined to their immediate communities (Choi et al., 2015; Glass & Balfour, 2003; Krantz-Kent & Stewart, 2007). Resulting from retirement, onset of functional difficulties, and other life course events common in later life (Bromell & Cagney, 2014; Glass & Balfour, 2003), this heightened spatial confinement increases older persons' dependence upon their immediate environments' businesses, institutions, organizations, infrastructure, amenities, services, and accessible social support (Choi et al., 2015), all of which weaken within declining contexts (Chernick et al., 2011; Kazembe & Nickanor, 2017; Leventhal & Brooks-Gunn, 2003; McDaniel et al., 2013; Modrek et al., 2013; Peck, 2012; Tendler, 1982; Weffer et al., 2014). This vulnerability is compounded by the decrements in physical and cognitive abilities involved in the aging process that might accentuate older adults' general dependence upon accessible institutions and resources (Lawton & Nahemow, 1973). Furthermore, older persons' high extents of fear of both violent and non-violent crimes (Fried & Barron, 2005; Piro et al., 2006), which rise within declining neighborhoods (Aneshensel, 2009), might increase the negative health and quality of life consequences of living in worsening communities.

Scholarship further shows how neighborhoods' structural, or socioeconomic, conditions impact their overall social circumstances and solidarity (here referred to as "overall neighborhood social capital"), presenting some likely mechanisms through which neighborhoods affect health and well-being (York Cornwell & Cagney, 2014). Putnam (2001) conceptualizes social capital as a community resource that exists beyond the particular social connectedness of individual community residents. Through this community resource, residents can unite to collectively address their shared problems and realize their common goals (Putnam, 2001). Some scholars argue that communities in worse socioeconomic circumstances tend to be those with less effective cohesion and collective mobilization (e.g., Ansari, 2013; Bursik, 1988; Dawson et al., 2019; Putnam, 2001; Sampson & Groves, 1989). Conversely, Stack's (1974) ethnography of a disadvantaged American urban neighborhood revealed the extent to which challenging structural circumstances lead community residents to bind together and provide each other with needed instrumental and emotional support. Schafer et al. (2009) concur that troubled community circumstances might strengthen social ties between neighbors.

Further research attention should be paid to neighborhood social capital's multidimensionality. Using wave 2 of the National Social Life, Health, and Aging Project (NSHAP) survey, the same data set employed in the present study, York Cornwell and Cagney (2014) disaggregate the overall neighborhood social context (here referred to as "overall neighborhood social capital") into scales of social cohesion (a community's close-knittedness and trustingness, as well as congruence in values), social ties (how often community residents act in each other's interests), and danger (a community's extent of danger and crime; as explained in Section 2, this scale is here reverse coded to construct a measure of neighborhood safety), all of which impact residents' health (Cicognani et al., 2020;

Gattino et al., 2013; Henderson et al., 2016; Kim & Ross, 2009; Weisburd et al., 2018). As well as some disagreement in the scholarly literature concerning whether troubled neighborhood conditions strengthen or weaken community social fabric, there is a dearth of research investigating how residents' health and well-being (e.g., Gariepy et al., 2014; Glymour et al., 2010; Wight et al., 2013), and different dimensions of neighborhood social capital change as neighborhood socioeconomic conditions change. Dawson et al. (2019) studied such variables and their relationships; however, their sample was limited to adolescents. Furthermore, in congruence with the large majority of studies of neighborhood effects, they analyzed cross-sectional data, limiting causal inferences. The present study helps fill a research gap and furthers Dawson et al.'s (2019) analyses through a longitudinal investigation of neighborhood structural impacts upon residents' depressive symptoms and stress, as well as the three measures of neighborhood social capital developed by York Cornwell and Cagney (2014), within a sample of older adults, who might show unique patterns of adjustment (see above) as their neighborhoods change. These three separate dimensions of neighborhood social capital potentially show unique dynamics as neighborhood structural conditions change (York Cornwell & Cagney, 2014).

These processes and their effects might differ for those relocating to new neighborhoods. Those with relatively little experience living in a particular neighborhood encounter more uncertainty and unknowns as they report their perceptions of their communities. This lack of experience might provide them with less evidence of neighborhood social cohesion and ties. Furthermore, less familiarity with one's surroundings might accentuate fear, and thus perceptions of neighborhood danger.

This study examines these three dimensions of neighborhood social capital through the subjective reports and evaluations of community residents. While two separate respondents within the same neighborhood might vary in their reports of these measures of neighborhood social capital, each respondent's personal assessments of his/her community conditions likely affect his/her health and well-being. These subjective assessments accurately depict the extent to which respondents feel that their communities are providing them with the resources, support, social activity, and safety they require to live healthily and happily. For example, fears of victimization within neighborhoods perceived as dangerous could lead older adults to remain within their homes and lose opportunities for health-promoting physical and social activity (Aneshensel et al., 2011; Liska et al., 1988). Similarly, perceptions of low amounts of trust, reciprocity, social interaction, mutual support, and cohesion within one's neighborhood could discourage older adults from forming social ties and engaging in social activities and interactions that are protective of health (Charles & Carstensen, 2010; Cornwell et al., 2008; Rook, 2009). It is thus important that we understand more completely and accurately influences upon subjective neighborhood perceptions. Furthermore, subjective community evaluations are thus effective variables for this study's focus on older adults' quality of life.

1.1 | Context of the recovery period following the Great Recession of 2007–2009

In addressing these topics, this study investigates neighborhood changes between 2010–2011 and 2015–2016. As such, this study is located within the recovery period following the Great Recession of 2007–2009, which was the most severe global economic crisis since the Great Depression of the 1930s (Meltzer et al., 2013). Extensive variations in how the Great Recession affected American neighborhoods (see Kneebone & Holmes, 2016; Owens & Sampson, 2013) imply substantial differences in speed and extent of recovery. This study harnesses this variability to investigate how neighborhood socioeconomic changes affect their older residents' mental health and community perceptions.

1.2 | Theoretical perspectives

This study employs social disorganization theory as an orienting framework. This theory suggests that worsening neighborhood socioeconomic circumstances lead to declines in community institutions and organizations, as well as

informal networks that regulate neighborhood members' behavior and activities while increasing the community's capacity to collectively address common concerns (Ansari, 2013; Bursik, 1988; Sampson & Groves, 1989). Consequent delinquent and criminal activity cause residents to avoid leaving their homes, to limit their social interactions to their strongest social ties, to avoid involvement in community groups and activities, and to generally distrust both those within and those outside of their neighborhoods, all of which decrease health and well-being (Aneshensel, 2009). As such, this theory suggests that increasing neighborhood socioeconomic disadvantage negatively affects all three dimensions of neighborhood social capital.

1.3 | Research questions and hypotheses

This study's first research question is, "How do changing neighborhood socioeconomic conditions affect older residents' mental health?" Based on social disorganization theory, it is hypothesized that worsening neighborhood structural conditions lead to depression and stress among older residents.

The second research question posed is, "How do changing neighborhood socioeconomic conditions affect older residents' perceptions of various dimensions of neighborhood social capital?" Informed by social disorganization theory, it is hypothesized that declining communities' older residents will report lower extents of neighborhood social cohesion and safety. Informed by Stack (1974), it is hypothesized that the widespread need for instrumental and emotional support within declining communities implies that their older residents will not report lower extents of neighborhood social ties.

The third research question is, "How do relocations to new neighborhoods moderate the impacts of changing neighborhood socioeconomic conditions upon older adults' perceptions of neighborhood social capital?" It is hypothesized that lack of experience in a new community will provide less evidence of neighborhood social cohesion and ties, leading to lower reports of these community characteristics. This study further hypothesizes that less familiarity with one's new environment will accentuate fear of crime and violence, causing lower perceptions of neighborhood safety.

2 | METHODS

2.1 | Data set and sample

This study's source of individual-level variables is the National Social Life, Health, and Aging Project (NSHAP) survey. This longitudinal panel study of a representative sample of older American adults employs a complex multistage area probability sampling procedure. Its questions focus on health, quality of life, well-being, and social connectedness. This study utilized the second (2010–2011) and third (2015–2016) waves (the two most recent waves) because they include a set of 11 diverse subjective assessments of neighborhood social circumstances or social capital.

The first wave (2005–2006) incorporated 3005 respondents between 57 and 85 years of age. The second wave comprised 3377 respondents between 36 and 99 years of age, including respondents from the first wave, their partners, and additional respondents (74% response rate). To ensure analyses of older persons, wave 2 respondents below the age of 50 years ($n = 14$) were excluded from this study. Among second-wave respondents of at least 50 years of age, 70.09% participated in the third wave, forming an analytical sample of 2357 respondents.

While details concerning the NSHAP's wave 1 sampling procedure are available in O'Muircheartaigh et al. (2009); Suzman (2009), information pertaining to the wave 2 sampling design is provided in O'Muircheartaigh et al. (2014). The Institutional Review Boards of the National Opinion Research Center (NORC) and the University of

Chicago provided permission for the NSHAP. Respondents within the NSHAP provided written declarations of their informed consent.

As other studies have done (e.g., Estabrooks et al., 2003), census tracts were here utilized to operationalize neighborhoods. These geographical units are "small, relatively permanent statistical subdivisions of a county or equivalent entity.... Census tracts generally have a population size between 1,200 and 8,000 people, with an optimum size of 4,000 people" (United States Census Bureau, 2012). Protected geodata provided by NORC through special contractual arrangements allowed the association of NSHAP interviewees with their census tracts. The present study included respondents from 691 census tracts at wave 2. The average wave 2 census tract encompassed 3.41 interviewees (minimum = 1, maximum = 27). While investigations of contextual effects commonly employ multilevel statistical techniques, these relatively low amounts of interviewees per census tract precluded the use of these methods.

The 2006–2010 and 2011–2015 American Community Surveys (ACS) provided census tract-level data for the second and third waves, respectively. Due to the low numbers of respondents per census tract within single years, in both cases, data over the 5-year spans of time were averaged. In both ACS data sets, all census tracts were investigated within every 1 of the 5 years. Since the 2010 Decennial Census does not include the present study's census tract-level socioeconomic variables (see below), it could not be utilized for the second wave. The 2006–2010 and 2011–2015 ACSs were the best options for the second and third waves because there are no other data at the census tract level that do not stretch further than 2010 and 2015, respectively. These upper boundaries should be sustained to prevent associating individual-level outcomes with contextual causes from later time points.

Respondents who remained within the analytical sample between waves 2 and 3 differed in some respects from those who were lost to attrition. Reasons for attrition included death, confinement to an institution, and incapability to locate an interviewee. Retained respondents were more likely to be women, were generally younger in age, were more educated, showed less stress and depression, were in better personal economic circumstances, and were more involved in community groups and activities, as well as having more close social ties and receiving more social support. Moreover, retained respondents had higher likelihoods of being employed for pay, being married or living with a partner, and having one or two children, while showing lower probabilities of having no children or more than two children. At the level of the neighborhood, those who remained within the analytical sample tended to reside within communities with higher overall social capital and safety, lower population densities and residential instability, as well as stronger socioeconomic conditions. In other regards, the two groups were not significantly different. As such, retained respondents generally profited from more favorable individual and community circumstances.

2.2 | Dependent variables

2.2.1 | Mental health

This study employed two indices of respondents' mental health: depressive symptoms and stress. The former were operationalized through the 11-item short-form version of the 20-item Center for Epidemiologic Studies Depression Scale (CES-D). Respondents were asked 11 questions concerning how often in the previous week they "felt depressed," their "sleep was restless," "people were unfriendly," they "felt sad," etc. Possible answers were (1) rarely or none of the time, (2) some of the time, (3) occasionally, or (4) most of the time. The two items expressing a better mood were reverse coded. To produce this index, the 11 answers were averaged within the second and third waves (Cronbach's αs: wave 2 = .79, wave 3 = .82).

In waves 2 and 3 of the NSHAP, the four questions used to develop the index of perceived social stress (here referred to simply as "stress") were asked in leave-behind questionnaires, given to all interviewees subsequent to

their in-person interviews (York Cornwell & Cagney, 2014). While at wave 2, 87.33% of respondents returned their leave-behind questionnaires, the wave 3 return rate was 85.24%. The four items within the scale of perceived social stress are a subgroup of items from Cohen's Perceived Stress Scale (Cohen et al., 1983). Regarding the previous week, respondents were asked how often they felt "unable to control important things," "confident about my ability," "things are going my way," and "difficulties piling up." As with depressive symptoms, possible answers were (1) rarely or none of the time, (2) some of the time, (3) occasionally, or (4) most of the time. The two items denoting less stress were reverse coded. Averaging the four answers within each wave produced this index. The Cronbach's αs for this index were relatively low (wave 2 = .58, wave 3 = .59), implying somewhat less than ideal amounts of internal reliability.

2.2.2 | Perceived neighborhood social capital

In waves 2 and 3 of the NSHAP, the 11 questions used to develop measures of neighborhood social capital were asked in leave-behind questionnaires. All questions referred to the area within a 20-min walk or 1-mile distance from one's home. Three of the 11 questions, "How often do people in this area visit?," "How often do people in this area do favors?," and "How often do people in this area ask advice?," were answered with (0) never, (1) rarely, (2) sometimes, or (3) often. The remaining eight questions asked interviewees to express their agreement with the following assertions: "this is a close-knit area," "people around here are willing to help," "people in this area don't get along," "people in this area don't share the same values," "people in this area can be trusted," "people in this area are afraid at night," "there are places where 'trouble' is expected," and "you're taking a big chance walking alone at night." Respondents answered that they (1) strongly disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, or (5) strongly agree. Each negative assertion's responses were reverse coded. To form the index of overall neighborhood social capital, all answers were standardized before being averaged, separately by wave (Cronbach's αs: wave 2 = .77, wave 3 = .81). Standardization was required because of the two different sets of response categories. York Cornwell and Cagney (2014) provide a detailed discussion of the motivation for and value of inclusion of these variables within the NSHAP as of wave 2.

York Cornwell and Cagney (2014) further explain how these 11 items encapsulate three neighborhood context indices that this study employs as central outcomes: neighborhood social ties, neighborhood social cohesion, and neighborhood danger. The index of neighborhood social ties was developed through averaging raw responses (without standardization) to the first three questions (as ordered above) of the index of overall neighborhood social capital, separately by wave (Cronbach's αs: wave 2 = .76, wave 3 = .79). The index of neighborhood social cohesion was created through averaging raw responses to the next five of the above questions (with negative assertions' answers reverse coded), separately by wave (Cronbach's αs: wave 2 = .68, wave 3 = .72). Finally, this study's index of neighborhood safety (rather than danger) was developed by averaging unstandardized reverse-coded answers to the final three of the above questions (Cronbach's αs: wave 2 = .81, wave 3 = .83). The reversals of these final three answers deviate from York Cornwell and Cagney's (2014) scale constructions; however, they allow for all neighborhood social capital indices to consistently point in the positive direction. York Cornwell and Cagney (2014) provide more details concerning these three scales and emphasize their strong reliability, validity, and research value. The following chart depicts the items used to form each of the three subindices of neighborhood social capital.

Neighborhood social ties

(1) How often do people in this area visit?
(2) How often do people in this area do favors?
(3) How often do people in this area ask advice?

Neighborhood social cohesion

(1) this is a close-knit area
(2) people around here are willing to help
(3) people in this area don't get along
(4) people in this area don't share the same values
(5) people in this area can be trusted

Neighborhood safety

(1) people in this area are afraid at night
(2) there are places where "trouble" is expected
(3) you're taking a big chance walking alone at night

2.3 | Independent variable

This study's central independent variable is an index of census tract-level socioeconomic disadvantage. In accordance with Ailshire and Clarke (2015), this index is based on the percentage of adults unemployed, households on public assistance, and persons whose incomes are below the poverty line, which are three central measures of neighborhood socioeconomic circumstances. All three scores were standardized (to place them all on the same scale) before being averaged, separately by wave (Cronbach's αs: wave 2 = .76, wave 3 = .79).

2.4 | Moderating variable

Whether a respondent changed census tracts between the two waves was studied as a potential moderator of how changes in census tract-level socioeconomic disadvantage impact mental health and perceptions of the broader community.

2.5 | Control variables

As is explained in further detail below, the present study employed fixed-effects linear regression models. As such, all time-invariant features of neighborhoods and respondents were controlled. Models were further adjusted for some time-variant characteristics of neighborhoods and respondents through the inclusion of control variables.

At the census tract level, population density (persons per square mile) was controlled (logarithm transformed to reduce the right skew). Further controlled was residential instability: the proportion of the population that had changed residences in the previous year. These variables were controlled because they are contextual characteristics distinct from socioeconomic disadvantage that potentially affect residents' mental health and perceptions of neighborhood social capital. In fact, using the NSHAP's second wave, York Cornwell and Cagney (2014) found differences in interviewees' perceptions of their neighborhoods by interviewer subjectively assessed residential density.

At the individual level, employment (working for pay, retired, or not working for pay for reasons other than retirement) and marital/relationship (married or living with a partner, separated or divorced, widowed, or never married) circumstances were controlled. Both are important features of respondents' lives that likely impact the outcomes here investigated while not being the present study's focus.

Individual-level financial circumstances were also controlled. Respondents were asked to report in dollars their households' total incomes in the previous year. Interviewees were also asked to report in dollars their households' total assets, including all forms of wealth subtracted by all forms of debt. In accordance with the United States Bureau of Labor Statistics—Consumer Price Index Inflation Calculator (2020), amounts from wave 2 were adjusted for inflation between waves 2 (based on 2010) and 3 (based on 2015) by multiplying them by 1.086449. Both amounts at both waves were logarithm transformed to reduce their right skew. These control variables helped ensure that the census tract-level central independent variable captured true contextual effects, rather than simply encapsulating residents' personal socioeconomic changes.

2.6 | Analysis

The analyses began with examinations of correlations between the two mental health outcomes, depressive symptoms and stress, and between perceived neighborhood social ties, social cohesion, and safety. This revealed the extents to which these outcomes denoted unique yet related facets of mental health and neighborhood social capital, respectively.

This study's central analyses were based on fixed-effects linear regressions. The individual-level fixed effects captured all time-invariant features of individuals and their census tracts. This permitted investigations of how changing census tract levels of socioeconomic disadvantage were associated with changes in older residents' mental health and perceptions of neighborhood social capital net of all time-invariant census tract (e.g., climate, educational and healthcare institutions and resources, general culture, and demographic composition) and individual (e.g., education and race/ethnicity) characteristics. This is important for causal interpretations of results (see Strumpf et al., 2017) since stable features of census tracts and individuals could affect census tract socioeconomic declines (or placement within worsening census tracts), mental health, and perceptions of neighborhood social capital.

While 17.82% of respondents within the analytical sample changed census tracts between waves 2 and 3, this study's focus is the effects of changes in one's census tract-level socioeconomic circumstances, which was included in all models. Nonetheless, changes in two other important census tract-level measures, population density, and residential instability, were controlled, further reinforcing causal interpretations of results despite the sizeable minority of respondents who relocated out of their wave 2 census tracts.

The first set of regression analyses examined mental health. Model 1 regressed depressive symptoms upon census tract socioeconomic disadvantage. The second model further included the census tract-level control variables. The third model then added the individual-level control variables. Models 4 through 6 repeated these analyses with stress as the dependent variable. Models 3 and 6 included individual-level control variables to examine if census tract-level socioeconomic changes have direct effects upon mental health net of these individual-level changes. In no models did census tract socioeconomic disadvantage significantly interact with respondents' census tract relocations (results not shown).

The second set of regression analyses investigated perceptions of neighborhood social capital. Model 7 regressed overall neighborhood social capital upon census tract socioeconomic disadvantage. Model 8 further included the census tract-level control variables. While the next two models repeated these analyses with neighborhood social ties as the dependent variable, the following two studied neighborhood social cohesion.

None of these six models (Models 7 through 12) showed significant interactions between census tract socioeconomic disadvantage and respondents' census tract relocations (results not shown). However, because the interaction between census tract socioeconomic disadvantage and respondents' census tract relocations significantly affected perceived neighborhood safety, four models examined this outcome. Model 13 regressed neighborhood safety upon census tract socioeconomic disadvantage. Model 14 further included the census tract-level control variables. Models 15 and 16 repeated these two models with additions of interaction terms between census tract socioeconomic disadvantage and respondents' census tract relocations.

Some additional modeling details are noteworthy. No models focused on neighborhood social capital included individual-level control variables because their outcomes denoted neighborhood contexts, rather than individual-level characteristics. Furthermore, census tract relocation had no main effect within any model because fixed-effects regressions only include main effects for time-variant variables. Respondents were divided into those who relocated to a new census tract and those who did not; there were no changes in this categorization across waves 2 and 3.

The inverse probability weighting technique proposed by Hawkley et al. (2014) diminished bias caused by selective attrition between waves 2 and 3. A large set of health and demographic measures from wave 2 predicted inclusion within the analytical sample at wave 3. Inverse predicted probability scores developed from this logistic regression (inclusion (1) vs. noninclusion (0) at wave 3) were multiplied by the NSHAP's standard wave 2 weights before incorporation in the regression analyses. This strategy provided higher weights to those respondents who had lower likelihoods of inclusion in the analytical sample. Selective attrition might still have led to the underestimation of how rising census tract socioeconomic disadvantage affects mental health and perceptions of neighborhood social capital, especially if those more disadvantaged in their personal and community circumstances, and thus more vulnerable, were less likely to have been included in wave 3.

Missing data were addressed through multiple imputations using chained equations. The variables with at least 10% missing data were overall neighborhood social capital (wave 2 = 10.27%, wave 3 = 9.97%), neighborhood social ties (wave 2 = 10.27%, wave 3 = 10.10%), neighborhood social cohesion (wave 2 = 10.56%, wave 3 = 10.61%), neighborhood safety (wave 2 = 10.78%, wave 3 = 10.69%), stress (wave 2 = 12.77%, wave 3 = 12.94%), and total household assets (wave 2 = 11.67%, wave 3 = 11.03%). Within the analytical sample, 61.52% had no missing data. While the multiple imputation process incorporated all dependent variables, all models excluded those respondents originally missing data in their respective dependent variables (see Von Hippel, 2007). Standard errors were adjusted for clustering at the wave 2 census tract level. All analyses were conducted with the Stata 16 statistical software package.

3 | RESULTS

Table 1 presents descriptive statistics at both waves for this study's variables. The average respondent reported relatively low amounts of depressive symptoms and stress at both waves (between "rarely or none of the time" and "some of the time" per item). At both waves, overall neighborhood social capital had a standard deviation of about 56% of that of any of its standardized component items. Concerning neighborhood social ties, the average respondent answered somewhere between "rarely" and "sometimes" on any one of the three items (wave 2 = 1.517, wave 3 = 1.368). Concerning neighborhood social cohesion and safety, the typical respondent answered somewhere between "neither agree nor disagree" and "agree" on each item denoting more favorable neighborhood social circumstances (cohesion: wave 2 = 3.493, wave 3 = 3.510; safety: wave 2 = 3.621, wave 3 = 3.644).

At both waves, the index of census tract-level socioeconomic disadvantage had a standard deviation of approximately 80% of that of any of its three standardized component items.

Within both waves, the majority of the analytical sample reported being married or living with a partner (wave 2 = 74.54%, wave 3 = 66.44%), as well as being retired (wave 2 = 62.18%, wave 3 = 72.83%). Just under 18% of respondents relocated to a new census tract between waves 2 and 3 of the NSHAP.

Table 2 reveals the correlational relationships (Pearson correlations) among the three scales of neighborhood social capital here studied. At wave 2, all three scales were positively correlated; however, the correlation between neighborhood social ties and neighborhood safety was low in magnitude (0.031) and did not reach statistical significance (both other correlations were significant at the $p < .0001$ level). At wave 3, all three scales were significantly positively correlated ($p < .0001$). Except for the correlations between

TABLE 1 Descriptive statistics ($N = 2357$)

Variables	Wave 2		Wave 3	
	Mean/ proportion (%)	Standard deviation	Mean/ proportion (%)	Standard deviation
Dependent variables				
Neighborhood-level				
Overall social capital	0.018	0.555	0.029	0.568
Social cohesion (1–5)	3.493	0.576	3.510	0.583
Social ties (0–3)	1.517	0.721	1.368	0.719
Safety (1–5)	3.621	0.911	3.644	0.899
Individual-level				
Depressive symptoms (1–4)	1.424	0.435	1.488	0.463
Stress (1–4)	1.771	0.663	1.729	0.670
Independent variable				
Census tract socioeconomic disadvantage	−0.025	0.808	−0.042	0.789
Moderating variable				
Census tract relocation				
Relocated			17.82%	
Did not relocate			82.18%	
Control variables				
Census tract-level				
Logged population density (persons per square mile)	6.965	1.903	6.993	1.889
Population density (persons per square mile)	3790.604	9342.244	3902.056	9551.116
Residential instability (proportion having lived in a different residence 1 year ago)	0.138	0.077	0.133	0.071
Individual-level				
Logged total household assets ($)	11.774	3.400	11.587	3.556
Total household assets ($)	686,434.5	1,945,308	731,247.4	2,145,615
Logged household income ($)	10.697	1.071	10.548	1.299
Household income ($)	65,482.55	77,437.36	58,922.22	75,388.11
Marital/relationship status				
Married or living with a partner	74.54%		66.44%	
Separated or divorced	8.19%		9.29%	
Widowed	15.44%		22.61%	
Never married	1.82%		1.65%	
Employment status				
Working for pay	27.76%		17.09%	
Retired	62.18%		72.83%	
Not working for reasons other than retirement	10.06%		10.08%	

TABLE 2 Pearson correlations between neighborhood social cohesion and ties, and neighborhood safety ($N = 2357$)

	Social cohesion	Social ties	Safety
Wave 2			
Social cohesion	1.000		
Social ties	0.431 ($p < .0001$)	1.000	
Safety	0.319 ($p < .0001$)	0.031 ($p = .1602$)	1.000
Wave 3			
Social cohesion	1.000		
Social ties	0.443 ($p < .0001$)	1.000	
Safety	0.380 ($p < .0001$)	0.117 ($p < .0001$)	1.000

neighborhood social ties and neighborhood safety (wave 2 = 0.031, wave 3 = 0.117), all correlations were moderate in magnitude (correlations ranging from 0.319 to 0.443). These correlations suggest that while these scales fit together as aspects of neighborhood social capital, they denote distinct dimensions of this larger concept and warrant separate study.

At both waves, depressive symptoms and stress were moderately and significantly correlated (Pearson correlations: wave 2 = 0.317, $p < .0001$; wave 3 = 0.367, $p < .0001$). These correlations imply that while these two measures are associated, they form distinct aspects of mental health.

Table 3 presents the fixed-effects linear regression results for depressive symptoms and stress. Even after adjustment for all census tract- and individual-level control variables, rising census tract socioeconomic disadvantage was significantly associated with increased depressive symptoms (Model 3 coeff.: 0.057, $p < .05$) and stress (Model 6 coeff.: 0.123, $p < .001$). The former coefficient suggests that a one standard deviation rise in census tract socioeconomic disadvantage leads to slightly over 10% of a standard deviation increase in depressive symptoms. The latter coefficient implies that when census tract socioeconomic disadvantage rises by one standard deviation, stress increases by almost 15% of a standard deviation.

It is further notable that widowhood (compared with being married or living with a partner) was associated with significantly more depressive symptoms (coeff.: 0.187, $p < .001$), while not being significantly associated with stress. Compared with being retired, working for pay was significantly associated with fewer depressive symptoms (coeff.: −0.054, $p < .05$) and higher stress (coeff.: 0.132, $p < .01$).

The fixed-effects linear regression results displayed within Table 4 show that rising census tract socioeconomic disadvantage led to lower perceptions of overall neighborhood social capital (Model 8, census tract-level control variables included: coeff.: −0.089, $p < .01$) and neighborhood social cohesion (Model 10, census tract-level control variables included: coeff.: −0.093, $p < .05$), while not being significantly associated with neighborhood social ties (in neither Models 11 nor 12). These coefficients within Models 8 and 10 suggest that a one standard deviation rise in census tract socioeconomic disadvantage is associated with almost 13% of one standard deviation decreases in both overall neighborhood social capital and neighborhood social cohesion.

Table 5 presents the fixed-effects linear regression results that show how census tract socioeconomic disadvantage interacted with respondents' census tract relocations in affecting perceived neighborhood safety. This interaction term only reached statistical significance when predicting perceived neighborhood safety. Without inclusion of the control variables nor the interaction term, increasing census tract socioeconomic disadvantage was significantly associated with decreasing perceptions of neighborhood safety (Model 13 coeff.: −0.115, $p < .05$). When the control variables were added, this coefficient was reduced to marginal significance (Model 14 coeff.: −0.097, $p < .10$). Models 15 (without the census tract-level control variables) and 16 (with the census tract-level control variables) revealed that decreasing perceptions of

TABLE 3 Fixed-effects linear regression analyses of depressive symptoms and stress

Variables	Model 1 Depression	Model 2 Depression	Model 3 Depression	Model 4 Stress	Model 5 Stress	Model 6 Stress
Census tract-level						
Socioeconomic disadvantage	0.068*	0.068*	0.057*	0.127***	0.123**	0.123***
	(0.029)	(0.028)	(0.027)	(0.037)	(0.037)	(0.037)
Logged population density		0.004	−0.003		−0.012	−0.011
(persons per square mile)		(0.012)	(0.011)		(0.024)	(0.024)
Residential instability		−0.030	−0.050		0.218	0.178
		(0.206)	(0.180)		(0.296)	(0.290)
Individual-level						
Logged total household assets ($)			−0.004			−0.000
			(0.004)			(0.008)
Logged household income ($)			−0.000			−0.014
			(0.010)			(0.017)
Separated/divorced			0.137			−0.199
(ref. married/living with a partner)			(0.087)			(0.164)
Widowed			0.187***			−0.008
			(0.041)			(0.073)
Never married			0.127			−0.260
			(0.209)			(0.266)
Working for pay (ref. retired)			−0.054*			0.132**
			(0.023)			(0.048)
Not working for reasons other than retirement			0.112^			0.079
			(0.066)			(0.058)
Constant	1.498***	1.474***	1.509***	1.749***	1.802***	1.940***
	(0.002)	(0.080)	(0.132)	(0.005)	(0.160)	(0.250)
Observations	4712	4712	4712	3694	3694	3694
Number of respondents	2356	2356	2356	1847	1847	1847

Note: Robust standard errors in parentheses.

***$p < .001$.

**$p < .01$.

*$p < .05$.

^$p < .10$.

neighborhood safety with rising census tract socioeconomic disadvantage only occurred among respondents who relocated to new census tracts (Model 15, interaction coeff.: −0.328, $p < .01$; Model 16, interaction coeff.: −0.325, $p < .01$). The census tract socioeconomic disadvantage main effect (coeff.: 0.036) and interaction term coefficients within Model 16 suggest that when census tract socioeconomic disadvantage rises by one standard deviation, those who relocated to a new census tract will perceive neighborhood safety to have decreased by approximately 25.5% of a standard deviation.

The effects here revealed are modest in magnitude. These modest effect sizes are expected since scholars have emphasized that contextual effects are typically of lower strength than those of individuals' own characteristics (see Oberwittler, 2004; Pickett & Pearl, 2001; Stjärne et al., 2004).

TABLE 4 Fixed-effects linear regression analyses of overall neighborhood social capital, neighborhood social cohesion, and neighborhood social ties

Variables	Model 7 Overall social capital	Model 8 Overall social capital	Model 9 Social cohesion	Model 10 Social cohesion	Model 11 Social ties	Model 12 Social ties
Census tract-level						
Socioeconomic disadvantage	−0.101**	−0.089**	−0.100*	−0.093*	−0.056	−0.051
	(0.032)	(0.031)	(0.039)	(0.039)	(0.041)	(0.040)
Logged population density		−0.033		−0.033		−0.085**
(persons per square mile)		(0.023)		(0.025)		(0.031)
Residential instability		−0.317		−0.150		0.187
		(0.313)		(0.345)		(0.440)
Constant	0.034***	0.302*	3.507***	3.752***	1.448***	2.002***
	(0.003)	(0.152)	(0.004)	(0.173)	(0.005)	(0.210)
Observations	3896	3896	3856	3856	3890	3890
Number of respondents	1948	1948	1928	1928	1945	1945

Note: Robust standard errors in parentheses.

***$p < .001$.

**$p < .01$.

*$p < .05$.

4 | CONCLUSIONS

In accordance with other scholarship (e.g., Blair et al., 2014; Dawson et al., 2019; Kim & Ross, 2009; Matheson et al., 2006) and social disorganization theory (Ansari, 2013; Bursik, 1988; Sampson & Groves, 1989), this study confirms within an older sample that neighborhoods' characteristics affect symptoms of stress and depression. As such, this study's first hypothesis is confirmed. Furthermore, these impacts upon mental health remain substantial and significant after controlling for changes in census tract-level population density and residential instability, as well as changes in respondents' financial, employment, and marital/relationship circumstances. This suggests that socioeconomically disadvantaged contexts are sources of direct stressors that negatively affect mental health net of individual-level changes. These findings highlight the need for more extensive and nuanced analyses of many aspects of neighborhoods that potentially affect health, quality of life, and well-being.

While not the present study's focus, it is further notable that within an older sample, widowhood leads to higher depression, while being unassociated with stress. Among older adults, compared with being retired, working for pay yields ambivalent effects upon mental health. While working for pay reduces depressive symptoms, it increases stress.

This article extends scholarship through demonstrating how changing neighborhood structural socioeconomic conditions cause changes in two important aspects of older residents' mental health, as well as unique patterns of change in older residents' perceptions of three dimensions of neighborhood social capital: social ties, social cohesion, and safety. These analyses of changes through time reinforce causal interpretations of results as they preclude the possibility that the results are based only on the fact that older persons selected into more disadvantaged communities tend to be in worse mental health and more pessimistic about their neighborhoods' social capital. By finding significant results within an older sample, while the bulk of research on neighborhood effects

TABLE 5 Fixed-effects linear regression analyses of neighborhood safety

Variables	Model 13 Safety	Model 14 Safety	Model 15 Safety	Model 16 Safety
Census tract-level				
Socioeconomic disadvantage	−0.115*	−0.097^	0.023	0.036
	(0.057)	(0.052)	(0.056)	(0.056)
Logged population density		0.028		0.036
(persons per square mile)		(0.033)		(0.033)
Residential instability		−0.823^		−0.734
		(0.486)		(0.462)
Cross-level interaction				
Socioeconomic disadvantage*			−0.328**	−0.325**
Respondent's census tract relocation			(0.124)	(0.120)
Constant	3.664***	3.593***	3.669***	3.527***
	(0.006)	(0.216)	(0.006)	(0.219)
Observations	3842	3842	3842	3842
Number of respondents	1921	1921	1921	1921

Note: Robust standard errors in parentheses.

***$p < .001$.

**$p < .01$.

*$p < .05$.

^$p < .10$.

examines adolescents and adults in general, this study encourages explorations of the effects of contexts across the entire life course. Because of older adults' heightened spatial confinement (Bromell & Cagney, 2014; Choi et al., 2015; Glass & Balfour, 2003; Krantz-Kent & Stewart, 2007), great extents of fear of violence and crime (Fried & Barron, 2005; Piro et al., 2006), and general physical and cognitive declines (Lawton & Nahemow, 1973), future studies of contextual effects should focus more on older residents.

Rising census tract socioeconomic disadvantage leads to decreases in overall neighborhood social capital; this is in agreement with what was hypothesized. However, the three scales of neighborhood social capital here studied show unique dynamics as neighborhood structural conditions change.

Neighborhood social cohesion decreases with rising census tract socioeconomic disadvantage. Social disorganization theory suggests that worsening economic circumstances lead to declines in the community institutions and informal social networks that control community members' behavior and that further the community's ability to collectively address shared concerns (Ansari, 2013; Bursik, 1988; Sampson & Groves, 1989). This is reflected in the declining neighborhood social cohesion. This finding is concordant with what was hypothesized.

However, increasing census tract socioeconomic disadvantage is not significantly associated with decreasing neighborhood social ties. This finding concords with Stack (1974) and Schafer et al. (2009), who suggest that difficult structural circumstances might lead community residents to actively seek out and provide each other with material and emotional aid. This might explain why worsening neighborhood structural circumstances do not negatively affect community residents' direct involvements in each other's lives and active provisions of mutual support. This also is in agreement with what was hypothesized.

Census tract socioeconomic disadvantage did not differentially affect perceived overall neighborhood social capital, neighborhood social cohesion, and neighborhood social ties based on whether respondents relocated to a new census tract. This disconfirms what was hypothesized.

However, rising census tract socioeconomic disadvantage is associated with lower perceptions of neighborhood safety only among older persons who relocated to a new census tract. This contradicts the hypothesis that rising census tract socioeconomic disadvantage generally decreases perceptions of neighborhood safety. However, it confirms the hypothesis that the negative effects of increased census tract socioeconomic disadvantage upon perceived neighborhood safety are stronger among those who moved to a new census tract. Especially among older adults who show higher apprehensiveness concerning violence and crime (Fried & Barron, 2005; Piro et al., 2006), being less accustomed to and familiar with one's close environment might create stronger perceptions and fears of danger. Furthermore, safety might generally be a prominent concern as people move to new neighborhoods, especially if they are aware that they have relocated to an area in worse socioeconomic circumstances. This might skew perceptions of neighborhood safety downward. For those who do not change residential communities, adjustments in levels of danger in response to neighborhood socioeconomic changes might be too subtle and gradual to be perceived over the span of 5–6 years employed in the present study.

This study has demonstrated how changing neighborhood structural socioeconomic conditions impact various dimensions of older persons' health and well-being. In addition to significant effects upon depressive symptoms and stress, worsening census tract socioeconomic conditions negatively affected perceptions of overall neighborhood social capital, neighborhood social cohesion, and neighborhood safety (among those relocating to new census tracts). The latter are highly consequential for quality of life as they denote the extent to which residents trust that their communities are close-knit and supportive, while providing them with the opportunities for health-promoting physical, social, and cognitive activity, as well as the safety that will allow them to live happily and comfortably. These factors might be especially important for more spatially confined older residents (Bromell & Cagney, 2014; Choi et al., 2015; Glass & Balfour, 2003; Krantz-Kent & Stewart, 2007). Further research should study the causes and consequences of subjective perceptions of neighborhood circumstances, across diverse age groups.

4.1 | Limitations and paths for future research

One limitation is that this study assesses census tract-level predictors for their associations with outcomes pertaining to respondents' local areas (within a 20-min walk or 1-mile distance from one's home). While these two sets of geographical boundaries do not perfectly correspond, the fact that American census tracts typically include between 1200 and 8000 inhabitants (the ideal population size being 4000 people; United States Census Bureau, 2012) suggests that they are adequately congruent.

Another limitation is this study's timespan of only 5–6 years. As neighborhoods change only gradually, a longer timespan is likely required to assess the full effects of neighborhood socioeconomic changes upon residents' perceptions of various dimensions of neighborhood social capital. A replication of this study with a 10- or 15-year span of time might show increasing neighborhood socioeconomic disadvantage to be significantly associated with reduced perceptions of neighborhood safety even among those who have not relocated to new communities.

4.2 | Policy recommendations

This study highlights the value of community social capital. Especially within neighborhoods undergoing structural declines, efforts and resources should be dedicated to the development of social foci (Feld, 1981), including community centers, senior centers, exercise facilities and programs, hobby groups, etc., around which social activities and relationships are developed, thus improving numerous dimensions of community social capital. Theories of collective efficacy further suggest that neighborhoods with higher social capital are more capable of cooperative efforts to improve community socioeconomic conditions (Putnam, 2001).

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CONFLICT OF INTERESTS

The author declares that there are no conflicts of interest.

PEER REVIEW

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DATA AVAILABILITY STATEMENT

This study's analyses were conducted within a secure and protected enclave managed by the National Opinion Research Center (NORC) at the University of Chicago. As such, the data cannot be made publicly available.

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