

Neighborhood social integration as a predictor of neighborhood perceptions

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Abstract

A growing body of literature has established a relationship between neighborhood perceptions and both physical and mental health outcomes, yet there remains a need to further explicate possible psychosocial factors that are predictive of neighborhood perceptions. This study hypothesized that an increase in social integration would result in more positive neighborhood perceptions. Propensity score matching on social integration was employed to strengthen the ability to draw a causal inference about the effect on neighborhood perceptions. When controlling for a range of sociodemographic covariates—including area deprivation index as a measure of objective neighborhood conditions—high social integration accounted for more than a 7% increase in neighborhood perceptions. The findings indicate the role of social integration as a predictor of neighborhood perceptions, revealing the potential importance of interventions and mechanisms aimed at improving neighborhood perceptions via social integration for the purposes of improving physical health and mental wellbeing.

KEYWORDS

neighborhood conditions, neighborhood perceptions, neighbors, social determinants, social integration, social relationships, social ties

1 | INTRODUCTION

Neighborhood perceptions play an important role in individual-level health and well-being outcomes (Godhwani et al., 2019). Negative neighborhood perceptions are associated with a range of health outcomes, including lower levels of physical functioning, higher levels of physical chronic illnesses, and negative mental health outcomes (Carbone, 2020; Ross & Mirowsky, 2001). Research studying the effects of neighborhood perceptions on health outcomes continues to grow, yet there remains a need to explicate the elements that are predictive of neighborhood perceptions. The present study focuses on an individual's relationship to the community, via social integration, as a predictor of neighborhood perception. Using propensity score matching to strengthen the ability to make a causal inference, this study tests the hypothesis that higher levels of social integration predict more positive perceptions of one's neighborhood.

1.1 | Neighborhood perceptions

Perceptions of a range of neighborhood problems are associated with poorer self-rated physical health (Godhwani et al., 2019), increased obesity rates (Burdette & Hill, 2008; Rooks et al., 2014), increased rates of alcohol use (Hill & Angel, 2005; Plascak et al., 2018), engagement in dating violence (Rothman et al., 2011) as well as dating violence victimization (Malik et al., 1997), and mortality among older adults (Wen et al., 2005). Negatively perceived neighborhoods were found to have higher noise levels and lower levels of safety, cleanliness, visual appeal, and reputation (Mouratidis, 2020). Community members' perceptions of crime, noise pollution, air quality, traffic, and litter, were all associated with poorer self-rated health as well as lower levels of self-reported physical functioning (Bowling et al., 2006). In a longitudinal study, researchers found that individuals who perceived greater neighborhood safety problems at the beginning of the study reported more health problems ten years later (Robinette et al., 2016). Perceived neighborhood problems were associated with higher blood pressure and higher body mass index among a sample of Latino adults with diabetes (Moreno et al., 2014), while a more positive perception of neighborhood social cohesion was associated with a lower risk of stroke (Kim et al., 2013).

Individuals' neighborhood perceptions are also associated with mental health and emotional well-being outcomes (Toma et al., 2015). More severe and a greater number of perceived neighborhood problems, including transportation issues, access to goods and services, drug or gang activity, and safe roads, are associated with higher scores on anxiety and depression measures (Gary et al., 2007). For older adults, more negative perceptions of neighborhood safety are associated with higher levels of depression symptoms (Wilson-Genderson & Pruchno, 2013). In a study on a community of 300 residents in a large northeastern city, poorer perceptions of safety were associated with higher levels of depressive symptoms (Gonyea et al., 2017). Levels of violence in a neighborhood are indirectly associated with depression via personally experienced violence as well as perceptions of neighborhood disorder (Curry et al., 2008). Among a sample of Baltimore residents, those who feared neighborhood violence had a nearly seven-fold greater odds of screening positive for depression as compared to respondents who did not have a similar fear. Additionally, neither history of victimization nor awareness of violent events in the community were statistically significantly associated with positive depression screenings (Tonorezos et al., 2008). Mair et al. (2010) found that among women, perceived neighborhood violence was associated with a higher score on the Center for Epidemiological Studies-Depression Scale, while physical disorder and physical decay (rated via systematic social observation) as well as perceived disorder were not associated with depression scores when they controlled for individual-level variables. For men, both perceived neighborhood violence and perceived disorder were associated with higher depression scores, while similarly to women, neither physical disorder nor physical decay were associated with depression scores. Within a sample of residents in a Bronx neighborhood in New York, residents' neighborhood perceptions were found to be associated with the severity of their daily stressors as well as their negative emotional reactions to these stressors, suggesting differences in neighborhood perceptions are related to risk and resiliency (Scott et al., 2018). Utilizing a composite score of

neighborhood perception as part of longitudinal analysis, Carbone (2020) found that lower neighborhood perceptions at wave one were predictive of clinical depression at wave three of the study.

Positive neighborhood perceptions are tied to positive health-related behaviors such as the likelihood of both seniors (Maisei, 2016) and children (Galaviz et al., 2016) to engage in physical activity. Individuals who have more positive views of their neighborhood are also more likely to engage in preventative health screenings, such as those for colorectal cancer (Beyer et al., 2016; Halbert et al., 2016). In a prospective cohort study of participants in six communities across the United States, Echeverría et al. (2008) found that perceptions of neighborhood problems were associated with increased self-reported levels of smoking and alcohol use, even when controlling for individual-level socioeconomic and demographic characteristics. Greater perceived neighborhood violence was associated with the perpetration of intimate partner violence (Reed et al., 2009).

Overall, neighborhood perceptions play an important role in a wide range of physical, mental, and behavioral health outcomes. Yet to date, there are limits and gaps in the literature. Two of the most critical limitations are the lack of effect sizes and a heavy reliance on cross sectional—as opposed to longitudinal—studies. This growing body of literature has led some to argue that perceived neighborhood conditions have an even greater impact on individual health and well-being than objective measures such as socioeconomic indicators, crime rates, and neighborhood amenities (e.g., Ambrey et al., 2014; Galaviz et al., 2016; Ross & Mirowsky, 2001). Others have found that objective neighborhood measures and neighborhood perceptions capture unique variances in a range of health outcomes (Orstad et al., 2017; Zhang et al., 2019). It has also been hypothesized that neighborhood perceptions may both mediate (Weden et al., 2008) and moderate (Zhang et al., 2019) the relationship between objective neighborhood conditions and health outcomes. As such, it is important for researchers to better understand potential predictors of neighborhood perceptions, such as social integration.

1.2 | Social relationships and social integration

Social relationships play an important role in understanding the connections between neighborhood perceptions and health. Researchers have focused both on the ways in which social relationships, or lack thereof, can impact neighborhood perceptions, as well as the role of social relationships in mitigating the individual-level effects of living in socially disordered communities (e.g., Latham & Clarke, 2018; Pickover et al., 2018; Wang et al., 2018). Social relationships at a more communal level can be operationalized via social integration, which represents the degree to which individuals feel connected to others in society through commonalities (Keyes, 1998). It is an outgrowth of the belief that one has something in common with other members of a community combined with a sense of belonging to that community (Keyes & Shapiro, 2004).

Research on social integration dates to the late 19th century when Emile Durkheim sought to explain the influence of social dynamics on individual pathology (Berkman & Glass, 2000; Brisette et al., 2000). Durkheim argued that the degree to which an individual is attached to society was a function of social ties and social integration. He believed that the degree to which an individual experiences social integration was the result of how strongly that individual internalized societal values, norms, and beliefs. Durkheim used this approach to study and understand suicide, a phenomenon that he viewed not as an individual act, but as a consequence of societal influences (Berkman & Glass, 2000; Brisette et al., 2000).

Social integration is rooted in associations and connectedness to both primary (i.e., smaller, more informal, and lasting groups such as immediate family and close friends) and secondary groups (i.e., larger, more formal, and less personal groups such as block groups, tenant/homeowner associations, and neighborhood associations) (Liu & Besser, 2003; Montpetit et al., 2015; Ross & Jang, 2000; Sampson & Byron Groves, 1989; Thoits, 2011). One path to increasing social integration is to strengthen social ties among individuals in a community (Berkman & Glass, 2000). Yet the relationship between social ties and social integration is complex. While some social ties are a prerequisite for social integration, they are not sufficient. The degree of social integration an individual

experiences can vary independent of the breadth or depth of social ties. For example, an individual with a broad network of weak social ties may feel less socially integrated than an individual with a small, but tight-knit group of friends and family members that constitutes strong social ties. (For a more detailed discussion of the theoretical background connecting social ties and social integration, see Berkman & Glass, 2000).

1.3 | Linking social integration with neighborhood perceptions

Since Durkheim, social integration has been associated with a wide variety of other health-related outcomes, including mortality (Barger & Uchino, 2017; Berkman, 1984), reoccurrence of cancer (Helgeson et al., 2015), infection (Cohen et al., 1998), cardiovascular disease (Chang et al., 2017), and death after myocardial infarction (Berkman, 1995; Seeman, 1996). Research has also expanded on earlier findings that social integration is associated with depression (Cohen & Wills, 1985). Recent studies provide evidence that social integration may have a moderating effect on the relationship between mental health and neighborhood factors such as high vacancy rates (Pearson et al., 2019) and perceived neighborhood safety (Gonyea et al., 2017).

While social integration has been studied in relation to health outcomes, its association with upstream factors is more limited. Specifically, there is a lack of research on the association between social integration and neighborhood perceptions. Given the role of neighborhood perceptions in determining health and well-being outcomes, it is important to consider if social integration influences neighborhood perceptions. This study will focus on the association between social integration and neighborhood perceptions by asking if an increase in social integration results in more positive neighborhood perceptions. Exploring this relationship can be a complicated task as sociodemographic characteristics, social ties, and objective neighborhood conditions can confound the relationship between social integration and neighborhood perceptions. To address this issue, propensity score matching is employed to limit the bias of these and other potential confounders.

2 | METHODS

2.1 | Data and sample

This study uses two waves of the Midlife in the United States (MIDUS) study, which is a national, longitudinal study of health and well-being (Ryff et al., 2006, 2014). The goal of MIDUS is to better understand the ways in which social, behavioral, and psychological factors influence the physical and mental health of individuals as they age. Numerous forms of data collection are included within the MIDUS study including surveys, daily diaries, biomarkers, and cognitive assessments. The study is a national probability sample that also includes multiple subsamples, including oversampling from certain urban areas, and subsamples of siblings and twins. Although there are multiple components to the MIDUS study, the present analysis will focus on data collected through surveys as part of the second and third waves of data collection. Survey data from MIDUS 2, the second wave of the study, was completed between 2004 and 2006 ($N = 4963$), while wave three—MIDUS 3—survey data were collected from 2013 to 2014 ($N = 3294$). The final analytic sample based on the matched data was 1480. An explanation of how this subsample of the MIDUS data was created is described in Section 3.

2.2 | Variables

The dependent variable was neighborhood perception, as operationalized via the Perceived Quality of Neighborhood Scale (Keyes, 1998). This scale is constructed from respondents' answers to four questions (*a lot*,

some, a little, not at all): "I feel safe being out alone in my neighborhood during the daytime," "I feel safe being out alone in my neighborhood at night," "I could call on a neighbor for help if I needed it," and "People in my neighborhood trust each other." The final neighborhood quality score is the mean of responses for the four questions (range = 1.00–4.00) (Cronbach's α for the analytic sample = .60).

The independent variable of social integration was based on three Likert-style questions (*strongly agree, somewhat agree, a little agree, I don't know, a little disagree, somewhat disagree, strongly disagree*): "I don't feel I belong to anything I'd call a community," "I feel close to other people in my community," and "My community is a source of comfort." Positive items were reverse coded, and the results were summed to create the social integration scale, where higher numbers represented greater social integration. (Cronbach's α for the analytic sample = .83). The social integration variable was dichotomized into low and high social integration, which represents the control (low social integration) and treatment (high social integration) groups. The median value ($Mdn = 15.00$) was used as a cut off, with scores at or above the median representing high social integration and scores below the median representing low social integration. To aid in causal inference, only observations that stayed consistent across both points in time were included in the analysis. That is, individuals in the treatment group reported high social integration at both MIDUS wave two and wave three, while individuals in the control group reported low social integration at each wave.

A range of sociodemographic variables was included in the analysis. These variables included age (*continuous*), sex (*male, female*), marital status (*married, separated/divorced, widowed, never married*), number of years living in the neighborhood (*continuous*), frequency of contact with neighbors (*every day, several times per week, once per week, one to three times per month, less than once per month, rarely/never*), and frequency of socializing with neighbors (*every day, several times per week, once per week, one to three times per month, less than once per month, rarely/never*). The analyses also included baseline neighborhood perceptions measured at wave two. This variable was constructed in the same manner as described above for the dependent variable. Finally, the analysis controlled for objective neighborhood conditions via the Area Deprivation Index (ADI) (University of Wisconsin School of Medicine Public Health, 2015). The ADI is a composite score of objective neighborhood measures based on block-group level American Community Survey (ACS) data. The ADI is a scale that ranges from 1 to 100 and represents the national percentile ranking for a given Census block group (i.e., higher score represents greater disadvantage). Examples of ACS variables used to create the ADI include median family income, median home value, median gross rent, percentage of the population 25 years old and older with a high school diploma, and percentage of families below the poverty level. A complete description of the measure can be found elsewhere (Kind et al., 2014). While there are a number of objective measures of neighborhood conditions available, the ADI is becoming one of the more widely used and accepted tools in the literature (e.g., Bhardwaj et al., 2020; Durfey et al., 2018; Ghirmoldi et al., 2020; Ramphal et al., 2020; Raphael et al., 2019). These specific variables were selected based on previous research that suggests they could confound the relationship between the variables of interest (e.g., Bhatia et al., 2015; Maisel, 2016; van Deurzen et al., 2016). ADI values were linked to the MIDUS data with the aid of the Institute on Aging at the University of Wisconsin-Madison, who administers the MIDUS study, for the purposes of maintaining participant confidentiality.

3 | ANALYSIS

The analytic approach for this study was to employ propensity score matching to enable the strengthening of causal inference by reducing measured, and potentially unmeasured, confounding. This was accomplished in multiple steps, with all data management and analyses completed in Stata/MP 16.0 and R (version 1.2.5001). First, descriptive statistics for the full, unmatched sample ($N = 1611$) were calculated. Second, the MatchIt package in R (Ho et al., 2011) was utilized to calculate propensity scores via a one-to-one optimal matching method that applied logistic regression with a caliper of 0.10 (final analytic sample = 1480). All of the covariates included in the final

analysis were employed as independent variables in the logistic regression model to predict social integration and calculate the propensity scores. Third, descriptive statistics for the final, matched sample were computed. Next, a leave-one-out sensitivity analysis was completed to assess the degree of confounding introduced by the covariates and to estimate potential unmeasured confounding. Finally, a multivariate regression model was employed to assess the effect of social integration on neighborhood perceptions for the matched data while controlling for sociodemographic characteristics.

3.1 | Propensity score matching and causal inference

Propensity score matching is an analytic technique employed to reduce systematic confounding of the treatment variable to enhance the ability to establish causal associations (Austin, 2011). This is a two-step process with the first addressing measured confounding and the second aimed at assessing unmeasured confounding. Propensity score matching pairs observations in the treatment group to observations in the control group on a range of observed covariates. The goal of this process is to ensure that the two groups mirror each other and do not differ on the characteristics of the covariates, therefore attempting to emulate a randomized assignment to each group. Propensity scores provide the predicted probability that an observation will be in the treatment group (Austin, 2011). By weighting data based on the propensity scores, confounding resulting from differences in baseline covariates is mitigated.

Randomized assignments have the advantage of controlling for unobserved systematic confounding. While propensity score matching can only account for measured confounding, sensitivity testing—such as a leave-one-out analysis—can be applied to address unmeasured confounding (Stuart, 2010). A leave-one-out sensitivity analysis systematically removes one variable at a time from the logistic regression used to calculate the propensity scores. As a result, the effect of each individual variable on the treatment variable can be assessed. This provides a range for the degree of confounding associated with the variables in the model. If theory suggests that the confounding from unmeasured variables has the same order of magnitude as the measured confounding, then the sensitivity testing can be used to approximate the level of additional potential confounding, therefore allowing one to assess the strength of the causal inference and its independence from systematic confounding (see Chen et al., 2015; Heller et al., 2009; Noyce et al., 2017; Zeng et al., 2019).

4 | RESULTS

4.1 | Descriptive statistics

Table 1 provides two sets of descriptive statistics. The first is for the initial data set of all, unmatched, observations for which no missing data was present on the variables of interest ($N = 1611$). This sample, as presented in the table, is stratified by the independent—that is, treatment—variable into low ($n = 871$) and high ($n = 740$) social integration. Overall, respondents have positive perceptions of their neighborhood (low social integration $M = 3.35$, $SD = 0.53$ and high social integration $M = 3.69$, $SD = 0.36$ at time one). The majority of respondents were married (low social integration = 68.54%; high social integration = 78.11%), were slightly more likely to be female (low social integration = 51.89%; high social integration = 57.43%), were middle-aged (low social integration age, $M = 53.69$, $SD = 10.79$; high social integration age, $M = 56.30$, $SD = 11.05$), and tended to be longer-term residents in the community (years in community: low social integration, $M = 14.57$, $SD = 12.42$; high social integration age, $M = 17.78$, $SD = 14.93$). The mean ADI for both groups was in the lower half of the national percentile distribution (low social integration, $M = 38.87$, $SD = 25.18$; high social integration: $M = 38.87$, $SD = 25.18$).

TABLE 1 Descriptive statistics for unmatched and matched samples

Variables	Unmatched (N = 1611)		Matched (N = 1480)	
	Social Integration		Social Integration	
	Low (n = 871)	High (n = 740)	Low (n = 740)	High (n = 740)
	M (SD)	M (SD)	M (SD)	M (SD)
Wave 2 neighborhood perception	3.35 (0.53)	3.69 (0.36)	3.48 (0.42)	3.69 (0.36)
Wave 3 neighborhood perception	3.29 (0.56)	3.69 (0.34)	3.37 (0.52)	3.69 (0.34)
Years living in the neighborhood	14.57 (12.42)	17.78 (14.93)	14.96 (12.34)	17.78 (14.93)
Age	53.69 (10.79)	56.30 (11.05)	53.94 (10.72)	56.30 (11.05)
Area Deprivation Index	42.97 (26.49)	38.87 (25.18)	41.50 (25.89)	38.87 (25.18)
	Count (%)	Count (%)	Count (%)	Count (%)
Marital status				
Married	597 (68.54)	578 (78.11)	553 (74.73)	578 (78.11)
Separated/divorced	147 (16.88)	70 (9.46)	103 (13.92)	70 (9.46)
Widowed	54 (6.20)	39 (5.27)	44 (5.95)	39 (5.27)
Never married	73 (8.38)	53 (7.16)	60 (8.11)	53 (7.16)
Sex				
Female	452 (51.89)	425 (57.43)	380 (51.35)	425 (57.43)
Male	419 (48.11)	315 (42.57)	360 (48.65)	315 (42.57)
Frequency of contact with neighbors				
Every day (reference)	284 (32.61)	382 (51.62)	278 (37.57)	382 (51.62)
Several times per week	267 (30.65)	229 (30.95)	244 (32.97)	229 (30.95)
Once per week	149 (17.11)	80 (10.81)	122 (16.49)	80 (10.81)
One to three times per month	87 (9.99)	33 (4.46)	59 (7.97)	33 (4.46)
Less than once per month	48 (5.51)	13 (1.76)	28 (3.78)	13 (1.76)
Rarely/never	36 (4.13)	3 (0.41)	9 (1.22)	3 (0.41)
Frequency of getting together with neighbors				
Every day	39 (4.48)	64 (8.65)	37 (5.00)	64 (8.65)
Several times per week	83 (9.53)	129 (17.43)	83 (11.22)	129 (17.43)
Once per week	124 (14.24)	149 (20.14)	122 (16.49)	149 (20.14)
One to three times per month	136 (15.61)	170 (22.97)	130 (17.57)	170 (22.97)
Less than once per month	221 (25.37)	141 (19.05)	196 (26.49)	141 (19.05)
Rarely/never	268 (30.77)	87 (11.76)	172 (23.24)	87 (11.76)

Table 1 also provides descriptive statistics for the matched data that comprise the final analytic sample. As part of the propensity score matching process, all individuals in the treatment group (high social integration, $n = 740$) were matched with respondents in the control group (low social integration, $n = 871$). Individuals in the control group who were not matched to an individual in the treatment group were dropped from the analysis ($n = 131$).

4.2 | Sensitivity analysis

As shown in Table 2, apart from baseline neighborhood perceptions, removing individual variables from the propensity score model has marginal impacts on the full model, suggesting that if the model is affected by unmeasured confounding proportional to the level of measured confounding, that confounding would have a small impact on the model. With the exception of baseline perceptions, the point estimates for predicting social integration when individual variables are removed from the model all fall within the 95% confidence interval for the value when the remaining variables are included. While baseline neighborhood perception is a large confounder due to its collinearity with the dependent variable, no other potential confounders are expected to have that magnitude of an effect.

4.3 | Causal analysis results

The full results of the linear regression of the matched data are displayed in Table 3. Controlling for covariates, high social integration results in a more than 7% increase in neighborhood perception as compared to the low social integration group ($\beta = .22, p < .001$). Given the range of 3.00 in the neighborhood perception scale, this change is equivalent to a 7.33% increase in the high social integration group). Baseline neighborhood perception was also a large predictor of neighborhood perception at the second time-point ($\beta = .45, p < .001$). Other significant covariates associated with lower neighborhood perception include being female ($\beta = -.05, p < .05$) and objective neighborhood conditions as operationalized via the ADI ($\beta = -.001, p < .01$). Overall, the model accounts for nearly one-third of the variance in neighborhood perception at time two ($R^2 = .30$).

5 | DISCUSSION

This study explored the role of social integration in predicting neighborhood perceptions. A growing number of researchers suggest that perceptions of the neighborhood in which one lives have implications for health and well-being that may have a greater impact than some objective outcomes (e.g., Ambrey et al., 2014; Galaviz et al., 2016;

TABLE 2 Results of leave-one-out sensitivity analysis

Variable removed	Social integration coefficient	Lower 95% CI	Upper 95% CI
None (all variables included)	0.19	0.14	0.25
Baseline neighborhood perception	0.30	0.25	0.35
Marital status	0.21	0.16	0.26
Sex	0.21	0.16	0.26
Age	0.21	0.16	0.26
Years living in the neighborhood	0.21	0.16	0.26
Frequency of contact with neighbors	0.21	0.16	0.26
Frequency of getting together with neighbors	0.19	0.14	0.25
Area deprivation index	0.21	0.16	0.26

Note: The table shows the change in the effect of social integration on neighborhood perception when the potentially confounding covariates are individually excluded from the multivariate logistic regression analysis.

TABLE 3 Neighborhood perception multivariate logistic regression results

Variables	Estimate (SD)
Social integration	.22 (0.02)***
Baseline neighborhood perception	.45 (0.03)***
Marital status	
Married (reference)	–
Separated/divorced	–.04 (0.03)
Widowed	.01 (0.05)
Never married	–.06 (0.04)
Female	–.05 (0.02)*
Age	.001 (0.001)
Years in neighborhood	.001 (0.001)
Frequency of contact with neighbors	
Every day (reference)	–
Several times per week	.002 (0.03)
Once per week	.02 (0.04)
One to three times per month	–.01 (0.05)
Less than once per month	.11 (0.07)
Rarely/never	.04 (0.12)
Frequency of getting together with neighbors	
Every day (reference)	–
Several times per week	.04 (0.05)
Once per week	.05 (0.05)
One to three times per month	.05 (0.05)
Less than once per month	.03 (0.05)
Rarely/never	–.02 (0.05)
Area deprivation index	–.001 (0.0004)**
Model R ²	.30

Note: Bold values represent statistically significant of at least $p < .05$.

* $p < .05$;

** $p < .01$;

*** $p < .001$.

Ross & Mirowsky, 2001). In addition, studies suggest that objective and subjective neighborhood conditions explain unique (i.e., not overlapping) variance in some health outcomes (Orstad et al., 2017; Zhang et al., 2019). These results suggest that when controlling for baseline neighborhood perceptions, individuals who are more highly socially integrated rate their neighborhoods more positively than less socially integrated individuals. Furthermore, much of this research is limited by its cross-sectional nature as well as the lack of effect size reporting. The longitudinal nature of this analysis as well as the reporting of specific effect sizes for the full model and the focal independent variable of social integration is an important contribution to the literature and should aid in directing future research efforts.

These findings have important implications for community practitioners. While a growing body of literature has demonstrated that neighborhood perceptions are associated with health and well-being (e.g., Galaviz et al., 2016; Maisel, 2016; Toma et al., 2015), research to date has not identified factors that influence

neighborhood perceptions. Focusing on improving social integration among community members can be a tangible and achievable means by which public and community health professionals can work with community development professionals to improve the health and well-being of neighborhood residents. Community development efforts include social, economic, and environmental efforts to strengthen civic society through collective efforts (Craig, 2007). Community development can also be summarized as representing the combination of solidarity—or individuals within a community or group who share a common identity coming together—and agency—those individuals working to change or improve their world and situation (Bhattacharyya, 1995). While efforts that qualify as community development are wide ranging, strengthening social relationships, building social cohesion among community members, and therefore strengthening social integration within neighborhoods is a fundamental aspect of community development work (Midgley & Livermore, 1998; Reed, 2005; Rothman, 2007; Sheikheldin & Devlin, 2015). Social integration, as a means of improving health outcomes via changes in neighborhood perceptions, provides opportunities for trans-disciplinary collaboration between community health and community development professionals.

This study has some limitations. First, MIDUS is not a nationally representative sample, therefore generalizability may be limited. This is evidenced by the demographic characteristics of the sample, as individuals tended to be older, married, and longer term neighborhood residents. Second, overall neighborhood ratings are relatively high suggesting general contentment with neighborhoods and their conditions. Results may differ with a sample where the dependent variable is less negatively skewed. Third, this approach does not account for individuals' whose level of social integration changed between wave two and wave three. Additional study of this population is necessary. Fourth, the decision to dichotomize the social integration variable at 15 is based on the sample distribution, as there is not an agreed upon cutoff value for this variable. Future research should assess the sensitivity and specificity of specific cutoff values for this scale and use that information to dichotomize the variable for future studies. In addition, while the longitudinal structure of the data allows for strengthening causal inference, the age of the baseline data raises possible limitations, including how people experience social relationships within the context of technological advances and the use of social media. Shepherd and Lane (2019) found that among youth, social media may help strengthen social integration, while another study found that higher levels of online social integration were associated with a reduced risk of mortality (Hobbs et al., 2016). While many questions remain, it is clear that feelings of social integration as they relate to the online world should be an area of consideration for future research.

Measures of neighborhood perceptions also present challenges and limitations. These include the potential for same source bias (Chum et al., 2019), variance in perceived boundaries of neighborhoods (Coulton et al., 2013), and inconsistencies between objective and perceived neighborhood measures (Orstad et al., 2017; Zhang et al., 2019). As previously discussed, it is important to recognize that earlier studies suggest that both objective neighborhood conditions and neighborhood perceptions are important and that neighborhood perception may play either a mediating or moderating role in the relationship between objective measures and health outcomes (Weden et al., 2008; Zhang et al., 2019). Finally, while a model that explains one-third of the variance in a dependent variable is a strong model by most social science standards, it still leaves two-thirds of the variance in neighborhood perception unexplained.

6 | CONCLUSION

This study is a unique approach to better understanding the variables associated with neighborhood perception. Research has established a link between neighborhood perceptions and individual health outcomes, but there is still limited knowledge of the factors that influence neighborhood perceptions. A more comprehensive understanding of the role of social networks and social connections as they relate to perceptions of communities is needed. This study begins to address this need by concentrating specifically on social integration as a predictor of

neighborhood perceptions. Results of this study can be used by community practitioners, such as social workers and public health professionals as they work with community members and coordinate community-level interventions. By improving neighborhood perceptions by strengthening social integration, practitioners and neighborhood stakeholders can improve physical, mental, and emotional outcomes for community members.

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

PEER REVIEW

The peer review history for this article is available at <https://publons.com/publon/10.1002/jcop.22536>

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available via ICPSR at <https://www.icpsr.umich.edu/web/NACDA/series/203>.

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