Article

Vigilance at home: Longitudinal analyses of neighborhood safety perceptions and health ☆

Jennifer W. Robinette [a,*], Susan T. Charles [b], Tara L. Gruenewald [a]

[a] Davis School of Gerontology, University of Southern California, 3715 McClintock Avenue, Los Angeles, CA 90089-0191, United States
[b] Department of Psychology and Social Behavior, University of California, 4201 Social and Behavioral Sciences Gateway, Irvine, CA 92697-7085, United States

ARTICLE INFO

ABSTRACT

Feeling unsafe in one's neighborhood is associated with poor health. This relation may be conferred through multiple pathways, including greater psychological distress and health behaviors that are associated with poorer health and perceptions of neighborhood safety. Women and older adults often report feeling less safe in their environments despite having a lower risk of victimization than men and younger adults, and it is unclear whether these differences influence the health-perception relationship. We used the Midlife in the United States study to test whether baseline neighborhood safety perceptions would be associated with chronic health conditions 10 years later, and whether this relation differs by gender, age, and individual and neighborhood SES. Chronic health conditions included items such as respiratory problems, cancer, autoimmune disorders, digestive problems, pain, infections, cardiovascular conditions, sleep problems, and depression and anxiety. Results indicated that people who perceived lower neighborhood safety had more health problems 10 years later than those perceiving more neighborhood safety. These findings persisted after adjusting for baseline health, neighborhood income, individual income, and individual sociodemographics. This relation was partially mediated by smoking. Results did not differ by gender, age, or individual SES. Our results indicate a longitudinal relation between feeling unsafe in one's neighborhood and later health problems among men and women representing a wide age and income range. Moreover, our findings support a behavioral pathway through which neighborhood safety perceptions may be linked to health.

1. Introduction

Examining health in the context of residential neighborhoods is not a new endeavor. Recently, however, researchers have been interested in how residents' appraisals of their neighborhoods are associated with their health. Cross-sectional studies have demonstrated that neighborhood safety perceptions (NSP) are associated with various aspects of health, including elderly mobility disability, self-rated health, and psychological distress (Clark et al., 2009; Hale et al., 2013; Meyer, Castro-Schilo, & Aguilar-Gaxiola,

2014). Furthermore, these perceptions partially explain the long-standing relation between socioeconomic status (SES) and physical and mental health (Kim, 2010; Ross & Mirowsky, 2001). Researchers are also focusing on mechanisms, such as health behaviors and stress (Burdette & Hill, 2008; Hale et al., 2013), to explain these connections as this information may inform neighborhood-level health interventions.

Despite these advances to the field of neighborhoods and health research, cross-sectional designs and lack of explanatory factors restrict our current understanding of why NSPs relate to physical health outcomes. Moreover, although researchers have identified differences between men and women and by age in reports of NSPs, it is unclear how the relation between these perceptions and health may vary by gender and age. In the present study, we tested three hypotheses. First, using the longitudinal Midlife in the United States study, we tested the hypothesis that NSPs would be related to health 10 years later even after adjusting for baseline health status and various neighborhood- and individual-level sociodemographic characteristics. Second, we investigated whether this relation varies between men and women,

* Corresponding author.
E-mail address: jrobinet@usc.edu (J.W. Robinette).

by age, and among individuals with differing SES. Third, we examined affective and behavioral pathways that may partially explain this hypothesized link.

1.1. Neighborhood safety perceptions and health

Lower NSPs are significantly associated with worse self-rated health and more symptoms of psychological distress (Hale et al., 2013; Kim, 2010; Meyer et al., 2014; Ross & Mirowsky, 2001), and also partially account for relations between lower individual and neighborhood SES and poorer physical and mental health outcomes (Kim, 2010; Meyer et al., 2014). These studies highlight the importance of NSPs for physical and mental health, but studies have investigated these associations with samples from single states (California, Wisconsin, and Illinois, respectively), potentially limiting generalizability across regional boundaries. Each of these investigations also utilized cross-sectional designs, which limit our knowledge of whether NSPs can prospectively predict future health conditions.

One longitudinal study of older adults whose income was below the poverty line found that lower NSPs were associated with increased mobility disability (Clark et al., 2009). This study represents an improvement over previous cross-sectional designs, yet the findings were limited to residents in Connecticut. Whether this finding generalizes to individuals residing in communities around the nation who vary in age and income is one of the foci of the present study. Another study examined the relation between NSPs and activities of daily living (ADLs, e.g., eating, dressing) among a national sample of older adults (Sun, Cenzer, Kao, Ahalt, & Williams, 2012); older adults with lower NSPs experienced greater declines in the ability to carry out ADLs over a ten-year period than those with higher NSPs. To date, however, there is a dearth of investigations which examine *how* NSPs relate to these aspects of health, and whether individual attributes modulate these relations. The present study examined whether the relation between NSPs and health differs between men and women, by age, and among those with varying levels of SES.

1.2. Neighborhood safety perceptions and health: moderators

Fear of crime varies systematically between men and women and by age (for reviews see Smith & Torstensson, 1997; Snedker, 2015). Women and older adults typically report higher levels of fear than men or younger adults despite having a lower likelihood of being the target of physical violence. One hypothesis for this discrepancy is that women and older adults are more vulnerable to physical violence. This argument has been interpreted both in that women and older adults perceive themselves as relatively less able to flee from such an assault, and that they react more fearfully to perceived risk of violence. An alternative hypothesis for the discrepancy between fear reports and likelihood of victimization is that men more often than women downplay, or neutralize, their fear of crime (Smith & Torstensson, 1997).

Despite a substantial literature documenting demographic differences in reports of fear, there is a paucity of work examining how the relation between NSPs and health may vary by gender or age. On the one hand, perceptions of safety may relate more strongly to health among individuals who perceive themselves as more vulnerable to threats (i.e., women or older adults). On the other hand, it is possible that fear of crime is a stronger predictor of health among those most likely to be the targets of crime. In the present study, we tested this question by examining whether the relation between NSPs and health conditions 10 years later would differ between men and women or by age. Additionally, given that others (Clark et al., 2009) have found that NSPs only relate to mobility disability among older adults living in poverty (and not

those above the poverty line), we also examined whether the relation between NSPs and health varies as a function of SES.

1.3. Neighborhood safety perceptions and health: pathways

One study found that NSPs not only related to health through psychological distress, but also through self-reported physiological arousal (difficulty breathing, numbness, and sweating not related to exercise) and engagement in poor health behaviors (e.g., diet and exercise; Burdette & Hill, 2008). This study provided an important contribution indicating that NSPs may relate to health through multiple affective, physiological, and behavioral pathways. However, the analysis was limited to a cross-sectional analysis of data from a single geographic region (Texas). Like many other examinations of NSPs, generalizability of these previous findings is therefore restricted. The present study will build on these findings by examining a potential longitudinal relation between NSPs and health and potential affective and behavioral pathways using a large national sample of young to older adults.

1.4. The present study

Similar to others (Clark et al., 2009), we hypothesized that lower NSPs at a baseline period would predict a greater number of self-reported physical and mental health conditions ten later. We also examined whether this potential relation would persist across the full range of individual SES, neighborhood SES, age and both genders. Additionally, we predicted that affective and behavioral pathways would partially explain this hypothesized link. To examine an affective pathway, we predicted that depressive symptoms would partially explain links between baseline NSPs and later health. To examine behavioral pathways, we predicted that excessive alcohol consumption, sleeping troubles, smoking, and physical activity would partially account for the correlation between NSPs and health. In all of our statistical models, we adjusted for baseline health status and several individual sociodemographic characteristics related to health, NSPs, or both.

2. Method

2.1. Sample and procedures

The Midlife in the United States (MIDUS) longitudinal study assesses behavioral, psychological, and social factors that may explain variations in mental and physical well-being across the life course. Participation involved the completion of a telephone interview and self-administered questionnaire. The first wave of data collection took place in 1994, and follow-ups have been conducted every ten years thereafter. We include participants who completed Waves II (2004) and III (2014) in the present study. Most MIDUS participants were sampled via random digit dialing procedures, with siblings or twins of these participants representing the remainder of the sample. The study was completed using ethical guidelines with the approval of each of review boards of the institutions involved.

2.2. Measures

2.2.1. Chronic health conditions

In MIDUS II, participants reported whether or not (1=yes, 0=no) in the past 12 months they had experienced or been treated for any chronic physical and mental health conditions. Physical health conditions included items such as respiratory problems (e.g., asthma), cancer, autoimmune disorders (e.g., arthritis, lupus), pain (e.g., sciatica, migrane headaches), skin trouble

(e.g., eczema, dry scaly skin), digestive problems (e.g., indigestion, constipation), cardiovascular diseases (e.g., hypertension, diabetes), and infections (e.g., HIV). Mental health conditions included anxiety or depression, sleep problems, and substance use disorders. These health conditions were summed so that higher scores represent more health problems, and were used as our measure of baseline health status.

At the third wave of data collection, participants again reported the number of chronic physical and mental health conditions they had experienced in the past 12 months. Participants responded either yes (1) or no (0) to the same items assessed at Wave II. Items for which participants responded 'yes' were summed so that higher values represented more chronic health conditions. This composite was used as our primary outcome variable in our analyses.

2.2.2. Neighborhood safety perceptions

The MIDUS II self-administered questionnaire included two questions assessing safety in the participants' neighborhoods: I feel safe being out alone in my neighborhood during the daytime; I feel safe being out alone in my neighborhood at night (Keyes, 1998). Using a Likert-type scale, participants rated these questions with 1=a lot, 2=a little, 3=some, and 4=not at all. Items were reversed coded so that higher mean scores represented more neighborhood safety.

2.2.3. Depressive symptoms

Depressive symptoms were assessed in MIDUS II with seven items (Wang, Berglund, & Kessler, 2000). Participants reported whether there had been a period of two weeks in the last 12 months they had felt items such as lost interest in most things, felt more tired out or low on energy than usual, and had a lot more trouble concentrating than usual. Participants provided no=0/ yes=1 responses, and all 'yes' responses were summed.

2.2.4. Health behaviors

At Wave II, participants were asked about any sleeping trouble they had with the question, 'During the last 30 days, how often have you experienced trouble getting to sleep or staying asleep?' Responses options ranged from 1 (Not at all) to 6 (Almost every day). Excessive alcohol consumption was assessed with a series of questions asking participants how many days a week they had consumed alcoholic beverages in the previous month, and on average how many drinks were consumed on each of those days. Abstainers were those who had not consumed any alcoholic beverages in the previous month. Participants were considered to be 'light' drinkers if they reported no more than 3 (women) or 4 (men) drinks per occasion. Heavy consumption was defined as 7 drinks per week for women and 14 drinks for men. A dichotomous variable was then created with 0=those who abstained or consumed moderate amounts of alcohol, and 1=heavy consumption. Cigarette smoking was asked with the question, 'Have you ever smoked cigarettes regularly?' Responses were either no (0) or yes (1). A physical activity summary score was calculated as a weighted sum of responses to 18 questions asking about frequency of engagement (6-point scale ranging from 1 - never to 6 - several times a week) in *light* ("that which requires little effort," e.g., light housework, easy walking), *moderate* ("not physically exhausting, but it causes your heart rate to increase slightly and you typically work up a sweat," e.g., light tennis, brisk walking), and *vigorous* ("causes your heart to beat so rapidly that you can feel it in your chest and you perform the activity long enough to work up a good sweat and are breathing heavily," e.g., vigorous swimming, high intensity aerobics) activity. Three stem questions were asked for light, moderate, and vigorous activity across multiple time periods (summer and winter) and domains (at work, at home, and for leisure). These items were averaged for one score

each for light, moderate, and vigorous activity (weights of 1, 3, and 5 for light, moderate and vigorous activity, respectively).

2.2.5. Additional covariates

Neighborhood SES was operationalized as median household income at the census tract (CT) level. This information was collected from the 2000 US Census, as the 2000 dicennial year is the closest match possible to the MIDUS II dataset, collected between 2004 and 2006. Although some researchers have argued that administrative boundaries such as the CT do not always reflect people's representation of 'neighborhood' (Basta, Richmond, & Wiebe, 2010), others have demonstrated similar results using both CTs and smaller 'natural' neighborhoods (Ross, Tremblay, & Graham, 2004). An incremental census tract variable was created so that estimates in our models could be interpreted as the change in the number of chronic health conditions for every $10,000 increase in census tract income.

Individual SES in MIDUS II was captured with median household income, represented by a composite of self-reported income from personal wages, pensions, social security, and government assistance. Questions assessing these sources of income were repeated once for the participant and once for his or her spouse, and these values were then combined. We created an incremental individual income variable to interpret changes in the number of chronic health conditions based on $10,000 increments.

To adjust for potential negative response biases, MIDUS II levels of neuroticism were assessed with four items assessing the degree to which participants felt a series of adjectives described them (e.g., moody, worrying, nervous, calm; Lachman & Weaver, 1997). Responses ranged from 1=A Lot to 4=Not at All. The item assessing 'calm' was reverse-coded so that higher scores on the averaged composite variable represented higher levels of neuroticism, α=0.74. Age was coded in years. Gender was dichotomized with 1=male and 2=female.

2.3. Statistical analyses

We conducted path analyses in MPLUS to examine our hypotheses. We first assessed our hypothesis that individuals reporting lower NSPs at Wave II would have more chronic mental and physical health conditions at Wave III, 10 years later (Model 1) after adjusting for individual income, age, gender, baseline health condition burden, levels of neuroticism, and neighborhood income. We next examined a series of moderators of this hypothesized link. The gender and age differences in reports of fear of crime (Smith & Torstensson, 1997; Snedker, 2015) informed our decision to examine gender × NSPs and age × NSPs interactions in Models 2 and 3. Based on previous findings in the literature (Clark et al., 2009), we also examined potential individual income × NSPs and neighborhood income × NSPs interactions on the number of chronic health conditions in Models 4 and 5.

Our second set of analyses allowed us to examine two potential pathways of the hypothesized link between NSPs and health. In Model 1 we tested the hypothesis that individuals perceiving less safety in their neighborhoods would report more symptoms of depression, and that this would represent an affective pathway to health. Next, we examined several hypothesized behavioral pathways in Model 2–5 by alternatively including smoking status, alcohol consumption, sleep troubles, and physical activity in the model. In Model 6 we examined the combined set of potential mediators simultaneously. Each of these models adjusted for individual income, age, gender, baseline health condition burden, levels of neuroticism, and neighborhood income.

3. Results

Participants were eligible for the present study if they had completed the main telephone interview and self-administered questionnaire at both Wave II and III of the MIDUS Study. 4963 participants completed MIDUS Wave II. Of those 3294 participants who also completed Wave III, 2754 were included in our analytic sample. Nineteen participants were missing addresses making it impossible to link neighborhood income to their records. A large group of participants completed the initial telephone interview but did not return the self-administered questionnaire ($N=388$). The remaining participants that were excluded did not respond to questions regarding individual income ($N=108$), neuroticism ($N=17$), or NSPs ($N=8$). The majority (93.08%) of the analytic sample was white, ranging from 30 to 84 years old ($M=55$ years, $SD=11$ years), and 55.77% were women.

Means and standard deviations for the variables used in the analyses are shown in Table 1. In general, participants felt safe in their neighborhoods. There was a slight increase in the number of reported chronic health conditions from Wave II to Wave III. Both individual and neighborhood income spanned wide ranges. Participants generally reported low levels of neuroticism and depressive symptoms. The majority of the participants in this sample reported that they had smoked at some point in their lives and a minority of participants were considered to be 'heavy' drinkers.

3.1. Neighborhood safety perceptions and health: moderators

In Model 1 we confirmed our hypothesis that lower Wave II NSPs would predict a greater number of self-reported health conditions at Wave III. Individuals with more baseline health conditions, older age, higher levels of neuroticism, and lower neighborhood income had significantly more chronic health conditions at Wave III. None of the interactions (Models 2–5) were significant. See Table 2 for the results of Model 1.

3.2. Neighborhood safety perceptions and health: pathways

In our last set of analyses we examined our hypothesized affective and behavioral pathways. See Fig. 1 for the conceptual pathways that were examined in the present study and results of the relations between NSPs and the potential mediators, and between the potential mediators and health 10 years later. As can be seen in Fig. 1, individuals who perceived their neighborhoods as more safe are more likely to engage in physical activity and to have been a smoker at some point in their lives. Smokers and people who reported having more trouble falling or staying asleep reported more chronic health conditions after a 10-year period.

Table 1
Baseline means and standard deviations.

	M (SD)
NSPs	3.69 (0.49)
Wave III Health	2.42 (2.23)
Wave II Health	2.12 (1.97)
Individual income, $	75,915 (61,155)
Age	54.87 (11.35)
Neuroticism	2.05 (0.62)
Neighborhood income, $	50,524 (21,425)
Depressive symptoms	0.49 (1.58)
Physical activity	29.42 (10.91)
Sleep troubles	3.06 (1.73)
Ever smoked[a] %	62.34
Heavy drinker[b] %	27.23

[a] Compared to smoked at some point.
[b] Compared to Abstainers and moderate drinkers.

Table 2
Neighborhood safety perceptions on self-reported number of chronic health conditions.

	Model 1
Intercept	−0.04 (0.44)
NSPs	−0.18[*] (0.09)
Baseline health	0.57[***] (0.03)
Individual income	−0.01 (0.01)
Age	0.03[***] (0.00)
Gender[a]	0.08 (0.07)
Neuroticism	0.21[***] (0.07)
Neighborhood income	0.04[**] (0.02)

NSP=Neighborhood safety perceptions.
Values are b (SE).

[a] 1=Male, 2=female.
[*] $p < 0.05$.
[**] $p < 0.01$.
[***] $p < 0.001$.

Results of the path analysis in which we examined whether any of the affective or behavioral factors independently mediated the relation between NSPs and health can be found in Table 3. Results of these models indicated that smoking status partially mediated the relation between NSPs and health; the indirect effect tested using bootstrapped standard errors was marginally significant for smoking status ($p=0.08$). Depressive symptoms, physical activity, alcohol consumption, and sleep troubles were not significant mediators. Results of Model 6 in which we examined the combined set of mediators simultaneously indicated that the pattern of mediation remained the same; smoking status partially mediated the relation between NSPs and health 10 years later. Depressive symptoms, physical activity, alcohol consumption, and sleep trouble did not. The total indirect effect, taking into account all potential mediating factors simultaneously was not significant.

4. Discussion

Prior studies demonstrate a cross-sectional relation between NSPs and health. This study further contributes to this body of research by examining a longitudinal relation between these factors. We observed that lower NSPs were related to more chronic health conditions 10 years later, adding further support for a potential causal role of NSPs on health. Furthermore, we observed evidence of a behavioral pathway, in which smoking partially mediated this longitudinal relation.

4.1. Neighborhood safety perceptions and health: moderators

Few researchers have investigated whether relations between neighborhood features and health vary as a function of individual characteristics. We were particularly interested in whether this potential relation might exist for some subgroups of people and not others. For example, a large literature suggests there are differences between men and women and across age both in their reports of fear of crime and in their likelihood of becoming victims of violence. Despite a lesser likelihood of victimization, women and older adults report more fear of crime than men and younger adults, and researchers have posited that this discrepancy may be partially explained by men's general tendency to neutralize their fear of crime (Smith & Torstensson, 1997; Snedker, 2015). Our findings suggested that, despite reports of higher NSPs among women, NSPs were related to long-term health among both men and women.

Previous researchers have demonstrated that NSPs may be more strongly associated with health among individuals who are
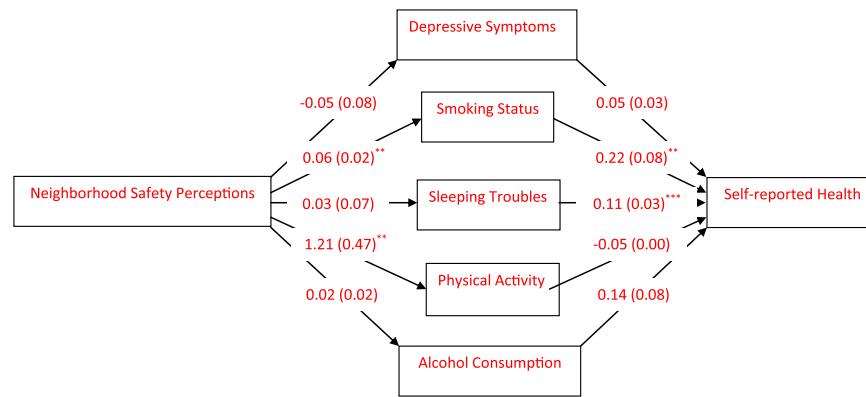
Fig. 1. Direct associations between NSPs, hypothesized mediators, and self-reported health adjusting for individual income, age, gender, baseline health status, levels of neuroticism, and neighborhood income. *Note*. Models adjust for individual income, age, gender, baseline health status, levels of neuroticism, and neighborhood income.

Table 3
Direct and indirect effects of NSPs on health through multiple pathways.

	Direct		Indirect	
	Estimate (SE)	Bootstrapped 95% CI	Estimate (SE)	Bootstrapped 95% CI
Depressive symptoms	−0.181[*] (0.086)	−0.358, −0.017	−0.002 (0.005)	−0.019, 0.004
Smoking status	−0.196[*] (0.087)	−0.382, −0.041	0.013 (0.007)	0.002, 0.032
Sleep troubles	−0.187[*] (0.085)	−0.368, −0.027	0.003 (0.008)	−0.012, 0.019
Physical activity	−0.177[*] (0.086)	−0.356, −0.014	−0.006 (0.005)	−0.018, 0.001
Alcohol consumption	−0.186[*] (0.086)	−0.372, −0.029	0.003 (0.003)	−0.001, 0.013

Note: Values are estimates, SE (CI). [†]$p < 0.10$, [*]$p < 0.05$, [**]$p < 0.01$, [***]$p < 0.001$.

already vulnerable to poorer health, such as those with low SES or those living in low SES neighborhoods (Clark et al., 2009). However, we examined interactions between NSPs and both individual and neighborhood SES, and neither of these interactions was significant in predicting long-term health outcomes. These null results suggest that, among this sample of young to older adult men and women, neither individual nor neighborhood SES buffers or exacerbates the health correlates of low or high NSPs, respectively.

Some researchers have posited that, through age-related physiological declines, older adults may be more susceptible to neighborhood hazards (Geller & Zenick, 2005). NSPs represent a social form of neighborhood hazard, and Clark et al. (2009) found that this hazard is associated with health among older adults living in poverty. One reason why we did not find the same interaction between neighborhood income and NSPs may be that the Clark et al. (2009) sample was relatively older compared to the present sample. We lacked sufficient power to examine whether NSPs interact with individual or neighborhood income among younger, middle-aged, or older adults. This will be an important endeavor for future research. We did, however, examine whether the relation between NSPs and health varies as a function of age, but this interaction was not significant.

4.2. Neighborhood safety perceptions and health: pathways

Our first aim in our mediation analyses was to examine a potential affective pathway explaining relations between NSPs and long-term health. Other researchers have identified relations between NSPs and measures of psychological distress (i.e., depressive symptoms; Hale et al., 2013). We examined whether depressive symptoms partially explain relations between NSPs and health 10 years later. However, path analyses indicate that depressive symptoms do not significantly mediate this relation in this sample of young to older adults.

Our second aim in our mediation analyses was to examine potential behavioral pathways. Results of these analyses indicated

that smoking status partially mediated the relation between NSPs and health 10 years later, although the indirect effect was small. Depressive symptoms, physical activity, alcohol consumption, and sleep troubles did not significantly mediate this relation.

4.2.1. Future directions and conclusions

In the present study, we demonstrated that how safe people feel in their neighborhoods has associations with health many years later. Moreover, this relation was observed among both men and women, individuals representing a wide age range, and in a sample with a wide range of individual and neighborhood SES contexts. Increasing perceptions of safety, perhaps through community-building interventions or increased surveillance, could be points of intervention at the neighborhood-level.

Our sample was primarily white, and future replications of our work should prioritize sampling those from diverse backgrounds, including ethnic minority and international samples. Generally, members of minority groups continue to live in much lower SES neighborhoods than whites (De la Roca, Ellen, & O'Regan, 2014). Given that neighborhood SES may shape safety perceptions of residents, it will be important in future research to address how relations between health and NSPs may vary in these different segments of the U.S. population. Perhaps more importantly, examining relations between NSPs and health among even older samples would allow for further examination of individual × neighborhood level interactions; we were unable to test whether low SES at the individual- or neighborhood-level exacerbates low NSPs among successively older adults. Additionally, our variable assessing NSPs contained only two items, and more comprehensive measures may increase reliability of the construct. Similarly, more comprehensive assessments of participants' health behaviors will be desirable for future tests of mediation. Nevertheless, previous investigations of NSPs and health have found significant associations among more diverse samples and used a single-item to assess NSPs (Clark et al., 2009; Meyer et al., 2014).

Lastly, our primary health outcome, number of chronic physical and mental health conditions, was collected via self-report. Future work should incorporate additional objective health outcomes. Despite these limitations, the present study builds on previous research by demonstrating a longitudinal relation between neighborhood features and peoples' health.

References

Basta, L. A., Richmond, T. S., & Wiebe, D. J. (2010). Neighborhoods, daily activities, and measuring health risks experienced in urban environments. *Social Science Medicine*, *71*, 1943–1950. http://dx.doi.org/10.1016/j.socscimed.2010.09.008.

Burdette, A. M., & Hill, T. D. (2008). An examination of processes linking perceived neighborhood disorder and obesity. *Social Science Medicine*, *67*, 38–46. http://dx.doi.org/10.1016/j.socscimed.2008.03.029.

Clark, C. R., Kawachi, I., Ryan, L., Ertel, K., May, M. E., & Berkman, L. F. (2009). Perceived neighborhood safety and incident mobility disability among elders: The hazards of poverty. *BMC Public Health* (p. 9), 9. http://dx.doi.org/10.1186/1471-2458-9-162.

De la Roca, J., Ellen, I. G., & O'Regan, K. M. (2014). Race and neighborhoods in the 21st century: What does segregation mean today? *Regional Science and Urban Economics*, *47*, 138–151. http://dx.doi.org/10.1016/j.regsciurbeco.2013.09.006.

Geller, A. M., & Zenick, H. (2005). Aging and the environment: A research framework. *Environmental Health Perspectives*, *113*, 1257–1262. http://dx.doi.org/10.1289/ehp.7569.

Hale, L., Hill, T. D., Friedman, E., Nieto, F. J., Galvao, L. W., Engelman, C. D., & Peppard, P. E. (2013). Perceived neighborhood quality, sleep quality, and health status: Evidence from the Survey of the Health of Wisconsin. *Social Science Medicine*, *79*, 16–22. http://dx.doi.org/10.1016/j.socscimed.2012.07.021.

Keyes, C. L. M. (1998). Social well-being. *Social Psychology Quarterly*, *61*, 121–137 (Retrieved from ⟨http://www.jstor.org/stable/2787065⟩).

Kim, J. (2010). Neighborhood disadvantage and mental health: The role of neighborhood disorder and social relationships. *Social Science Research*, *39*, 260–271. http://dx.doi.org/10.1016/j.ssresearch.2009.08.007.

Lachman, M. E., & Weaver, S. L. (1997). *The Midlife Development Inventory (MIDI) personality scales: Scale construction and scoring.* Waltham, MA: Brandeis Universityhttp://dx.doi.org/10.1177/1359105306066610.

Meyer, O. L., Castro-Schilo, L., & Aguilar-Gaxiola, S. (2014). Determinants of mental health and self-rated health: A model of socioeconomic status, neighborhood safety, and physical activity. *American Journal of Public Health*, *104*, 1734–1741. http://dx.doi.org/10.2105/AJPH.2014.302003.

Ross, C. E., & Mirowsky, J. (2001). Neighborhood disadvantage, disorder, and health. *Journal of Health and Social Behavior* (pp. 258–276), 258–276.

Ross, N. A., Tremblay, S., & Graham, K. (2004). Neighborhood influences on health in Montreal, Canada. *Social Science Medicine*, *59*, 1485–1494. http://dx.doi.org/10.1016/j.socscimed.2004.01.016.

Smith, W. R., & Torstensson, M. (1997). Fear of crime: Gender differences in risk perception and neutralizing fear of crime: Toward resolving the paradoxes. *British Journal of Criminology*, *57*, 608–634.

Snedker, K. A. (2015). Neighborhood conditions and fear of crime: A reconsideration of sex differences. *Crime and Delinquency*, *6*, 45–70. http://dx.doi.org/10.1177/0011128710389587.

Sun, V. K., Cenzer, I. S., Kao, H., Ahalt, C., & Williams, B. A. (2012). How safe is your neighborhood? Perceived neighborhood safety and functional decline in older adults. *Journal of General Internal Medicine*, *27*, 541–547. http://dx.doi.org/10.1007/s11606-011-1943-y.