Perceptions of neighborhood dangerousness and changes in sleep quality during the COVID-19 pandemic: Assessing the mediating role of changes in health behaviors

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ABSTRACT

Numerous studies have demonstrated that neighborhood context contributes to variations in morbidity and mortality. This body of work includes a burgeoning literature that links adverse neighborhood characteristics (e. g., neighborhood poverty and perceptions of disorder and dangerousness) with poorer sleep outcomes. During the COVID-19 pandemic, many neighborhoods exhibited socioeconomic downturns and escalations in crime and violence. The question is the extent to which these changes in neighborhood conditions have impacted the sleep quality of residents. In this paper, we use original survey data from the 2021 *Crime, Health, and Politics Survey* (CHAPS), a national probability sample of adults living in the U.S., to formally test whether changes in perceptions of neighborhood dangerousness during the pandemic are associated with sleep quality during the same period. Regression analyses show that while reports of a neighborhood becoming safer during the pandemic are associated with better sleep quality, reports of a neighborhood becoming more dangerous are associated with worse sleep quality. Mediation analyses also indicate that the association between increased neighborhood dangerousness and poorer sleep quality is partially explained by a concurrent deterioration in diet quality, but not increases in alcohol or cigarette consumption. We conclude with a discussion of the implications of our findings for research and policy on neighborhood context and sleep.

1. Introduction

Over the past fifteen years, numerous studies have shown that living in a neighborhood characterized by socioeconomic disadvantage (e.g., poverty) and disorder (i.e., noise, structural dilapidation, and crime) is associated with a wide range of adverse sleep outcomes in adulthood, including objective actigraphy assessments (e.g., sleep duration, sleep efficiency, onset latency, and waking after sleep onset) and subjective self-reports of sleep duration, restless sleep, insomnia symptoms, overall sleep quality, sleepiness, and lethargy (Bassett and Moore, 2014; DeSantis et al., 2013; Hale et al., 2013, 2019; Hill et al., 2009, 2016; Johnson et al., 2015; Johnson et al., 2009; Riedel et al., 2012; Simonelli et al., 2017; Steptoe et al., 2008; Troxel et al., 2020). Researchers have speculated that, because sleep is an adaptive behavior, neighborhoods that are noisy (from neighbors, busy streets, and crowding), run-down (from substandard housing and abandoned buildings), and dangerous (from direct experiences with crime and fear of victimization), may directly undermine the ability of residents to initiate and/or maintain sleep (Grandner, 2019; Hale et al., 2013, 2019; Hale and Do, 2007; Hill et al., 2009, 2016). Studies also suggest that stressful neighborhood conditions could contribute to poor sleep quality through various psychological and physiological pathways. For example, perceptions of noise and crime could elicit short-term feelings of annoyance, fear, and hopelessness (Grandner, 2019; Hale et al., 2013; Hill et al., 2009, 2016; Troxel et al., 2020). These feelings could effectively activate the stress response and trigger the release of stress hormones (epinephrine and cortisol) that promote mental and physiological arousal (Grandner, 2019; Hill et al., 2016; Hirotsu et al., 2015; Martire et al., 2020; Mellman et al., 2018; Testa et al., 2021; Troxel et al., 2020).

Although this body of work has made significant contributions to our understanding of neighborhood contextual variations in sleep health, researchers have only recently begun to explore the effects of rapidly

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changing neighborhood environments on sleep quality during the COVID-19 pandemic (Hill et al., n.d., in press). Studies along these lines are potentially important because the pandemic has contributed to a range of stressful conditions that could conceivably undermine sleep. Socioeconomic downturns have been widespread, especially among the most vulnerable and disadvantaged segments of society (Hardy and Logan, 2020; Pereira and Oliveira, 2020; Perry et al., 2021). Homicide rates have spiked (Rosenfeld and Lopez, 2020). Firearm purchases have skyrocketed (Hill et al., 2021). Americans are more concerned about crime in their communities (McCarthy, 2020; Morning Consult/Politico, 2021).

The crucial question is whether recent changes in perceptions of danger in one's neighborhood during the pandemic might contribute to changes in sleep quality. While previous studies of neighborhood context and sleep health have rightly emphasized pathways related to stress, fear, and physiological arousal, we extend this research by exploring understudied mechanisms related to recent changes in health-related behaviors (Flanagan et al., 2021; Knell et al., 2020). In this study, we draw on data from a recently collected national survey to formally test whether changes in perceptions of neighborhood dangerousness are associated with changes in sleep quality during the COVID-19 pandemic. We also assess whether any observed association between neighborhood dangerousness and sleep quality is mediated or explained by recent changes in health behavior. In other words, we consider the possibility that recent changes in perceptions of neighborhood dangerousness could undermine sleep by encouraging maladaptive coping processes related to poorer diets, increased alcohol consumption, and greater cigarette use.

Our mediation model is formally derived from several theoretical and empirical sources. First and foremost, Grandner's (2019) "social ecological model of sleep health" highlights health-related behavior as a key proximal mechanism linking neighborhood context and sleep health. Second, numerous theories of health behavior change have been integrated into the study of sleep health to inform strategies for the modification of sleep behavior (Grandner, 2019; He et al., 2019; Knowlden, 2019; Patterson and Ashare, 2019; Smith et al., 2019). More directly, previous research has linked various indicators of neighborhood disadvantage and disorder with risky dietary behavior and elevated levels of substance use and abuse (Burdette and Hill, 2008; Hill and Angel, 2005; Hill and Maimon, 2013; Jackson et al., 2019; Ma et al., 2015; Miles, 2006; O'Brien et al., 2019), which are all known risk factors for poorer sleep outcomes (Godos et al., 2021; He et al., 2019; Patterson and Ashare, 2019; Smith et al., 2019). In short, these perspectives suggest that stress stemming from adverse neighborhood conditions can result in the use of unhealthy behaviors (i.e., poor diet, substance use) as a means of palliative escape, to relieve symptoms of emotional distress.

In accordance with the social-ecological model of sleep health and relevant theories and patterns of health behavior, we expect to find that respondents who report that their neighborhoods had become more dangerous during the pandemic will be more likely to also report that their sleep quality had become worse during the same period. We also anticipate that this association will be at least partially explained by poorer health-related behaviors (poorer diets, increased alcohol consumption, and greater cigarette use) during the pandemic.

2. Data

Data for this study are from the 2021 *Crime, Health, and Politics Survey* (CHAPS). The CHAPS survey is based on a national probability sample of 1771 community-dwelling adults aged 18 and over living in the United States. Respondents were sampled from the National Opinion Research Center's (NORC) *AmeriSpeak©* panel, which is representative of households from all 50 states and the District of Columbia. The AmeriSpeak panel was obtained through a multi-year sampling process beginning in 2015. The current panel size is 48,900 panel members age 13 and over residing in over 40,000 households. For additional

information see: https://amerispeak.norc.org/Documents/Research/AmeriSpeak%20Technical%20Overview%202019%2002%2018.pdf. Sampled respondents were invited to complete the online survey in English between May 10, 2021 and June 1, 2021.

The data collection process yielded a survey completion rate of 30.7% and a weighted cumulative response rate of 4.4%. The weighted cumulative response rate is the overall survey response rate that accounts for survey outcomes in all response stages, including the panel recruitment rate, panel retention rate, and survey completion rate. It is weighted to account for the sample design and differential inclusion probabilities of sample members. Our cumulative response rate is within the typical range of high-quality general population surveys (4–5%) (Pew Research Center, 2021). The multistage probability sample resulted in a margin of error of $\pm 3.23\%$. A margin of error of plus or minus 3.23 percentage points at the 95% confidence level means that if we fielded the same survey 100 times, we would expect the result to be within 3.23 percentage points of the true population value 95 of those times. The average design effect is 1.92. The design effect is variable-specific and the reported value is the average design effect calculated for a set of key survey variables. A design effect of 1.92 is very good because it means that the variance is only about twice as large as would be expected with simple random sampling. The survey was reviewed and approved by the Institutional Review Board (IRB) at NORC and the University of Texas at San Antonio IRB. The current study uses data on 1655 respondents with valid responses on all key variables.

2.1. Dependent variables

The dependent variable measures a respondent's change in sleep quality because of the COVID-19 pandemic. Respondents were asked "During the coronavirus (COVID-19) pandemic, would you say the quality of your sleep has gotten worse, gotten better, or stayed about the same as before the pandemic?"

2.2. Independent variables

The independent variable is measured using a question asking respondents "During the coronavirus (COVID-19) pandemic, would you say your neighborhood has become more dangerous, less dangerous, or stayed about the same, as before the pandemic?"

2.3. Control variables

Demographic measures include *age in years*, *biological sex* (1 = male, 0 = female), *race/ethnicity* (White, Black, Hispanic, other race/ethnicity), *born in U.S.* (1 = yes, 0 = no), and *marital status* ([a]married, [b] widowed, divorced or separated, [c] never married, or [d] cohabitating). Socioeconomic variables include *educational attainment* (less than high school, high school graduate/GED, some college, bachelor's degree, or post-graduate study), and *annual household income* (under $30,000, $30,000 to under $60,000, $60,000 to under $100,000, or $100,000 or more). Neighborhood level measures include whether a respondent resides in a *metropolitan area* (1 = yes, 0 = no) and the number of *years living in neighborhood* (less than 1 years, 1–2 years, 3–5 years, 6–10 years, or 11 or more years). Level of *neighborhood disorder* is based on a scale of three items asking respondents their level of agreement (strongly disagree (1) to strongly agree (5)) with the following statements: (a) my neighborhood is clean [reverse coded], (b) my neighborhood is noisy, (c) there is a lot of crime in my neighborhood (alpha = 0.802). Neighborhood disorder is moderately correlated with the perceptions of neighborhood becoming more dangerous during COVID-19 ($r = -0.332$). We also include control variables that measure a respondent's experiences with COVID-19, including whether the respondent themselves had ever been diagnosed with COVID-19 (1 = yes, 0 = no), and whether the respondent knows anyone that has been diagnosed with COVID-19 (1 = yes, 0 = no). Finally, we include a nine-

item measure of emotional wellbeing. Respondents were asked in the past 30 days, how often they felt: (a) nervous, (b) restless or fidgety, (c) everything was an effort, (d) hopeless, (e) so sad that nothing could cheer you up, (f) worthless, (h) angry, (i) lose your temper, (j) yell at people. Responses included: always, very often, sometimes, rarely, never. The nine items were summed into a cumulative index (alpha = 0.912).

2.4. Attenuating variables

Attenuating variables measure worsening health behaviors during the COVID-19 pandemic. *Diet* is measured using a question asking, "During the coronavirus (COVID-19) pandemic, would you say the quality of your diet has gotten worse, gotten better, or stayed about the same as before the pandemic?" *Cigarette consumption* is measured with a question asking, "During the coronavirus (COVID-19) pandemic, would you say you have smoked traditional cigarettes more, less, or about the same as before the pandemic?" *Alcohol consumption* was measured with an item asking, "During the coronavirus (COVID-19) pandemic, would you say you have used alcohol more, less, or about the same amount as before the pandemic?" All items were recoded into binary variables and captured (1) worse health behavior compared to (0) the same or better. In the case of cigarette smoking, respondents who indicated being non-smokers were classified with a value of 0 indicating their smoking behavior remained the same.

2.5. Analytic approach

The relationship between neighborhood dangerousness and sleep quality during the COVID-19 pandemic was assessed using multinomial logistic regression. Sleep remaining the same is the reference category across models. Models include post-stratification weights via iterative proportional fitting or raking to general population parameters derived from the Current Population Survey. Post-stratification weights were used to reduce sampling error and non-response bias.

To examine the indirect effects of perceptions of neighborhood dangerousness on sleep quality, we use the Karlson-Holm-Breen (KHB) method for attenuation in nonlinear models (Karlson et al., 2012). In non-linear models, the interpretation of changes in coefficients between statistical models is challenging due to a rescaling that occurs whenever an additional variable is included, regardless of whether that individual variable is correlated with other independent variables in the model. The KHB approach resolves this issue by adjusting for rescaling and provides a decomposition of the independent indirect effects across multiple attenuating variables.

3. Results

Descriptive statistics are presented in Table 1. The multinomial logistic regression results in Table 2 show the association between perceptions of neighborhood dangerousness and sleep quality during the COVID-19 pandemic. In Model 1, net of control variables, the relative risk of worse sleep quality (relative to sleep quality remaining the same) is more than 3 times greater for respondents who reported that their neighborhood had become more dangerous during the pandemic (RRR = 3.436, 95% CI = 1.712, 6.897). The relative risk of better sleep quality is also more than 3 times greater for respondents who reported that their neighborhood had become less dangerous during the pandemic (RRR = 3.692, 95% CI = 1.315, 10.362).

With the inclusion of the mediating variables in Model 2, the effects of reporting more danger (RRR = 2.815, 95% CI = 1.312, 6.040) and less danger (RRR = 3.860, 95% CI = 1.349, 11.042) in one's neighborhood remain statistically significant. Results also indicate a greater relative risk of worse sleep quality for respondents who reported a worse diet (RRR = 3.860, 95% CI = 2.593, 5.748) and increased alcohol consumption (RRR = 2.052, 95% CI = 1.254, 3.356).

Table 1

Descriptive statistics of analytic sample ($N = 1665$).

Variable	Mean	Standard deviation	Min	Max
Sleep quality during COVID-19				
Worse	21.2%		0	1
Same	74.6%		0	1
Better	4.2%		0	1
Neighborhood dangerousness during COVID-19				
Worse	8.6%		0	1
Same	86.3%		0	1
Better	5.2%		0	1
Age	47.33	17.49	18	94
Female	51.3%		0	1
Race/ethnicity				
White	63.2%		0	1
Black	11.3%		0	1
Hispanic	16.5%		0	1
Other race/ethnicity	9.0%		0	1
U.S. born	90.1%		0	1
College graduate	36.1%		0	1
Marital status				
Married	52.0%		0	1
Widowed/divorced/separated	17.5%		0	1
Never married	25.4%		0	1
Cohabitating	5.1%		0	1
Household income				
<$30,000	23.9%		0	1
$30,000 - < $60,000	28.1%		0	1
$60,000 - < $100,000	25.0%		0	1
≥$100,000	23.0%		0	1
Metropolitan area	83.5%		0	1
Neighborhood disorder	8.33	2.54	0	12
Years living in current neighborhood				
<1 year	7.7%		0	1
1–2 years	13.4%		0	1
3–5 years	20.3%		0	1
6–10 years	15.6%		0	1
≥11 years	43.0%		0	1
Respondent diagnosed with COVID-19	10.1%			
Knows someone diagnosed with COVID-19	73.2%			
Emotional wellbeing scale	24.51	7.62	0	36
Worse diet	24.3%		0	1
Worse alcohol consumption	14.9%		0	1
Worse cigarette consumption	6.7%		0	1

Finally, Table 3 reports the results of the KHB mediation analysis. We focus on testing the mediation of attenuating variables that were significantly associated with the sleep quality outcome (Hayes, 2009). The findings indicate that diet explains approximately 21.5% of the association between neighborhood dangerousness and sleep quality (*z*-statistic = 4.079, $p < .001$). The mediation effects of alcohol and cigarette use were not substantively or statistically significant. In summary, the association between increased neighborhood dangerousness and poorer sleep quality is partially explained by a concurrent deterioration in diet quality, but not increases in alcohol or cigarette consumption.

4. Discussion

The findings of this study demonstrated that changes in perceptions of neighborhood dangerousness are associated with changes in sleep quality. Specifically, those who perceived their local neighborhoods as becoming more dangerous during the COVID-19 pandemic tended to report declining sleep quality during the same period. In contrast, those who perceived their neighborhood as becoming less dangerous tended to report an improvment in sleep quality. Moreover, the relationship between neighborhood dangerousness and worsening sleep quality was partially mediated or explained by worsening diet.

Our study extends previous work in two key respects. First,

Table 2

Multinomial Logistic Regression of Neighborhood Dangerousness on Sleep Quality during the COVID-19 Pandemic ($N = 1665$).

	Model 1: With control variables				Model 2: With control variables + mediators			
	Worse sleep		Better sleep		Worse sleep		Better sleep	
Variables	RRR	95% CI	OR	95% CI	RRR	95% CI	RRR	95% CI
Independent variable								
Neighborhood dangerousness – Same (reference)	–	–	–	–	–	–	–	–
Neighborhood dangerousness – Worse	3.436***	(1.712, 6.897)	1.473	(0.498, 4.360)	2.815**	(1.312, 6.040)	1.712	(0.570, 5.143)
Neighborhood dangerousness – Better	0.709	(0.276, 1.818)	3.692*	(1.315, 10.362)	0.675	(0.279, 1.635)	3.860*	(1.349, 11.042)
Control variables								
Age	0.985*	(0.971, 0.999)	0.948***	(0.922, 0.973)	0.992	(0.977, 1.007)	0.945***	(0.920, 0.971)
Female	1.549*	(1.044, 2.300)	0.983	(0.490, 1.968)	1.505*	(1.001, 2.262)	0.936	(0.470, 1.864)
White (reference)	–	–	–	–	–	–	–	–
Black	1.113	(0.575, 2.154)	2.296	(0.846, 6.230)	1.139	(0.610, 2.127)	2.335	(0.870, 6.266)
Hispanic	1.905*	(1.151, 3.153)	2.714*	(1.204, 6.117)	2.027**	(1.193, 3.442)	2.768*	(1.237, 6.191)
Other race/ethnicity	1.106	(0.529, 2.314)	0.939	(0.254, 3.477)	1.354	(0.657, 2.792)	0.853	(0.229, 3.170)
U.S. born	2.676**	(1.322, 5.417)	0.866	(0.333, 2.253)	2.391*	(1.110, 5.152)	0.818	(0.324, 2.065)
College graduate	1.774**	(1.212, 2.595)	1.791	(0.889, 3.610)	1.880**	(1.256, 2.814)	1.665	(0.829, 3.347)
Married (reference)	–	–	–	–	–	–	–	–
Widowed/divorced/separated	0.931	(0.554, 1.566)	1.925	(0.732, 5.063)	0.880	(0.499, 1.554)	1.936	(0.735, 5.101)
Never married	0.806	(0.484, 1.344)	1.007	(0.433, 2.342)	0.842	(0.500, 1.420)	1.013	(0.428, 2.396)
Cohabitating	0.391*	(0.158, 0.967)	0.724	(0.217, 2.414)	0.330*	(0.121, 0.903)	0.790	(0.228, 2.734)
Household income — < $30,000 (reference)	–	–	–	–	–	–	–	–
Household income — $30,000, <$60,000	1.406	(0.814, 2.431)	1.718	(0.662, 4.459)	1.737	(0.948, 3.180)	1.640	(0.662, 4.064)
Household income — $60,000, <$100,000	1.197	(0.678, 2.113)	1.636	(0.580, 4.615)	1.421	(0.777, 2.597)	1.671	(0.613, 4.557)
Household income — ≥ $100,000	1.222	(0.669, 2.234)	3.596*	(1.290, 1.023)	1.457	(0.751, 2.829)	3.788**	(1.393, 1.302)
Metropolitan area	1.132	(0.700, 1.829)	0.593	(0.260, 1.352)	1.147	(0.687, 1.914)	0.535	(0.233, 1.230)
Neighborhood disorder	0.996	(0.919, 1.081)	0.905	(0.793, 1.033)	1.001	(0.918, 1.092)	0.913	(0.797, 1.047)
Years in neighborhood — <1 year (reference)	–	–	–	–	–	–	–	–
Years in neighborhood — 1-2 years	0.836	(0.384, 1.823)	0.921	(0.284, 2.988)	0.826	(0.385, 1.773)	0.971	(0.294, 3.203)
Years in neighborhood — 3-5 years	0.406*	(0.188, 0.876)	1.152	(0.340, 3.902)	0.439*	(0.201, 0.961)	1.165	(0.341, 3.974)
Years in neighborhood — 6-10 years	0.649	(0.306, 1.377)	1.140	(0.348, 3.733)	0.631	(0.288, 1.380)	1.167	(0.347, 3.929)
Years in neighborhood — ≥11 years	0.670	(0.319, 1.407)	0.521	(0.148, 1.837)	0.753	(0.355, 1.596)	0.503	(0.141, 1.801)
Respondent diagnosed with COVID-19	2.477**	(1.359, 4.513)	0.386	(0.130, 1.146)	2.261*	(1.201, 4.259)	0.395	(0.123, 1.267)
Knows someone diagnosed with COVID-19	1.350	(0.829, 2.200)	0.954	(0.418, 2.177)	1.325	(0.795, 2.208)	1.030	(0.456, 2.324)
Emotional wellbeing scale	0.895***	(0.868, 0.923)	1.030	(0.981, 1.082)	0.903***	(0.875, 0.933)	1.028	(0.979, 1.080)
Attenuating variables								
Worse diet	–	–	–	–	3.860***	(2.593, 5.748)	0.937	(0.468, 1.879)
Worse alcohol consumption	–	–	–	–	2.052**	(1.254, 3.356)	0.476	(0.200, 1.131)
Worse cigarette consumption	–	–	–	–	1.927	(0.804, 4.623)	0.428	(0.107, 1.717)

Abbreviations: RRR = relative risk ratio; CI = confidence interval ***$p < .001$, **$p < .01$, *$p < .05$.

Table 3

Karlson-Holm-Breen Test of Attenuation between Neighborhood Dangerousness and Sleep Quality ($N = 1665$).

Variables	% reduced	z-statistic
Worse diet	21.54	3.595***
Worse alcohol consumption	3.98	1.795
Worse cigarette consumption	1.71	1.115
Total	**27.23%**	

***$p < .001$, **$p < .01$, *$p < .05$.

regression analyses confirm that living in a dangerous neighborhood is associated with adverse sleep outcomes in adulthood (DeSantis et al., 2013; Hale et al., 2013, 2019; Hill et al., 2009, 2016; D. A. Johnson et al., 2015; S. L. Johnson et al., 2009; Simonelli et al., 2017; Steptoe et al., 2008). Second, our mediation analyses support the social ecological model of sleep health and several theories of health behavior change by establishing dietary behavior as a mechanism of neighborhood context (Grandner, 2019; He et al., 2019; Knowlden, 2019; Patterson and Ashare, 2019; Smith et al., 2019). While previous studies of neighborhood context and sleep health have emphasized pathways related to stress, fear, and physiological arousal, our analyses suggest that health-related behavior may also play a mediating role. The underlying theory is that perceptions of neighborhood dangerousness could undermine sleep by encouraging maladaptive coping processes related to poorer diets.

These findings add novel evidence by focusing on the role of changes in neighborhood conditions (Wallace et al., 2018) and health-related behaviors during the COVID-19 pandemic. Various features of the community may be implicated in the pathways linking neighborhood conditions with health behaviors and sleep (Barrington et al., 2014; Diez Roux and Mair, 2010). For example, the role of psychosocial stress and other personal stressors may promote unhealthy coping strategies, such as eating high caloric foods, which in turn, affects sleep health (Grandner, 2019; He et al., 2019; Knowlden, 2019; Patterson and Ashare, 2019; Smith et al., 2019). Because violence and the fear of danger are also stress-inducing, these factors may contribute additional interactions between the neighborhood environment and health behavior (Diez Roux and Mair, 2010). Future research should examine dynamic changes among features of the neighborhood and personal feelings and coping strategies.

The reported associations among neighborhood dangerousness, health behaviors, and sleep quality are likely linked to an overall sense of despair during the COVID-19 pandemic (Redelmeier and Shafir, 2020). Individuals who felt helpless and feared the unknown future of the pandemic presumably consumed an unhealthier diet and drank more alcohol as a way to cope; as a way to feel in control while living under lockdown (Ingram et al., 2020). Additionally, individuals living in communities where perceptions of dangerousness were higher may have turned to unhealthy behaviors in part due to limited prospects for healthier coping strategies.

Before discussing the implications of this study, it is important to note a few limitations that can be expanded upon in future research. First, CHAPS was conducted between May 10, 2021 and June 1, 2021.

Although this time frame provides rare insight into behavior during a key period of the COVID-19 pandemic, we cannot assess the relationship between perceptions of neighborhood dangerousness and sleep at other periods. Second, our focal measures are based on self-reports. Our measures are imprecise in the sense that we were unable to assess which facets of sleep changed (e.g., typical hours of sleep, difficulty getting to sleep, or difficulty staying asleep) or the precise magnitude of any behavior change. The veracity of our findings is therefore contingent upon replication with more objective measures of sleep (i.e., actigraphy) (Van De Water et al., 2011). Finally, because our analyses are based on cross-sectional data, none of the reported associations should be considered casual. With this in mind, our proposed mediation model requires replication with longitudinal data assessing changes in neighborhood perceptions and health-related behavior over time.

Our findings suggest that community policies geared toward making neighborhoods safer and enhancing the subjective experience of safety may contribute to public health by improving sleep quality. One strategy could be the expansion of local community organizations that focus on reducing violence and building stronger communities. Indeed, recent work suggests that the presence of such organizations can play a key role in reducing violent crime and strengthening overall community life (Sharkey et al., 2017). Another approach involves leveraging changes to the built environment to reduce crime (Kondo et al., 2018). Removing blight and vacant urban spaces and replacing them with green spaces (i. e., street trees, gardens, grass reserves, and parks) is one way to alter the built environment to improve sleep (Astell-Burt et al., 2013; Astell-Burt and Feng, 2020; Grigsby-Toussaint et al., 2015; B. S. Johnson et al., 2018) and to reduce violence and crime (Bogar and Beyer, 2016; Branas et al., 2018). The installation of better lighting in communities may also be an effective strategy for reducing nighttime crimes (Chalfin et al., 2021). Such an approach could signal to residents that a community is safe and protected. As Chalfin et al. (2021, p. 10) explain: "providing ambient lighting, the towers may be perceived as a sign that the general area in which they are placed has been prioritized or cared for by either law enforcement or city planners." However, such an approach should be deployed sparingly considering that artificial outdoor lighting can alter sleep behavior (Ohayon and Milesi, 2016). In the absence of primary prevention strategies, communities can benefit from efforts to expand initiatives rooted in trauma-informed approaches as a response to rising violence. For instance, Baltimore City has recently developed a comprehensive, multisector task force to provide support to aid in the healing and recovery of residents who are directly and indirectly exposed to violence (Healing City Baltimore, 2021). The expansion of such efforts to local communities experiencing upticks in crime and violence can be critical for improving the sleep health and overall wellbeing of residents (Testa et al., 2021).

5. Conclusions

Using a national sample of adults collected during the COVID-19 pandemic, perceptions of neighborhoods becoming more dangerous were associated with worsened sleep quality. This association was partially explained by worsening diet during the pandemic. These findings advance our understanding of the complex intersection of the subjective neighborhood experience and health-related behavior and suggest actionable strategies for improving the public health of neighborhoods.

Contributors

A.T. conceptualized and designed the study, and conducted the statistical analyses. A.T., C.F., and TH drafted the manuscript. All authors interpreted the results and reviewed and approved the final manuscript as submitted.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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