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Neighborhood Disorder and Incarceration History Among Urban Substance Users

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Abstract

This research examines the relationship between neighborhood physical and social disorder and incarceration history among urban drug users. A cohort of 358 African American and White urban drug users completed a clinical interview and psychological assessment that emphasized cognitive and social-behavioral HIV risk factors. The Neighborhood Inventory for Environmental Typology was used to assess indicators of physical and social disorder. After controlling for age, gender, education, and having a place to live, multivariable analyses revealed that living in a neighborhood with moderate or high levels of disorder (odds ratio [OR] = 1.63; 95% confidence interval [CI] = [1.02, 2.59]) and drinking alcohol every day or nearly every day for 3 months or more (OR = 2.03; 95% CI [1.24, 3.31]) were associated with incarceration history. Findings suggest that select characteristics of disadvantaged communities may be important determinants of incarceration vulnerability among urban substance users. Residential improvements hold promise to enhance interventions aimed to reduce incarceration.

Keywords

neighborhood disorder; substance use; incarceration; urban drug/alcohol use

Introduction

A growing body of research has examined the built environment as a social determinant of health, resulting in empirical evidence of environmental physical incivility and social disorder as a public health threat. Residents living in disadvantaged urban neighborhoods have a greater likelihood of witnessing or experiencing violence, having affiliations with

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delinquent peers, and having experienced poverty and/or high-risk family-level factors such as coercive/aggressive parenting styles and parental substance use or criminal involvement (Bronfenbrenner, 1979; LaVeist & Wallace, 2000; Li, Harmer, Cardinal, & Vongjaturapat, 2009; Pickett & Pearl, 2001; Sallis et al., 2009; Shaw & McKay, 1942; Stouthamer-Loeber, Drinkwater, & Loeber, 1999; Yen & Kaplan 1999).

Evidence suggests that these negative outcomes also function as a risk factor for incarceration. For example, about 80% of the U.S. population of incarcerated adults has a history of involvement with alcohol or illicit substances (Beck, Karberg, & Harrison, 2002; Conklin, Lincoln, & Tuthill, 2000). Furthermore, the profile of nonviolent offenders in prisons indicates that poor and impoverished ethnic minority males and their residential communities are disproportionately affected by incarceration (Bonczar, 2003; Pettit & Western, 2004). Moreover, in studies by Chauhan, Reppucci, and Turkheimer (2009) and Sampson, Morenoff, and Raudenbush (2005), 60% to 70% of disparities in criminal justice involvement and recidivism can be explained by risk factors related to neighborhood disadvantage.

Although public health professionals and researchers have cited both the relationship between drug and alcohol abuse and a history of incarceration (Arndt, Turvey, & Flaum, 2002; Shore, Filson, & Rae, 1990) and associations between community conditions and substance-related crime (Aneshensel & Sucoff, 1996; Jencks & Mayer, 1990; Kelling & Cole, 1997; Kurtz, Koons, & Taylor, 1998; Ross, 1977; Sampson & Raudenbush, 1999; Skogan, 1990; Taylor, 2001; Warren, Thompson, & Saegert, 2001; White, 1990), there are gaps in the literature about how neighborhoods may be associated with incarceration history/vulnerability and recidivism. Scholars have found that incivilities including deteriorated physical structures, litter, unsupervised youth, public consumption of alcohol or other drugs, residential segregation, population density, and visibility of antisocial networks are important cues that signal the spatial concentration of crime and delinquency (Bowling & Phillips, 2002; Brown, Perkins, & Brown, 2004; Ellickson, Martino, & Collins, 2004; Gordon, Tulak, & Troncale, 2004; Hale, 1996; Hawkins, Catalano, & Miller, 1992; Osofsky, 1999; Sampson & Raudenbush, 1999; Taylor, 2001; White & Gorman, 2000; Wilson & Keizer, Lindenberg, & Steg, 2008), yet these studies have relied primarily on macro-level indicators of neighborhood disadvantage or subjective reports from residents of the neighborhood environment. More work is needed to objectively identify specific malleable neighborhood-level factors, including measures of both physical and social hazards that drive incarceration risk.

This study builds on existing built environment and health research by using the Neighborhood Inventory for Environmental Typology (NifETy), an objective environmental assessment tool (Furr-Holden et al., 2008), to explore associations between a composite of neighborhood-level physical and social disorder indicators, regular drug or alcohol use, and self-reported history of justice system involvement among a sample of urban substance users. Given the impact of neighborhoods on offending, we believe urban substance users' risk of incarceration will be exacerbated by neighborhood physical and social disorder hazards. Guided in part by the socioecological model of behavior as well as disorder exposure theories (Keizer et al., 2008; Sallis & Owen, 1996; Rountree, Land, & Miethe,

1994; Wicker, 1979), this investigation will empirically test this conceptual model by examining the association between neighborhood hazards and incarceration history (Figure 1). Although temporally this study is not able to assess risk for incarceration, it will allow estimation of the relationship between incarceration history and neighborhood environment and form the basis for future research to examine causal pathways.

Method

Data Sources

Two sources of data were used in this study: the International NEURO-HIV Epidemiologic Study—Baltimore site (hereafter referred to as the Neurostudy) and the Environmental Strategies for Violence, Alcohol, and Other Drug Prevention Study, which used the NIfETy method to assess neighborhood characteristics of interest. The Neurostudy and NIfETy data sets were geocoded as two separate map layers and merged to facilitate the investigation of links between neighborhood hazards and individual substance use and incarceration history. Both studies and the merged data set were approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board. Detailed descriptions of both studies follow.

The Neurostudy.—Data from the Baltimore baseline interview of 432 injection and noninjection drug users enrolled in the Neurostudy—a longitudinal epidemiological examination of neurocognitive, social, and behavioral risk factors of HIV, hepatitis A, hepatitis B, and hepatitis C infection—were used for the analysis. To be eligible for the Neurostudy, participants had to be aged 15 to 50 years and report using injection or noninjection drugs during the previous 6 months. Study participants were recruited using strategies that included street outreach, local needle exchange site outreach, advertisements in local newspapers, and referrals from enrolled participants and social service agencies.

The data used in this investigation were collected between 2002 and 2006. The survey protocol included a computer-assisted interview with items to assess demographics, sociobehavioral infectious disease risk factors, drug use injection practices, injection in high-risk contexts, and type of drug used most often (Vlahov, Anthony, Celentano, Solomon, & Chowdhury, 1991). Trained research assistants also conducted neuropsychological assessments, such as measures on intellectual functioning and impulse control. The Johns Hopkins Bloomberg School of Public Health Institutional Review Board approved the study protocol in 2001; annual reviews and human subjects' approvals have been maintained. Participants were incentivized for study involvement.

The NIfETy method.—The NIfETy method of data collection is designed to assess potentially malleable characteristics of the built and social environment theorized to increase the risk of violence, alcohol, and other drug (VAOD) exposure (Furr-Holden et al., 2010; Furr-Holden et al., 2008). The NIfETy assessments were conducted in each of the 242 residential neighborhoods of Baltimore City, Maryland. A random selection of block faces in each neighborhood was assessed based on the number of census blocks in the neighborhood, with larger neighborhoods having a larger number of randomly selected block faces. The NIfETy instrument assesses 172 items operationalized within seven domains: physical

layout, structures on the block, dwelling type, youth and adult activity, physical order and disorder, social order and disorder (Furr-Holden et al., 2010; Furr-Holden et al., 2008). NIfETy assessments were conducted independently by trained two-person team field raters who spent 20 to 30 minutes on selected residential block faces entering environmental into handheld personal digital assistant devices and data were remotely uploaded at the end of the day (Furr-Holden et al., 2008). NIfETy data collection began in 2005 and continues through the present (2010).

The 2006 summer collection of NIfETy data was used in this investigation because it aligns with the Neurostudy data and the summer data provide the richest picture of neighborhood social disorder. The 2005 NIfETy data were not used despite alignment with the Neurostudy because some participants were not yet recruited and, given the study's emphasis on the cross-sectional relationship between incarceration history and neighborhood environment, the authors chose to minimize time-varying neighborhood influences (e.g., citywide efforts to board vacant housing or time-limited police enforcement efforts) by restricting all neighborhood data to one consistent time point. This consideration is further addressed in the discussion section as a limitation of the study.

Measures

Outcome measure.—Incarceration history was determined from participant responses to query on experiences in institutions such as “jail, detention centers, prison, or correctional facilities.” The outcome measure was dichotomized into “Yes/No” categories for the questions “Have you ever spent any time in a correctional facility?” and “Have you ever spent any time in a prison?”

Main effect variable.—A neighborhood disorder composite was derived for each sampled block face using 17 items from the NIfETy theorized to promote or sustain drug and alcohol involvement, or substantiated in the literature described earlier as a predictor of poor neighborhood environment. The items were coded “1” for presence and “0” for absence of the specific indicator (regardless of frequency). Items used for the composite were presence of liquor stores, bars, boarded and unboarded abandoned structures, structures with broken windows, trash in the street, unmaintained property, damaged sidewalks, drug paraphernalia (including syringes, vials, or baggies), evidence of vandalism, evidence of prostitution, signs of eviction, traffic (three cars passing through the residential block within 3 minutes) and absence of recreational outlets in the neighborhood. A mean neighborhood composite score was created for each neighborhood by averaging the composite score for each sampled residential block face. The mean neighborhood disorder composite was used to form a categorical variable for each neighborhood, denoting a low, moderate, or high disorder neighborhood. The composite scale ranged from 0 to 11, with 0 to 3 indicators representing low disorder, 4 to 7 indicators representing moderate disorder, and 8 to 11 indicators representing high disorder.

Control variables.—Participants were categorized according to their self-reported gender, age, race/ethnicity, education, employment status, having a regular place to live, and alcohol use. For ease of interpretation, age was separated into five groups with roughly 20% in each

group: 16 to 27, 28 to 32, 33 to 35, 36 to 39, and 40 to 50. Race/ethnicity was collapsed into African American or White due to the small number of “other” race/ethnicity ($n = 14$). Years of education was coded high school graduate or more, employment status as yes/no, regular place to live as yes/no, and ever drinking alcohol every day or nearly every day for 3 months or more as yes/no. All information was derived from responses on the HIV-risk interview.

Geospatial Analyses and Data Merging

ArcGIS 9.1 was used to geocode the major intersection nearest to each Neurostudy participant’s home address. These geocoded intersections were joined to a separate map layer of Baltimore City’s neighborhood statistical areas (NSAs). These NSAs are a conglomeration of U.S. census blocks, a relatively small geographic unit often the size of one city block, that have been validated in other studies to reflect shared residential experiences and self-reported neighborhood affiliation (Taylor, 2001). Therefore, NSAs in this study are simply referred to as neighborhoods. Each neighborhood was assigned a mean disorder composite score. This score was assigned to each participant based on the neighborhood in which the respondent-reported intersection was located.

Statistical Analysis

Because the NIfETy data were collected only in Baltimore City, only participants with addresses within the city were geocoded; thus, 21 participants living outside of the city were excluded. Of the 411 people reporting residence in Baltimore City, 39 were excluded due to missing information on alcohol and 14 were excluded for reporting race/ethnicity other than African American or White. Thus, the final analysis included 358 participants.

A logistic regression model was used to examine associations between neighborhood disorder and incarceration history. A multivariable model was used to adjust these estimates for age group, race/ethnicity, gender, having a regular place to live, education, and ever drinking alcohol every day or nearly every day for 3 months or more. The covariates in the final adjusted model were included if they were considered clinically meaningful, were known confounders or if chi-square analyses yielded a significant difference in incarceration at $\alpha = .05$. All regression analyses were performed using SAS software 9.1.

Results

The average age of participants ($n = 358$) was 33 years ($SD = 7.38$). Forty-nine percent of the sample was White and 51% African American. About half (55%) of the participants were male, 46% had less than a 12th grade education, and 33% had a history of incarceration in a correctional facility. Most (91%) of the sample reported having a regular place to live and 48% were from neighborhoods classified as moderately or highly disordered, collapsed into one group. Fifty-seven percent of participants reported ever-drinking alcohol every day or nearly every day for 3 months or more.

Table 1 presents the results of the univariate logistic regression analyses. Participants living in a moderately or highly disordered neighborhood were more than 50% more likely to have a history of incarceration when compared to those who live in a neighborhood with low

disorder (*OR*: 1.58; 95% CI [1.01, 2.46]). African American race/ethnicity was also found to place participants at statistically significantly higher odds for incarceration history when compared to White participants (*OR*: 1.89; 95% CI [1.20, 2.96]). Finally, participants who reported ever drinking alcohol every day or nearly every day for 3 months or more had nearly twice the odds of incarceration history compared to those who did not report such alcohol use (*OR*: 1.90; 95% CI [1.20, 3.30]).

Table 2 presents the odd ratios (AOR) for history of incarceration and neighborhood disorder, controlling for age group, gender, race/ethnicity, education level, alcohol use, and having a regular place to live. After adjusting for other covariates, participants who lived in a moderately or highly disordered neighborhood had 63% higher odds of having an incarceration history (AOR: 1.63; 95% CI [1.02, 2.59]) when compared to those who lived in a neighborhood with low disorder. African Americans had twice the odds of having an incarceration history when compared to Whites (AOR: 2.20; 95% CI: [1.37, 3.53]), and those who reported drinking alcohol on a daily basis for more than 3 months had twice the odds of having an incarceration history when compared to those who did not report such alcohol use (AOR: 2.03; 95% CI [1.24, 3.31]).

Discussion

This study adds to existing research on neighborhood factors related to incarceration by using an objective measure of neighborhood disorder, providing preliminary evidence on a defined set of malleable neighborhood factors related to incarceration history among urban substance users even after controlling for known individual risk factors including ethnicity/race and gender. Our study findings are consistent with existing research in several ways. For example, according to a report by the Sentencing Project (2006), there are significant racial disparities in incarceration rates, as African American males are incarcerated at more than six times the rate of White males and African American females are incarcerated at four times the rate of White females. In our study, African Americans had twice the odds of having an incarceration history when compared to Whites. Work by the International Centre for Prison Studies and others support this finding with reports that the United States has the highest documented incarceration rate and total prison rate in the world and that 70% of the American prison population is non-White (International Centre for Prison Studies, 2007; Walmsley, 2005).

With that research and this work in mind, incarceration may be a dramatic indicator of the extent to which neighborhood physical and social disorder impacts urban non-White substance users. Existing research further proposes that exposure to multiple forms of disadvantage for adults may depress residents' abilities to respond efficiently to shifting demands, for example, to perform consistent with employment-based expectations, interact with peers in a prosocial way, and refrain from substance misuse (Garbarino, 1999; Garmezy, Masten, & Tellegen, 1984; Garmezy & Rutter, 1983; Leventhal & Brooks-Gunn, 2004). To the extent that our work combined with existing research accurately represents social ecology in urban neighborhoods, disorder exposure may be related to vulnerability for involvement in antisocial behavior (e.g., drug use and other illicit activities that lead to incarceration) and decreased commitment to customary social principles.

The results of this study should be interpreted in view of several limitations. First, causality could not be determined in this study. The Neurostudy and NIfETy data were cross-sectional. As well, the neighborhood data are not temporally aligned with the Neurostudy participants' neighborhood at the time of incarceration; rather, the neighborhood data represent the neighborhood they lived in postincarceration. It is probable that these disordered neighborhoods are, in large, the product of incarceration via self-selection into these neighborhoods or constraints on the choice of where to live following incarceration. While this is not a minor limitation, this study nonetheless sheds light on the plight of ex-offenders who often have to contend with tremendous environmental hazards to prevent recidivism. Future investigations on this population are planned using longitudinal follow-up data to look at first-time offenders and recidivism among prior offenders. In that context, this research is a first step in understanding the relationship between neighborhood environment and incarceration among substance users and will form the basis for future research to examine causal pathways.

This study found preliminary evidence that living in a neighborhood with concentrated incivility increases the odds of having an incarceration history, even after controlling for demographic covariates. In view of national initiatives to reduce substance use and recidivism, our work suggests that preventive interventions and public policies could be strengthened by incorporating programs that also address features of the built and social environment and give ex-offenders increased residential access to positive neighborhood environments.

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Figure 1.
Conceptual model linking neighborhood disorder and incarceration among urban substance users.

Table 1.

Sociodemographic and Behavioral Risk Factors and Their Unadjusted Odds Ratios for Incarceration History Among Baltimore Substance Users at Baseline Interview

Characteristic	n (%)	Incarceration History (Yes) (%)	Unadjusted Odds Ratio (OR)	95% CI
Total	358	118 (33.0)		
Age quintiles (years)				
16 to 27	72 (20.1)	16 (13.6)	0.61	[0.29, 1.29]
28 to 32	78 (21.8)	29 (24.6)	1.26	[0.64, 2.51]
33 to 35	66 (18.4)	21 (17.8)	1.00	[0.48, 2.06]
36 to 39	73 (20.4)	30 (25.4)	1.49	[0.75, 2.97]
40 to 50	69 (19.3)	22 (18.6)	1.00	
Gender				
Male	197 (55.0)	69 (58.5)	1.23	[0.79, 1.92]
Female	161 (45.0)	49 (41.5)	1.00	
Race/ethnicity				
African American	184 (51.4)	73 (61.9)	1.89	[1.20, 2.96]
White	174 (48.6)	45 (38.1)	1.00	
Education level				
K–11th grade	165 (46.1)	53 (44.9)	0.93	[0.60, 1.45]
12th grade or higher	193 (53.9)	65 (55.1)	1.00	
Regular place to live				
Yes	325 (90.8)	106 (89.8)	1.18	[0.56, 2.49]
No	33 (9.2)	12 (10.2)	1.00	
Alcohol daily more than 3 months				
Ever	203 (56.7)	79 (66.9)	1.90	[1.20, 3.30]
Never	155 (43.3)	39 (33.1)	1.00	
Neighborhood disorder				
Medium/high	170 (47.5)	65 (55.1)	1.58	[1.01, 2.46]
Low	188 (52.5)	53 (44.9)	1.00	

Table 2.

Adjusted Odds for Incarceration History From Multivariate Logistic Regression Model for Incarceration History Among Baltimore Substance Users at Baseline Interview

Characteristic	n (%)	Incarceration History (Yes) (%)	Adjusted Odds Ratio (AOR)	95% CI
Total	358	118 (33.0)		
Age quintiles (years)				
16 to 27	72 (20.1)	16 (22.2)	0.65	[0.30, 1.42]
28 to 32	78 (21.8)	29 (37.2)	1.24	[0.61, 2.52]
33 to 35	66 (18.4)	21 (31.8)	0.92	[0.43, 1.96]
36 to 39	73 (20.4)	30 (41.1)	1.52	[0.74, 3.10]
40 to 50	69 (19.3)	22 (31.9)	1.00	
Gender				
Male	197 (55.0)	69 (35.0)	1.17	[0.73, 1.88]
Female	161 (45.0)	49 (30.4)	1.00	
Race/ethnicity				
African American	184 (51.4)	73 (39.7)	2.20	[1.37, 3.53]
White	174 (48.6)	45 (25.9)	1.00	
Education level				
K–11th grade	165 (46.1)	53 (32.1)	1.02	[0.64, 1.64]
12th grade or higher	193 (53.9)	65 (33.7)	1.00	
Regular place to live				
Yes	325 (90.8)	106 (32.6)	1.41	[0.64, 3.09]
No	33 (9.2)	12 (36.4)	1.00	
Alcohol daily more than 3 months				
Ever	203 (56.7)	79 (38.9)	2.03	[1.24, 3.31]
Never	155 (43.3)	39 (25.2)	1.00	
Neighborhood disorder				
Medium/high	170 (47.5)	65 (38.2)	1.63	[1.02, 2.59]
Low	188 (52.5)	53 (28.2)	1.00	