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Neighborhood Context and Substance Use Disorders: A Comparative Analysis of Racial and Ethnic Groups in the United States

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Abstract

Background—There is evidence that ethnic/racial minorities are conferred differential risk for substance use problems based on where they live. Despite a burgeoning of research focusing on the role of neighborhood characteristics on health, limited findings are available on substance use. Our study uses nationally representative data (N= 13, 837) to examine: (1) What neighborhood characteristics are associated with risk of substance use disorders?; (2) Do the associations between neighborhood characteristics and substance use disorders remain after adjusting for individual-level factors?; and (3) Do neighborhood characteristics associated with substance use disorders differ by race/ethnicity after adjusting for individual-level factors?

Methods—Data were drawn from the Collaborative Psychiatric Epidemiology Studies (CPES-Geocode file) with 836 Census tracts. Analyses included African Americans, Asians, Caribbean Blacks, Latinos, and non-Latino whites. Separate logistic regression models were fitted for any past-year substance use disorder, alcohol use disorder, and drug use disorder.

Results—Living in more affluent and residentially unstable census tracts was associated with decreased risk of past-year substance use disorder, even after adjusting for individual-level factors. However, when we investigated the interaction of race/ethnicity and census latent factors with past-year substance use disorders, we found different associations for the different racial/ethnic groups. We also found different associations between neighborhood affluence, residential instability and any past-year substance use and alcohol disorders by nativity.

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Contributors

Kristine Molina, Ph.D. acquired the neighborhood level data; guided creation of neighborhood measures, geocoding, and data analysis; and took primary lead on drafting the manuscript. Margarita Alegría, Ph.D. conceptualized the study, helped guide data analysis and writing of the manuscript; and had full access to the CPES data. Chih-Nan Chen, Ph.D. undertook the statistical analysis. All authors contributed to and have approved the final manuscript.

Conflict of Interest

All authors declare that they have no conflicts of interest.

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Conclusions—Characteristics of the environment might represent differential risk for substance disorders depending on a person's ethnicity/race and nativity status.

Keywords

neighborhood context; substance use disorders; alcohol; drugs; racial/ethnic minorities; nativity

1. Introduction

Prior studies find an association between neighborhood characteristics and risk of substance use net of individual-level effects (Galea et al., 2007; Silver et al., 2002). The strain brought on from poverty and its byproducts in disadvantaged communities (e.g., despair, psychological distress; Boardman et al., 2001; Sampson et al., 1997) as well as the erosion of social bonds in economically deprived contexts is argued to be reasons for the positive association found between disadvantaged neighborhood characteristics and increased risk for psychiatric disorders. Residential context appears to influence both individual behaviors and health outcomes (Diez Roux and Mair, 2010; Pickett and Pearl, 2001; Williams and Collins, 2001). Given the significant implications of residential context on risk for illness and resource allocations related to individual behaviors and health outcomes (Robert, 1999), research assessing the role of contextual factors on population health is expanding.

Substance-related morbidity and mortality, for example, are disproportionately higher among poor, ethnic minority populations (cf. Galea and Vlahov, 2002; Jones-Webb et al., 1996), who more often than non-Latino whites reside in neighborhoods characterized by poverty (Casciano and Massey, 2008; Williams and Collins, 2001). As such, the residential environment where an individual resides can contribute to pervasive racial/ethnic health disparities in the US, including the risk for psychiatric disorders (Morenoff and Lynch, 2004; Stockdale et al., 2007). Examining potential ways that residential context influences the risk of illness (Boardman et al., 2001; Buu et al., 2011; Galea et al., 2007; Silver et al., 2002; Stockdale et al., 2007) is critical to understanding environmental factors associated with substance use disorders and substance-related problems for ethnic minority and socioeconomically disadvantaged groups (e.g., DUI, cirrhosis mortality, homelessness; Caetano, 2003; Chartier and Caetano, 2010; Fisher and Breakey, 1991; Galea and Vlahov, 2002; Jones-Webb et al., 1996).

Previous social disorganization and social control theories (Hirschi, 1969; Robert 1999; Sampson et al., 1997) posit that residing in a poor neighborhood, characterized by high levels of social disorganization and residential mobility increases the likelihood that an individual will engage in problematic behaviors. Poverty and disrupted social bonds are also theorized to account for the positive association between disadvantaged neighborhoods and higher rates of substance use among their inhabitants. Yet the prevalence of substance use disorders varies across racial/ethnic groups (Breslau et al., 2006; Grant et al., 2004), raising questions about whether the effects of residential context differ across these groups. While neighborhood affluence is robustly associated with better health outcomes for the general population (Browning and Cagney, 2003; Wen et al., 2003), neighborhood composition, even in disadvantaged neighborhoods, seems to exert an independent influence on health behaviors that diverges by nativity. That is, increased neighborhood concentrations of immigrants or certain ethnic minorities in poor neighborhoods may confer a greater sense of collective identity and efficacy (Kulis et al., 2007; Mazumdar et al., 2000; Vega et al., 2010) that help mitigate the deleterious effects of neighborhood poverty on health behaviors such as substance use.

In this paper, we contribute to the literature in two important ways. First, using data from the Collaborative Psychiatric Epidemiology Studies (CPES), we investigate whether neighborhood characteristics are associated with higher odds of meeting criteria for DSM-IV 12-month substance, alcohol, and drug use disorders, and if so, whether these associations remain after adjusting for individual-level characteristics. Second, we assess how and to what extent neighborhood context is associated with risk of any past-year substance, alcohol, and drug use disorders among racial/ethnic minority groups compared to non-Latino whites, after adjusting for individual-level factors. We hypothesize that 1) neighborhood disadvantage and residential instability will be associated with higher odds of DSM-IV substance use disorders; 2) neighborhood affluence and greater immigrant concentration will be associated with lower odds of DSM-IV substance use disorders and; 3) that neighborhood characteristics will have variable associations with odds for substance use disorders across racial/ethnic groups. To our knowledge, this is one of the first studies to examine whether there is differential racial/ethnic group effect on the role of neighborhood context on substance use disorders employing a population-based sample. As such, no *a priori* hypotheses are made regarding specific racial/ethnic comparisons for risk of different substance use disorders.

2. Methods

Data were drawn from the Collaborative Psychiatric Epidemiology Studies (CPES-Geocode file), which consists of three cross-sectional, nationally-representative household surveys: the National Comorbidity Survey-Replication (NCS-R; Kessler et al., 2004), the National Latino and Asian American Study (NLAAS; Alegria et al., 2004a), and the National Study of American Life (NSAL; Jackson et al., 2004). The multiple-frame sampling approach and creation of design-based analysis weights in the CPES were able to generate a single, nationally representative sample (see Heeringa and Berglund, 2007), allowing for the comparative analyses proposed in the present study.

The sample design of the three surveys included in the CPES have been previously described in detail elsewhere (see Heeringa et al., 2004 and Pennell et al., 2004), but are briefly described here. The NCS-R is a nationally representative sample of English-speaking adults residing in the coterminous US, administered in two parts: Part I, including core diagnostic assessments, and Part II, assessing service use, impairment, and correlates of psychiatric illness, administered to a subsample of respondents. We include the 4,180 non-Latino white respondents of the final Part II subsample ($n = 5,692$). The final weighted response rate was 70.9% (Kessler et al., 2004). The NLAAS, a nationally stratified area probability sample of non-institutionalized Latino and Asian persons in the coterminous US, that includes 2,554 Latinos and 2,095 Asians. The overall weighted response rate for the NLAAS was 73.2% (Alegria et al., 2004a). Lastly, the NSAL is a nationally representative sample of English-speaking black Americans of African and Caribbean descent. The NSAL sample included 3,570 African Americans and 1,621 respondents of Caribbean descent. The overall response rate for the total NSAL sample was 71.5% (Jackson et al., 2004). Caribbean Black respondents who self-reported being of Latino ethnicity ($n = 183$) were excluded, leaving a sample size of 13,837. We allowed for listwise deletion in all analyses, as missing data constituted less than the 5% recommended for imputation (Tabachnick and Fidell, 2007).

2.1. Procedure

Data collection was conducted between 2001–2003. The primary mode of data collection for all three surveys was by in-person interviewing at the respondent's home using computer-assisted interviewing. Only the NLAAS was available in languages other than English (e.g.,

Spanish, Vietnamese; see Alegría et al., 2004b). The institutional review board committees of all participating institutions approved all study procedures (Pennell et al., 2004).

2.2. Measures

2.2.1. Substance Use Disorders—Alcohol and drug use disorders were assessed using the World Mental Health Composite International Diagnostic Interview (WHM-CIDI; Kessler and Üstün, 2004). Diagnoses are based on the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV; American Psychiatric Association, 1994). Responses to the CIDI are used to classify individuals as meeting DSM-IV criteria for a past-year psychiatric disorder or not. We used the following composite diagnostic categories: any substance use disorder (alcohol abuse, alcohol dependence, drug abuse, drug dependence); any alcohol use disorder (alcohol abuse, alcohol dependence); and any drug use disorder (drug abuse, drug dependence).

2.2.2. Individual-Level Variables—Variables include race/ethnicity (non-Latino white, Latino, Asian American, African American, Black Caribbean), age, sex; marital status, education, work status and nativity (US-born or foreign-born). We also included a poverty index, a continuous measure referring to the income-to-needs ratio (the total household income divided by the federal poverty threshold, adjusted for family size and number of children less than 18 years).

2.2.3. Neighborhood-Level Variables—We define neighborhoods per census tract, a measure theorized to closely approximate neighborhoods (Krieger et al., 2002) and designed to represent homogeneous properties in terms of population characteristics, economic status, and living conditions (US Census, 2009). Data were extracted from the 2000 US Decennial Census Summary File 3 and linked to individual respondents in the CPES-Geocode data set file via unique identifiers. We selected fifteen census tract-level variables that tap into different neighborhood characteristics (Lantz and Pritchard, 2010): percent non-Latino black population; percent non-Latino Asian population; percent Latino population; percent of population who lived in a different house five years previously (in 1995); percent of owner-occupied housing units; percent who completed at least a high school degree (≥ 25 years); percent who completed an undergraduate degree or higher (≥ 25 years); percent of households with public assistance; percent of female-headed households with own children under age 18; percent of civilians holding management/ professional/and related professions (for employed civilian population ≥ 16 years); percent of foreign-born population; percent of families with an annual income above \$75,000; percent of recent immigrant population (year of entry between 1995- March 2000); percent of civilians unemployed (≥ 16 years); and percent of population living below the poverty level (for whom poverty status is determined).

2.3. Analytic Approach

2.3.1. Factor Analysis—We constructed characteristics of neighborhoods through exploratory factor analysis (EFA), using orthogonal varimax rotation. Items with factor loadings of .60 or higher were retained (cf. Sampson et al., 1997). For items with high loadings on two or more factors, we retained it in the factor with the highest loading. Items with a negative loading were recoded so all items loaded positively onto the latent factors. Eigen values (cut-off of 1.0), suggested four factors that represented neighborhood characteristics. However, the fourth was not considered legitimate because there was only one item that loaded highly and solely on this factor (i.e., percent living in different house in 1995). Thus, three factors were retained, with percent living in different house in 1995 considered a single-item, neighborhood-level predictor. Table 1 displays factor loadings for each of the retained census tract-level variables. We constructed neighborhood latent factors

using confirmatory factor analysis to describe the observed patterns in the census tract-level data.

2.3.2. Multilevel Modeling—We employed multilevel analysis for binary outcomes (Guo and Zhao, 2000). Multilevel logistic regression estimated the association between individual-and neighborhood-level characteristics with risk of meeting criteria for DSM-IV 12-month substance use, alcohol, and drug use disorders; separate successive logistic regression models were fitted for each past-year diagnosis. We first estimated a basic model (Model 1) of the association between individual-level characteristics and each past-year diagnosis. Model 2 fitted multilevel logistic regression models that include neighborhood characteristics as explanatory variables of these outcomes only. Another set of multilevel logistic regression models (Model 3) included all individual-level characteristics and all neighborhood characteristics. The full model (Model 4) added cross-product terms for each racial/ethnic group and each neighborhood characteristic, while controlling for individual-level factors. We estimated multivariable logistic regression models within a multilevel framework using the Generalized Linear Latent and Mixed Models (GLLAMM) commands, incorporating survey weights, within Stata version 10.0. We used the GLLAMM procedure because the maximum-likelihood estimation algorithm has been shown to be superior to more conventional multilevel programs (Rodriguez and Goldman, 1995). Since the nesting of the sampling design of the CPES was not conducted by census tract, we were unable to separate level 1 (individual) and level 2 (neighborhood) weights from the sampling weights and cluster variables available in the CPES dataset. Instead, we followed procedures by Kovacevic and Rai (2003) and Pfeffermann et al. (1998) by creating pseudo-weights at each of the levels, re-constructing weights by normalizing final CPES weights to the individual and neighborhood levels using 2000 US Census county population data.

3. Results

3.1. Any Past-Year Substance Use Disorder

Table 3 presents results of logistic regression analyses for any past-year substance use disorder. Model 1 shows that African Americans compared to non-Latino whites; women compared to men; and immigrants compared to US-born respondents, are at a decreased risk for any past-year substance use disorder. According to Model 2, individuals who live in affluent neighborhoods and those who live in residentially mobile neighborhoods are at a decreased risk for any past-year substance use disorder. Finally, contrary to our hypothesis, Model 4 shows that for Asians and African Americans, living in affluent neighborhoods is associated with an increased risk for any past-year substance use disorder (OR= 1.16; 95% CI= 1.01, 1.33 and OR= 1.35; 95% CI= 1.14, 1.59, respectively) compared to non-Latino whites (OR= 0.89; 95% CI= 0.82, 0.98), independent of individual-level factors.

3.2. Any Past-Year Alcohol Use Disorder

Similar patterns emerged in Models 1 and 2 for any past-year alcohol use or substance use disorder. In Model 3, results mirror those for any past-year substance use disorders, except that Asians are less likely to meet criteria for any past-year alcohol use disorder compared to non-Latino whites. Model 4 suggests that, after adjusting for individual-level characteristics, Latinos living in neighborhoods with higher concentration of Latinos/immigrants are at a decreased risk for past-year alcohol use disorder (OR= 0.89; 95% CI= 0.80, 0.98) compared to non-Latino whites (OR= 1.06; 95% CI= 0.99, 1.14). Further, African Americans and Black Caribbeans residing in affluent neighborhoods are at an increased risk for any past-year alcohol use disorder (OR= 1.31; 95% CI= 1.09, 1.58 and OR= 1.50; 95% CI= 1.18, 1.91, respectively) compared to non-Latino whites (OR= 1.03; 95% CI= .88, 1.19), independent of individual-level characteristics.

3.3. Any Past-Year Drug Use Disorder

Model 1 results parallel those of any past-year substance use disorder, although unemployed individuals are not at higher risk of any past-year drug use disorder. No significant associations were noted in Model 2 or Model 3. Lastly, in the full model, greater neighborhood concentrated disadvantage was associated with decreased odds of any past-year drug disorder for Asians (OR= 0.69; 95% CI= 0.51, 0.95) compared to non-Latino whites (OR= .99; 95% CI= 0.83, 1.19). African Americans living in more affluent neighborhoods were at an increased risk of meeting criteria for any past-year drug disorder (OR = 1.33; 95% CI = 1.10, 1.60) than non-Latino whites (OR= 0.94; 95% CI= 0.83, 1.07).

3.4 Supplementary Analyses

As a sensitivity check, we included nativity as a modifier of the association between neighborhood context and DSM-IV substance disorders, given that it has been found to moderate the relation between neighborhood context and health outcomes (Kimbrow, 2009; Lee and Ferraro, 2007; Vega et al., 2010). After adjustment of individual-level variables, significant interactions between nativity and three of our neighborhood context measures were noted (data not shown). Immigrant respondents residing in more affluent neighborhoods were at significantly increased odds of meeting diagnosis for any past-year substance use disorder (OR= 1.15; 95% CI= 1.03, 1.29) and any past-year alcohol use disorder (OR= 1.12; 95% CI= 1.02, 1.23) compared to their U.S.-born counterparts. We did not find that nativity modified the relation between concentrated disadvantage, Latino/immigrant concentration, and substance use disorders.

4. Discussion

Our results show differences between non-Latino whites and racial/ethnic minority groups regarding the association between neighborhood context and risk of past-year substance-related disorders. Additionally, we found differential risk of substance use disorders between immigrant and US-born respondents across different neighborhood contexts. As in many studies comparing diverse ethnic/racial groups, what is found for one group is not necessarily found for another.

4.1. Neighborhood Concentrated Disadvantage

Asians living in more disadvantaged neighborhoods were at a decreased risk for any past-year drug use disorder compared to their non-Latino white counterparts. These results may be attributable to the low prevalence of substance use disorders among Asians as compared to other racial/ethnic groups (Grant et al., 2004). Specifically, rates of illicit drug use among Asian adults living in poverty are lower than rates among the population living in poverty (NSDUH, 2010). Prior research suggests several mechanisms, including those related to sociocultural factors, which may explain reduced rates of substance use disorders among Asian populations. For example, Asians compared to European Americans have been found to report more abstinence-promoting environments such as having fewer family members who use or offer substances (Johnson and Nagoshi, 1990). Family influences, concerns about shame and losing face, and cultural norms against substance use have been shown to account for reduced rates of substance use/abuse (Au and Donaldson, 2000). A prior study on Asian drug users found that participants expressed stigma attached to drug use in their community; and drug users who had good relationships with their families expressed more shame and embarrassment related to their drug use (Nemoto et al., 1999). Our findings provide a basis for future studies with Asian populations to evaluate how environments that have been shown to be detrimental to health for some racial/ethnic groups may interact with broader sociocultural factors to differentially influence substance use outcomes.

4.2. Neighborhood Affluence

Independent of individual-level characteristics, we found an increased risk for any past-year substance use disorder, alcohol use disorder, and any drug use disorder for African Americans; an increased risk for any past-year alcohol use disorder for Black Caribbeans; and an increased risk for any past-year drug use disorder for Asians living in neighborhoods with greater affluence compared to non-Latino whites in these neighborhoods. These findings contradict our hypothesis, but are similar to those of Galea and colleagues' (2007), who found that higher neighborhood median income was associated with greater likelihood of alcohol use, and among alcohol users, higher neighborhood median income was associated with greater frequency of alcohol use. Affluence may not necessarily deter one from engaging in alcohol or drug use as affluent neighborhoods may be susceptible to lower cohesiveness and collective efficacy (Luthar, 2003; Sampson et al., 1997); lack deep social connections (Myers, 2000); and have physical characteristics that contribute to feelings of isolation and social disconnect from neighbors (Luthar et al., 2003). Framed within the stress and coping framework (Thoits, 1995), these findings might also be attributed to race-related stress associated with being a minority. Pickett and Wilkinson (2008) note that members of ethnic minority groups with material resources may still endure psychosocial stress associated with being a low status minority within a majority white community. Greater neighborhood SES in concert with fewer individuals from one's racial group is associated with increased reporting of discrimination (Dailey et al., 2010; Hunt et al., 2007), and discrimination has been associated with increased likelihood of using alcohol as a coping mechanism (Chae et al., 2008; Martin et al., 2003). When data were re-analyzed with nativity as a modifier, foreign-born persons residing in more affluent neighborhoods were at an increased risk for past-year alcohol disorder compared to their US-born counterparts. Affluent neighborhoods appear protective for US-born persons, but not for immigrants. Although research on the "immigrant paradox" shows that positive health outcomes for immigrants are partly explained by the protective role of "ethnic enclaves," few studies have examined the role of affluence on immigrant health behaviors. In our data, immigrants of color were more likely to reside in neighborhoods with higher SES levels than their US-born counterparts, except for Latino immigrants, who were not significantly more likely than their US-born counterparts to live in affluent neighborhoods (data not shown). This may help explain the association we found for most of the racial/ethnic minority groups in the sample, which were more likely to be comprised of immigrants and are at an increased risk of substance use disorders than non-Latino whites. It is unclear from our data however, if differential experiences associated with minority status, either as racial/ethnic minorities or as immigrants, may result in differential outcomes for minority status groups compared to majority groups living in similar social environments. Nonetheless, in the context of neighborhood affluence, both race/ethnicity and nativity may influence risk of substances use disorders. Future research should include measures of discrimination to evaluate whether neighborhood-level characteristics are associated with risk of substance use disorders independent of self-reported discrimination. As the NCS-R was the only survey in the CPES data set that did not include a measure of discrimination, we were unable to account for this in our analyses.

4.3. Neighborhood Latino/Immigrant Concentration

Consistent with previous studies employing Latino samples (Frank et al., 2007; Kulis et al., 2007; Ostir et al., 2003), we found that living in Latino-immigrant dense neighborhoods was associated with lower risk of any past-year alcohol use disorder for Latinos (compared to non-Latino whites). Although Latino/immigrant enclaves may be disproportionately low-income, they may provide advantages, such as family stability, that foster a sense of collectivism and access to social networks (Mazumdar et al., 2000), counterbalancing adverse outcomes associated with living in ethnic enclaves (Jargowsky, 2006).

Supplementary analyses revealed that nativity also modified the association between Latino-immigrant concentration and past-year alcohol use disorder, with foreign-born individuals being at a decreased risk compared to their US-born counterparts. A plausible explanation for these findings concerns the “ethnic-enclave hypothesis” which posits that the lower risk of ill-health among immigrants may be a result of the spatial diffusion of protective practices that deter against risky behavior (Eschbach et al., 2004). In our data, US-born and immigrant Latinos resided in neighborhoods with similar levels of Latino/immigrant concentrations, unlike other racial/ethnic groups in the sample. Greater association between US- and immigrant-born Latinos may result in less engagement with problematic behaviors, which in turn may contribute to a lower risk of alcohol use disorders among Latinos in general. It has been suggested that substance use among Latinos be understood as a complex social learning process wherein not only can substance-related behaviors change as a result of one’s social environment, but so can attitudes and expectancies toward certain behaviors (Finch et al., 2000; Marin et al., 1993). Future studies should examine how intra-group relations and attitudes toward alcohol use may mediate the relation between ethnic/immigrant enclaves and risk of alcohol use disorders among immigrant and US-born Latinos.

4.4. Neighborhood Residential Instability

We did not find that neighborhood residential instability moderated the relation between race/ethnicity and any substance use disorders. Contrary to our hypothesis, residential instability was associated with lower risk of any substance use disorder and any alcohol use disorder among the pooled sample, after adjusting for individual-level characteristics. Our supplementary analyses revealed that living in more residentially unstable neighborhoods was protective of any past-year substance use and alcohol use disorders for US-born persons, but not for immigrants. Interestingly, US-born persons from most racial/ethnic minority groups (except Asians and Afro-Caribbeans) tended to live in tracts with greater residential instability. It is plausible that US-born persons are driving the results we found by race/ethnicity. Nonetheless, residential instability was associated with lower risk of past-year substance use and alcohol use disorders.

Although conventional reasoning suggests that residential instability indicates less social cohesiveness and greater social disorganization, factors typically associated with deleterious outcomes (Sampson et al., 1997), perhaps residential instability reflects a more complex relationship with health behaviors than previously thought (Browning and Cagney, 2003). For example, Wilson (1996) argued that residential instability may have beneficial effects in more disadvantaged neighborhoods, given these neighborhoods may actually drive some residents away (Fischer, 2002). Thus, it is plausible that since substance abusers are a more mobile group than non-users (Cahill and La Vigne, 2008), we may be capturing those tracts from which substance abusers moved out, resulting in the negative association found between residential instability and risk of substance use disorders. Future research on substance use may benefit from examining the conditional estimated effects of residential instability.

Divergent findings between our and those of other studies might be explained by methodological and sampling differences. Residential instability has mostly been measured as a composite measure including renters. However, because the tenure variable we used (i.e., % owner-occupied housing) loaded highest and negatively onto the “Disadvantage” latent factor, we did not include it in our measure of residential instability. Further, most other studies have been regionally-based and have not used diagnostic criteria for substance use disorders. Thus, our findings may not be entirely comparable to those of other studies.

4.5. Limitations and Future Directions

There are a few methodological issues that we believe warrant consideration. First, due to the cross-sectional nature of our data, we cannot infer causation or establish the directionality of any of the observed associations. It is probable that individuals with substance abuse disorders are more likely to reside in more disadvantaged neighborhoods, rather than the converse (Buu et al., 2007). Our study is unable to account for social selection, a major limitation in studies of “neighborhood effects” in terms of determining: if the neighborhood influences the individual; if the individual self-selects a type of neighborhood or; if individual changes the make up of the neighborhood in a reciprocal manner (Manski, 1989; Oakes, 2004). Future studies can attempt to account for prior neighborhood health and an individual’s history of alcohol and drug use/abuse prior to residing in their current neighborhood (Browning and Cagney, 2003). Further, retrospective recall of age of onset and the limited number of incident cases does not allow us to determine if associations between neighborhood characteristics and substance use disorders are due to an increase in the incidence rate or not. Longitudinal studies are needed to sort out the temporal sequence of the observed associations and rule out social selection processes.

Increasingly, research is making use of DSM-IV diagnoses for substance use disorders, though not all previous studies have done so. Although frequency of drug/alcohol use and substance-related disorders may represent similar constructs, the factors underlying substance use and abuse/dependency may be different (Galea et al., 2004). Similarly, it seems unlikely that neighborhood characteristics operate similarly for all psychiatric disorders; future studies should examine whether the neighborhood contexts have similar associations with other health outcomes among different racial/ethnic and nativity groups. Furthermore, census tracts may not capture individual perception of a neighborhood, which is associated with health outcomes (Alegría et al., 2007). Future research would benefit from incorporating objective and subjective features of neighborhoods. Moreover, though we only included Latino/immigrant concentration, different ethnic concentrations may have divergent associations with substance use disorders; more conceptual and methodological approaches to the study of ethnic enclaves and other multi-ethnic contexts are needed (Logan et al., 2002). Lastly, we are unable to capture changes in neighborhood characteristics or historical patterns (Logan et al., 2002) using only 2000 Census data. A systematic examination of how neighborhoods change over time and the impact it may have on substance use disorders is clearly warranted (Diez Roux, 2001).

5. Conclusion

Neighborhood context matters for past-year substance use disorders. Different contexts may differentially impact racial/ethnic and nativity groups, independent of individual-level characteristics. Recognizing this implies that strategies to address health inequalities must consider the differential associations of neighborhood context across race/ethnicity and nativity. Moreover, even when the associations between neighborhood characteristics and substance use outcomes might look similar across groups, their underlying dynamics may be different. Elucidating mechanisms through which different neighborhood contexts are associated with specific outcomes for different segments of the population has important public health and policy implications for developing targeted interventions and reducing racial/ethnic disparities (Diez Roux, 2001). Greater attention should be paid to the role of public policy in addressing social determinants of substance use disorders, such as those that consider the psychosocial conditions and stresses tied to minority status (Alegría et al., 2003). While this study provides only a partial picture of individual and neighborhood-level factors that may be associated with risk of substance use disorders, it makes a significant contribution by documenting for whom and how neighborhood social environments may shape risk of substance use disorders.

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Table 1

Factor Loadings of Census Tract-Level Variables

Census Variables	Factor Loadings			
	Concentrated Disadvantage	Latino/Immigrant Concentration	Affluence	Residential Mobility
% Owner-occupied housing (reverse coded)	0.61			
% Black	0.71			
% Unemployed	0.73			
% Public Assistance	0.78			
% Below poverty level	0.80			
% Female-headed household w/ own children under 18 yrs of age	0.84			
% Foreign-born		0.82		
% Latino		0.84		
% High school degree			0.65	
% Annual income at or above \$75,000			0.78	
% Management/ professional/ related occupations			0.92	
% Undergraduate degree and higher			0.94	
% Lived in different house in 1995				0.78
Chronbach's α	0.74	0.82	0.94	N/A

Note. Data are from the 2000 Census Summary File 3.

Table 2
Distribution of Sociodemographic Characteristics in CPES Pooled Sample and by Race/Ethnicity (Weighted)

	All		Non-Latino White		Latino		Asian		African American		Caribbean Black		p
	n = 13,837		n = 4,180		n = 2,554		n = 2,095		n = 3,570		n = 1,438		
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE	
Sex													**
Male	47.5%	0.01	47.5%	0.01	51.5%	0.01	47.5%	0.01	44.0%	0.01	50.5%	0.03	
Females	52.5%	0.01	52.5%	0.01	48.5%	0.01	52.5%	0.01	56.0%	0.01	49.5%	0.03	
Age, years													***
18–34	31.7%	0.01	27.6%	0.01	49.0%	0.02	39.5%	0.02	35.7%	0.01	39.7%	0.02	
35–49	30.9%	0.01	30.4%	0.01	30.1%	0.01	32.2%	0.02	34.1%	0.01	32.4%	0.01	
50–64	21.0%	0.01	22.9%	0.01	13.4%	0.01	18.0%	0.01	18.6%	0.01	17.0%	0.01	
65 and over	16.4%	0.01	19.1%	0.01	7.5%	0.01	10.3%	0.02	11.6%	0.01	10.9%	0.03	
Education, years													***
11 or less	18.2%	0.01	13.0%	0.01	44.5%	0.02	15.1%	0.01	24.2%	0.01	20.7%	0.02	
12	30.9%	0.01	31.5%	0.02	24.5%	0.01	17.7%	0.01	37.9%	0.01	30.5%	0.02	
13–15	27.3%	0.01	29.1%	0.01	20.8%	0.01	25.3%	0.01	23.8%	0.01	27.1%	0.04	
16 or more	23.7%	0.01	26.4%	0.01	10.2%	0.01	42.0%	0.02	14.1%	0.01	21.7%	0.01	
Work Status													***
Employed	65.3%	0.01	65.3%	0.01	63.5%	0.02	63.9%	0.01	66.8%	0.01	76.2%	0.01	
Unemployed	6.0%	0.00	5.0%	0.01	7.4%	0.01	6.4%	0.01	10.1%	0.01	8.2%	0.01	
Out of labor force	28.7%	0.01	29.7%	0.01	29.1%	0.02	29.8%	0.02	23.1%	0.01	15.5%	0.02	
Household Income													***
\$0–14,999	16.2%	0.01	12.8%	0.01	27.5%	0.02	18.3%	0.01	24.7%	0.01	13.7%	0.03	
\$15,000–34,999	22.4%	0.01	19.9%	0.01	28.7%	0.01	13.2%	0.01	33.9%	0.01	33.3%	0.03	
\$35,000–74,999	34.2%	0.01	36.1%	0.01	27.7%	0.02	28.5%	0.02	31.3%	0.01	37.0%	0.03	
\$75,000 or more	27.1%	0.01	31.2%	0.02	16.1%	0.01	40.0%	0.02	10.1%	0.01	15.9%	0.02	
Nativity													***
US-Born	86.8%	0.01	96.7%	0.01	41.5%	0.02	23.1%	0.03	97.7%	0.00	32.8%	0.03	
Foreign-Born	13.2%	0.01	3.3%	0.01	58.5%	0.02	76.9%	0.03	2.3%	0.00	67.2%	0.03	

Note. W/D/S= Widowed/Divorced/Separated. P-values are from Rao-Scott statistic for the Pearson chi-square test for contingency tables.

\$watermark-text

\$watermark-text

\$watermark-text

p<.01;

p<.001.

Table 3
Multilevel Logistic Regression Models of Any 12-Month Substance Use Disorder (Weighted)

	Model 1		Model 2		Model 3		Model 4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Individual Characteristics								
Race/Ethnicity								
White (ref)	1.00				1.00		1.00	
Latino	0.72	(0.46 – 1.12)			1.52	(0.70 – 3.32)	1.59	(0.73 – 3.46)
Asian	0.58 [†]	(0.34 – 1.00)			0.57	(0.27 – 1.25)	0.61	(0.28 – 1.32)
African American	0.51 ^{***}	(0.37 – 0.70)			0.50 [*]	(0.28 – 0.87)	0.51 ^{***}	(0.31 – 0.85)
Black Caribbean	0.95	(0.23 – 4.01)			0.50	(0.22 – 1.16)	0.36 [*]	(0.16 – 0.79)
Age, years								
18–34 (ref)	1.00				1.00		1.00	
35–49	0.67 ^{**}	(0.50 – 0.89)			0.64 ^{**}	(0.46 – 0.90)	0.64 ^{**}	(0.45 – 0.89)
50–64	0.16 ^{***}	(0.09 – 0.27)			0.15 ^{***}	(0.07 – 0.34)	0.15 ^{***}	(0.07 – 0.34)
65+	^{***}	(0.00 – 0.01)			0.00 ^{***}	(0.00 – 0.02)	0.00 ^{***}	(0.00 – 0.02)
Gender								
Male (ref)	1.00				1.00		1.00	
Female	0.41 ^{***}	(0.31 – 0.54)			0.43 ^{***}	(0.28 – 0.66)	0.42 ^{***}	(0.27 – 0.65)
Marital Status								
Married/cohabitating (ref)	1.00				1.00		1.00	
D/S/W	1.86 ^{***}	(1.37 – 2.53)			2.05 ^{***}	(1.47 – 2.86)	2.05 ^{***}	(1.47 – 2.86)
Never married	2.55 ^{***}	(1.97 – 3.32)			3.68 ^{***}	(2.29 – 5.91)	3.68 ^{***}	(2.29 – 5.92)
Education, years								
11 years (ref)	1.00				1.00		1.00	
12 years	0.66	(0.38 – 1.15)			1.19	(0.39 – 3.67)	1.21	(0.40 – 3.71)
13–15 years	0.53 ^{**}	(0.34 – 0.83)			0.84	(0.39 – 1.81)	0.84	(0.39 – 1.81)
16 years or more	0.33 ^{***}	(0.19 – 0.57)			0.34	(0.08 – 1.39)	0.34	(0.08 – 1.40)
Poverty	0.88	(0.60 – 1.28)			0.84	(0.59 – 1.19)	0.85	(0.59 – 1.21)

	Model 1		Model 2		Model 3		Model 4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Work Status								
Employed (ref)	1.00				1.00		1.00	
Unemployment	1.52[*]	(1.01 – 2.28)			1.31	(0.50 – 3.41)	1.28	(0.49 – 3.34)
Out of Labor Force	1.16	(0.74 – 1.82)			0.92	(0.31 – 2.77)	0.92	(0.30 – 2.77)
Nativity								
US Born (ref)	1.00				1.00		1.00	
Immigrant	0.28^{***}	(0.15 – 0.52)			0.11^{***}	(0.05 – 0.26)	0.11^{***}	(0.05 – 0.26)
Neighborhood Characteristics								
Disadvantage			1.00	(0.91 – 1.09)	1.03	(0.96 – 1.10)		
Latino/Immigrant Concentration			1.00	(0.95 – 1.06)	1.01	(0.95 – 1.08)		
Affluence			0.92[*]	(0.87 – 0.98)	0.92^{**}	(0.86 – 0.98)		
Residential Mobility			0.91^{**}	(0.86 – 0.96)	0.89^{**}	(0.82 – 0.97)		
Neighborhood Characteristics x Race/Ethnicity								
Disadvantage (White)								
Latino ^a							1.05	(0.89 – 1.24)
Asian ^a							0.97	(0.82 – 1.13)
African American ^a							0.77 [†]	(0.57 – 1.03)
Black Caribbean ^a							0.93	(0.75 – 1.15)
Latino/Immigrant Concentration (White)							1.25	(0.95 – 1.64)
Latino ^a							1.02	(0.95 – 1.09)
Asian ^a							0.92 [†]	(0.84 – 1.01)
African American ^a							1.00	(0.83 – 1.20)
Black Caribbean ^a							0.98	(0.87 – 1.12)
Affluence (White)							0.84	(0.65 – 1.09)
Latino ^a							0.89[*]	(0.82 – 0.98)
							1.00	(0.86 – 1.16)

	Model 1		Model 2		Model 3		Model 4	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Asian ^a							1.16 [*]	(1.01 – 1.33)
African American ^a							1.35 ^{***}	(1.14 – 1.59)
Black Caribbean ^a							1.13	(0.63 – 2.03)
Residential Mobility (White)							0.90 [†]	(0.81 – 1.00)
Latino ^a							0.86	(0.70 – 1.04)
Asian ^a							0.92	(0.76 – 1.12)
African American ^a							1.02	(0.87 – 1.19)
Black Caribbean ^a							1.01	(0.67 – 1.50)
Constant	0.12 ^{***}	(0.08 – 0.20)	0.02 ^{***}	(0.02 – 0.04)	0.05 ^{***}	(0.02 – 0.13)	0.05 ^{***}	(0.02 – 0.13)
Observations	13626		13624		13592		13592	

Note.^aReference group is non-Latino whites. D/S/W= Divorced/separated/widowed.[†]p< .10;^{*}p< .05;^{**}p< .01;^{***}p< .001