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Neighborhood Context and Binge Drinking by Race and Ethnicity in New York City

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Abstract

Background—Neighborhood context is associated with binge drinking and has significant health, societal, and economic costs. Both binge drinking and neighborhood context vary by race and ethnicity. We examined the relations between neighborhood characteristics —neighborhood norms that are accepting of drunkenness, collective efficacy, and physical disorder — and binge drinking, with a focus on examining race and ethnic-specific relationships.

Methods—Respondent data were collected through 2005 random digit-dial-telephone survey for a representative sample of New York City residents; neighborhood data were based on the 2005 New York City Housing and Vacancy Survey. Participants were 1,415 past year drinkers; Whites ($n = 877$), Blacks ($n = 292$) and Hispanics ($n = 246$). Generalized Estimating Equations (GEE) were used to estimate population average models.

Results—For the overall sample, neighborhood norms that were more accepting of drunkenness were associated with greater binge drinking (OR = 1.22; 95% CI = 1.09, 1.37); collective efficacy and physical disorder were not significant. However, when examining this by race/ethnicity, greater collective efficacy (OR = 0.75; 95% CI = 0.62, 0.91) and greater physical disorder (OR = 0.76; 95% CI = 0.62, 0.93) were associated with less binge drinking for Whites only. Neighborhood norms that were more accepting of drunkenness were associated with binge drinking among Whites (OR = 1.20; 95% CI = 1.05, 1.38) and, while not significant (perhaps due to power), the associations were similar for Hispanics (OR = 1.18; 95% CI = 0.83, 1.68) and slightly lower for Blacks (OR = 1.11; 95% CI = 0.67, 1.84).

Conclusions—Overall, results suggest that neighborhood characteristics and binge drinking are shaped, in part, by factors that vary across race/ethnicity. Thus, disaggregating data by race/ethnicity is important in understanding binge drinking behaviors.

Keywords

Binge drinking; neighborhood norms; collective efficacy; physical disorder; racial and ethnic differences

Binge drinking is associated with significant economic and social costs related to victimization, injury, and health (Bouchery et al., 2011; Centers for Disease Control and Prevention, 2014; Cotti et al., 2014; MacDonald et al., 2005). For example, in 2006, the cost of binge drinking in the United States was \$170.7 billion from loss of productivity, healthcare, and criminal justice costs (Bouchery et al., 2011). A growing body of literature indicates: (1) neighborhood context shapes binge drinking; (2) neighborhood context varies by race/ethnicity; and (3) binge drinking varies by race/ethnicity. We seek to integrate and build upon this body of work. First, we will examine how three neighborhood characteristics –neighborhood norms regarding acceptance of drunkenness, collective efficacy, and physical disorder –influence binge drinking. Second, we will investigate whether the relations between neighborhood context and binge drinking vary by race/ethnicity.

Neighborhood Characteristics and Binge Drinking

There are many theoretical explanations suggesting why neighborhoods play an important role in shaping drinking behaviors. It is well documented that proximity to alcohol outlets is associated with binge drinking (Ahern et al., 2013) with some indication that the impact of alcohol outlets does not vary by race and ethnicity (Truong & Strum, 2009). However, there may be a role for neighborhoods beyond the point at which purchase of alcohol occurs. For instance, individuals who live in neighborhoods with high levels of physical disorder (e.g., crime, dilapidated buildings, litter) may have higher levels of alcohol consumption as a means of coping with this adversity (Hill & Angel, 2005; Mulia et al., 2008). Further, high levels of collective efficacy (cohesion and cooperation among neighborhoods as evidenced by such factors as willingness to intervene on behalf of neighbors (Sampson, Raudenbush et al. 1997)), may be related to alcohol consumption in two ways – collective efficacy could lower drinking because it reduces feelings of isolation (Fagan et al., 2014) or it could enhance drinking by providing a social network for alcohol consumption (Zhou et al., 2014). Lastly, drinking norms may set the tone for appropriate behaviors within a neighborhood and permissive drinking norms could promote a culture of drinking (Ahern et al., 2008). Permissive drinking norms may also provide social networks that allow for engaging in high levels of drinking.

Indeed, empirical analyses have demonstrated that factors such as neighborhood physical disorder are associated with drinking outcomes. Neighborhood physical disorder is associated with increased drinking in cross-sectional studies among adults in New York City (Bernstein et al., 2007) and the Netherlands (Kuipers et al., 2012). It has also been found with longitudinal studies among low income women from Boston, Chicago, San Antonio, and Northern California (Hill & Angel, 2005; Mulia et al., 2008) and adults in Canada (Martin-Storey et al., 2013). Most relevant to our study, Bernstein et al. (2007), found that individuals who live in neighborhoods with poor external (i.e., structural issues with windows and stairways) as well as internal characteristics (i.e., poor heating, water leakage,

peeling paint) were more likely to engage in heavy alcohol use, after adjusting for neighborhood income, age, race, and sex. However, potential confounding by other aspects of the neighborhood environment has not been rigorously examined.

Empirical results that test the relation between collective efficacy and alcohol consumption are mixed. One study in New Zealand found that higher social cohesion, a component of collective efficacy, was related to greater frequency of drinking but less consumption per drinking occasion (Lin et al., 2012) independent of neighborhood disorder. Another study from the Netherlands found that social cohesion had no linear association with hazardous alcohol use but that moderate social cohesion was related to more alcohol use in men (Kuipers et al., 2012). This study also found that neighborhood disorder, relative to social cohesion, was a more important factor in alcohol use. Using South African townships, Cain et al. (2013) found that those who endorse higher levels of collective efficacy reported less binge drinking. Further research using different neighborhood constructs that also consider potential confounding factors such as social norms is important to clarify the role and importance of collective efficacy in drinking behaviors.

An association between social norms surrounding drinking and alcohol consumption has been documented in diverse samples. Social norms refer to codes of conduct that are often unseen but that are believed to regulate thought and behavior, and evidence indicates that perceptions of norms around drinking (e.g., whether it is permissible to be drunk, how much drinking is permissible) predict drinking behavior across social context (Cunningham et al., 2012; Greenfield & Room, 1997; Skog, 1985). Permissive drinking norms were associated with higher levels of drinking and binge drinking in cross-sectional studies with New York City adults (Ahern et al., 2008) and African American men who have sex with men (Tobin et al., 2014). This relationship between permissive drinking norms and higher drinking has also been found among college students using cross-sectional (Halim et al., 2012) and longitudinal designs (Talbot et al., 2014). Ahern et al. (2008), in a study using the data from the present study, found that permissive neighborhood drunkenness norms were associated with binge drinking after adjusting for individual drunkenness norms, though these results were not stratified by race and did not simultaneously consider other neighborhood constructs such as physical disorder. Further research, using these data, have also indicated a role of neighborhood drinking norms on alcohol use disorder (Ahern, Balzer et al. 2015). Taken together, this literature suggests that a culture of drinking has an influence beyond individual drinking beliefs. In addition, it also suggests that norms that are less accepting of drunkenness may be related to less binge drinking.

Variation by Race/Ethnicity

The pattern of alcohol consumption varies by race and ethnicity in the United States, reflecting diverse situational norms for drinking and historical legacies that manifest in drinking behavior (Zapolski et al. 2014). A range of samples consistently demonstrates that Whites are less likely to abstain from drinking (Kerr et al., 2011; Zapolski et al., 2014) and are more likely to binge drink (Banta et al., 2014; Chariter & Caetano, 2010) compared to Blacks and, depending on the ethnic subgroup, Hispanics (Kanny et al., 2012; Serdula et al., 2004). However, Blacks and Hispanics have a heavier burden of some consequences of

alcohol use, including unemployment, medical, and social consequences relative to Whites (Caetano et al., 1998; Chartier & Caetano, 2010; Sloan et al., 2009). Neighborhood context may help to explain these distinct drinking patterns, given that neighborhoods also vary by race/ethnicity.

In the United States, race/ethnic minorities are more likely to live in neighborhoods with higher levels of disorder (Kelly et al., 2007). Kelly et al. (2007) found that block groups that were predominantly Black were 12 times more likely to have disorder including abandoned buildings, the presence of trash and graffiti, broken windows, and abandoned cars. Blacks and Hispanics generally live in less socially cohesive and informally controlled neighborhoods relative to Whites (Hobson-Prater & Leech, 2012; Tobler et al., 2009). Social norms regarding drinking also differ substantially by race/ethnicity in the United States with Blacks being more disapproving of alcohol use, relative to Whites (see review: Zapolski et al., 2014).

In summary, neighborhoods with high levels of disorder and permissive drinking norms place individuals at risk for higher alcohol consumption. Blacks and Hispanics live in neighborhoods that are characterized by greater disorder. However, Blacks also live in neighborhoods with less permissive drinking norms that are associated with less binge drinking. It is possible that drinking norms are a more powerful driver for binge drinking, relative to physical disorder and collective efficacy, and may be a critical factor in binge drinking among Blacks relative to Whites and Hispanics. No study, to our knowledge, has examined the role of these different neighborhood characteristics on binge drinking by race/ethnicity.

Study aims

The present study seeks to examine the relationship between binge drinking and three neighborhood characteristics simultaneously (i.e., physical disorder, collective efficacy, and neighborhood norms surrounding drunkenness) while controlling for individual characteristics (i.e., demographics, individual perceptions of collective efficacy, and attitudes towards getting drunk). Further, given differences in binge drinking patterns as well as in neighborhood context among Blacks, Hispanics and Whites, we seek to determine whether these relationships vary by race/ethnicity.

Method

Research Design

The New York Social Environment Study was conducted from June 2005 to December 2005. It is a multilevel study designed to examine the relations between neighborhood characteristics and individual substance use and mental health outcomes in New York City. In each household, one adult aged 18 years or older whose birthday was closest to the date of the survey was interviewed by telephone. Interviews were conducted in either English or Spanish. Of those contacted and eligible, 54% agreed to participate in the study. Respondents were offered \$10 in compensation for their participation. Using a random digit-dial-telephone survey of households across New York City, we interviewed 4,000

participants. Previous studies of these data have considered neighborhood social norms and alcohol outcomes (Ahern et al. 2008, Ahern, Balzer & Galea, 2015), as well as other neighborhood constructs and alcohol (Ahern, et al., 2013; Le, Ahern & Galea, 2008), tobacco use (Ahern, Hubbard, & Galea, 2009, Ahern et al. 2009, Karasek, Ahern, & Galea, 2012), depression (Ahern & Galea 2011), and violence (Ahern et al. 2013). In the present paper we simultaneously consider a range of neighborhood indicators in relation to binge drinking, by race and ethnicity.

We limited our analyses to those who drank in the last year and to those who lived in the neighborhood for at least a year, in an effort to ensure sufficient exposure to the neighborhood and its possible influence on binge drinking. Our final sample size was 1,415; Whites ($n = 877$), Blacks ($n = 292$) and Hispanics ($n = 246$). Other race/ethnic groups were not analyzed due to small sample size.

Measures

Individual Level Characteristics—We controlled for several individual level factors that were associated with both excessive drinking and were measured in the survey – being male, being younger in age, higher income, not graduating college, and being single (Naimi et al. 2003, Keyes & Hasin 2008, Paul et al., 2011). We also examined individual perceptions of collective efficacy and individual acceptance of drunkenness, described below.

Demographics: Participants were interviewed with a structured questionnaire that included socio-demographic variables including age, gender (reference group male), marital status (i.e., married, divorced, separated, widowed, and never been married; reference group never been married), education (i.e., less than high school, high school graduate/GED, some college, college graduate, and graduate work; reference group graduate work), and household income (i.e., less than or equal to \$40,000, more than \$40,000 to \$80,000, and more than \$80,000; reference group \$80,000+). See Table 1 for means and frequencies.

Acceptance of Drunkenness: We used modified questions from the National Survey on Drug Use and Health (Substance Abuse and Mental Health Services Administration, 2007) to measure drinking norms. Participants were asked how they felt about adults getting drunk at least once a week (acceptable, unacceptable, or don't care one way or the other). This variable was coded into acceptable or other (which included unacceptable or don't care one way or the other).

Collective Efficacy (Sampson et al., 1997): Participants were asked five questions regarding informal social control including likelihood of a neighbor intervening if children in the neighborhood were skipping school, spray painting graffiti, showing disrespect to another adult, a person being beaten or threatened, and whether the local community would organize to keep a fire station from closing. They were also asked five questions regarding social cohesion including level of agreement with items on whether neighbors are close-knit, willing to help, get along, share the same values, and can be trusted. Responses were given on a 5-point Likert scale and the two scales were combined to measure collective efficacy

given preliminary analyses indicating similar magnitude of associations with binge drinking. Higher scores indicate greater collective efficacy. This measure represented good internal consistency for the group as a whole ($\alpha = 0.77$) and by race/ethnicity for Whites ($\alpha = 0.77$), Blacks ($\alpha = 0.78$), and Hispanics ($\alpha = 0.72$).

Alcohol consumption: We assessed alcohol consumption with the World Mental Health Composite International Diagnostic Interview (CIDI) alcohol module (Kessler & Ustun, 2004) and National Institute on Alcohol Abuse and Alcoholism (NIAAA) binge drinking questions (NIAAA Task Force, 2003). These questions included whether individuals ever drank, whether they drank in the past year, and how many drinks per drinking day. We calculated the outcome of binge drinking as 5 or more drinks in two hours for men and 4 or more drinks in two hours for women.

Neighborhood Level Characteristics

The neighborhood units were community districts. New York City has 59 community districts defined by the Office of City Planning. In the 1970s, these community districts were created by residents using a consultative process to reflect residents' own descriptions of neighborhoods. Consequently, these areas represent recognizable neighborhoods with which residents identify, such as Hell's Kitchen and the South Bronx. The community districts share political and social organizations and are more than physical spatial units; community districts have been extensively used as geographic indicators in health studies of New Yorkers. Each participant's address or nearest cross streets was geocoded and linked to a community district. The average number of participants per community district was 78, with a range of 19 to 144.

Physical Disorder—Data for the physical disorder variables was collected from the New York City Housing and Vacancy Survey (NYCHVS) from 2005 (NYCHVS; U.S. Census Bureau, 1999). The NYCHVS is conducted every three years to comply with state and city rent regulation laws. The survey responses were weighted using 2000 Census level data.

The NYCHVS collects data from trained observers and residents. First, observers indicated whether a series of building problems were present as they approached the building or walked inside a building (coded as present or not) and included external wall problems (e.g., missing bricks, sloping walls, major cracks, loose roofing), window problems (e.g., broken, missing, rotted, loose, or boarded up windows), stairway problems (e.g., loose, broken, or missing stair railing and steps), floor problems (e.g., sagging or sloping floors, slanted or shifted door frames, deep wears in floors, holes, or missing flooring), and whether the building was dilapidated or deteriorated. Second, a person living in the occupied house answered a series of questions regarding whether there were issues with the plumbing (incomplete plumbing, no plumbing, or shared plumbing), the kitchen (incomplete kitchen, no kitchen, or one or more kitchen facilities does not work), the heating (heating breakdown or needing sources of additional heat), the toilet (no toilet, not working in the past 3 months), and how many maintenance deficiencies they experienced in 2005. Those living in the house also answered a series of questions related to internal disorder. This included

presence (coded as yes or no) of mice, cracks or holes in interior walls, holes in the floor, broken plaster, peeling paint, and water leakage. A total of 47 items were included in the physical disorder assessment. We conducted a principal component analysis to develop a construct of physical disorder. The internal consistency for this variable was adequate for the group as a whole 0.96 and by race/ethnicity (Whites $\alpha = 0.95$, Blacks $\alpha = 0.96$, and Hispanics $\alpha = 0.96$).

Collective Efficacy—Participants' responses within a neighborhood were averaged to calculate a variable that represents the community district's collective efficacy. The full sample (N=4,000) was used to generate these averages, and in the analytic sample, the mean neighborhood collective efficacy across community districts was 3.61, with a range of 2.73 to 4.05.

Acceptance of Drunkenness—Drunkenness norms were calculated as the proportion of residents who believed it was acceptable to get drunk once a week compared to others. The full sample, (N=4,000) was used to generate proportions, and in the analytic sample, the mean neighborhood acceptance of drunkenness across community districts was 22%, with a range of 11% to 44%.

Data Analytic Plan

All analyses were weighted for sampling by using the ratio of the persons in the household to phone lines in the household to account for probability of being selected for the interview. Descriptive and bivariate analyses were conducted using survey procedures in SAS 9.3 (SAS Institute, 2011). Variance was estimated using Taylor series linearization.

First, we examined race/ethnic differences in the individual and neighborhood variables. Comparisons were made by race/ethnicity; chi-square tests were used for categorical variables, t-tests were used for continuous variables. Second, using the Proc Genmod function in SAS 9.3, we estimated population average models with Generalized Estimating Equations (GEE) overall and by race/ethnicity. GEE models account for clustering of the data and assume a common correlation matrix of the repeated response measure (Hubbard et al., 2010). We chose this over random effects models given that our interest is not on the effects of a specific community district on binge drinking (conditional means) but rather on varying neighborhood exposures on binge drinking across all community districts (marginal means). Our models used the logit link function and an exchangeable correlation matrix, and we report robust standard errors. All neighborhood variables were standardized using z-scores to facilitate interpretation for regression modeling. When examining our models that were stratified by race and ethnicity, several community districts were excluded due to the absence of a person of that race and ethnicity in our data. We excluded seven community districts for Whites, nine for Blacks, and four for Hispanics.

Results

Descriptive and Bivariate Analyses

Table 1 describes the socio-demographic and alcohol use characteristics for the entire group and by race/ethnicity. The mean age was 45.14 (SE = 0.51; Range 18–94) with significant differences between the three groups. In our sample, White respondents were the oldest and the Hispanics were the youngest. There were no significant differences with regard to gender. Whites were more likely to be married and less likely to be single compared to Black and Hispanic respondents. There were no race/ethnic differences in whether the individual believed it was acceptable to get drunk once a week. Compared to Blacks and Hispanics, Whites reported more collective efficacy in their neighborhoods.

In terms of neighborhood characteristics, neighborhoods within which Blacks lived were the least accepting of drunkenness once a week, followed by Hispanics, and then Whites. Further, neighborhoods within which Whites lived had more collective efficacy relative to both Blacks and Hispanics. Lastly, Blacks and Hispanics tended to live in the most physically disordered neighborhoods, while Whites lived in the least physically disordered neighborhoods.

Multivariate Analysis

For the group as whole, individuals who believed it was acceptable to get drunk once a week were 2.32 times more likely to binge drink compared to those who were not accepting (see Table 2). At the neighborhood level, physical disorder and collective efficacy were not significantly associated with binge drinking. Neighborhood norms that were more accepting of drunkenness once a week were associated with greater binge drinking. Controlling for individual attitudes, a one point increase in the percentage of respondents in a community district who were accepting of drunkenness was associated with a 22% increase in the odds of respondent binge drinking.

Stratified by race/ethnicity, a different pattern of results emerged. Whites who believed it was acceptable to get drunk once a week were more likely to binge drink compared to those who did not have those beliefs (OR = 3.23); the relation was not as strong among Blacks (OR = 1.39) and Hispanics (OR = 1.95). The interaction between race/ethnicity and attitudes toward drunkenness was significant (chi-square=8.8, $p=0.003$).

In terms of neighborhood characteristics, neighborhood acceptance of drunkenness was associated with increased odds of drinking in all three racial/ethnic groups, and was statistically significant among Whites (OR=1.20, 95% C.I. 1.05–1.38). The interaction between race and neighborhood acceptance of drunkenness was not significant (Chi-square=0.25, $df=1$, $p=0.64$). Higher neighborhood collective efficacy was associated with decreased odds of binge drinking in all three racial/ethnic groups, and was statistically significant among Whites (OR=0.75, 95% C.I. 0.62–0.91). The interaction between race and neighborhood collective efficacy was not significant (chi-square=0.13, $df=1$, $p=0.72$). Higher neighborhood physical disorder was associated with decreased odds of binge drinking, significantly among Whites (OR=0.76, 95% C.I. 0.62, 0.93); ORs were close to

1.0 for Blacks and Hispanics, and the interaction between race and neighborhood physical disorder was not significant ($\chi^2=2.1$, $df=1$, $p=0.15$).

Discussion

The present study examined the role of social norms of drunkenness at the individual and neighborhood level as well as neighborhood characteristics including physical disorder and collective efficacy on binge drinking among Black, Hispanic, and White adult drinkers in New York City. We found that, in the full sample of current drinkers, both individual and neighborhood acceptance of drunkenness were independently related to risk for binge drinking indicating that both individual attitudes and community norms jointly shape risk for problematic alcohol use. Individual perceptions of collective efficacy, neighborhood norms around collective efficacy, and neighborhood physical disorder were not associated with binge drinking. This suggests that when considering these three neighborhood characteristics simultaneously neighborhood norms are most influential with regard to binge drinking. When disaggregating this by race/ethnicity, individual acceptance of drunkenness was more strongly associated with binge drinking among Whites in New York City compared with Black and Hispanic respondents.

Before contextualizing our results, it is important to note that when stratifying our data by race and ethnicity, several community districts were excluded due to the absence of a person of that race or ethnicity in our sample. Further, neighborhood indicators were significantly associated with binge drinking among Whites but not among Black and Hispanic subgroups and interaction results indicated that the effect sizes did not significantly vary. While limited power may underlie some of the interaction results, we note that magnitudes of associations did not substantially vary, suggesting limited evidence for differential neighborhood effects by race/ethnicity in these data.

Our results are in contrast to previous work that has found a positive relationship between physical disorder and binge drinking (Bernstein et al. 2007; Hill & Angel, 2005; Kuipers et al., 2012; Mulia et al., 2008). However, the majority of these studies examined individual perceptions of physical disorder based on self-report rather than ratings by observers that are aggregated to a neighborhood level (Hill & Angel, 2005; Kuipers et al., 2012; Mulia et al., 2008). Bernstein and colleagues' (2007) study used observer ratings but they did not account for other competing factors, suggesting that accounting for the role of social norms in the study of drinking patterns is critical when examining neighborhood effects on drinking. Future research that models these neighborhood factors over time to assess their functional form and relations is an important direction of this work.

Higher neighborhood-level collective efficacy was associated with lower risk for binge drinking, though results were significant only among the White subgroup. Prior research on collective efficacy and binge drinking are mixed with some studies showing lower binge drinking with a South African sample (Cain et al., 2013), greater frequency but less drinking per occasion in a New Zealand sample (Lin et al., 2012), and gender differences, with greater effects for men, in a sample from the Netherlands (Kuipers et al., 2012). All three studies examined individual reports of collective efficacy rather than collective efficacy

aggregated to the neighborhood level. Therefore, it is difficult to compare these results to the present sample, where collective efficacy was aggregated at the neighborhood level. Further, the interaction between race/ethnicity and neighborhood collective efficacy was not significant, indicating that results did not substantially vary by race/ethnicity. That stated, the magnitude of the odds ratio was strongest among Whites, suggesting that there is a need to examine variation in the impact of collective efficacy of binge drinking among adults. It is possible that other exposures experienced by racial/ethnic minorities diminish the role of the neighborhood context for binge drinking, including stressors associated with marginalized social status (Clark, Salas-Wright et al. 2015) such as discrimination and stigma. In addition, social sanctions against drinking among predominately Black and Hispanic neighborhoods (Zapolski et al., 2014) may limit variation in risky drinking associated with factors such as collective efficacy. Further research into social norms and their role in shaping drinking, conjointly with individual and other risk factors, are important next steps of research into high risk drinking patterns.

The results on neighborhood norms surrounding acceptance of drunkenness build upon a body of literature suggesting that neighborhood and cultural norms are critical in understanding drinking behaviors (Ahern et al., 2008; Keyes et al., 2012; Zapolski et al., 2014) as well as other substance use behaviors (Ellickson et al., 1999; Keyes et al., 2011). The association magnitudes were similar across race and ethnicity, as evidenced by non-significant interaction between race/ethnicity and neighborhood norms. Prior studies have found that situational norms (i.e., where individual believe drinking is acceptable) are associated with drinking behaviors for both Black and White adults (Caetano & Clark, 1999) and Black, White, and Hispanic men (Herd, 1994).

While neighborhood norms do not differ across race and ethnicity in association with binge drinking, we found that at the individual level, personal attitudes regarding acceptance of drunkenness are associated with binge drinking among Whites but not other racial/ethnic groups, with significant interaction in effect size. Our results add to the growing literature which have found social and cultural norms of alcohol are a salient predictor of alcohol use for White adolescents compared to Black (Keyes et al., 2011; Mrug & McCay, 2013) and Hispanics adolescents (Corbin et al., 2008). These contrasting results by race and ethnicity in the literature may be the result of operationalization of norms that vary by situation and developmental stage. There are two potential mechanisms underlying these differential associations between attitudes and binge drinking by race. First, Blacks and Hispanics in our sample, compared to Whites, lived in neighborhoods that were generally more disapproving of drunkenness. There is substantial evidence that neighborhoods in the United States are substantially segregated with respect to race and ethnicity (Sampson, 2012). These two factors may create a unique context within which social norms, rather than individual beliefs, shape drinking behaviors among minorities. Second, even though we adjusted for income, there may be residual confounding with socioeconomic status. Individuals from lower socioeconomic status are more likely to attribute alcohol problems to external causes (e.g. stress of unsafe living conditions), whereas those of higher socioeconomic status are more likely to attribute alcohol problems to internal causes (e.g., personal moral failing) (McKirman, 1984). Extending this work, Whites in our sample, who in general have higher socioeconomic status, may be more likely to attribute drinking to internal causes such as

individual beliefs that shape their drinking behaviors, compared with Blacks and Hispanics. Regardless, these differences highlight the importance of investigating drinking behaviors by race/ethnicity. The present study was not able to assess longitudinal relations between changing neighborhoods and effects on changing drinking patterns, precluding an assessment of how neighborhood constructs mediate and are mediated by each other. For example, collective efficacy could shape drunkenness norms or vice versa, thereby shaping drinking outcomes. Further research with longitudinal information on changing neighborhoods is a critical next step of this research.

This study has several limitations. First, the cross-sectional nature of our research design cannot tease apart the longitudinal relationships between neighborhood factors and drinking. For example, more disapproving attitudes of drunkenness were associated with less binge drinking, but we cannot assess the effects of changing neighborhood attitudes on changes in binge drinking. Cultural norms may be related to less drinking or less drinking may create the cultural norms of more disapproving attitudes. Future research should investigate the causal direction of this relationship. Second, as mentioned, several of these neighborhoods characteristics are related to one another. For example, neighborhood disorder characterized by poor physical living conditions and disorder may lead to less collective efficacy and subsequently allow for more permissive drinking norms (Kuipers et al., 2012; Mulia et al., 2008). Future research should examine the interactive relationship among neighborhood variables and their influence on binge drinking. Third, we did not include other relevant neighborhood characteristics that have shown a relationship to binge drinking such as alcohol outlets (Ahern et al., 2015) and neighborhood disadvantage (Karriker-Jaffe et al., 2012). The constructs of physical disorder, collective efficacy, and norms were of the most interest to us, particularly given the lack of research in this area, with regard to race and ethnic differences. Further, these data were collected in New York City, which is richly diverse in demographics and neighborhoods; results may not generalize to other locations. Fourth, we were unable to account for measurement error in the neighborhood variables which may have contributed to some of the null findings for Blacks and Hispanics (Mujahid, Diez Roux, Morenoff & Raghunathan, 2007). Lastly, there is significant variability in drinking patterns among different Hispanics subgroups (Cateano et al., 1998). Therefore, we may have been unable to detect associations due to heterogeneity within our Hispanic sample.

Overall, results suggest that neighborhood characteristics and binge drinking are shaped in part by factors that vary across race/ethnicity, and thus that disaggregating data by race/ethnicity is important in understanding binge drinking behaviors. The results highlight the fact that we have a limited understanding of how collective efficacy and physical disorder relate to binge drinking by race and ethnicity. Neighborhood norms appear to operate similarly but further research, with greater power, is needed.

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Table 1

Socio-Demographic, Neighborhood, and Binge Drinking Characteristics for White, Black, and Hispanic current drinkers in the New York Social Environment Survey (N=1,415)

Individual Characteristics	Full Group	White	Black	Hispanic	<i>p</i> < .05
Age	45.14 (0.51)	48.03 (0.65)	43.42 (1.13)	37.79 (1.01)	All
Gender					
Male	836 (61.6%)	511 (59.9%)	178 (64.8%)	147 (63.5%)	None
Female	579 (38.4%)	366 (40.1%)	114 (35.2%)	99 (36.5%)	
Marital Status					
Married	611 (49.5%)	421 (55.8%)	92 (37.6%)	98 (43.5%)	W vs B, H
Divorced	180 (9.5%)	110 (9.0%)	38 (11.1%)	32 (9.1%)	
Separated	52 (3.3%)	14 (1.2%)	18 (5.0%)	20 (7.8%)	
Widowed	102 (5.2%)	72 (5.8%)	22 (6.5%)	8 (2.0%)	
Never Been Married	463 (32.5%)	257 (28.2%)	120 (39.8%)	86 (37.6%)	
Education					W vs B, H
Less than high school	100 (7.8%)	24 (2.7%)	33 (12.5%)	43 (17.9%)	
High school graduate/GED	263 (20.5%)	118 (15.0%)	76 (26.0%)	69 (30.9%)	
Some college	269 (20.4%)	124 (16.2%)	93 (32.2%)	52 (20.0%)	
College graduate	392 (26.1%)	279 (31.0%)	63 (19.7%)	50 (18.7%)	
Graduate work	389 (25.2%)	331 (35.1%)	26 (9.7%)	32 (12.6%)	
Income					All
Less than or equal to 40,000	405 (31.4%)	163 (19.8%)	124 (41.0%)	118 (55.3%)	
More than 40,000 to 80,000	481 (37.0%)	305 (38.2%)	106 (41.2%)	70 (28.6%)	
More than 80,000	400 (31.5%)	319 (41.9%)	46 (17.8%)	35 (16.1%)	
Acceptance of Drunkenness					None
Yes	439 (30.6%)	275 (30.9%)	92 (32.2%)	72 (27.5%)	
No	976 (69.5%)	602 (69.1%)	200 (67.8%)	174 (72.5%)	
Collective Efficacy	3.61 (0.02)	3.77 (0.03)	3.48 (0.05)	3.47 (0.05)	W vs. B, H
Neighborhood Characteristics*					
Acceptance of Drunkenness	0.22 (0.002)	0.23 (0.003)	0.19 (0.003)	0.21 (0.004)	All
Collective Efficacy	3.61 (0.01)	3.69 (0.01)	3.49 (0.01)	3.49 (0.02)	W vs. B, H

Individual Characteristics		Full Group	White	Black	Hispanic	<i>p</i> < .05
Physical Disorder		−0.21 (0.03)	−0.47 (0.03)	0.17 (0.07)	0.17 (0.07)	W vs. B, H
Outcome						
Binge Drinking in the Last Year						
Yes		396 (29.0%)	231 (27.8%)	85 (26.7%)	80 (35.1%)	None
No		1019 (71.0%)	646 (72.2%)	207 (73.3%)	166 (64.9%)	

Note. W stands for White, B stands for Black and H stands for Hispanic. Frequency of response categories are unweighted; percentages, means and standard errors are weighted. Chi-square tests used for categorical variables; t-tests used for continuous variables.

* Neighborhood characteristics are based on the averages across neighborhoods and are continuous variables. The range of acceptance of drunkenness was 0.11 to 0.44, indicating that neighborhoods ranged from 11% of respondents in a community district reporting that it is acceptable to get drunk to 44% of respondents in a community district reporting that it is acceptable to get drunk. Ranges for mean collective efficacy by neighborhood was 2.73 to 4.05, and mean physical disorder by neighborhood was −1.47 to 2.67. Physical disorder value is based on a principal component analysis of all variables indicative of neighborhood physical disorder based on the 2005 New York City Housing and Vacancy Survey.

Generalized Estimating Equations Predicting Binge Drinking for White, Black, and Hispanic current drinkers in the New York Social Environment Survey (N=1,415).

Table 2

	Full Group Odds Ratio (95% CI) (N _{CD} = 59)	Whites Odds Ratio (95% CI) (N _{CD} = 52)	Blacks Odds Ratio (95% CI) (N _{CD} = 50)	Hispanics Odds Ratio (95% CI) (N _{CD} = 55)
Individual Acceptance of Drunkenness	2.32 (1.67, 3.22)	3.23 (2.23, 4.68)	1.39 (0.64, 3.01)	1.95 (0.92, 4.14)
Individual Collective Efficacy	0.96 (0.77, 1.19)	0.97 (0.69, 1.36)	0.82 (0.56, 1.21)	0.96 (0.57, 1.63)
Neighborhood Acceptance of Drunkenness	1.22 (1.09, 1.37)	1.20 (1.05, 1.38)	1.11 (0.67, 1.84)	1.18 (0.83, 1.68)
Neighborhood Collective Efficacy	0.89 (0.74, 1.06)	0.75 (0.62, 0.91)	0.89 (0.54, 1.49)	0.95 (0.62, 1.44)
Neighborhood Physical Disorder	0.91 (0.77, 1.06)	0.76 (0.62, 0.93)	1.06 (0.73, 1.56)	0.98 (0.74, 1.29)

Note. Full group model adjusts for age, race, sex, marital status, education and income. Race/ethnicity-specific model adjusts for age, sex, marital status, education and income. CI stands for Confidence Interval. CD stands for Community Districts. Seven community districts did not have any Whites, nine had no Blacks, and four had no Hispanics.