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Perceived Neighborhood Fear and Drug Use Among Young Adults

Katherine P. Theall, PhD¹, Claire E. Sterk, PhD², and Kirk W. Elifson, PhD³

¹Louisiana State University, School of Public Health

²Emory University, Rollins School of Public Health

³Georgia State University, Department of Sociology

Abstract

Objectives—To examine the association between perceptions of neighborhood safety and drug use, as well as mediation by depression and self-esteem.

Methods—The sample included 210 inner-city young adults (18 to 25 years) recruited from the Atlanta, Georgia, USA.

Results—Respondents who indicated greater fear of their neighborhood environment also had significantly greater levels of drug use than did those with lower perceived fear. However, this relationship was not a result of lower self-esteem or higher levels of depressive symptoms.

Conclusions—Exploratory results point to the need to consider the broader role of the community environment and its impact on drug use among young adults.

The social environment increasingly is recognized as a key component when considering health issues beyond the commonly individual-level risk and protective factors. Two main examples of social environment constructs that have been explored are social capital indicators and social disorganization at the neighborhood level. Numerous studies over the past several decades have examined the effect of neighborhood environment on individual and population mortality and health status. The search for mechanisms that explain *why* neighborhoods matter has come into focus in both social and behavioral science and public health literature.¹ Neighborhood characteristics may affect the health of the perceived fear. However, this relationship was not a result of lower self-esteem or higher levels of depressive symptoms. *Conclusions:* Exploratory results point to the need to consider the broader role of the community environment and its impact on drug use among young adults residents through stressful neighborhood conditions as well as the availability of resources. However, the mechanisms through which neighborhood context may influence health behavior remains poorly understood, and few studies have examined the mechanisms that link neighborhood characteristics to behavioral health outcomes such as drug use.^{2,3}

Many urban neighborhoods are characterized by elevated sources of stress, including economic deprivation, income inequality, social disorder, crime and victimization, drug use, and a strong presence of the HIV epidemic. Crime serves as a source of stress in many urban neighborhoods, not only for those who perceive high personal risks of victimization but also for those who fear for the safety of those they care about.⁴ Repeated exposure to stressful situations has been shown to foster an allostatic load—chronic overactivity or inactivity of

Address correspondence to Dr. Theall, Louisiana State University, School of Public Health, 1615 Poydras St., Suite 1500, Room 1536, New Orleans, LA 70112. ktheal@lsuhsc.edu.

body systems that change to meet demands of a stressful environment.⁵ Stress also has been identified as leading to adverse health outcomes through poor immune function and depression.⁶ In addition, social stress may result in feelings of helplessness and hopelessness, which in turn, may lead to escapism in the form of certain behaviors such as substance use, possibly through various pathways.^{7,8} The relationship between social stress and behavior is likely to be mediated by psychosocial characteristics.

Lack of control and feelings of helplessness have been linked to increased depression.⁹ Depression and other psychological effects of stress may lead to increased substance abuse and other behaviors such as crime. Research has shown that individuals who are depressed are more likely to initiate drug use and to relapse.¹⁰ Higher levels of emotional distress have also been associated with greater sexual and drug-use risk behavior.¹¹ Depression has been associated with needle and injection equipment sharing and greater injection frequency,^{12,13} with greater levels of depression in individuals who perceived greater neighborhood social disorder.

Current research suggests that not only the physical environments in which people live but also their perceptions of those environments are important determinants of health, above and beyond socioeconomic disadvantage.^{14,15} Wilson and colleagues found a decreased likelihood of emotional distress among individuals with a positive perception of their physical neighborhood environment.¹⁶ Studies have shown that the risk of mental health problems related to stress (eg, anxiety, depression, powerlessness) is higher among individuals who perceive more crime and disorder in their neighborhoods.¹⁷ In a community sample of 818 individuals who were current or former drug users, Latkin and colleagues found perceptions of neighborhood characteristics (vandalism, litter or trash, vacant housing, teenagers hanging out, burglary, drug selling, and robbery) to predict depressive symptoms at a 9-month follow up interview.¹⁸ Among adolescents in low socioeconomic status (SES) neighborhoods, the perception of neighborhood hazards (eg, crime, violence, drug use, graffiti) as dangerous has been shown to be positively associated with symptoms of depression, anxiety, oppositional defiant disorder, and conduct disorder.¹⁹

Fear of neighborhood environment, including fear of crime and victimization, is a severe individual-and community-level problem that may influence how freely people move about the places where they reside.²⁰ Fear is likely a critical factor in the stress process and stress-related outcomes.²¹ It has also been linked to fewer community social and psychological ties, which can also have an impact on risk behavior. Social isolation, as a potential result of neighborhood crime and mistrust,²² has been linked to adverse health outcomes.^{23,24} Fear of neighborhood environment may be a marker for neighborhood disorder. Disordered neighborhoods, often in economically disadvantaged areas, have been shown to lack formal and informal social controls.²⁵ Limited economic resources, social and human capital, and weak social control may lead to greater levels of risk-taking behavior—both on an individual and community level.

This exploratory study examined the relationship between fear of neighborhood environment and drug use among young adults and evaluated the mediating role of personality and psychosocial characteristics (self-esteem and depression). The relationships explored are consistent with social cognitive²⁶ and social disorganization^{25,27,28} theories, as well as with the stress and adaptation perspective on how social environments may affect health.²⁴

Methods

Sample Selection, Eligibility, and Recruitment

The sample consisted of 210 young adults between the ages of 18 and 25 recruited from the Atlanta, Georgia, metropolitan area between September 2002 and August 2006.

Respondents were recruited as part of a larger cross-sectional nested-family study on drug use transmission; therefore, some of the young adults were siblings. All respondents included in this study resided in the Atlanta area, were out of drug treatment or any other institutional setting, had not been in drug treatment for the 30 days preceding the interview, and spoke English. The exclusion of respondents who were in drug treatment or other institutional settings was applied because research has shown these persons to shift their perceptions of their own circumstances as well as those in the community.^{29,30}

The initial phase of recruitment entailed conducting a community assessment based on relevant epidemiological indicators and expertise among social and health care professionals from a wide range of agencies. The subsequent phase involved ethnographic mapping and windshield surveys, conducted by ethnographers and indigenous outreach workers. These assessments yielded baseline information to identify study communities, blocks, specific locations in communities, and potential members of the target population.³¹ Upon the selection of sampling sites, targeted sampling was employed to ensure the inclusion of a wide representation of young adults who used and did not use drugs. Targeted sampling was complemented with chain referral and theoretical sampling.³² Targeted sampling often is used in community-based studies for the recruitment of respondents from a wide range of settings to ensure representativeness of the sample. As opposed to quota sampling, which assumes that the main characteristics relevant to the sampling frame are known a priori, theoretical sampling is driven by knowledge that is acquired as part of the recruitment process. Recruiters were given specific instructions on sites and types of respondents as additional information from local experts emerged. Additional recruitment locations, for example, were explored as the field staff learned of new locations in which respondents tended to gather in groups versus those areas known as isolated hangouts.

Respondents were sampled from 30 census block groups within inner-city Atlanta. Less than 3% of the eligible respondents declined participation, most often due to lack of ability to commit to an interview time. Those who did not participate were widely dispersed across the census block groups and not concentrated in specific neighborhoods. Within census block groups we found differences in poverty (range of households with income below the federal poverty level from 21% to 76%), education (range of adults with incomplete high school education from 24% to 76%), percentage of female-headed households (range from 24% to 78%), percentage of people not in the labor force (20% to 80%), housing structures (range of one-unit housing structures from 45% to 83%), homeownership (range of owner-occupied households from 26% to 72%), vacant housing (range of vacant housing units from 0% to 50%), and residential stability (range of residents residing at same address since 1995 from 34 to 81%).

In addition, we reviewed 2007 Part 1 crime and drug arrests for these block groups based on data from the City of Atlanta Police Department and calculated these rates as the total number divided by the 2000 census population count for each census block group expressed as a rate per 1000 residents. When comparing drug arrest rates, we found a rate of drug arrests that ranged from 11 to 449 (median=50). When comparing total Part 1 crimes for each census block group, we found a crime rate that ranged from 33 to 2196 (median= 95).

Data collection involved computer-assisted, structured interviews that were conducted by interviewers. Interviewers were available for the respondents to complete computer-assisted

interviews. The interviews were conducted by 3 staff, 2 of whom were male and one female and with one of the men and the woman being of African American race/ethnicity. The other male staff interviewer was white. This team was supplemented with 4 graduate students who work part-time—one half of whom were female and 3 fourths of whom were white. One of the male graduate students was African American. The average length of time to complete either interview was approximately 2 hours (range from 1 to 3.5 hours). Respondents were reimbursed \$25 for their participation.

Measures

Data were collected using an instrument developed specifically for the study, based on formative research. Additional items used in the overall assessment were derived from instruments that have been shown to produce both valid and reliable results from drug users.³³ These included items from, for instance, the risk behavior assessment (RBA) as developed by the cooperative agreement sites and the National Institute on Drug Abuse,³⁴ the Addiction Severity Index (ASI),³⁵ the DSM-IV partial substance abuse module (SAM),³⁶ and the Global Appraisal of Individual Needs (GAIN).³⁷

The primary outcome for the present study was *drug use*, specifically, illegal drug use in the last 90 days, measured as the number of days in the last 90 days that crack/freebase cocaine, powder cocaine, heroin, other opiates, methamphetamine, amphetamine, marijuana, hallucinogens, ecstasy, or other club drugs was used. Also assessed was the number of the aforementioned illegal drugs that were used in the last month and whether any problems due to drug use were experienced (in the last month). To describe the sample, the respondents were categorized as users versus nonusers.

The primary exposure of interest was perceived neighborhood fear, an assessment of perceived fears of one's neighborhood environment (perceived fear), and protective actions taken because of fear (ie, protective actions). *Perceived fear*, which assessed fear of one's neighborhood environment, included a summary of the level of fear (not at all afraid=0, not very afraid=1, somewhat afraid=2, afraid=3, or very afraid=4) for 19 specific concerns: having someone break into one's home while away; having someone break into one's home while home; being raped; being hit by a drunk driver; having something taken from one by force; having strangers hang out near one's place at night; being threatened with a knife, club, or gun; being beaten by someone one knows; being beaten by a stranger; being murdered; having one's car stolen; being cheated out of money; receiving obscene phone calls; being approached by a homeless person; finding out that someone was robbed near one's home; finding out someone was murdered near one's home; being robbed or mugged on the street; and having to watch someone else being badly hurt. The items were combined, resulting in a measure of perceived fear of neighborhood environment ranging from 0 to 76 (Cronbach's alpha = 0.93). Although perceived neighborhood fear, as measured above, is perceived and reported by respondents (a subjective assessment), moderate to high correlations between respondents' perceptions and independent assessments by researchers have been reported.³⁸

Protective actions measured the extent to which the respondents took action triggered by the perceived fear. These actions included the frequency (never=0, seldom=1, sometimes=2, or always=3) of walking after dark, having a dog living at their home, leaving the TV or radio on when they leave the house, leaving the lights on when they leave the house, walking to stores, carrying a gun in their car, carrying a gun on them, installing extra locks or changing locks on a door, and adding additional lighting at their house in the past year. The 9 items were summarized to obtain an overall measure of protective actions, potentially ranging from 0 to 27 (Cronbach's alpha = 0.65).

The primary hypothesized potential mediators of the relationship between the 2 measures of perceived neighborhood fear and behavioral outcomes were psychosocial characteristics, including self-esteem and depressive symptoms. Self-esteem was based on 10 items from Rosenberg's (1965) self-esteem scale, used to measure general feelings of self-worth.³⁹ Scores ranged from 1 to 50, and higher scores represented higher levels of reported self-esteem (Cronbach's alpha = 0.82). Indicators of depression were derived from the Center for Epidemiological Studies Depression Scale (CES-D).⁴⁰ Twenty items were administered, with response categories ranging from 0 to 7 to reflect the number of days symptoms were experienced in the last week. The composite item for overall depressive symptoms ranged from 0 to 140 (Cronbach's alpha = 0.88), and higher scores represented more depressive symptoms. Also examined, albeit not as potential mediators, were sensation seeking/impulsivity or low self-control and post-traumatic stress disorder (PTSD) symptoms. Low self-control or sensation seeking was captured with 12 categorical items derived from the Zuckerman scale⁴¹ on thrill and adventure seeking (strongly disagree to strongly agree, 1 to 5). Overall scores ranged from 12 to 60, and higher scores represented lower levels of self-control (Cronbach's alpha = 0.89). The Zuckerman scale was modified to exclude alcohol and other drug items.⁴² Sixteen summed dichotomous items on the extent of being bothered or upset by events in the past (yes/no) represented post-traumatic stress disorder (PTSD) symptoms, among respondents who indicated that they ever experienced a frightening or horrible event that had adverse effects on them. The score had an overall range of 0 to 16, and higher scores represented higher levels of PTSD symptoms (Kuder-Richardson²⁰ = 0.77).

Other covariates examined and introduced as controls given their association with drug use included sociodemographics, familial characteristics, lifetime and current abuse and victimization, other current substance use patterns, and social network characteristics. Socio-demographic characteristics included gender, age, education, racial/ethnic background, relationship status, employment status, whether the respondent lived with a substance user, unstable living situation (defined as living on the streets, car, shelter, transitional housing, or hotel versus in own home, someone else's home, or public housing), and whether the respondent had any children.

Abuse and violence items included lifetime emotional, physical, and sexual abuse history, assessed with questions indicating whether the respondent had ever been abused emotionally, sexually, or physically (yes/no) and the frequency of abuse within the last year. The childhood trauma questionnaire was also used to assess childhood neglect.⁴³

Additional substance use patterns covered items on lifetime and daily cigarette smoking (yes/no); frequency of alcohol consumption—at least once a month (yes/ no) and problem drinking (ie, whether respondent experienced problems with drinking and whether she or he wanted to quit or cut down on drinking); and the age at first use of cigarettes, alcohol, and illegal drugs. Also assessed were whether the respondent's mother or father had/has problems with alcohol (ie, alcoholic) or drugs (yes/no).

Social networks and deviant behavior were assessed with items that examined involvement with the criminal justice system and the deviant behavior of the respondents and their friendship network. Lifetime criminal history included the number of crimes for which the respondent indicated being arrested and charged. The level of delinquent activity of friends included the reported number of friends (none to all, 0-4) who engaged in one or more 17 different delinquent activities (eg, purposely destroyed property that did not belong to them; physically hurt someone; sold, distributed, or helped to make illegal drugs) (Cronbach's alpha = 0.72). Personal involvement in delinquent activities was the number of times in their lifetime the respondents were involved in the same 17 delinquent activities. Having traded

sex in the last year and being a member of a gang in the last year were also assessed. Additional social network items included whether the respondents had someone they could turn to if they were in trouble or being threatened physically (yes/no) and the number of people they could turn to (0 to 10, eg, partner, friends, family).

Statistical Analyses

Bivariate analyses were used to identify crude differences according to 3 measures of drug use (the number of drug-using days in the last 90 days, the number of illegal drugs used in the last month, and general drug use status—user versus nonuser) and the indicators of perceived fear of neighborhood environment or consequences of fear. Crude and multivariate linear regressions were used to assess the contribution of each independent variable in explaining the variance in drug use and fear. A generalized estimating equation (GEE) approach was used to account for any familial clustering between primary respondents (from the parent study) and siblings. Standardized beta estimates, standard errors, and score chisquare tests were used to quantify the variation in estimates of all models. Regression diagnostics were performed such as leverage and influential diagnostics, using traditional regression methods. Less than 5% of the data was missing for any given variable, and pairwise deletion was employed in regression models and other statistical analyses. All statistical analyses were performed with SAS version 9 for Windows, with PROC GENMOD used for GEE.

Variables found to be significant ($P < 0.05$) in crude bivariate analyses were examined in a multivariate context as factors associated with drug use and/or potential confounders in the relationship between drug use and fear. Confounding and collinearity were examined in all multivariate models, as well as the interaction between sex and fear with drug use given the relationship between fear and gender and on employment (as a marker for income and socioeconomic status) and fear on drug use. Mediation by select psychosocial characteristics was assessed by including, separately, each psychosocial factor in a multivariate model with measures of fear and additional predictors of drug use and/or confounders between the relationship of drug use and fear. Removal of the effect of fear after inclusion of the potential mediator and a significant relationship between the mediator and drug use were deemed indicative of mediation.

Results

Characteristics of Participants According to Drug Use Status

Table 1 presents characteristics of young adults according to their drug use status. Approximately 83% of the respondents were classified as drug users (ie, used at least one illegal drug in the last month). The sample was primarily African American (81.4%); and approximately half had less than a high school education (56.7%), were single (48.1%), and had at least one child (45.2%). Nearly three- fourths (67.1%) indicated that they live with a substance user (someone who uses alcohol or drugs). Approximately half of the respondents were daily cigarette smokers (54.8%) and experienced problems with alcohol use in the last year (47.5%). Of those classified as drug users, the median number of drugs used in the last month was 2 (range = 0 to 7), and the median number of drug-using days in the last 90 days was 72 (range = 1 to 90 days). The level of perceived fear of the neighborhood environment indicated considerable dispersion, with a median level of perceived fear of 24 (range = 0 to 68) and of protective actions of 11.5 (range = 1 to 22).

Users and nonusers differed with respect to employment status, living situation, cigarette and alcohol use, age at first alcohol and illegal drug use, criminal and delinquent behavior,

select psychosocial characteristics, recent physical and sexual abuse, and levels of perceived fear and protective actions.

Factors Associated With Fear

Table 2 presents factors associated with perceived fear and protective actions taken. With respect to the level of perceived fear of the neighborhood environment, women, African Americans, respondents with children, and those not employed full-time, with a lower history of criminal offense and fewer friends involved in delinquent activities perceived greater fear. Higher levels of drug use (including the number of illegal drugs used, problems experienced due to drug use, and the number of drug-using days) were significantly associated with higher levels of fear. Greater self-esteem was associated with less perceived fear, whereas increased levels of depressive symptoms, sensation seeking, PTSD, and emotional abuse were associated with more perceived fear. Although the presence of social support was not significantly different between users and non-users, the number of people available for support was significantly higher in non-users than users.

Some, but not all, similar relationships were observed for the frequency of protective actions taken, although male respondents were more likely to respond to fear with action than were female respondents. Single respondents were significantly less likely to respond to fear with protective action than were those who were not single. Those who lived with a substance user took more frequent action than those who did not. With respect to criminal and delinquent behaviors, those who were more involved criminally and indicated more delinquent behaviors also acted more frequently on their fears than did respondents with less delinquent or criminal activity. Furthermore, there was no observed association between select psychosocial characteristics and the frequency of actions taken in response to fear.

Relationship Between Fear and Drug Use

As shown in panel 1 of Table 3, the positive relationship between drug use (measured as drug-using days in the last 90 days) and perceived fear remained even after taking into account other important predictors of drug use and potential confounders between drug use and fear. Respondents who indicated greater fear of their neighborhood environment also had greater levels of drug use than did those with lower perceived fear (standardized $\beta=0.268$, standard error=0.130, $P < 0.05$). Panels 2 and 3 of Table 3 display a similar final model, with the addition of self-esteem and symptoms of depression, respectively. Contrary to the conceptualized mediating relationship between select psychosocial predictors and fear and drug use, the addition of self-esteem and depressive symptoms suggested a confounding rather than mediating effect. That is, the addition of these factors (separately) to a model with perceived fear did not remove but strengthened the effect of fear on drug use. Self-esteem and depressive symptoms were also significantly associated with drug use in these final models, with lower levels of self-esteem and greater levels of depressive symptoms linked to greater drug use. No interaction between sex and fear and between employment status and fear was observed.

Similar effects were observed with other drug use characteristics measured in the study (eg, number of problems experienced due to drug use, number of illegal drugs used in the last month), with a salient relationship between perceived fear and drug use even after taking into account important covariates and with a confounding rather than mediating effect of the select psychosocial characteristics considered.

Unlike the relationship between perceived fear and drug use, the significant crude relationship between the frequency of actions taken in response to fear and drug use did not remain after controlling for important predictors of drug use and/or potential confounders.

Results of the final multivariate model for the frequency of protective actions taken are presented in Table 4. Given this relationship and the crude relationship between self-esteem and depressive symptoms and frequency of action, potential mediation by these factors was not considered.

Reviewing these and previous (Table 2) results, perceived fear and protective actions appear to measure different constructs. Considering factors associated crudely with perceived fear and protective actions (Table 2), current factors associated with drug use and routine activities were more likely to be associated with protective actions rather than perceived fear, including living with a substance user, the frequency of involvement in delinquent activities, being a gang member, and being physically abused in the past year. Psychosocial factors, on the other hand, such as self-esteem, depressive symptoms, self-control / impulsivity, PTSD symptoms, and social support were more strongly associated with perceived fear, as was emotional abuse in the previous year.

Furthermore, certain factors associated in multivariate models with drug use when each indicator of fear was included were also different (Tables 3 and 4). Although females were found to have elevated perceived fear and were more likely to take protective actions in crude analyses, these relationships were not significant in the multivariate models shown in Tables 3 and 4. The most salient predictors for perceived neighborhood fear included perceived fear, being unemployed, being a gang member, and age at first illegal drug use. Being physically or sexually abused, self-esteem, and depressive symptoms were also significantly associated with perceived fear in multivariate models (Table 3). Frequency of protective actions taken in response to fear, on the other hand, was not significantly associated with drug use in multivariate models, and the most salient predictors of drug use when protective actions were considered included employment status, living with a substance user, and age at first illegal drug use (Table 4).

Moreover, the 2 constructs were not strongly correlated and were actually inversely associated – $\rho = -0.05$ ($P = 0.4443$). It is impossible to determine the direction of this association given the study design but perhaps those who take protective actions are as a consequence less fearful. Even though the 2 constructs were not significantly correlated (and therefore likely not a potential mediator), we examined mediation by protective actions in the perceived fear / drug use relationship given that fear may induce change in protective actions and protective factors have been shown to reduce the impact of risk factors on negative outcomes.^{44,45} Including protective actions to the models presented in Table 3 did reduce the effect of fear but not by more than 10% and fear still remained significantly associated with the frequency of drug use (eg, for model 1, with only perceived fear, standardized $\beta = 0.260$, standard error = 0.125; $P < 0.05$).

Discussion

This study examined the relationship between fear of neighborhood environment and drug use among young adults, paying particular attention to the potential mediating role of personality and psychosocial characteristics (self-esteem and depression). Findings suggest that the level of perceived fear of neighborhood environment is positively associated with drug use behavior although this relationship does not appear to be a result of decreased self-esteem or increased levels of depression. Respondents who indicated greater fear of their neighborhood environment also had greater levels of drug use than did those with lower perceived fear even after taking into account important predictors of drug use. Protective actions taken in response to fear were not, however, associated with drug use in multivariate models.

Furthermore, the measure of perceived fear employed in this study, although a representation of the multidimensional concept of crime-specific fear, may be a construct distinct from protective actions. Research has shown that perceived fear (ie, emotionally based, crime-specific fears) may be distinctly different from a more general, cognitive, perceived risk.^{46,47} Although protective actions may be a reaction to perceived fear, results from this study suggest that they may also be different constructs. The 2 constructs were not significantly correlated in this sample; and predictors of each construct differed, with factors associated with routine activities more strongly associated with protective actions and psychosocial factors more strongly associated with perceived fear.

Nonetheless, findings substantiate the role of fear of neighborhood environment in drug use although the exact mechanism through which fear may impact drug use is unknown. Fear may be a marker for stress as a result of the neighborhood environment. Given that individuals may turn to drugs to cope with life's stressors (ie, self-medication), this explanation is plausible. Internalized fear may have a greater effect on drug use than actual environmental conditions although in the absence of neighborhood-level information, this is impossible to determine in this sample of young adults. However, although not the primary outcome of interest, alcohol use was not significantly associated with perceived fear or protective actions in this sample (Table 2), which suggests that there may be alternative explanations to the observed relationships, given that the relationship between any substance use and perceived fear would follow the self-medication hypothesis.

Alternative explanations for the observed relationships include the social environment surrounding illegal drug use. Previous research has suggested that the frequency of drug use may predispose individuals to the risk of victimization and abuse,⁴⁸ given the drug use lifestyle, heightening perceptions of neighborhood fear. Drug use and dealing, and associated crimes as well as crime in general, were more common in the neighborhoods that are perceived as unsafe and stressful. Such drug-enmeshed social environments may trigger drug use behaviors by, eg, increasing a likelihood of relapse to drug use among recovering users, increasing access to illegal drugs and social networks of users, exposing users and residents to social norms and attitudes that tend to normalize drug use.

An additional explanation for the observed findings, given the present cross-sectional design, is that consequences (ie, drug use) may actually be a cause (ie, perceived neighborhood fear) rather than vice versa. The frequency of illegal drug use in this sample was associated with perceived fear (Table 2), and the level of perceived fear predicted the frequency of illegal drug use (Table 3). Such bidirectional observations are indicative of reverse causality and can truly be tested only with a longitudinal study design. Although the frequency of illegal drug use predicted protective actions taken (Table 2), the converse was not significant in the final multivariate model taking into account other covariates (Table 4), lending further credence to the fact that perceived fear and protective actions are 2 different constructs.

Despite important findings, limitations to our study should be considered. The method of recruitment (due to an unknown population of drug users), small sample size, and cultural and geographic characteristics of these samples limit the generalizability of findings to a wider population. The small sample size may also be a threat to the statistical conclusion validity of the findings, given the relatively large standard errors in some of the models. The measure of perceived fear is also limited in that it may pick up instances of domestic violence in that there is no distinction between the source of fear (internal or external). Women who suffer high levels of domestic violence may find these measures irrelevant. "Drug use" is also limited in that there was not enough variability in types of drug use to look at the relationships between specific drug use and perceived fear, even though each

drug (illicit or other) is surrounded by very different sets of social relations and perhaps different environmental influences on use. Furthermore, data used were based on self-reports, which may be affected by recall, social desirability, or additional types of bias. However, the types of drug-using and sexual behaviors measured here have been consistently reported as both valid and reliable,⁴⁹ and fairly recent time frames were used to minimize the possibility of recall bias. Nonetheless, there may be a downward bias toward the null, given previous research indicating that self-reported drug use, particularly hard drug use, leads to attenuated or conservative regression estimates.

The lengthy time period of data collection (September 2002 - August 2006) may have also opened the door for history or differential secular effects— with respect to both drug-use outcome measures and fear of crime. As part of our ongoing engagement with the study areas, crime data collected from the Atlanta Police Department (including for the 30 census blocks) and reviewed on a quarterly basis reveal no significant changes during the study period. The consistency in the crime pattern and rate during the time of the study period reduces the likelihood that the study findings were impacted by historical or secular trends. Moreover, data from the Community Epidemiology Work Group of the National Institute on Drug Abuse for Atlanta do not show any major shift in drug trends for the area during that time.⁵⁰ We therefore do not anticipate that major changes in main areas such as crime and drug use occurred over the 4-year study period. Nevertheless, we do not know this for certain, nor do we know whether any other changes in the social environment in the 30 census blocks during the study period may have impacted our results, and this is another limitation of this study. Future research should use data from a larger and prospective longitudinal sample, better able to handle multiple predictors and to tease out the exact relationship between perceived fear and drug use.

The consequences of adolescent and young adult drug use are extensive, including costs to the family, community, and society. Adolescents and young adults who use and abuse substances may also experience an array of individual problems, including academic difficulties, health-related problems (including mental health), poor peer relationships, and involvement with the juvenile justice system. Regardless of the mechanism behind the observed relationship between perceived fear and drug use, results point to the need to consider the broader role of the community environment and its impact on drug use among adolescents and young adults. Additional research is needed on the protective and risk factors related to the adolescent's individual, household, and community— all of which are strongly connected. Future research should consider these larger influences, including the interrelationship among family socioeconomic status and life course events, ethnic identity, culture, and discrimination.

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Table 1
Characteristics of Participants According to Drug Use Status (N=210)

	Non-User n=36	User n=174	Total N=210
Sociodemographics			
Median age (range)	21 (18-25)	21 (18-25)	21 (18-25)
Male	13 (36.1%)	89 (51.2%)	102 (48.6%)
African American	28 (77.8%)	143 (82.2%)	171 (81.4%)
Less than high school education	17 (47.2%)	102 (58.6%)	119 (56.7%)
Single	16 (44.4%)	85 (48.9%)	101 (48.1%)
Children (at least one)	16 (44.4%)	79 (45.4%)	95 (45.2%)
Employed full-time, currently	* 10 (27.8%)	23 (13.2%)	33 (15.7%)
Live with substance user	* 14 (38.9%)	127 (73.0%)	141 (67.1%)
Current unstable living situation ^a	* 0 (0.0%)	3 (1.7%)	3 (1.4%)
Substance Use and Other Delinquent Behavior			
Mother or father with alcohol or drug use problem	21 (58.3%)	117 (67.2%)	138 (65.7%)
Ever smoked cigarettes	* 16 (44.4%)	152 (87.4%)	168 (80.0%)
Smoke daily	* 7 (19.4%)	108 (62.1%)	115 (54.8%)
Drink alcohol at least once a month	* 12 (33.3%)	143 (82.2%)	155 (73.8%)
Experienced problems due to alcohol, last year	* 2 (5.4%)	73 (50.3%)	75 (47.5%)
Median number of illegal drugs used in the last 30 days (range)	— 2 (1-7)	2 (0-7)	
Experienced problems due to drug use, last 30 days	— 52 (29.9%)	52 (24.8%)	
Median days of illegal drug use, last 90 days (range)	— 72 (1-90)	72 (1-90)	
Median age first regular smoking cigarettes (range)	17 (11-21)	16 (9-25)	16 (9-25)
Median age first started drinking alcohol (range)	* 17 (12-22)	15 (12-24)	16 (12-24)
Median age first illegal drug use (range)	* 16 (12-22)	14 (9-23)	14 (9-23)
Arrested in last year	* 4 (11.1%)	67 (38.5%)	71 (33.8%)
Median number of crimes ever arrested and charged (range)	* 0 (0-2)	2 (0-14)	1 (0-14)
Median number of friends involved in delinquent activities ^b	* 2 (0-32)	12 (0-52)	11 (0-52)
Median number of times involved in delinquent activities ^b	* 0 (0-63)	16 (0-740)	9 (0-740)
Gangmember	* 0 (0.0%)	12 (6.9%)	12 (5.7%)
Social support – Someone to turn to if being physically threatened (yes)	36 (100%)	162 (93.1%)	198 (94.3%)

		Non-User n=36	User n=174	Total N=210
Median number of people can turn to (item range=1 to 10) (range)	*	4 (1-8)	3 (1-8)	3 (1-8)
Psychosocial Characteristics				
Median self-esteem(range)	*	43 (32-50)	39 (25-50)	39.5 (25-50)
Median depressive symptoms (range)	*	14 (0-54)	18 (0-91)	17 (0-91)
Median low self-control / impulsivity (range)	*	33.5 (14-49)	37 (18-54)	37 (14-54)
Median PTSD (range)		0 (0-16)	0 (0-16)	0 (0-16)
Abuse / victimization				
Median level of neglect growing up (range)		7 (0-24)	6 (0-24)	7 (0-24)
Physically abused in last year	*	3 (8.3%)	38 (21.8%)	41 (19.5%)
Sexually abused in last year	*	0 (0.0%)	9 (5.2%)	9 (4.3%)
Emotionally abused in last year		6 (16.7%)	37 (27.0%)	53 (25.2%)
Fear of Neighborhood Environment				
Perceived fear (range)	*	23.5 (0-65)	31 (0-68)	24 (0-68)
Protective actions taken (range)	*	10 (1-22)	12 (2-22)	11.5 (1-22)

Note.

* < 0.05, based on crude chi-square estimates from GEE models. Percentages reflect number of non- missing responses.

^aUnstable living situation = living in a hotel, shelter, on the streets, in a car, or homeless.

^bFriends involved in delinquent activities = number of friends (none to all, 0-4) who engaged in 17 different delinquent activities (e.g., purposely destroyed property that did not belong to them, physically hurt someone). Personal involvement in delinquent activities = the number of times (0- 9999) in their lifetime respondent was involved in the same 17 activities.

Table 2
Factors Associated with Perceived Fear and Protective Actions Taken (N=210) – Results
of Crude GEE Linear Regression Analyses

	Perceived Fear Standardized Beta (Standard Error)	Protective Actions Standardized Beta (Standard Error)
Age (years)	-0.067 (0.531)	-0.152 (0.131)
Male	-15.097 (2.240) *	1.922 (0.535) *
African American	6.845 (3.031) *	1.702 (0.836) *
Single	-0.675 (2.779)	-1.155 (0.553) *
Children (at least one)	5.437 (2.637) *	0.465 (0.585)
Employed full time, currently	-5.784 (3.358) *	-1.974 (0.798) *
Live with substance user	2.389 (2.830)	2.106 (0.609) *
Number of crimes ever arrested and charged	-1.396 (0.394) *	0.423 (0.142) *
Number of friends involved in delinquent activities	-0.269 (0.105) *	0.145 (0.022) *
Number of times involved in delinquent activities	-0.002 (0.002)	0.003 (0.0006) *
Gang member	3.006 (3.887)	3.839 (1.055) *
Drink alcohol at least once a month	0.429 (3.168)	0.772 (0.672)
Experienced problems due to alcohol, last year	1.030 (2.779)	0.952 (0.642)
Number of illegal drugs used in the last 30 days	2.294 (0.951) *	0.644 (0.233) *
Experienced problems due to drug use, last 30 days	5.322 (2.733) *	1.949 (0.558) *
Number of days of illegal drug use, last 90 days	0.094 (0.036) *	0.018 (0.008) *
Self-esteem	-0.128 (0.048) *	-0.189 (0.223)
Depressive symptoms	0.207 (0.082) *	0.026 (0.017)
Low self-control / impulsivity	0.107 (0.044) *	-0.179 (0.222)
PTSD	0.630 (0.237) *	0.053 (0.053)
Social support – Someone to turn to if physically threatened	8.698 (4.724)	-1.983 (1.240)
Number of people can turn to	1.905 (0.669) *	-0.072 (0.154)
Physically abused in last year	2.147 (2.663)	2.428 (0.758) *
Sexually abused in last year	3.076 (3.378)	1.399 (1.257)
Emotionally abused in last year	6.669 (2.693) *	0.589 (0.631)

Note.

* < 0.05, based on score chi-square estimates from GEE models.

Table 3
Relationship between Drug Use (Number of Days of Illegal Drug Use) and Perceived Fear of Neighborhood Environment (N=210) and Mediating Effect of Psychosocial Characteristics

	Perceived Fear Only Standardized Beta (Standard Error)	Addition of Self-Esteem Standardized Beta (Standard Error)	Addition of Depression Standardized Beta (Standard Error)
Level of perceived fear	0.268 (0.130) *	0.269 (0.123) *	0.299 (0.127) *
Male	0.360 (5.235)	0.280 (0.336)	0.533 (5.201)
Employed full-time, currently	-20.041 (5.659) *	-23.897 (6.198) *	-21.829 (5.580) *
Live with substance user	13.118 (5.777) *	15.004 (5.502) *	14.625 (5.704) *
Gang member	10.005 (7.004) *	11.349 (9.372) *	11.817 (9.675) *
Age first illegal drug use	-2.168 (0.947) *	-1.851 (0.963) *	-2.185 (0.963) *
Drink alcohol at least once a month	7.799 (5.223)	6.932 (5.042)	7.386 (4.874)
Any physical or sexual abuse in last year	10.585 (6.526)	11.239 (6.211) *	10.813 (6.269)
Low self-control / impulsivity	0.430 (0.485)	0.149 (0.508)	0.329 (0.481)
Self-esteem		-0.948 (0.430) *	
Depressive symptoms			0.410 (0.161) *

Note.

* < 0.05, based on score chi-square estimates from GEE models.

Table 4
Relationship between Drug Use (Number of Days of Illegal Drug Use) and Frequency of
Actions Taken In Response to Fear (N=210)

Protective Behaviors Taken	Standardized Beta (Standard Error)
Frequency of actions taken in response to fear	0.945 (0.667)
Male	5.586 (5.376)
Employed full-time, currently	-22.350 (7.385) *
Live with substance user	12.661 (6.057) *
Gang member	6.129 (10.369)
Age first illegal drug use	-1.862 (1.026) *
Drink alcohol at least once a month	6.644 (5.273)
Any physical or sexual abuse in last year	6.910 (6.719)
Low self-control / impulsivity	-0.535 (0.462)

Note.

*
 < 0.05, based on score chi-square estimates from GEE models.