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Aggressive Crime, Alcohol and Drug Use, and Concentrated Poverty in 24 U.S. Urban Areas

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Abstract

The nexus between substance use and aggressive crime involves a complex interrelationship among mediating individual and community-level variables. Using multilevel logistic regression models, we investigate how community-level concentration of poverty variables mediate the predictive relationships among individual level social attachment variables and substance use on aggressive crime in a large national sample of male arrestees (N = 20,602) drawn from 24 U.S. urban areas. The findings support our hypothesis that individual social attachments to marriage and the labor force (education and employment) are the principal individual-level pathway mediating the substance abuse/aggression nexus. In the random intercept model, 3.17% of the variation not explained by the individual-level predictor variables is attributable to community-level variation in urban area female-headed households and households receiving welfare. This confirms our hypothesis that social structural conditions of an urban environment differentially expose persons to conditions that predict being arrested for an aggressive crime. Our findings tend to counter the cultural theorists who argue for an indigenous culture of violence in inner-city ghettos and barrios.

Keywords

Aggressive crime; alcohol; arrestees; drugs; Drugs-violence nexus

A common assumption in the U.S. is that substance use and violent crime is highly related. Upon closer observation, however, the association of these two behaviors at the individual, situational, and community-level is more complex and subtle. This article builds upon our previous research expanding its scope to include the variability of urban context, specifically concentrated poverty (1,2). Utilizing a large national sample, we investigate here how the concentration of poverty mediates the relationships among individual-level predictors, substance use, and violent crime in male arrestees (N = 20,602) drawn from 24 U.S. metropolitan areas.

ILLEGAL DRUGS, ALCOHOL, AND VIOLENT CRIME

While the association of alcohol, drug use, and violent crime enjoys a long research history, it is only in recent years that direct measures of this relationship (e.g., physical drug tests and officially known crimes) using large quantitative data sets have been available. These studies have found that alcohol is consistently linked to aggressive and violent behavior

(3,4). In contrast, research on drug use and violence generally concludes, contrary to popular conceptions, that these relationships are unsystematic and/ or weak (5,6). Nonetheless, mediating individual-level characteristics such as age, gender, race, and ethnicity, and personality factors, for example, may be important in explaining the causal pathways from intoxication to aggression (7). As well, community-level risk factors using neighborhoods as the unit of analysis has been used to explain violence and crime with disadvantaged urban areas (8,9).

We theorize that aggressive crime will vary systematically with the structural features of the urban environment. Our argument is that aggressive crime and violence is rooted in the structural differences among these metropolitan areas. That is, the higher the concentration of poverty, the higher the levels of aggressive crime. Moreover, on the individual level, the existence of social attachments, such as marriage, are important in deterring aggressive crimes. Our hypothesis is that alcohol and drug use will be significantly related to aggressive crime, but that specific individual-level social characteristics and community-level concentrated poverty variables will mediate this relationship.

PROCEDURES

Sample and Measurement

Our data are drawn from the 1992 Drug Use Forecasting (DUF) program conducted in 24 cities ranging from larger (Houston and Miami) to smaller (Ft. Lauderdale) cities, some with high Mexican-American (e.g., San Antonio), African-American (St. Louis), and other Hispanic (New York and Chicago) populations. In 1997, the program was reorganized and renamed the Arrestee Drug Abuse Monitor (ADAM) program. The 1992 national data set was used in this analysis similar to prior analyses we published. If we had chosen more recent data from the ADAM system, the interpretability of our earlier results would be confounded.

Female arrestees were excluded from our study because males are overwhelmingly more likely to be perpetrators of aggressive crimes (10,11). The sample includes a wide range of racial and ethnic groups in this relatively young group of men with lower levels of education—the groups charged with the bulk of violent/aggressive crime in this country. The DUF data combine measures of violent and/or aggressive actions and drug (urinalysis) and alcohol (self-reported) use with measures of ethnicity, socioeconomic positions, age, and city for over 20,000 respondents. The validity of drug test data of arrestees has been demonstrated in numerous studies (12,13). Over 90% of those arrestees approached agreed to be interviewed and over 80% of these consented to urine samples. The limitations of DUF methodology have also been recognized (14).

The type of crime (aggressive/nonaggressive) was based upon the charge for which the offender was booked and conceived as the dependent variable in the analysis. Aggressive crimes included extortion/threat, homicide, kidnapping, robbery, sex offenses (rape), assault, family offenses, obstruction of police, and disturbance of public peace. Non-aggressive crimes included burglary, prostitution, drug sale, weapons, flight from bench warrants, forgery, fraud, larceny/theft, probation/parole violation, stolen property, stolen vehicle, under the influence, drug possession, fare beating, liquor, obscenity, driving while intoxicated (DWI), and driving violations (not DWI). Alcohol consumption was obtained from self-reports with a cut-off point based on previous studies (15,16). The DUF sociodemographic characteristics of the arrestees were also included. Four community-level concentrated poverty variables were included: the percentages of high-school dropouts, unemployed males, households receiving welfare, and female-headed households in that metropolitan area. These variables were calculated using information published in the 1990

U.S. Census Survey and the procedures documented in the national Urban Underclass Database (17).

Statistical Analysis

Due to the design of DUF data collection procedures, the sample has an unbalanced clustered structure. We used random-effects logistic regression models (RRM) in order to include a random cluster effect that estimates the influence of the cluster on the outcomes of the individuals within the cluster (18,19). Application of conventional statistical models that assume independent observations, such as linear regression and fixed-effects analysis of variance models, to clustered data tends to inflate the Type I error rate and produce significance tests that are too liberal. Estimation of the parameters of the RRM was performed using the HLM program (20).

Three models were fit to predict aggressive/nonaggressive crime in the 24-city data. In all models a random urban area effect was included to account for the clustering of individuals within cities. Beside the random urban area effect, the base model included individual-level effects of an offender's drug and alcohol use. An interaction term of drug use and alcohol use was included in a preliminary analysis. Although a trend was identified, the term was removed from the model for the sake of parsimony. The simple random effects model added socioeconomic covariate effects at the individual-level: employment status, level of education, marital status, ethnicity, income, and offender's age. The random intercept model added covariate effects of the community-level concentrated poverty variables. In a preliminary analysis, a variable indicating if the city alone or the county would determine whether there was a mediating effect of differences in size among DUF metropolitan areas proved not to be significant and was excluded from the analysis. Through the examination of the variance components of a null model and these three models, we determined which model best fitted the data.

RESULTS

For the total sample, almost two-thirds of the offenders have been charged with nonaggressive crimes while around one third have been charged with aggressive crimes. Nearly 19% of the sample is of Hispanic-American origin, 23% Euro-American, and 58% African-American. The sample is relatively young and undereducated with the average age being 30 years old ($SD = 8.877$) and the majority (56%) not having completed high school. The majority of the sample is single (56%) with 30% being married and 14% divorced or separated. Sixty-three percent of the offender's urine sample tested positive for some type of drug. Nearly 45% of the sample tested positive for cocaine, 26% for marijuana, and 7% for opiates. Only a small percentage of the sample tested positive for the other seven drugs.

Table 1 presents an overview of the four concentrated poverty community-level variables used in this study for the 24 DUF metropolitan areas. On the percentage of high-school dropouts, most cities were between the 13% and 17% range. St. Louis displayed the lowest rate on this measure at 7.86 while Houston showed the highest rate at 17.45. On male unemployment most cities were in the range between 10% and 13%. St. Louis also had the lowest male unemployment rate (9.72) while Houston also had the highest (15.84). St. Louis consistently had the lowest rate on the variable of households receiving welfare (3.57) with Ft. Lauderdale next in the ranking (3.97) while Detroit had the highest rate (16.04). This variable showed more variation than either high school drop out or male unemployment rates. Most cities were in the 8% to 11% range. The most variation was found in the variable of percentage of female-headed households. A wide range from a high of 41.58% for Atlanta to a low of 9.81% for Birmingham was distinguished.

Table 2 presents the conditional coefficient estimates and standard errors of the predictor variables on aggressive crime for the 3 models. The effects of the drug and alcohol variables were robust across the three models. Specifically, a positive response on alcohol use increased the likelihood of being charged with an aggressive crime, while a negative response on drug use increased the probability of being charged for a crime. Moreover, findings largely support our hypothesis that social attachments to marriage and the labor force are the principal individual-level pathway mediating the substance abuse/aggression nexus. Testing negative on drugs is the strongest predictor for being arrested for an aggressive crime in our multilevel analysis. These findings tend to counter the cultural theorists who argue that there is an indigenous culture of violence in inner-city ghettos and barrios.

While not shown, the amount of variation attributable to the metropolitan area is statistically significant. In the random intercept model, 3.17% of the variation not explained by the individual-level predictor variables is attributable to community-level variation. This confirms our hypothesis that structural conditions of an urban environment differentially expose persons to conditions that predict being arrested for an aggressive crime.

DISCUSSION AND CONCLUSIONS

We find for a large national sample of arrestees that testing positive for illegal drug use is negatively associated with aggressive crime and that, in contrast, self-reported frequent use of alcohol has strong and robust positive effects. These results are consistent with our earlier research in Houston, Dallas, San Antonio, as well as European national-level studies of aggressive behavior and substance use (1,2,21). The negative association of drug use on aggressive crime supports the less popular notion that illegal drug-related violence has less to do with intoxication (pharmacological) and possibly more with other factors.

We found that the multilevel model provides the best fit of the 1992 DUF data. Two significant concentrated poverty variables in the model were significant in explaining variation in aggressive behavior across the 24 urban areas. The specific urban area profile of a high percentage of female-headed households with a corresponding low percentage of households receiving welfare was found in our study to shape the urban context in which drug and alcohol use have robust effects on aggressive crime. The additive effect of heavy drinking to this stressful social complex appears to further increase the odds of being arrested for an aggressive crime. Lastly, we also found that exposure to certain specific structural conditions of concentrated poverty seems to be more salient than race in explaining the violence and substance abuse nexus.

Wilson (22) and others (11) argue that the constellation of these characteristics in low-income urban communities produces what they identify as “concentrated effects.” These communities are characterized by poverty, joblessness, welfare dependency, female-headed families, declining marriage, illegitimate births, welfare dependency, and crime that result in multiple, interlocking social problems. The violence–substance use nexus as indicated by this study can be traced, in part, to the social disorganization that is associated with community-level factors of these cities.

Study Limitations

One limitation of this study is that the DUF data is not representative of the general population. Further, it is not possible to precisely determine whether the periods of arrestee drinking and/or drug use overlapped precisely with the period when the alleged crimes were committed. Our analysis was also limited by not breaking down the urine analysis measure by specific illegal drugs. Another limitation is that there might be an overlap between the

measures of alcohol and drug use. Despite their limitations, these data allow us to identify the specific pathways leading from the urban context to individual aggressive behavioral outcomes at a national level.

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Table 1

Percentages of underclass city-level indicator variables for 24 DUF metropolitan areas in 1992

Metropolitan area	High school— dropout (%)	Male unemployment (%)	Households receiving welfare (%)	Female-headed households (%)
1. Atlanta	13.08	14.65	13.64	41.58
2. Birmingham *	12.29	9.81	12.29	9.81
3. Chicago	17.04	11.69	14.36	31.05
4. Cleveland	10.62	10.64	10.45	22.10
5. Dallas *	17.14	11.62	4.60	18.51
6. Denver	16.17	12.06	7.61	21.93
7. Detroit	14.95	11.22	16.04	29.81
8. Ft. Lauderdale *	13.97	9.92	3.97	15.21
9. Houston	17.45	15.84	7.06	22.73
10. Indianapolis *	17.23	10.48	5.82	20.63
11. Kansas City	15.66	12.37	9.22	24.93
12. Los Angeles *	17.33	10.99	9.85	18.81
13. Miami *	13.17	10.95	9.96	20.93
14. New Orleans	12.81	11.68	9.81	24.89
15. NY/Manhattan	13.08	11.10	10.94	30.43
16. Omaha	10.47	10.51	6.52	20.78
17. Philadelphia	15.05	15.03	13.98	31.77
18. Phoenix *	15.02	11.12	4.94	14.40
19. Portland *	13.49	12.32	6.54	17.48
20. San Antonio *	11.42	12.53	8.40	19.40
21. San Diego *	11.24	10.85	8.18	15.49
22. San Jose *	10.97	10.67	6.38	14.16
23. St. Louis	7.86	9.72	3.57	14.42
24. Washington, D.C.	13.87	13.23	8.94	39.19

* Metropolitan area = county (instead of city).

Conditional coefficient estimates of fixed effects^a and standard errors of the individual- and city-level variables on aggressive crime for the base, simple random intercept and random intercept models for 1992 DUF national sample (N = 20,602)

Table 2

Variables	Base Model		Simple Random Intercept Model		Random Intercept Model	
	Coefficient	Std Error	Coefficient	Std Error	Coefficient	Std Error
Individual-level variables						
Grand intercept	-.378 ***	.076	-.248 *	.097	-.089	.587
Drug use	-.560 ***	.031	-.544 ***	.032	-.544 ***	.032
Alcohol use	-.165 ***	.032	.174 ***	.033	.174 ***	.033
Employment status			.068	.037	.067	.037
High school education			-.036	.035	-.034	.035
College education			-.109 *	.044	-.109 *	.044
Single vs. married			-.308 ***	.035	-.309 ***	.035
Divorced vs. married			-.358 ***	.050	-.357 ***	.045
African-American vs. Euro-American			.005	.040	.004	.041
Hispanics vs. Euro-American			-.052	.051	-.047	.051
Legal income			.100 **	.037	.100 **	.037
Age			.009	.012	.009	.012
City-level variables						
%high school dropout					.024	.029
%unemployed males					-.059	.059
%households receiving welfare					-.060 *	.020
%female-headed households					.033 *	.014

*
p < .05;

**
p < .01;

p < .001.

^aControlling for the random effect of metropolitan area.