

## The Relationship Between Substance Use, Drug Selling, and Lethal Violence in 25 Juvenile Murderers\*

**REFERENCE:** McLaughlin CR, Daniel J, Joost TF. The relationship between substance use, drug selling, and lethal violence in 25 juvenile murderers. *J Forensic Sci* 2000;45(2):349–353.

**ABSTRACT:** The goal of the present study was to determine the relationship between substance use, drug selling, and lethal violence in adolescent male homicide offenders and their victims. The study employed a retrospective review of criminal justice databases and medical examiner records for murders committed by 25 adolescent males incarcerated in the Commonwealth of Virginia juvenile correctional centers from February 1992 to July 1996. The perpetrator sample was 84% African American and 16% white. The average age at the time of the offense was 15.0 years (range = 13.0 to 17.7 years). The victims were 84% male, 60% African American and 32% white. The median victim age was 28.0 years (mean = 34.8, range = 17 months to 75 years). The results indicated that 52% of the murders were committed by juveniles with identified involvement in drug selling, and 28% of the murders were drug-related. Toxicology results indicated recent drug or alcohol use in 27% of the victims; while 74% of the perpetrators reported substance use, 35% indicating daily use. Using discriminant analysis, it was possible to accurately classify 86% of the drug-related murders with the variables of recent victim drug use and perpetrator substance use history. The results indicated that adolescent males involved in the sale and distribution of illegal drugs comprised a significant percentage of those incarcerated for murder. Recent victim drug use and perpetrator substance use may be important variables in identifying drug-related juvenile homicides. These results underscore the link between substance use, drug selling, and lethal violence.

**KEYWORDS:** forensic science, juvenile, homicide, substance use, drug selling

The explosion of urban violence has been described as a public health emergency (1,2), creating veritable combat zones in the urban communities inundated with drugs and violence (3). Adolescents currently comprise the fastest growing group of both victims and perpetrators of violent crime, including murder (4–9).

<sup>1</sup> Substance Abuse Research Division, Commonwealth of Virginia, Department of Juvenile Justice; and the Departments of Surgery and Internal Medicine at the Medical College of Virginia/Virginia Commonwealth University, Richmond, VA.

<sup>2</sup> Office of the Chief Medical Examiner, Commonwealth of Virginia, Department of Health; Departments of Legal Medicine and Pathology, Medical College of Virginia/Virginia Commonwealth University, Richmond, VA; and the Department of Pathology, University of Virginia, Charlottesville, VA.

<sup>3</sup> Health Services Division, Commonwealth of Virginia, Department of Juvenile Justice, Richmond, VA.

\* This work was supported by the National Institute on Drug Abuse at the National Institutes of Health (DA 10000).

Received 8 March 1999; and in revised form 1 June 1999; accepted 1 June 1999.

While recent statistics suggest that these trends may have plateaued (10), earlier studies documented significant increases in violent juvenile crime (11), including a 232% increase in the number of juveniles arrested for murder between 1980 and 1994, in the Commonwealth of Virginia (12). Despite these dramatic increases, however, juvenile homicide remains a relatively rare event with few large studies characterizing juvenile murderers. Much of the earlier research on juvenile murderers has focused on familial homicide which accounts for a relatively small percentage of all juvenile murders (13,14). Previous research on adolescent homicide, however, has documented several differences between juvenile and adult murderers. For example, while adults are more likely to kill alone during a domestic dispute, juveniles frequently commit murder impulsively, in groups during the commission of another felony (13).

Involvement in substance use and drug selling has been demonstrated to increase significantly the risk for both violent offending and victimization (15–17). This association between drug selling and violence has been highlighted by studies which indicated that juveniles involved in the sale and distribution of cocaine were more likely to report having assaulted someone with the intent of serious injury or murder than those who were not involved in drug selling (18). Moreover, review of 4298 murders during a two-year period in New York City revealed a significant link between recent victim substance use and homicide (15). Additional studies confirm the link between substance use, drug selling, and lethal and nonlethal violence (9,18–23).

Despite the considerable evidence linking drugs and violence, most studies have analyzed victim and perpetrator characteristics in isolation, thereby negating the fact that homicide is a behavioral event or interaction whereby both victim and perpetrator variables may interact in defining the total event. Consequently, relatively little is known about how substance use and drug selling interact with both victim and perpetrator characteristics in defining the total behavioral interaction. Elucidation of potential interactive variables operating between the victim and perpetrator may permit identification of critical risk factors and situational variables; ultimately facilitating the development of effective violence prevention programs. Therefore, the goal of the present study was to evaluate the relationship between substance use, drug selling, and lethal violence in a sample of 25 juvenile murderers and their victims. It was hypothesized that characterization of the relationship between victim and perpetrator substance use and drug selling may provide insight into the factors associated with the escalation of a behavioral interaction or dispute into a homicidal event.

## Method

### Subjects

The subjects for the study were male juveniles committed to the Commonwealth of Virginia juvenile correctional facilities from February 1992 to July 1996. All juvenile offenders between the ages of 10 and 18 years, who are not transferred to circuit court, are within the purview of the Virginia Department of Juvenile Justice. The juveniles in the study had current ( $n = 23$ ) or prior offenses ( $n = 2$ ) for murder ( $n = 20$ ) and voluntary manslaughter ( $n = 5$ ), yielding a total sample of 25 incarcerated juvenile offenders. This sample represents all juveniles committed to the Commonwealth of Virginia juvenile correctional facilities for these offenses during the sampling frame. The sample was exclusively male, 84% African American, 16% White, and the average age at the time of the offense was 15.0 years (SEM = 0.21; range = 13.0 to 17.7 years).

The behavioral characteristics of the assault and its relationship to drug selling were collected from the perpetrator intake files, as well as information contained in the medical examiner records. Information pertaining to perpetrator involvement in drug selling was obtained from records maintained by the Commonwealth of Virginia, Department of Juvenile Justice (DJJ). These data were comprised of self-report information as well as officially-documented behavior, including adjudicated involvement in drug selling, or involvement in a drug-related homicide. Drug-related homicides were operationally-defined as those events directly related to a drug transaction or attempt to procure drugs, or an event related to accusations of stolen drugs and/or drug money. Perpetrator substance use information was obtained from information collected as part of the intake process to the DJJ juvenile correctional centers. Information pertaining to victim involvement in drug selling was obtained from DJJ court intake records and juvenile correctional center commitments, as well as the Virginia Criminal Investigation Network (VCIN), a statewide database of adult arrest data. Post-mortem toxicology results were employed to determine recent antemortem victim substance use.

### Statistics

The data were analyzed using the SPSS statistical package. Non-parametric tests (Mann-Whitney U, maximum likelihood  $\chi^2$ , t-tests and odds ratios (OR, 95% CL) were used to evaluate prevalence rates as well as the characteristics associated with drug-related murders. Stepwise discriminant analysis (24) was utilized to explore the relationship between substance use, drug selling and lethal violence. In addition, discriminant analysis was employed in an effort to determine the relative importance of the variables evaluated in predicting drug-related homicide.

## Results

One juvenile was involved in a double homicide, while two juveniles participated in the same murder resulting in a total of 25 perpetrators, 25 victims and 24 events. Two of the victims were assaulted in Northern Virginia and transferred to hospitals in the District of Columbia for medical treatment where they subsequently expired. Consequently, some data, including autopsy protocols, for two of the male victims in the study were unavailable. Therefore, the final victim sample ranged from 23 to 25, depending on the relative availability of data from these two subjects. The victims ranged in age from 17 months to 75 years (average age = 34.8 years [SEM = 4.3 years]; median = 28.0 years;  $n = 23$ ). The victims were 84% male, 60% African American and 32% white (Table 1). Consistent with other reports (5,13,15,25), firearms were the most prevalent weapon used in all of the murders, followed by stabbing and blunt trauma (Table 1).

### Drug Sellers and Drug-Related Murders

Thirteen (52%) of the 25 murderers were drug sellers, while seven (28%) of the murders were considered to be drug-related. More than half of the murders committed by juveniles with identified involvement in drug selling were drug-related (54%,  $n = 7$ ). The second highest category was dispute-related murders, which accounted for 23% of the murders committed by juvenile drug sellers ( $n = 3$ ). Two of the perpetrators reported substance use coincident with the event, however, these were not included in the drug-related murder sample. More than half of the drug-related murders (57%,  $n = 4$ ) could be linked directly to a drug transaction (e.g., buyer robbed by seller, disputes over money or drug quality), while the remaining cases involved accusations of stolen drugs and/or drug money (43%,  $n = 3$ ). The victims of the drug sellers were exclusively male, and more likely to be African American ( $\chi^2 = 7.2$ ,  $p < 0.01$ ; Table 1). In addition, the victims of the drug sellers were significantly younger than the victims of juveniles not involved in drug selling ( $t = 3.04$ ,  $p < 0.05$ ; 23.4 years [SEM = 3.0], 44.5 years, [SEM = 6.7], for the victims of drug sellers and nondrug sellers, respectively). Finally, two of the victims had documented involvement in drug selling; however, there was no reliable association between victim drug selling and perpetrator selling, or whether the murder was drug-related ( $p > 0.05$ ).

### Substance Use

Perpetrator substance use was categorized into none (no history of any use), some (included experimentation to less than daily use), and daily use. Substance use information was available for 23 perpetrators (Table 2); 39% of the perpetrators admitted to some substance use, and 35% reported daily use, while 26% reported no substance use. Alcohol and marijuana were the most frequently

TABLE 1—Victim demographics and weapon used. N and (% column total).

Circumstances	Victim Gender		Victim Race*		Weapon/Method†			Total
	Male	Female	Black	White	Gun	Stab	Blunt	
Drug-related	7 (100)	0 (0)	6 (86)	1 (14)	6 (86)	1 (14)	1 (14)	7
Nondrug-related	14 (78)	4 (22)	9 (50)	7 (39)	12 (67)	4 (22)	4 (22)	18
Total	21 (84)	4 (16)	15 (60)	8 (32)	18 (72)	5 (20)	5 (20)	25

\* Missing or incomplete data ( $n = 23$  for victim race).

TABLE 2—Victim and perpetrator involvement in substance use and drug selling. N and (% column total).

Circumstances	Perpetrator Involvement in Drug Selling	Perpetrator Substance Use* (n = 23)			Victim Recent Substance Use* (n = 22)		Total
		None	Yes	Daily	Drugs	Alcohol	
Drug-related	7 (100)	0 (0)	4 (57)	3 (43)	4 (57)	1 (14)	7
Non-drug-related	6 (33)	6 (33)	5 (28)	5 (28)	0 (0)	3 (17)	18
Total	13 (52)	6 (26)	9 (39)	8 (35)	4 (16)	4 (16)	25

\* Missing or incomplete data (n = 2 and 3 for perpetrator and victim substance use, respectively).

reported; 83% of the perpetrators admitting to any substance use reported using alcohol and/or marijuana. Two of the juveniles reported using other drugs including cocaine. The drug-involved perpetrators were involved in more substance use than those not involved in drug selling (Mann-Whitney U = 38.0,  $p > 0.05$ ).

Toxicology results were available for 22 of the victims (88%; Table 2), and 27% of those tested had evidence of recent drug or alcohol use. With respect to the interpretation of the toxicology results, 18 of the victims sustained injuries that were either quickly lethal (i.e., dead at the scene), or had documented survival times of approximately one hour or less. None of the victims for whom toxicology results were available survived longer than eight hours after injury. These survival times would be within the range of detection for the compounds assessed (10). Although four of the victims tested positive for recent alcohol use (average blood alcohol concentration = 0.07% weight/volume; range 0.02 to 0.11), only two of these subjects met the legal criteria for intoxication in the Commonwealth of Virginia (0.08% weight/volume; Code of Virginia §18.2–269 [3]). All of the victims with evidence of recent drug use (n = 4) were victims of drug-related murders; accounting for 57% of all victims of drug-related murder (cocaine, n = 2; cocaine and opiates, n = 2). Victims with evidence of recent use were more likely to have been involved in a drug-related homicide than those with no evidence of recent use (OR, 95% CL; 6.0, 2.1–16.8;  $\chi^2 = 11.3$ ,  $p > 0.05$ ,  $p < 0.01$ ).

#### Discriminant Analysis

Preliminary review of the cases revealed that there were no non-drug-related murders with indications of recent victim drug use. In addition, there were no drug-related murders where the perpetrator did not have some history of use, while 38% of the perpetrators in non-drug-related murders presented with no history of substance use. Therefore, recent victim drug use and perpetrator use were selected for inclusion in the discriminant analysis. Additional variables expected to be predictive of drug-related murders, including victim and perpetrator demographic information and injury characteristics, were included in the analysis as well. Four cases, all non-drug-related, were excluded from the analysis due to insufficient data. Cases with multiple victims/perpetrators (n = 2) were collapsed and entered into the analysis once. A total of 20 cases were included in the discriminant analysis.

The variables were entered into the discriminant analysis in a stepwise fashion. With this statistical approach, variables are entered and removed until the optimal set of discriminating variables is selected. At this time, no additional variables are included in the model (24). The first variable entered was recent victim drug use (Table 3). When recent victim use was considered alone, 57% of the drug-related cases were correctly classified. Inclusion of perpe-

TABLE 3—Discriminant analysis: classification of drug-related homicides by victim and perpetrator substance use. Standardized discriminant function coefficients of drug-related homicides by victim and perpetrator substance use.

Variable	Within Structure Coefficients
Recent victim drug use	0.7884
Perpetrator substance use	-0.4566

(n = 20, Wilks' Lambda = 0.4176, Canonical Corr. = 0.7631, Classification Rate = 85%,  $p < 0.001$ ).

trator substance use significantly enhanced the predictive efficacy of the model, increasing the classification rate to 86% for the drug-related murders. At this step no additional variables were entered, and the overall classification rate for the drug-related/non-drug-related murders was 85% using the variables of recent victim drug use and perpetrator substance use.

#### Discussion

The relationship between substance use, drug selling, criminal offending, and lethal violence in 25 juvenile murderers and their victims was examined. The results indicated that 28% of the murders reviewed for the present study were related to drug selling, while approximately half of the juvenile murderers presented with identifiable involvement in drug selling. Stepwise discriminant analysis was employed in an effort to evaluate the relative importance of the variables found to be associated with the drug-related murders, and provide a basis for the development of putative models regarding the relationship between substance use, drug selling, and lethal violence in homicides perpetrated by male adolescents. The results from the discriminant analysis were consistent with the hypothesis that both victim and perpetrator variables may be important in determining the overall event. Consistent with earlier reports (15), recent victim drug use emerged as the most important variable in determining whether a homicide was drug-related. The addition of perpetrator substance use contributed significantly to the model's ability to predict the drug-related homicides, however, bringing the overall classification accuracy up to 85%. The resulting model was supported by the finding that there were no non-drug-related murders where the victim showed signs of recent use, and no drug-related murders where the perpetrator did not have some history of use.

Juvenile drug sellers have been identified as a group at particularly high risk for both perpetrating and being the victims of violent crime (19,20,22,26). Consistent with these reports, the data from the present study indicated that juvenile drug sellers are over-rep-

resented in the sample of incarcerated juvenile murderers. Earlier analysis of this population indicated that juvenile drug sellers represented approximately 9% of admissions to the Commonwealth of Virginia juvenile correctional centers (27), yet they accounted for more than half of the juvenile murderers in the present study. Additional data in the records reviewed were consistent with the hypothesis that drug-related violence may take more than one form (17,26,28). This information suggested the drug-related murders may be divided further depending on the nature of the victim-perpetrator relationship or interaction. For example, some victims were murdered during attempts to procure drugs, suggesting that the event was related directly to their involvement in substance use. Other murders appeared to be related to accusations or disputes regarding stolen drugs and/or drug money, and were consistent with the systematic violence associated with illegal distribution networks (26).

The substance use patterns among the juvenile drug sellers were almost identical to those previously documented among incarcerated juvenile drug traffickers (27), with one notable exception. In the previous study 27% of the juveniles had no documented involvement in substance use (27), while only 8% of the juvenile drug sellers in the present sample had no readily identifiable involvement in substance use. In addition, the other sample demonstrated significantly less violent offending and aggressive behavior when compared with its delinquent peers (27). This finding indicates potential diversity within drug-involved juvenile offender population when substance use and propensity for violence are considered, and is congruent with subpopulations of drug sellers, or a division of labor in the drug distribution network (26). On the other hand, the prevalence of recent victim substance use was consistent with earlier data linking substance use to a risk for homicide (15). The data from the present study indicated that this group of potential victims may be at particularly high risk for homicide from drug-involved perpetrators, supporting the suggestion that their involvement in substance use may have been the critical risk factor for the homicide. Finally, the victims of the drug sellers distinguished themselves in that they frequently involved young black male victims, a group noteworthy for its high victimization rate (4,15,25,29–32).

In conclusion, our findings indicated that 28% of the murders perpetrated by male adolescents were related to drug selling, and that juveniles involved in the sale and distribution of illegal drugs accounted for more than half of the juvenile murderers studied. While familial murder has received considerable attention (13,14), these data serve to further emphasize the link between drugs and violence in adolescent populations and suggest that drug-related juvenile homicide may represent a rapidly emerging and far more prevalent problem. Finally, the results from the present study are consistent with the hypothesis that homicide is a behavioral *interaction* where both victim and perpetrator variables play a role in the ultimate outcome.

#### Acknowledgments

The authors thank Dr. Marcella F. Fierro, Chief Medical Examiner for the Commonwealth of Virginia, for permission to access the medical examiner records; and Ms. Heather P. Sanderson for assistance with data collection and analysis.

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Additional information and reprint requests:

Colleen R. McLaughlin, Ph.D.  
Department of Criminal Justice Services  
805 East Broad Street  
Richmond, VA 23219