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The Drugs-Violence Nexus among Rural Felony Probationers*

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Abstract

Little research has focused on the drugs-violence nexus in rural areas. As such, the purpose of this study was to use Goldstein's (1985) tripartite conceptual framework to examine the relationship between drugs and violence among felony probationers in rural Appalachian Kentucky (n=800). Data on demographics, substance use, criminal history, and violence were collected between 2001 and 2004 using an interviewer-administered questionnaire. Rural probationers were partitioned into four groups based on lifetime violent victimization/perpetration experiences: (1) *neither a perpetrator nor a victim*, (2) *perpetrator only*, (3) *victim only*, and (4) *both a perpetrator and a victim*. Chi-square analyses indicated substance use and criminal history varied across the four groups. Binary logistic regression analyses were used to explore the significant correlates of both perpetration and victimization. Multivariate analyses supported both the psychopharmacological model and the economic compulsive models of perpetration and victimization. Further implications of these findings are discussed.

In recent years, a growing body of research has examined the relationship between drug use and violent crime (Goodrum, Wiese, & Leukefeld, 2004; Martin, Maxwell, White, & Zhang, 2004; McCoy, Messiah, & Yu, 2001; Parker & Auerhahn, 1998). While drug users typically engage in non-violent crime, there is support for a positive relationship between specific drugs and violent crime (Martin et al., 2004; McCoy, et al., 2001; Parker & Auerhahn, 1998). However, little research has focused on the drugs-violence nexus among rural offenders (Goodrum et al., 2004). Motives to engage in crime stem from the available opportunities for criminal behavior, which vary across the rural-urban continuum (Conger, 1997; Leukefeld et al., 2002). For instance, rural drug offenders are faced with region-specific obstacles such as higher unemployment, higher rates of illiteracy, and higher rates of poverty that may ultimately lead to criminal behavior among drug abusers (Leukefeld et al., 2002). Rural offenders also have different drug preferences, drug use patterns, and are less likely to have ever received substance abuse treatment (Leukefeld et al., 2002; Warner & Leukefeld, 2001). Therefore, the

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rural drug abuser's experience likely differs from that of the urban drug abuser. As such, the purpose of this study was to use Goldstein's (1985) tripartite conceptual framework to examine the relationship between drug use and violence among felony probationers in rural Appalachian Kentucky.

Theoretical Framework

The current study is grounded in Goldstein's (1985) conceptual drugs/violence framework which outlines three types of violence that occur among drug abusers: (1) psychopharmacological, (2) economic compulsive, and (3) systemic. In other words, drug abusers may become involved in the criminal justice system because of the pharmacological effects of drugs, due to economically necessitated behavior, or as a result of drug distribution or sales. Research demonstrates that violent offenders and victims of violent crimes have the same characteristics (Goldstein, 1985). Drug using victims of violence are often easier targets because of unpredictable behaviors, impairment of clear communication signals, and/or because drug dealers, for instance, often carry large sums of money (MacCoun, Kilmer, & Reuter, 2003). Therefore, drug abusers may be either the perpetrators or victims of violent crimes for psycho-pharmacological, economic compulsive, or systemic reasons.

Psychopharmacological Model of Violence

The psychopharmacological model of violence incorporates the physiological process of ingesting a psychoactive substance. For instance, the intoxicated behavior of a drug user may lead to a volatile, unrestrained state that precipitates a violent act (Goldstein, 1985). Psychopharmacological violence may involve drug use by either the perpetrator, the victim, or both. A drug's likelihood of contributing to violence depends upon its psychoactive properties. Heroin is the least likely to be associated with violence, while amphetamines, cocaine, and phencyclidine (PCP) may be linked to violence (Parker & Auerhahn, 2001). Moreover, alcohol is the drug with the strongest association to violence (Martin et al., 2004; McClelland & Teplin, 2001). McClelland and Teplin (2001) reported a relationship between alcohol intoxication and violent perpetration, and found an even stronger relationship between alcohol intoxication and victimization. However, there is less conclusive support for a pattern or direction of association between drug use and violence (MacCoun et al., 2003; Parker & Auerhahn, 2001).

While the physical or psychological effects of a drug like alcohol may impair decision making skills initiating perpetration of a violent act, drug abusers are also more available as victims of violent acts because of similar effects (Goldstein, 1991). In fact, some research identifies victims of violent crimes as significantly more likely to be intoxicated than victims of non-violent crimes (McClelland & Teplin, 2001). Drug users engage in high risk behaviors due to the severity of their substance use, which may increase their likelihood for being the victim of a violent crime.

Economic Compulsive Model of Violence

Economic compulsive violence occurs when drug users engage in profit-oriented criminal activity to maintain their expensive drug habits. Goldstein (1985) suggests that expensive drugs such as cocaine, are most relevant for the economic compulsive model since they usually reflect compulsive patterns of use. In fact, the Bureau of Justice Statistics (BJS) reports that in 2002, approximately a quarter of the nation's convicted property and drug offenders had committed their crimes to get money for drugs (Karberg & James, 2005). Although, economic compulsive drug users are not typically violent, they are motivated by the financial gain that results from violent encounters like robbery. Economic compulsive violence usually depends on the contextual factors. Various environmental and economic conditions may impact drug abusers

depending on their geographic locations, although the extent to which substance abusers commit violent crime out of economic necessity in rural regions is still unknown. It is possible that rural substance users may engage in violent criminal behaviors to obtain money for drugs due to the substantial economic disparity typical of rural communities. Victims of this type of violence are also typically drug users (Goldstein, 1985).

Systemic Model of Violence

The systemic model suggests that individuals can engage in violence during the sale and distribution of drugs. Collins (1990) suggests that systemic violence typically occurs in areas that have limited social control mechanisms, have high rates of interpersonal violence, and are economically disadvantaged. Examples of systemic violence include territorial disputes, retribution for failure to pay debts, or elimination of informants (Goldstein, 1985). The differences between rural and urban drug users may vary a great deal given the lack of opportunities to engage in organized crime in rural areas. However, drug trafficking occurs in rural areas, but perhaps with different types of drugs than in urban areas. For example, marijuana is one of Kentucky's largest cash crops with the rural state ranking second in the nation for production and much of Kentucky's marijuana is trafficked to other states in the U.S. (Drug Enforcement Agency [DEA], 2007a).

Victims of systemic violence are usually involved in drug trafficking (Goldstein, 1985). A "drug deal gone wrong" may frequently progress to victimization and violence in that weapons have been linked to drug trafficking (Sheley, 1994). Criminal activity on a systems level, such as drug trafficking, can account for most of the criminal activity among drug users (Nurco, Kinlock, & Hanlon, 2004), although for rural communities the extent of systemic violent crime remains unknown.

Present Study

Opportunities for drug involvement and violence typically occur within community settings rather than in the criminal justice system. However, previous studies on rural offenders typically examined prisoners (Goodrum et al., 2004; Leukefeld et al., 2002), while few studies examine the largest criminal justice population -- probationers (Glaze & Bonczar, 2006). This study examines the drugs-violence nexus among probationers in Kentucky, the state with the highest increase in the probation population in the nation (15%) (BJS, 2005a). Among those involved in the criminal justice system, individuals receiving community supervision - probation and parole - have the greatest opportunity to engage in crime and drug use (Belenko, Langley, Crimmins, & Chaple, 2004; Martin, O'Connell, Inciardi, Beard, & Surratt, 2003; Oser et al., 2006a). According to the Bureau of Justice Statistics, although probationers are typically not on probation for committing violent crimes (19%), the severity of drug use among probationers may be a factor for violent encounters since the majority of probationers were convicted of alcohol or drug related charges (43%) (Glaze & Bonczar, 2006). It's also important to examine Kentucky because the region of rural Appalachian Kentucky has the highest rate of past month illicit drug use (excluding marijuana) in the U.S. (National Survey on Drug Use and Health [NSDUH], 2005).

The purpose of this study is to use Goldstein's (1985) tripartite conceptual framework to examine the relationship between drug use and violence among felony probationers in rural Appalachian Kentucky. In this study, a narrow definition of violence is used in an effort to avoid recall bias. Specifically, violent victimization is measured by either the participant being beaten up and/or someone using a knife or firing at gun at the participant, whereas violent perpetration is measured by either the participant beating someone else up and/or using a knife or firing a gun on someone. This definition of violence includes all forms of violent crime (e.g., family violence, interpersonal violence, etc.) regardless of if the violent offense resulted in an

arrest or conviction. Three research questions will be explored in this study. First, do demographic characteristics, criminal involvement, and substance abuse histories differ between rural probationers who were victims and perpetrators of violent crimes? Second, what impact do psychopharmacological measures, economic compulsive measures, and systemic measures have on the likelihood of committing a violent crime? Third, what impact do psychopharmacological measures, economic impulsive measures, and systemic measures have on the likelihood of being a victim of a violent crime?

It is hypothesized that psychopharmacological violence will be prevalent in this study. Since probationers are most likely to have been convicted of drug crimes, it is expected that offenders will have lifetime histories of substance use that may be related to violent behaviors. Furthermore, given the economic conditions in rural Kentucky, it is expected that violence perpetration and victimization will be economically motivated. The limited information on organized crime in rural Kentucky leads to the speculation that the systemic violence model will not be supported.

Method

Over a 3 ½ year period, 800 probationers were recruited by trained interviewers from probation offices within two probation districts. These two probation districts were comprised of 30 rural and/or Appalachian counties in Kentucky. To be eligible for the study, a participant had to be 18 years of age or older, on felony probation in one of the thirty designated counties, and consent to participate. The study was approved by the University of Kentucky Institutional Review Board and a certificate of confidentiality was obtained from the National Institutes of Health to further protect participants' identities. Females were over-sampled at 30% to ensure adequate representation and to facilitate a sufficient sample size for data analyses. Participants were compensated $30 for participating in the 1–2 hour structured face-to-face baseline interview. Additional information on the methodology is available elsewhere (see Leukefeld et al., 2003; Oser, Leukefeld, Cosentino-Boehm, & Havens, 2006b).

Measures

The questionnaire included data on demographic characteristics, psychopharmacological measures, economic compulsive measures, and systemic measures. The two dependent variables of interest were drawn from a modified version of the Conflict Tactic Scale of Violence (Straus & Gelles, 1990). Specifically, respondents were asked if they had ever been the victim of a violent crime (1 = yes; 0 = no) or ever committed a violent crime (1 = yes; 0 = no) in their lifetime. Violent crime was defined as "beaten" or "used a knife or fired a gun."

Four demographic characteristics were included in the multivariate models. Age was measured in number of years. The remaining variables were dichotomous measures (1 = yes; 0 = no) and included whether the participant was female, married, and had a high school diploma/GED.

Three variables were used to measure the psychopharmacological component based upon these existing literature. In particular, alcohol, cocaine/crack, and other stimulants were chosen because they are the psychoactive substances most frequently linked to violence. Respondents were asked, "Do you think that you are an alcoholic?" Responses were coded '1' for yes and '0' for no. Drug use was measured by two items derived from the Addiction Severity Index (ASI) (McLellan et al., 1990). Specifically, lifetime use of cocaine/crack (1 = yes; 0 = no) and other stimulants (e.g., amphetamines or methamphetamines) (1 = yes; 0 = no) were included.

The economic compulsive component was measured by two variables which target the extent to which violent crimes occurred as a result of economic necessity. Respondents were asked to rate the extent to which they engaged in crime (i.e., illegal activities) to pay for drug expenses

or living expenses in the three months prior to arrest (0 = none; 1 = a little; 2 = some, 3 = half, 4 = most/all). In addition, the number of lifetime arrests was a self-reported continuous variable.

Two dichotomous variables were used to measure the systemic component. Specifically, self-report data was used to assess if the participant had ever committed a weapons offense (1 = yes; 0 = no) and had ever sold or trafficked drugs (1 = yes; 0 = no) in their lifetime.

Analytic Strategy

Goldstein's (1985) tripartite conceptual framework was used to examine the relationship between drug use and violence among rural felony probationers in Kentucky. A three-fold analytic approach was used. First, rural probationers were partitioned into four groups based on lifetime violent victimization/perpetration experiences: (1) *neither a perpetrator nor a victim*, (2) *perpetrator only*, (3) *victim only*, and (4) *both a perpetrator and a victim.* Group differences across demographic characteristics, criminal history, lifetime prevalence of substance use, psychopharmacological measures, economic compulsive measures, and systemic measures were examined using chi-squares and one-way analysis of variance (ANOVA). This initial approach provided a comprehensive description of the violent perpetration/victimization typology before examining the correlates of violent perpetration and violent victimization. Second, binary logistic regression was used to determine the impact of psychopharmacological measures, economic compulsive measures, and systemic measures on the likelihood of committing a violent crime. Third, binary logistic regression was used to determine the impact of psychopharmacological measures, economic compulsive measures, and systemic measures on the likelihood of being a victim of a violent crime. Due to the dichotomous nature of the dependent variables (e.g., having ever been the victim of a violence crime or having ever been the perpetrator of a violent crime) binary logistic regression was the appropriate statistical approach (Mertler & Vannatta, 2000). None of the independent variables correlated so highly as to imply problems with multicollinearity. Results of the two binary logistic regression models report the beta values, standard errors, odds ratios, and 95% confidence intervals.

Results

Descriptive

Since the majority of participants reported either having been the perpetrator in a violent crime (67.7%) or having been the victim of a violent crime (68.3%), a first step was to partition the rural probationers into four groups based on criteria of both perpetration and victimization. In this exhaustive typology, rural probationers were placed into one of four groups: *neither a perpetrator nor a victim* (n = 164), *perpetrator only* (n = 89), *victim only* (n = 94), and *both a perpetrator and a victim* (n = 452). Table 1 displays group means across demographic characteristics, criminal history, lifetime prevalence of substance use, psychopharmacological measures, economic compulsive measures, and systemic measures (n = 800).

There were significant differences between gender and marital status across the four groups. For example, females comprised 63.8% of the violent *victimization group*, but only 27% of the violent *perpetrator group* (χ^2 (3) = 66.57; p < .001) Significant group differences also emerged across the criminal history variables. Specifically, rural probationers in the *perpetrator group* (28%) and in the *both a perpetrator and a victim group* (45%) were significantly more likely to have a juvenile arrest record than their non-perpetrating counterparts ($\chi^2(3) = 64.23$, p < .001). The number of times incarcerated also differed among the four groups, with the *neither group* reporting the lowest number of times incarcerated (*M* = 3) and the *both group* reporting the highest number of times incarcerated (*M* = 7.9) (F(3) = 5.37, p < .001). Rural probationers who had been *both a perpetrator and a victim* of a violent

crime were significantly more likely to have ever engaged in the use of alcohol ($\chi^2(3) = 22.27$, $p < .001$), marijuana ($\chi^2(3) = 41.59$, $p < .001$), hallucinogens ($\chi^2(3) = 64.70$, $p < .001$), sedatives ($\chi^2(3) = 41.46$, $p < .001$), heroin ($\chi^2(3) = 13.42$, $p < .01$), and other opiates ($\chi^2(3) = 49.25$, $p < .001$).

Among the three psychopharmacological measures, there were significant group differences. Specifically, rural probationers who were *both a violent perpetrator and a victim* were more likely to define themselves as an alcoholic ($\chi^2(3) = 27.16$, $p < .001$), to have used cocaine/crack ($\chi^2(3) = 47.79$, $p < .001$), and to have used any stimulant other than crack or cocaine ($\chi^2(3) = 56.74$, $p < .001$). Conversely, rural probationers who had *never been involved in a violent crime* as either a perpetrator or victim were less likely to identify themselves as an alcoholic, to have ever used cocaine/crack, and to have ever used any other stimulant.

The economic compulsive measures – number of arrests and engaging in crime to pay for drugs and/or living expenses -- varied as a function of group membership. Again, rural probationers who were *both a perpetrator and a victim* reported an average of 12.7 lifetime arrests, as compared to 4.6 in the *neither group*, 7.0 in the *victim group*, and 5.7 in the *perpetrator group* ($F(3) = 14.97$, $p < .001$). Participants who had been *both a perpetrator and a victim* in a violent crime were significantly more likely to have engaged in crime to pay for drugs and/or living expenses ($F(3) = 7.93$, $p < .001$).

Both systemic measures varied across the four groups. Specifically, rural probationers who were *both violent perpetrators and victims* were over-represented among those who had ever committed a weapons offense ($\chi^2(3) = 36.56$, $p < .001$). Approximately three-fifths of the *both group* (62.6%) reported selling or trafficking drugs as compared to two-thirds of the *neither group* (40.2%) ($\chi^2(3) = 34.68$, $p < .001$).

Multivariate Results of Violent Perpetration

Table 2 presents four logistic regression equations that highlight results on the tripartite theoretical framework for rural probationers' violent perpetration. Model 1 includes the demographic indicators and three psychopharmacological measures. Females and high school educated participants were less likely to have committed a violent offense in their lifetime. All three psychopharmacological measures were significant. Probationers who defined themselves as alcoholics were 1.6 times more likely to report engaging in acts of violent perpetration ($p < .05$). Regarding the use of illicit drugs, participants who had ever used cocaine/crack (O.R. = 1.68; $p < .01$) or any other stimulants such as methamphetamines (O.R. = 1.91; $p < .01$) were significantly more likely to have ever committed a violent offense.

Model 2 examines the economic compulsive correlates of violent perpetration, while controlling for demographic characteristics. Specifically, being older and female decreases the likelihood of committing a violent crime. Each additional self-reported arrest produces a 4% increase in the likelihood of committing a violent crime (O.R. = 1.04; $p < .01$). In addition, probationers in rural counties who use crime to pay for drugs and/or living expenses were more likely to have engaged in violent crime in their lifetime (O.R. = 1.26; $p < .01$).

The systemic correlates of violent perpetration in rural counties are displayed in Model 3. Again, being female and having a high school diploma were negatively associated with violent perpetration. In addition, having ever committed a weapons offense (O.R. = 1.91; $p < .01$) or having ever sold or trafficked drugs (O.R. = 2.02; $p < .01$) increased the odds of committing a violent crime across the lifespan approximately two-fold.

Model 4 presents the fully specified equation by including the demographic, psychopharmacological, economic compulsive, and systemic measures for violent perpetration

by probationers in rural counties. The gender and education coefficients remained remarkably stable across the models. Specifically, females with high school diplomas or GEDS were less likely to be violent perpetrators. In the psychopharmacological component, defining oneself as an alcoholic and having ever used cocaine/crack were reduced to non-significance; however, the lifetime prevalence of other stimulant use increased the likelihood of having ever committed a violent crime (O.R. = 1.60; $p < .05$). One of the two economic compulsive measures remained statistically significant. Specifically, the number of lifetime arrests was positively correlated with having ever committed a violent crime across the lifespan (O.R. = 1.02; $p < .05$). Finally, both of the systemic measures were reduced to non-significance. All four models were statistically significant; but, model 4 provided the best fit to the data.

Multivariate Results of Violent Victimization

The four logistic equations examining the impact of the tripartite theoretical framework on the lifetime likelihood of being a victim of a violent crime among rural probationers are displayed in Table 3. Model 1 examined the relationship between the psychopharmacological measures and violent victimization in rural counties, while controlling for demographic characteristics. Marriage served as a protective factor against ever being victimized (O.R. = .67; $p < .05$). Two of the three psychopharmacological measures were related to violent victimization. Self-defined alcoholics were 2.5 times more likely to have been the target of a violent offender ($p < .01$). Likewise, having ever used any stimulant other than crack or cocaine increased the odds of victimization more than two-times (O.R. = 2.18; $p < .01$).

Model 2 includes demographic characteristics and economic compulsive measures. Again, there is a negative relationship between being married and being the victim of a violent crime (O.R. = .71; $p < .05$). Both arrest history and engaging in crime to subsidize a probationer's lifestyle were significantly related to being a violent crime victim. In fact, each additional self-reported arrest produced a 8% increase in the likelihood of being a victim of a violent offense, net of the effects of the other independent variables in the model (O.R. = 1.08; $p < .01$). Participants who used crime to pay for drugs and/or living expenses were more likely to have been violently victimized in their lifetime (O.R. = 1.21; $p < .05$).

Only two variables were significant in Model 3, which examined the relationship between the systemic measures and violent victimization while controlling for demographic characteristics. Specifically, married rural probationers were 31% less likely to have been the victim of a violent crime (O.R. = .69; $p < .05$). In addition, there was more than a two-fold increase in the likelihood of having ever been the victim of a violent crime among participants who had ever committed a weapons offense (O.R. = 2.37; $p < .01$).

The fully specified equation for violent victimization is displayed in Model 4. The marital status coefficient remained stable across the four models with married participants being less likely to have been violently victimized in their lifetime. Both of the psychopharmacological coefficients remained statistically significant. Rural probationers who defined themselves as alcoholics (O.R. = 1.86; $p < .05$) and those who had ever used stimulants other than crack or cocaine (O.R. = 1.91; $p < .01$) were almost twice as likely to have been violently victimized. Only one of the two economic compulsive measures remained a significant correlate of violent victimization. Specifically, there was a 5% increase in the likelihood of having been the victim of a violent crime for each additional arrest (O.R. = 1.05; $p < .01$). Finally, neither of the systemic measures were statistically significant in the fully specified equation. Overall, each of the four models were statistically significant; however, Model 4 was the best fit.

Discussion

This study was the first to use Goldstein's tripartite model to examine the impact of demographic characteristics, psychopharmacological measures, economic compulsive measures, and systemic measures on both violent perpetration and violent victimization among rural felony probationers. The majority of felony probationers (56.5%) in this study reported being both a victim as well as a perpetrator of violence during their lifetimes. The Bureau of Justice Statistics (Glaze & Bonczar, 2006) reports that the majority of community supervised offenders do not typically have violent charges. However, the majority of probationers at the national and local level (Glaze & Bonczar, 2006; Oser et al., 2006b) are serving their sentences because of drug charges which provides some support for the drugs/crime relationship. Moreover, the government data report on arrests for a crime, whereas the present study is based upon self-report data of the occurrence of a violent act, regardless of a subsequent arrest. Research has shown that the number of arrests relative to the number of crimes committed are quite large (Carmichael & Piquero, 2006) and that violent crimes are often underreported by victims (Rennison, 2001). Consequently, self-reported crimes, as compared to arrests, may be a more accurate depiction of violent crime perpetration and victimization.

In the fully specified model for violent perpetration, male stimulant users (i.e., amphetamine or methamphetamine users) were significantly more likely to have committed a violent crime in their lifetime. This provides support for the psychopharmacological model. According to national surveys, including the National Survey on Drug Use and Health (NSDUH) (2005) and the Monitoring the Future survey of students (Johnston, O'Malley, Bachman, & Schulenberg, 2006), methamphetamine use and abuse in the United States has increased in recent years. Methamphetamine use has also been reported to be high in many rural areas (Maxwell, 2004; National Center on Addiction and Substance Abuse at Columbia University [CASA], 2000) because of the ease of production or "meth cooking" in makeshift labs (Drug Enforcement Agency [DEA], 2007b). In addition, the psychopharmacodynamics of amphetamines and methamphetamines contribute to violent behavior (Boles & Miotto, 2003).

There was also support for the relationship between economic compulsive measures and violent crime perpetration. An extensive arrest history decreases the ability to find employment (Basile, 2005; Harrison & Schehr, 2005) and results from the current study indicate that numerous prior arrests were associated with committing a violent crime. Rural areas, especially Eastern Kentucky, are plagued by economic disadvantage and provide minimal job opportunities (Appalachian Regional Commission, 2007). According to the 2000 U.S. Census, when Kentuckians are compared to the U.S. national average, they are less likely to have a high school degree (74.1%, 80.4%) or a Bachelor's degree or higher (17.1%, 24.1%). Kentucky residents also have lower median household incomes ($36,663, $43,318) and are more likely to fall below the poverty line (14.9%, 12.5%). Consequently, rural felony probationers may be more likely to engage in economically oriented violent crime which is evidenced by their extensive criminal arrest histories.

There were several significant independent correlates of being the victim of a violent crime. Specifically, non-married self-defined alcoholic stimulant users with extensive arrest histories were significantly more likely to have ever been violently victimized. Again, this provides support for the psychopharmacological and economic compulsive models of violent crime among drug users. Consistent with existing research on the relationship between alcohol use and violent victimization (Boles & Miotto, 2003; McClelland & Teplin, 2001), self-defined alcoholic rural probationers were almost twice as likely to have been the victim of a violent crime. Defining oneself as alcoholic indicates a greater level of severity and may be indicative of a longer substance abuse history. The psychoactive properties of alcohol make a self-

proclaimed alcoholic dependent person more susceptible to victimization because it decreases frontal lobe functioning and inhibitions (Boles & Miotto, 2003). The inhibitory effects of alcohol may affect the ability to socialize and increase the unpredictability of interactions. This may ultimately increase the likelihood for violence. Likewise, there is a pharmacological link between amphetamines, methamphetamines and violence. The use of amphetamines and/or methamphetamines can produce a psychotic state characterized by delusions, disorientation, or paranoid thinking (Miczek & Tidey, 1989), which may make the user vulnerable to violent victimization.

The economic compulsive measure of number of arrests was related to an increased likelihood of being the victim of a violent crime. Specifically, rural residents could have extensive arrest histories because they have not received treatment for their drug abuse and dependence (Warner & Leukefeld, 2001). In fact, there is limited availability and accessibility to drug abuse treatment programming in rural areas (Conger, 1997). The lack of drug abuse treatment may lead to employment problems, which could place drug users in risky situations due to the distressed and economically poor region in which they live (Appalachian Regional Commission, 2007). These risky situations can backfire and lead to violent victimization (i.e., being the victim of an assault when engaging in transactional sex) since the literature indicates a link between criminal activity and victimization (Falshaw, Browne, & Hollin, 1996; Lake, 1993; Weeks & Windom, 1998).

While there is some support for the existence and growth of rural gang activity (Evans, Fitzgerald, Weigel, & Chvilicek, 1999; Swetnam & Pope, 2001; Wells & Weisheit), no support was found for the systemic model of violence for either perpetration or victimization in this study. This lack of significance could be attributed to the operationalization of systemic violence indicators since this study was part of a larger HIV intervention project that did not include any gang-specific measures to assess territorial disputes, retribution for selling low-quality drugs, and/or the elimination of confidential informants. Future studies should examine the systemic model of violence in rural areas. For example, rifles, guns, and other hunting equipment are more prevalent in rural areas (Cook & Ludwig, 1997) and individuals under the influence of stimulants may be more likely to use these readily available weapons in the commission of violent crimes (e.g., robbery).

Several limitations must be noted. This was a cross-sectional study that examined correlational effects, not causation. The temporal ordering of events were unknown. For example, the majority of probationers were both victims and perpetrators and it is unclear if victimization at a young age drove the participant into crime or if a criminal lifestyle increased the risk of violent victimization. While longitudinal data are ideal, this study was a first step in examining the violence/drugs nexus in rural areas among individuals under community supervision. While this was a community based study, it is not generalizable to all rural populations. Future research could explore the drugs/violence nexus among other rural populations such as those in substance abuse treatment or prison settings. Finally, this study was part of a larger HIV intervention project which limited the ability to operationalize the components of Goldstein's tripartite model as well as the dependent variable. For example, future research could have a broader definition of violent crime that included robbery, rape, etc.

Despite these limitations, this study was the first to use Goldstein's (1985) tripartite conceptual framework to examine the relationship between drug use and violence among felony probationers in rural Appalachian Kentucky. As expected, multivariate analyses supported both the psychopharmacological model and the economic compulsive models of violent perpetration and victimization among rural probationers. However, there was no support for the systemic model of violence which could be indicative of the limited gang-related activities

in these rural counties. Future studies are needed to examine the prevalence of rural gangs and their impact on violence in rural communities.

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Table 1

Group Differences across Demographic Characteristics, Criminal History, Lifetime Prevalence of Substance Use, Psychopharmacological Measures, Economic Compulsive Measures, and Systemic Measures (N=800)

	Neither (n=164)	Victim (n=94)	Perpetrator (n=89)	Both (n=452)
Demographic Characteristics				
Age	35.6	34.2	32.4	33.4
% Female**	44.5	63.8	27.0	24.3
% Married*	39.0	34.0	39.3	28.1
% High School Diploma or GED	71.3	65.2	60.2	61.6
Criminal History				
% Ever Arrested as a Juvenile**	18.0	13.0	28.0	45.0
% Ever Incarcerated	67.0	66.0	67.0	69.0
Number of Times Incarcerated**	3.0	5.0	3.7	7.9
Lifetime Prevalence of Substance Use				
% Alcohol**	93.9	94.7	98.9	99.6
% Marijuana**	76.2	89.4	89.9	94.3
% Hallucinogens**	36.0	42.6	53.9	69.0
% Sedatives**	43.3	51.1	60.7	70.1
% Heroin**	7.9	4.3	6.7	14.6
% Opiates**	42.0	62.4	62.9	72.7
Psychopharmacological Measures				
% Self-defined Alcoholic**	9.0	17.0	11.0	26.0
% Ever Used Cocaine/Crack**	45.1	60.6	66.3	74.6
% Ever Used Other Stimulants**	31.1	45.2	43.8	63.5
Economic Compulsive Measures				
Number of Arrests**	4.6	7.0	5.7	12.7
Extent to Which Crime is Used to Pay for Drugs/Living Expenses [a]**	.5	.7	.7	1.0
Systemic Measures				
% Ever Commit Weapon Offense**	11.0	13.0	15.0	30.0
% Ever Sell or Traffic Drugs **	40.2	39.4	58.0	62.6

** Notes: ($p < .01$)

* ($p < .05$)

[a] Likert scale where 0=none, 1=a little, 2=some, 3=half, 4=most/all

Table 2

Independent Correlates of Violent Perpetration

	Model (1)		Model (2)		Model (3)		Model (4)	
	B (S.E.)	**OR (95% C.I.)**	**B (S.E.)**	**OR (95% C.I.)**	**B (S.E.)**	**OR (95% C.I.)**	**B (S.E.)**	**OR (95% C.I.)**
Demographic Characteristics								
Age	−.01 (.01)	.99 (.97–1.00)	−.02 (.01)	.98* (.97–1.00)	−.02 (.01)	.99 (.97–1.00)	−.02 (.01)	.99 (.97–1.00)
Female	−1.14 (.17)	.32** (.23–.45)	−1.03 (.17)	.36** (.26–.50)	−1.01 (.17)	.37** (.26–.51)	−.99 (.18)	.37** (.26–.52)
Married	−.17 (.18)	.85 (.60–1.19)	−.15 (.17)	.86 (.62–1.21)	−.14 (.17)	.87 (.62–1.22)	−.12 (.18)	.89 (.63–1.27)
High School Diploma/GED	−.41 (.18)	.66* (.47–.93)	−.31 (.17)	.74 (.52–1.03)	−.37 (.17)	.69* (.49–.97)	−.36 (.18)	.70* (.50–.99)
Psychopharmacological								
Self-defined Alcoholic	.46 (.24)	1.58* (1.00–2.50)					.31 (.25)	1.36 (.84–2.20)
Ever Used Cocaine/Crack	.52 (.20)	1.68** (1.14–2.47)					.32 (.21)	1.37 (.92–2.05)
Ever Used Other Stimulants	.65 (.19)	1.91** (1.31–2.78)					.47 (.20)	1.60* (1.09–2.37)
Economic Compulsive								
Number of Arrests			.04 (.01)	1.04** (1.02–1.06)			.02 (.01)	1.02* (1.00–1.04)
Crime to Pay for Drugs or Living Expenses			.23 (.07)	1.26** (1.09–1.44)			.08 (.08)	1.08 (.92–1.26)
Systemic								
Ever Commit Weapon Offense					.65 (.23)	1.91** (1.22–2.99)	.35 (.24)	1.41 (.88–2.26)
Ever Sell or Traffic Drugs					.70 (.17)	2.02** (1.46–2.80)	.33 (.19)	1.39 (.96–2.02)
−2 Log likelihood		878.90		892.86		897.92		860.04
Model χ^2		114.07**		102.36**		98.87**		131.36**
Nagelkerke R^2		.19		.17		.16		.22

** Notes: ($p < .01$)

* ($p < .05$), Two-tailed. n of cases is 785.

Table 3

Independent Correlates of Violent Victimization

	Model (1)		Model (2)		Model (3)		Model (4)	
	B (S.E.)	**OR (95% C.I.)**	**B (S.E.)**	**OR (95% C.I.)**	**B (S.E.)**	**OR (95% C.I.)**	**B (S.E.)**	**OR (95% C.I.)**
Demographic Characteristics								
Age	−.00 (.01)	1.00 (.98–1.01)	−.01 (.01)	.99 (.98–1.01)	−.00 (.01)	1.00 (.98–1.01)	−.01 (.01)	.99 (.98–1.01)
Female	−.16 (.17)	.85 (.61–1.18)	.03 (.17)	1.03 (.73–1.44)	−.10 (.17)	.91 (.66–1.26)	.05 (.18)	1.05 (.74–1.48)
Married	−.40 (.17)	.67* (.48–.93)	−.34 (.17)	.71* (.51–.99)	−.37 (.17)	.69* (.50–.96)	−.39 (.17)	.68* (.48–.95)
High School Diploma/GED	−.29 (.17)	.75 (.54–1.05)	−.12 (.17)	.89 (.64–1.24)	−.22 (.17)	.80 (.58–1.11)	−.17 (.17)	.84 (.60–1.19)
Psychopharmacological								
Self-defined Alcoholic	.91 (.25)	2.50** (1.54–4.05)					.62 (.26)	1.86* (1.11–3.09)
Ever Used Cocaine/Crack	.28 (.19)	1.32 (.90–1.93)					.10 (.20)	1.11 (.74–1.65)
Ever Used Other Stimulants	.78 (.19)	2.18** (1.51–3.15)					.64 (.20)	1.91** (1.30–2.80)
Economic Compulsive								
Number of Arrests			.07 (.01)	1.08** (1.05–1.10)			.05 (.01)	1.05** (1.02–1.08)
Crime to Pay for Drugs or Living Expenses			.19 (.07)	1.21** (1.06–1.39)			.11 (.08)	1.12 (.96–1.30)
Systemic								
Ever Commit Weapon Offense					.86 (.22)	2.37** (1.54–3.67)	.46 (.24)	1.58 (.99–2.51)
Ever Sell or Traffic Drugs					.30 (.16)	1.35 (.99–1.86)	−.21 (.19)	.82 (.56–1.18)
−2 Log likelihood		913.37		912.45		954.15		879.75
Model χ^2		75.10**		76.79**		36.63**		107.18**
Nagelkerke R^2		.13		.13		.06		.18

** Notes: ($p < .01$)

* ($p < .05$), Two-tailed. n of cases is 785.