

Pathways Between Substance Use, Dependence, Offense Type, and Offense Severity

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Abstract

There is a well-established connection between alcohol, drugs, and offending, but little is known about the intervening role of dependence. The present study was designed to assess the intervening effects of alcohol and drug dependence on the types and severity of offenses arrestees were charged with. Data were drawn from the 2010 Arrestee Drug Abuse Monitoring Program II program. This program utilized a probability sample of male arrestees ($N = 3,013$) from 10 cities across the United States between April 1 and September 30, 2010. Arrestees completed face-to-face interviews shortly after they were booked into jails. Path analysis was used to test the mediated relationships between substance use indicators, dependence, offense severity, and offense type. Drug and alcohol dependence mediated the relationship between alcohol and drug use indicators, the types, and the severity of charges among arrestees. Assessment and treatment provisions aimed at dependence need to be included in criminal justice practices to successfully reduce these types of offenses.

Keywords

drug dependence, alcohol dependence, offending, mediation, arrestees, ADAM

Introduction

Substance use is a pervasive problem among offenders involved in the American criminal justice system. Consider, for example, estimates which show as many as 85% of inmates in American jails reported use of an illicit drug in their lifetime (Staton-Tindall, Havens, Oser, & Burnett, 2011), with 35% reporting dependence on at least one drug (Lo, 2004). Recent drug use is also a significant problem considering 69% of inmates reported regular use of drugs in the 30-day period leading up to the offense for which

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they were incarcerated (James, 2002). Alcohol use prevalence is also fairly high among criminal justice-involved offenders with 36% of those convicted reporting drinking alcohol immediately prior to the commission of their offense (Greenfeld, 1998).

Research has closely examined how certain types of offending may be uniquely and directly related to substance use. One of the most popular conceptions of these relationships can be conceived through an extension of Goldstein's (1985) typology, which largely focused on ways substance use can contribute to violence. Although this framework was originally directed toward violent offenses, it can readily be expanded to inform how the pharmacological effects of certain substances influence other types of criminal activity. In effect, certain substances could prompt violent crime, nonviolent crime, or substance-related crime. One of the most substantiated areas of research supportive of this conceptual approach provides ample evidence that alcohol use plays a prominent role in violent offending, such as assault and domestic violence (Foran & O'Leary, 2008; Zhang, Wieczorek, & Welte, 1997). Estimates show anywhere from 20% to 80% of violent offenders had been drinking alcohol immediately prior to committing the offense (Collins & Messerschmidt, 1993; Greenfeld, 1998). Illicit drug use, in comparison, has been observed as a primary motivating factor underlying non-violent property offenses, such as burglary or theft. Drug users have been known to rely on these crimes as primary methods to support their drug use (Stewart, Gossop, Marsden, & Rolfe, 2000; Wright & Decker, 1997). Perhaps most obviously, the pharmacological effects substance users experience can lead to unconventional public behavior and attract the attention of law enforcement officials. This type of situation can result in a criminal charge of being "under the influence of an intoxicating substance," especially in inner city areas where drug use is likely to take place in public areas (Johnson, Williams, Dei, & Sanabria, 1990). Overall, this body of research generally suggests the pharmacological effects of substance use can influence the types of crime offenders become involved in, but largely overlooked is a critically important intervening factor in the substance use-crime relationship.

Dependence has not yet been considered as a vital intervening element between substance use and offending patterns. It is characterized by compulsive desire to continue persistent drug or alcohol use despite experiencing major adverse consequences from using (American Psychiatric Association, 1994), which also closely conforms to the newly designated *DSM-5* diagnostic criteria of moderate and severe substance use disorders (American Psychiatric Association, 2013). The vast majority of those meeting dependence criteria for substances such as alcohol, cocaine, and cannabis will be recognized as having a severe substance use disorder, and nearly all others will be classified as having a moderate use disorder (Kopak, Metzke, & Hoffmann, 2013; Kopak, Proctor, & Hoffmann, 2012; Proctor, Kopak, & Hoffmann, 2013). For the sake of brevity, dependence will be consistently used in the present study for those likely to exhibit addiction to substances.

Those who endorse diagnostic criteria, such as being unable to reduce use or experience tolerance toward a substance, may regularly find themselves in situations which increase their propensity to engage in criminal activity. Many chronic heavy drug users, for example, who are most likely to experience cravings driven by dependence,

may be highly motivated to acquire their drugs of choice by illegal means compared with those who do not experience dependence. Research focused on heroin use (with special consideration of the symptoms of dependence such as tolerance and withdrawal), for example, has shown those who had used the drug in the past year were significantly more likely to be involved in shoplifting compared with those who had not recently used heroin (Bennett & Holloway, 2005). Usually, due to low levels of education and lack of opportunities for conventional employment, drug users have openly reported their willingness to rob or steal from others to support their addiction (Wright & Decker, 1997). This tendency is also more pronounced among those who use multiple drugs, because they may be more desperate to engage in crimes of acquisition to offset the cost of their drug use (Cross, Johnson, Davis, & Liberty, 2001). Multiple drug addictions are also likely to result in greater levels of craving or other symptoms that could make an individual more desperate to acquire substances.

Similarly distinct patterns of violent criminal activity have been observed among heavy and frequent alcohol drinkers, suggesting dependence may be a crucial yet disregarded factor in this relationship. Empirical evidence has demonstrated how alcohol consumption can contribute to increased aggression (Chermack & Taylor, 1995) and hostility (Kachadourian, Homish, Quigley, & Leonard, 2012), which can elevate levels of anger and raise one's predilection for violent behavior (Norström & Pape, 2010). These findings support the alcohol–violent offending relationship especially considering those arrested for violent crimes have reported higher rates of problems stemming from their alcohol use compared with offenders arrested for other types of crime (Sevigny & Coontz, 2008). Again, these results do not, however, consider the important role of alcohol dependence in the drinking–violent offending relationship. The most problematic heavy alcohol drinkers, who are also most likely to come to the attention of police and be processed through the criminal justice system, may be most likely to experience alcohol dependence.

One of the most important known determinants of dependence is age of initiation of use. Empirical evidence has demonstrated the chances of developing severe drug dependence are higher among those who begin using before the age of 15 (Robins & Przybeck, 1985). These problems related to drug use take some time to emerge and those who start using earlier may experience these problems within 5 to 7 years after initiation of use (Anthony & Petronis, 1995). In short, the earlier the drug or alcohol use started, the greater the likelihood of developing dependence, displayed by proximally related behavioral problems later in life.

Early onset of tobacco has also demonstrated the high potential for dependence and serves as a prime example of how this condition can develop among those with genetic indicators favorable toward this condition. For example, smoking tobacco has been found to manifest into indications of dependence among adolescents in the seventh grade who have been identified as genetically susceptible to dependence (DiFranza et al., 2000). In another study, 10% of the most susceptible adolescents (in the sixth grade) showed signs of craving within days of inhaling, and one in four susceptible youth showed signs of nicotine dependence within a month of inhaling smoke (DiFranza et al., 2007). Therefore, it is plausible those who experience these markers

for dependence and initiate use at early ages may reach this level of problematic use at a faster rate than those who initiate use later in life.

The opposite trend, evidenced by steep reductions in alcohol dependence diagnoses, has been observed as a direct result of drinking initiation at later ages. One study found the largest proportion of those who met criteria for alcohol dependence (40%) started drinking prior to age 15 (Grant & Dawson, 1997). This proportion of alcohol-dependent drinkers decreased in each older age group, eventually dropping to 10% among those who initiated drinking at age 21. The same study also found the odds of lifetime alcohol dependence decreased by 14% for every year drinking initiation was delayed. It has been demonstrated a larger proportion (15.9%) of those who initiated drinking at ages 11 or 12 qualified for an alcohol dependence diagnosis 10 years after their first drink compared with only 1% of those who initiated drinking at 19 years or later (DeWit, Adlaf, Offord, & Ogborne, 2000). In addition to becoming more prone to lifetime dependence, those who initiate drinking earlier are also likely to experience the most severe levels of dependence (Hingson, Heeren, & Winter, 2006).

Early alcohol use, similar to other substances, has also been associated with development of dependence among those with genetic vulnerabilities. A twin study, for example, revealed that for some vulnerable youth, drinking prior to age 15 significantly increased the risk for alcohol dependence, while initiation of alcohol use after the age of 18 showed no such effect on these genetic factors (Agrawal et al., 2009). The dependence connected to early onset of alcohol use and genetic vulnerability, similar to drug dependence under corresponding circumstances, could have significant implications for certain types of criminal activities.

This body of research has shown the links between drug use, alcohol use, and offending are fairly well-established, but far less is known about the intervening influence of dependence. Although research has provided some insight into the prevalence of substance use and dependence in criminal justice populations, researchers have not, however, examined in more detail the link between substance use, dependence, and the types of offenses arrestees are taken into custody for. If dependence does, in fact, significantly contribute to certain types of offending, criminal justice policies and practices can be better informed to effectively identify and address dependence. Ultimately, these practices could be offered to arrestees to reduce future offending through effective drug and alcohol dependence treatment options.

The present study addresses this gap by investigating the mediational effects of alcohol dependence and drug dependence on arrestees' offense type and severity. Given the existing knowledge about the effects of substance use on the development of dependence, it was hypothesized earlier age of initiation of drug use and larger numbers of drugs used in arrestees' lifetimes would increase dependence which, in turn, would increase the likelihood of being charged with less-serious, nonviolent crimes such as acquisitive or substance-related offenses (e.g., drug possession). Alcohol dependence was also hypothesized to mediate the effect between age at first heavy drinking episode and the type of offense arrestees' were charged with. Offenders who initiated heavy drinking earlier were expected to report more alcohol dependence symptoms which were hypothesized to lead to violent offense charges.

Method

Sample

Data for the present study were drawn from the Arrestee Drug Abuse Monitoring II (ADAM II) program. The original ADAM program was sponsored by the National Institute of Justice from 1998 to 2003 (Zhang, 2003). Data were not collected from arrestees again until 2007, when the Office of National Drug Control Policy (ONDCP) adopted sponsorship of the ADAM II program and resumed multisite data collection efforts across the United States from 2007 to date. Data for the present study were based on those obtained from the ADAM II program between April 1 and September 30, 2010 (ONDCP, 2011).

The ADAM II program implemented a probability sampling design in 10 cities within 10 different states across the United States (including Atlanta, Georgia; Charlotte, North Carolina; Chicago, Illinois; Denver, Colorado; Indianapolis, Indiana; Minneapolis, Minnesota; New York, New York; Portland, Oregon; Sacramento, California; and Washington, D.C.). The probability sample for each site was drawn according to the total number of arrests made in that site on a given day. The data collection periods for each site were selected to avoid events which would influence typical arrest patterns, such as major holidays. All male arrestees above 18 years of age who were taken into custody in the past 48 hours for any charge were eligible for inclusion in the study. Approximately 86% of those who were eligible agreed to participate in the study.

Eligible participants were approached in booking areas of police stations and jails. Once informed consent was obtained, arrestees completed a face-to-face interview which typically lasted between 20 and 25 minutes. In addition to the information gathered during the interview, the ADAM II program also collected a urine specimen from participants to analyze for the presence of 10 drugs and arrestees' booking data. The ADAM II data include basic demographic information, drug use history, present use, prior alcohol- and drug-related treatment, prior arrests, and many other variables (ONDCP, 2011).

The ADAM II data possess several strengths and weaknesses in the context of this particular analysis. Its strengths include the representation of arrestees in several large metropolitan areas in the United States with a wide range of criminal charges and its inclusion of measures which accurately assess drug and alcohol dependence. This is especially important for the present analyses, because they afford the opportunity to provide a broad assessment of the associations between dependence and offending in an often overlooked and hard-to-reach population. In contrast, these data were collected to specifically gather information on male drug users at the time they entered the criminal justice system and, therefore, exclude female arrestees, anyone who declined to participate in the interview, and drug users who have not been arrested.

This study included participants with complete interviews, complete criminal charges, and clear indicators for offense severity of the present primary charge they were arrested for. Arrestees who indicated their racial background was White, African American or Black, or Hispanic or Latino were included and those who self-identified

as Asian (1%), American Indian or Alaskan Native (3%), or Native Hawaiian or other Pacific Islander (1%) were excluded due to the small numbers in these groups. The final sample size for the present study comprised 3,013 arrestees.

Measures

Control variables. There were several control variables, which are known to be related to substance use and offending, included in the present study. A continuous measure of arrestees' age (which ranged from 18-65 years) was included. Arrestees' education level was considered with the question, "What is the highest level of education you have?" Responses were coded "0" for those who had completed high school or had less than a high school-level education, "1" for arrestees who had attended some college or completed an associate's degree, and "2" for those who had completed a bachelor's degree or had received formal college education beyond a 4-year degree. A measure of marital status was included with single men who have never been married coded "1," and all others coded "0." A measure of arrestees' race and ethnicity was included with a series of dummy-coded variables for those who self-identified as "White," "African American or Black," or "Hispanic or Latino." Arrestees' employment status was also considered with a dichotomous variable coded "0" among those who were unemployed or out of work at the time of their arrest, and "1" for those who were employed.

Independent variables. Three key substance use indicators were included as key independent variables in this study. Arrestees' age of first drug use was computed according to a series of six questions asked to arrestees who reported having used a drug in their lifetime prior to arrest. Participants, who reported a history of marijuana, crack cocaine, heroin, methamphetamine, or any other type of drug, were asked, "How old were you the first time you used that drug?" The minimum age across these six responses was taken as the age of onset for drug use for each participant. The present age of arrestees who reported never having used a drug in the past was taken as the age of onset of drug use since they theoretically could have initiated use at any time after their release from custody. A small proportion (3%) of cases reported their first age of drug use earlier than 12 years. These arrestees were collapsed into the lowest age category represented by those who were 12 years or younger when they initiated drug use, representing the empirically identified age most frequently cited for substance use initiation among those who reported illicit drug use (Kandel & Logan, 1984). A similar measure was computed for age of onset of alcohol use. Participants were asked, "How old were you the first time you had at least five or more drinks on the same day?" The present age was used as the theoretical age of onset for those who reported not ever having had alcohol in the past. The same method was used with the age of onset of heavy alcohol use measure with those who reported their first five-drink episode occurred before the age of 12 collapsed into the lowest category, which included those 12 years or younger. The third key predictor variable was based on the total number of different types of drugs an arrestee had used in his lifetime. A composite score (which

ranged from 0 to 5) was computed from five questions, which asked arrestees if they had ever used marijuana or hashish, crack or powder cocaine, heroin, methamphetamine, or any other drug they did not have a prescription for.

Mediators. There were two substance dependence measures treated as mediators in the present study. Drug dependence and alcohol dependence were measured with six items each in the ADAM II interview. These six items were designed to focus on the specific behaviors identified as diagnostic criteria for drug or alcohol dependence and substance use disorders by the American Psychiatric Association (1994, 2013). These six behaviors included (a) unintended drug/alcohol use, (b) neglect of responsibilities due to drug/alcohol use, (c) desire to reduce drug/alcohol use, (d) objections to drug/alcohol use by others, (e) preoccupation with drug/alcohol use, and (f) drug/alcohol use to relieve emotional distress. A brief screening instrument, identified by the acronym UNCOPE, was designed to assess these six indicators of drug and alcohol dependence (Hoffmann, Hunt, Rhodes, & Riley, 2003). The items, which contained specific language to referencing alcohol and drug use, included (a) "In the past 12 months, have you spent more time drinking [using drugs] than you intended?" (b) "Have you neglected some of your usual responsibilities because of using alcohol [drugs]?" (c) "Have you wanted to cut down on your drinking [drug use]?" (d) "In the past 12 months has anyone objected to your use of alcohol [drugs]?" (e) "Have you frequently found yourself thinking about drinking [using drugs]?" (f) "Have you used alcohol [drugs] to relieve feelings such as sadness, anger, or boredom?" Each of these items was dichotomized and the sum of the six alcohol-related items served as the measure of alcohol dependence, while the sum of the six drug-related items served as the measure of drug dependence.

Offending outcomes. There were also two offending-related dependent variables of interest. Offense severity was a binary measure of whether an arrestee's primary charge was a misdemeanor or a felony-level crime. Those who were charged with a misdemeanor were coded "0," while those charged with a felony were coded "1." Offense type was also based on the primary charge arrestees received when booked and was computed as a three-category nominal-level measure. These categories included "nonviolent" offenses (e.g., property-related crimes), "violent" offenses (e.g., interpersonal crimes such as aggravated assault and domestic violence), and "substance-related" offenses (e.g., drug possession and driving while intoxicated). A complete list of the offenses in each of the three categories is provided in the appendix.

Analyses

The conceptual model designed for the present study to assess the intermediate effect of drug and alcohol dependence between substance use indicators and offense outcomes is presented in Figure 1. The hypothesized relationships, based on existing empirical evidence described earlier, are identified with arrows between the variables.

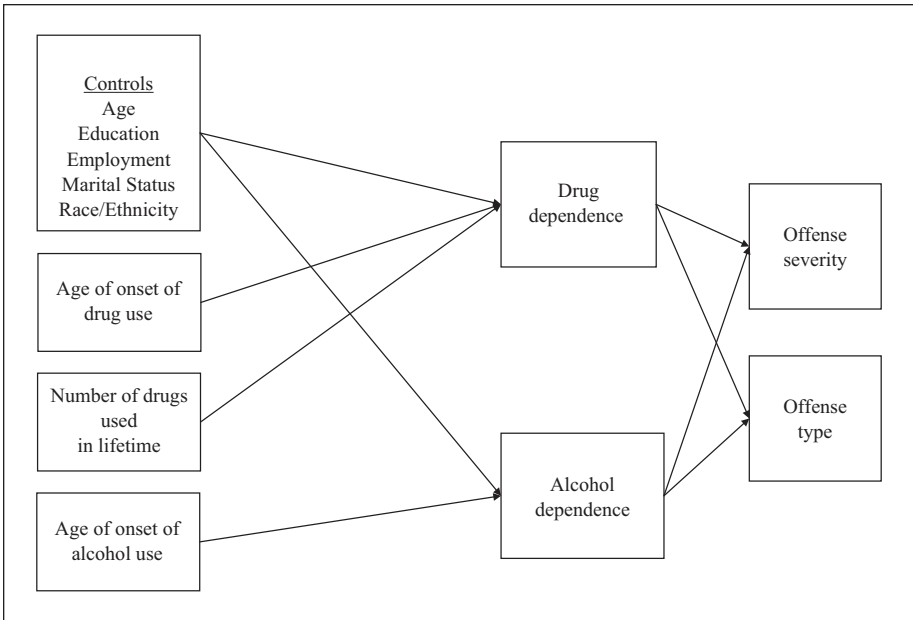


Figure 1. Conceptual mediation model predicting offense type and severity.

The *age of onset of drug use* and the corresponding measure of *age of onset of alcohol use*, which were empirically described in prior research as antecedents to their respective forms of dependence, are hypothesized to increase the levels of dependence reported by arrestees. A similar hypothesized relationship is identified in the conceptual model between the *number of drugs used in one's lifetime* and the increased likelihood of experiencing indicators of drug dependence. There was also a set of hypothesized effects specified between *alcohol dependence*, *drug dependence*, *offense type*, and *offense severity*. These pathways were designated according to prior research suggesting heavy chronic substance use is a catalyst for certain types of offending (e.g., heavy alcohol use and violent crime compared with chronic drug use and non-violent or property crime). In addition, a pathway was included to reflect the potential that nonviolent and substance-related offenses emanating from drug dependence would draw less-serious (i.e., misdemeanor) charges compared with the more severe, violent offenses likely to be associated with alcohol dependence.

The most important conditions necessary to indicate a mediated relationship include (a) the independent variable must significantly affect the mediator, and (b) the mediator must significantly influence the dependent variable(s) (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). To test the theoretical model and assess these intervening relationships, path analysis was used to simultaneously regress the two dependent variables (offense type and offense severity) on the mediators (drug and alcohol dependence), while also conducting a regression of the mediators on the independent

Table 1. Descriptive Statistics for the ADAM II Sample.

Variable	<i>n</i>	%
Race/ethnicity		
White	735	24
Black	1,815	60
Hispanic	463	15
Education level		
Completed high school or less	2,276	75
Some college	590	20
College graduate or more	147	5
Single, never married	2,154	72
Employed at time of arrest	1,362	45
Present offense charge		
Felony	1,187	39
Violent offense	663	22
Non-violent offense	1,615	54
Substance-related offense	738	25

Note. ADAM II = Arrestee Drug Abuse Monitoring Program II

variables (age of onset of drug use, age of onset of alcohol use, and number of drugs used in lifetime) and the control variables (age, education level, employment at the time of arrest, marital status, and race/ethnicity).

This model was estimated using Mplus version 5.1 (Muthén & Muthén, 1998-2008). Mplus is capable of modeling multiple meditating pathways with multiple dependent variables. Mplus also has the ability to perform path analysis with categorical dependent variables utilizing logit analysis. This approach is synonymous with logistic regression analyses and provides odds ratios for ease of interpretation. This is especially useful for the analysis of offense type because it is a nominal variable with three categories, and assessment of the odds of being charged with one type of crime compared with another offers a clear and concise explanation of the results.

Results

Descriptive Statistics

Demographic information for the study sample is presented in Table 1. The majority (60%) of the sample self-identified as Black or African American. The two proxy variables to assess socioeconomic status indicated the largest proportion (75%) of the sample had relatively low (completed high school or less) education and less than half (45%) of the sample was employed at the time of arrest. Almost three-quarters (72%) of the sample was single and had never been married.

The substance use-related variables indicated arrestees' first 5-alcoholic drink episode took place, on average, during emerging adulthood ($M = 22.1$ years of age, $SD = 10.0$).

Table 2. Effects of Control and Independent Variables on Mediators.

Predictor	Drug dependence	Alcohol dependence
	β (SE)	β (SE)
Age	-0.083 (0.021)***	0.296 (0.020)***
Education	-0.033 (0.015)*	-0.025 (0.016)
Employment	-0.059 (0.016)***	-0.028 (0.017)
Black	0.123 (0.020)***	-0.052 (0.022)*
Hispanic	-0.006 (0.018)	-0.018 (0.020)
Age of onset of drug use	-0.090 (0.017)***	—
Number of drugs used in lifetime	0.465 (0.022)***	—
Age of onset of alcohol use	—	-0.410 (0.014)***

* $p < .05$. *** $p < .001$.

In comparison, arrestees began using drugs, on average, slightly earlier ($M = 18.7$ years of age, $SD = 8.9$) and reported use of between one and two ($M = 1.6$, $SD = 1.2$) different drugs. Descriptions of the two mediating variables indicated arrestees reported a slightly higher number of drug dependence symptoms ($M = 2.0$, $SD = 2.2$) compared with alcohol dependence symptoms ($M = 1.4$, $SD = 2.0$). Scores on both dependence scales ranged from 0 to 6, indicative of arrestees who did not endorse any dependence symptoms, while others endorsed the total possible number of symptoms included in the scale.

There were some distinct patterns in the severity and types of offenses arrestees were charged with. The majority (61%) of arrestees was charged with less-serious (i.e., misdemeanor) offenses, and most (54%) of these offenses were classified as non-violent. The second most prevalent set of offenses was substance-related (25%) followed by violent (22%) offenses.

Path Analysis

The standardized effects of the control variables and the key independent variables on the substance dependence-related mediators in the path model are presented in Table 2. The two drug use-related independent variables were significantly associated, albeit in opposite directions, with the number of drug dependence symptoms reported by arrestees. For instance, a one standard deviation increase in the age at which arrestees first used drugs was associated with a 0.090 standard deviation-unit decrease in the number of drug dependence symptoms reported. Simply put, the later in life arrestees initiated drug use, the fewer number of drug dependence symptoms were recognized. The number of drugs ever used, in contrast, was associated with a significant increase in the number of drug dependence symptoms. A one standard deviation increase was associated with a 0.465 standard deviation-unit increase in the number of drug dependence symptoms reported by arrestees. This effect of the number of drugs arrestees reported using in the past on the number of drug dependence symptoms was larger than the effect of the lifetime number of drugs used.

The relationship between the age at which arrestees first reported drinking five alcoholic beverages and alcohol dependence was in the same direction as the effect of age of drug use initiation on drug dependence. The later a five-drink episode initially occurred during arrestees' lifetime drinking history, the fewer alcohol dependence symptoms were reported. This inverse effect was signaled by a one standard deviation unit increase in age of first five-drink episode which contributed to a -0.410 standard deviation unit decrease in the number of reported alcohol dependence symptoms.

The effects of the mediators on the dependent variables are presented in Table 3. Drug dependence consistently predicted offense severity and all offense types. Endorsement of an additional dependence symptom was associated with a 13% increase in the odds of being charged with a felony offense. The paths from drug dependence to offense types indicated increases in the number of dependence symptoms arrestees reported were associated with lower (15%) odds of being charged with a violent offense compared with a substance-related offense, lower (10%) odds of being charged with a nonviolent offense compared with a substance-related offense, and lower (5%) odds of being charged with a violent offense compared with a nonviolent offense.

Alcohol dependence had a divergent effect from drug dependence on offense severity. For each additional alcohol dependence symptom arrestees reported, there was an 8% reduction in the odds of being charged with a felony offense. Alcohol dependence also significantly predicted offense type. Endorsement of an additional alcohol dependence symptom was associated with greater (9%) odds of being charged with a violent offense relative to a substance-related offense, and significantly higher (7%) odds of being charged with a violent offense relative to a nonviolent offense.

Discussion

The primary objective of this study was to assess the intervening properties of alcohol and drug dependence in the substance use–crime relationship. Evidence from the path analysis demonstrated the integral role of dependence in some of these relationships. Overall, alcohol and drug dependence emerged as important mediating contributors to certain offense types and severity levels, which adds a previously unknown level of detail to the discussion of the substance-related reasons many offenders become involved in criminal activities.

The mediated relationship between the number of drugs ever used, age of drug use initiation, drug dependence, offense type, and severity was consistent with prior research. Arrestees who used a greater number of drugs in their lifetime and started using earlier in life reported more dependence symptoms. Evidence suggests earlier drug use initiation and polydrug use serve as two key antecedents of drug dependence. Those who initiate drug use at earlier ages have been shown to engage in persistent use and are likely to experience an increased likelihood of development of dependence symptoms through adulthood (Chen & Kandel, 1995). Persistent illicit drug users have also reported recent use of a wider range of substances, including alcohol, tobacco, and cocaine (Chen & Kandel, 1995). This combination of early initiation, coupled with the potential for genetic vulnerability to dependence, is likely to result in

Table 3. Effects of Drug and Alcohol Dependence on Offense Type and Severity.

Mediator	Felony vs. misdemeanor		Violent vs. substance-related		Nonviolent vs. substance-related		Violent vs. nonviolent	
	OR (SE)	95% CI	OR (SE)	95% CI	OR (SE)	95% CI	OR (SE)	95% CI
Drug dependence	1.13 (0.02) ^{***}	[1.09, 1.17]	0.85 (0.05) ^{***}	[0.81, 0.90]	0.90 (0.03) ^{***}	[0.86, 0.94]	0.95 (0.18) ^{***}	[0.91, 0.99]
Alcohol dependence	0.92 (0.02) ^{***}	[0.88, 0.96]	1.09 (0.11) ^{***}	[1.04, 1.15]	1.03 (0.19)	[0.98, 1.07]	1.07 (0.16) ^{***}	[1.02, 1.11]

Note. OR = odds ratio; CI = confidence interval.

***p < .001.

substance use disorders involving persistent, multiple substance use, and consequent behaviors likely to result in arrests.

This increased likelihood of drug dependence ultimately left arrestees with greater chances of being charged with substance-related or nonviolent offenses. Drug possession, the predominant substance-related offense driving this result, was the primary charge issued to the largest (14%) proportion of offenders in the sample. Drug dependence probably increased the likelihood an arrestee had an illegal drug in their possession, which led to the largest number of arrestees in the sample being charged with this type of offense compared with any other offense. Given these observations, effectively addressing drug dependence has the potential to reduce the largest proportion of criminal charges captured in the ADAM II program.

Drug dependence also increased the probability of being charged with a nonviolent crime, especially relative to a violent crime. Many drug-dependent offenders engage in property-related or acquisitive crimes, to fund their drug use. For example, research has shown offenders are likely to depend on robbery and theft to support patterns of heavy drinking and persistent drug use (Wright & Decker, 1997). This is supported with the observation that the second most prevalent (8% of the sample) offense charge, following drug possession, in the ADAM II program was larceny/theft. Other studies have also found acquisitive crimes comprise a consequential portion of offending among heavy drug users in the criminal justice system (Gjeruldsen, Myrvang, & Opjordsmoen, 2004). This finding supports the fairly well-known assertion many drug offenders may engage in nonviolent property crime to support their use, but it also highlights the important role of drug dependence in motivating this type of behavior. A polydrug user who exhibits several signs of drug dependence, for example, is most compelled to engage in these types of nonviolent crime to support their addiction compared with someone who does not experience this array of dependence-related symptoms.

Another noteworthy finding was the intervening role of alcohol dependence between age at first heavy drinking episode and offense severity. The later arrestees initiated heavy drinking, the fewer alcohol dependence symptoms were reported. This corresponds with research which has followed adolescents into early adulthood and shown early initiation of alcohol use increased the likelihood of chronic adult alcohol dependence (Guttmanova et al., 2012).

Alcohol dependence subsequently increased the chance arrestees were charged with a less-serious misdemeanor offense compared with a more serious felony offense. At first, it seemed this finding was rather counterintuitive. One explanation for this result is likely related to the possibility many arrestees in the sample may be classified as “nuisance inebriates” (Sevigny & Coontz, 2008). This is a group of offenders who tended to report frequent and recent alcohol use who were also typically involved in nonserious types of offending, such as disorderly conduct or resisting arrest. As the number of alcohol dependence symptoms increased in the ADAM II sample, the likelihood of being charged with a misdemeanor offense, such as public peace disturbance (6% of the ADAM II sample charged), increased.

The mediated relationship between arrestees’ age of their first heavy drinking experience and offense severity was not universal, but a clear pattern did emerge. A rise in

the number of alcohol dependence symptoms predicted the chance arrestees were charged with violent offenses compared with substance-related or nonviolent offenses. The two leading categories of violent offenses in the ADAM II program were domestic violence (6%) and assault (5%). Some of the reasons underlying the alcohol dependence–violent offense connection were likely related to the biological effects and social consequences of alcohol use. Alcohol use, for instance, has been shown to directly elevate aggression (Duke, Giancola, Morris, Holt, & Gunn, 2011; Fals-Stewart, 2003), and alcohol problems have been shown to enhance the likelihood arrestees become involved in violent offenses, such as intimate partner violence (Stuart et al., 2006). The probability of becoming involved in domestic violence may also be highest among drinkers who have the most severe levels of alcohol dependence (Foran & O’Leary, 2008). Frequent, heavy alcohol use is probably likely to increase the opportunities for domestic violence incidents to take place, which may have also contributed to the probability alcohol-dependent arrestees were taken into custody for this type of offense.

This study contributes to our knowledge of the complex relationships between substance use, dependence, and offense types, but there are also some limitations that deserve mention. Despite the strengths of the ADAM II program, which include its probability sampling design across several large metropolitan areas in the United States, this program does not include sampling of rural areas. In addition, only arrestees who were booked and charged were included in these official data. Frequent offenders who managed to evade arrest are not represented. Although few of these “high-rate winners” (Chaiken & Chaiken, 1990) persist in their offending without being arrested for extended periods of time, this group may be characterized by different levels of substance dependence compared with those who were involved in the criminal justice system at the active time the ADAM II program collected information. This sample also contained a disproportionate number of Black and Latino arrestees, which may not accurately resemble the arrestee population in all regions of the United States. Last, although the substance use-related questions retrospectively captured age of substance use initiation and prior substance use, the mediated relationships observed in this study should not be considered truly causal, because the ADAM II program was based on a cross-sectional research design. Prospective research should investigate these mediated relationships in a longitudinal panel design to establish a directly observed cause–effect relationship between substance use indicators, the development of dependence, and offending.

After considering these limitations, there are some clear policy implications which merit discussion. We now have evidence to demonstrate drug and alcohol dependence as important driving forces in offending patterns. Also, dependence involving alcohol and other drugs can occur fairly rapidly if use was initiated at an early age. Not only does this add to our knowledge of the detailed relationships between substance use and crime, but it can also inform criminal justice responses to substance-related crime in adult and juvenile correctional systems. For example, assessment and effective treatment of alcohol and drug dependence may be one of the most effective ways to reduce arrestees’ involvement in certain types of criminality, given the significant influence drug and alcohol dependence had on certain types of offenses. Specifically, identification of

alcohol dependence and provision of effective treatment options for this condition could be an effective way to reduce a substantial portion of violent misdemeanor offenses many arrestees are charged with. Similar reductions in criminal justice resources may be realized if appropriate drug dependence assessments are made. Arrestees who experience drug dependence and come into contact with the criminal justice system because of drug possession or other nonviolent crimes comprise a significant number of individuals processed through the system. Drug dependence is a contributing factor to these charges and proper treatment options can be one way to help reduce these arrestees' persistent presence in the system and reduce law enforcement, court, and correctional costs. Criminal justice policies and procedures which take dependence into account need to be considered to meaningfully reduce substance-related crime.

Appendix

Offense category	Offenses
Violent	Aggravated assault, Blackmail/Extortion/Threat, Kidnapping, Manslaughter – Negligence, Murder/Homicide, Robbery, Sexual assault/rape, Weapons, Domestic violence, Child abuse, Spouse/ Partner abuse, Offense against family/child, Violation protection order, Other assault, Sex offense/Indecency with child, and Other crime against persons.
Non-violent	Arson, Bribery, Burglary, Burglary tools, Damage/Destroy property, Forgery, Fraud, Larceny/Theft, Stolen property, Stolen vehicle, Trespassing, Failure to pay child support, Prostitution, Embezzlement, Fare beating, Flight/Escapes, Gambling, Obscenity, Obstruction of justice, Public peace/disturbance, Probation/Parole violation, Technical violation, Traffic-related, Unspecified warrant, Sales no license.
Substance-related	Dwi/Dui, Drug possession, Drug sale, Liquor, Possession of alcohol, Under influence of substance.

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