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The Role of Psychosocial Characteristics in Criminal Convictions Among Cocaine and Gambling Clients in Treatment

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Abstract This study assessed the relative importance of problem gambling, cocaine use and selected psychosocial characteristics in predicting criminal convictions. A self-administered questionnaire was completed by clients when admitted to a treatment program for a primary problem with cocaine (n=300), gambling (n=199), or tobacco (n=249). The questionnaire included questions on various psychosocial characteristics and criminal conviction(s) in the past 3 years. Those in treatment for cocaine use or gambling had higher rates of criminal conviction (21.8 % and 11.6 %, respectively) than those in treatment for tobacco (1.6 %). In a multivariate analysis, being in treatment for cocaine or gambling, compared to those in treatment for tobacco, was significantly associated with having had a criminal conviction; while having high levels of social support and being employed full-time were protective factors against criminal conviction. Due to the cross-sectional nature of the study causation cannot be inferred.

Keywords Crime · Gambling · Cocaine · Treatment populations · Psychosocial characteristics

Several studies have shown that problem gamblers and cocaine users have elevated crime rates (Bellringer et al. 2009; Bennett et al. 2008). A meta-analysis determined that cocaine users are approximately 2.5 times more likely to commit a criminal offense than non-drug users (Bennett et al. 2008). Similarly, a study of problem gamblers in treatment found that gamblers were 4 times more likely to have committed a crime than the general population (Meyer and Stadler 1999). Although factors that may influence gamblers' and cocaine users' propensity to crime are not fully understood, many theories have been developed

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(Allen 2007; Bellringer et al. 2009; Bennett and Holloway 2005; Bennett et al. 2008; Best et al. 2001; Goldstein 1985; Turner et al. 2009; White and Gorman 2000). Goldstein (1985) proposes three ways that drug use leads to the commission of crimes: 1) 'economic-compulsive' crimes are committed with the purpose of generating money to support drug use, 2) 'psychopharmacological' crimes are committed because drug use has impaired cognitive function, and 3) 'systemic' crimes occur as part of the system for distribution and use of illegal drugs. While Seddon (2000) notes that, in terms financially motivated crimes, it has been argued that 1) drug use causes crime by creating a financial need to obtain drugs, 2) that crime causes drug use by generating large income and acceptability of non-law abiding behaviors, and that 3) crime and drug use are related to other factors or a single factor. For problem gamblers, since no pharmacological affects are present and because gambling is, for the most part, legal the relationship is most commonly thought to be related to income generation to support gambling (Bellringer et al. 2009; A. P. Blaszczynski and McConaghy 1994).

Evidence for the above theories is often suggested by the types of crimes committed, i.e., an act of theft or fraud indicates an economic motivation while an act of violence may be considered a 'psychopharmacological' crime or a 'systemic' crime. Research has shown cocaine users most commonly commit non-violent income generating offenses such as theft, shoplifting, and prostitution (Bennett et al. 2008). Similar to cocaine users, the most common offenses gamblers commit include fraud and non-violent property offenses, such as theft, embezzlement, and shoplifting; while they commit fewer violent offences than the general population (Brown 1987; Meyer and Stadler 1999; Turner et al. 2009). However, the types of crimes committed does not rule out the possibility that psychosocial differences among those committing crimes may contribute to or mediate the propensity towards criminality.

Although research has looked at the influence of gender and age (Bennett et al. 2008) and severity of drug dependence or gambling problem (Meyer and Stadler 1999; Stewart et al. 2000; Turner et al. 2009) in predicting crime there has been limited research that address the role of other characteristics. Psychosocial characteristics, shown to be related to crime for other groups, may help to explain criminal activity and are often linked to substance use and gambling problems. Hammersley et al. (1989) suggests that the relationship between drugs use and crime is complex in that both are symptoms of a delinquency that is rooted in the users' social and personal background and is therefore influenced by a range of psychosocial factors. Kasarabada et al. (2000) found in a sample of male veterans using cocaine, that there was a positive correlation of verbal aggression with criminal involvement. Meyer and Fabian (1992) found that problem gamblers who commit crimes have more pronounced problem behaviors and more psychosocial problems i.e., aggressiveness and emotional instability than gamblers who do not commit crimes. Blaszczynski and Steel (1998) found in a study of gamblers in treatment that 93 % had one or more personality disorders, which were positively correlated with the severity of gambling problem. Both of these factors may potentially predict criminality. Macdonald et al. (2008) found that disrespect for the law and aggressive personality were associated with violence among those in treatment for substance use. Since only a minority of the individuals with problem cocaine use or gambling are convicted of a crime there is indication that protective and risk factors exist within these populations. For example, there is a growing consensus in criminology that social support is protective against crime, while coercive relationships are a risk factor for committing crime (Colvin et al. 2002).

Delineating the degree to which factors related to crime are more directly related to problem cocaine use or gambling or else to other psychosocial characteristics is an important area of inquiry. Since many psychosocial characteristics are associated both to problem cocaine use or gambling and criminal activity prior studies' that have found an association

between problem drug use or gambling and crime may be partially attributed to unmeasured psychosocial characteristics. The purpose of this study is to investigate the rate and factors related to criminal convictions among problem gamblers and cocaine users in treatment. We aim to contribute to existing research by examining the relative importance of psychosocial characteristics within the crime and cocaine use relationship along with the crime and gambling relationship. For this study, the following research questions were formulated: (1) Are rates of criminal convictions among problem gamblers or cocaine users different from a comparison group of tobacco users? (2) What is the relative importance of various psychosocial characteristics and problem cocaine use or gambling in predicting criminal convictions? (3) What are possible mechanisms of an increased criminal conviction rate for gamblers and cocaine users?

Method

Research Design

Using a cross-sectional study design, a self-administered questionnaire was given to clients in a supervised group setting when admitted to various addiction treatment programs in Ontario, Canada. The subjects received $20 for participating in the study. The response rate was 93.6 %. The questionnaire included questions about demographics, criminal conviction (s) and potential risk or protective factors. The study was approved by the ethics committee at the Centre for Addiction and Mental Health, and at the treatment sites, where required.

The Sample

As noted by Seddon (2000), it is important to examine both drug using offenders compared to similar non-drug using groups in order to illuminate the processes by which people become involved in different forms of crime. To this end we chose tobacco users in smoking cessation programs as a comparison group. Selecting those in tobacco cessation treatment allowed us to use the same method for data collection, thus limiting potential methodological biases that might arise from a general population comparison group. Among the tobacco cessation clients we were able to collect the data in exactly the same manner as the gambling and cocaine client groups.

Subjects of this study were 18 years or older and in treatment for certain addictions, including a primary problem with cocaine (n=300), gambling (n=199), and tobacco (n=249). In order to reduce potential selection bias treatment sites that primarily treat street involved youth, known to have high rates of crime, were removed from the sample yielding a sample size of cocaine n=284, gambling n=199, and tobacco n=247.

Demographics Measures

Measures of personal annual income, age, gender, marital status, and employment were included in the questionnaire.

Severity of Problem Measures

Severity of the problem use of tobacco, gambling and drugs were determined through several scale items. These items were included to ensure that each participant had correct

group membership. Severity of tobacco use was measured using a modified version of the Fagerström Scale for nicotine dependence (Heatherton et al. 1991). The scale ranges from 0 to 8 with a higher score indicating more nicotine dependence. The Diagnostic and Statistical Manual of Mental Disorders (DSM) IV was used to measure gambling problem severity. It is a ten point scale. A score of 5 or more indicates problem gambling (American Psychiatric Association 2000). The Drug Abuse Screening Test (DAST) was used to determine the severity of cocaine use. The scale of the test is 0 to 20 with higher values indicating higher levels of drug use (Skinner 1982).

Conviction Measures

Clients were asked whether they had received a criminal conviction in the past 3 years. Those who had reported a conviction were asked to indicate the type of crime it was, up to a maximum of 5 different events; this variable was grouped into seven categories, outlined as follows (adapted from Brown 1987):

1. Theft or fraud (including theft, auto theft, fraud, robbery, and shoplifting)
2. Violence (including assault, threatening behaviour, break and enter, armed robbery, assault with a weapon, arson, and uttering death threats)
3. Crime against the state i.e., after an initial arrest (including breach of bail, breach of probation, breach of recognizance, and breach of trust)
4. Alcohol related (driving under the influence of alcohol and intoxication)
5. Drug related (prescription writing, production of controlled substance, and driving under the influence of drugs)
6. Prostitution or pimping
7. Other (including trespassing, mischief, possession of stolen property, road rage, careless driving, driving under suspension, use of firearms, and unspecified crimes)

In order to gain a better understanding of the nature of the relationships between crime and cocaine use and crime and gambling we included an open-ended question asking how each conviction related to their addiction. This question was designed to better understand the possible causal pathways in which substance use or gambling may be linked to crime.

Psychosocial Characteristic Measures

The psychosocial characteristics included various measures that have been previously linked to substance use in this same sample (Macdonald et al. 2008). They are as follows: risk-taking/impulsivity (Cherpitel 1999), the physical aggression sub-scale (Buss and Perry 1992), social supports scale (adapted from Kaplan et al. 1988), coping inability (Cohen et al. 1983) and disrespect for the law (Macdonald 1987). Cronbach's alpha, used to measure the inter-reliability of these measures, ranged from .482 to .886. Only disrespect for the law had an alpha (alpha=.482) below .650 suggesting that it may represent more than one construct i.e. deviance.

Analysis

As a first step we examined the characteristics of the sample by treatment group. Comparisons are made between the groups using t-tests for continuous variables and Fisher's Exact Test for dichotomous variables. To address the first research question, comparing the rates of

criminal conviction among the 1) problem gamblers against the tobacco clients and 2) cocaine clients against the tobacco clients, the percent of subjects who had been convicted of various types of crime were calculated and evaluated using Fisher's Exact Test. Fisher's Exact Test, suitable for 2 × 2 tables, was used because the expected number of criminal conviction among the tobacco clients was small. Additionally we compared the cocaine clients to the gambling clients to examine potential differences between these two groups. For the second research question, examining the role of psychosocial characteristics and group membership for problem gambling and cocaine treatment clients in criminal convictions, bivariate and multivariate logistic regression were conducted using tobacco users as the comparison group. The multivariate analysis controlled for age, sex, demographic and psychosocial characteristics. Cocaine clients who only reported a drug conviction (n=7) were removed, as those who use illegal substances would be more likely to have a conviction simply for the use of the substance (White and Gorman 2000). For the final research question, to identify possible causal mechanisms of increased conviction rate for gamblers and cocaine users, the open ended question of how the conviction related to the participant's addiction was assessed. The participant's answers were grouped based on the similarity of the responses.

Results

Demographic and psychosocial characteristics of the three groups are reported in Table 1. A higher percent of the cocaine treatment clients were male (62.3 %) than the other two groups (tobacco =42.1 % and gambling=46.7 %). The cocaine clients were significantly younger, more likely to have a secondary addiction, not be employed full-time and have an income of less than $30,000/year, than the other two groups. They were also significantly different on all psychosocial measures having greater inability to cope, physical aggression, risk taking/impulsivity and disrespect for the law and showed lower levels of social support. The gambling clients were less likely to be married than the tobacco clients (p=.002) and were more likely to have a secondary addiction (p=.008). The gamblers showed greater coping inability, physical aggression, risk taking/impulsivity and showed lower levels of social support but showed no difference in disrespect for the law from the tobacco clients. As expected, the tobacco group scored highest on the nicotine dependence scale, the gamblers scored highest on the Gambling DSM IV scale and the cocaine clients scored highest on the DAST scale.

As shown in Table 2, the cocaine clients had a significantly higher percentage of criminal convictions in the past 3 years (21.8 %) than the gamblers (11.6 %) or the tobacco clients (1.6 %). The cocaine clients also were significantly more likely to have conviction than the gamblers (p=.003). For both the problem gamblers and the cocaine clients the majority of convictions were theft and fraud. Both groups were significantly more likely to have been convicted of a theft or fraud in the past 3 years than the tobacco clients (p<.001), but the cocaine clients were no more likely than the gambling clients to have had this type of conviction. The cocaine clients had a greater range in type of convictions versus the gamblers and the tobacco clients. Additionally, the cocaine clients were more likely to have had a conviction for violence against a person, crime against the state and "other" convictions than the tobacco clients. The gambling clients were no more likely than the tobacco clients to have been convicted of any type of crime other than theft or fraud. As would be expected, the cocaine users were more likely to have been convicted of a drug related offence than the other two groups. The cocaine clients were also more likely than the gambling clients (p=.010) to have had a conviction for violence.

Table 1 Characteristics of the sample and comparison between treatment groups

	Treatment group (n)			*p* values for group comparisons		
	Tobacco (247)	Gambling (199)	Cocaine (284)	G vs T	C vs T	G vs C
Demographics						
Male %	42.1	46.7	62.3	ns	<.001	.001
Income below $30,000 %	35.3	37.2	47.3	ns	.006	.031
Full-time employment %	47.5	49.2	28.6	ns	<.001	<.001
Married/common-law %	64.1	49.2	26.2	.002	<.001	<.001
Has a secondary addiction %	6.1	13.8	62.0	.008	<.001	<.001
Age *mean*	47.3	46.4	35.1	ns	<.001	<.001
Psychosocial characteristics						
Coping inability *mean*	10.0	13.0	14.3	<.001	<.001	<.001
Physical aggression *mean*	17.9	19.4	26.8	.008	<.001	<.001
Risk taking/impulsivity *mean*	11.4	14.3	17.7	<.001	<.001	<.001
Disrespect for the law *mean*	16.6	17.2	22.3	.ns	<.001	<.001
Social support *mean*	24.6	22.1	20.0	<.001	<.001	<.001
Severity of problem						
Nicotine dependence *mean*	4.88	2.15	3.41	<.001	<.001	<.001
Gambling DSM *mean*	0.04	7.39	0.43	<.001	<.001	<.001
DAST *mean*	1.40	1.49	14.55	ns	<.001	<.001

G Gambling; *T* Tobacco; *C* Cocaine; *ns* not significant ($p>.100$)

p values for means are calculated with independent samples *T*-test; equal variances were not assumed when Levene's Test for Equality of Variances was significant

Fisher's Exact Test used to calculate p values; Exact significance is 2-sided

DSM-IV not validated for self-reporting

Table 2 Percentage of cocaine, gambling and tobacco clients with criminal convictions in the last three years by offence category and comparison between treatment groups

	Treatment group (n)			*p* values for group comparisons		
	Tobacco (247)	Gambling (199)	Cocaine (284)	G vs T	C vs T	G vs C
Theft or fraud %	0.4	9.5	11.4	<.001	<.001	ns
Violence against a person %	0.0	0.5	4.6	ns	.001	.010
Crime against the state %	0.0	0.5	2.9	ns	.008	.088
Alcohol related %	0.8	0.5	1.8	ns	ns	ns
Drug related %	0.0	0.0	6.4	NA	<.001	<.001
Prostitution/pimping %	0.0	0.0	1.8	NA	.064	.081
Other %	0.4	0.5	3.2	ns	.023	.052
Any convictions %	1.6	11.6	21.8	<.001	<.001	.003

G Gambling; *T* Tobacco; *C* Cocaine; *NA* Fisher's Exact not calculated because both tobacco clients and gamblers did not report this type of crime; ns = not significant ($p>.100$)

The crime types are not mutually exclusive

Fisher's Exact Test used to calculate p values; Exact significance is 2-sided

Table 3 shows both bivariate and multivariate logistic regression analysis of the relationship of various factors and a having at least one criminal conviction in the past 3 years. Bivariate analysis revealed that the odds of committing a crime are greater among gambling (OR=7.53) and cocaine clients (OR=15.13) than the tobacco client comparison group. Measures of coping inability, physical aggression, risk taking/impulsivity and disrespect for the law were significantly higher in those who were convicted of a crime while measures of social support were lower. Those employed full-time and married were less likely to have been convicted of a crime (OR=.295 and .469, respectively); while those with a secondary addiction were more likely to have a criminal conviction (OR=2.07). Multivariate logistic regression shows that gambling clients were 4.53 times more likely to have been convicted of a crime in the past 3 years than those in tobacco treatment and that that cocaine clients were 5.70 times more likely to have been convicted of a crime in the past 3 years than those in tobacco treatment when controlling for psychosocial and demographic characteristics. Those with higher levels of social support were significantly less likely to be convicted of a crime (AOR=.934; p=.043) when controlling for other factors. Additionally, the multivariate model showed that those who were employed full-time were significantly less likely to be convicted of a crime (AOR=.453; p=.033). Replacing the treatment groups with severity of addiction in the multivariate model produced similar results (not shown).

The last analyses observed possible causal pathways of increased conviction rate for gamblers and cocaine users by examining their responses to how the conviction related to their addiction. Among problem gamblers with a conviction for a crime in the past 3 years and who responded to the question (n=17): thirteen (76.5 %) stated they needed money to gamble, four (23.5 %) needed money to live, and three (17.6 %) reported desperation. Among cocaine clients who were convicted for a crime in the past three years who responded to the question (n=50): twenty (40 %) reported that their conviction related to their addiction because they needed drug or alcohol money, nine (18 %) reported needing

Table 3 Bivariate and multivariate logistic regression of conviction in the past three years (yes), those with drug convictions removed from the sample

Characteristic	Bivariate				Multivariate			
	OR	95 % CI		p value	AOR	95 % CI		p value
Tobacco (comparison)								
Gambling	7.53	2.55	22.24	<.001	4.53	1.40	14.67	.012
Cocaine	15.13	5.40	42.44	<.001	5.70	1.64	19.34	.006
Coping inability (continuous)	1.12	1.06	1.20	<.001	.991	.907	1.08	.846
Physical aggression (continuous)	1.06	1.03	1.09	<.001	1.00	.959	1.04	.999
Risk taking/impulsivity (continuous)	1.10	1.05	1.15	<.001	.979	.908	1.06	.574
Disrespect for the law (continuous)	1.07	1.03	1.12	<.001	1.06	.978	1.15	.156
Social support (continuous)	.872	.828	.919	<.001	.934	.874	.998	.043
Income below $30,000	1.96	1.25	3.09	.003	1.54	.835	2.82	.167
Employed full-time	.295	.168	.519	<.001	.453	.219	.936	.033
Married/common-law	.469	.289	.761	.002	.936	.502	1.75	.835
Has a secondary addiction	2.07	1.31	3.26	.002	.914	.483	1.73	.914
Sex (males)	1.30	.819	2.08	.262	1.02	.561	1.85	.951
Age (continuous)	.963	.943	.984	.001	.994	.963	1.03	.686

OR odds ratio; *AOR* adjusted odds ratio; *CI* confidence intervals

money to live, seven (14 %) said they were desperate; while two (4 %) reported that their conviction was not related to their addiction. Other reasons (all reported by less than 5 % of the responding sample) were: paranoia, they were angry or more aggressive, intoxication, blacked out, fraud to get cigarettes, trespassing to do cocaine in a building, recklessness, out looking for drugs and runner for a dealer.

Discussion

Our study found numerous significant differences in psychosocial characteristics among those in treatment for problem gambling, cocaine use and tobacco. This indicates that those with problem cocaine use and problem gamblers are different in terms of their underlying characteristics than the tobacco comparison group. A multivariate analysis revealed a significant association between being in treatment for cocaine use and having a criminal conviction as well as gambling and criminal conviction, when controlling for psychosocial characteristics and demographic factors. This supports past studies that have found similar relationships (Bellringer et al. 2009; Bennett et al. 2008).

Both problem gamblers and cocaine users had higher rates of convictions than the tobacco group and significantly higher rates of theft and fraud. The high prevalence of these types of crime indicates an economic motivation. This finding is supported by the self-reported explanations by both groups as income generation was the most common account of how their addiction related to the crime. This observation supports Goldstein's first hypothesis of an economic motivation for the link between crime and drug use (Goldstein 1985). Additionally, being employed full-time was a significant protective factor against criminal conviction when controlling for other factors. This suggests that having a stable income may be a protective factor against criminal conviction. Future studies are needed to better understand this relationship.

Social support was found to be significantly protective against conviction(s) when controlling for other factors. Colvin (2002) suggests social support will inhibit criminal behavior and lead to pro-social behavior. Increasing social support among those involved in problem gambling and cocaine use could potentially help build resilience against engaging in criminal behaviour. An alternative explanation is that those with social support are able to acquire financial assistance from their support network, reducing their need to commit crimes. More detailed studies on social support among those who use cocaine or gamble and commit crime are needed to assess the mechanisms of these relationships.

Some potential limitations of this study should be addressed. The Gambling DSM-IV was utilized for its ease of comprehensibility and use but has not been verified for self-reporting. However, this should have very little impact on the study results as it was only used to confirm group assignment. Additionally, as noted by White and Gorman (2000), a limitation of the sample is that it was drawn from treatment centres and was not random; therefore, results may not be generalized to other populations. Moreover, our analysis is based on retrospective self-reports of conviction and thus introduces subjectivity and the possibility of socially desirable reporting and recall bias. The survey was also conducted after the participants were in treatment so there is the possibility that the psychosocial characteristics may have changed since being involved in crime. Additionally, only crime where a conviction was laid is reported, therefore criminal acts that were not followed by a criminal conviction are not included in this study. Our study is also limited by its cross-sectional design, consequently we caution against inferring any direct causality between criminal conviction(s) and the independent variables included in the analysis.

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