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Short Communication

The association between impulsivity and alcohol/drug use among prison inmates

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HIGHLIGHTS

- Examine association between impulsivity and substance use
- Use large, mixed-gender inmate sample
- Analyze non-clinical drug use

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ABSTRACT

Background: Few studies have examined the relation between impulsivity and drug involvement with prison inmates, in spite of their heavy drug use. Among this small body of work, most studies look at clinically relevant drug dependence, rather than drug use specifically.
Method: $N = 242$ adult inmates (34.8% female, 52% White) with an average age of 35.58 ($SD = 9.19$) completed a modified version of the 15-item Barratt Impulsiveness Scale (BIS) and measures assessing lifetime alcohol, opiate, benzodiazepine, cocaine, cannabis, hallucinogen, and polysubstance use. Lifetime users also reported the frequency of use for the 30 days prior to incarceration.
Results: Impulsivity was higher among lifetime users (versus never users) of all substances other than cannabis. Thirty day drug use frequency was only related to impulsivity for opiates and alcohol.
Discussion: This study extends prior work, by showing that a lifetime history of non-clinical substance use is positively associated with impulsivity among prison inmates. Implications for drug interventions are considered for this population, which is characterized by high rates of substance use and elevated impulsivity.

1. Introduction

Prison inmates are especially vulnerable to substance use and misuse. Over half (56%) of state prison inmates have used at least one illicit substance in the month before their offense (Mumola & Karberg, 2006) whereas less than 25% of the general adult population reports past month illicit drug use (Johnston, O'Malley, Bachman, & Schulenberg, 2013). Moreover, 32% of inmates were under the influence of drugs when committing their crime (Mumola & Karberg, 2006).

Since 1980, the number of U.S. inmates has risen drastically (Harrison & Beck, 2003), and there are currently more than 2.2 million adults held in federal prisons, state prisons, or local jails (Glaze & Heberman, 2013). The late 20th century increase is partly due to more punitive sentences for drug-related crimes and high rates of substance use disorders (SUDs) (Belenko & Peugh, 1998; Blumstein & Beck, 1999), which is estimated at around 50% among prison inmates (Mumola & Karberg, 2006).

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1.1. Impulsivity and substance use

The relation between personality and substance use disorders is well established (e.g., Caspi et al., 1997; Sher, Trull, Bartholow, & Vieth, 1999). Of note, impulsivity, a personality construct indicative of sensation seeking, perseverance, lack of premeditation, and urgency (Whiteside & Lynam, 2001), is related to alcohol and drug abuse (Perry & Carroll, 2008). Impulsivity is a risk factor for drug experimentation and people who use drugs are typically more impulsive than those who do not (de Wit, 2009). Similarly, impulsivity is positively associated with alcohol and illicit drug use frequency (Hanson, Luciana, & Sullwold, 2008), while the related trait of novelty-seeking is prospectively associated with an increased likelihood of developing an SUD (Sher, Bartholow, & Wood, 2000).

A small body of research has examined the relation between impulsivity and substance use/dependence among an incarcerated population. In two studies, impulsivity was related to a global assessment of drug use severity among male (Ireland & Higgins, 2013) and female (Mooney et al., 2008) adult inmates. Although these studies are informative, both used the Drug Abuse Screening Test, which only assesses general drug dependence, rather than asking about specific substances (i.e. "Have you ever felt bad or guilty about your drug abuse" versus "Have you ever felt bad or guilty about your alcohol abuse"). However, in a recent study, Hopley and Brunelle (2012) examined the relation between drug use and impulsivity with greater specificity by assessing alcohol, cannabis, opioid, stimulant, and hallucinogen dependence separately. For each of these substances, inmates with probable dependence scored higher on impulsivity than those without probable dependence. Among adolescents mandated to substance abuse treatment, those in the top 50 percentile of impulsivity, measured with the Millon Adolescent Clinical Inventory (MACI) Impulsivity Scale, reported more past 3-month alcohol and marijuana use relative to those who scored on the bottom half of impulsivity (Dévieux et al., 2002). Although not statistically significant, cocaine was also more prevalent in the high impulsive group.

Impulsivity has been identified as a risk factor for substance use/abuse generally, but it has rarely been examined among incarcerated adults despite their high rates of substance use, and the need for tailored interventions to keep prisoners from relapsing upon their release. The few studies that have examined the impulsivity — substance use/abuse relation among this population often use general assessments of drug dependence (or probable dependence) among male- or female-only inmates (e.g. Hopley & Brunelle, 2012; Ireland & Higgins, 2013; Mooney et al., 2008). Only one of these studies (Dévieux et al., 2002) has looked at substance use frequency (as opposed to dependence symptoms), but did so with a narrow range of substances (alcohol, marijuana and cocaine) among adolescents only. Although many prisoners do meet criteria for substance abuse or dependence, others have a history of drug involvement below those thresholds (Mumola & Karberg, 2006). There is currently a gap in the literature addressing this broader inmate population, which the current study sought to fill. Accordingly, the present study was designed to examine the relation between impulsivity and the use of several substances in a mixed-gender sample of adult inmates. We hypothesized that impulsivity would be higher among participants with a lifetime history of drug use. We also expected a positive relation between impulsivity and the *frequency* of substance use.

2. Method

2.1. Participants and procedures

This study is a secondary data analysis using baseline data from a randomized controlled trial (RCT) that has been reported elsewhere (Clarke et al., 2011, 2013). In brief, the RCT examined the effectiveness of a six-session smoking cessation intervention using cognitive-behavioral therapy enhanced with motivational interviewing in comparison to a general wellness video control condition. The study was conducted in a large tobacco-free state correctional facility located in the northeastern U.S. All study procedures were approved by a variety of relevant IRBs.

Both men and women inmates who were interested in participating were screened for eligibility and met inclusion criteria if they were: 18 years of age or older, smoked at least ten cigarettes per day prior to incarceration, able to speak English, and scheduled to be released within eight weeks of study enrollment. In total, 84% of participants who were screened met eligibility criteria and participated in the study at baseline. After providing informed consent, participants completed a baseline assessment via Audio Computer-Assisted Self-Interview. Although 247 participants completed this study, the sample used here is comprised of $N = 242$ inmates due to missing data for five participants. See Table 1 for a description of the sample.

2.2. Measures

The independent variable of interest for all analyses was impulsivity, which was assessed with a modified version of the BIS15 (Spinella, 2007) from the 30 item Barratt Impulsiveness Scale (BIS-11; Patton, Stanford, & Barratt, 1995). It is a valid measure of impulsivity, constructed by taking items with the highest loadings from the BIS-11 (Spinella). Due to experimental error, however, one item "I am restless at lectures or talk" was not administered to participants, so the measure used here is comprised of the remaining 14 items. All items were on a 4-point Likert scale, with potential scores ranging from 1 to 4. We observed a co-efficient alpha of .779.

Substance use was assessed with a modified version of the Addiction Severity Index (ASI; McLellan, Luborsky, O'Brien, & Woody, 1980). Participants were asked to indicate if they had ever used a particular substance (*yes/no*), and if so, how many days they used that substance in the 30 days prior to incarceration. Specific substances included: alcohol, heroin, methadone, other opiates/pain killers, barbiturates, sedatives or benzodiazepines, cocaine, amphetamines, cannabis, hallucinogens, inhalants, and more than one substance per day (including alcohol). For

Table 1
Study characteristics.

Demographic	Percent of sample
Age ($M = 35.58$, $SD = 9.19$)	
19–28	26.9
29–38	35.1
39–48	28.3
49+	9.1
Gender	
Male	65.2
Female	34.8
Race/ethnicity	
Non-Hispanic White	52.0
Hispanic White	8.2
Non-Hispanic Black	17.6
Hispanic Black	3.7
Hispanic other	8.2
Native American/Alaskan Native	4.9
Asian or Pacific Islander	0.8
Bi-racial or multi-racial	1.6
Other	2.9
Highest level of education completed	
Did not complete high school	64.6
Completed 12th grade	20.2
Completed ≥1 year of college	8.2
Time incarcerated[a] ($M = 1.20$, $SD = 1.58$ years)	
Less than 6 months	42.7
6–12 months	26.2
13–24 months	14.7
25+ months	16.4

[a] Participants were asked: "How long has it been since you smoked daily?" We used these responses as a proxy for time incarcerated, since all participants were daily smokers prior to incarceration, but unable to smoke in the Rhode Island correctional facility.