



Short Communication

A comparison of motivations for use among users of crack cocaine and cocaine powder in a sample of simultaneous cocaine and alcohol users



Gina Martin ^{a,*}, Scott Macdonald ^{a,b}, Basia Pakula ^c, Eric A. Roth ^{a,d}

^a Centre for Addictions Research of British Columbia, University of Victoria, Canada

^b School of Health Information Science, University of Victoria, Canada

^c School of Population and Public Health, University of British Columbia, Canada

^d Department of Anthropology, University of Victoria, Canada

HIGHLIGHTS

- Social motivation was lower among frequent crack users than cocaine powder users.
- This relationship held when controlling for other factors.
- Cocaine and alcohol may have less social importance to those who primarily smoke crack.
- Other motivational measures showed no significant differences between groups.
- Route of administration should be considered in studies of cocaine use with alcohol.

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ABSTRACT

This study examined the motivations for using cocaine and alcohol comparing those who primarily smoked crack and those who primarily used cocaine powder when using simultaneously with alcohol. Motivations examined included: 1) to cope with a negative affect, 2) enhancement, 3) to be social and 4) to conform. The research design was a cross-sectional study in which clients in treatment for cocaine and alcohol problems completed a self-administered questionnaire about their substance use. Among those who primarily smoked crack or snorted cocaine when also using alcohol ($n = 153$), there were 93 participants who reported primarily snorting cocaine and 60 participants who primarily reported smoking crack. Bivariate analyses found that those who primarily smoked crack reported lower social motivations to use alcohol and cocaine. When adjusting for other covariates in a multivariate analysis, social motivation was still significantly different between groups. Additionally, those who primarily smoked crack were more likely to be older, report higher cocaine dependence severity, be unemployed and were less likely to have completed some post-secondary education, than those who primarily snorted cocaine. No differences were found in enhancement, coping or conformity motivations between the two groups. These results suggest that simultaneous cocaine and alcohol use may have social importance to those who primarily snort cocaine, but that this importance is less evident to those who smoke crack. Consequently, future studies examining motivations for simultaneous cocaine and alcohol use should distinguish between different routes of cocaine administration.

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1. Introduction

Research has shown that alcohol and cocaine are frequently used simultaneously, and that dependence on both substances is common among those who use cocaine (Flannery, Morgenstern, McKay, Wechsberg, & Litten, 2004). For example, Helzer and Pryzbeck (1988) found that within five U.S. cities, 85% of those who were dependent on cocaine also met the criteria for dependence or abuse of alcohol.

Additionally, a recent study in Madrid, Spain, found that among heavy drinkers the risk of developing alcohol dependence was higher in those who also use cocaine (Rubio et al., 2008). Despite the relatively common use of cocaine and alcohol together little is known about the different motivations for simultaneous use of cocaine with alcohol (Gossop, Manning, & Ridge, 2006a).

It is important to distinguish characteristics of those who use cocaine simultaneously with alcohol as experimental and biological studies have shown that when mixed together, alcohol, a depressant, and cocaine, a stimulant, produce a new metabolite, cocaethylene. The production of cocaethylene can result in different pharmacological effects compared with either drug alone, such as: enhanced and prolonged

* Corresponding author at: PO Box 1700 STN CSC, Victoria, BC V8W 2Y2, Canada. Tel.: +1 250 853 3240; fax: +1 250 472 5321.

E-mail address: gcmartin@uvic.ca (G. Martin).

euphorogenic effects, increased heart rate, and increased plasma cocaine concentrations (Harris, Everhart, Mendelson, & Jones, 2003; McCance, Price, Kosten, & Jatlow, 1995; McCance-Katz et al., 1993; Pennings, Leccese, & Wolff, 2002). Additionally, it has been suggested that different methods of cocaine administration may lead to differences in the levels of cocaethylene concentration (Herbst et al., 2011). Past studies have shown that different routes of cocaine administration (snorting cocaine or smoking crack) when also using alcohol are associated with different use patterns (Gossop, Manning, & Ridge, 2006a,b; Gossop et al., 2006a). Therefore, it has been suggested that research should consider differences in route of cocaine administration in studies of those who simultaneously use alcohol and cocaine (Gossop et al., 2006b).

Hypothesized possible motivations for simultaneous substance use include enhancing of effect, modifying the effect of either substance alone, substitution if the preferred substance is not available, and for social reasons (Gossop et al., 2006a). A recent qualitative study found that those who engage in simultaneous cocaine and alcohol use identified many motivational reasons for this use pattern. These included, but were not limited to: obtaining a desired high, to become more sober, to be social, and to alleviate unpleasant emotions (Brache, Stockwell, & Macdonald, 2012). Although a small number of studies examined possible motivational or functional reasons (i.e., reasons to use and expectations of use) (Brache et al., 2012; Pakula, Macdonald & Stockwell, 2009a), as well as situational factors associated with simultaneous use (Pakula, Macdonald, Stockwell, & Sharma, 2009b), no empirical studies have examined whether the motivations for cocaine and alcohol use vary by route of administration of cocaine. Accordingly, this paper seeks to compare the motivations for use of cocaine and alcohol between those who primarily smoke crack and those who primarily snort cocaine at times when also using alcohol.

2. Methods

2.1. Research design

The research design was a cross-sectional study in which clients in treatment for cocaine and alcohol problems completed a self-administered questionnaire on their substance use and health. Participants were sampled from five treatment centers in two Canadian provinces (two from British Columbia and three from Ontario). This study was restricted to those who frequently used both cocaine and alcohol simultaneously (defined as drinking alcohol more than 50% of the time when using cocaine, within 3 h of administration of each substance). The sample was restricted to clients 18 to 65 years old. Using a quota sampling strategy, we sought to obtain a sample of 200 simultaneous cocaine and alcohol users with approximately equal numbers of males and females. By the end of the study we had obtained data from 224 participants who met the simultaneous cocaine and alcohol use criteria. Participants completed a consent form and filled out the questionnaire anonymously. They were given a \$20 gift certificate for their time. The study was approved by the ethics review board at the University of Victoria and ethics boards of the treatment providers in situations where treatment was provided within a hospital context.

2.2. Measures

2.2.1. Route of administration

Participants were asked to report what methods of administration (snort cocaine, smoke crack or inject cocaine) were used when using cocaine and alcohol together within a 3 h window, in the twelve months prior to making the decision to enter treatment. These measures were assessed on a five point Likert scale ranging from never (0) to practically all the time (4). These measures were dichotomized with those reporting use most of the time (3) or practically all the time (4) classified as primarily using that method; while those who reported use

approximately half the time or less (0–2) were classified as infrequently using that method.

2.2.2. Motivation

The modified Drinking Motives Measure (DMM) was used to assess motivation for substance use among the study participants. The DMM questionnaire assesses four motivational concepts for alcohol use: 1) to cope with a negative affect, 2) enhancement, 3) to be social and 4) to conform (Cooper, 1994). It has previously been used in a male treatment sample of alcohol users (Galen, Henderson, & Coover, 2001) and has been extended to cannabis use (Simons, Correia, & Carey, 2000).

In the present study, the measure was adapted to ask about cocaine and alcohol use. Each participant was asked how often they used cocaine and alcohol for specific reasons, from a list of twenty items. The items were assessed on a five point Likert scale ranging from: (1) almost never/never to (5) almost always/always (see Cooper (1994) for the list of items). If less than 20% of the sample was missing an item the mean of the available items was imputed. Exploratory factor analysis (retaining four factors) was used to confirm that use of the DMM sub-scale measures for cocaine and alcohol use was valid and reliable. Based on this analysis one item was dropped from the coping motivation measure: "I use to feel more self-confident and sure of myself" which loaded higher on the social motivation sub-scale than the coping motivation sub-scale. This improved the coping measure increasing Cronbach's alpha from .780 to .820. For each of the four motivational measures Cronbach's alpha ranged from .761 to .876 indicating acceptable internal consistency of the sub-scales' items.

2.2.3. Other measures

For measures of dependence on alcohol and cocaine prior to entering treatment we used the Severity of Dependence Scale (SDS), which measures the degree of dependence experienced by users of different types of drugs by assessing items on a five point Likert scale (Gossop et al., 1995). Additionally, socio-demographic factors, such as household income and employment status, were examined as potentially important covariates.

2.3. Statistical analysis

Those who primarily smoked crack when using alcohol simultaneously were compared to those who primarily snorted cocaine on the motivational sub-scales, cocaine and alcohol SDS, and on socio-demographic factors using bivariate analyses. If at least a marginally significant bivariate difference ($p < .10$) was found in any potential covariates that variable was included in a multivariate logistic regression predicting those who primarily smoke crack compared to those who primarily snort cocaine as a reference group. The dependence scales, sex and age, were included as covariates regardless of significance.

3. Results

Of the 224 participants, 204 responded to the entire suite of route of administration questions. Because a small number of participants ($n = 20$) reported primarily injecting cocaine, we did not examine cocaine injection in the further analyses. Of the 184 remaining participants, 9 reported using primarily (greater than half the time) by both snorting cocaine and smoking crack, and 22 participants did not report using any routes more than half the time when also using alcohol. Because the main purpose of the analyses was to make comparisons between different routes of administration, the former 31 participants were omitted from analyses for a total sample of $n = 153$.

Table 1 shows the descriptive characteristics and bivariate statistics of the sample by primary route of cocaine administration. Those who primarily snorted cocaine when using alcohol simultaneously reported significantly higher social motivations to use than those who frequently

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