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Gaging the impact of multiple substance use on community corrections involvement

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Abstract

Historically, research has demonstrated that multiple substance use, compared to single substance use, poses additional challenges for treatment throughout the continuum of care including referrals, interventions, and relapse prevention. However, it appears that this pattern cannot be easily generalized to all criminal justice settings as evidenced by mixed findings across criminal justice samples. The purpose of the current study is to investigate possible differences in legal and substance-related outcomes between multiple substance users and single substance users within a community corrections sample. Structured clinical interviews were conducted to divide 531 individuals under community corrections supervision into three groups including multiple substance users, single substance users, and non-substance users. Results indicated that while multiple substance users were arrested more frequently and had more problems with family members, there were no differences compared to their single substance using counterparts in terms of depressive disorders, anxiety disorders, or types of offense. These findings contrast with previous research on samples outside of community corrections suggesting that multiple substance use requires tailored interventions with consideration to context of their use. Discussion includes limitations to generalizability and assessment of substance use as well as implications for treatment and future research.

Keywords

assessment; criminal justice; community corrections; drug use; drug abuse; substance dependence

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Disclosures

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Introduction

Multiple substance use is a constant obstacle in the treatment of addiction and outcomes are typically worse for multiple substance user than for those who use individual substances (Dutra et al., 2008; Marsden et al., 2009). Treatment is complicated for a number of reasons beginning with referral, through intervention, and into planning for relapse prevention. Treatment of choice varies by substance and the inability to obtain an accurate picture of the substances being used can prevent referral to the appropriate level of care (e.g., inpatient vs outpatient vs maintenance therapy). During treatment, different substances are associated with different risk factors such as a heightened probability of overdose (Shah, Lathrop, Reichard, & Landen, 2008), criminal justice involvement (Inciardi, 2007), aggression (Gerra et al., 2008), and suicide risk (Cornelius et al., 1998; Hakansson, Bradvik, Schlyter, & Berglund, 2010; Pompili et al., 2012). Addiction interaction, or switching from one substance to another based on availability is also common among multiple substance users (Leri, Bruneau, & Stewart, 2003), and multiple substance use has been shown to increase overall drug craving (Epstein, Marrone, Heishman, Schmittner, & Preston, 2010). This is especially problematic in pharmacological interventions where a preventative agent such as Methadone, Buprenorphine, or Antabuse is being used to prevent intoxication on a particular substance yet the individual uses a substance such as cocaine not affected by this agent. In sum, multiple substance use has been associated with a host of problems throughout the continuum of substance use treatment.

In addition to treatment, accurate assessment of multiple substance use also poses a number of challenges in rehabilitation, research, and general medical settings. These challenges include underreporting or denial of using a specific substance. While individuals who are presenting for addiction treatment tend to be open in acknowledging their use of specific substances (Drake, 1998) examinations of non-substance using treatment seeking samples have found under reporting of both illicit (Delaney-Black et al., 2010) and legal substances (Stockwell, Zhao, & Macdonald, 2014). Furthermore, cognitive science has demonstrated that addiction appears to be largely driven by implicit mechanisms, suggesting that the under reporting of substance use may be an unconscious component of the addiction process (Kozlowski et al., 1996; Winkelman & Berridge, 2004). Substance use interferes with memory formation and individuals may not be able to accurately recall the characteristics surrounding their use. Furthermore, the role of stigma reduces self-report of substance use. This applies to both the stigmatization of the substance (Delaney-Black et al., 2010), and the stigmatization of the population (Clark, Zyambo, Li, & Cropsey, 2016). Furthermore, there are difficulties with providing an accurate history that are not specific to substance use. Individuals living with chronic conditions, as substance use typically is, often do not make the best historians as they have to account for years of information. Thus, a variety of factors complicate the assessment of multiple substance use.

Due to the numerous problems associated with multiple substance use one may conclude that the detrimental conditions associated with this pattern of use would only be amplified in the community corrections setting. The community corrections population represents 80% of the total criminal justice population. This is an at-risk population that is underserved across multiple indices of both psychological and physical healthcare (Cropsey, Binswanger, Clark,

& Taxman, 2012) and this group has well documented problems with multiple substance use (Clark et al., 2012; 2013). Furthermore, the community corrections population is highly stigmatized and thus may be less likely to self-report harder more problematic substance use (Bai et al., 2014; Clark et al., 2016). This population both contains a number of risk factors for multiple substance use and has less resources to deal with the consequences of use which would suggest a potential exacerbation of the aforementioned problems.

When findings from substance use treatment and other substance using samples are generalized to a community corrections sample the data would suggest that the community corrections group would struggle in similar ways as the other groups; however, when community corrections groups have been examined directly in the past many of the more established findings regarding substance use have not been replicated. For example, data on treatment outcome typically finds worse outcomes for harder drugs. However, research on community corrections samples have yielded mixed results. Research has demonstrated worse outcomes for harder substances in some cases (Clark et al., 2013) while in others no differences have been found. For example, recidivism rates in community corrections samples have shown no differences for crack cocaine use when compared to alcohol and marijuana use (Clark, Hendricks, Brown, & Cropsey, 2014; Shaffer, Hartman, Listwan, Howell, & Latessa, 2011), nor were differences found for methamphetamine users (crystal meth) when compared to non-meth users (72% of the comparison group was made up of alcohol and marijuana users; Listwan, Shaffer, & Hartman, 2009). Several possible explanations exist to explain this discrepancy. It is likely specific legal and rehabilitation models influence this process greatly. Criminal justice populations tend to be highly heterogeneous as a multitude of factors can lead to arrest and imprisonment. Thus the impact of any individual factor, such as substance use, is likely to be diminished. Furthermore, the community corrections population is unique in that it is composed of the least severe members of the criminal justice population, making it a restricted range of a larger population.

While a number of explanations could exist to suggest whether individuals in community corrections have more severe problems associated with multiple substance use, the question has not been answered empirically and the goal of this study was to address that gap to inform a better understanding of the impact of multiple substance use in community corrections. We examined a sample of 531 individuals under community corrections supervision and compared multiple substance users to single substance users and to individuals who did not meet criteria for any form of pathological substance use. We examined both substance use characteristics as well as criminal justice involvement and other indices of recovery. Due to the strong and consistent evidence linking multiple substance use to more severe substance related outcomes we hypothesized that the multiple substance use group would have more severe substance use histories. The evidence linking criminal justice involvement and multiple substance use is decidedly mixed and insufficient to form a hypotheses one way or another. This portion of the study is exploratory.

Method

Participants

This is a secondary analysis of intake data from the baseline session of a randomized clinical trial (R01CA14166305; PI: Cropsey; see Cropsey et al., 2015) testing the effectiveness of Bupropion to improve smoking cessation quit rates in a sample of individuals who were currently under community corrections supervision. The sample was collected from a midsized city in the southeastern United States. The sample was demographically representative of the region with 344 African Americans and 187 White (self-identified as non-Latino or non-Hispanic ethnicity). The gender breakdown was 178 women and 353 men. The average age was 36.6 years ($SD = 11.0$ years). Further information on the demographic characteristics of the sample can be found in Table 1. There were a total of 677 individuals who underwent the initial baseline assessment for the study; however, only 531 individuals completed the necessary measures and had sufficient data to be included in this study.

Procedure

This study assessed substance use through two structured clinical interviews, the Mini International Neuropsychiatric Interview (MINI, Sheehan et al., 1997; 1998) and the Addiction Severity Index (ASI, McLellan et al., 1985). Additionally, questionnaires were administered to assess demographics and the Wechsler Test of Adult Reading (WTAR; Wechsler, 2001) was administered to provide an estimated full-scale IQ. The MINI and ASI were conducted either by a research assistant, graduate student, or postdoctoral fellow. The entire assessment lasted approximately 1.5–2 hours. The groups: multiple substance users, single substance users, and non-substance users were based on diagnostic criteria from the MINI. The participants also underwent a medical examination conducted by a physician; however, none of the data from the medical examination are used in the current study. For further information on the procedures used during the clinical trial from which these data were gathered see Cropsey and colleagues, 2015.

Measures

The Mini International Neuropsychiatric Interview (MINI, Sheehan et al., 1997; 1998) is a structured clinical interview which asks questions that correspond to symptoms identified in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; American Psychiatric Association, 2000) to determine the presence or absence of a psychological disorder. The MINI is divided into modules based on diagnostic category with each module beginning with one or two screening questions—with the exception of psychotic disorders—and concludes with a diagnostic box that indicates whether criteria has been met. The MINI has been used in a variety of settings, including multicenter clinical trials, epidemiology studies, and clinical settings. Administration time is approximately 15 minutes. The MINI has been found to have high reliability and validity in comparison with the Composite International Diagnostic Interview (CIDI), the Structured Clinical Interview for DSM-III-R Patients (SCID-P), and other measures of mental illness (Friedman et al., 2005; Lecrubier et al., 1997; Sheehan et al., 1997, 1998). The MINI was used to determine the independent variables Anxiety Disorders and Depressive Disorders as well as the substance use

categories. Anxiety Disorders and Depressive Disorders were both composite variables made up of individuals who met diagnostic criteria for any disorder within the respective categories.

The Addiction Severity Index (ASI, McLellan et al., 1985) is a structured clinical interview that assesses substance use as well as seven areas often impacted by addiction. Specifically, the ASI assesses alcohol use, drug use, medical history, employment/support, family/social history, legal history, and psychological history (McLellan et al., 1992). The ASI includes over 350 questions and takes 20–30 minutes to administer. The response format varies based on the question. The ASI has demonstrated good test-retest reliability over 3-day interval (ICC not reported; McLellan et al., 1985), 1-week interval (ICC = .64–.86; Drake, McHugo, & Biesanz, 1995), and an 18-day interval (ICC >.80 for chemical abuse, employment/support, and legal; ICC = .50–.59 for medical and psychiatric; McCusker, Bigelow, Servigon, & Zorn, 1994). A study completed by Leonhard and colleagues (2000), demonstrated that the internal consistency was adequate for all seven domains (Alcohol α = .84, Drugs α = .69, Medical α = .89, Employment/support α = .65, Family/social α = .74, Legal α = .65, and Psychological α = .84). The validity of the ASI has been demonstrated through associations with other established measures of addiction (McLellan et al., 1985). For this study, the ASI was used to determine the severity and extent of an individual's substance use history as well as their legal history. The variable Family Dysfunction indicated participants' responses to the question: In the past 30 days have you had serious conflicts with your family?

Analyses

The purpose of the study was to determine if individuals engaging in multiple substance use were characterized by more severe legal histories and substance use characteristics than other members of the community corrections sample. We created three groups, multiple substance users (i.e., those who met criteria for abuse or dependence on two or more substances), single substance users (i.e., those who met criteria for abuse or dependence on a single substance), and non-substance users (i.e., those who did not meet criteria for substance abuse or dependence). We then determined univariate relationships between the predictor variables (e.g., depressive disorders, anxiety disorders) and the three levels of substance use via ANOVA and chi-square analyses. These univariate analyses were conducted to determine eligibility for inclusion our multivariate analysis. Significant associations were loaded into a multinomial regression with multiple substance users set as the comparison group. This was done so that the multiple substance users could be simultaneously compared to the single substance users, and non-substance users. Finally, the substance use characteristics (i.e., number of substances tried throughout one's life, age of first use, and years of total use) of the two substance using groups were also compared via univariate analyses. A Bonferroni Correction was employed to interpret significance.

Results

The results of the univariate comparisons between multiple substance users, single substance users, and non-substance users can be seen in Table 1. Multiple substance users were more

likely to be White and have a higher estimated IQ. They tended to report a higher number of arrests and those arrests tended to be substance related arrests. They tended to report a higher level of family dysfunction, depressive disorders, and anxiety disorders. There were no significant differences for gender, person offenses, property offenses, and court offenses.

When the significant predictor variables were loaded into a multinomial regression (See Table 2) predicting non-substance use and single substance use using multiple substance use as the reference group, non-substance use was associated with a lower estimated IQ, a lower likelihood of committing a substance related offence, fewer family problems in the past month, and a lower probability of meeting criteria for an anxiety disorder. Single substance use was associated with a history of fewer arrests, and more problems with family in the past month. There were no significant associations for age, race, or meeting criteria for a depressive disorder.

When the substance use characteristics of the multiple substance users were compared to the single substance users, there was no significant differences for age of initiation $F(1, 313) = 2.95, p = .087$. There was a significant difference for years of total substance use $F(1, 313) = 7.52, p = .006$ with the multiple substance users ($M = 16.95, SD = 10.21$) reporting an average of about three years longer use than the single substance users ($M = 13.82, SD = 10.04$).

Discussion

Multiple substance use is often associated with more severe outcomes than single substance use when non-criminal justice samples are examined (Dutra et al., 2008; Marsden et al., 2009). However, established findings on substance use do not always generalize to criminal justice samples. For example, several studies examining community corrections samples have indicated that more severe substance use (i.e., use of more addictive and damaging substances) may not be associated with more severe outcomes (Clark et al., 2014; Listwan et al., 2009; Shaffer et al., 2011). The current study largely supported this pattern. The data indicated that multiple substance use was not associated with more severe involvement in the criminal justice system. Multiple substance users did not appear drastically different from those who met criteria on a single substance. There were no differences in person offenses, property offenses, or court offenses. There were no differences in the number of arrests or months spent incarcerated. The multiple substance users tended to have a more extensive substance use histories, and this was reflected in a greater number of substance related offenses. However, outside of their substance use and substance related legal charges, the multiple substance users largely resembled both the single substance users and the non-substance users.

The relationship between substance use and criminal justice involvement is complicated, and it is likely that local laws, regional demographics, individual differences, and stochastic factors all play a role in both criminal justice involvement and legal outcomes. The lack of reliable mean differences between groups and the failure of established predictors of negative consequences (i.e., multiple substance use and drug severity) to generalize to the community corrections population speaks to the need for detailed and accurate assessment

of the needs of individuals in this population. Population heterogeneity is a constant problem complicating both research as well as treatment of the community corrections population and it would appear that case-by-case tailored treatment of substance use is warranted at this time. The current study demonstrated that multiple substance users tended to have more severe substance use histories, yet these more severe histories did not translate into more extreme legal or other consequences aside from having a greater probability of a substance related charge.

Our results indicated that the multiple substance users reported more family problems and a greater likelihood of experiencing an anxiety disorder. The research design and analyses conducted limit our ability to establish the direction of causality for these findings, yet they remain interesting even as observations. A link between meeting criteria for an anxiety disorder using multiple substances fits with the established literature and is not unique to criminal justice samples as anxiety is an established risk factor for substance use (Douglass et al., 2010; Merikangas et al., 1998; Smith & Book, 2010). Our identification of family dysfunction as a potential risk factor also fits with the literature as it has shown to be a salient predictor of both involvement in the criminal justice system (Gordon, Graves, & Arbutnot, 1995) and increased psychological distress relative to other individuals under criminal justice supervision (Clark, Li, & Cropsey, 2016; Laishes, 1997). However, there has been little empirical work investigating the link between family dysfunction and drug use among those under supervision. A heightened association between these variables would make sense given the nature of incarceration. Incarceration often isolates individuals from their support system. Family may represent the last means of stability and accountability for individuals under community corrections and its absence likely has negative consequences. Due to the nature of incarceration, examining the role of family support is an important area for future research on substance use and incarceration in general.

Several facets of this study limit the generalizability of its findings. First, the study relied on self-report data of substance use. Self-report data of substance use can be especially inaccurate when individuals are not seeking substance use treatment (Fendrich & Johnson, 2005; Stockwell, Zhao, & Macdonald, 2014), when they are part of a research study (Schuler et al., 2009), and when there is a high degree of stigma associated with use for that population (Bai et al., 2014). All three of these factors were at play during the current study. These are widely recognized problems, yet there is very little to be done about them. Second, while 531 was a sufficient sample size to answer our research question it was not sufficient to explore patterns linked to specific types of substance use or patterns associated with different sets of multiple substances. An examination of patterns of different substance use (e.g., cocaine and marijuana versus cocaine and heroin) would have potentially made for a far more interesting study. However, it is also possible that this more elaborate examination would have also yielded no meaningful differences within a community corrections population. Third, classifying individuals as being multiple substance users was done by examining diagnostic criteria. There are pros and cons to this approach. There is no agreed upon means of classifying multiple substance use in the research literature. And the majority of studies have classified different multiple substance users based on their use of a single substance. These techniques have included self-identified substance of choice (Clark et al., 2012), meeting diagnostic criteria based on the Diagnostic and Statistical Manual of Mental

Disorders (DSM-5; American Psychiatric Association, 2013; Gerra et al., 2008), prevalence of use (Conway et al., 2013), and focusing on the substance with the most negative consequences associated with its use (Conway, Kane, Ball, Poling, & Rounsaville, 2003). Furthermore, it is common to use composite data to determine primary substance use in groups of multiple substance users by combining medical record data, interview data, quantity of use, age of onset, and a variety of other factors (Brecht, Huang, Evans, & Hser, 2008; Conway, Swendsen, Rounsaville, & Merikangas, 2002; Suh, Ruffins, Robins, Albanese, & Khantzian, 2008). The absence of a reliable means of assessing the extent and severity of addiction in multiple substance users has been widely noted (Conway et al., 2010), but a uniform method of assessment has yet to be developed. Our examination was based on diagnostic criteria, but others in the field rely on other methods.

Future work should look to address the limitations of this study through attempting to replicate with a larger sample size, more detailed analysis, and more comprehensive assessment of substance use. Clinically, this and other studies also demonstrating the lack of a relationship between substance use characteristics and criminal history speak to the need for individualized treatment and broader assessment of needs. The search for accurate and consistent markers of treatment failure and recidivism in the community corrections population is necessary to reduce recidivism and improve functioning. Much of the substance use literature generalizes from other treatment populations to the community corrections population; however, in many cases it does not appear to be linked with legal history or outcome. Determining markers of recidivism and targeting them is a crucial step towards improving the lives of the community corrections population and improving society as a whole.

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Highlights

- Multiple substance users reported more arrests than single substance users.
- Multiple substance users were more likely to report family disfunction.
- Multiple substance users did not differ in offense categories from single substance users.

Table 1

Sample Characteristics and Univariate Comparisons

Characteristic	Non-Substance Use			Non-Substance Use			Multiple Substance Use		
	N	Mean (SD) or %		N	Mean (SD) or %		N	Mean (SD) or %	
Age	215	37.86 (11.33)		165	35.38 (11.32)		151	36.00 (9.97)	
Full scale IQ	215	87.99 (13.56)		165	90.17 (12.98)		151	92.48 (13.33)	
Total number of arrests	215	9.07 (9.59)		165	8.60 (9.54)		151	12.32 (15.31)	
Gender	132	37.4	Male	113	32.0		108	30.6	
	83	46.6	Female	52	29.2		43	24.2	
Race	152	44.2	African American/Black	104	30.2		88	25.6	
	63	33.7	Caucasian-non-Hispanic	61	32.6		63	33.7	
Person offenses	59	41.0		40	27.8		45	31.3	
Property offenses	107	42.1		69	27.2		78	30.7	
Substance offenses	151	36.7		134	32.5		127	30.8	
Court offenses	111	41.6		77	28.8		79	29.6	
Family Dysfunction	51	34.7		35	23.8		61	41.5	
Anxiety disorder	28	23.3		43	35.8		49	40.8	
Depressive disorder	30	29.1		33	32.0		40	38.8	

Note Significant results appear in **Bold**.

Table 2

Characteristics Associated with Types of Substance Use

Predictors	Non-Substance Use			Single Substance Use		
	<i>B (std. error)</i>	<i>Wald chi-square</i>	<i>Sig.</i>	<i>B (std. error)</i>	<i>Wald chi-square</i>	<i>Sig.</i>
Age	0.02 (0.01)	3.13	0.077	-0.01 (0.01)	0.20	0.658
Full Scale IQ	-0.02 (0.01)	5.94	0.015	-0.02 (0.01)	2.34	0.126
Number of arrests	-0.01 (0.01)	1.85	0.174	-0.03 (0.01)	5.19	0.023
Race	0.02 (0.27)	<0.01	0.948	-0.07 (0.28)	0.07	0.791
Substance offenses	-0.66 (0.29)	5.40	0.020	0.03 (0.31)	0.01	0.932
Family Dysfunction	-0.64 (0.25)	6.64	0.010	-0.90 (0.26)	11.77	0.001
Anxiety disorder	-0.85 (0.32)	6.84	0.009	0.02 (0.31)	<0.01	0.959
Depressive disorder	-0.25 (0.33)	0.56	0.455	-0.24 (0.33)	0.51	0.474

Note Multiple substance users were used as the reference group for this analysis.