



Facets of impulsivity in the relationship between antisocial personality and abstinence

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ABSTRACT

Most individuals who enter drug treatment programs are unable to maintain long-term abstinence. This problem is especially relevant for those presenting with Antisocial Personality Disorder (ASPD). In examining potential mechanisms underlying the relationship between ASPD and abstinence, one factor that may be especially useful is the personality variable of impulsivity. Thus, the current study examined ASPD status in relation to longest abstinence attempt among 117 substance use treatment-seeking individuals, considering the mediating role of five facets of impulsivity: urgency, perseverance, premeditation, control, and delay discounting. Results indicated that individuals with ASPD evidenced shorter previous abstinence attempts and lower levels of perseverance and control than those without ASPD. Further, lower levels of control were associated with shorter abstinence attempts. Finally, control mediated the relationship between ASPD and longest quit attempt. These results suggest the potential value of multiple facets of impulsivity in efforts to understand relapse and subsequent treatment development efforts.

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1. Introduction

Due to the high prevalence of illicit drug and alcohol use and subsequent costs to society, a great deal of research in the past two decades has focused on the development and evaluation of effective treatments. Although outcome studies show promise (Gossop, Marsden, Stewart, & Kidd, 2003; Hubbard, Craddock, Flynn, Anderson, & Etheridge, 1997), recent estimates indicate that a large number of individuals who enter drug treatment relapse within a matter of weeks or even days, and few of these individuals are able to recover abstinence thereafter (Hubbard et al., 1997; Ravndal, Vaglum, & Lauritzen, 2005). This problem is especially relevant for individuals diagnosed with Antisocial Personality Disorder (ASPD). Indeed, the presence of ASPD among substance using individuals is often associated with a poor prognosis for treatment outcomes across treatment settings (e.g., Arndt, McLellan, Dorozynsky, & Woody, 1994; Cacciola, Rutherford, Alterman, McKay, & Snider, 1996; Goldstein et al., 2001; Grella, Joshi, & Hser, 2003). As a salient example, a recent study reported that individuals with ASPD in residential substance use treatment had significantly earlier post-treatment failure at the post-

treatment follow-ups than those without ASPD (Goldstein et al., 2001). Despite this increased probability of treatment failure associated with ASPD, there is a dearth of literature explicitly examining why individuals with ASPD are at an elevated risk for poor treatment outcomes. Therefore, investigating factors that might underlie or mediate the relationship between ASPD and poor treatment outcomes might indicate potential avenues for targeted treatment approaches.

In examining the potential underlying mechanisms of the relationship between ASPD and treatment failure, one variable that may be especially useful is that of trait-impulsivity. Impulsivity has not only been consistently found to be related to substance use disorders, (e.g., Allen, Moeller, Rhoades, & Cherek, 1998; Moeller et al., 2001), but is also a distinguishing characteristic of ASPD (American Psychiatric Association, 2000). A number of studies indicate that compared to non-ASPD substance users, individuals with ASPD evidence higher levels of impulsivity (Moeller et al., 2001). Furthermore, other studies indicate that impulsivity is predictive of substance use treatment failure (Miller, 1991; Moeller et al., 2001; Patkar et al., 2004). Taken together, these studies suggest that the construct of impulsivity may explain the high rates of treatment failure among individuals with ASPD.

Despite the clearly established role of impulsivity in ASPD, substance use, and substance use treatment outcomes, one difficulty in interpreting these documented relationships is the multidimensional nature of impulsivity (Evenden, 1999; Monterosso, Ehrman, Napier, O'Brien, & Childress, 2001; Whiteside, Lynam, Miller, & Reynolds,

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2005). Various conceptualizations of the construct of impulsivity have been proposed, including the inability to resist impulsive acts in the face of negative affect, susceptibility to boredom, lack of planfulness, preference for acting without regard to consequences, and the inability to delay gratification (Cloninger, Przybeck, & Švrakić, 1991; Logan, Schachar, & Tannock, 1997; Whiteside et al., 2005), among others.

Each of the aforementioned facets of impulsivity has been linked to ASPD, substance use, or indices of treatment failure. In a longitudinal study (Lynam & Miller, 2004), separate dimensions of impulsivity were found to be differentially associated with deviance and substance use in adolescence and adulthood. For instance, the compromised ability to withhold impulsive behavior in the presence of negative affect (termed *urgency*) was related to substance use in adolescence. Similarly, the inability to consider potential consequences of behavior prior to acting (lack of *premeditation*) was related to substance use and antisocial behavior. In contrast, the inability to persist during a boring or difficult task (lack of *perseverance*), was *not* related to antisocial behavior or substance use across all assessment points. However, a study examining impulsivity as a predictor of substance use disorder diagnoses demonstrated that lack of perseverance conferred large effect sizes (Verdejo-García, Bechara, Recknor, & Pérez-García, 2007). Furthermore, a similar construct, task-persistence, has been shown to be inversely related to substance use (Quinn, Brandon, & Copeland, 1996). Finally, the inability to be planful and deliberate (lack of *control*) has been associated with substance use disorders (McGue, Slutske, & Iacono, 1999; Swendsen, Conway, Rounsaville, & Merikangas, 2002) and ASPD (Taylor & Iacono, 2007).

Behavioral measures of impulsivity such as delay discounting, or the tendency to prefer smaller immediate rewards over larger delayed rewards have also been linked to ASPD, substance use severity, and treatment outcomes. Research indicates that drug users exhibit substantially high rates of delay discounting (Allen et al., 1998; Coffey, Gudleski, Saladin, & Brady, 2003; Crean, de Wit, & Richards, 2000; Madden, Petry, Badger, & Bickel, 1997; Kirby & Petry, 2004; Petry, Kirby, & Kranzler, 2002; Petry & Casarella, 1999; Petry & Casarella, 1999; Vuchinich & Simpson, 1998). With respect to treatment outcome, higher levels of delay discounting have been found to predict shorter periods of abstinence from illicit drugs at follow-up in opiate addicts (Pasetti, Clark, Mehta, Joyce, & King, 2008). Similarly, recent work indicates that substance abusers with ASPD discounted delayed rewards at higher rates than their non-ASPD substance-abusing counterparts (Petry, 2002).

The studies described above provide excellent documentation of the univariate relationships of the multiple dimensions of impulsivity and ASPD, as well as their relationships to substance use and treatment failure. However, to date, no substance use treatment outcome studies have explicitly examined the unique roles of different facets of impulsivity as related to treatment outcomes in individuals diagnosed with ASPD. Moreover, no studies have explicitly examined the *meditational* role of the multiple dimensions of impulsivity in the relationship between ASPD and substance use treatment failure. Thus, the current study sought to identify facets of impulsivity that may explain negative treatment outcomes in individuals with ASPD, with a focus on dimensions of impulsivity that have been shown to be related to either ASPD or substance use outcomes. Specifically, we examined a) facets of impulsivity uniquely related to ASPD and, b) the potentially mediating role of these types of impulsivity in the relationship between ASPD and longest abstinence attempt.

2. Method

2.1. Participants

As part of a larger study, 150 inpatient residents in a drug and alcohol abuse treatment center in the greater Washington DC metropolitan area completed questionnaire packets. Treatment at this center involves a mix of strategies adopted from Alcoholics and Narcotics

Anonymous as well as group sessions focused on relapse prevention and functional analysis. The center requires complete abstinence from drugs and alcohol (including the prohibition of any form of agonist treatment such as methadone), with the exception of caffeine and nicotine; regular drug testing is provided and any use is grounds for dismissal from the center. Typical treatment lasts between 30 and 180 days. Aside from scheduled activities (e.g., group retreats, physician visits), residents are not permitted to leave the center grounds during treatment.

Thirty-three participants were excluded from analyses because of missing data on one or more of the variables of interest and/or issues of literacy. Casewise deletion was used in order to assure that all analyses were conducted on the same set of observations. Furthermore, the excluded participants did not differ from the included participants with respect to demographics, drug use, ASPD diagnosis, impulsivity variables or longest abstinence attempt. The final sample of 117 participants had a mean age of 41.6 ($SD = 8.8$). Sixty-three percent of the participants were male, and 94.2% were African-American, with the rest of the participants endorsing "Caucasian". With regard to highest education level achieved, 20% of the participants had an education level of "less than high school", 44.2% had a "high school or equivalent" level, and 35.8% had "some college and above" level. The modal income was \$0–\$9999, and most were not living with a partner (74.2%).

2.2. Measures

2.2.1. Demographics and longest abstinence attempt

A short self-report questionnaire was administered to obtain demographic information, as well as the number of days of the participants' longest serious abstinence attempt prior to treatment (not counting detoxification).

2.2.2. Assessment of ASPD

The Structured Clinical Interview for DSM-IV, Axis II (SCID-II; First, Gibbon, Spitzer, Williams, & Benjamin, 1997) was used to obtain ASPD diagnosis. All interviews were audio recorded, and reliability checks on all assessments were conducted. The last author (C.W.L.) listened to every 10th interview to ensure that assessor drift did not occur over time.

2.2.3. Level of substance use

We assessed frequency of substance use in the past year prior to current treatment and lifetime heaviest substance use in the following nine categories of substances: (a) cannabis, (b) alcohol, (c) cocaine, (d) stimulants, (e) sedatives, (f) opiates, (g) hallucinogens (other than PCP), (h) PCP, and (i) inhalants. Responses were provided on a Likert-type scale ("Never" = 0 to "About every day" = 5).

2.2.4. Assessments of impulsivity

In the current study, we utilized the Trait Negative Emotionality Superfactor and the Control subscale of the Multidimensional Personality Questionnaire (MPQ; Tellegen, 1992). The Trait-Negative Emotionality (NEM) subscale measures the degree to which an individual is easily upset, has unaccountable mood changes, is nervous, tense, and feels unlucky, exploited or mistreated. The Control subscale was used to assess individual differences in self-control and planfulness. Specifically, high scores on the Control scale indicate someone who is restrained, organized, and reflective. The measure has high internal consistency (Cronbach alpha = .85) and high 30-day test re-test reliability ($r = .89$). The MPQ has strong psychometric properties and the internal consistency in the current study was acceptable, ranging from .80 to .90 for NEM and Control, respectively.

To measure impulsive pathways and motivations for drug use, the UPPS Impulsive Behavior Scale (UPPS; Whiteside et al., 2005) was administered, which assesses four distinct facets of personality associated with impulsive behavior: urgency, (lack of) premeditation,

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