



## Impulsivity and addiction severity in cocaine and opioid dependent patients



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### HIGHLIGHTS

- Drug abusers are more impulsive than the general population.
- Impulsivity associated with severity, especially in patients with cocaine dependence
- The need of the program specific to cocaine patients with higher impulsivity

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### ABSTRACT

**Background:** Impulsivity as a personality trait is a risk factor for the development and maintenance of cocaine and opioid dependence. The objective of this study is to analyze the relationship between impulsivity and addiction severity in cocaine and opioid dependent patients.

**Methods:** A cross-sectional, observational study of 526 patients with lifetime cocaine dependence (CD,  $n = 351$ ), opiate dependence (OD,  $n = 51$ ) and comorbid cocaine and opiate dependence (COD,  $n = 124$ ) to throughout life, according to DSM-IV-TR, was conducted. The sample was recruited at the Addiction and Dual Diagnosis Unit of Vall d'Hebron University Hospital from January 2006 to April 2013. Patients were evaluated with the EuropASI, the SCID I and II interviews, and the Barratt Impulsivity Scale (BIS-11). Descriptive statistics of the main variables (including mean, standard deviation) was performed. Chi square test was used to compare categorical variables and Kruskal–Wallis test to compare continuous variables. Spearman correlation was used to analyze the relationship between EuropASI scores and BIS-11 scores.

**Results:** The mean age of the patients was  $36.37 \text{ years} \pm 8.08$  (19–66). CD and COD were more impulsive and had higher addiction severity than OD. OD patients had worse medical status than CD and COD patients while COD patients had more severe drug use and legal problems than the other groups. However, impulsivity and addiction severity were only positively correlated in CD patients.

**Conclusions:** Impulsivity should be appropriately screened and addressed in cocaine dependents as it may be related to addiction severity.

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### 1. Introduction

Cocaine dependence and opioid dependence are highly prevalent addictive disorders (EMCDA Report, 2014) associated with the existence of several medical and psychiatric problems (Herrero, Domingo-Salvany, Brugal, & Torrens, 2011; López-Durán & Becona, 2006; Leri, Stewart, Tremblay, & Bruneau, 2004; Roncero et al.,

2011; Sartor, Kranzler, & Gelernter, 2014; Torrens, Gilchrist, & Domingo-Salvany, 2011). Prevalence of cocaine use in the general population is the 4.1% and the prevalence of problem drug use opiates is estimated at 0.41% (EMCDA Report, 2014). They often co-occur with other mental disorders such as depressive disorders, anxiety disorders (Pani, Vacca, Trogu, Amato, & Davoli, 2010; Torrens et al., 2011) and personality disorders (Herrero et al., 2011; Rounsaville et al., 1991; Thomasius, Sack, & Petersen, 2010).

Impulsivity can be conceptualized as a personality trait (“trait impulsivity”) or as a transient state, “state impulsivity” (i.e.: impulsive behaviors). Impulsivity as a “personality trait”, is more related to a pattern of behavior. They “impulses” or “state impulsivity” are more

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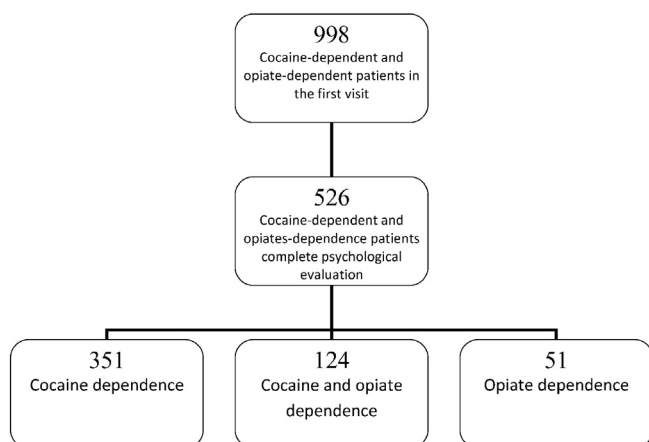


Fig. 1. Study flow chart.

cognitive in nature (Barratt, & Felthous, 2004; Stanford, & Barratt, 1992). The “trait impulsivity” is multidimensional and complex behavior manifested by an exaggerated tendency to perform acts, unplanned and often socially inappropriate behavior compared to peers (Dickman, 1993). “Trait impulsivity” can be defined as the predisposition toward rapid and unplanned reactions to internal or external stimuli without considering the possible negative consequences to yourself or to others (Moeller et al., 2001). Impulsivity is known to increase the vulnerability to addictive disorders (Barratt, 1994; Pedrero-Pérez, Ruiz, Rojo, Llanero, & Puerta, 2012; Valero et al., 2014). In the general population, motor impulsivity, as the propensity to promptly react to the stimulus without considering the consequences, has been related to substance abuse. Impulsivity as sensation seeking also plays a significant role in the startup phase of drug use usually during the adolescence (Muñoz, Graña, Peña, & Andreu, 2002). Specifically, “trait impulsivity” has been conceptualized as a trigger (Moeller et al., 2002) and as a maintainer (Coffey, Gudleski, Saladin, & Brady, 2003; Forcada, Pardo, & Bondía, 2006; Roncero et al., 2013) of cocaine dependence and it has also been related to poorer treatment outcomes in this population (Poling, Kosten, & Sofuoglu, 2007).

A similar relationship has been observed among opiate dependence people (Coffey et al., 2003; Kirby, Petry, & Bickel, 1999; Kirby & Petry, 2004; Walsh, Donny, Nuzzo, Umbricht, & Bigelow, 2010).

The severity of the addiction can be defined from the biopsychosocial variables of each patient, and for it to clinical and research level is used European Addiction Severity Index interview (EuropASI). This is a relatively brief, semi-structured interview designed to provide important information about aspects of a client's life which may contribute to his/her substance abuse syndrome. It is the first step in developing a client profile for subsequent use by research and clinical staff (Grella, Karnoa, Wardaa, Niva, & Moore, 2009; López-Goñi, Fernández-Montalvo, & Arteaga, 2012). Addiction severity has been linked to several factors such as presence of other psychiatric disorders, younger age of first use of drugs, and/or polydrug use (Grella et al., 2009). Patients with comorbid cocaine and opiate dependence are known to have high clinical addiction severity which results in a significant deterioration at the physiological and psychological level (Roncero et al., 2011; Torrens et al., 2011). The relationship between impulsivity and severity of addiction is partially known, especially with regards to the differences of the primary drug of abuse. It could be hypothesized that higher impulsivity scores are related to greater addiction severity regardless of the type of the addiction. The objective of this study is to analyze the relationship between impulsivity and addiction severity in cocaine dependent patients, opiate dependent patients, and patients with co-occurrent opiate and cocaine dependence.

## 2. Material and methods

A cross-sectional observational study of a clinical sample of 526 adult (>18 year-old) patients in treatment for lifetime cocaine dependence (CD,  $n = 351$ ), opiate dependence (OD,  $n = 51$ ) and cocaine and opiate dependence (COD,  $n = 124$ ) was conducted. (See Fig. 1.)

### 2.1. Participants

The present study was conducted in the Addiction and Dual Diagnosis Unit of University Hospital Vall d'Hebron. Data were collected between January 2006 and April 2013. Patients with drug intoxication, low language proficiency and/or severe medical disorders at baseline were excluded. All patients had to meet DSM-IV criteria for opiate and/or cocaine dependence.

Inclusion criteria: being over 18 years old, cocaine dependence, cocaine dependence and opioid together and opioid dependence according to DSM IV-TR, sign consent to participate in the study and complete the evaluation process, the protocol was previously approved by the ethics committee of the Hospital. Exclusion criteria were intoxication at baseline examination, severe somatic disease at baseline examination and low language proficiency. Patients did not receive financial compensation for their participation in the study. This work is part of a broader research on comorbidity in substance dependent (Roncero et al., 2013; Valero et al., 2014).

### 2.2. Procedure

Three diagnostic interviews were conducted in the outpatient drug addiction unit. Socio-demographic data (sex, age, nationality, education level), and information related to cocaine and opiate dependence (age of onset of dependence, amount of consumption) were collected by psychiatrists. Psychometric assessments were conducted by trained psychologists.

### 2.3. Instruments

- Ad hoc socio-demographic questionnaire (Grau-López et al., 2012)
- BIS-11

The Spanish version (Oquendo et al., 2001) of the Barratt Impulsiveness Scale (BIS-11) (Patton, Stanford, & Barratt, 1995) was completed by all patients. The BIS-11 is a measure of “trait impulsivity”. This self-administered questionnaire provides a total score and three subscales scores: cognitive impulsivity (tendency to make quick decisions); motor impulsivity (propensity to act solely for the stimulus without thinking of the consequences) and unplanned impulsivity (high interest for the present that the future).

- EuropASI

The validated Spanish version (Bobes & García, 2007) of the European Addiction Severity Index (EuropASI) (Kokkevi & Hartgers, 1995) was administered to all patients. The EuropASI is a semi-structured interview that collects information about general medical status, employment situation, alcohol and other drugs consumption, legal problems, family and social relationships, and psychological status. The composite scores use ranging from 0 to 1, with higher scores indicating greater severity. Composite analysis has been used to control the degree of subjectivity of each interviewer's scores (López-Goñi et al., 2012; McLellan et al., 1992).

- SCID

The Spanish version (First, Gibbon, Spitzer, Williams, & Smith, 1999; First, Spitzer, Gibbon, & Williams, 1999; Williams et al., 1992) of the

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