Psychometric properties of the Spanish version of the Cocaine Selective Severity Assessment to evaluate cocaine withdrawal in treatment-seeking individuals

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A R T I C L E   I N F O

A B S T R A C T

Reliable and valid assessment of cocaine withdrawal is relevant for treating cocaine-dependent patients. This study examined the psychometric properties of the Spanish version of the Cocaine Selective Severity Assessment (CSSA), an instrument that measures cocaine withdrawal. Participants were 170 cocaine-dependent inpatients receiving detoxification treatment. Principal component analysis revealed a 4-factor structure for CSSA that included the following components: 'Cocaine Craving and Psychological Distress', 'Lethargy', 'Carbohydrate Craving and Irritability', and 'Somatic Depressive Symptoms'. These 4 components accounted for 56.0% of total variance. Internal reliability for these components ranged from unacceptable to good (Chronbach's alpha: 0.87, 0.65, 0.55, and 0.22, respectively). All components except Somatic Depressive Symptoms presented concurrent validity with cocaine use. In summary, while some properties of the Spanish version of the CSSA are satisfactory, such as interpretability of factor structure and test–retest reliability, other properties, such as internal reliability and concurrent validity of some factors, are inadequate.

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1. Introduction

The assessment of cocaine withdrawal is relevant for treating cocaine-dependent patients. Cocaine withdrawal is a marker of severity of cocaine dependence (Schuckit et al., 1999; Sofuoglu, Dudish-Poulsen, Brown, & Hatsukami, 2003) and a predictor of treatment failure (Kampman et al., 2001; Mulvaney, Alterman, Boardman, & Kampman, 1999). Clinical manifestations of cocaine withdrawal include a heterogeneous group of mental and physical symptoms (Brower, Maddahian, Blow, & Beresford, 1988; Cottler, Shillington, Compton, Mager, & Spitznagel, 1993; Gawin & Kleber, 1986), which is consistent with the wide variety of cocaine-induced neuroadaptations (Koob & Le Moal, 2006). It is unclear whether cocaine withdrawal symptoms decrease monotonically (Coffey, Dansky, Carrigan, & Brady, 2000; Satel et al., 1991; Weddington

et al., 1990) or not (Epstein & Preston, 2010; Foltin & Fischman, 1997; Gawin & Kleber, 1986).

Multidimensional evaluation of cocaine withdrawal is clinically useful because it is likely that only some of the withdrawal symptoms contribute to the reinstatement of cocaine abuse, and/or are of value in guiding pharmacological treatment for relapse prevention. Some cocaine withdrawal symptoms (e.g., dysphoria), but not others (e.g., fatigue), are associated with lifetime history of depression (Helmus, Downey, Wang, Rhodes, & Schuster, 2001). According to the findings of a 12-week randomized controlled clinical trial (Oliveto et al., 2012), treatment with sertraline delays relapse in cocaine use in cocaine-dependent patients presenting with depression symptoms. Moreover, in recently abstinent cocaine users, the presence of depressive symptoms is associated with enhanced reinforcing effects of cocaine (Sofuoglu, Brown, Babb, & Hatsukami, 2001; Uslaner, Kalechstein, Richter, Ling, & Newton, 1999) and cocaine-primed craving (Elman, Karlsgodt, Gastfriend, Chabris, & Breiter, 2002). Impairment of physiological, but not subjective, sleep quality has been found during the first 2 weeks of cocaine abstinence (Morgan et al., 2008). In that study, the changes in sleep architecture were related to cognitive dysfunction, thus suggesting that treatments to improve sleep may be relevant in the management of cocaine dependence. In fact, the use of modafinil has been shown to normalize sleep architecture in cocaine-dependent subjects who participated in a

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Table 1
Factor structure of stimulant withdrawal in previous studies[a,b].

Factors	Srisurapanont et al. (1999) (amphetamine withdrawal)	McGregor et al. (2008) (amphetamine withdrawal)	Sofuoglu et al. (2005) (cocaine withdrawal)
Factor 1			
Symptoms	Drug craving	Anxiety	Drug craving
	Dysphoric mood[c]	Depression	Depressed mood
	Agitation	Agitation	Agitation
		Retardation	Retardation
	Vivid dreams	Vivid dreams	Vivid dreams
		Tension	Insomnia
		Irritability	
		Suicidality	
		Paranoia	
		Difficulty concentrating	
		Anhedonia	
Variance explained	39%	45%	26.1%
Factor 2			
Symptoms	Decreased energy	Fatigue	Fatigue
	Increased appetite	Inactivity	Increased appetite
	Craving sleep	Hypersomnia	Hypersomnia
	Dysphoric mood[c]		
Variance explained	15.8%	10.1%	19.1%
Factor 3			
Symptoms	Reduced pleasure	Drug craving intensity	
	Anxiety	Drug craving frequency	
	Slowing movement		
Variance explained	11.1%	9%	

[a] Principal component analysis was used in all studies. Srisurapanont et al. (1999) and Sofuoglu et al. (2005) performed varimax rotation on the resulting component pattern and McGregor et al. (2008) performed oblique rotation.

[b] The list of symptoms for each factor has been ordered to facilitate comparisons between the three studies.

[c] Dysphoric mood was removed from the definitive factor structure due to item cross-loading.

16-day, inpatient, randomized controlled clinical trial (Morgan, Pace-Schott, Pittman, Stickgold, & Malison, 2010).

Only three studies have investigated the dimensions of psychostimulant withdrawal in users reporting cocaine or amphetamine as their primary substance of abuse (Table 1). However, all three studies used different assessment instruments and procedures, thus making comparison of results difficult. Srisurapanont, Jarusuraisin, and Jittiwutikan (1999) used an 11-item scale that included the amphetamine withdrawal symptoms of *DSM-IV* (American Psychiatric Association [APA], 1994) in addition to amphetamine craving to assess 102 patients (outpatients and inpatients). McGregor et al. (2008) used a 16-item scale to assess 133 treatment-seeking amphetamine users. This scale was derived from that devised by Srisurapanont et al. and the Cocaine Selective Severity Assessment (CSSA), which was designed to measure cocaine withdrawal (Kampman et al., 1998). Sofuoglu, Dudish-Poulsen, Poling, Mooney, and Hatsukami (2005) interviewed 554 non-treatment-seeking cocaine users by telephone to assess their past experiences on the eight *DSM-IV* symptoms of cocaine withdrawal in addition to cocaine craving.

The first factor, which is the key factor with regards to the content measured by a particular scale, included drug craving and dysphoric mood, both of which were contained in the structure obtained by Srisurapanont et al. in amphetamine withdrawal, similarly to that found by Sofuoglu et al. in cocaine withdrawal. However, the first factor reported by McGregor et al. did not include drug craving but rather a varied set of symptoms indicative of psychological distress. In all the factor structures (Table 1), the second factor included symptoms that give the patient a lethargic appearance. Increased appetite also loaded in the second factor of the factor structures

reported by Srisurapanont et al. and Sofuoglu et al. Moreover, dysphoric mood loaded in the second factor (in addition to the first factor) in the structure obtained by Srisurapanont et al., who decided to remove this cross-loading item from the definitive factor structure. The clinical content of the third factor was completely different in the respective factor structures of amphetamine withdrawal (Table 1).

The CSSA can be especially useful for the multidimensional assessment of cocaine withdrawal since it includes a wider variety of clinical manifestations of cocaine withdrawal than *DSM-IV*, and it has good psychometric properties. The CSSA has shown concurrent validity with recent use of cocaine, and good interrater reliability and internal consistency (Cronbach's alpha = 0.80) (Kampman et al., 1998). Moreover, CSSA has predictive validity for several treatment outcomes for cocaine dependence. Patients scoring higher on the CSSA abandon treatment more frequently or have more difficulty in reducing cocaine use during treatment (Kampman et al., 2001; Mulvaney et al., 1999). Likewise, the CSSA has been proven to be a useful tool to assess the efficacy of several drugs used to treat cocaine withdrawal and dependence (Ahmadi, Kampman, & Dackis, 2006; Kampman, Volpicelli, Alterman, Cornish, & O'Brien, 2000; Kampman et al., 2001). However, CSSA could be used more properly after more research into its dimensionality.

To be clear, the aim of the present study was not to refine the CSSA to improve its psychometric properties, nor to develop a short version of the instrument. Rather, our main purpose was to evaluate the psychometric properties of the CSSA in the real world of clinical practice. Specifically, we examined the factor structure, reliability, and concurrent validity of the Spanish version of the CSSA in cocaine-dependent patients admitted for detoxification treatment.

2. Methods

2.1. Participants

The charts of all patients admitted for cocaine detoxification treatment at the addiction unit of the Sant Pau Hospital (Barcelona) from January 2003 to July 2009 were examined retrospectively. All participants had failed to interrupt cocaine use in outpatient facilities, requested admission, and presented cocaine dependence criteria (*DSM-IV* [APA, 1994]: 304.20). Patients receiving opioid methadone maintenance treatment were excluded. Eligible patients who did not have at least one complete CSSA evaluation during admission, regardless they finished or not detoxification treatment, were excluded from the study. The study protocol was approved by the Institutional Review Board of Sant Pau Hospital.

2.2. Assessments and interventions

The CSSA is an 18-item, interviewer-administered measure of cocaine withdrawal severity during the preceding 24 hours (Kampman et al., 1998). In all but four CSSA items (i.e., paranoid ideation, bradycardia, and intensity and frequency of cocaine craving), only the responses of 0, 3–4, and 7 are labelled; these scores represent, respectively, minimum, medium and maximum severity or duration. The score of 5 of the paranoid ideation item has also been labelled (i.e., 'feels people are out to get him/her') and in this way it is distinguished from the 3–4 score ('unable to trust anyone'). All the categories of the bradycardia item are defined by eight ranges (0–7) of heart rate values. The items about intensity and frequency of cocaine craving are scored using two separate visual analogue scales divided by eight perpendicular marks corresponding to numbers 0 to 7. The recorded score is the number of the mark closest to the patient's mark. Any mark made by the patient between 0 and 1 is recorded as 1. The items of attention, energy level and activity level are inversely rated. Two sets of items are paired (i.e., hyperphagia–hypophagia and hypersomnia–hyposomnia), such that a response greater than zero on