Acceptability, validity and reliability of the Structured Clinical Interview for the Spectrum of Substance Use (SCI-SUBS): a pilot study

A. SBRANA, L. DELL'OSSO, C. GONNELLI, P. IMPAGNATIELLO, M.R. DORIA, S. SPAGNOLLI, L. RAVANI, G.B. CASSANO, Department of Psychiatry, Neurobiology, Pharmacology and Biotechnology, University of Pisa, Italy
E. FRANK, M.K. SHEAR, V.J. GROCHOCINSKI, Department of Psychiatry, Western Psychiatric Institute and Clinic, University of Pittsburgh, USA
P. RUCCI, Department of Psychiatry, Neurobiology, Pharmacology and Biotechnology, University of Pisa, Italy and Department of Psychiatry, Western Psychiatric Institute and Clinic, University of Pittsburgh, USA
J.D. MASER, Department of Psychiatry, University of California at San Diego, USA
J. ENDICOTT, New York State Psychiatric Institute, Columbia University, New York, USA

ABSTRACT *This paper reports on the acceptability, reliability and validity of the Structured Clinical Interview for the Spectrum of Substance Use (SCI-SUBS), a new instrument exploring the interactive pathway between substance abuse and psychiatric disorders.*

Psychiatric outpatients with (n = 21) and without (n = 32) substance abuse comorbidity according to the DSM-IV, non-psychiatric subjects with opioid dependence (OD, n = 14) and normal controls (n = 33) were assessed with the SCI-SUBS. The presence or absence of psychiatric disorders was determined with the Structured Clinical Interview for DSM IV (SCID).

The SCI-SUBS was well accepted by participants. The internal consistency of the domains was satisfactory (between 0.64 and 0.93). Domain scores of OD subjects were significantly higher than those of controls and of psychiatric patients without substance abuse. The cut-off point on the SCI-SUBS total score at which there was optimal discrimination between the presence and the absence of a DSM-IV diagnosis of substance abuse was 45.

The pilot version of the SCI-SUBS has satisfactory internal consistency and construct validity.

Key words: substance abuse, spectrum, reliability, validity, structured interview

Introduction

In the last decade the use of psychoactive substances among adolescents and young adults dramatically increased both in Europe and in the US (Ether Ashton, 2001). Epidemiological studies indicate a strong association between substance abuse and psychiatric disorders (Brooner et al., 1997; Pini et al., 1999; Dixon 1999), although the full range of this association has yet to be explored. The hypothesis of a causal relationship between substance abuse and psychiatric disorders has been so influential that a number of disorders were labelled as 'substance-induced' (for instance cannabis- or cocaine-induced psychosis, alcohol-induced jealousy, drug-induced depression). More recently, this view was corroborated by results demonstrating that even subthreshold disorders can lead to the use of substances for self-medication (Rounsaville et al., 1982; Mirin et al., 1988; Castaneda et al., 1989; Sonne et al., 1994). Alcohol, sedatives, stimulants, and opioids are used to improve depressive mood or to induce sleep, whereas in mania cocaine or amphetamines are paradoxically used to maintain euphoria (Rounsaville et al., 1982; Khantzian, 1985). It has been reported that patients

with panic disorders make use of alcohol and sedatives to relieve anxiety and patients with social phobia often turn to substances to improve their social performance (Page 1989; Cox et al., 1989). It was also observed that individuals suffering from body dysmorphophobia are likely to take steroids and that individuals with eating disorders use amphetamines, cocaine and ecstasy to control their weight (Herzog et al., 1992).

We hypothesize that the use of substances is best conceptualized as a spectrum that ranges from mild forms of craving to severe dependence. In our conceptualization (Cassano et al., 1997; Cassano et al., 1999), 'spectrum' denotes a broader band of symptomatology than a category of disorder, as for example in the DSM-IV. Indeed, as we have reported elsewhere, the spectrum of a disorder may include subclinical manifestations, atypical (by atypical we mean symptoms not included in the DSM-IV) as well as typical signs and symptoms, and traits that define temperament and personality. Clinical observation suggests that these spectrum manifestations may be prodromal to a full-blown disorder, remain as an ill-defined, subclinical and incomplete expression of a disorder, or be the residual of a previous psychiatric disorder (Cassano et al., 1997).

Spectrum conditions related to specific DSM-IV diagnoses were operationally defined to create structured interviews and self-report questionnaires that were found to be useful in clinical work and research (Rucci and Maser, 2000; Frank et al., 2000). The Structured Clinical Interview for the Spectrum of Substance Use (SCI-SUBS) was designed to explore the relationship between psychiatric disorders (either 'threshold' or 'subthreshold') and substance abuse and the pathways through which these conditions trigger or reinforce one another during the lifetime. Existing interviewer-administered instruments include a thorough assessment of current frequency and severity of substance/alcohol use and its impact of physical and mental health and work functioning (Addiction Severity Index (McLellan et al., 1980), Severity of Dependence Scale, (Gossop et al., 1995); SASSI), but the SCI-SUBS is a clinical instrument that explores the lifetime use of substances giving special emphasis to subtle aspects not explored in the classical nosographic systems such as, for instance, early and excessive use of caffeine. In addition, it investigates substance sensitivity and the possible reasons that led

to the use of substances, starting from the need to improve one's performance or bodily image up to the need to alleviate mood or anxiety symptoms, to attain social disinhibition, or to experience unusual sensations.

The aim of this paper is to report on the acceptability, reliability and discriminant validity of the SCI-SUBS in a mixed sample including psychiatric patients with or without substance abuse, non-psychiatric subjects with substance (opioid) dependence and normal controls. Special attention is devoted to the spectrum of substance use in bipolar patients because our psychiatry department specializes in the diagnosis and treatment of mood disorders and because converging evidence from the literature indicates that bipolar disorder represents an increased risk for alcohol or drug abuse or dependence with respect to the general population and other psychiatric disorders (Regier et al., 1990; Brady and Lydiard, 1992; McElroy et al., 2001).

Material and methods

Instruments

Structured Diagnostic Interview

The Structured Clinical Interview for DSM IV (SCID – American Psychiatric Association, 1994) was used to determine the presence or absence of DSM IV Axis I disorders. Resident psychiatrists trained and certified in its use conducted the interview.

Structured Clinical Interview for the Spectrum of Substance Use (SCI-SUBS)
The Structured Clinical Interview for the Spectrum of Substance Use (SCI-SUBS) is a structured interview that explores lifetime symptoms, behaviours and experiences related to the use of substances. It consists of 150 dichotomous (yes/no) items grouped into six domains. This instrument was created by capitalizing on the long-standing clinical experience of Italian and American psychiatrists and psychologists including several of the authors, who met periodically to select a pool of items, discuss their face validity and arrange the sequence of items according to relevant 'domains' defined *a priori*. Within each domain, the investigator began by enumerating the criterion symptoms according to DSM, then added associated features as described in the DSM, followed by atypical manifestations, subthreshold and

full-blown symptoms they had observed in their clinical practice and research experience. The first domain, 'substance use and improper use of drugs' (43 items), assesses the excessive use of chocolate, coffee, tea, the use of diet pills, pain killers, hypnotics not medically prescribed and the use of drugs after the age of 15. We hypothesize that increased use of recreational substances and use of medications out of prescription, or for periods longer than prescribed, may underlie, in some cases, the presence of a psychiatric disorder. In such cases, the psychiatric disorder may push toward an improper use of drugs (Rounsaville et al., 1982).

The second domain 'childhood and adolescence' (nine items) explores the use of drugs and substances and attention deficit/hyperactivity between five and 15 years of age. Findings from the literature indicate that attention deficit/hyperactivity disorder may contribute to addictive vulnerability. Several factors are common to the developmental psychopathology of substance abuse and attention deficit disorder, suggesting an underlying deficit in behavioural regulation as an explanation for this comorbidity (Wilson and Levine, 2001). These authors argue that faulty learning processes or attempts to self-medicate dysfunctional behaviour may contribute to the pathogenesis of substance use disorders. Substance abuse itself may also contribute to the development of attentional deficits and behavioural dysregulation through direct (for example, prenatal or self-inflicted exposures to neurotoxic substances) and indirect (for example, poverty, neglect, abuse) mechanisms. Early use of substances is a risk factor for subsequent drug dependence and has been associated with early onset psychiatric disorders (Bukstein et al., 1989).

The third domain 'substance sensitivity' (19 items) explores increased sensitivity to drugs and substances (such as mood change, anxiety attacks or strong sensations). We hypothesized that the presence of some psychiatric disorders enhances the sensitivity to medications or substances and induces unusual reactions. For instance, in panic disorder this enhanced sensitivity has been shown to be protective towards the use of cannabis, cocaine and other stimulants and to be a risk factor for an increased use of alcohol and sedatives (Aronson and Craig, 1986; Moran, 1986; Price and Giannini, 1987).

The fourth domain 'use of substances or drugs for self-medication' (54 items) explores self-medication to relieve symptoms related to mood, anxiety, eating disorders, body dysmorphic disorder, attention deficit disorder, to increase the performance or to enhance sensorial perceptions.

The fifth domain 'sensation seeking' (eight items) explores the tendency to seek strong emotions according to the temperament model proposed by Cloninger (1987). High novelty-seeking and low harm avoidance have been reported to lead to early onset of substance use in boys from 10 to 15 years by Masse and Tremblay (1997).

The sixth domain 'symptoms related to substance use' (22 items) includes criterion symptoms related to the substance abuse and dependence disorder according to DSM-IV (McLellan et al., 1980). Thus, the SCI-SUBS can be also used as a diagnostic instrument.

Raters received instructions on the substance-use spectrum concept and a detailed description of the SCI-SUBS and its aims.

Statistics
One-way analysis of variance was used to compare the mean scores of the domains among groups.

Post-hoc pairwise comparisons were conducted at the significance level of 0.05 and then, applying the Bonferroni correction 0.05/6 = 0.0083, where six is the number of comparisons, to reduce the risk of type-I error. Analysis of covariance was used to compare mean domain scores controlling for age and gender.

The internal consistency of domains was determined by using Kuder-Richardson (KR) coefficient, a special form of Cronbach's alpha for dichotomous items (Nunnally and Bernstein, 1994).

The chi-square or Fisher exact test, where appropriate, was used to compare the frequency of endorsement of items across groups.

Sample
The study sample includes 33 normal controls without psychiatric disorders, 14 subjects with substance (opioid) dependence with no psychiatric diagnosis, 21 psychiatric patients with and 32 without DSM-IV substance abuse. Psychiatric patients were recruited among consecutive outpatients at the Psychiatric Clinic of the University of Pisa and subjects with substance (opioid) dependence were recruited among consecutive subjects attending the Study and Intervention on Addictions Unit (SIAU) of the Department of Psychiatry of the University of Pisa.

This outpatient unit specializes in treatment of individuals with opiate dependence resistant to standard protocols (tapered methadone or other detoxification treatments) and of psychiatric patients with a dual diagnosis. These four samples were selected in order to establish the construct validity of the SCI-SUBS. We expected that OD subjects would have the highest total scores, followed by psychiatric patients with substance abuse, psychiatric patients without substance abuse and controls. In addition, we expected that psychiatric patients with substance abuse would have an earlier onset of use of substances as compared with the other groups.

All subjects gave their written informed consent and were not paid for their participation in the study. The Ethical Committee of the University of Pisa approved the study protocol.

The demographic characteristics of these groups are reported in Table 1. About two-thirds of the subjects were male, but the gender ratio varied among groups, with males being the large majority among psychiatric patients and females being more frequent among controls (chi-square = 29.6, df = 3, p < 0.001). The mean age was 31.7 ± 9.6. Subjects recruited at the SIAU were distributed by gender as in the overall sample; patients without substance abuse were older than controls and the other groups did not differ from each other on age. DSM-IV primary diagnoses in psychiatric patients were bipolar I disorder (n = 39, 17 of whom had comorbid substance abuse), unipolar depression (n = 9, two of whom had substance abuse), schizophrenia/schizoaffective disorder/delusional disorder (n = 4, one of whom had substance abuse),

bipolar II disorder with substance abuse (n = 1). Bipolar I patients reported a lifetime use of alcohol (n = 9/39, 27.3%), sedatives (7.7%), cannabis (57.6%), stimulants (15.2%), opioids (6.1%), cocaine (18.2%), hallucinogens (9.1%). All the SIAU subjects had been using opioids in their lifetime. Some of them reported a lifetime use of cocaine (n = 3), cannabis (n = 4), stimulants (n = 1), sedatives (n = 2), alcohol (n = 1), stimulants (n = 1), hallucinogens (n = 2).

Results

Acceptability

The SCI-SUBS took an average of 20 minutes to administer and was well accepted by patients and controls, none of whom refused to be interviewed. A few items were modified at the completion of the study because the subjects found the wording difficult or the concepts unfamiliar.

Internal consistency

The internal consistency of domains (Table 2) was satisfactory for the six domains, with KR coefficients ranging between 0.64 and 0.93. According to Nunnally and Bernstein, acceptable reliability depends on what is being analysed; values between 0.50 and 0.70 and higher are considered satisfactory for group comparisons and values >0.90 are needed for comparisons among individuals or among repeated administrations to the same individual. Our results show that two domains have an internal consistency higher that 0.90. One is the domain 'symptoms related to substance use', which includes symptoms related to

Table 1. Demographic characteristics of the four study groups

	Non- psychiatric subjects with opioid dependence (n = 14)		Psychiatric patients with comorbid substance abuse disorder (n = 21)		Psychiatric patients without comorbid substance abuse disorder (n = 32)		Controls (n = 33)		Test, significance
	N	%	N	%	N	%	N	%	
Age (mean ± SD)	30.8 ± 7.8		32.8 ± 10.0		36.2 ± 11.0		27.0 ± 6.2		F = 5.8, p = 0.001
Female	5	35.7	1	4.8	6	18.8	23	69.7	χ^2 = 29.6, p < 0.001
Married	1	7.1	3	14.3	11	34.4	2	6.1	χ^2 = 10.7, p = 0.013
Working status									χ^2 = 62.9, p < 0.001
employed	9	64.3	8	38.1	16	50.0	9	27.3	
unemployed	2	14.3	10	47.6	10	31.3	1	3.0	
housewife			1	4.8	1	3.1			
student	3	21.4	2	9.5	1	3.1	22	66.7	
retired					4	12.5	1	3.0	

intoxication, tolerance and withdrawal and the other is the domain 'use of substances or drugs for self-medication'.

Construct validity of domains
Mean scores of the domains were compared among groups using one-way analysis of variance. Subjects with substance (opioid) dependence had the highest domain scores and differed significantly from controls and psychiatric patients without substance abuse on the domains 'improper use of drugs', 'substance sensitivity', and 'symptoms related to substance use' (Table 3). This latter domain also discriminated subjects with opioid dependence from psychiatric patients with substance abuse. Early use of substances was more common among psychiatric patients with than without substance abuse. When a Bonferroni correction was applied to the significance level in the pairwise comparisons, most of the differences continued to be significant, except those regarding sensation seeking and early use of substances. In order to test whether differences on mean domain scores among groups were affected by the demographic composition of groups, analyses of covariance (ANCOVA) were performed, with each domain used alternately as the dependent variable and age, gender and groups as the independent variables. As the results of these ANCOVA analyses were overlapping with those of the ANOVA, we did not report them here.

Sensitivity, specificity and positive predictive value
The accuracy of the SCI-SUBS in predicting a lifetime diagnosis of substance abuse was investigated by using the receiver operating characteristic curve (ROC) analysis. An empirical ROC curve (Figure 1) was constructed for the total SCI-SUBS score by using as the gold standard the presence/absence of a DSM-IV diagnosis of substance abuse. An optimal cut-off score of 45 was found, balancing sensitivity and specificity.

In correspondence to this cut-off value, sensitivity was 74.3%, specificity 76.9% and positive predictive value 63.4%. The area under the curve was 0.81 (95% CI), which indicates that the instrument performed well.

Item endorsement in the four groups
In comparing the frequency of endorsement of individual items across the four groups, we identified 25 discriminant items for subjects with substance dependence (see appendix), who endorsed positive responses in a significantly higher percentage than the other three groups (# 38, 43, 48, 49, 61, 69, 71, 76, 77, 78, 80, 83, 86, 90, 91, 95, 107, 148, 144, 140, 134, 133, 132, 129, 122). These items explore use of opioids or cocaine before the age of 15, regular use of these substances since that age and a variety of reasons for using them as self-medication. Items # 129, 132, 133, 134, 140, 144, 148 investigate criterion symptoms for substance abuse disorder, such as abuse, intoxication, addiction, withdrawal.

Items # 15, 25, 49a, 51, 56, 98, 116, 150, 118 were discriminants for psychiatric patients with substance abuse. These items investigate excessive use of analgesics, use of barbiturates, restlessness before the age of 15, substance use to improve functioning and control anxiety, and the use of substances to have ESP experiences. Item # 150 ('did you ever notice or did anyone ever tell you that when you used substance you could not think straight or used poor judgement, for example, arguing with the police?') concerns lack of insight.

We analysed the 'sensation seeking' (SS) domain and its eight items in more detail, to test whether the tendency to get involved in potentially risky or dangerous situations was more common among opioid-addicted individuals than among psychiatric patients or controls. Dangerous impulsiveness was present to a certain extent in control subjects, 69% of whom endorsed at least one SS item, as compared to 89.5%

Table 2. Internal consistency of the six SCI-SUBS domains in the overall sample (n = 100)

	Kuder-Richardson coefficient
Improper use of drugs	0.86
Use of substances in childhood and adolescence	0.64
Substance sensitivity	0.87
Self-medication	0.93
Sensation seeking	0.80
Typical symptoms	0.93

Table 3. Mean and standard deviations of the scores of the SCI-SUBS domains in the four groups. The last two columns provide the one-way ANOVA results and the post-hoc pairwise comparisons at p=0.05 and after correcting the significance level for multiple comparisons according to Bonferroni (p=0.0083).

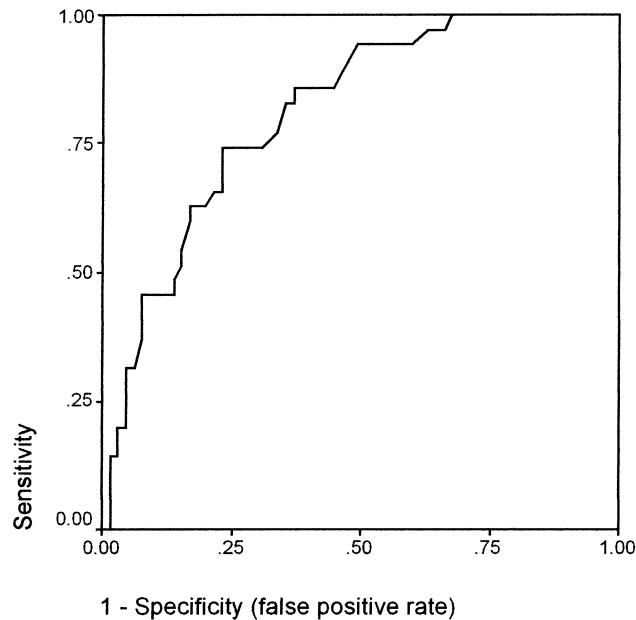|	Non- psychiatric subjects with opioid dependence (n = 14)	Psychiatric patients with comorbid substance abuse disorder (n = 21)	Psychiatric patients without comorbid substance abuse disorder (n = 32)	Controls (n = 33)	Test, significance, and significant post-hoc comparisons at p = 0.05	Significant post-hoc comparisons at p = 0.0083 (Bonferroni correction)
	(1)	(2)	(3)	(4)		
Improper use of drugs	19.1 ± 5.0	14.7 ± 6.6	9.2 ± 5.6	9.4 ± 4.7	F=14.5, p<0.001, 1>3,4; 2>3,4	1>3,4; 2>3,4
Use in childhood and adolescence	2.5 ± 2.2	2.7 ± 2.1	2.0 ± 1.6	1.3 ± 1.5	F=3.1, p=0.03, 2>3	
Substance sensitivity	10.8 ± 4.7	7.7 ± 3.6	4.3 ± 3.8	3.7 ± 3.9	F=13.9, p<0.001, 1>3,4; 2>3,4	1>3,4; 2>4
Self-medication	18.5 ± 9.1	14.3 ± 10.6	9.9 ± 10.2	8.4 ± 7.6	F=4.8, p=0.003, 1>3,4	1>4
Sensation seeking	4.6 ± 2.9	3.9 ± 2.6	2.4 ± 2.1	2.9 ± 2.2	F=3.6, p=0.015, 1>3	
Symptoms related to substance use	15.4 ± 4.9	9.3 ± 5.4	5.7 ± 6.5	4.7 ± 5.4	F=13.2, p<0.001, 1>2,3,4; 2>4	1>3,4

Figure 1. Accuracy of the total SCI-SUBS score in predicting the DSM-IV diagnosis of substance abuse. Results of the ROC analysis.

among non-psychiatric subjects with opioid dependence and 84.2% among psychiatric patients with substance abuse. Still, the only item endorsed with a significantly higher frequency in the latter two groups as compared to controls and psychiatric patients without substance abuse was #123: 'did you ever notice or did anyone ever tell you that situations that you find exciting, others consider dangerous' (chi-square = 22.6, df = 3, p < 0.001).

Spectrum of substance use in bipolar patients (n = 39)
We compared the frequency of endorsement of the SCI-SUBS items among bipolar patients versus other psychiatric patients, under the hypothesis that the former are more likely to use substances. Nine items were found to discriminate bipolar disorder from other diagnoses (Table 4). Bipolar patients reported excessive use of alcohol, tobacco (items #3 and #5) and hashish or marijuana after the age of 15 (item #30: '. . . I want to ask you whether after the age of 15 you have ever tried hashish or marijuana'). They also used drugs or substances in order to be more assertive/self-confident, increase their creativity or to achieve or maintain a sense of euphoria (items #72, #74, #79) and to relax after work or during the weekend (#82). They kept on using substances even though this caused physical problems (item #137). Item #130 ('Because of

substance use, did you ever notice or did anyone ever tell you that your work performances, including housework, was poor?') suggests that in 25% of these patients (as compared to 0% among patients with other diagnoses) the use of substances interferes with everyday life; while this difference is not significant (p = 0.062), it is in the expected direction.

Although the large number of comparisons (150) yields about eight significant differences at p = 0.05 and two at p = 0.01 because of chance alone, the eight items we identified are consistent with our clinical observations of bipolar patients. In addition, the frequency of endorsement of these items was markedly increased among bipolar patients and each comparison exceeded the significance level of 0.02 for the Fisher one-tailed exact test.

Discussion
This pilot study indicates that the SCI-SUBS is acceptable both for patients and controls and that domains are reliable for group comparisons. Although more work is needed to refine and shorten the instrument, our results support the discriminant validity of a number of items, some of which are endorsed more frequently by subjects with opioid dependence, whereas others are more typical of psychiatric patients. We also obtained some useful

Table 4. Frequency of endorsement of SCI-SUBS items discriminating patients with bipolar disorder from patients with other disorders; all comparisons, except for item #130, are significant at least p < 0.02 using Fisher exact test

# item		Bipolar disorder (N=39)		Other diagnoses (N=14)	
		N	%	N	%
3	Smoked or chewed a lot of tobacco	31	79.5	5	35.7
5	Drank a lot of alcohol	26	66.7	2	14.3
30	Used hashish or marijuana	26	66.7	4	28.6
72	Used substances/drugs to be more assertive	18	46.2	1	7.1
74	Used substances/drugs to enhance creativity	16	41.0	0	0
79	Used substances/drugs to achieve or maintain a sense of euphoria	20	51.3	1	7.1
82	Used substances/drugs to relax after work or during the weekend	25	64.1	2	14.3
130*	Because of the use of substances, the work performance was decreased	10	25.6	0	0
137	Used substances although this caused physical problems	20	51.3	1	7.1

* p = 0.062

preliminary indications about the items discriminating bipolar disorder from other psychiatric disorders. Bipolar patients were found to differ from patients with other psychiatric disorders on increased use of tobacco, alcohol, hashish or marijuana, in line with findings in the literature regarding comorbid substance abuse disorder in bipolar patients (Pini et al., 1999). They reported using drug/substances in search of creativity and euphoria or to relax during free time, despite the physical problems those substances might induce. Indeed, Perretta et al. (1998) have found that poor attention to or neglect of physical problems may facilitate toxicophilic risk behaviours. Our results indicate that a large percentage of bipolar patients use substances to be more assertive, most likely because of underlying social-phobic traits that are frequently associated with both bipolar disorder and substance abuse disorder (Himmelhoch, 1998). Contrary to our expectation, we did not find any difference in the mean score of the sensation-seeking cluster between patients with bipolar disorder and with other diagnoses. Our findings suggest that it is non-psychiatric patients with opiate dependence who have the highest propensity to risk and that one item 'Did you ever notice or did anyone ever tell you that situations that you find exciting, others consider dangerous?' is more discriminant than the others of the sensation seeking cluster. One possible interpretation is that these patients use substances in search of strong emotions because of an insufficient action of primary brain rewarding systems (but this could be, in most cases, an expression of other underlying psychopathological processes) and not because of concurrent psychiatric disorders. This mechanism may account for the difference between primary and secondary substance dependence disorder, the latter often being a self-medication behaviour (Rounsaville et al., 1982; Mirin et al., 1988; Cataneda et al., 1989; Sonne et al., 1994; McElroy et al., 2001).

Promising indications are emerging from our data, but our results should be considered preliminary. First, the overall sample size is rather low and results need replication. In addition, the mixed sample of psychiatric patients enrolled for this study includes a majority of individuals with bipolar disorder and a wide spread of other diagnoses. Although this reflects the diagnostic distribution of patients attending the Psychiatric Clinic of the University of Pisa, which has a reputation for the treatment of bipolar disorders, we acknowledge that the heterogeneity of the sample prevents comparison of the SCI-SUBS profile across different diagnoses. Further data on larger samples of psychiatric patients with different disorders are warranted in order to sketch the profile of substance use associated with defined disorders and comorbid subthreshold conditions and

to show that the SCI-SUBS provides a better diagnostic characterization of patients and may give useful indications for suitable treatments targeted for dual diagnosis.

References

American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. 4 edn (DSM IV). Washington DC: American Psychiatric Association, 1994.

Aronson TA, Craig TJ. Cocaine precipitation of panic disorder. Am J Psychiatry 1986; 143: 643–5.

Brady KT, Lydiard RB. Bipolar affective disorder and substance abuse. J. Clin. Psychopharmacology 1992; 12 (suppl 1): 17–22.

Brooner RK, King van L, Kidorf M, Schmidt CW, Bigelow GE. Psychiatric and substance use comorbidity among treatment-seeking opioid abusers. Arch Gen Psychiatry 1997; 54: 71–80.

Bukstein OG, Brent DA, Kaminer Y. Comorbidity of substance abuse and other psychiatric disorders in adolescents. Am J Psychiatry 1989; 146: 1131–41.

Cassano GB, Dell'Osso L, Frank E, Miniati M, Fagiolin A, Shear K, Pini S, Maser J. The Bipolar Spectrum: a clinic reality in search of diagnostic criteria and an assessment methodology. J Affect Disord 1999; 54: 319–28.

Cassano GB, Michelini S, Shear K, Coli E, Maser JD, Frank E. The panic-agoraphobic spectrum: a descriptive approach to the assessment and treatment of subtle symptoms. Am J Psychiatry 1997; 154 (suppl 6):27–38.

Castaneda R, Galanter M, Franco H. Self-medication among addicts with primary psychiatric disorders. Compr Psychiatry 1989; 30: 80–3.

Cloninger CR. A systematic method for clinical description and classification of personality variant. Arch Gen Psychiatry 1987; 44: 573–88.

Cox BJ, Norton GR, Dorward J, Fergusson PA. The relationship between panic attacks and chemical dependencies. Addict Behav 1989; 14: 53–60.

Dixon L. Dual diagnosis of substance abuse in schizophrenia: prevalence and impact on outcomes. Schizophrenia Res 1999; 35: S93–S100.

Ether Ashton C. Pharmacology and effects of cannabis: a brief review . Br J Psych 2001; 178: 101–6.

Frank E, Shear MK, Rucci P, Cryanowski JM, Endicott J, Fagiolini A, Grochocinski VJ, Honk P, Kupfter Dj, Maser JD, Cassano GB. Influence of panic-agoraphobic spectrum symptoms on treatment response in recurrent major depression. Am J Psychiatry 2000; 157: 1101–7.

Gossop M, Darke S, Griffiths P, Hando J, Powis B, Hall W, Strang J. The Severity of Dependence Scale: psychometric properties of the SDS in English and Australian samples of heroin, cocaine and amphetamine users. Addiction 1995, 90: 607–14.

Herzog DB, Keller MB, Sacks NR, Yeh CJ, Lavori P. Psychiatric comorbidity in treatment-seeking anorexic and bulimic. J Am Acad Child Adolesc Psychiatry 1992; 31: 810–18.

Himmelhoch JM. Social anxiety, hypomania and the bipolar spectrum: data, theory and clinical issues. J. Affect Disord 1998; 50: 203–13.

Khantzian BJ. The self-medication hypothesis of addictive disorders: focus on heroin and cocaine dependence. Am J Psychiatry 1985; 142: 1259–64.

Masse LC, Tremblay RE. Behaviour of boys in kindergarten and the onset of substance abuse during adolescence. Arch Gen Psychiatry 1997; 54: 62–8.

Mcelroy S, Altshuler LL, Suppes T, Keck P Jr, Frye MA, Denicoff KD, Nolen WA, Kupka RW, Leverich GS, Rochussen JR, Rush AJ, Post RM. Axis I psychiatry comorbidity and its relationship to historical illness variables in 288 patients with bipolar disorder. Am J Psychiatry 2001; 158: 3. 420–6.

McLellan AT, Luborsky L, Woody GE, O'Brien CP. An improved diagnostic evaluation instrument for substance abuse patients. The Addiction Severity Index. Journal of Nervous and Mental Disease 1980, 168: 26–33.

Mirin SM, Weiss R, Michael J, Griffin M. Psychopathology in substance abusers: diagnosis and treatment. Am J Drug Alcohol Abuse 1988; 14: 139–57.

Moran C. Depersonalization and agoraphobia associated with marijuana use. Br J Med Psychol 1986; 59: 187–96.

Nunnally JC, Bernstein IH. Psychometric Theory. Maidenhead: McGraw Hill Inc, 1994.

Page RM. Shyness as a risk factor for adolescent substance use. J Soc Health 1989; 59: 432–35.

Perretta P, Akiskal HS, Nisita C, Lorenzetti C, Zaccaguini E, Della Santa M, Cassano GB. The high prevalence of bipolar II and associated cyclothymic and hyperthymic temperaments in HIV- patients. J Affect Disord 1998; 50: 215–24.

Pini S, Dell'Osso L, Mastrocinque C, Marcacci G, Papasoghi A, Vignolis, Pallanti S, Cassano G. Axis I comorbidity in bipolar disorder with psychotic features. Br J Psychiatr 1999; 175: 467–71.

Price WA, Giannini AJ. Phenilcyclidine and 'crack'-precipitated panic disorder. Am J Psychiatry 1987; 144: 686–7.

Regier DA, Farmer ME, Rae DS, Locke BZ, Keith SJ, Judd LL, Goodwin FK, Comorbidity of mental disorders with alcohol and other drug abuse. Results from the Epidemiological Catchment Area (Eca) Study. Jama 1990; 264: 2511–8.

Rounsaville BJ, Weissmann MM, Crits-Christoph K, Kleber HD. Diagnosis and symptoms of depression in opiate addicts: course and relationship to treatment outcome. Arch Gen Psychiatry 1982; 39: 151–6.

Rucci P, Maser JD. Instrument development in the Italy-USA

Collaborative Spectrum Project. Epidemiol Psichiatr Soc 2000; 9: 249–56.

Sonne SC, Brady KT, Morton A. Substance abuse and bipolar affective disorder. J Nerv Ment Dis 1994; 182: 349–52.

Wilson JJ, Levine FR. Attention deficit hyperactivity disorder (ADHD) and substance use disorders. Curr Psychiatry Rep 2001; 3: 497–506.

Correspondence: Alfredo Sbrana, Department of Psychiatry, Neurobiology, Pharmacology, Biotechnology University of Pisa, Via Roma 67, 56100 Pisa, Italy.
Telephone: (+39) 050-835411.
Fax: (+39) 050-21581.
Email alfredosbrana@virgilio.it.

Appendix

Discriminant items of the SCI-SUBS

15	After 15 years of age, have you ever used pain killers?
25	After 15 years of age, have you ever used barbiturates?
38	Now I want to ask you whether after 15 years of age you have ever tried cocaine and crack.
43	Now I want to ask you whether after 15 years of age you have ever tried other substances.
48	From 5 to 15 years of age did you sniff or breathe gasoline, nail polish, paint, glue or other solvents?
49	From 5 to 15 years of age, did you ever take amphetamine, ecstasy, cocaine and other stimulants or heroin?
49a	From 5 to 15 years of age be restless, jumping, running, climbing, not to be able to remain calm and seated (for instance to listen to a fairy tale), more than other children of your age?
51	After using caffeine, tobacco, alcohol, drugs or medications, did you ever have a different reaction than other people?
56	Did you ever noticed that your use of caffeine, alcohol, cigarettes, medications or any of the drugs mentioned so far improve your overall functioning?
61	Have you ever thought about caffeine, alcohol, cigarettes, medications or any of the other drugs mentioned above as your life would be unbearable without them?
69	Did you ever use caffeine, tobacco, alcohol, drugs or medications in order to improve your mood (for example to feel less irritable, angry or sad)?
71	Did you ever use caffeine, tobacco, alcohol, drugs or medications in order to induce sleep in order to escape from your troubles?
76	Did you ever use caffeine, tobacco, alcohol, drugs or medications in order to feel capable of doing things successfully?
77	Did you ever use caffeine, tobacco, alcohol, drugs or medications in order to alleviate pervasive tiredness?
78	Did you ever use caffeine, tobacco, alcohol, drugs or medications in order to alleviate boredom?
80	Did you ever use caffeine, tobacco, alcohol, drugs or medications in order to feel better after something bad happens?
83	Did you ever use caffeine, tobacco, alcohol, drugs or medications in order to tolerate a pervasive pain or other physical symptoms?
86	Did you ever use caffeine, tobacco, alcohol, drugs or medications in order to escape from reality?
90	Did you ever use caffeine, tobacco, alcohol, steroids, drugs or medication in order to enhance your sexual performance?
91	Did you ever use caffeine, tobacco, alcohol, steroids, drugs or medication in order to improve your ability to speak in public?
95	Did you ever use caffeine, tobacco, steroids, alcohol, drugs or medications in order to increase your self confidence with the opposite sex?
98	Did you ever use caffeine, tobacco, steroids, alcohol, drugs or medications in order to be able to participate at parties, in group games or group sports?
107	In order to control your weight, did you ever take substances to make you vomit?
116	Did you ever use alcohol, medications out of prescription or drugs in order to get in touch with the spirit world?
118	Did you ever use alcohol, medications out of prescription or drugs in order to expand your mind or enhance your spirituality?
122	Did you ever notice or did anyone ever tell you that you enjoy doing something dangerous like driving fast on a dangerous route?
123	Did you ever notice or did anyone ever tell you that you usually find exciting what others would find frightening?
129	If you have ever used any of the following substances, because of their use, did you ever notice or did anyone ever tell you that your school performances was poor?

132   If you have ever used any of the following substances, because of their use, did you ever notice or did anyone ever tell you that you should quit taking drugs because you were a danger to yourself or others?

133   If you have ever used any of the following substances, because of their use, did you ever notice or did anyone ever tell you that you were at risk of having (or continue to have) legal problems?

134   During the times when you most heavily used alcohol, caffeine, cigarettes, drugs or medications, did you ever have difficulty quitting or reducing their use?

140   Did you ever notice or did anyone ever tell you that you used alcohol, caffeine, tobacco, drugs or medications for longer periods or in greater quantities than you planned to?

144   Taking drugs or medications without prescriptions, did you ever notice that you need higher or more frequent doses to get the effect that you wanted?

148   Did you ever notice or did anyone ever tell you that when you used substances your behaviour was improper, strange or out of character?

150   Did you ever notice or did anyone ever tell you that when you used substances you could not think straight or used poor judgment (for example arguing with the police)?