Personality

Personality Profile in Young Current Regular Users of Cocaine

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This study examined the relationship between the personality profile of a sample of cocaine users and the presence of Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) diagnoses and the severity of substance use. A total of 120 participants (46 women, mean age: 23.8 years) from nonclinical settings in Barcelona, Spain, 2003–2006, were assessed using the Psychiatric Research Interview for Substance and Mental Disorders (PRISM) and the Temperament and Character Inventory-Revised version (TCI-R). Most of the participants had completed more than primary education, nearly half of them were employed, one third lived with parents, and near a quarter had some criminal record. Snorting was the main route of cocaine administration. They were using a mean of 1.82 substances. Cocaine users with low Self-Directedness, low Cooperativeness, and high Self-Transcendence scores in the TCI-R, with high severity of substance use and psychiatric comorbidity, would be suggestive of a possible specific phenotype. The limitations and implications of the study are discussed.

Keywords Cocaine use; personality dimensions; phenotype; TCI-R; psychiatric comorbidity

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Introduction

Personality disorders are frequent among substance abusers in both clinical (Craig, 2000; Verheul, 2001) and nonclinical samples (Compton, Conway, Stinson, Colliver, and Grant, 2005; Franques, Auriacombe, and Tignol, 2000; Grant et al., 2004). Prevalence rates of personality disorders among individuals with substance use disorders are about four times higher than in the general population (estimates of the overall Axis II prevalence range from 34.8% to 73.0% [median 56.5%]; Grant, Stinson, Dawson, Chou, and Ruan, 2005; Kokkevi, Stefanis, Anastasopoulou, and Kostogianni, 1998). Several studies have shown that greater severity of psychopathology and drug use are associated with poorer treatment outcomes among cocaine users (Carroll, Power, Bryant, and Rousanville, 1993), yet findings specifically regarding the relationship of antisocial personality disorder with treatment outcomes for opioid or cocaine users are controversial (Cacciola, Alterman, Rutherford, McKay, and Mulvaney, 2001; Messina, 2003; Grella, 2005; McKay, Alterman, Cacciola, Mulvaney, and O’Brien, 2000).

Personality disorders can be assessed from a categorical approach (i.e., based on Diagnostic and Statistical Manual of Mental Disorders [DSM-IV] criteria) or from a dimensional approach (finding a personality profile based on specific traits). According to DSM-IV diagnosis, an important ongoing controversy concerns the question whether and to what extent Axis II diagnoses in substance users are substance-related artifacts reflecting the characteristic lifestyles of addictive individuals rather than true personality disorders with an enduring course independent of Axis I symptoms. Clinical diagnoses from a categorical approach produce dichotomized outcomes and dichotomization reduces statistical power and decreases accuracy (Skilling, Harris, Rice, and Quinsey, 2002).

On the other hand, dimensional scales consider that a continuum is present between psychopathology and the normal range. Personality disorders are seen here as maladaptive extremes of normal personality dimensions. According to the theoretical background underlying TCI, character scores could be used to estimate the probability for the presence or absence of personality disorders whereas temperament scores could be used for differential diagnoses (Svrakic, Whitehead, Przybeck, and Cloninger, 1993). From the dimensional approach, the most salient variables that have been identified to characterize drug users in general are sensation seeking (Zuckerman, 1974), novelty seeking, (Cloninger, 1987), impulsivity (Patkar et al., 2003), and harm avoidance (Wills, Vaccaro, and McNamara, 1994). In general, higher levels of these dimensions have been found in substance users than in the controls except for harm avoidance, because some studies have reported lower levels (Wills, Vaccaro, and McNamara); and others, higher levels (de Wit and Bodker, 1994; Le Bon et al., 2004).

The Temperament and Character Inventory (TCI), developed by Cloninger and his coworkers based on his unified biosocial theory of personality, is one of the most widely used questionnaires that assesses personality traits from a dimensional approach (Cloninger, Przybeck, Svrakic, and Wetzel, 1994). The most prominent characteristic of this questionnaire is the large number of clinical and genetic studies, which validate the TCI’s results (Ando et al., 2004; Gillespie, Cloninger, Heath, and Martin, 2003; Hirano et al., 2002; Kim, Kim, Lee, Kim, and Kim, 2006). In 1999, a revised version was proposed by Cloninger (TCI-R), and several validation studies have been performed confirming the proposed structure (Hansen, Delhez, Cloninger, 2005; Pelissolo et al., 2005).

The study of links between personality and pattern of drug use is interesting in order to design optimal strategies in preventive care. Because personality may be associated with specific neurobiological mechanisms (Cloninger, 1987), it could also serve to better understand the complexities of addictive behaviors. Moreover, as a consequence of the
multifactorial nature of drug abuse, recent research has strived to identify more homogenous and precise phenotypes (Conway, Swendsen, Rounsaville, and Merikangas, 2006). It has become increasingly clear that typical phenotypes (including any use of a drug, drug seeking, regular or heavy use, inappropriate use of a drug, drug abuse, and drug dependence) are not able to adequately describe, discriminate, and predict the complex nature and course of drug abuse. Kirisci et al. (2006) considered developing a phenotype that reflects severity of substance use disorder. In this area, personality dimensions, severity of substance use, and their relationship, could be considered as a potential drug abuse phenotype.

The present study aims to describe the personality profile of a sample of young cocaine users as assessed with the TCI-R (Temperament and Character Inventory-Revised version) and to analyze whether their profiles differ if DSM-IV diagnoses are present and according to severity of drug use. This information could possibly shed some light on the description of a specific phenotype of severe cocaine users. In particular, the study is intended to answer four questions: (a) Is personality profile of young cocaine users different from personality profile in general population? (b) Is personality profile of young cocaine users with personality disorders different from that of young cocaine users without personality disorders? (c) Is personality associated with severity of drug use? (d) Is personality associated with lifetime presence of other Axis I disorders?

**Material and Methods**

**Subjects**

Young adult cocaine users were recruited from the ITINERE project cohort of current regular users of cocaine that started by the end of 2003 until early 2006. Inclusion criteria were age (18–30 years), resident in Barcelona, and current (having used cocaine within the 90 days prior to the interview) and regular use (having taken it at least 52 days over the 12 months prior to the interview, in which heroin was taken no more than 12 days). For recruitment a chain referral technique with different starting points at outdoor scenarios was used.

To be included in ITINERE a candidate was evaluated through a brief Selection Questionnaire and, if the inclusion criteria were met, the subject passed on to the first stage of the evaluation in which the objectives and procedures of the study were explained, as were the participation incentives (20 Euro per interview completed). Then the subject signed an informed consent after which the Baseline Questionnaire was administered through a face-to-face interview. After the interview, 80% of the subjects were randomly assigned to the mental health study and given an appointment for their second interview within 30 days of the first evaluation, in which the Psychiatric Research Interview for Substance and Mental Disorders (PRISM) (Hasin et al., 1996, 2006) and the revised version of the TCI-R (Gutierrez-Zotes, Sangorrin, Martin-Santos, Torres, and Torrens, 2004) were completed (see below). The Institutional Bioethics Committee approved the study design.

A total of 120 individuals completed the study. Of them, 38.3% were women. The mean age was 23.8 years ($SD = 3.4$; range 18–31). Most of the participants had never been married (85%). Most individuals (96.7%) had completed more than primary education (46.6% were university undergraduates or graduates). Nearly 47% were currently employed, and 15% were students. Up to 53.3% lived with friends (23.3% of the total sample were squatters), 33.3% were still living with parents, 10% lived with a partner, and 3.3% lived alone. Nearly 21% had at some time been held at a police station or had been in jail or prison overnight or longer (criminal record).
These individuals had used cocaine within the 90 days prior to the interview being snorting the main route of cocaine administration (91.7%), followed by intravenous route (4.2%), and only 2.2% smoked it. Nevertheless, 24 individuals (20%) had smoked cocaine at some time. It is difficult to know how representative they are of the Spanish or Barcelona cocaine users as no data about them are available.

**Measures**

**PRISM**

The substance- and non-substance-use comorbid disorders were diagnosed using the Spanish version of the PRISM (Torrens, Serrano, Astals, Pérez-Domínguez, and Martín-Santos, 2004). The PRISM is a semistructured clinician-administered interview that measures the major Axis I DSM-IV diagnoses of alcohol, drug, and psychiatric disorders and two Axis II disorders: Borderline (BPD) and Antisocial Personality Disorders (APD). In the Spanish version an extra section for attention-deficit hyperactivity disorder (ADHD) was added. Diagnoses are made using two time frames: “current” (criteria were met within the past year) and “past” (criteria were met before the previous 12 months). Lifetime prevalence, taking into account both current and past diagnoses, was used to present the frequency of substance use disorders, non-substance-use disorders, and psychiatric comorbidity. In addition to the substance abuse and dependence diagnoses, the PRISM differentiates “pathological use” (chronic intoxication: substance use 4 or more days a week for 3 or more weeks; and/or binges: 3 or more consecutive days of continuous substance use) from “occasional use” (substance use less than 4 days a week, unless substance was used in a binge pattern). In the present study opiates refers to a group made up of heroin, methadone, and opiate painkillers. The interview was administered by an experienced psychologist who had received PRISM training (Table 1).

**TCI-R**

The revised version of TCI-R is a self-administered 5-point scale (from Strongly disagree to Strongly agree) to rate the 240 items that measure seven independent dimensions of personality: four Temperament dimensions and three of Character (Table 1).

Temperament refers to automatic emotional responses to experience that are moderately inheritable (i.e., genetic, biological) and stable throughout life. Temperament manifests itself early in life and involves preconceptual or unconscious learning. Character represents conceptual or insight-based learning of self-concepts that mature in adulthood and are not linked to particular biological processes.

The Temperament dimensions are: (1) Novelty-Seeking (NS), reflecting behavioral activation; (2) Harm Avoidance (HA), reflecting behavioral inhibition; (3) Reward Dependence (RD), reflecting variations in social attachment and affiliation; and (4) Persistence (P), reflecting the ability to maintain a behavior in an extinction context.

The Character dimensions include: (5) Self-Directedness (SD), which refers to the ability of an individual to control, regulate, and adapt his or her behavior to fit the situation in agreement with individually chosen goals and values; (6) Cooperativeness (C), which was formulated to account for individual differences in identification with and acceptance of other people; (7) Self-Transcendence (ST), which is a character associated with spirituality and generally refers to identification with everything conceived as an essential and consequential part of a unified whole.
<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Areas covered</th>
<th>Number of items</th>
<th>Skills/abilities</th>
<th>Average time needed to respond</th>
<th>Advantages</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperament and Character Inventory-Revised (TCI-R)</td>
<td>Personality self-administered questionnaire</td>
<td>Temperament dimensions: Novelty Seeking, Harm Avoidance, Reward Dependence, Persistence. Character dimensions: Self-Directedness, Cooperativeness, Self-Transcendence.</td>
<td>240</td>
<td>Reading skills</td>
<td>30 minutes</td>
<td>Easy to respond. 5-point Likert scale (1, definitely false to 5, definitely true). Instrument validated in Spanish population.</td>
<td></td>
</tr>
<tr>
<td>Psychiatric Research Interview for Substance and Mental Disorders (PRISM)</td>
<td>Semistructured interview for diagnosing disorders according to DSM-IV criteria</td>
<td>SUD (substance use disorders): Mood disorders, Anxiety disorders, Psychotic disorders, Eating disorders, TDAH. 2 personality disorders (borderline and antisocial). Spanish speaker</td>
<td>90–120 minutes</td>
<td></td>
<td>PRISM: - Obtains a history of heavy drug and alcohol use, and lifetime timeline of periods of heavy substance use and abstinence. - Assesses lifetime and current psychiatric symptoms and disorders. - Provides guidelines to assist in differentiating substance-induced from primary symptoms, and to determine the temporal relationship of psychiatric symptoms and substance use. - Allows for interviewer or computer diagnosis.</td>
<td>Its administration is relatively lengthy.</td>
<td></td>
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</tbody>
</table>
In the present study, we used the TCI-R in its Spanish translation, the retrotranslation having been accepted by the author. This version had been standardized in a sample of 400 volunteers, 50% women, aged 18 to 65, representative of the Spanish general population to obtain a mean of 50 and a standard deviation (SD) of 10 (Gutierrez-Zotes, 2004).

Data Analysis

All the statistical analyses were done with SPSS 12.0. Prior to statistical analyses, all of the variables were examined through various programs for accuracy of data entry, missing values, and fit between their distributions and assumptions of multivariate analysis. Normality and linearity were checked and found to be satisfactory. Comparisons were carried out using chi-square and Fisher Exact tests for categorical variables and analyses of variance (ANOVA) for continuous variables. The Mann-Whitney U test was used when the size of a comparison group was too small to assume normality.

The mean scores in the total sample were computed for each of the seven dimensions of the TCI-R, and then compared with those from the reference population. Logistic regressions were done with all dimensions as independent variables in a backwards step process to determine the association of these dimensions with having or not having the different disorders (dependent variable). The Hosmer-Lemeshow statistic was used to assess the goodness of fit of logistic regression models. Odds ratios and 95% confidence intervals (CIs) were reported for all predictors significant at \( p < .05 \). Likewise, statistical significance was determined at \( p < .05 \) for all analyses.

To study the association between TCI-R dimensions and severity of substance use, three groups of substance use were established: nonpathological use (neither chronic intoxication nor binges, or no use), pathological use or substance abuse, and substance dependence. As only two subjects did not have any pathological use of cocaine, they were included in neither univariate nor multivariate analyses. To be able to analyze other drug severity with a multivariate approach (logistic regression), we subsumed pathological use or abuse and dependence in a unique category for alcohol and opiates. Other substances only had one statistically different dimension and a multivariate approach was not implemented.

Results

Patterns of Drug Use and Substance Use Disorders

Only 22 subjects (18.3%) did not meet criteria for any substance use diagnosis; the rest were diagnosed with abuse or dependence on some substance. The mean number of substance use diagnoses per individual was 1.82 (SD = 1.27). Specifically, 82 subjects (68.3%) had at least used cocaine, cannabis, and alcohol; 25 subjects (20.8%) had used cocaine and cannabis but not alcohol and possibly other different substances; and 11 subjects (9.2%) had used cocaine and alcohol but not cannabis. Disregarding these overlapping subgroups of substance users, cocaine dependence was diagnosed in 77 subjects (64.2%), whereas 41 subjects (34.2%) presented pathological use or cocaine abuse. Cannabis abuse or pathological use of cannabis was also diagnosed commonly (72.5%), followed by alcohol abuse or pathological use (58.3%). For the rest of substances, see Table 2.

Non-substance-use Disorders

A total of 50 subjects (41.7%) were diagnosed with a lifetime Axis I disorder other than substance use disorders and 15 subjects (12.5%) with a lifetime antisocial or borderline
Table 2

Personality dimensions in substance use disorders: comparison of subjects without pathological use or no use, subjects with pathological use/substance abuse and subjects with substance dependence

<table>
<thead>
<tr>
<th></th>
<th>Temperament dimensions</th>
<th>Character dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NS* mean (SD)</td>
<td>HA* mean (SD)</td>
</tr>
<tr>
<td></td>
<td>N (%)</td>
<td></td>
</tr>
<tr>
<td>Cocaine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonpathol use</td>
<td>2 (1.7)†</td>
<td></td>
</tr>
<tr>
<td>Abuse/pathol use</td>
<td>41 (34.2)</td>
<td>61.8 (7.2)</td>
</tr>
<tr>
<td>Dependence</td>
<td>77 (64.2)</td>
<td>64.4 (9.2)</td>
</tr>
<tr>
<td>Cannabis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonpathol use</td>
<td>11 (9.2)</td>
<td>61.5 (7.5)</td>
</tr>
<tr>
<td>Abuse/pathol use</td>
<td>87 (72.5)</td>
<td>63.7 (8.9)</td>
</tr>
<tr>
<td>Dependence</td>
<td>22 (18.3)</td>
<td>62.8 (7.8)</td>
</tr>
<tr>
<td>Alcohol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonpathol use</td>
<td>27 (22.5)</td>
<td>63.8 (8.6)</td>
</tr>
<tr>
<td>Abuse/pathol use</td>
<td>70 (58.3)</td>
<td>63.5 (8.2)</td>
</tr>
<tr>
<td>Dependence</td>
<td>23 (12.9)</td>
<td>62.3 (10.1)</td>
</tr>
<tr>
<td>Stimulants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonpathol use</td>
<td>62 (51.7)</td>
<td>62.8 (8.7)</td>
</tr>
<tr>
<td>Abuse/pathol use</td>
<td>31 (25.8)</td>
<td>64 (9.1)</td>
</tr>
<tr>
<td>Dependence</td>
<td>27 (22.5)</td>
<td>64.1 (8)</td>
</tr>
<tr>
<td>Hallucinogens†</td>
<td></td>
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<tr>
<td>Nonpathol use</td>
<td>65 (54.2)</td>
<td>62.7 (8.5)</td>
</tr>
<tr>
<td>Abuse/pathol use</td>
<td>41 (34.2)</td>
<td>63.2 (8.7)</td>
</tr>
<tr>
<td>Dependence</td>
<td>14 (11.7)</td>
<td>66.7 (8.9)</td>
</tr>
<tr>
<td>Opiate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonpathol use</td>
<td>107 (89.2)</td>
<td>63 (8.5)</td>
</tr>
<tr>
<td>Abuse/pathol use</td>
<td>2 (1.7)†</td>
<td>65.2 (9.2)</td>
</tr>
</tbody>
</table>

*NS, novelty seeking; HA, harm avoidance; RD, reward dependence; P, persistence; SD, self-directedness; C, cooperativeness; ST, self-transcendence.
**ANOVA p < 0.05
†TCI-R values for cells under 5 subjects are not provided.
‡Hallucinogens include acid, ecstasy, MDA, MDMA, and MMDA.
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Table 3
Description of the TCI-R dimensions by PD*1 (DSM-IV criteria), and corresponding ORs*

<table>
<thead>
<tr>
<th></th>
<th>Total n = 120</th>
<th>PD n = 15</th>
<th>non-PD n = 105</th>
<th>OR (CI 95%)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean (SD)</td>
<td>mean (SD)</td>
<td>mean (SD)</td>
<td></td>
</tr>
<tr>
<td><strong>Temperament</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Novelty Seeking</td>
<td>63.4 (8.6)**</td>
<td>68.8 (10.7)</td>
<td>62.6 (8.1)</td>
<td>1.09 (1.01–1.16)***</td>
</tr>
<tr>
<td>Harm Avoidance</td>
<td>49.7 (10.3)</td>
<td>56.3 (11.9)</td>
<td>48.8 (9.7)</td>
<td>1.07 (1.01–1.12)***</td>
</tr>
<tr>
<td>Reward Dependence</td>
<td>48.6 (9.8)</td>
<td>45.8 (13.6)</td>
<td>49.0 (9.1)</td>
<td>0.96 (0.91–1.02)</td>
</tr>
<tr>
<td>Persistence</td>
<td>45.8 (9.2)**</td>
<td>38.1 (10.2)</td>
<td>46.9 (8.5)</td>
<td>0.89 (0.82–0.95)***</td>
</tr>
<tr>
<td><strong>Character</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-directedness</td>
<td>41.9 (10.4)**</td>
<td>32.8 (13.8)</td>
<td>43.2 (9.1)</td>
<td>0.90 (0.85–0.96)***</td>
</tr>
<tr>
<td>Cooperativeness</td>
<td>42.3 (9.4)**</td>
<td>36.7 (11.5)</td>
<td>43.1 (8.9)</td>
<td>0.92 (0.87–0.98)***</td>
</tr>
<tr>
<td>Self-transcendence</td>
<td>53.8 (10.5)**</td>
<td>55.4 (11.9)</td>
<td>53.6 (10.3)</td>
<td>1.01 (0.96–1.06)</td>
</tr>
</tbody>
</table>

*PD, personality disorders; OR, odds ratio estimate; CI, confidence interval.
**p < .05, related to the general population scores.
***p < 0.05.

1Only two PDs are included in this study: APD (antisocial personality disorder) and BPD (borderline personality disorder).

personality disorder (APD or BPD). In Axis I, mood disorders were most common (27.5%), among which major depression was 18.3%, followed by anxiety disorders (15%), psychotic disorders and eating disorders (5%, each), and ADHD (2.5%). With regard to personality disorders, APD was diagnosed in 10% of subjects; and BPD, in 4.2%. Two subjects met criteria for both personality disorders. Only 18 subjects (15%) did not meet the criteria for any DSM-IV disorder.

**Personality**

TCI-R General Description. The mean scores and standard deviations of the seven dimensions of the TCI-R are shown in Table 3. No differences by gender were observed. Compared to the reference population (mean 50; SD =10), higher mean scores were observed for the Novelty-Seeking and Self-Transcendence dimensions, whereas Persistence, Self-Directedness, and Cooperativeness were lower than the mean score.

TCI-R and Personality Disorders. When compared with DSM-IV personality disorders diagnoses, TCI-R showed different profiles for subjects with personality disorders (12.5%) and for those without them (Table 3). Subjects with personality disorders were higher on Novelty-Seeking and Harm Avoidance, but lower on Persistence, Self-Directedness, and Cooperativeness. As nonparametric statistical methods gave equivalent results to parametric methods, to make interpretation easier, odd ratios (ORs) of personality disorders presence for each TCI-R dimension are shown in Table 3.

When all dimensions were considered in logistic regression models adjusted for age and gender with personality disorders as dependent variable, the model chosen was the one including Persistence and Self-Directedness (Table 4).
**Table 4**

Multivariate association adjusted for age and gender between TCI-R dimensions and the presence of mood, psychotic, substance use, and personality disorders (according to DSM-IV criteria)

<table>
<thead>
<tr>
<th>PD*</th>
<th>SUD*</th>
<th>Mood disorders</th>
<th>Psychotic disorders</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td><strong>Temperament dimensions</strong></td>
<td></td>
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</tr>
<tr>
<td>NS* OR (CI 95%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HA* OR (CI 95%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RD* OR (CI 95%)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>P* OR (CI 95%)</td>
<td>0.90 (0.83–0.98)**</td>
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</tr>
<tr>
<td><strong>Character dimensions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SD* OR (CI 95%)</td>
<td>0.92 (0.87–0.99)**</td>
<td>0.91 (0.86–0.96)**</td>
<td></td>
</tr>
<tr>
<td>C* OR (CI 95%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ST* OR (CI 95%)</td>
<td>1.05 (1.00–1.11)**</td>
<td>1.11 (1.02–1.22)**</td>
<td></td>
</tr>
<tr>
<td>χ² H-L (p)*</td>
<td>10.55 (0.23)</td>
<td>6.49 (0.59)</td>
<td>4.98 (0.76)</td>
</tr>
</tbody>
</table>

*PD, personality disorders; SUD, substance use disorders; NS, novelty seeking; HA, harm avoidance; RD, reward dependence; P, persistence; SD, self-directedness; C, cooperativeness; ST, self-transcendence; χ² H-L, Hosmer-Lemeshow test (p > .05); OR, odds ratio estimate; CI, confidence interval.

** (p < .05)

1Only two PDs are included in this study: APD (antisocial personality disorder) and BPD (borderline personality disorder).

**TCI-R and Substance Use Disorders.** Table 2 shows the differences in TCI-R dimensions mean values according to severity of drug use. In general, Self-Transcendence increases with increased drug severity (significant for cocaine and hallucinogens), whereas the other dimensions (Reward Dependence, Persistence, Self-Directedness, and Cooperativeness) decrease with higher drug use severity. In multivariate analysis, severity of cocaine use was related with Self-Transcendence (OR, 1.072; 95% CI, 1.024–1.122) and also with Cooperativeness (OR, 0.943; 95% CI, 0.900–0.987). Severity of alcohol use was related only with Reward Dependence (OR, 0.930; 95% CI, 0.882–0.980) and severity of opiates use was related with Persistence (OR, 0.921; 95% CI, 0.854–0.994), Self-Directedness (OR, 0.921; 95% CI, 0.860–0.987), and Cooperativeness (OR, 1.076; 95% CI, 1.003–1.155).

On the one hand, Self-Transcendence was the only dimension associated with any substance use disorder diagnoses in a multivariate model adjusted for age and gender (Table 4), and on the other hand, with the number of substance use diagnoses (β = 0.03; 95% CI, 0.01–0.05), so the higher the number of substance use disorders, the higher the Self-Transcendence score.

**TCI-R and Non-substance-use Disorders.** Mood disorders were related with Harm Avoidance (OR, 1.053; 95% CI, 1.011–1.109), Self-Directedness (OR, 0.907; 95% CI, 0.863–0.953), and Self-Transcendence (OR, 1.047; 95% CI, 1.007–1.089). Whereas Self-Directedness and Self-Transcendence were the dimensions associated with psychotic disorders (OR, 0.932; 95% CI, 0.870–0.999; and OR, 1.108; 95% CI, 1.026–1.197, respectively).

In a model with mood disorders as dependent variable, Self-Directedness is the only dimension that remains statistically significant when all the univariate significant dimensions
are included. In a model with psychotic disorders as dependent variable, Self-Transcendence is the only dimension that remains statistically significant (Table 4).

Other Variables. In corresponding logistic regressions, Reward Dependence and Self-Transcendence were also the dimensions related to presence of a criminal record (OR, 0.93; 95% CI, 0.88–0.98; and OR, 1.07; 95% CI, 1.02–1.13, respectively), so subjects who had ever been arrested or in jail scored lower in Reward Dependence and higher in Self-Transcendence dimension.

None of the seven TCI-R dimensions were related with having ever received drug or psychological treatment nor with the age of onset of cocaine use.

Discussion

In our sample of young users of cocaine the personality profile was significantly different from the normative data in the reference population. Furthermore, it was different according to the presence of personality disorders following DSM-IV criteria. Finally, personality profile was associated to the severity of drug use and with lifetime presence of other Axis I disorders.

The study provides a first approach to the personality disorders arena from a dimensional view using the most recent version of TCI (a validated tool that has shown its usefulness in populations of substance users) to figure out relationships between different personality dimensions in young cocaine users. It is noteworthy that the present work differs notably from earlier studies of psychopathology among cocaine users because it has focused specifically on cocaine users who were recruited from non-treatment settings. As such, the findings provide additional perspective on people who are engaged in a form of drug use that is now entrenched in the street drug scene. However, caution is needed when extrapolating these data to other samples of cocaine users. It is crucial to keep in mind that the data are cross-sectional, and it is not possible to know to what extent the personality traits have been influenced by drug use, even though to a large degree they are inherent to the person.

One of the main findings was that the mean Novelty-Seeking, Persistence, Self-Directedness, Cooperativeness, and Self-Transcendence scores of cocaine users were different from the general population. In part, these data are consistent with the results obtained in a nonclinical sample of 98 substance users (students) which showed that the personality trait of Novelty-Seeking was associated to the consumption of the most illicit and deviant substances, such as heroin or cocaine (Chakroun, Doron, and Swendsen, 2004). Moreover, higher Novelty-Seeking and lower Self-Directedness were found in a study with 108 female addicts (alcohol, heroin, amphetamines, and/or benzodiazepines) when compared to the general population, although, in contrast to our results, they also found higher Harm Avoidance scores (Gerdner, Nordlander, and Pedersen, 2002). Also, a similar profile has been described in a recent study on Spanish cocaine users seeking treatment (Pedrero, 2006). As has been widely documented in the literature, Novelty-Seeking is the dimension that consistently shows higher scores in drug use populations, suggesting behavioral disinhibition (i.e., sensation seeking, novelty seeking, impulsivity, and deviance proneness) as an etiologic factor related to substance abuse (Conway, Kane, Ball, Poling, and Rounsaville, 2003).

Special attention was devoted to the study of the association between two personality disorder diagnoses defined by DSM-IV (antisocial and borderline) and temperament and character dimensions among cocaine users, because these disturbances have been abundantly cited among drug users. Although only 15 subjects received a personality disorder
diagnosis and the characteristics of this group made it possible to find some differences, caution is recommended when interpreting these results. These results partially agree with the findings of a previous study (Gutierrez, Sangorrin, Martin-Santos, Torres, and Torrens, 2002), in which illegal substance users with a personality disorders scored higher on Harm Avoidance and lower on Self-Directedness and Cooperativeness. Moreover, our findings disagree with others in which no Novelty-Seeking differences were found in the TCI profile in terms of presence personality disorders or not (Fassino, Abbate, Delsedime, Rogna, and Boggio, 2004).

Although Svrakic (Svrakic, Whitehead, Przybeck, and Cloninger, 2002) postulates that extreme character traits (specifically, low Self-Directedness, low Cooperativeness, and high Self-Transcendence) are pathognomonic of personality disorders in the general population, in our sample of young cocaine users only low scores in Self-Directedness and Cooperativeness have distinguished those with personality disorders. This fact may suggest that high scores in Self-Transcendence are not so relevant for a personality disorder diagnosis, in a population of substance users in all of whom Self-Transcendence is high.

Research comparing the personality traits of different main “drug of abuse” subgroups has found discrepancies: For example, some studies have considered heroin users as being more impulsive and aggressive than cocaine users (Donovan, Soldz, Kelley, and Penk, 1998; McCormick, Dowd, Quirk, and Zegarra, 1998), whereas others have not been able to differentiate cocaine users from users of either heroin or cannabis on such traits (Craig, 1988; Greene, Adyanthaya, Morse, and Davis, 1993). Of the many potential explanations for the inconsistencies, severity of substance use is considered a likely contributor to the confusion (Conway, Kane, Ball, Poling, and Rounsaville, 2003). Moreover, there are some studies supporting the notion of a continuum of personality risk associated to substance abuse severity (Conway et al., 2002; McGue, Slutske, Taylor, and Iacono, 1997; Windle, 1991). Although many studies defined substance abuse severity in terms of the number of dependence symptoms for a particular substance, we considered a wider ranging categorization, taking into account not only dependence but also abuse and pathological use, for every substance. Although higher severity of cocaine use was associated with lower Cooperativeness and higher Self-Transcendence scores, these results coincide only partially with those obtained by Le Bon et al. (2004), since they also found association with Novelty-Seeking, Harm Avoidance and Self-Directedness in patients with heroin or alcohol abuse.

As regards the relationship between Axis I disorders (according to DSM-IV) and dimensions of TCI-R, our findings using a univariate approach are consistent with previous studies in which high scores of Harm Avoidance and low scores of Self-Directedness were found in depressed patients (Arkar et al., 2005; Jylhä et al., 2005; Naito, Kijima, and Kitamura, 2000; Smith, Duffy, Stewart, Muir, and Blackwood, 2005). Although several studies have suggested that Harm Avoidance has traitlike properties (Farmer et al., 2003; Richter, Eisemann, and Richter, 2000), it is also known that Harm Avoidance scores are positively correlated with depressed mood at the time of personality assessment (Farmer et al., 2003; Hirano et al., 2002). In the present study, these differences remained even when controlling for current presence of mood disorders. The relationship between mood disorders and Harm Avoidance scores could be addressed in future longitudinal follow-up studies. On the other hand, little is known about personality dimensions and psychotic disorders. In the present study, higher scores of Self-Transcendence were found in subjects with psychotic disorders, raising interesting questions as to whether the dimensions have the capability to distinguish between different groups of Axis I disorders. Future studies could address this point.
Overall, our results suggest that cocaine users with low Self-Directedness, low Cooperativeness, and high Self-Transcendence scores in the TCI-R, who have also high severity of substance use and presence of psychiatric comorbidity, are suggestive of a specific phenotype. Future studies taking into account genetic variables will enhance the knowledge of substance use behavior.

This study highlights the relevance of studying personality from a dimensional approach and provides new data to foster further development of and enhancing knowledge of personality disorders. Moreover, the findings underscore the utility of a phenotype defined according to individual differences in certain personality traits, in severity of cocaine use and in presence of psychiatric comorbidity. A proper understanding of the role of personality in substance users could help in providing adequate treatment options to this population.

RÉSUMÉ

Profil de personnalité dans des jeunes consommateurs actuels et réguliers de cocaïne

Dans cette étude on a examiné dans un groupe de consommateurs de cocaïne, la relation entre le profil de personnalité et la présence de diagnostiques du DSM-IV et la sévérité de la consommation. Un total de 120 sujets (46 femmes, âge moyen: 23.8 ans) provenant d’endroits non médicaux à Barcelone, Espagne, entre 2003 et 2006 furent évalués avec la (PRISM) et la TCI-R. La majorité des participants avaient terminé l’éducation élémentaire, presque la moitié étaient employés, une troisième partie habitait chez les parents et presque une quatrième partie avaient des antécédents criminels. La voie d’administration la plus fréquente était la nasale (sniffer). Ils utilisaient une moyenne de 1,82 drogues. Les consommateurs de cocaïne avec une basse ponctuation à Auto-Direción et Cooperación, et haute à Auto-Trascendencia dans le TCI-R, avec une grande consommation de cocaïne et comorbilité psychiatrique, suggèrent un possible phénotype. Les limitations et les implications de l’étude sont analysées.

RESUMEN

Perfil de personalidad en jóvenes consumidores actuales y regulares de cocaína

Este estudio exploró la relación que existe entre el perfil de personalidad de una muestra de consumidores de cocaína y la presencia de diagnósticos DSM-IV y la intensidad del consumo. Se evaluaron 120 participantes (46 mujeres; media de edad: 23,8 años) de contextos no clínicos de Barcelona, España, 2003–2006, mediante la Psychiatric Research Interview for Substance and Mental Disorders (PRISM) y el Temperament and Character Inventory-versión Revisada (TCI-R). La mayoría de los participantes tenía estudios secundarios como mínimo, casi la mitad trabajaba, la tercera parte vivía con los padres y casi una cuarta parte tenía antecedentes legales. La principal vía de administración era la esnifada y consumían una media de 1,82 sustancias. Los consumidores con baja Auto-Dirección, baja Cooperación y alta Auto-Trascendencia en el TCI-R, con un consumo elevado de cocaína y comorbilidad psiquiátrica, sugieren un posible fenotipo concreto. Se comentan las limitaciones e implicaciones del estudio.
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Glossary

**Novelty Seeking:** One of the four temperament dimensions proposed in the personality model of Cloninger. Individuals high in this dimension tend to be quick-tempered, excitable, exploratory, curious, enthusiastic, ardent, easily bored, impulsive, and disorderly.

**Harm Avoidance:** Temperament dimension in Cloninger’s personality model. Individuals high in this dimension tend to be cautious, careful, fearful, tense, apprehensive, nervous, timid, doubtful, discouraged, insecure, passive, negativistic, or pessimistic even in situations that do not normally worry other people.

**Reward Dependence:** Individuals who score high in this temperament dimension tend to be tender-hearted, warm, sensitive, dedicated, dependent, and sociable.

**Persistence:** Individuals high in this temperament dimension tend to be industrious, hard-working, persistent, and stable, despite frustration and fatigue.

**Self-Directedness:** One of the three character dimensions proposed by Cloninger. Highly self-directed persons are described as mature, strong, self-sufficient, responsible, reliable, goal-oriented, and constructive. They have good self-esteem and self-reliance.

**Cooperativeness:** Individuals high in this character dimension are described as empathetic, tolerant, compassionate, supportive, fair, and principled individuals.

**Self-Transcendence:** Individuals high in this character dimension tend to be unpretentious, satisfied, patient, creative, selfless, and spiritual. These individuals seem to tolerate ambiguity and uncertainty.

References


