Association for the Application of Neuroscientific Knowledge to Social Aims (AU-CNS)

E-mail: info@au-cnns.org - Web: www.au-cnns.org

Being instituted in Viareggio in 1994, AU-CNS is as a no-profit association aiming to promote the spreading of scientific knowledge and its application upon issues of mental illness and substance abuse. AU-CNS is involved into research and teaching activities, and the organization of seminars, conferences and public debates with either scientific or popular audience targets. Among these, the most remarkable are the National Conference of Addictive Diseases, taking place in Italy every two years, The European Opiate Addiction Treatment Association Conference taking place in different European towns every two years, and a Europad satellite meeting within the American Opioid Treatment Association Conference (AATOD) in the USA, every 18 months. AU-CNS directly cooperates with national and international associations on the basis of common purposes and fields of interests, and runs an editing activity comprising psychiatry and substance abuse textbooks, and the official magazine of Europad-Wftod "Heroin Addiction and Related Clinical Problems".

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European Opiate Addiction Treatment Association (EUROPAD)

E-mail: europad@wftod.org - Web: www.europad.org

EUROPAD (formerly EUMA) was founded in Geneva (Switzerland) on September 26, 1994. It is, and shall remain, independent of political parties and of any government. EUROPAD exists to improve the lives of opiate misusers and their families and to reduce the impact of illicit drug use on society as a whole. The Association works to develop opiate addiction treatment in Europe but also aims to make a major contribution to the knowledge of, and attitudes to, addiction treatment worldwide. EUROPAD aims to (a) promote the development and acceptance of Agonist Opioid Therapy, (b) encourage collaborative research into effective addiction treatment, (c) provide a forum for the communication of research results and best practice, (d) encourage contact between individuals and groups within treatment services, (e) co-operate in the development of effective public policy.

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World Federation for the Treatment of Opiate Dependence (WFTOD)

E-mail: info@wftod.org - Web: www.wftod.org

The World Federation for the Treatment of Opioid Dependence (WFTOD) officially started during the EUROPAD conference Ljubljana, Slovenia during July 2007. EUROPAD and AATOD have worked together since the AATOD conferences of 1989 in Newport, Rhode Island. EUROPAD conducted a major panel presentation from a number of its member nations for the conference participants. EUROPAD and AATOD have exchanged such collegial presentations at all of the AATOD and EUROPAD meetings since that date, creating the foundation for the working relationship, which led to the development of the WFTOD. EUROPAD and AATOD also worked together in filing an application to the NGO branch of DESA during 2010. The application was accepted on February 18, 2011 during the regular session of the Committee on Non-Governmental Organizations to the U.N. Department of Economic and Social Affairs (DESA). In the regular session held on July 25, 2011, the Economic and Social Council of the United Nations granted Special Consultative Status to the WFTOD.

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Ethnicity and drug addiction history. A comparison between Italian and Slovenian heroin addicts

Barbara Lovrecic 1, Mercedes Lovrecic 1,2, Luca Rovai 3, Fabio Rugani 3, Silvia Bacciardi 3, Liliana dell’Osso 3, Angelo Giovanni Icro Maremmani 3,4 and Icro Maremmani 3,4,5

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Summary

We aimed to study the impact of ethnicity on the clinical addiction history of heroin addicts belonging to two closely interrelated racial groups (213 Italian and 591 Slovenian) characterized by different cultural, historical and political features. The results of this study show that ethnicity tends to influence the clinical addiction history of Italian and Slovenian heroin addicts. Italians are, more frequently, stable users or else are involved in the revolving door stage, or are diagnosed more frequently as ‘dual diagnosis’. Slovenians are, more frequently, bipolar and polyabuser patients with a daily use of heroin, showing only minor social adjustment. These differences appear to be largely mediated by the various organizations providing medical services for addiction treatment in Italy and in Slovenia.

Key Words: Ethnicity; heroin addiction; drug addiction history; Italy; Slovenia.

1. Introduction

In medicine most pathological conditions have shown ethnic disparities in morbidity and mortality. This tendency has been confirmed too in the field of substance use and abuse, where racial and ethnic differences not only reflect biological differences, but can also be largely explained by socioeconomic differences and cultural factors [5, 18, 26, 42, 43, 56, 57].

Ethnicity appears to be a complex concept. It includes inherited characteristics such as race, but also other aspects such as religion, language, customs, history and the political establishment that influence the organization of medical services [55].

In the critical literature, the drug abuse pattern of multiracial juvenile populations has been studied while paying particular attention to young subjects. Males are generally more likely to report drug use and abuse than females, while Hispanic and White subjects more often report drug use and abuse than do Asian and African American subjects [41]. Going forward, gender and ethnicity has been reported to influence the severity of the various problems related to substance abuse, as measured by The Drug Abuse Problem Assessment for Primary Care. Such important sex- and race-related differences among drug users and abusers strengthen the need to consider gen-
We aim to study the impact of ethnicity on the addiction clinical history of heroin addicts belonging to two closely interrelated racial groups (Italian and Slovenian) characterized by different cultural, historical and political features.

To do so we compared the addiction clinical history of Italian and Slovenian heroin addicts treated during 2003 at the public health service facilities in the two national systems.

2. Methods

2.1 Design of the study

A comparative cohort study was designed in order to compare, on the basis of nationality, the demographic and clinical characteristics (i.e. the heroin addiction history) of heroin addicts who had applied for treatment.

All these patients were evaluated during their first medical evaluation at treatment entry some time in 2003. Drug Addicts were recruited at the Dual Diagnosis Unit of the Department of Psychiatry, Pisa University, Italy and at the Centre for Treatment and Prevention of Illegal Substance Use at Izola, Slovenia. The latter is a specialized centre for the treatment of “dual diagnosis heroin addicts”.

The demographic, anamnestic and clinical characteristics of the sample was assessed with a standardized instrument. All the data for the recruited patients were analysed anonymously. None of the researchers knew the identity of the examined subjects, who gave their informed consent to data elaboration for research purposes.

2.2 Subjects

We included in the study all those who had applied for treatment at some point in 2003.

The study sample consisted of 804 heroin addicts. Of the 591 Slovenian patients, 462 were male and 129 female, and of the 213 Italian heroin addicts who sought medical help for heroin addiction in specialized outpatient centres in that same year, 2003, 176 were male and 37 female.

2.3 Instruments

2.3.1 Drug Addiction History

Heroin addiction history was recorded by the Drug Addiction History Questionnaire (DAH-Q), which takes the form of a semi-structured interview.
comprising a multi-scale questionnaire.

In the somatic pathology section, checks were carried out to verify any presence of liver diseases, vascular, gastrointestinal, sexual or dentally related problems. The immune system situation, not only with regard to lymphatic problems but also with respect to an HIV infection that might lead to an AIDS condition, was investigated too.

The mental status section refers to various psychopathological areas. The presence/absence of insight is related to the correct knowledge of the patient regarding the nature of the disease with respect to its pathogenesis, prognosis and treatment modalities. In our view, patients fail to show insight when they deny having long-term problems with substance use control; when they show a lack of understanding of the risks of relapse after detoxification; when they tend to interpret any state of partial well-being as definitive healing; when they are unable to relate their behavioural changes to the chronic effects of substance intoxication; when they consider agonist opioid treatment as being useless or claim they have the ability to achieve total healing from the disease thanks to what they call their ‘willpower’.

The presence of abnormal consciousness is related to the detection of recurrent episodes or a state of clouded sensorium unrelated to a state of intoxication or withdrawal. Abnormal memory is checked as a whole, without distinguishing between fixation and re-enactment issues. We mark anxiety as being present if a patient shows symptoms of anxiety, fear, avoidance or increased arousal. As regards mood alterations, we look for the presence/absence of depression and excitement when a patient reports depressed, elevated, expansive or irritable mood. Two separate items record the presence of depression and/or any tendency towards the bipolar spectrum as testified by an elevated, expansive or irritable mood. Multiple episodes of depression, the presence of a manic phase, or any less than full-blown episodes of depression and mania, with the disposition to develop a chronic condition, are all inquired into. Any abnormal sleep pattern is investigated non-specifically; we consider that there is an abnormal eating pattern if a patient reports a period of anorexia that is unrelated to addiction practices, as well as binge eating episodes while under the effects of substance intoxication. The presence of violence is identified when there have been physical attacks on victims, the repeated destruction of objects, irritability, negativism, suspiciousness and verbal aggression; various different items were taken to point to the presence of suicidal tendencies – in this connection, a self-directed form of aggression could be viewed not only as attempted suicide, but also as self-injury; the last part of the mental status section searches for the presence of delusion and hallucinations, whether currently or over a lifetime.

The section regarding social adjustment was made distinctive by its division into 4 subsections. The first subsection had to be coded only if a patient had an occupation and had been unable to continue working as a student (stopped studying, stopped attending, he/she was not a student) or as a worker (stopped working, stopped working, he/she was unemployed). The second subsection had to be coded only if a patient was single; its aim was to investigate a patient’s living situation (living alone, living with parents, living in a community), parental relationships (satisfactory, unsatisfactory, or orphan), the social leisure situation (satisfactory, unsatisfactory) and loving (satisfactory, unsatisfactory, no partner). The third subsection had to be coded only if a patient was married. It consisted of 5 subsections which investigated a patient’s living situation (divorced, living with spouse), conjugal relationship (satisfactory, unsatisfactory, no such relationship), parental role (satisfactory, unsatisfactory, no children), parental relationship (satisfactory, unsatisfactory, orphan) and loving (satisfactory, unsatisfactory, no partner). The last subsection had to be investigated in any case; it included loving (satisfactory, unsatisfactory, no partner), social leisure items (satisfactory, unsatisfactory), and any evidence of an arrest or condemnation, or an ongoing lawsuit.

The fourth section investigates the substance(s) of abuse experienced by the patient. It is possible to check the use of alcohol, opioids (if a patient has used morphine, heroin or illegal methadone), CNS depressants (if he/she used anaesthetics, sedatives, benzodiazepines or hypnotics), CNS stimulants (if he/she used stimulants, cocaine or dopaminergics), hallucinogens (if he/she reports the use of LSD, MDMA and PCP), cannabinoids or inhalants. We checked for polyabuse, considering its primitive form, when a patient had used 3 or more substances during the earlier period before entering the treatment programme. We also investigated the presence of secondary polyabuse (through the “polyabuse and illegal methadone” item) – a form that is often found in methadone treatment, when the subject is undertreated with agonists.

The next section deals with any heroin abuse modalities reported at the time of the survey. Heroin intake was expressed by means of a categorical scale permitting also a metric analysis of severity, expressed through the choice of one of five answers.
(unusual, weekly, multi-weekly, daily, multi-daily). The modality of use included 4 different typologies [22]: the use of opiates does, in fact, interfere with the possibility of reaching a certain level of social adaptation. Any single patient can be included in only one of four typologies. The lowest level on this scale, corresponding to the maximum degree of maladjustment, is that of ‘street addicts’ (junkies). These patients are characterized by an often present phenomenon of multiple substance abuse and an incessant demand for medical prescriptions, sometimes on the borders of legality, of any substance that can alleviate the malaise of going through a withdrawal crisis or that might ease the craving for heroin. Also, the percentage of criminal activity that aims to raise money for ‘a daily dose’ (or ‘daily doses’) is at its peak. The establishment of a therapeutic approach, which they reject, is an extremely difficult task, too. On the other hand, we can classify patients as being ‘stable’ or as ‘conformists’ if they lead an existence that is apparently acceptable to social conventions. They often manage to keep their job, which in some cases may be quite important, and do not present legal problems. They do not tend to group with other addicts. We classify patients as ‘destructive’ or ‘violent’ addicts (i.e. junkies) when they are immersed in their drug sub-culture and live in places and situations that are often at the limits of the law or may even be in open conflict with rules or conventions. They do not have an honest job and often engage in criminal activities in order to survive. They also present unmotivated episodes of aggression, which they decided on only to cause suffering to their victim. Those who ‘live in two worlds’ (two worlders) do not care about their criminal activities or living together with other addicts, but often have a regular job; these are the heroin addicts who are most socially dangerous, because of the serious problems they are likely to cause at work, both during acute intoxication and during a withdrawal syndrome. Lastly, the ‘loners’ are not involved in the drug culture, do not have a stable job and in most cases live on State subsidies rather than on the proceeds of criminal activities. Very often they are carriers of serious psychopathological problems (e.g. Schizophrenia Simplex); this makes the concomitant drug addict behaviour very difficult to diagnose or treat properly. One item is dedicated to detecting the presence, in the past, of periodic self-detoxification. The stages of heroin addiction experience correspond to the natural history of addiction. Drug addict experience can be divided into three stages [38]. We could have a patient that is in the encounter or ‘honeymoon’ stage. In a normal, non-addicted person, the administration of opioids produces markedly positive feelings of well-being. The subject experiences an extreme sense of calm and relaxation, not without a certain amount of euphoria, even if this is quite different from the experience produced by the selective activation of the dopamine system, as occurs after the use of cocaine and amphetamine-like substances. Generally speaking, substance administration is occasional and the subject expresses the conviction that he/she can voluntarily interrupt the experience at any time. There is no outward sign of any genuine drug addiction behaviour; there is no tendency to increase the dose or any irresistible desire to use it. There are no clear signs of a withdrawal syndrome. The situation is often underestimated both by the patient and the social environment, because neither is capable of recognizing the subtle signs of a dysphoria which is bound to become increasingly predominant. The next level is characterized by the intermediate or ‘dose-increasing’ stage. Patients who maintaining a constant dose find out that the euphoric effects tend to disappear gradually, while symptoms belonging to the opposite polarity appear, linked to a withdrawal syndrome that develops in parallel to the onset of tolerance. From being ‘normal’, the subject has gradually become addicted to a drug, and will have to increase the dose of the substance to allow the feeling of euphoria to be experienced once again. In any case, as a result of the same mechanism, the withdrawal symptomatology will become more severe. The need for the substance becomes increasingly more ‘imperative’ and, by continuing to abuse opioids, as well as intensifying the need to increase the dose, the subject will reach a point where the euphoric pole can no longer be attained, and the patient will fluctuate between a greater and greater difficulty in maintaining normality and a progressively more severe psychophysical malaise due to the withdrawal syndrome. This is the condition of a decompensated drug addict. In more severe cases this condition evolves into a ‘latest’ stage in which the subject is totally oriented, by any means, lawful or unlawful, moral or immoral, towards substance-seeking. In the end, a patient could be admitted to repeated detoxification treatments or enter into the ‘revolving door’ stage. This can be recognized by a more or less prolonged period of addiction, the impossibility of finding sufficient quantities of substance, or a self-awareness of his/her psycho-physical condition, which spurs the heroin addict to make his/her earliest attempts to handle detoxification personally, and, later on, to apply for help to social health services. At this
time, the ordeal of relapsing behaviour begins. After a request for assistance that the subject conveys to oth-
ers, and that is often sincerely motivated, ‘after hav-
ing reached the bottom’, in most cases, the next de-
velopment is the rigid positions taken by operators in
the sector to ‘quickly liberate’ the person from the
drug and set up psychological or social rehabilita-
tion programmes (psychotherapeutic or community in-
terventions). This often leads to a ‘revolving door’ situ-
ation, unfolding as a dramatic sequence of being treated, quitting the treatment, falling out, being ar-
rested, being hospitalized, going back to treatment, and so on. This perpetuates the sensation of incurab-
ility in drug addicts, and explains their mistaken belief
that such situations are incurable in others. In this pe-
riod, too, the risk of death from an ‘overdose’ is high-
er because, in a drug addict in detoxification, the
gradual decline of tolerance to opioids appears along-
side the onset of craving for the substance, which
leads to the occasional use of heroin. The administra-
tion of a dose equal to the dose administered during
the period of tolerance will, in these circumstances,
cause an ‘overdose’. Considering clinical typology,
drug addicts can be divided into reactive, self-thera-
peutic, and metabolic [38]. ‘Reactive’ drug addicts
can be checked when drug consumption is a response
to social interaction and family issues. In this case,
substance abuse can be called a normal adolescent
crisis with concomitant specific personality traits and
environmental difficulties without full-blown person-
ality disorders. The lack of structured critical capaci-
ties impedes the rejection of a useless, harmful, but
well-organized offer, such as that of heroin. Typically,
heroin induces psychological barriers to its purchase,
but there are moments in the life of a teenager in
which he/she may be caught off guard. These indi-
viduals’ dominant clinical presentation is that appro-
priate to the ‘honeymoon’ stage, continuing over
time, but continuous use can lead to an unfavourable
evolution of the ‘addiction’. Psychotherapeutic and
educational assistance, associated when necessary
with psychopharmacological therapy with opioid an-
tagonists, is indicated for these subjects. Any ‘self-
therapeutic’ form of drug addiction has to be marked
when a euphoric effect is not always sought after in a
drug; initially, a subject often ‘actively seeks for a
substance that will ease off dysphoria and finds out
that opioids are able to do this better than other drug
categories’ [20, 21]. In other words, for some of those
who approach drugs the concept of seeking for a drug
functions as an unconscious attempt to provide self-
therapy for previously existing psychopathological

disorders that might benefit from that kind of drug.
This concept was confirmed, even if in a partial and
not univocal way, by the hypothesis of the role of en-
dorphins in psychopathology [9]. That role was tested
by trying out different strategies; using opioid antago-
nists for the treatment of mental disorders; evaluating
the results of the administration of endorphins; inves-
tigating baseline endorphin levels in psychiatric pa-
tients; stimulating an endogenous release through
pain or stress induction, or by the application of elec-
trodes to reach the brain. Even though the results of
these studies have not yet permitted a clear vision of
the problems involved, it is very likely that the self-
administration of opioids, because of their antidote-
pressant, anti-anxious and antipsychotic action, will
take place in situations of psychopathological decom-
pensation, in subjects affected by conditions of de-
pression, psychosis, panic, social phobia and agor-
aphobia that often go unrecognized by family members
and even by the physician [10, 11, 14]. Only an early
diagnosis and the prompt treatment of primary forms
may be able to prevent the development of a form of
metabolic withdrawal. We classified a patient as be-
ing a ‘metabolic’ drug addict when, independently of
the modality of the first encounter with heroin, after
around two years of living through the intermediate
stage, and especially during the ‘revolving door’ pha-
se, a chronic form characterized by the withdraw-
al syndrome, craving and relapsing behaviour devel-
oped. Treatment with long-term drug replacement
therapy reinforced by psychological and social sup-
port in a perspective of late detoxification is indicated
for these subjects.

The following section investigates the presence
of lifetime and current treatments. The treatments
considered are: those in a therapeutic community
(CT), psychopharmacological anti-craving treatment,
psychotherapy, agonist or antagonist short-term de-
toxification, agonist or antagonist maintenance.

The last section inquires into addiction history.
There is the possibility of recording age at the first
contact with the substance, age at the onset of con-
tinuous use, duration of dependence, and age at first
treatment. In the case of treatment with an agonist,
medication dosage can be recorded, too.

2.3.2 Psychiatric diagnostic evaluation
Psychiatric disorders were investigated on the
basis of the DSM-IV Decision Trees for Differential
Diagnosis. Each decision tree starts with a set of clin-
ical features. When one of these features is a promi-
nent item of the current clinical picture, the clinician
will ask a series of questions to rule in or rule out a number of disorders. The questions are just approximations to the diagnostic criteria and are not meant to replace them. Three decision trees have been used: “Differential Diagnosis of Psychotic Disorders” (initial clinical features: delusions, hallucinations, disorganized speech, or grossly disorganized behaviour); “Differential Diagnosis of Mood Disorders” (initial clinical features: depressed, elevated, expansive or irritable mood; two separate items record the presence of depression and/or any tendency towards the bipolar spectrum as testified by an elevated, expansive or irritable mood); “Differential Diagnosis of Anxiety Disorders” (initial clinical features: symptoms of anxiety, fear, avoidance, or increased arousal).

As to bipolar spectrum diagnoses, histories of previous hypomanic episodes, as well as temperamental characteristics, were explored using the criteria listed in the SID, the Semistructured Interview for Depression [6]. All information was gathered from the patient and at least one close relative (usually from parents or siblings); in addition, all available clinical records were carefully examined. Inquiries into temperamental attributes were made about the habitual behaviour of the patient – during periods free of affective episodes – by gathering information from the patient and significant others. Although it may seem strange that such figures have been documented for addicted patients, Italian addicts find it hard to become detached from their families, despite the disruption of family relationships. In fact, almost 90% of the patients in our sample were still living with their original or acquired families.

Our operational criteria for affective temperaments have been drawn from the University of Tennessee [2] modification of the Schneiderian descriptions [53]. The SID, developed as part of the Pisa-Memphis (now San Diego) collaborative study on affective disorders, has been used with over 2000 patients at the time of writing: its reliability for diagnostic assessment of patients and their temperaments has been documented elsewhere [46, 48]. The SID was resorted to in order to increase the level of diagnostic accuracy with respect to bipolar disorders. In the hypothesis that minor bipolar syndromes were overrated, such a bias would not affect the rate of DD. In fact, the relationship between outcome and specific diagnostic subgroups is beyond the study’s terms of reference.

Patients were evaluated while outside acute phases, for which hospitalization would often be required, so as to reduce the diagnostic ambiguity between intoxication-related symptoms and spontaneous mental disorders. In cases where further information emerged on clinical grounds or from later interviewing, diagnoses were reviewed.

When an independent psychiatric disorder is concomitant with a substance abuse disorder, we consider the patient as being affected by a dual diagnosis condition.

2.4. Data analysis

To identify the distinctive traits of Italian and Slovenian heroin-dependent patients, we compared their demographic and clinical characteristics (with specific reference to concomitant substance abuse and previous treatment) on the basis of ethnicity subgroups. We used the chi-square test for categorical variables and the Student T-test for continuous vari-

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<tr>
<td>Working</td>
</tr>
<tr>
<td>Discharged</td>
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</table>

Figures between parentheses are percentages
ables. To find the most distinctive traits and evaluate their accuracy as predictors, the variables that showed statistically significant differences (p<0.05) were included in separate logistic backward regression analysis using ethnicity as criterion. Statistical analyses were carried out using the SPSS package. Since this is an exploratory study, statistical tests were considered significant at the p <0.05 level.

3. Results

Table 1 shows significant differences between Italian and Slovenian heroin addicts. Italians were older, more frequently married and managed to keep their job even during periods of addictive behaviour. Slovenians were younger, more frequently single and had mostly lost their job. No differences were found regarding gender and their student position.

Table 2 shows differences regarding clinical characteristics. Compared with Slovenians, Italian heroin addicts showed significantly more physical comorbidity and psychopathology at treatment entry. Their treatment was more frequently comprehensive in nature. The duration of their dependence was longer, and their age at first treatment was greater. They more frequently succeeded in maintaining their productivity, and were not engaged in street crimes, although their condition involved major individual and relational impairment (due to stable substance use). In the same way they were in the late phase of their dependence (revolving door stage), where patients underwent a series of relapses and repeatedly failed to maintain a drug-free condition after detoxification. Lastly, they were more frequently diagnosed as dual diagnosis patients. In particular, they more frequently received a diagnosis of depressive recurrent disorder or anxiety disorder.

On the other hand, Slovenians more frequently showed major problems with their families and at work; they had more legal problems and were more frequently polyabusers. At treatment entry, they showed a higher frequency in resorting to a daily intake of heroin (in other words, their use was less sporadic). They were more frequently diagnosed as bipolar patients.

Table 3 shows significant differences regarding

| Table 2: Clinical characteristics of 804 heroin addicts on the basis of their Italian or Slovenian ethnicity |
|---------------------------------------------------------------|--------------------------|-----------------|----------------|-----------------|
| DAH-RS items                                                 | Italian N=213            | Slovenian N=591 | Chi/T          | p               |
| Physical comorbidity                                         | N (%)                    | N (%)           | 62.77          | <0.001          |
| Psychopathology                                              | 143 (67.1)               | 211 (35.7)      |                |                 |
| Work major problems                                          | 151 (70.9)               | 335 (56.7)      | 13.22          | <0.001          |
| Family major problems                                        | 97 (45.5)                | 342 (57.9)      | 9.59           | 0.001           |
| Sexual major problems                                        | 91 (42.7)                | 441 (74.6)      | 71.15          | <0.001          |
| Leisure major problems                                       | 42 (19.7)                | 97 (16.4)       | 1.19           | 0.274           |
| Legal problems                                               | 77 (36.2)                | 155 (26.2)      | 7.51           | 0.006           |
| Polyabuse                                                    | 65 (30.5)                | 324 (54.8)      | 37.03          | <0.001          |
| Unsuccessful treatment in the past                           | 84 (39.4)                | 558 (94.6)      | 294.15         | <0.001          |
| Comprehensive treatment                                      | N (%)                    | N (%)           |                |                 |
| Age 1st heroin contact (yrs)                                 | 18.9±4.4                 | 19.47±4.2       | -1.57          | 0.118           |
| Age at onset of addiction (yrs)                              | 21.7±5.0                 | 21.20±4.2       | 1.34           | 0.180           |
| Age at first treatment (yrs)                                 | 25.07±5.1                | 22.51±4.9       | 6.23           | <0.001          |
| Dependence length (mths)                                     | 93.84±72.3               | 67.82±48.5      | 4.83           | <0.001          |
| Daily use                                                    | 77 (48.4)                | 378 (86.5)      | 93.55          | <0.001          |
| Stables                                                      | 113 (62.4)               | 123 (24.9)      | 81.74          | <0.001          |
| Late stage                                                   | 114 (69.9)               | 292 (58.4)      | 6.89           | 0.008           |
| Dual diagnosis                                               | 117 (54.9)               | 193 (32.7)      | 32.78          | <0.001          |
| Psychosis, chronic                                           | 11 (09.4)                | 36 (18.7)       |                |                 |
| Depressive, recurrent                                        | 67 (57.3)*               | 53 (27.5)*      |                |                 |
| Bipolar I and II                                             | 16 (13.7)*               | 95 (49.2)*      |                |                 |
| Anxiety disorders                                            | 23 (19.7)*               | 9 (04.7)*       | 108.07         | <0.001          |

* Univariate p<0.05
concomitant substance abuse and previous treatment of our patients. Slovenian heroin addicts showed a more frequently concomitant use of alcohol, Central Nervous System (CNS) depressants, CNS stimulants, hallucinogens, cannabinoids, inhalants and illegal methadone. Moving on to the topic of previous treatment, the Italian patients were more frequently treated in Therapeutic Communities and undergoing long-term naltrexone treatment. By contrast, Slovenians were treated with psychopharmacotherapy, psychotherapy and short-term methadone. No differences were detected regarding previous long-term methadone treatment.

Table 4 shows the most distinctive characteristics of our sample on the basis of their ethnicity. Italian heroin addicts were more frequently diagnosed as being affected by anxiety disorders or recurrent depressive disorder. They were affected by physical comorbidity. The duration of their dependence was greater.

On the other hand, Slovenian heroin addicts were characterized by a more frequent condition of polyabuse and daily heroin use; they were diagnosed as bipolar 1 or 2, and showed legal problems and major problems with their families.

<table>
<thead>
<tr>
<th>Table 3. Concomitant substance abuse and previous treatment of 804 heroin addicts on the basis of Italian or Slovenian ethnicity</th>
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<tbody>
<tr>
<td>Concomitant substance abuse</td>
</tr>
<tr>
<td>Alcohol</td>
</tr>
<tr>
<td>CNS Depressant (BDZ)</td>
</tr>
<tr>
<td>CNS Stimulants</td>
</tr>
<tr>
<td>Hallucinogens</td>
</tr>
<tr>
<td>Cannabinoids</td>
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<tr>
<td>Inhalants</td>
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<tr>
<td>Illegal methadone</td>
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</tbody>
</table>

| Previous treatments                          |            |            |     |   |
| Therapeutic communities                      | 70 (32.9)   | 54 (90.2)   | 67.38  | <0.001 |
| Psychopharmacotherapy                        | 74 (34.7)   | 278 (47.1)  | 9.73   | 0.001 |
| Psychotherapy                                | 73 (34.9)   | 260 (44.1)  | 5.30   | 0.021 |
| Short-term methadone                         | 73 (35.1)   | 372 (62.9)  | 48.35  | <0.001 |
| Long-term methadone                          | 122 (58.7)  | 333 (56.3)  | 0.33   | 0.563 |
| Long-term naltrexone                         | 45 (21.4)   | 3 (00.5)    | 120.38 | <0.001 |

<table>
<thead>
<tr>
<th>Table 4. Logistic regression analysis. Criterion = etnicity (Slovenian), predictors: univariate significant demographic and clinical characteristics.</th>
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</thead>
<tbody>
<tr>
<td>Odds ratio</td>
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<tr>
<td>Anxiety</td>
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<tr>
<td>Depressive, recurrent</td>
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<tr>
<td>Physical comorbidity</td>
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<td>Dependence length (mths)</td>
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<tr>
<td>Family major problems</td>
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<td>Legal problems</td>
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<td>Bipolar 1.2</td>
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<tr>
<td>Daily use</td>
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<td>Polyabuse</td>
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Constant = -1.53
4. Discussion

Before discussing the results of this study we wish to recall some of the main historical and cultural differences between Italy and Slovenia.

Italy has been inhabited since the prehistoric period; Greek, Etruscan and Roman populations lived here over the centuries. For many centuries the city of Rome was the political and cultural centre of Western civilization, the capital city of an empire that included Western and Balkan Europe, North Africa and the Middle East, and, even after the Middle Ages, throughout the Renaissance, Italy was the main cultural centre of the Western world. In 1946 the Italian state became a republic, and Italy has been a member of the European Community (lately renamed the European Union) since its creation in 1992. At the present time, Italy is a global nation with high living standards and it has the seventh-largest economy in the world. Italians occupy the top position in Europe for life expectancy and have the second best public health system in the world.

Slovenia too has been inhabited since prehistoric times, and Celtic, Roman and Slav populations lived here over the centuries. Subsequently, Slovenia was repeatedly invaded by the Ottoman Empire; it was then conquered by Napoleon and the Austro-Hungarian Empire. Its situation changed radically during the First World War, when, along with Serbia and Croatia, it became part of the Kingdom of Yugoslavia. After the Sixties, Slovenia, which was already considered the most developed region of Yugoslavia, began a new phase of major socioeconomic development, which led to its winning of independence in 1991. In 2004 Slovenia joined the European Union and at present it continues to be a rapidly developing country enjoying a good degree of success in the economic and social fields.

In Italy, the earliest services providing drug-related treatment had their inception in the mid-Seventies, with the birth of the CMAS (Medical Centre for Social Assistance) concomitantly with the Basaglia Psychiatric Law number 180/78. Today, the coordination of drug-related treatments takes place at a regional level, and includes two important subsystems: SerTs (founded in 1990, there are now more than 500 units of this kind covering the whole of Italy) are public drug treatment units which mainly carry out outpatient treatment, and are part of the Italian National Health System. Within all the SerTs, integrated treatment is provided, and reintegration programmes are implemented too. Most Italian therapeutic communities are private, non-profit organizations. Data indicate that 56.6% of all clients entering treatment reported opioids as their primary drug. The most widely used substitution substance in Italy is methadone (introduced in 1975), although the use of buprenorphine has been increasing since its introduction in 1999 (source: EMCDDA – European Monitoring Centre for Drugs and Drug Addiction).

Compared with Italy, the Slovenian Health System is younger, because the Slovenian nation is much younger than the Italian Republic; as a result, drug-related treatments were introduced much more recently. The network of Centres for the prevention and treatment of illicit drug addiction was built up in the middle of the Nineties, and started to provide nationwide opioid agonist outpatient treatment in those years. In Slovenia, on the other hand, drug-related treatment is currently provided regularly, but by various different systems of health, social and civil society organizations (all of them NGOs) [19, 23-25, 49, 50].

The first official national health data base set up in Slovenia showed that some problematic heroin users were already present in the Seventies, but later, in the Nineties, the use of heroin became an epidemic phenomenon. At that time there were frequent requests for specific opioid agonist detoxification treatment at psychiatric hospitals in the nearby country of Croatia, because no such treatment was available in most of Slovenia. Medical treatment with the opioid agonist methadone did start in the early Nineties in Slovenia, but only in a sporadic, unorganized way, about 15 years after its first use in Italian centres. Buprenorphine was registered in 2004 (5 years after Italy) and these two medications have contributed to a greater diversification of opioid maintenance treatment options. The buprenorphine/naloxone combination was only introduced in Slovenia in 2007 (source: EMCDDA – European Monitoring Centre for Drugs and Drug Addiction). One consequence is that Slovenian experience and knowledge in the field of drug-related treatment are less developed than they are in Italy.

In this study, Italian and Slovenian heroin addicts differ in the typology of their personal details, and in clinical and therapeutic features. Italians are older, more frequently married and employed, present a more severe physical comorbidity and psychopathology, as well as a longer drug dependence history including admission to comprehensive treatment, and are older at their first treatment. They can be classified more frequently as stable users or as patients in-
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has proved to improve the quality of life of heroin addicts [36]. More than 40 years of research and clinical practice have repeatedly demonstrated its efficacy in millions of patients throughout the world [29, 32, 39].

5. Conclusions

Ethnicity tends to influence the addiction clinical history of Italian and Slovenian heroin addicts. The Italian patients are, more frequently, stable users or else are involved in the revolving door stage or were diagnosed as ‘dual diagnosis’. The Slovenian patients are, more frequently, bipolar and polyabuse patients who use heroin daily and show only minor social adjustment. These differences appear to be largely mediated by the various organizations providing medical services for addiction treatment in Italy and in Slovenia.

References


volved in the revolving door stage, and be diagnosed in the dual diagnosis category. On the other hand, Slovenians are more frequently bipolar and/or polyabuse patients with a daily use of heroin, and present a major familial and working impairment that involves legal problems. As to differences in treatments, a participation in Therapeutic Communities and/or a long-term naltrexone treatment seem to be typical of Italian patients, whereas Slovenian patients are typically treated with psychopharmacotherapy, psychotherapy and short-term methadone programmes.

These data are consistent with the literature, which provides further evidence of the fact that, among drug abusers and dependent patients, nationality tends to influence a long series of parameters ranging from the pattern of abuse of substances to the problems related to substance abuse, and including strictly clinical factors such as comorbidity and dependence duration [12, 17, 41, 58].

Slovenian patients are more frequently bipolar, with a polyabuser status, than Italian ones, and they present a lower level of social adjustment. In the literature a connection between bipolar disorder and substance abuse has been largely confirmed not only at a clinical level [4, 8, 33, 34, 47]; we have already stressed the possible role of the bipolar spectrum in the pathogenesis of substance use disorders. [31, 37, 45]. On the other hand, it should be noted that Italian heroin addicts do not seem to be healthier than Slovenian ones at a psychopathological level, as they present a higher rate of dual diagnosis (depressive disorder of recurrent type and anxiety disorder). Other variables, such as the therapeutic ones, merit consideration as possible factors capable of mediating the impact of ethnicity on substance abuse and dependence.

Slovenian heroin addicts more frequently than Italian ones enter short-term methadone programmes. These programmes, which are usually characterized by inadequate dosages and premature detoxification, have been proved to elicit polydrug abuse. On the contrary appropriate long-term methadone programmes are crucial not only because they enhance patients’ retention rate in treatment, but also because they reduce the risk of polydrug abuse and facilitate social rehabilitation [27, 30, 35, 40].

We suppose that the minor social adjustment and the more frequent polydrug abuse of Slovenian heroin addicts could be largely due to the different organization of medical services for addiction treatment now current in Slovenia. As a matter of fact, methadone maintenance treatment, when properly carried out,


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**Contributors**
Barbara Lovrecic, Mercedes Lovrecic, Luca Roverai, Angelo Giovanni Icro Maremmani and Liliana Dell’Osso revised literature and conceived the methodology of the study (sample selection, statistical analyses) discussed results and wrote the preliminary report. Silvia Bacciardi and Fabio Rugani discussed results. Icro Maremmani participated in the study programming, discussed results and revised the final form of the manuscript. All authors approved the final form.

**Conflict of interest**
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The Opiate Treatment Index (OTI) clinical interview: New evidence of its reliability and validity

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Summary

The Opiate Treatment Index (OTI) is a semistructured clinical interview designed by Shane Darke et al., to measure self-reported treatment outcomes of opioid users. It consists of six independent outcome domains. The domains chosen to reflect the dimensions of treatment outcomes were: Drug use, HIV Risk-taking Behaviour, Social Functioning, Criminality, Health, and Psychological Adjustment. The aim of this work is to analyze the internal structure and reliability of the Spanish version of this instrument, as well as to contribute evidence of its concurrent validity with regard to measures of global functioning such as the Global Assessment of Functioning Scale (GAF) of the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). The study was carried out with a total sample of 105 patients with substance dependence who were being treated in two centres for drug addictions. Test-retest and inter-rater reliability were both very high (with mean intra-class correlation coefficient [ICC] values for the two scores of .89 and .88, respectively). The internal consistency values were generally moderately high, and similar to those observed by other authors in comparable studies. Principal component analysis (PCA) of each one of the OTI scales reveals structures made up of several factors. The differences between this and other studies and the practical applications of this well-known instrument are discussed.

Key Words: Opioid-related disorders; outcome assessment; psychological test.

1 Introduction

The conceptual framework for the assessment of treatment outcomes in addictive disorders has evolved in recent years. The focus of attention has shifted from a model based on effectiveness, interpreted as the limitation of drug use and increases in retention rate, to a more global model based on functional recovery and quality of life [21, 43]. Assessment of the outcomes of these programmes calls for a set of standardized instruments to measure their effectiveness [44, 47]. Despite continuous recommendations to use these diagnostic tools, their usage was inadequate until a few years ago. The advantages of using instruments of this type are obvious. One of the basic elements of the scientific method is the successive testing of hypotheses. As each research study is generally designed to answer a single question, analysis of the consistency of various different findings should be carried out by comparing a high number of research studies. This is only feasible if the measurement units and the assessment instruments are fully compatible.

One of the key points of research in the field of addictive behaviours is the effectiveness of different treatment alternatives. The evidence accumulated so far supports some of the following conclusions [4, 5, 23, 24, 32, 42, 46, 50, 51, 55]:

a. treatment of substance addiction is more effective and more efficient than “no treatment”;

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b. there is no single treatment that is effective for all substance-dependent patients;

c. all intervention modalities (opiate maintenance programmes, therapeutic communities, and so on) lead to a fall in drug use and criminality in most patients, and an improvement in their general health status and quality of life;

d. in general, the dropout rates are relatively high in most of the treatment modalities, although they are somewhat lower in opiate maintenance programmes; and

e. in all the alternatives, programme outcomes may vary, especially depending on aspects related to the process (i.e., “dose” of treatment activity and days spent in treatment) and, to a lesser extent, on the patients’ characteristics when initiating treatment (structure).

However, there are several key aspects about which less evidence is available; in particular: [32, 33, 39, 42, 46]

a. a multidimensional typology of drug-addicted patients that can be interpreted from a trans-theoretical perspective has yet to be established with methodological rigour;

b. we do not know which modality or type of intervention is most efficient for each typology of patient;

c. we do not know what effect a particular combination of programmes or a specific sequence of components may have on a specific type of user at each moment of their consumption history;

d. we still lack conclusive data on the relationship between the intensity of treatment and its outcomes, as well as the criteria used in modifying intervention on the basis of the typology of the patients being treated and their responses to that intervention; and

e. we know very little about how patients’ context and environment affect treatment outcomes.

The development of research into these aspects is restricted by the low degree of comparability between the outcomes of diverse studies. This is partly due to the lack of consensus among their authors about the treatment outcome criteria that should be applied and the use of different measurement instruments [16, 44]. The questionnaire used to collect the data must be valid and reliable for the conclusions to be plausible. The most widely used instrument with these characteristics has traditionally been the Addiction Severity Index (ASI) of McLellan et al. [40, 41]. The ASI (5th version) is a semistructured clinical interview for the assessment of the level of severity or impairment in six areas of drug-related problems. However, some authors agree in finding limitations on the validity of this instrument, such as some scoring subjectivity, the questionable cross-cultural validity of some of its items, the absence of a section for the assessment of HIV risk-taking behaviours, and the apparently low validity of the section dealing with medical problems [16, 29, 31]. This has led to a need to develop a new assessment instrument such as the Opiate Treatment Index (OTI) of Darke et al. [18], and to modify the original version of the ASI, which has been followed up by the European Addiction Severity Index (EuropASI) [37] and the 6th version of the ASI [11].

The OTI has good psychometric properties. The papers on OTI published so far have analyzed its test-retest reliability [2, 18], inter-rater reliability [1, 2, 16, 18, 20], internal reliability (internal consistency) [2, 18], concurrent validity with the Addiction Severity Index [18], with key informants [2, 18], with other drug use measurements [2, 16, 18], with collateral medical diagnoses [18] and collateral criminal activity antecedents [18], as well as analysis of the structure of its latent factors [2, 16, 17, 18]. Up to the present moment its external validity in relation to general functioning assessments had not been analyzed.

The aim of this work is to analyze the internal structure and reliability of the Spanish version of the OTI, as well as to contribute evidence of its concurrent validity with regard to assessments of global functioning.

2 Methods

2.1 Subjects

The study was carried out on a total sample of 105 patients who satisfied the criteria set out in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) for substance abuse or dependence. A consecutive sampling method was used, and the participants who requested treatment for their addiction, or who were already in an intervention programme, were recruited after they had arrived for a scheduled appointment. Of these people, 76.2% were attended to in a public outpatient centre (Cadiz Provincial Centre for Drug Dependency), whereas the remaining 23.8% came from a therapeutic community (the FADAIS Centre in Tarifa). Their drug consumption status was assessed according to the criteria of Rounsaville [47], as later modified and adapted [27] (“withdrawal state”, “acute intoxica-
tion”, “extended abstinence” and “steady-state use of the drug”). In this way, only those subjects who were in “extended abstinence” were included (1. At least 10 days must elapse during which the subjects have withdrawn from substance use; and 2. At the time of the interview, the subject did not present symptoms of ‘substance withdrawal’ according to DSM-IV criteria”) and in the so-called situation of “steady-state use of the drug” according to the same criteria (“1. During which time the subject has ingested sufficient amounts of a drug to which he or she is tolerant to avoid withdrawal symptoms; and 2. At the time of the interview, the subject did not present symptoms of ‘substance intoxication’ [according to DSM-IV criteria] due to the substances consumed during the previous month”). The subjects who were in a “withdrawal state” or in “acute intoxication” were excluded.

2.2 Measurement instruments

The Opiate Treatment Index (OTI) [16, 18] is a comprehensive, standardized set of measures, that are multidimensional in nature. It consists of six independent outcome domains which reflect the dimensions of treatment outcome. Its main utility is the outcome assessment of opiate treatment programmes. The domains chosen to reflect the dimensions of treatment outcome were: Drug use, HIV Risk-taking Behaviour, Social Functioning, Criminality, Health, and Psychological Adjustment. The scales follow a dimensional scoring model. Each scale provides a measure of the severity or degree of impairment in the corresponding functional area. In all the scales, higher scores imply greater dysfunction. Variables are continuous rather than categorical to maximize the sensitivity of the instruments to actual behavioural change. The interval of retrospective assessment is one month for all the scales, except for Social Functioning, where it is six months. All the scales are hetero-administered except for Psychological Adjustment, which is self-administered by patients. In relation to clinical interpretation of the OTI, the total numerical scores of each scale can be transformed into clinical categories of severity, such as “Low”, “Below average”, “Average”, “Above average”, and “High”. The OTI typically takes between 20 and 30 minutes to administer.

The Drug Use section provides an evaluation of the severity of consumption for each of 11 different psychoactive substances during the past month, based on a model of quantity/frequency. Each item provides a value, called Q-score, which corresponds to the number of episodes/units of daily consumptions. The HIV Risk-taking Behavior (HRBS) scale consists of 11 items, each of which was chosen to address a specific HIV risk-taking behaviour. All the items are scored on a 0-5 scale, with a higher score indicating a higher degree of risk-taking. Scores may thus range from 0 to 55. These items are grouped into two subscales, each of which assesses a specific aspect of these behaviours (injecting and sexual risk-taking behaviour), so that separate subscale scores could be derived, as well as global risk-taking scores. The Social Functioning scale is a 12-item scale which addresses opiate-related social functioning such as social adjustment, social support, and drug culture involvement. Each question is given a score on a 0-4 scale, with higher scores indicating higher degrees of social dysfunction. Scores may thus range from 0 to 48. The Criminality section assesses the frequency of recent perpetration of crimes in four major areas (property crime, drug-dealing, fraud and crimes involving violence). It is a 4-item scale according to which total scores may range from 0 to 16, with higher scores indicating greater criminal involvement. The Health scale is a symptom check list that has been designed to give an index of the subject’s current state of health, especially in relation to those areas within which opioid users usually develop problems. The Health scale is divided into 8 numerical items, each of which is rated as a dichotomic item (0 = absence, 1 = presence) and measures a variety of symptoms that can be grouped into health problems and organic systems, such as general problems (14 items), injection-related problems (5 items), cardio/respiratory (9 items), genito-urinary (4 items), gynaecological (2 items), musculo-skeletal (3 items), neurological (10 items), and gastro-intestinal (5 items). The total score is the sum of reported symptoms, with higher scores indicating poorer general health. Scores may thus range from 0 to 52. Lastly, as an approximation to the current measurement of the Psychological Adjustment of opiate-addicted patients, the authors of the OTI decided to include the 28-item General Health Questionnaire (GHQ-28) of Goldberg and Hillier [26, 54]. Its utility and interpretation within the OTI follow a dimensional rather than a categorical model. Thus, the total score ranges along a hypothetical continuum whose poles are psychological well-being and distress.

Until we began the present inquiry, this interview had not been the object of adaptation or validation in Spain. Prior to this study, the OTI was translated (by direct and back-translation) and conceptually adapted to our cultural sphere. Firstly, two clinical practitioners translated the original version (in English) inde-
pendently, reaching a consensus on a single Spanish version. Then, a philologist who was not familiar with the original version translated this Spanish version back into English. Lastly, these two versions were compared, verifying their syntactic, technical, conceptual, and content equivalences [28].

The Schedules for Clinical Assessment in Neuropsychiatry (SCAN) are made up of a battery of instruments developed by the World Health Organization (WHO) to assess, measure and classify psychopathology, and the behaviours associated with the principal adult psychiatric disorders. It is a semistructured clinical interview, whose contents lead to the generation of diagnoses according to the criteria of the DSM-III-R and the International Classification of Diseases (ICD-10). This instrument has been the object of various cross-cultural adaptation studies and has been validated in our setting [56]. The SCAN is modular and some of its sections, such as those that assess substance-use disorders, can be administered independently. We used sections 11 and 12 (Alcohol and Other Drugs, respectively) to assess dependence.

The data provided by this instrument were reviewed and other cases had to be excluded from the study because of technical problems encountered during the recording. Thus, for the analysis of inter-rater reliability, the final number of patients who came to the first interview was scheduled seven days later to complete the assessment (in administering the OTI); in many cases, it also coincided with the patients’ next appointment, which facilitated their presence. Analysis of test-retest reliability was carried out by estimating first the item-by-item concordance, and second, the concordance between the two successive total scores for each participant. For item-by-item concordances, we determined the percentage of simple agreement and the weighted kappa coefficient [12], which was interpreted according to Feinstein’s criteria [22]. This author establishes five levels of agreement to categorize and interpret the values of kappa coefficients (Poor = 0-.20, Fair = .21-.40, Moderate = .41-.60, Good = .61-.80, and Very Good = .81-1). To calculate the concordance between the total scores recorded on the scales, we used the intraclass correlation coefficient (ICC) by applying the ICC formula 1.1 of Shrout and Fleiss [49] or the E5 formula of Bartko and Carpenter (7,8).

Inter-rater reliability. To assess inter-rater reliability, we compared the observations made independently by two interviewers (Int1 and a second interviewer, Int2) about the same participants at the same time. Out of the total number of patients who came to the first interview, we selected a random sample (n = 45), and we proposed that a second interviewer should assess them at that time, either directly or by a video recording, for which they signed an informed consent form. Two individuals rejected the video recording and another two cases had to be excluded from the study because of technical problems encountered during the recording. Thus, for the analysis of inter-rater reliability, the final number of participants included in this analysis was 41, as the remaining 29 did not come to the second appointment for various reasons (such as “I forgot” and “I had other obligations”). We chose one week as the interval between the two observations times to minimize the probable influence of participants’ recollection of the test responses at retest, and the decision was also based on the data provided by the bibliography (original validation study of the OTI); in many cases, it also coincided with the patients’ next appointment, which facilitated their presence.

2.3 Procedure and Analysis

During the personal interview carried out by Interviewer 1 (Int1), a battery made up of the above-mentioned instruments (OTI, Sections 11 and 12 of the SCAN, and GAFS) was administered. Previously, Int1 informed the patients of the goals of the study, gave instructions on how to complete the questionnaires, and assured the participants of the confidentiality of their responses. On the basis of these data, a diagnosis was made of the substance use disorder (abuse or dependence), and we analyzed the internal consistency and structure of the OTI, as well as its concurrent validity with regard to the GAFS scores.

2.3.1 Reliability

Test-retest reliability. To assess test-retest reliability, we compared the observations made by the same interviewer (Int1) on the same participants at two different times. A random group (n = 70) selected out of the total sample of patients who took part in the first interview was scheduled seven days later to complete the assessment (in administering the OTI). The total number of participants included in this analysis was 41, as the remaining 29 did not come to the second appointment for various reasons (such as “I forgot” and “I had other obligations”). We chose one week as the interval between the two observations times to minimize the probable influence of participants’ recollection of the test responses at retest, and the decision was also based on the data provided by the bibliography (original validation study of the OTI); in many cases, it also coincided with the patients’ next appointment, which facilitated their presence. Analysis of test-retest reliability was carried out by estimating first the item-by-item concordance, and second, the concordance between the two successive total scores for each participant. For item-by-item concordances, we determined the percentage of simple agreement and the weighted kappa coefficient [12], which was interpreted according to Feinstein’s criteria [22]. This author establishes five levels of agreement to categorize and interpret the values of kappa coefficients (Poor = 0-.20, Fair = .21-.40, Moderate = .41-.60, Good = .61-.80, and Very Good = .81-1). To calculate the concordance between the total scores recorded on the scales, we used the intraclass correlation coefficient (ICC) by applying the ICC formula 1.1 of Shrout and Fleiss [49] or the E5 formula of Bartko and Carpenter (7,8).

Inter-rater reliability. To assess inter-rater reliability, we compared the observations made independently by two interviewers (Int1 and a second interviewer, Int2) about the same participants at the same time. Out of the total number of patients who came to the first interview, we selected a random sample (n = 45), and we proposed that a second interviewer should assess them at that time, either directly or by a video recording, for which they signed an informed consent form. Two individuals rejected the video recording and another two cases had to be excluded from the study because of technical problems encountered during the recording. Thus, for the analysis of inter-rater reliability, the final number of
participants included was 41. In 15 cases, the assessments took place with both interviewers present and face-to-face with the patient. Int1 carried out the interview directly, while Int2 scored the participant’s responses to the questions on a parallel questionnaire. In no event did Int2 have access to or know the scores recorded by Int1. Also, Int2 was not allowed to reformulate the questions already asked. For the remaining 26 participants, inter-rater reliability was assessed by comparing the scores obtained face-to-face by Int1 with those obtained by Int2 when viewing the video recordings of the interviews of those same patients. For the analysis of inter-rater reliability, we first estimated the item-by-item concordance and then the concordance between total scores, using the same statistical procedures as in the test-retest analysis.

Internal reliability. For the analysis of internal consistency, Cronbach’s alpha coefficient was calculated, with values ranging between 0 and 1 [13], by interpreting its results according to Nunnally’s criteria [45]. For this author, values lower than .60 should be considered insufficient.

2.3.2 Validity

Correlation with the Global Assessment of Functioning Scale (GAFS). To assess the external validity of the construct measured by the OTI, we analyzed its concurrent validity, considered as the correlation between the total scores of each OTI scale and the GAFS score, using Pearson’s linear correlation coefficient.

2.3.3 Structure of the OTI

To assess the dimensionality of this scale, we conducted exploratory factor analysis (on the main components). To determine the number of factors to be extracted, we used Kaiser’s criterion [35, 36] and, to select the items that load on each factor, Stevens’ criterion [53]. Varimax rotation was used to transform the solutions. The verification of the adequacy and statistical significance of the correlation matrix provided by the model ensure the correct interpretation and validity of the data involved in the principal component analysis. To ensure a correct interpretation, we performed the matrix sampling adequacy test (MSA). The MSA test is a mathematical index that derives algebraically from a linear combination of the partial correlations and the multiple correlations of each variable [36]. To verify the statistical criterion of homogeneity, we used Bartlett’s sphericity test [9, 10], which estimates the significance of the factors in the loading matrix, while assuming the nonsignificance of the residual matrix.

3. Results

The mean age of the participants of the sample was 30.2 years (SD = 6.6); 91.4% were men and 8.6% were women. Of those in the sample, 60% were single and had lived at the same address for an average of 13.7 years (SD = 10.5). Their home either belonged to them or to their family in 75.2% of these cases, and 94.5% had lived at home for the past month. The participants had completed an average of 6.9 years of schooling (SD = 2.7).

At the time of the interview, 86.6% of the sample (91 participants) were in “extended abstinence” and the remaining 13.3% (14 subjects) were in a “steady-state use of the drug” situation. Of those in the sample, 96.2% (n=101) met the DSM-IV criteria for opiate dependence, and this was their reason for requesting treatment (Table 1). Of the four remaining patients consulted about the consumption of other substances, one met the DSM-IV criteria for alcohol dependence, another for sedative dependence (benzodiazepines), the third was diagnosed as cocaine-dependent, and, in the last case, the consumption of cannabis, cocaine and alcohol was ascertained, but the DSM-IV criteria

| Table 1. Frequency distribution of the drug-related disorders according to DSM-IV criteria (USE: refers to the drug use pattern that does not meet the diagnostic criteria for abuse or dependence). |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Category                        | Opiates (n=105) | Cannabis (n=90) | Sedatives/Hypnotics (n=90) | Cocaine (n=90) | Alcohol (n=90) |
| Dependence                      | 101 (96.19)     | 2 (2.22)        | 6 (6.66)          | 15 (16.66)     | 5 (5.55)        |
| Abuse                           | 0 (0.00)        | 0 (0.00)        | 2 (2.22)          | 1 (1.11)       | 4 (4.44)        |
| Use                             | 0 (0.00)        | 31 (34.44)      | 8 (8.88)          | 9 (10.00)      | 60 (66.66)      |
| Does not use                    | 4 (3.81)        | 57 (63.33)      | 74 (82.22)        | 65 (72.22)     | 21 (23.33)      |
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...for abuse or dependence were not met. All the participants with opiate dependence received the course specifier of disorder “with physiological dependence” (according to DSM-IV criteria). Of this group, 82.5% (n = 52) were undergoing agonist therapy (methadone). Of the dependent patients, 11.1% were in “early full remission” and 1.58% (one subject) was in “early partial remission”. Lastly, 4.76% (3 subjects) were in “sustained full remission”. We found no cases of opiate “abuse” in the sample. Table 1 also shows the distribution of the cannabis, sedative-hypnotics, cocaine and alcohol-related disorders. Among the patients who had opiate dependence, we found 14 participants with cocaine dependence (13.3%), 5 with sedative-hypnotic dependence (4.76%), and 3 with alcohol dependence (2.85%).

Table 2 shows the case distribution by treatment modality and the stay of the participants in each modality. The patients in the sample had undergone an average of 2.1 previous treatments (SD = 2.3) and, at the time of the interview, they had been in the corresponding programme for 3.3 months (SD = 5.9). Of the patients, 23.8% (n = 25) were in treatment in a therapeutic community (the FADAIS Centre in Tarifa), and the remaining 76.2% (n = 80) were attended to in an outpatient resource (Cadiz Provincial Centre for Drug Dependency). Of the latter, 32 patients were in a maintenance programme with methadone, 28 were in treatment without methadone (20 with naltrexone, too, and 8 without it), 2 participants were interviewed while in detoxication treatment, and lastly, 18 patients were not being treated (“no treatment”). These were participants who had come to the outpatient centre requesting treatment, and who had not yet been formally included in any of the established programmes at the time of the interview. Most of the patients in the sample (83.8%) were assessed within the first three months of treatment, and 7.6% (n = 8) had been in treatment for over a year. It can be seen that all the patients in the therapeutic community were interviewed during the first month of their stay (in the first week), and were diagnosed with opiate dependence.

### 3.1 Reliability

Test-retest reliability. Table 3 presents the data of the test-retest reliability analysis. Section 3A
shows the values of the ICCs for the total scores agreement of each of the OTI scales and Section 3B shows the frequency distribution of each category of agreement (item-by-item) into which the values of the kappa coefficients can be grouped, according to Feinstein’s criteria. Section 3A shows that the ICCs values for the total scores of the OTI scales are high or very high, ranging between .77 and .97 (mean: 0.89). Thus, the highest value, which corresponds to the Criminality scale, is .97 (95% CI: 0.92-1). This means that the percentage of variance attributable to disagreement between observations of the same participants made at two different moments is 3%.

The item-by-item reliability analysis shows generally high indexes (Table 3B). Thus, for the HIV Risk-taking Behaviour and Criminality scale, 100% of their items present a “strong” or “almost perfect” level of agreement, and, for the scale of Social Functioning, this level reached 91.6%. The item-by-item agreement for the Psychological Functioning scale (GHQ-28) was lower; “moderate” or “strong” for 69.2%, and “poor” or “regular” for the remaining 30.8%. The items in the Drug Use and Health scales were coded as quantitative variables, so the kappa index is not applicable as an estimator of concordance. For this purpose, we used the ICC. The ICC values observed in the Drug Use scale were high (ranging from .82 to .98), and the mean ICC value for the items in the Health scale was .72. Currently, the ICC is considered the most adequate estimator of reliability (for quantitative variables), because Pearson’s product-moment correlation coefficient tends to overestimate it [8], which is why we used the ICC in this study. Nevertheless, to compare our outcomes with those obtained by other authors (who used the Pearson coefficient), we also calculated the values of this estimator for each of the total OTI scores (Table 4). We conducted a generalization of validity analysis on these data, based on inferential statistics [38]. The hypothesis is that the statistics calculated in each study (in this case, the test-retest reliability coefficient) are only precise sample estimations of a populational value (the “true reliability” coefficient of the instrument). In step one, the weighted mean correlation coefficient for the sample size of the diverse studies - Darke et al.’s [18], Adelekan et al.’s [2], adding the data reported in the present study - is calculated. For this purpose, we used the formula of Schmidt and Hunter (cf. 38). Secondly, we estimated the variance of the coefficient across the three studies and corrected the sample error. In our analysis, as the values of the corrected variance were very low, the estimates must be very accurate.

Inter-rater reliability. Table 5 presents the data resulting from the inter-rater reliability analysis. In section 5A, the values corresponding to the ICC for the total score agreement of each OTI scale are presented, and, in 3B, we report the frequency distribution for each of the categories of agreement (item-by-item) in which the values of the kappa coefficients can be grouped according to Feinstein’s criteria. Here too, the values of the ICCs for the total scores of each OTI scale are high or very high, ranging between .69 and .99 (mean: .88). The highest value, which corresponds to the HIV Risk-taking Behaviour scale, is .99 (95%CI: 0.99-1). The analysis of item-by-item reliability shows globally high indexes. Thus, in the HIV Risk-taking Behaviour and Social Functioning scales, 100% of their items presented a strong or almost perfect level of agreement; in the Criminality Scale, the level of agreement was 80%. For the item reliability analysis of the Drug Use and Health scales, we used

| Table 4. Test-retest reliability of the OTI scales; values of Pearson correlation coefficients for the total scores of the scale (MCCW = mean correlation coefficient weighted by sample size. WV = weighted variance of the statistical data across the studies. VCSE = variance correction by sample error (estimator of populational variance). The correlational values are obtained with Pearson’s coefficient. |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | Darke et al., 1992(18) | Adelekan et al., 1996(2) | González-Saiz (present study) | MCCW | WV | VCSE |
| Drug Use        | 0.92            | 0.79            | 0.89            | 0.86            | 0.002           | 0.000           |
| HIV Risk-taking | 0.87            | 0.75            | 0.96            | 0.86            | 0.008           | 0.006           |
| Social Functioning | 0.89            | 0.85            | 0.90            | 0.88            | 0.000           | 0.000           |
| Criminality     | 0.86            | 0.70            | 0.98            | 0.85            | 0.014           | 0.012           |
| Health          | 0.86            | 0.90            | 0.81            | 0.85            | 0.001           | 0.000           |
| Psychological Adjustment | 0.78            | 0.80            | 0.86            | 0.81            | 0.001           | 0.000           |
the ICC, as these items were encoded as quantitative variables. In the Drug Use scale, the ICC values observed were very high (ranging from .85 to 1), and for the Health scale, the mean ICC value was .87. The inter-rater reliability of the Psychological Adjustment scale was left unanalyzed because it is a self-administered scale. By comparing the data shown in Tables 3 and 5, it can be seen that, except for the Criminality scale, the ICC values for the analysis of inter-rater reliability are somewhat higher than those corresponding to test-retest reliability.

Internal reliability. Table 6 presents the values of the Cronbach alpha coefficients for each of the OTI scales, and the values found in the prior works of Darke et al. [18] and Adelekan et al. [2]. These values range between .27 for the Criminality scale and .91 for the Psychological Adjustment scale (mean: .61). The values corresponding to the HIV Risk-taking Behaviour, the Health and the Psychological Adjustment scales can be considered sufficient according to Nunnally’s [45] criteria. This implies the existence of a moderately high covariation among the items that make up each of them - a finding that supports their internal consistency and, therefore, the homogeneity of these theoretical constructs. According to these criteria, the Cronbach alpha values of the Social Functioning and Criminality scales are not high enough to ensure adequate internal consistency, although, as we shall see, this is not the only estimator of scale homogeneity.

3.2 Validity

Correlation with the Global Assessment of Functioning Scale (GAFS). The correlation coefficients between the total scores of each of the OTI subscales with the total GAFS score were very high. The highest values corresponded to the Health (−.75), Social Functioning (−.67), and Psychological Adjustment (−.65) scales, followed by the HIV Risk-taking Behaviour (−.49), Criminality (−.45), and Drug Use (−.43) scales. All these coefficients were statistically significant (p < .05) and mathematically negative, because the systems that encode the severity of these instruments are reversed.

3.3 Structure of the OTI

Due to the extensive nature of the data obtained by us, this paper presents a summary of our most im-
important results; the complete tables are available on request from the authors. For each scale, Table 7 shows the number of latent factors extracted, the percentage of variance explained, and the sample adequacy coefficient. By analyzing a specific scale, for example, HIV Risk-taking Behaviours, it can be seen that the solution supplied by the model supports a two-factor structure. The first factor, which accounts for 45% of the variance of the correlation matrix, includes items 1 to 6. These items assess the risk behaviours associated with ways of preparing and administering drugs, coinciding in this case with the content and denomination of this subscale (Risk associated with drug use). Factor 2 accounts for 18.2% of the variance, and items 7 to 11 load on it, expressing an assessment of HIV risk behaviours related to sexual behaviour; this factor likewise coincides with the structure that defines the second subscale of this section of the OTI (Risk associated with sexual behaviour). The value of the matrix sample adequacy coefficient was .79, which means that the data provided by this analysis are conclusive (values lower than .50 do not allow interpretation) and this finding supports the homogeneity of the set of items that make up the total score of this OTI scale. The correlation matrix, as analyzed by Bartlett’s test, was statistically significant, which underlines the robustness of the results of the principal component analysis (Chi-square = 5092.1, p = .0001).

To delimit the latent factors present in these correlations, we conducted a principal component analysis on the set of total scores of each of the scales used in this interview. Under these conditions, the OTI displays a clear two-factor structure (Table 8). This instrument, as a whole, is a homogeneous set, with a sample adequacy coefficient value of .71, and Bartlett’s test indicates a statistically significant matrix (Chi-square [20]=90.6, p = .0001). Factor 1, which accounts for 38% of the correlation matrix, includes the total scores of the Drug Use, HIV Risk-taking Behaviour, Social Functioning, and Criminality scales. Factor 2, which accounts for 17% of variance, groups the scores of the Health and Psychological Adjustment scales. Taken together, these two factors account for 60% of the variance in the correlation matrix.

Table 7. Analysis of the structure of the OTI: summary of the factor analysis (Nr. Factors: Number of factors extracted; % Variance: Percentage of variance of the extracted factors; SAC: sample adequacy coefficient).

<table>
<thead>
<tr>
<th>Scale</th>
<th>Nr. Factors</th>
<th>% Variance</th>
<th>SAC (MSA test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug Use</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>HIV Risk-taking Behaviour</td>
<td>2</td>
<td>63 %</td>
<td>0.79</td>
</tr>
<tr>
<td>Social Functioning</td>
<td>6</td>
<td>78 %</td>
<td>0.56</td>
</tr>
<tr>
<td>Criminality</td>
<td>2</td>
<td>84 %</td>
<td>0.65</td>
</tr>
<tr>
<td>Health</td>
<td>2</td>
<td>51 %</td>
<td>0.78</td>
</tr>
<tr>
<td>Psychological Adjustment</td>
<td>8</td>
<td>70 %</td>
<td>0.78</td>
</tr>
</tbody>
</table>

Table 8. Comparison of the results of the principal component analysis of the OTI interviews as a whole with those of the two previous.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Darke et al., 1992 (n=290)</th>
<th>Adelekan et al., 1996 (n=97)</th>
<th>Gonzalez-Saiz (present study) (n=105)</th>
<th>Darke et al., 1992 (n=290)</th>
<th>Adelekan et al., 1997 (n=97)</th>
<th>Gonzalez-Saiz (present study) (n=105)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug Use</td>
<td>0.76</td>
<td>0.68</td>
<td>0.51</td>
<td>0.11</td>
<td>0.27</td>
<td>0.38</td>
</tr>
<tr>
<td>HIV Risk-taking Behaviour</td>
<td>0.81</td>
<td>0.66</td>
<td>0.68</td>
<td>0.09</td>
<td>0.003</td>
<td>0.09</td>
</tr>
<tr>
<td>Social Functioning</td>
<td>0.54</td>
<td>0.33</td>
<td>0.69</td>
<td>0.29</td>
<td>0.55</td>
<td>0.13</td>
</tr>
<tr>
<td>Criminality</td>
<td>0.63</td>
<td>0.67</td>
<td>0.66</td>
<td>0.14</td>
<td>0.54</td>
<td>0.06</td>
</tr>
<tr>
<td>Health</td>
<td>0.10</td>
<td>0.11</td>
<td>0.30</td>
<td>0.86</td>
<td>0.83</td>
<td>0.79</td>
</tr>
<tr>
<td>Psychological Adjustment</td>
<td>0.11</td>
<td>0.05</td>
<td>-0.005</td>
<td>0.85</td>
<td>0.89</td>
<td>0.88</td>
</tr>
<tr>
<td>Eigenvalue (λ)</td>
<td>1.95</td>
<td>2.15</td>
<td>2.32</td>
<td>1.59</td>
<td>1.17</td>
<td>1.03</td>
</tr>
<tr>
<td>% Variance</td>
<td>33</td>
<td>35.8</td>
<td>38.7</td>
<td>27</td>
<td>19.6</td>
<td>17.2</td>
</tr>
</tbody>
</table>
tion matrix. This same two-factor structure was observed in prior studies [2, 18] and, in both cases, they were interpreted in the same way. We will therefore maintain the previously used names for these factors in our paper: “drug using life-style” (Factor 1) and “health and well-being” (Factor 2).

4 Discussion

The data provided by this study allow us to conclude that the Spanish version of the OTI presents very high test-retest and inter-rater reliability, and moderately high internal consistency; in addition, new aspects of its factor structure have been defined. The participants assessed as present certain sociodemographic characteristics that can be considered representative of, and very similar to, the profile of users who habitually come to specific services for drug addicts in our setting. Validation studies of the OTI carried out previously in Australia and the United Kingdom analyzed its reliability, internal consistency, and concurrent validity [1, 2, 14-20]. In all these studies, the sample was made up of patients who had initiated treatment for their opiate dependence (especially in methadone maintenance programmes), and the sample sizes ranged between 32 participants in the study of Deering and Sellman [20] and 290 in that of Darke et al. [18].

The results of this work support high test-retest and inter-rater reliability. We verified that the inter-rater reliability of the OTI is somewhat higher than the corresponding test-retest reliability (except for the Criminality scale). In an initial interpretation, this may seem illogical, because it is reasonable to think that the same clinical practitioner’s observations would be more consistent with his or her own observations than those that were subjected to comparison but contributed by two different clinical practitioners, considering their diagnostic variability. These data can, however, be understood in greater depth after making a more detailed analysis. The variations observed between two interviewers’ scores are mainly determined by what is called the observational variation between them [52]. In this case, the two observations are made at the same time. But, in a strict sense, the test-retest reliability coefficient measures the concordance between two observations made by the same clinical practitioner, assuming the invariance of the object of observation. In our case, however, the test-retest reliability coefficient accounts for the observational variability of a clinical practitioner in making his or her own observations (true test-retest concordance), but also the variability of individual symptoms (occasion-by-occasion variability) because, during that 7-day interval, a genuine variation in a given attribute may have occurred (considering the various problems measured on each scale).

These high coefficients could also be due to the fact that the range covered by the total scores observed in the two interviews was very small, which might lead to an overrating of the level of agreement. However, this did not actually occur, because the observed ranges were very close to the possible ranges - a finding that supports the plausibility of the concordance values recorded by us.

As commented on above, the rates of test-retest reliability observed for the total scores on each OTI scale are very similar to those observed by other authors. The similarity between the samples allowed us to conduct this comparative analysis and to generalize the results obtained. Nevertheless, we had to perform two adjustments. Firstly, although we analyzed concordance through the ICC in our study, for comparative analysis we used the same estimator as other authors, namely Pearson’s product-moment correlation coefficient. Secondly, we made the results comparable, because prior studies used a different concept of reliability. In their test-retest reliability section, Darke et al. [18] grouped two different types of analysis. Their “test-retest reliability for the same interviewer” coincides with the concept of test-retest reliability used by us. From our classification outline, test-retest reliability was assessed through the analysis of the concordance of observations carried out on the same subject by the same interviewer at different moments separated by a certain time interval [6, 48]. What these authors call “test-retest reliability for different raters” or “inter-rater reliability” is the concordance of observations separated from each other by a certain time interval and carried out by two raters on the same subject. We think that this latter concept is ambiguous and equivocal because, in this case, the observed variability should be attributed to three different sources: the instrument itself, inter-examiner differences, and genuine variation in the attribute being examined. Therefore, in this analysis, we have only included the concept of test-retest reliability (which means selecting the data corresponding to 25 subjects from the study of Darke et al. and 33 subjects from the study of Adelekan et al.).

In view of these results, it could be stated that the internal consistency of the diverse OTI scales is somewhat parallel to that of studies carried out previously (Table 6). None of the validation studies car-
ried out previously on the OTI assessed the internal consistency or carried out factor analysis of the Drug Use scale. Neither has this study. The main reason for this is that, strictly speaking, this section of the OTI interview is not an assessment scale, because the scores corresponding to mean and recent consumption of each substance are independent of each other.

Internal consistency of the HIV Risk-taking Behaviour scale is satisfactory according to Nunnally’s criteria ($\alpha = .61$), which indicates that the items can be added up to obtain a total score. Nevertheless, this value is somewhat lower than that found by Darke et al. [17] ($\alpha = .70$) (Table 6). These differences are probably due - at least with regard to the study of Darke et al. - to the fact that, in our sample, the scores observed in each item were lower. The mean alpha coefficient value (populational estimation) was .67, so it can be concluded that the internal consistency of the HIV Risk-taking Behaviour scale is acceptable. The principal component analysis reveals a two-factor structure that exactly coincides with the sub-scales contained in this section of the interview (risk associated with the mode of consumption and with sexual behaviour). This coincidence is still greater than that found by Darke et al. [14]. These data support the role of this scale in measuring the impact of risk behaviours on infection in this population. The relatively low scores of some items have led us to consider the possibility that some of these behaviours were not reported to the interviewer. This may occur especially in the subscale of sexual behaviours, where the phenomenon of social desirability may affect the responses given [34]. We must therefore note the need to assure patients of the maximum confidentiality of what they say, and to set up a good relationship with them. Future studies should describe in detail and update the items that refer to risky sexual behaviours.

The Social Functioning scale turns out to have an insufficient internal consistency, if Nunnally’s [45] criteria are applied, yielding an alpha value of .57. Darke et al. [18] and Adelekan et al. [2] found very similar values (Table 6), indicating a mean weighted overall estimation of .56. However, the sample adequacy coefficient, although acceptable, is relatively low (.56), which indicates insufficient homogeneity. The direct interpretation is that the relationship between its items is weak. In this sense, the elimination of those with a lower specific weight would give the result of a higher internal consistency of the remaining set of items. However, an additional analysis using a stepwise multiple regression model allowed us to conclude that no item should be excluded - a finding that indicates the significant contribution of all the items to the total score that measures social functioning. As a result, the coexistence of distinct components within the scale is plausible. Thus, principal component analysis revealed a 6-factor structure whose contents support the need to diversify the area of social functioning into differentiated aspects. As a result, a set of items emerges that explores relations of friendship, groups of users, and so on. A multidimensional assessment instrument should demonstrate more marked differences between the diverse components in the patients’ social area. In our opinion, one of the main limitations of the OTI scale is the low presence of items that explore family dysfunction.

The Criminality scale is the section of the OTI with the least internal consistency ($\alpha = .27$), which coincides with the findings of Darke et al. [18] and Adelekan et al. [2]. The value of the mean weighted alpha coefficient among the three studies was only .34. This means that the scores of the items are not closely related to each other, and that their sum does not form a homogeneous construct. This does not invalidate the recording of each kind of crime individually. Principal component analysis indicates a 2-factor structure that is difficult to interpret, as it groups within a single factor a series comprising property crimes, fraud and crimes involving violence.

The Health scale has high internal consistency ($\alpha = .71$), very similar to that found in previous studies. The sample adequacy coefficient is also high (.78), which, along with the alpha value, supports the homogeneity of the scale. The internal structure is also very compact and is defined by two factors: the first one groups practically all the items and explains 38% of the variance. The Injection-related problems scale has a lower correlation with the rest of the items. In the study of Darke et al. [17], the first factor had fewer items, which provides less support to the unidimensionality of these authors’ results. In general terms, these data indicate that this list of symptoms can be used to obtain a global assessment of the health status of these patients. This scale has the advantage of being easy to use by nonmedical personnel because, without establishing a diagnosis, it still provides a general measure of the severity of these problems. One potential drawback of its use is a possible difference in the weightings of the scores by gender [25]. Thus, assuming the equality of the scores of the “common” items shared by two patients of different sex, the woman might be subject to an additional score of severity in the gynaecological area.

The Psychological Adjustment scale has the
highest consistency coefficient of the entire OTI (.91), which coincides with the results of prior studies. The mean weighted alpha coefficient of the GHQ-28 in the opiate-dependent population is estimated to be .86. This value, along with a sample adequacy coefficient of .78, supports the homogeneity of the scale; in other words, the total score can be derived from the sum of its items. However, principal component analysis indicates an 8-factor structure that is difficult to interpret. The first factor groups some items from the Social Dysfunction scale, whereas the rest of the items are distributed among the other factors. Obviously, this structure does not define the four known subscales of the GHQ-28. This shows the need to validate instruments for each specific population.

The correlations between the scores of the OTI scales are relatively low, which supports the concept of a degree of independence between different drug-related problems. As McLellan et al. [39] concluded in a prospective assessment of treatment outcomes at a 6-month follow-up, using the ASI-5, the decrease in the severity of a certain area (i.e., drug use) is not necessarily accompanied by a parallel or proportionate reduction in each of the other dysfunctional areas. This same group reached the same conclusions in the study of reliability and validity of the ASI-6 [11]. The practical consequence of these findings is, therefore, the need to organize the treatment, by specifically targeting each of these deficient aspects during the intervention. In any event, these findings should be interpreted with some precaution. Although these low associations have generally been viewed as implying the independence of each area from the others, in a stricter sense, this may not be true, because the Pearson or Spearman estimators are linear correlation coefficients. That is, they measure the degree of association between two variables through the level of fit of their residuals to their regression line. In other words, a low or null correlation coefficient should not be interpreted in the sense that the two variables are not related, but rather, in the sense that, if they are related, their relation is nonlinear. Logically, this leads to the possibility that there may be a genuine relation of another order, and the methodological difficulties entailed by this must be acknowledged.

With regard to concurrent validity, we wish to stress the relatively high correlation between the level of general functioning, measured with the GAFS, and the OTI scales that measure health status, psychological adjustment and social functioning. This result, which had not been analyzed previously by other authors, seems coherent from a clinical point of view, because it identifies three essential dimensions that are affected by drug use [30]. This fact provides a foundation for considering these three OTI scales as indicators of functional recovery.

This study presents some limitations. The sample size, although considered adequate, and larger than that of other studies, did not allow us to detect - on account of their low prevalence - the consumption of some substances or the presence of infrequent behaviours. This led to us being unable to determine some item reliability coefficients, and has probably affected the multivariate analyses. However, the assessment of substance use was based on the information reported by the subjects interviewed. It should be taken into account that the concept of reliability corresponds to self-reported consumption, rather than consumption detected by means of the analysis of urinary metabolites, which was not carried out.

To conclude, the data reported in this study support the reliability and validity of the Spanish version of the OTI clinical interview as an instrument for the assessment of treatment outcomes in cases of opiate addiction over a broad range of drug-related problems. On the other hand, we contribute evidence of validity that authorizes the use of the OTI scales that have been designed to assess health, psychological adjustment, and social functioning by acting as indicators of these patients’ functional recovery. The OTI can be used for the evaluation of the effectiveness and efficiency of methadone or buprenorphine/naloxone maintenance treatment.

References


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Conflict of Interest
The authors have no relevant conflict of interest with regard to the present study.

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The effects of psychopathology and personality on substance abuse in twelve-step treatment programme abstainers, opiate substance abusers and a control sample

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Summary

The purpose of this study was to examine the effects of psychopathology and personality on opiate substance abuse, and also to investigate the roles of marital status, income, educational level, and familial history of drug abuse and family size, as well as ethnicity, in determining substance abuse. There were 150 young adult male participants divided into three groups; these comprised twelve-step treatment programme abstainers, opiate addicts and normal individuals, respectively. A demographic questionnaire, the SCL-90-R, and the NEO PI-R were used in this study. The study data demonstrated significantly positive and negative correlations between the Neuroticism and Extraversion dimensions of personality and all indices of psychopathology. Patients with opiate use had significantly higher levels of psychopathology than the other two groups. The twelve-step self-treatment programme significantly lowered psychopathology in patients with opiate abuse. In addition, normal individuals had a significantly lower level of Neuroticism and higher levels of Openness to Experience, Agreeableness and Conscientiousness than either opiates abusers or abstainers. Lastly, the results of the study indicated the effects of familial history of substance abuse and family size on prospective drug abuse.

Key Words: Psychopathology, Personality, Substance Abuse.

1. Introduction

Substance abuse is a broad spectrum, multi-etiological disorder which has many negative long-lasting effects on individual well-being, particularly that of young adults. The various forms taken by substance abuse disorders include health risk behaviours that are often linked together, and, as a rule, all of these disorders originate in three etiological factors that comprise: psychopathology, personality characteristics, and a negative social environment [28]. Studies in the literature have indicated that substance abusers generally report a high level of psychopathology and mental disorders such as anger, depression, and anxiety [60, 63, 68, 71]. Suicide and forms of mental disorder was assumed to be an accompanying feature, with a multitude of other risk behaviours in cases of substance abuse [5]. Similarly, substance abuse in young people was associated with violent behaviour and deviant peer relations, and these personality dysfunctions undoubtedly intensify their propensity for distinctive types of drugs in substance abuse [19, 24].

As a result, many researchers have adopted a comorbidity hypothesis to explain substance abuse disorders in various different populations; this decision may prove to be correct because of the probable effects of both psychopathology and personality factors in substance abuse disorders. Clark and Bukstein [15] suggested that the types of substance use disorder that are most subject to comorbidity are mood and anxiety disorders. In any case, the importance of personality characteristics continues to remain a crucial factor in the etiology of substance abuse disorders [35, 42, 66]. Specifically, Cloninger, [16] developed a model of temperament in substance abuse which came to be known as the three-dimensional theory of temperament. This theory was formulated to account for the role played by biological and psychological
factors in substance abuse disorders. This theory describes patients’ characteristic behavioural responses to drug abuse within three dimensions: novelty seeking (NS), harm avoidance (HA), and reward dependence (RD). Sher [65] proved the efficacy of Cloninger and Eysenck’s theory on substance abuse disorders. Similarly, Chang [14] showed that novelty seeking was positively correlated with substance abuse. In a more recent study, Cloninger, [17] pointed out that individual differences in the development of personality could play a major role as a causal antecedent of the full range of psychopathology, particularly in substance abuse. Besides this, the effects of social disadvantage and negative environments in substance abuse have been emphasized in the psychological literature. In particular, Kilpatrick and colleagues [47] explained how adolescents who had been involved in physical and sexual assault, who had witnessed violence, and who had had family members with substance abuse problems, ran higher risks of being current substance abusers. These authors also identified ethnicity as an indicator of sociocultural factors that play a significant role in determining a high risk of becoming a drug addict.

Drapela [27] proposed that both social control theory and social learning viewpoints are useful concepts, because they help to explain how psychopathology, personality, and socio-familial factors (i.e. intergenerational transmission and impoverished environmental situations) are likely to be impacted by the presence of substance abuse disorders. It should be noted that these theories have led to many new findings in this field. Social control theory predicts that relationships of strong attachment between parent and child are likely to inhibit substance abuse in adolescents and youths. Social learning theory highlights the fact that children and adolescents who were strongly attached to, and had bonded with, a substance-abusing parent are those most likely to become a substance abuser, because they take their parents’ deviant behaviours as their model at the moment of activating the modelling process. According to social learning theory, patients with substance abuse are known to often identify with models of this kind, and they learn the disordered substance abuse patterns from the situations included in their social environment. For example, social learning theorists have suggested that the effects of male and female models “may be a function of the extent to which the behavior in question is sex-typed” [7]. More specifically, current studies have proved that young people often tend to model their own behaviour on that of their same-sex parent, with the direct result that they take up deviant behaviours [39]. Subsequently, from a social learning perspective, a clear majority of investigations in this field have attempted to change the psychopathology, personality, and familial deficits of patients suffering from substance abuse disorders, with the aim of helping them to adopt new roles and models that will enable them to learn how to cope with substance abuse and, therefore, enact new, more healthy roles.

A good example of this is that self-help treatment groups act as sources of social bonding between patients with substance abuse by setting up the objective of allowing all members to attain abstinence and recover from their individual disorder. Self-help treatment groups offer a novel approach in this field, but there is a lack of evidence about how this module functions, and about its efficacy in lowering psychopathology and personality alterations – more specifically, in patients who have an opiate abuse disorder in Iran. There are two reasons that lie behind the present study. First, opiate dependence is rooted in a strong historical context in this country, and it belongs to a major subset of substance abuse problems; it follows that effective treatments for opiate dependence would require a preliminary search for and a validation of new therapeutic methods in this field. Second, compared with other substance abuse subgroups, opiate abusers are subject to more serious unemployment, medical and legal problems. Hence, this type of disorder is bound to place a greater cost burden on both society and families [26]. As a result, the present study chose as its main aim the examination of the possible effects of psychopathology and personality factors in its three study groups: twelve-step treatment programme abstainers, opiate addicts and normal young adults, all of them chosen from an Iranian population.

The present study is grounded on the twelve-step treatment programme, the diathesis-stress and biopsychosocial models in psychopathology, and the Big Five Personality model. The twelve-step treatment programme in this study is founded on the programme of Narcotics Anonymous (NA) which was developed as an extension of the programme of Alcoholics Anonymous, and it uses the same twelve steps, while replacing the word “alcohol” with “drugs” or “substances”. The NA programme was founded in 1953; it has its own set of basic texts, and the first NA manifesto was published in 1962 [59]. Similarly, the Narcotics Anonymous (NA) groups hold a regular planned meeting on Thursday nights, and their staff also provide transport services to first-step clients to
two outside meetings every week. It should also be mentioned that 95% of inpatient addiction treatment programmes in the United States incorporate both AA and NA methods and principles at some levels [11]. Lastly, there are many NA groups which apply 12-step programmes as the best hope of stopping substance abuse in addicted people [2]. For example, all of the 12-step self-help groups try to apply versions of the notion of hitting bottom in their localized formula story of addiction, so as to make recovery possible [40]. The first-step patients do not receive preferential treatment in the application of different types of recovery theory in substance abuse disorders, and they only affirm that addiction itself is a problem. Members are well informed on the question of the need to understand that their actions and problems have to be considered symptomatic of “active addiction” or of “recovery.” This therapeutic programme usually places emphasis on acceptance of the addiction problem, renunciation of control, active participation in the 12-step meetings, and admission to a programme of recovery [13, 33, 34, 38, 43]. Altogether, both AA and NA are looked upon as being an effective modality of substance abuse treatment for adults [45, 58, 69, 70].

The diathesis-stress model attempts to explain the relationship between the causes of substance abuse and the degree to which individuals may be in peril in reacting to those causes. The diathesis-stress model implies that people have individual differences deriving from their predispositions to substance abuse disorders. Diatheses can comprise both biological and psychological factors that are significant in substance inception [64, 77]. Hence, some people may have more of these diatheses for the development of substance abuse disorders than others. This model suggests that having a propensity to substance abuse is not the only efficient way of triggering the illness. One alternative is that an individual’s diathesis must interact with some stressful life events located within a subject’s social, psychological and biological backgrounds; it can then produce the onset of the disorder. The diathesis-stress model helps practitioners to account for individuals’ variability in the occurrence, onset, and time course of substance use via the predication of interactive relations between diathesis and stress processes [75]. In line with this theory, it seems to anticipate the occurrence of psychopathology (i.e. depression), and personality deficits (i.e. neuroticism) can produce an upward surge in the incidence of risky behaviour such as substance abuse, after which this disorder is modulated or predisposed by a few maladaptive coping strategies. This model seems beneficial in predicting psychopathology comorbidity in substance abuse and in revealing the premorbid role of maladaptive personality traits in predisposing individuals to this disorder.

The biopsychosocial model provides a framework for the investigation of all the relevant biological, psychological, and social factors that might be supporting the development and maintenance of the substance disorder [8, 18, 30]. Psychological factors favouring substance abuse contain a few negative patterns of thinking, deficits in coping skills, judgment problems, and impaired emotional functions. To some degree, psychological factors may be affected by the comorbidity of psychopathology or the maladaptive dimensions of personality, and by social factors (i.e. personal and demographic contexts) as these are modelled in response to people encountered within social institutions and within future addicts’ families as they grow up [62]. According to this model, when there is severe vulnerability in a person’s inherent susceptibility to a mental disorder, one consequence is that less external stress is required to cause him/her to contract that disorder [76]. In reality, the presence of an unsupportive, harmful environment during an individual’s early development builds up a basis both for psychopathology and for personality deficits, and it predisposes an individual to substance abuse at a later stage.

Lastly, the linkage between personality and substance abuse disorder has attracted worldwide attention [10, 20, 61]. According to personality theories, traits describe the nature of personality, besides determining its actual operations [12]. Westen [74] expressed the view that traits “are emotional, cognitive and behavioral tendencies that constitute underlying personality dimensions in which individuals vary” (p. 421). Based on factorial theories of personality, Costa and McCrae [21] developed the concept that five dimensions are central to personality: Extraversion, Neuroticism, Openness to Experience, Agreeableness, and Conscientiousness. Matthews and Deary [51] claimed that the Big Five model was an extensive model of normal and abnormal personality, and that this might be applicable to building up an understanding of substance abuse. This Big Five model assumed that its dimensions subsumed many of the narrower traits, while remaining independent of each other, and that they are able to capture some aspects of the various mental disorders [51]. According to the Big Five model, adult substance abusers might have the features of a low level of inhibition and a strong tendency toward stimulation seeking that were found to
belong to the Extraversion and the Conscientiousness domains of personality [21, 48]. In addition, Dubey et al., [29] revealed that substance abusers record higher scores on Neuroticism and Extraversion, whereas those who do not abuse substances often obtain significantly higher scores on Openness to Experience and Conscientiousness. By contrast, there appear to be no significant differences between abuser and non-abuser groups in the Agreeableness domain. Walton and Roberts [72] indicated that substance abusers record lower scores for Conscientiousness and higher scores for Neuroticism than abstainers and moderate substance users. Furthermore, those who refrain from drug abuse show high levels of Conscientiousness. Ball [6] found that patients with low Extraversion were prone to social and psychological withdrawal – a feature that might ultimately hinder treatment progress. Conversely, patients with high Openness to Experience respond more positively to the novel treatment methods. Patients with low Agreeableness were more predisposed to interpersonal antagonism, while individuals with a high level of Conscientiousness had stronger tendencies to make an effort towards implementing their treatment. Moreover, the combination of high Neuroticism, low Extraversion, and low Conscientiousness set up a basic barrier against therapeutic progress [56]. In this sense, the Big Five model predicts that personality dimensions will take different forms in substance abusers, abstainers and normal individuals.

Speaking more generally now, based on predictions drawn from the theories mentioned so far and from the literature, it seems that psychopathology, personality and familial factors have some potential roles to play in the development and treatment of substance abuse. Similarly, this study speculates that opiate abuse development and treatment may exert an influence on these factors. It should be borne in mind that the most common treatment for opiate dependence in Iran is methadone maintenance therapy (MMT). For example, the recent national statistics show as many as 115,000 people have received methadone therapy [31, 57, 67]. However, it looks as if the main effect of actual involvement in self-helping therapies such as the twelve-step programme might be to attenuate the psychopathological symptoms; it will, in any case, greatly modify the personality traits of patients with the opiate abuse disorder. It follows that one aim of this study should be an investigation of the concurrent effects of psychopathology, personality and familial factors in the three groups comprising: twelve-step treatment abstainers, opiate addicts and normal young adults in an Iranian sample. The first hypothesis of this study is that psychopathology and personality would probably reveal significant correlation coefficients in this sample. The second hypothesis to be formulated is that psychopathology and personality would prove to differ significantly in comparing the twelve-step treatment abstainers, opiate addicts and the control group of normal young adults. The third hypothesis is that group status, marital status, income, educational level, the history of substance abuse in the family, and of family size, together with ethnicity, may all play significant roles in the emergence of substance abuse within this sample.

2. Methods

2.1 Sample

There were 150 young adult male participants (20-30 years old) divided into three groups: twelve-step treatment programme abstainers (N=50), opiate addicts (N=50) and normal subjects (N=50), and they were all selected from the population of Shiraz city, Fars province, Iran. None of the opiate-using patients in this study were female because women in Iran use opiates less frequently than men; women who use opiates often face tremendous stigma, so they show no tendency to self-refer to clinics for therapy. In addition, there is little information on the prevalence of opiate use in Iranian women [1]. All the participants in the three groups were young adults (in the 20-35 year age range). All of the twelve-step treatment programme abstainers had attended their abstinence and recovery sessions in a similar group and in a similar situation, and they had all experienced at least a one-year period of successful withdrawal and abstinence from opiate abuse. However, judging by the statements made by many people who were members of multiple 12-step groups in the city, their initial claim of recovery and redemption from addiction was a subjective, self-reported one, and, after they had attested to their abstinence from opiates, they were screened for substance abuse by a clinical psychologist at a private clinic, and only then included in this study. The opiate addicts were included after their substance abuse disorder had been diagnosed, and they all had a drug abuse history lasting over a year. All members of the group of opiate addicts passed a diagnostic and clinical interview before being included in this study. Members of the control group were carefully screened; two clinical psychologists applied the diagnostic criteria for substance use disorders, and, after
group members had been approved, they enlisted in this study. All patients were recruited from an outpatient clinic. These samples were demographically comparable because all they matched with respect to age and level of education. After an informed consent had been obtained, participants completed a demographic questionnaire based on two inventories.

2.2 Instruments

The demographic sheet included age, ethnicity, level of education, marital status, family size, income, and occupation. Two inventories were used: (1) the Symptom Check List 90 Revised, and (2) the NEO Five Factor Inventory (NEO-PI-R).

Symptom Check List 90 Revised (SCL-90-R). The SCL-90-R was invented for mental health screening purposes by Derogatis in 1977 [25]. The SCL-90-R involves 90 items that include: somatization (12 items), obsessive–compulsive (9 items), anxiety (10 items), interpersonal sensitivity (9 items), depression (13 items), aggression (6 items), phobia (7 items), paranoia (6 items), psychosis (10 items), and atypical (7 items) scales [22]. In addition, it has a total scale score index. The reliability of SCL-90-R was firmly established by Derogatis in 1977 [25]. The SCL-90-R reliability ranged from r=.90 for the depression factor as the highest value and r=.77 as the lowest value among the psychosis factors. The SCL-90-R correlation with the MMPI was at its highest for depression (r=.73) and at its lowest (r=.36) for phobia factors. Marashi [50] reported SCL-90-R reliability using an internal consistency alpha in an Iranian sample as follows: somatization (?=.84), obsessive-compulsive (? =.91), interpersonal sensitivity (?=.82), depression (?=.93), anxiety (?=.86), aggression (?=.90), phobia (?=.83), paranoid (?=.81), psychosis (?=.84) and total scale (?=.98). In addition, the SCL-90-R was standardized for the Iranian population, and its validity and reliability have been confirmed [32, 46].

The NEO Five Factor Inventory [21]. The NEO-PI-R is a revised version of the Neuroticism-Extraversion-Openness Personality Inventory (NEO-PI), which was invented to measure the three of the Big Five dimensions [23]. The NEO-PI-R comprises 240 items and was primarily developed through factor analytical methods. All its items are rated on a five-point scale to yield scores on the five personality domain. The domain scales display good internal reliability values, which range from .87 to .92. Facet scales display internal reliability values ranging from .58 to .82 [73]. Two-year test-retest reliability values for the NEO-PI-R ranged between .83 and .91 for domains and between .64 and .86 for facets [54]. The general applicability of the NEO-PI-R has been substantiated across cultures [6, 53]. The reliability and validity of the NEO-PI-R have been verified by several studies on Iranian samples [3, 36, 41]. In addition, the NEO-PI-R inventory has been shown to be very beneficial in investigating issues such as the need to identify the personality profiles of drug abusers and how to improve the drug treatment programmes that are based on these profiles [10].

3. Results

Analysis of data pertinent to our first hypothesis included an inquiry into correlation coefficients. In the present study this was carried out to evaluate correlation coefficients between psychopathology indices and personality dimensions. This investigation was computed among the 16 variables in an effort to assess the degree to which these quantitative variables were positive and linearly related in our sample. Our findings indicated that somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, aggression, phobia, paranoia, psychosis, additional items, and the SCL-90-R total score had linearly significant positive relationships with each other in this sample. There were significantly negative relationships between Neuroticism, Openness to Experience and Agreeableness. Conversely, there were significantly positive relationships between Extraversion, Openness to Experience and Agreeableness. Similarly, Conscientiousness correlated with the Extraversion, Openness to Experience and Agreeableness dimensions of personality in a significantly positive way. Our findings indicated only significantly positive and negative relationships between the Neuroticism and Extraversion dimensions of personality and all the indices of psychopathology, respectively. However, there were no significant relationships between Agreeableness and any of the indices of psychopathology. In addition, the Conscientiousness dimension of personality showed a significant negative correlation with somatization, obsessive-compulsive, interpersonal sensitivity, anxiety, paranoia and the SCL-90-R total score (Table 1).

To examine the possible group differences pertinent to the second hypothesis, several one-way analyses of variance (ANOVA) were performed among the three groups, with the group situation as independent variables and with all indices of psychopathology and personality dimensions being treated as dependent var-
It should also be noted that there are significant differences between the groups of twelve-step treatment abstainers, opiate addicts and normal young adults in the Neuroticism ($F_{2, 147}=69.24, p=.0001$), Extraversion ($F_{2, 147}=27.96, p=.0001$), Openness to Experience ($F_{2, 147}=99.35, p=.0001$), Agreeableness ($F_{2, 147}=7.21, p=.001$) and Conscientiousness ($F_{2, 147}=5.52, p=.005$) dimensions of personality. The a posteriori follow-up for group differences based on Duncan’s test indicated that the individuals in the control group have a significantly lower level of Neuroticism and a significantly higher level of Openness to Experience, Agreeableness and Conscientiousness than patients who use opiates and than the twelve-step treatment programme abstainers. On the other hand, no significant differences were recorded between the twelve-step treatment programme abstainers and patients who use opiates in the Neuroticism, Openness to Experience, Agreeableness, and Conscientiousness dimensions of personality. However, both the control group and the twelve-step treatment programme abstainers have a significantly higher level of Extraversion than patients who are using opiates.

Going on now to examine the second hypothesis through the detailed differences between the groups (Table 2). The findings relevant to this hypothesis showed significant differences between the three groups – twelve-step treatment abstainers, opiate addicts and normal young adults – in somatization ($F_{2, 147}=105.19, p=.0001$), obsessive-compulsive ($F_{2, 147}=96.40, p=.0001$), interpersonal sensitivity ($F_{2, 147}=57.57, p=.0001$), depression ($F_{2, 147}=111.70, p=.0001$), anxiety ($F_{2, 147}=105.58, p=.0001$), aggression ($F_{2, 147}=73.78, p=.0001$), phobia ($F_{2, 147}=45.58, p=.0001$), paranoia ($F_{2, 147}=43.57, p=.0001$), psychosis ($F_{2, 147}=64.15, p=.0001$), additional items ($F_{2, 147}=85.30, p=.0001$), and the SCL-90-R total score ($F_{2, 147}=131.55, p=.0001$). The a posteriori follow-up test for group differences based on Duncan’s test indicated that the individuals in the control group have a significantly lower level of Neuroticism and a significantly higher level of Openness to Experience, Agreeableness and Conscientiousness than patients who use opiates and than the twelve-step treatment programme abstainers. On the other hand, no significant differences were recorded between the twelve-step treatment programme abstainers and patients who use opiates in the Neuroticism, Openness to Experience, Agreeableness, and Conscientiousness dimensions of personality. However, both the control group and the twelve-step treatment programme abstainers have a significantly higher level of Extraversion than patients who are using opiates.

### Table 1. Psychopathology and Personality Correlation Coefficients in the Total Sample

<table>
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<th>DEP</th>
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<th>AGG</th>
<th>PHO</th>
<th>PAR</th>
<th>PSY</th>
<th>ADI</th>
<th>SCL-90-R</th>
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Note: *p ≤ .05, **p ≤ .01, SOM = Somatization, OCD = Obsessive-compulsive, IPS = Interpersonal sensitivity, DEP = Depression, ANX = Anxiety, AGG = Aggression, PHO = Phobia, PAR = Paranoia, PSY = Psychosis, ADI = Additional Items, SCL-90-R = Symptom Check List 90 Revised, NEUR = Neuroticism, EXTR = Extraversion, OPFE = Openness for Experience, AGAB = Agreeableness, CONS = Conscientiousness.
Table 2: Psychopathology indices and personality dimensions in Narcotics Anonymous, Addicted and Normal Groups

<table>
<thead>
<tr>
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in terms of psychopathology and personality constructs, and their subscales, a univariate analysis of variance was conducted using groups as independent variables and psychopathology, personality and their factors as dependent variables. An overall univariate analysis only indicated the effect of group status, Wilks’ k = .079; F (30, 266) = 22.77; p = .0001. In this case, significant differences were found in somatization (F2=105.19, p=.0001), obsessive-compulsive (F2=96.40, p=.0001), interpersonal sensitivity (F2=57.57, p=.0001), depression (F2=111.70, p=.0001), anxiety (F2=105.58, p=.0001), aggression (F2=73.78, p=.0001), phobia (F2=45.58, p=.0001), paranoia (F2=43.57, p=.0001), psychosis (F2=64.15, p=.0001), additional items (F2=85.30, p=.0001), and the SCL-90-R total score (F2=131.55, p=.0001). There were also significant group differences in the Neuroticism and Extraversion (F2=69.24, p=.0001), Extraversion (F2=27.96, p=.0001), Openness to Experience (F2=99.35, p=.0001), Agreeableness (F2=7.21, p=.0001), and Conscientiousness (F2=5.52, p=.005) dimensions of personality. Obviously, these findings are identical with the results from ANOVAs.

Moreover, to examine the possible effects of group status, marital status, income, educational level, history of substance abuse in the family, family size and ethnic differences, and their interactions in this sample, a multivariate analysis of variance (MANOVA) were conducted by examining these variables and their interactions as independent variables, and psychopathology and personality, along with their factors, as dependent variables. An overall multivariate effect only indicated the effects of group status, Wilks’ k = .40; F (16, 48) = 2.23; p = .05, the family history of substance abuse, Wilks’ k = 052; F (60, 84) = 1.59; p = .02, and family size, Wilks’ k = .006; F (120, 161) = 1.43; p = .01. However, an overall multivariate effect rejected the effects of the level of education, Wilks’ k = .478; F (15, 21) = 1.52; p = .18, marital status, Wilks’ k = .609; F (15, 21) = .89; p = .57, income, Wilks’ k = .496; F (15, 21) = 1.42; p = .22, ethnicity, Wilks’ k = .28; F (30, 42) = 1.20; p = .28, and their interactions in the psychopathology index and personality dimensions. The a posteriori comparisons obtained by applying the Duncan test indicated that patients with opiate substance abuse would be likely to have significantly higher interpersonal sensitivity, anxiety and aggression than people without those conditions. Lastly, the people who had a family comprising more than four members would have significantly higher interpersonal sensitivity and aggression than individuals without that situation.

4. Discussion

The aim of the present study was to investigate the concurrent effects of psychopathology, personality and a few demographic and familial factors in three groups: twelve-step treatment abstainers, opiate addicts and normal young adults. The results obtained from this study in the first hypothesis indicated significant positive and negative relationships between the Neuroticism and Extraversion dimensions of personality and all the psychopathology indices. However, there was no significantly relationship between Agreeableness and all the psychopathology indices. Additionally, the Conscientiousness dimension of personality was correlated significantly but negatively with somatization, obsessive-compulsive, interpersonal sensitivity, anxiety, paranoia, and the SCL-90-R total score. In agreement with Westen et al., [74] it seems that the Big Five model of personality could determine individuals’ mental health by their application of different forms of emotional, cognitive and behavioural strategies in the real world. It therefore predicted that the Neuroticism and Extraversion dimensions would contain a few traits such as irritability and sensation seeking which prepare people for the occurrence of psychopathology and mental disorders. However, inherent traits in the Agreeableness, Conscientiousness and Openness to Experience dimensions of personality could protect individuals against mental illness and psychopathology. It suggests that these domains of personality function as a buffering system against the stressors and increase the boundaries of people’s behavioural repertoire. Linkage between psychopathology and the personality is a well-known issue in abnormal psychology, but this is relatively novel in the Big Five model and within an Iranian culture. According to both diathesis-stress and biopsychosocial models, this study suggests that people’s mental health is tracked by their personality development. This assumption cannot be called a new insight, because it was first adopted by Freud in traditional psychoanalytic theory, and then borrowed by trait theories like the Big Five model of personality. This interrelatedness between psychopathology and the Big Five model in opiate abuse is a relatively new field, but it is congruent with the effects of tempera-
ment models in drug abuse [14, 17, 65].

The results from this study in the second hypothesis indicated that patients with opiate use have a significantly higher score for somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, paranoia, psychosis, additional items and the SCL-90-R than the twelve-step treatment programme abstainers and the control group. The twelve-step treatment programme abstainers have a significantly higher score for somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, aggression, phobia, paranoia, additional items and the SCL-90-R than the control group. Therefore, this study proved the benefits of the twelve-step self-treatment programme in lowering psychopathology in patients with opiate abuse. However, there are no significant group differences between the twelve-step treatment program abstainers and the control group in the indices for aggression, phobia and psychosis. These findings were not supported in the previous literature because they are novel, but in general they are in line with the comorbidity hypothesis prediction in the field of mental health and high risk behaviours such as substance abuse [5, 15, 19, 24, 60, 63, 68, 71]. Thus, they could explain from both diathesis-stress and biopsychosocial models which would attempt to explore the influences of potential causes on substance abuse over an entire life-span [8, 18, 30, 62, 64, 75-77]. Therefore, the existence of some forms of premorbid mental illness and psychopathology during an individual’s development can predispose him/her to the occurrence of substance use disorders at a later stage. This might be due to a patient’s inefficient psychological resources, deficits in problem-solving, cognitive, coping and social skills, and/or their attempt to compensate for psychological distress by using a few dysfunctional coping and emotion regulations styles, and to run away from psychic pain and traumas [4, 44]. Similarly, the present study indicated that normal individuals have a significantly lower level of Neuroticism and a higher level of Openness to Experience, Agreeableness, and Conscientiousness than either patients who are abusing opiates or abstainers in the twelve-step treatment programme. There are, however, no significant differences between the twelve-step treatment programme abstainers and patients who abuse opiates in the Neuroticism, Openness to Experience, Agreeableness and Conscientiousness dimensions of personality. In addition, both the control group and the twelve-step treatment programme abstainers had a significantly higher Extraversion than patients with opiate abuse. The current finding for the Neuroticism dimension was in accordance with the previous literature on personality, and it is also in line with predictions deriving from the Big Five model in substance abuse [6, 10, 21, 48, 51, 52, 72].

Since individuals with a high Neuroticism dimension tended towards more negative feelings, it is only to be expected that substance abusers will experience higher degrees of negative feelings such as anxiety, anger, or depression primarily, and then that they will try to dampen down these disturbed feelings by starting a substance abuse disorder. Because of inadequate role models and inappropriate social skills for mastering their negative feelings, it seems they experience many kinds of negative emotions from childhood to later stages. They therefore pick up the habit of following emotionally negative reactions against stressors and live events. Otherwise, they are more likely to interpret ordinary situations and minor frustrations as threatening and worry-evoking events that they are unable to challenge or control. Thus, these coping and cognitive deficits that affect their emotional regulation styles can diminish their ability to think rationally, make decisions, and cope effectively with stressors. Eventually, the Neuroticism domain of personality could come to dominate their personality and later to restrict their social networks and perceived support. By contrast, Extraversion in normal people is highly marked by pronounced involvement with the external world, the joy felt at being with people, a sense of energy, and an experience of positive emotions. Similarly, Openness to Experience is a type of personality dimension that empowers people to follow an imaginative and creative strategy from a down-to-earth perspective. As a result, people with a high level of Openness to Experience are intellectually curious, appreciate of art, and sensitive to beauty. They tend to be more aware of their feelings, and to think and act in a variety of individualistic and nonconforming ways. The Agreeableness domain reflects the differences between different people’s commitment to prosocial cooperation and social harmony, to value getting along through qualities — being considerate, friendly, generous, helpful, willing to compromise their interests with others, and an optimistic view of human nature. People with high degree of Conscientiousness are often interested in the ways in which they could control, regulate, and direct their impulses, and they will to attain more achievement in their real lives. Thus, people with a healthy personality usually apply greater Extraversion, Openness to Experience, Agreeableness and Conscientiousness than patients with substance abuse disorders, and...
these four personality dimensions help them to enhance their positive emotions and then to tone down many negative feelings. Thereby, the Big Five model could serve as a promising venue for therapeutic interventions in patients with substance abuse disorders, particularly for self-help groups in this field.

The results from this study that are pertinent to its third hypothesis indicated the effects of group status, the familial history of substance abuse and family size on substance abuse disorders. One finding is that patients with opiate substance use had significantly higher psychopathological indices than the twelve-step treatment programme abstiners and the control group. Individuals who had more than one family member with a history of substance abuse disorder have a significantly higher level of interpersonal sensitivity, anxiety and aggression than their counterparts who are not in the same condition. People who had a family size of over four members have a significantly higher level, of interpersonal sensitivity and aggression than individuals who were not in the same situation. In any case, an overall multivariate analysis rejected the effects of educational level, marital status, income, ethnicity, and their interactions on indices of psychopathology and personality dimensions. However, the effects of family size on psychopathology have already been documented [49, 55]. It is therefore likely that overcrowding or large family size predict psychopathology, including substance abuse. Similarly, the effects of a family history of substance abuse on mental disorders and drug abuse in the children in that family have been supported in many investigations [9, 37]. The present findings are in line with predictions from social learning and social control theories, and with diathesis-stress and biopsychosocial models in substance abuse disorders [7, 8, 18, 27, 28, 30, 39, 47, 64, 75, 77]. The effects of a family history of substance abuse and of family size on the emergence of substance abuse disorders could explain, on the basis of modelling, inefficient child rearing and socialization, and disadvantaged and unsupportive situations in addicted families; these factors predispose the children in the family to similar disorders in the future. Obviously, this explanation is consistent with diathesis-stress and biopsychosocial conceptualizations due to the long-term repercussions of an adverse childhood on substance abuse.

In conclusion, the present study adds to the psychology literature because it explores the interrelatedness between psychopathology and personality in general, the effects of psychopathology and the Neuroticism dimension of personality on the development of opiate abuse, and the benefits of the twelve-step self-help programme for treatment leading to a fall in psychopathology in patients with opiate abuse. Furthermore, learning theories, diathesis-stress and biopsychosocial conceptualizations are appropriate frameworks within which to account for these findings. It should be noted that the present study is limited for two reasons. First, this study only relied on self-rating measurements; second, it indicated that the abstinent group presents a more severe psychopathological condition than that of the control group. This information should motivate clinicians to find a better treatment for these patients because the “Twelve-Step Treatment Abstainer Programme” is not the best treatment. That programme did improve these patients’ clinical condition with respect to opioid substance abusers, but it did not lead patients to a state of clinical well-being. Future studies with a similar population should incorporate longitudinal designs to reveal the effects of psychopathology and personality factors that are associated with substance abuse over an entire life-span, and to examine these constructs within different cultural samples both within clinical and non-clinical populations.

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TO THE EDITOR: Post-Traumatic Stress Disorder (PTSD) is the most frequently reported psychiatric sequelae of traumatic exposure, often characterized by specific neurobiological alterations, the tendency to a chronic course, and a high risk for suicide [20, 25, 50, 52, 57]. There is evidence of high comorbidity rates between PTSD and other mental disorders, such as mood and anxiety disorders [9, 53], and substance-use disorders (SUDs), this latter being observed especially in veteran populations and in patients participating in substance-use programs [37, 45, 47, 63, 69, 71]. Focusing on substance-use disorders a large majority of drug-dependent patients have been reported to experience one or more PTSD criteria for traumatic experiences. More than one third were found to meet criteria for current PTSD and half of them for lifetime PTSD. The assessment of trauma and PTSD in substance misusers and, conversely, the assessment of substance abuse in victims of PTSD appear to be essential in clinical practice [56]. On one side PTSD has been reported to facilitate SUDs’ onset and complicate their clinical course. More severe drug and alcohol abuse problems have in fact been reported in patients with PTSD, compared to those without PTSD or with other mental disorders, such as major depression and social phobia [6, 10, 45] [44]. On the other side, patients with dual diagnosis (PTSD and substance/alcohol use disorders) tend to suffer from more severe PTSD symptoms, particularly avoidance and arousal symptoms, to leave prematurely the treatment of the substance use disorder, to relapse more quickly and are more likely to engage in HIV risk behaviours related to the SUD, compared to patients with PTSD alone [39, 49, 55, 59, 62]. Interestingly, studies on the relationship between PTSD and SUDs have shown the role of gender in modulating this relationship. In particular, men and women presenting with both diagnoses seem to report different types of trauma: while men are more likely to report combat, accidents and exposure to crime, women report more childhood sexual physical and emotional abuse, and adult sexual assault. Further, men report an overall wider variety of substances, while women with SUDs present higher prevalence of current or lifetime PTSD [64]. Men and women also seem to differ in the temporal sequence of PTSD and SUDs: while among men SUDs seem to generally precede the traumatic exposure and PTSD symptoms or to occur simultaneously, among women PTSD either precedes or occurs simultaneously with a SUD [16]. A study exploring whether there are gender-specific associations between trauma exposure and alcohol or drug relapse in alcohol-dependent adults, Heffner et al. [34] showed that severity of childhood trauma,
number of lifetime events evoking fear, helplessness, or horror and current trauma symptoms all predicted relapse in women, but not in men. Previously, Bornovalova et al. [5] examined gender differences in two potential explanatory factors of the association between PTSD and substance-use frequency. The potential mechanisms explored were difficulties controlling impulsive behaviour when distressed and a lack of emotional awareness and clarity. In line with previous work [29, 67], authors found that in women, the association between PTSD symptoms and substance-use frequency was partially accounted for by difficulties controlling impulsive behaviour when distressed, whereas for men the relationship between PTSD symptoms and substance-use frequency was partially explained by lack of emotional awareness and clarity of emotions.

Behavioural outcomes other than substance abuse have also been explored in patients with PTSD. It is the case of Maladaptive Behaviours, defined as volitional behaviours whose outcome is uncertain and which entail negative consequences that impact everyday activities [33, 36, 51]. Anecdotal data have been reported on maladaptive behaviours, such as risk-taking behaviours, dangerous driving or promiscuous sex, emerging in patients with PTSD. Aggressive and unsafe driving has been reported amongst male veterans of the Iraq and Afghanistan wars, with PTSD severity being associated to aggressive driving but not other forms of unsafe driving [40]. Iraq and Afghanistan war veterans with PTSD also showed significantly higher rates of aggressive traits, including violent behaviours, compared to those without PTSD [38][28].

In summary PTSD and SUDs and maladaptive behaviours seem to correlate and influence each other, with gender displaying an important modulating effect.

In the past years, increasing attention has been devoted to PTSD occurrence in earthquake-exposed populations, addressing the impact of not only Axis I disorder but also of its partial or subthreshold forms [11, 14, 23, 42]. Earthquakes, in fact, represent one of the most frequently occurring natural disasters throughout the world, affecting numbers of people, often striking unexpectedly, threatening lives and leading to large-scale destruction. Italy is one of the most seismically active countries in Europe but, despite the fact that minor tremors are common occurrences, deadly earthquakes such as those that most recently affected the Country (e.g. L’Aquila in April 2009 and, lately, the Emilia Romagna region), are unusual. The earthquake that on April 6th 2009 struck the town of L’Aquila, at 3:32 a.m., was one of the major seism events of the last decades, with a Richter Magnitude of 6.3.

L’Aquila is a town with a population of 72,000 inhabitants, and because of the earthquake many buildings collapsed and large parts of the town were destroyed, 309 people died and more than 1,600 individuals were injured and 66,000 displaced. In two previous studies, in line with literature on earthquake-exposed populations showing PTSD ranging from 10.3% to 45.5% [4, 11, 41, 70], we reported PTSD rates as high as 37.5% after 10 months [23] and 30.7% after 21 months [21] from exposure, among adolescents attending the last year of high school. According to the literature [1, 21, 31, 42, 72] higher PTSD rates were found in women and bereaved subjects [21, 23]. Despite the number of studies on PTSD in earthquake-exposed populations significantly increased over the past 20 years, data on specific aspects of post-traumatic stress reactions, such as the proclivity of individuals with PTSD to engage in behaviours with adverse health consequences, in earthquake-exposed population are still scarce [1, 13, 23, 46, 54, 61, 65, 68, 69].

In the framework of an Italy-USA international research collaboration project, a new concept of “spectrum” approach to PTSD has been developed that explores post-traumatic stress symptomatology according to a multidimensional approach, and its related assessment instruments: the Structured Clinical Interview for Trauma and Loss Spectrum [27] and its Self-Report [26]. The “spectrum” approach adopted by the researchers of the Spectrum-Project [30] has been utilized to refer to psychiatric conditions that encompass various arrays of symptoms and behavioural features relating to an established DSM or ICD disorder (e.g. panic, mood and substance use disorders, [2, 3, 12, 19, 60]. This approach gives clinical weight to low severity and isolated symptoms that either appear alone or occur concomitantly with a major disorder. In addition to the core symptoms and associated features of current DSM diagnostic categories, the spectrum includes: a) atypical symptoms, commonly seen in clinical populations but not mentioned in the diagnostic criteria; b) temperamental and personality traits and behavioural styles that may represent either the diathesis for a syndromal Axis I disorder or that have evolved as a means of adapting to specific spectrum symptoms. Considering the requirements stated by the DSM-IV-TR for PTSD when developing a spectrum assessment of this condition, we considered potentially triggering events, peri-traumatic and persistent symptoms. Thus the SCI-TALS and TALS-SR
explore stress response syndromes across three different dimensions: 1) the dimension of potentially traumatic events, that includes not only the traumatic events considered by the DSM-IV-TR criterion A, but also “low-magnitude” or mild events (such as failure at school or at work, economic problems, sexual harassment, abortion), besides a wide continuum of loss events [24, 35]; 2) the dimension of the peritraumatic and acute reactions; 3) the dimension of the post-traumatic spectrum symptoms, including criterion and non-criterion symptoms, associated with DSM-IV-TR diagnosis of PTSD [48]. According to the Spectrum concept, the TALS-SR also includes a specific domain that targets maladaptive coping behaviours that trauma victims may develop in the aftermath of trauma exposure (Domain VII “Maladaptive coping”). This domain explores whether the subject stopped taking care of him/herself, stopped taking prescribed medications or failed to follow-up medical recommendations, used alcohol or drugs or over-the-counter medications to calm him/herself or to relieve emotional or physical pain, engaged in risk-taking behaviours (e.g. driving fast, promiscuous sex, hanging out in dangerous neighbourhoods), suicidal ideas (wishing he/she hadn’t survived; thinking about ending his/her life; intentionally scratching, cutting, burning or hurting him/herself; attempting suicide).

In line with the literature on maladaptive behaviours in veterans or adolescents with PTSD, by means of the TALS-SR we explored maladaptive behaviours among young adult survivors to the L’Aquila earthquake [23]. Significant gender differences were found among survivors 10 months after exposure, with males reporting significantly higher rates than in women in almost all items but the one exploring whether they had stopped taking care of themselves (“e.g. not getting enough rest or not eating properly”), in which females showed significantly higher endorsement rates than men. In fact, in the aftermath of the earthquake men reported significantly more alcohol or drug use in order to calm him or to relieve emotional pain compared to women, as well as having engaged in risk-taking behaviours and having attempted suicide. In a more recent study [22] on 939 L’Aquila earthquake survivors from the general population, we also reported significantly higher scores on the maladaptive coping domain among for what concern the items “...engage in risk-taking behaviours, such as driving fast, promiscuous sex, hanging out in dangerous neighbourhoods?” and “...attempt suicide?” and among women for what concern the item “...stop taking care of yourself, for example, not getting enough rest or not eating right?”. As far as age was concerned, younger subjects showed higher scores than subjects older than 40 years at the item “engage in risk-taking behaviours, such as driving fast, promiscuous sex, hanging out in dangerous neighbourhoods?” particularly in men while mature women had higher scores than younger ones at the item “stop taking prescribed medications or fail to follow-up with medical recommendations, such as appointments, diagnostic tests, or a diet”. In light of these results it could also be argued the concomitant significant increase of risk taking behaviours and suicidality in these subjects. Maladaptive behaviours, in fact, could be also interpreted as similar to sensation-seeking behaviours reported in some disorders, such as borderline personality disorder, that are often associated to high risk for self-injuring and suicidal behaviours in subjects often characterized by having experienced severe or multiple lifetime trauma. In these cases we could argue the role of post-traumatic stress numbing symptoms that may underlie this association.

Undoubtedly, further studies are needed, in larger sample and in patients with different mental disorder, in order to better understand the possible interplay of post-traumatic stress spectrum symptoms and suicidality and to validate this possible interpretation. In line with the observed correlation between PTSD and SUDS, recently a study has been performed to investigate, by means of TALS-SR [26, 27] and Drug Addiction History Rating Scale (DAH-RS) [43], the life events (loss events and potentially traumatic events) of 82 heroin-dependent patients before and after the dependence age of onset (DAO) and their emotional, physical and cognitive responses to these events, within a trauma and loss spectrum. Personality traits at risk for PTSD have been assessed. In passing from the before-DAO to the after-DAO period, 97.6% of patients continued to experience life events, 82.9% loss events and 91.5% potentially traumatic events. The life events most frequently rated, as the most important by patients are “death of a close friend or relative”, “divorce” and being neglected or abandoned. Sexual abuse seems to be present, but with a lower percentage. Criminal behaviours become very common after-DAO. “Grief reactions” to loss events increase after-DAO, as well as “reactions to the most important event”, “re-experiencing”, “avoidance and numbing”, “maladaptive coping” and “arousal”. After-DAO, it was found an increase in all the emotional, physical and cognitive behaviours typically reported in PTSD patients. This increase in the intensity of emotive reactions during a drug addiction
history seems to configure a sort of PTSD spectrum resulting from the addictive process [58].

The present letter primarily corroborates the need 1) to explore maladaptive behaviours and substance-abuse in general populations exposed to potentially traumatic events, such as natural disasters, and 2) to consider the higher emotional reactivity of substance abusers to potentially traumatic events, so as to allow the optimization of therapeutic resources when these life events occur. Secondly 3) we point out gender related differences in the prevalence rates of post-traumatic disorders and maladaptive behaviours, thus suggesting that women adopt different coping strategies to trauma in comparison with men. Finally, 4) drug abusers with PTSD have a risk-prone life style [15, 17, 18, 32], show heightened vulnerability to stress exposure [7], tend to use substances in an attempt to self-medicate against the negative symptoms of PTSD [8, 66] and show poor coping strategies [7]. In this line, there is the need of clinical instruments, such as TALS-SR [26, 27], that highlight maladaptive and risk behaviors like substance use.

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Reduction of psychotic symptoms during the use of exogenous opiates

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TO THE EDITOR: It is known that the comorbidity of schizophrenia with opiate dependence disorder has an incidence of between 4 and 12% (3). Several studies have described the beneficial effects of opiates in reducing psychotic symptoms, due to its neuromodular effect on the dopamine system (6). These studies have also hypothesized a reduction in the time spent in a psychotic clinic during its use, with a worsening of the comorbidity during the opiate abstinence period. We report a case which supports this theory.

“Mr. S” is a 39 year-old caucasian man who had applied to our unit with a request for treatment for positive psychotic symptoms. At the age of 28 he was diagnosed with paranoid schizophrenia and opiate dependence disorder. He was therefore admitted several times to the hospitalization unit for psychotic decompensation. Between 2003 and 2009 the patient did not show acute symptoms as long as he was taking low doses of quetiapine (400 mg nightly) and methadone (140 mg daily). In December 2009 he was readmitted to the hospitalization unit, after interrupting the use of methadone a few months earlier; he then underwent treatment in the detoxification unit, as well as antipsychotic treatment for complaints in the sexual area.

While in hospital, he presented acute psychotic symptoms involving self-reference, damage and erotomaniac delusions, some of which took the form of hearing hallucinations. The family reported global insomnia and soliloquies.

After he started taking heroin regularly, treatment with methadone (45 mg per day) and quetiapine (800 mg daily) was resumed, and that brought the psychotic symptoms to an end. A few months later, he again stopped using methadone, without relapsing into heroin abuse; his psychotic symptoms reappeared, even though he maintained the antipsychotic medication.

In psychotic patients with opiate dependence it is believed that methadone treatment is the right choice, due to its intrinsic and synergic effects as an antipsychotic (2, 4, 7). The significant rise in prolactin-serum observed after methadone administration was correlated with the dopaminergic tone (4, 1). One hypothesis that has been demonstrated is that a decrease in the opiate dose may lead into greater dopamine activity or into an increase in the activity of the specific receptors that had been previously sensitized, which would explain the worsening of psychotic symptoms and an increase in ‘self-medication’ with heroin.
This case strengthens the hypothesis of the usefulness of methadone in dual psychosis.

References


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Conflict of interest
No conflict of interest.
TO THE EDITOR: The role of drug abuse in causing illegal behaviour is universally recognized [1]. In this connection, the negative image of individuals who are suffering most severely from drug abuse diseases, especially narcomania, has been increasingly recognized by public opinion, so consolidating a trend that has been in force over a period of many years. In the first place this is because there is a firmly established belief that drug addicts are socially dangerous and show a very high level of criminal aggressiveness. At the same time, the causes of single crimes can often be seen to be closely related to drug addiction, even if this question is still not fully understood. In any case, the complexity and versatility of this relationship lead to the conclusion that drug abuse diseases and the patterns of criminal behaviour of drug abusers are correlated.

In this letter we want to report the results of a study aimed to confirm the hypothesis previously formulated by us, that the illegal activities of drug abusers can be detected not only in the results of their chronic intoxication due to drug abuse, but in their mental attitudes, which had already been developing in the premorbid period and, typically, became reinforced throughout the period of drug dependence. This hypothesis is based on the previous studies carried out by us, in which the conclusion just formulated was declared, but remained at a more theoretical level and was methodologically unsupported.

267 psychoactive substance-dependent people were examined by clinical-and-psychopathological and/or clinical-plus-follow-up methods. Of these individuals, 188 were heroin-dependent, 79 were dependent on derivatives of amphetamine, 56 showed Pervitin (methamphetamine) dependence and 23 displayed dependence on phenylpropanolamine.

In accordance with the hypothesis mentioned above, the following subgroups were formed for subsequent examination:
1. the first included those who had been conducting various types of law infringement, including infringements related to illegal drug circulation covering the period from the moment when patients had first become involved with drug abuse until the study started (103 people, or 38.53% of the whole group);
2. the second subgroup included those whose misconduct was limited to infringements of the law related to illegal drug circulation during the same period (115 people, or 43.12% of the entire group);
3. the verification subgroup was made up of psy-
choactive substance-dependent individuals who had never been responsible for breaking the law, at least up till the moment when the study started (49 people, or 18.35% of the whole study group).

The individuals who had been involved with unlawful activities were those who underwent forensic psychiatric examination at the V.P. Serbsky State Scientific Centre for Social and Forensic Psychiatry (108 people) and forensic psychiatric examination at the Moscow A.A. Alexeev Mental Hospital in an outpatient setting (159 people). The third subgroup, consisting of those who were free of any involvement with illegal activities, were all drug abusers who were undergoing drug treatment at the V.P. Serbsky State Scientific Centre for Social and Forensic Psychiatry.

The separation of the individuals who had only carried out law infringements related to illegal drug circulation within their individual group results from the one of the statements made in formulating our hypothesis - that this kind of infringement correlates directly with the basic syndromes characteristic of drug abusers (morbid tendencies caused by drugs, alcoholic intoxication and the abstinence syndrome). It is therefore conditionned not so much by social attitudes due to an individual personality as by morbid impulses within the bounds of a dependence syndrome.

During the period of our study, the subgroups were compared according to their age distribution and duration of involvement with narcomania.

The research carried out showed significant differences in most of the biological, social and clinical parameters recorded for the premorbid period between the subgroups examined in this study. More specifically, the index numbers found for almost all the research parameters studied turned out to be considerably worse in the first subgroup than those found in the verification subgroup, but also than those in the second subgroup. At the same time, the differences between the first subgroup and the verification subgroup proved to be significant (because statistically reliable), whereas the differences between the second subgroup and the verification subgroup turned out to be unreliable in most cases.

A personal and family history burdened by personality disorders and those due to alcoholism had a significantly higher frequency among the members of the first subgroup. Personality disorders in this subgroup showed a frequency of 32.9%, against 14.9% in the second subgroup and 12.5% in the verification subgroup. The frequency of disorders caused by alcohol addiction amounted to 51.3%, 34.9% and 21.8%, respectively.

In their past history those belonging to the first and the second subgroups showed a higher level of prenatal pathology (42% and 38%, respectively, against 15% in the verification subgroup), and pathological features recurred in the postnatal period at a significantly higher frequency, too (in this case the percentages were 26.7%, 22.8% and 12.7%, respectively; p < 0.001). Severe head injuries experienced in an individual’s early years showed a significantly higher frequency in the first subgroup. Mental retardation and late physical development were observed only in the first and second subgroups.

In accordance with the finding of various exogenous features in anamneses of most of those who were examined in our study, indications of organic psychic disorders, as a rule showing a complex genesis, were detected in the prenosological period (57.14%, 31.91% and 25.0%, respectively).

Before formation of their dependence, members of the first subgroup had, during their childhood and adolescence, shown various behavioural disorders (such as escape from home, violation of school discipline and conflict with people around them). Almost half of them, in fact, had a juvenile police record. The members of the second and the verification subgroups showed the same deviations, but at a significantly lower frequency. It should be added that in most cases these kinds of deviation did not reach a degree that would allow them to be considered antisocial, and did not entail any administrative liability.

Those from the first and second groups had, at a significantly higher frequency, been brought up in one-parent families. As a result, the interpersonal relationships in the nuclear families that members of the first subgroup had belonged to had mainly been dysfunctional (giving rise to regular conflicts, scandals and emotional reproofs, sometimes combined with physical violence or the cruel treatment of children); this had been true of 69.05% of the subgroup’s members. In the verification subgroup the feature of disharmonious family relationships (through a lack of warm-heartedness, the formal nature of contacts between family members and hypoguardianship) had a frequency of 60%.

Members of the first and second subgroups had more often been bad performers at school, failed to show any interest in the results of their activities, and their relationships in the community displayed conflict and their interests were few and monotonous. Those belonging to the first subgroup had performed more poorly than those in the second subgroup, and
much worse than those in the verification subgroup, in terms of their educational and service development.

Consequently, on the basis of the fundamental clinical, biological and social characteristics of those in the second subgroup and, especially, those in the first during the prenosological period, those belonging to both of the first two subgroups differed significantly from those in the verification subgroup, whose recorded indices were above the average.

The comparison between the clinical parameters that monitor the evolution of drug dependence was carried out exclusively on the basis of information pertinent to individuals with heroin dependence (188 patients).

The basic clinical parameters of the evolution of drug dependence in members of the first subgroup supplied evidence concerning its more rapid evolution. These people had been starting to use psychoactive substances at an earlier age; the period of drug abuse and the duration of the first stage were becoming shorter; the plateau of tolerance was being settled at higher doses; the abstinence syndrome was described as severe at a significantly higher frequency, and the psychological component was prevalent in its structure, whereas the somatovegetative syndrome proved to be prevalent in the second and verification subgroups. In the first subgroup the reduction of abstinence disorders at the expense of the psychopathological component of abstinence had come more slowly. Cases of remission were observed at a significantly lower frequency, and the cases in which they were found lasted a significantly shorter time.

The transformation of the pathocharacterological structure of personality was observed against a background of progressive narcomania. During the first 2-3 years only, the deeper intensification of premorbid pathocharacterological disorders had been recorded. When narcomania persisted for over three years, changes occurred in the premorbid pathocharacterological structure of personality at the expense of its transformation; this led to an increase in the number of those involved in criminal activities. For that reason the whole period of progressive narcomania was divided into three time periods: (1) from 0 to the end of the second year of evolving narcomania, (2) from the start of year 3 till the end of year 4, and (3) beyond the fourth year.

It was ascertained that as narcomania evolves, the intensity of illegal activities underwent an increase, but only a very slight one. On the other hand, the number of those involved in criminal activities rose significantly. The sharp increase in the numbers of people involved in unlawful activities had been observed as early as in the first 2 years of narcotization. After that the numerical increase slowed down appreciably.

Simultaneously the predominant type of unlawful activity had changed as a result of a considerable
increase in the frequency of infringements of law related to illegal drug circulation. At the same time the percentage incidence of violent crimes and acts of hooliganism fell, while the number of people who had committed property crimes showed a tendency to fall, but remained at quite high levels.

Of all the phases that drug abuse conditions undergo, the opioid abstinence syndrome was the one most frequently found at the moment when a crime was committed (64.4%). Intoxication by alcohol (13.68%) or other psychoactive substances were observed more rarely on such occasions. Moreover, fewer crimes were committed as a consequence of the activation of pathological attraction to psychoactive substances (4.27%).

As the mean duration of narcomania has been steadily rising over the years the major crimes that are typical of basic drug abuse syndromes have become easier to identify. As long as the practice of drug abuse was still in its early stages, crimes caused by drug abuse were usually committed against the background of an activation of primary pathological attraction to a narcotic, and also against the background of the abstinence syndrome; more recently, as the mean duration of narcomania has increased, crimes have come to be committed much more frequently in the withdrawal condition, and much more rarely against the background of an activation of primary pathological attraction.

In the present study, a clear majority of property crimes (76.19%) and over a third of all personal crimes (35.48%) were committed when a patient’s condition showed the abstinence syndrome. The intoxication caused by opiates led to the detention of such people by policemen in accordance with article 228 of the Criminal Code of the Russian Federation (88.52% of cases involving that kind of crime were committed in a condition of drug abuse intoxication). In such cases intoxication due to drug abuse may be very specifically attributable to crime-relevant syndromes at the time when the crime was committed. In accordance with article 228 of the Criminal Code of the Russian Federation, in such cases the moment of committing a crime is considered to be irrelevant. Only the moment of the detention of the person who is in a condition of intoxication due to drug intoxication is recorded; someone of that type does, in fact, attract official attention because of his/her inadequate behaviour. Well over a third of personal crimes (38.7%) were committed in a condition of alcoholic intoxication (within a general framework of vicarious polynarcotism); this has traditionally been considered as a key factor in triggering a high risk of committing violent crimes.

To sum up, the research carried out by us confirmed the formulations first made in developing our research hypothesis. In particular, even if a patient’s vector of social activity is mainly developed in the prenosological period, its further development, attributable to psychic disorders springing from narcomania, exerts an influence on these individuals’ behaviour and determines the nature of their illegal activities, whose range gradually becomes narrowed down in most cases to illegal activities related to the prohibited circulation of drugs. All that has been set out above allows us to reach the conclusion that the medical and rehabilitation therapies that are implemented to deal with the drug abuse diseases of these individuals have the status of crucial countermeasures in preventing and curtailing their recurrent illegal activities. In the present circumstances, after the compulsory hospitalized medical treatment of narcomania was repealed by the Russian Federation Law dated 28th December 2003, compulsory treatment in an outpatient setting, along with the supervision of a psychiatrist in accordance with article 22 of the Russian Federation Criminal Code, are the only feasible, applicable measures that are still available.

References


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In memory of Pascal Courty

He will live in our memories
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