TEMPERAMENT AND CHARACTER INVENTORY (TCI) PERSONALITY PROFILE AND SUB-TYPING IN ALCOHOLIC PATIENTS: A CONTROLLED STUDY

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Abstract — Cloninger’s Temperament and Character Inventory (TCI) personality profile was used to compare alcoholic-dependent patients with non-psychiatric control subjects, and a search made for sub-types of alcoholics with different TCI profiles, using the criteria of age of onset of alcohol-related problems, paternal dependence on alcohol and familial antecedents of alcohol dependence. Alcohol-dependent patients (n = 38) were characterized by higher Novelty-Seeking [corresponding to Diagnostic and Statistical Manual of Mental Disorders (4th edition) group B personality type] and lower Self-Directedness than non-psychiatric control subjects (n = 47). Lower Self-Directedness indicates a higher probability of personality disorder in the alcoholic-dependent population. Only age of onset of alcohol-related problems delineated the two sub-populations with different TCI profiles: early-onset alcoholics (≤ 25 years of age, n = 19), but not late-onset ones (n = 16), in comparison with control subjects, were associated with higher Novelty-Seeking. Both early and late-onset patients scored lower on Self-Directedness than control subjects. Self-Directedness and Cooperation scores were lower in early-onset than in late-onset patients. These results in part support Cloninger’s typology, and the TCI data add to evidence concerning a higher probability of personality disorder in alcohol-dependent patients, particularly those with early-onset.

INTRODUCTION

Numerous studies have shown relationships between personality, predisposition traits and typologies of alcoholism (Buydens-Branchey et al., 1989; Irwin et al., 1990; Nixon and Parsons, 1990; Schuckit et al., 1990; Peterson et al., 1991; Zaninelli et al., 1992; Cloninger et al., 1995; Ades and Lejoyeux, 1997; Howard et al., 1997; Lejoyeux and Ades, 1997; Masse and Tremblay, 1997). Cloninger has proposed a method to investigate personality using a dimensional approach. The first version of the self-evaluation personality questionnaire was the TPQ (Cloninger, 1987a), yielding scores for the Temperament part of personality. Temperament can be linked with personality type in categorical classification. The TPQ has been used in several studies on personality and alcoholism typology (Cloninger, 1987a,b; Nixon and Parsons, 1990; Schuckit et al., 1990; Peterson et al., 1991; Zaninelli et al., 1987). High Novelty-Seeking has often been implicated as a trait predisposing to addictive behaviour (Cloninger et al., 1995; Howard et al., 1997; Lejoyeux and Ades, 1997). Typology models of alcoholic patients tend to have some common features: age of onset, personality characteristics (for example, antisocial personality disorder), and familial or genetic predisposition (Ades and Lejoyeux, 1997). Cloninger’s typology postulates two types of alcoholics (Cloninger et al., 1981; Cloninger, 1987b): type 1 or ‘milieu-limited’, defined as late onset, few familial alcohol-dependency antecedents, slower progress, milder alcoholism, important environmental influence and minimal criminality; and type 2 or ‘male-limited’ with characteristics including early onset, paternal type 2 alcoholism, severe alcoholism, little environmental influence, and frequent criminality. The personality profile proposed by Cloninger using the TPQ is higher Novelty-Seeking, lower Harm Avoidance and lower Reward Dependence in type 2 alcoholics. This typology has been criticized in several aspects in different studies. Nixon and Parsons (1990) did not observe the relationship between TPQ scores and type 1 or 2. Family or paternal history of alcoholism were not linked to TPQ scores in at least two studies (Peterson et al., 1991; Zanelli et al., 1992). Irwin et al. (1990) underscored the importance of age of onset and suggested that type 2 might represent a separate diagnosis, antisocial personality disorder, and not alcoholism itself.

We used the TCI (Cloninger et al., 1993; Svrakic et al., 1993), a more precise and complete version of the TPQ, for assessing Temperament and Character. Character may be determined by genetic and biological factors but is more influenced by environmental factors than Temperament, and is therefore less stable over time. It is divided into three independent dimensions: Self-Directedness, which is the main predictive element of the presence of personality disorder, Cooperation, which modulates the probability of personality disorder obtained from Self-Directedness, and Self-Transcendence. The present study attempts first to show personality traits that differentiate an alcohol-dependent population from a non-psychiatric control population using the TCI. A second component of this work examines subgroups of alcohol-dependent patients through evaluation of several typology aspects of Cloninger’s hypothesis. The criteria used in our search for subgroups based on TCI scores are age of onset, paternal dependence on alcohol, and familial antecedents of alcohol dependence.

SUBJECTS AND METHODS

For 3 months, all in-patients at the Brugmann University Hospital alcohol detoxification centre were invited to be

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considered for the study. A small number declined. Those who accepted were screened with a semi-structured interview based on the Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders (edition III-R), axis I (SCID, axis I) (Spitzer et al., 1992). Inclusion criteria were: DSM-III-R (American Psychiatric Association, 1987) alcohol dependence (severe and chronic) with physiological dependence, as evidenced by withdrawal symptoms in preceding attempts to strongly reduce or interrupt alcohol consumption. Exclusion criteria were: present or previous other substance misuse or dependence, schizophrenia and other psychotic disorders. One patient who met the diagnostic criteria for schizophrenia was excluded. No patient met diagnostic criteria for major depressive disorder at the time of evaluation, but alcohol-induced depressive disorders in partial remission were frequent. We did not exclude patients with axis II present psychiatric co-morbidity, even at the expense of homogeneity, in order to reflect the typical population of hospitalized alcohol-dependent patients. Those recruited consisted of 29 males and nine females, of mean (± SD) age 44 ± 9 years.

Controls, recruited using a public announcement in a general hospital, consisted of 47 healthy volunteers (27 male and 20 female). They had been screened using the same semi-structured interview (Spitzer et al., 1992). Exclusion criteria were present or previous alcohol dependence or misuse, significant somatic or psychiatric disorder at the time of the study, significant psychiatric disorder in the past and familial antecedents of affective or psychotic disorders. The mean age of this sample was 44 ± 13 years.

Patients taking part underwent the unit’s standard regimen. This included tapered, individually titrated, doses of diazepam (up to 120 mg per day in severe cases), vitamin B complex and large amounts of sugared fluids, in order to keep the withdrawal process under control. Patients were requested to stop all consumption of alcoholic beverages and non-prescribed drugs from their first hospital day.

They were asked to fill in a written TCI Self-evaluation questionnaire (226 questions with forced binary answer) at the end of the second week of abstinence. At that time, they were fully abstinent and no longer needing medication to control withdrawal symptoms. We used a French translation of this test checked by retro-translation. Patients were asked about their age at the onset of alcohol-related problems, defined as their recall of the first occurrence of alcohol-related problems. Early onset was defined as ≤25 years, late onset as >25. Patients were asked whether alcohol-dependence had affected other family members.

Statistics

We used the program SPSS 7.5 for Windows. All dimension scores were normally distributed for all groups and subgroups of subjects (the Kolmogorov–Smirnov test was not significant for any main dimension). We applied unpaired t-test and $\chi^2$-tests to compare dependent and non-psychiatric groups, alcoholics with and without paternal dependence on alcohol and with and without familial antecedents of alcohol dependence. To compare early-onset alcoholics, late onset alcoholics and non-psychiatric subjects, global one-way analysis of variance for the three groups was used and sex adjustment was tested. For multiple comparisons, the Scheffé procedure at the 5% significance level was applied (Scheffé, 1959).

RESULTS

TCI scores: comparison of the alcohol-dependent population and the non-psychiatric control population

Patients and controls were similar on mean age, and male/female ratio, but scored more highly on Novelty-Seeking and lower on Self-Directedness (Table 1). Lower Self-Directedness scores suggest, with respect to Cloninger’s theory, a higher probability of the presence of personality disorder in the alcohol-dependent population (Svrakic et al., 1993). For the above two significant variables, the group effect still remained after adjustment for age and gender.

TCI scores: comparison between early-onset and late-onset alcoholics and non-psychiatric control subjects

Nineteen subjects were classified as early-onset and 16 as late-onset alcoholics (three were not classified in either of these two subgroups. Table 2 shows that current age and the male/female ratio did not differentiate significantly between the three groups, represented by early-onset patients, late-onset patients and the controls, despite a tendency for early-onset patients to be male. Novelty-Seeking was significantly higher in the early-onset group in comparison with the non-psychiatric subjects. There was no significant difference in Novelty-Seeking between the late-onset patients and the non-psychiatric control subjects. The higher Novelty-Seeking scores of the total alcohol-dependent population compared to the control subjects (see Table 1 above) are therefore mainly due to the early-onset alcoholics. Self-Directedness was significantly lower in early-onset alcoholics than in either late-onset alcoholics or control subjects, and was also significantly lower in late-onset than in early-onset alcoholics than in controls. Cooperation in early-onset alcoholics was also significantly lower than in late-onset patients or controls. As described above, lower Self-Directedness coincides with a higher probability of personality disorder (Svrakic et al., 1993). Lower Cooperation increases this difference by modulating the predictive value of Self-Directedness (Svrakic et al., 1993). No relationship was seen between age of onset and familial or paternal antecedents of alcohol dependence.

TCI scores: relation to familial alcohol dependence

No significant difference was observed in TCI scores, age of onset, or current age or male/female proportion between

<table>
<thead>
<tr>
<th>Variable</th>
<th>Alcohol-dependent (n = 38)</th>
<th>Non-psychiatric controls (n = 47)</th>
<th>Significance (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% as males</td>
<td>76</td>
<td>57</td>
<td>n.s.</td>
</tr>
<tr>
<td>Age</td>
<td>44.0 ± 9.0</td>
<td>43.7 ± 13.1</td>
<td>n.s.</td>
</tr>
<tr>
<td>Novelty-Seeking</td>
<td>21.7 ± 4.3</td>
<td>19.0 ± 6.6</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>Harm Avoidance</td>
<td>20.8 ± 8.1</td>
<td>19.5 ± 7.9</td>
<td>n.s.</td>
</tr>
<tr>
<td>Reward Dependence</td>
<td>13.8 ± 5.9</td>
<td>14.8 ± 3.8</td>
<td>n.s.</td>
</tr>
<tr>
<td>Persistence</td>
<td>4.3 ± 2.2</td>
<td>4.2 ± 2.1</td>
<td>n.s.</td>
</tr>
<tr>
<td>Self-Directedness</td>
<td>19.1 ± 7.0</td>
<td>28.4 ± 8.0</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Cooperation</td>
<td>28.6 ± 7.7</td>
<td>30.5 ± 6.0</td>
<td>n.s.</td>
</tr>
<tr>
<td>Self-Transcendence</td>
<td>15.9 ± 7.6</td>
<td>13.2 ± 6.6</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

Values are means ± SD unless otherwise stated.

n.s., not significant.
subgroups with and without family or paternal history of alcohol-dependence.

**DISCUSSION**

Alcohol-dependent patients in general scored higher on Novelty-Seeking and lower on Self-Directedness than controls. Lower Self-Directedness indicates a higher probability of personality disorder according to Cloninger’s hypothesis. It could therefore be postulated to be a predisposing factor for alcohol dependence, but Character scores are not stable with respect to time (Cloninger et al., 1993) and low Self-Directedness could therefore be seen as either preceding or consequent upon alcohol dependence. Higher Novelty-Seeking is linked with higher impulsiveness, exploratory excitability, extravagance and disorderliness, and in categorical evaluation with DSM-IV group B personalities (antisocial, borderline, narcissistic, histrionic) (Cloninger, 1987a; Svrakic et al., 1993; American Psychiatric Association, 1994). Novelty-Seeking scores are more stable with time (Cloninger et al., 1991) (slightly decreasing) and high Novelty-Seeking is therefore probably present before the onset of alcoholism. Novelty-Seeking correlates with Sensation-Seeking (Earleywine et al., 1992; Lejoyeux and Ades, 1997), as proposed by Zuckerman (Zuckerman and Link, 1968). Both have often been proposed as predisposing factors of addictive behaviour (Cloninger et al., 1995; Howard et al., 1997; Lejoyeux and Ades, 1997), and, in particular, as initiating this type of behaviour (Cloninger et al., 1995; Masse and Tremblay, 1997).

We used Belgian healthy volunteers rather than published normative data, because TCI normative data may differ between countries (Pelissolo and Lepine, 2000) and TCI translations. However, our control sample could differ from the general population, as most were hospital employees (nurses, hospital technicians, etc.) and volunteered to take the test, but no other Belgian data (using the same TCI translation) were available to compare with the scores of our control sample.

In this relatively small study, our search for sub-types of alcoholics with different TCI personality profiles yielded only two subgroups, early-onset and late-onset. In our data, high Novelty-Seeking scores characterized early-onset patients and can be seen as predisposing to early-onset alcoholism. Lower character scores (Self-Directedness and Cooperation) indicating a higher probability of personality disorder were present in both subgroups, but more so in the early-onset subgroup.

These results agree partly with the Cloninger’s typology (I and II), in that we found an association between early-onset and high Novelty-Seeking. However, our TCI data give new information suggesting more frequent personality disorder in early-onset alcoholism (in addition to that already published using the TPQ) and, as already found in previous studies (Irwin et al., 1990; Peterson et al., 1991; Zaninelli et al., 1992), we found no influence of paternal or family history of alcohol dependence on personality profile or on the age of onset of alcohol-related problems.

A possible limitation of our study was that the TCI data were not corrected for the influence of residual depressive symptoms, which may still be present after alcohol withdrawal, even when patients with major depressive disorder have been excluded. If depressive symptoms had been commoner in the late-onset group, this could have exaggerated some of the TCI differences we have reported. Our sample would, unfortunately, have been too small to make the appropriate adjustments.

**REFERENCES**


