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ORIGINAL PAPER

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# Association of personality disorders with Type A and Type B alcoholics

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**Abstract** Personality disorders frequently occur as comorbid disorder in alcohol-dependent subjects. Antisocial personality was described as an important characteristic in Cloninger's Type 2 and Babor's Type B subjects. The impact of other personality disorders on these alcoholism typologies, their pathogenesis and prognosis is, however, still unclear. The present study investigated the prevalence of personality disorders in 237 (194 males) detoxified alcohol-dependent patients after subtyping this sample according to Babor's Type A/B following the criteria suggested by Schuckit et al. (1995). Personality disorders were assessed with the SCID-II (DSM-IV). In all, 160 patients (68 %) could be classified as Type A, and 77 (32 %) as Type B. Type B subjects were younger, had an earlier onset, more alcohol intake and a more severe course of alcohol dependence. Type B patients had significantly more often any cluster A and B personality disorder, and significantly specifically more often a borderline, antisocial and avoidant personality disorder. There were no statistical differences concerning the other personality disorders. In summary, the Type A/B dichotomy using the criteria of Schuckit et al. (1995) was replicated successfully. Differences concerning cluster B personality disorder prevalence of Type B subjects demonstrated that these subjects are significantly more often affected from borderline and antisocial personality disorder. The impact of other personality disorders does not play a substantial role in subtyping alcoholics.

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## Introduction

Personality disorders (PD) frequently occur as comorbid disorder in alcoholism (Nace et al. 1991; Nurnberg et al. 1993; Verheul et al. 1995; Driessen et al. 1998; Bottlender et al. 2003). Some authors conclude that alcohol-dependent patients with a comorbid PD (Andreoli et al. 1989; Reich and Vasile 1993; Strand and Benjamin 1997; Verheul et al. 1998), especially with an antisocial PD (Schuckit 1985; Kosten et al. 1989; Cadoret et al. 1984), have a poorer treatment outcome and prognosis. Further, these antisocial alcohol-dependent subjects tend to develop an earlier onset of alcoholism (Hesselbrock et al. 1986; Bahlmann et al. 2002). While antisocial personality disorder (ASPD) was described as an important characteristic in Type 2/Type B alcohol-dependent patients, the impact of other personality disorders on alcoholism typology, pathogenesis, and prognosis of disease is still unclear.

ASPD was found significantly more often in Cloninger's Type 2 than in Type 1 alcohol-dependent patients (Anthenelli et al. 1994; Hallman et al. 1996). Cloninger et al. (1981) proposed two potential subtypes of alcohol-dependent patients based on a large adoption study. Type 1 is characterized by a late onset and minimal criminality; it is found in both female and male offspring of alcohol-dependent biological parents and is influenced by postnatal environmental effects in the adoptive family. In contrast, Type 2 or "male-limited" alcoholism is thought to have an early onset and is usually associated with antisocial traits. Severe, recurrent alcohol dependence and delinquency often begins during adolescence. It is suggested to be transmitted primarily from father to son showing little environmental influence. In the past decade, the dichotomous classification model (Type 1/A vs. Type 2/B) was adapted and developed by other authors (Babor et al. 1992; von Knorring et al. 1985; Schuckit et al. 1995).

In its original evaluation, Babor et al. (1992) proposed that a more appropiate typology could be generated by incorporating aspects of multiple unitary theories into a single broad and more complex concept. They developed a pattern of characteristics derived from 17 dimensions to synthesize the information available from his sample of alcohol-dependent subjects. It was demonstrated that Type A and Type B alcohol-dependent patients differ in a number of important characteristics in these dimensions, including familial alcoholism, childhood disorder, dependence syndrome, ASP symptoms, social and physical consequences, for example. Type B group is the antithesis of Type A: Type B subjects were likely to have an earlier onset of more severe alcohol-related problems in the context of greater evidence of additional psychopathology and additional substance use disorders.

Schuckit et al. (1995) replicated the Type A/B approach, and a two-cluster solution was found that generated two groups similar to those described by Babor et al. (1992). The ability of the domains to identify subgroups remained robust even after the exclusion of alcohol-dependent patients with ASPD and those with an onset of alcohol dependence before age 25 years. In order to constitute a more manageable typology for clinical settings, Schuckit et al. (1995) addressed this issue by identifying a smaller subset of five variables of the 17 dimensions that might be especially useful for classifying Type A and B subgroups.

Type B subjects scored higher on each of the five dimensions than Type A subjects: (1) ounces of alcohol consumed per day, (2) relief drinking, (3) medical conditions, (4) physical consequences, and (5) social consequences.

While these domains differentiate alcohol-dependent subjects reliably regarding the Type A/B classification, the role of personality disorders other than antisocial PD and their influence on Type A and B alcoholics remain unclear.

The aim of the present study was to investigate the relation of DSM-IV Axis II comorbidity and types of alcohol dependence. The study investigated: (1) the confirmation of the classification by Schuckit et al. (1995) in 237 detoxified alcohol-dependent patients; (2) the prevalence of personality disorders (DSM-IV) and differences between Type A and Type B alcohol-dependent patients concerning comorbid Axis II diagnosis (categorical and dimensional approach); and (3) the influence of personality disorders on alcoholism characteristics.

## Methods

### Study design

All participants were recruited as inpatients from the alcohol dependence treatment ward of the psychiatric hospital, Ludwig-Maximilians-University of Munich. These alcohol-dependent subjects were treatment-seeking and admitted to the ward after a thorough outpatient psychiatric assessment. All patients were of German descent, met ICD-10 and DSM-IV criteria for alcohol dependence, and were recruited from 1998 to 2002. Further inclusion criteria were age between 18 and 75 years, male and female gender. Exclusion criteria included other current Axis I disorders like schizophrenia, dementia, brain organic disorders and suicidal behaviour. Moreover, inpatients were not enrolled into the study if they were not capable of informed consent due to their current mental condition.

All assessments were conducted 2 weeks after detoxification from alcohol close to the patient's discharge. At this time, all patients were free of any psychotropic medication.

Characteristics of alcohol dependence, including the five characteristics mentioned by Schuckit et al. (1995), were assessed using a structured interview, the Semi-Structured Assessment for the Genetics of Alcoholism (SSAGA) (Bucholz et al. 1994; Hesselbrock et al. 1999). These characteristics included daily alcohol intake, relief drinking, medical conditions due to alcohol, physical and social consequences. Taking SSAGA data, composite scales were calculated for the five characteristics and dichotomized using median split. Subjects were subtyped according to Type A or B if they met three or more of the dichotomized scores criteria (upper half: Type B, lower half: Type A). Personality diagnosis, including antisocial personality disorder was assessed using the SCID-II interview (German version: Wittchen et al. 1994). To cross-check the SCID-II interview results, a comprehensive psychiatric examination was performed by two experienced psychiatrists (UWP or MS). Using the SCID-II results and the clinical examination of patients, diagnosis of personality disorders and intensity of personality disorder traits were determined by summing up the positive items for each personality disorder diagnosis. Finally, the frequency of cluster A, B and C personality disorders was ascertained. Other alcoholism criteria were obtained by the SSAGA. Age of onset of alcohol dependence was assessed computing the mean of retrospectively obtained first alcohol dependence ages of onset criteria as mentioned in DSM-IV by the SSAGA: higher consumption of alcohol than intended, attempts to stop or control alcohol consumption, significant time spent consuming alcohol or recovering from alcohol intake, regular withdrawal symptoms during important daily obligations like school or work, reduction of important occupational or private activities because of alcohol intake, continued alcohol consumption despite the occurrence of psychological or physical harm, and occurrence of 50 % higher tolerance to alcohol effects. Daily alcohol intake was obtained using the typical daily average alcohol consumption of one week during the last 30 days before admission. Pure alcohol intake was computed in g/day. Duration of alcohol dependence was computed as the difference between current age and age of onset.

### Ethical standards

A signed written informed consent was obtained from patients and controls after complete and extensive description of the study. The Ethics Committee of the Ludwig-Maximilians-University of Munich approved the study.

### Data analyses

Beside descriptive statistics, group differences for continuous variables (e. g. personality disorder trait scores) were compared by Student T-test. Group differences for all categorical variables (e. g. personality disorder diagnosis vs. Type A/B) were evaluated using the chi-square statistics. A p-value of $< 0.05$ (2-tailed) was considered as statistically significant.

## Results

### Patients' characteristics

Altogether, 287 inpatients were enrolled into the study, but 50 (17.4 %) did not complete the assessment. Of

these subjects, the majority left treatment or were transferred to another ward before study completion. Thus, the sample available for analysis consisted of 237 (194 males and 43 females) alcohol-dependent patients aged 22–73 years. Further characteristics are presented in Table 1. The mean age at onset of alcohol dependence was 29 (± 9) years with a mean duration of 12 (± 8) years. The patients reported an average daily alcohol consumption of 328 (± 189) g in the weeks prior to detoxification. A majority of 59.1 % of the patients had a history of at least one alcoholism inpatient treatment. Finally, 175 (74 %) of all alcohol-dependent subjects received a diagnosis of at least one personality disorder.

## Typology of Babor et al. (1992) using the criteria of Schuckit et al. (1995)

A total of 160 patients (68 %) were classified as Type A (128 male/32 female) and 77 patients (32 %) as Type B (66 male/11 female). While there was no significant difference between the two types in income and years of education, Type B subjects were found to be significantly younger (38.3 ± 7.3 vs. 43.8 ± 9.2 years; T-value: 4.86; $p < 0.001$). Type B subjects had a significantly earlier age at onset (25 respectively 32 years; T-value = 5.24; $p < 0.0001$) and a slightly longer duration of alcohol dependence (13 respectively 12 years; T-value = –0.96; n. s.). Type B subjects reported a significantly higher daily alcohol intake before admission (432 respectively 280 g/day; T-value = –6.21; $p < 0.0001$) and had significantly more DSM-IV criteria for alcohol dependence (6.2 respectively 5.1; T-value = –5.96; $p < 0.0001$). Finally, Type B subjects had significantly more physical consequences due to alcohol (1.58 respectively 1.04; T-value = –3.93; $p < 0.0001$) and had experienced significantly more alcohol-related violence (2.14 respectively 0.71; T-value = –7.92; $p < 0.0001$).

**Table 1** Demographics and pretreatment clinical characteristics

| | Type A | Type B | Total sample | $\chi^2$-value Significance |
|---|---|---|---|---|
| n | 160 | 77 | 237 | |
| % males | 65.4 | 34.6 | 82 | 1.28 |
| % females | 74.4 | 25.6 | 18 | |
| % married | 35 | 18.4 | 29.5 | 6.79** |
| % single | 28.2 | 48.4 | 33.3 | 7.95** |
| % divorced | 41.3 | 32.5 | 38.4 | 1.69 |
| % employed | 55 | 39.5 | 50 | 4.79* |
| % any graduation | 93 | 89 | 92.3 | 0.932 |

* $p < 0.05$; ** $p < 0.01$

## Rates of personality disorders and personality disorder characteristics in Type A and Type B subjects

Of all subjects, 27.8 % had any cluster A (paranoid, schizoid, schizotypal) PD, 37.6 % of all subjects had any cluster B PD (histrionic, narcissistic, borderline, antisocial), and 40.1 % of all subjects had any cluster C PD (avoidant, dependent, obsessive-compulsive, negativistic, depressive). Type B patients had significantly more often any cluster A and B PD, respectively, and significantly more often a borderline, antisocial and avoidant PD. There were no statistical differences on the other PDs (see also Table 2). Analysing the intensity of PD, Type B subjects were noted to have significantly higher item scores on borderline PD, ASPD and depressive PD. No other statistical significant differences were found (see Fig. 1).

When analyses were performed separately for males and females, male Type B subjects did not have a higher rate of any cluster A PD. In cluster B, male Type B subjects met significantly more often a borderline and antisocial PD diagnosis. In cluster C, a significantly higher rate of avoidant personality disorder was reported from Type A persons. Regarding the intensity of personality disorders, male Type B subjects had a higher number of borderline and antisocial PD characteristics, while other numbers of PD characteristics did not differ significantly between subtypes.

In comparison, female Type B subjects had a higher rate of cluster A PDs, in particular paranoid PD. In cluster B, as with the male subjects, female type B persons had a significantly higher rate of borderline and antisocial PDs. Regarding cluster C PDs, in contrast to the male group, Type B females had a significantly higher rate of dependent PD diagnoses.

**Table 2** Frequency of personality disorders (PD) in Type A/B alcohol-dependent subjects

| Personality disorder | Type A N = 160 | Type B N = 77 | All subjects N = 237 | $\chi^2$-value Significance |
|---|---|---|---|---|
| Any cluster A PD | 23.1 % | 37.7 % | 27.8 % | 5.47* |
| Paranoid PD | 20.1 % | 28.9 % | 23.0 % | 2.23 |
| Schizoid PD | 5.2 % | 12.0 % | 7.4 % | 3.45 |
| Schizotypal PD | 2.6 % | 2.6 % | 2.6 % | 0.01 |
| Any cluster B PD | 30.6 % | 51.9 % | 37.6 % | 10.08** |
| Histrionic PD | 3.2 % | 2.6 % | 3.0 % | 0.06 |
| Narcissistic PD | 8.4 % | 6.8 % | 7.9 % | 0.18 |
| Borderline PD | 13.0 % | 28.0 % | 17.9 % | 7.73** |
| Antisocial PD | 12.9 % | 32.9 % | 19.5 % | 12.99*** |
| Conduct disorder | 18.1 % | 37.8 % | 24.5 % | 10.60** |
| Adult antisocial PD | 31.7 % | 60.8 % | 41.6 % | 17.07*** |
| Any cluster C PD | 39.4 % | 41.6 % | 40.1 % | 0.10 |
| Avoidant PD | 11.1 % | 22.7 % | 14.9 % | 5.29* |
| Dependent PD | 5.8 % | 9.3 % | 7.0 % | 0.97 |
| Obsessive-compulsive PD | 34.2 % | 26.3 % | 31.6 % | 1.46 |
| Negativistic PD | 4.6 % | 9.3 % | 6.1 % | 1.98 |
| Depressive PD | 5.2 % | 10.7 % | 7.0 % | 2.37 |

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

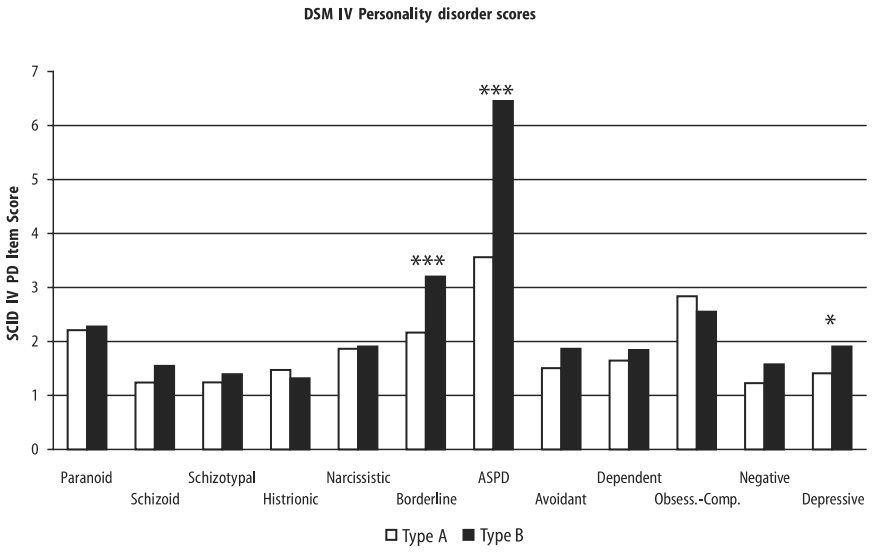


**Fig. 1** DSM-IV personality disorder scores in Type A and Type B alcohol-dependent patients

While female Type B subjects, like the male group, had a higher number of borderline and antisocial characteristics, they additionally reported a higher number of negativistic PD criteria.

### Influence of personality disorders on alcoholism characteristics

Patients diagnosed with any cluster A PD had a significantly earlier onset of alcoholism and they experienced significantly more alcohol-related violence. Patients with any cluster B PD had a significantly earlier age at onset, higher daily alcohol intake, number of DSM-IV criteria and had experienced significantly more alcohol-related violence. Cluster C subjects were significantly younger and had a significantly longer duration of alcohol dependence (see also Table 3).

When analysed separately, males with cluster A PD reported significantly more alcohol-related somatic consequences, while both males and females with any cluster A PD experienced more alcohol-related aggressive acts. Cluster B males and females were significantly younger, had an earlier age at onset of alcohol dependence, a higher number of DSM-IV criteria endorsed, and reported more alcohol-related violence. In addition, cluster B females had a higher average daily alcohol intake. Cluster C males had a significantly longer duration of alcohol dependence, while females with any cluster C disorder reported more alcohol-related violence.

## Discussion

In line with previous research (e. g. Bahlmann et al. 2002; Bottlender et al. 2003; Nace et al. 1991; Nurnberg et al. 1993; Verheul et al. 1995), we found high rates of comorbid Axis II disorder (DSM-IV) in detoxified alcohol-de-

**Table 3** Influence of personality disorders (cluster A, B, C) on alcoholism characteristics, SD: standard deviation

| Characteristics | Cluster A | | Sig. | Cluster B | | Sig. | Cluster C | | Sig. |
|---|---|---|---|---|---|---|---|---|---|
| | Yes | No | | Yes | No | | Yes | No | |
| Age of onset (years, ± SD) | 27.41±8.2 | 30.37±9.2 | * | 26.55±7.3 | 31.33±9.5 | *** | 27.87±7.5 | 30.65±9.8 | * |
| Duration of dependence (years, ± SD) | 13.55±8.1 | 11.97±7.9 | | 12.07±7.0 | 12.64±8.5 | | 13.79±8.5 | 11.56±7.5 | * |
| Daily alcohol intake (g/d, ± SD) | 311.2±153.9 | 335.9±200.7 | | 361.3±204.6 | 309.4±176.4 | * | 324.9±177.8 | 331.7±196.5 | |
| Number of DSM-IV criteria, ± SD | 5.62±1.4 | 5.47±1.3 | | 5.83±1.3 | 5.30±1.3 | ** | 5.65±1.3 | 5.41±1.3 | |
| Number of physical consequences, ± SD | 1.42±1.1 | 1.13±1.0 | | 1.34±1.1 | 1.14±1.0 | | 1.28±1.1 | 1.17±1.0 | |
| Alcohol-related violence, ± SD | 1.82±1.6 | 0.93±1.3 | *** | 1.97±1.6 | 0.70±1.2 | *** | 1.17±1.4 | 1.18±1.5 | |

*Sig* Significance of T-test; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

pendent patients: 28 % of all subjects had any cluster A PD, 38 % any cluster B PD, and 40 % had any cluster C PD. Altogether, almost three-quarters of the inpatients met criteria for at least one personality disorder. The SCID-II questionnaire tends to show a significant overlap between criteria for distinct personality disorders and may result in an overestimation of the overall rate of Axis II disorders. Furthermore, in alcohol-dependent subjects, there may be an overlap between prolonged withdrawal symptoms and items assessed in this questionnaire resulting in a higher frequency of personality disorder. Overlapping personality disorders may be explained by the affection of the coexisting alcohol dependence and may be the result of "definitional artifact" based on shared symptoms (Hudziak et al. 1996; Marinangeli et al. 2000; Zimmerman 1994). However, the concept of ASPD in DSM was reported to be of highest consistency due to its almost exclusive assessment of behavioural patterns including a tendency to deceive, lie and, in general, act in opportunistic ways without regard for the feelings or desires of others (APA 1987; Cottler et al. 1998). We studied an inpatient sample of treatment-seeking patients who were detoxified and initially weaned in an addiction treatment ward. These patients have higher Axis II comorbidity rates than untreated alcoholics (Berksons's bias) and might not be representative of all alcohol-dependent subjects. Raimo et al. (1999) indicated that studies using data from inpatient populations may give a skewed picture of the clinical characteristics of alcohol dependence. They divided over 3000 alcohol-dependent subjects from the Collaborative Study on the Genetics of Alcoholism into three groups: those without prior rehabilitation, those with only outpatient approaches, and subjects with an inpatient experience. A progression was shown from groups 1 to 3 for more general life problems, higher rates of additional drug dependencies and psychiatric disorders, and more alcohol-related adverse events. Logistic regression analyses revealed that those with no prior treatment were more likely to report lower levels of alcohol intake, and fewer alcohol problems. Among those who received help, inpatient care was predicted by an opposite profile.

The Type A/B dichotomy proposed by Schuckit et al. (1995) was replicated successfully in our sample. As proposed by Schuckit et al. (1995), we found a distribution of 2/3 Type A patients (n = 160) and 1/3 Type B patients (n = 77). Our results support the previous analyses from Schuckit et al. (1995) to use the reduced number of five instead of 17 criteria to subtype alcohol-dependent patients according to Babor. These five criteria make it more likely that Babor's typology is used in clinical settings to determine more specific treatment strategies for subgroups of alcohol-dependent subjects. Epstein et al. (2002) examined the usefulness of four prevailing uni- and multi-dimensional alcohol typologies (late/early onset, ASP/non-ASP, Type 1/2, Type A/B) and analysed a sample of 342 alcohol-dependent patients. Type A/B typology by Babor et al. (1992) was replicated and was the most promising. Nine of the original 17 dimensions made an important contribution to the Type A/B grouping: conscientiousness, drinks per drinking day, relief drinking, lifetime dependence severity, physical consequences, social consequences, the BMAST, depression symptom count and anxiety. There is substantial overlapping with Schuckit's variables suggesting that five to nine of the 17 original dimensions may be sufficient for clinical settings in future studies. Recently, Windle and Scheidt (2004) evaluated cluster analytical solutions ranging from two to five for a large (n = 802), ethnically diverse sample of alcoholic inpatients. They proposed that four, rather than two, subtypes may provide a more useful description of variation among alcoholics (mild course, polydrug, negative affect and chronic/antisocial). These contradictory findings may be the result of differences in the study samples. Similar to Babor's subjects, we studied exclusively Caucasians with fewer rates of comorbidity and other substance-related symptoms and disorders. Higher rates of comorbidity may have masked more subgroups. The two-type model (Type A and B) is robust across samples (size, gender, ethnicity) and settings and is much more reliable and valid across studies (Ball 1996, 2004). Previous research indicated that the two-type model has influence in allocating patients to specific kinds of treatment. Kranzler et al. (1996) investigated the hypothesis that, because of abnormalities in serotonergic neurotransmission that may underlie craving and impulsive behaviour, fluoxetine treatment differentially affects drinking among Type B alcoholics. Among Type B subjects, fluoxetine treatment resulted in poorer drinking-related outcomes than placebo treatment, while, among Type A subjects, there was no effect. This interactive effect did not persist during the 6-month follow-up period. Alcoholic subtypes identified by cluster analysis seem to be differentially responsive to the effects of fluoxetine treatment on drinking-related outcomes. Based on these findings, it is recommended that, in the absence of a comorbid mood or anxiety disorder, fluoxetine should not be used to maintain abstinence or reduce drinking in high-risk/severity alcoholics. In accordance with these results, Dundon et al. (2004) found that Type B alcoholics who had been treated with sertraline, in contrast to placebo, continued to show no advantage for pharmacotherapy in the 6 months after completing treatment. In addition, heavy drinking in Type B alcoholics increased over the 6 months postpharmacotherapy in those initially treated with sertraline compared with placebo.

Type B patients had significantly more often any cluster A and B personality disorder (PD), and significantly more often a borderline, antisocial and avoidant PD. Taking into account a dimensional approach, we found a similar pattern: Type B patients had significantly higher item scores on borderline, antisocial and depressive PD. There were no statistical differences regarding other PDs. Differences concerning PD concentrate on the cluster B with Type B subjects suffering significantly more often from borderline and antisocial PD. The impact of other PD does not play any substantial role in discriminating Type

A from Type B patients. While female Type B subjects, like the male group, had a higher number of borderline and antisocial characteristics, they additionally reported a higher number of negativistic PD criteria.

The entire spectrum of Axis II comorbidity has rarely been assessed in alcoholism research in the past. In a comprehensive approach, Driessen et al. (1998) investigated 250 hospitalized alcohol-dependent patients regarding their Axis I and II disorders. They found two types of alcohol dependence that substantially overlap with Cloninger's and Babor's types of alcoholism. In accordance with our results, Type B subjects were preferably associated with cluster A (schizoid) and cluster B (antisocial, boderline). When analysing the dimensional scores of personality pathology, Driessen et al. (1998) found more interrelationships compared to our study: Type B subjects were characterized by significantly higher schizoid, schizotypal, higher cluster B, and passive-aggressive scores than Type A subjects. As our results did not replicate this pattern, we hypothesize that cluster B with borderline and ASPD is the core personality trait for subtyping alcoholics and other PD do not play any substantial role. Driessen's data are limited due to the small numbers of subjects in the specific diagnostic classes. In contrast, the current sample is characterized by high rates of comorbid PD. Driessen et al. assessed lifetime Axis II comorbidity by means of the International Personality Disorder Examination, while in the current study SCID-II was used. This might explain the different results.

Not surprisingly, patients with any comorbid PD had a significantly earlier age of onset than patients without any PD, and cluster B subjects had a significantly higher alcohol intake and number of DSM-IV criteria. Alcohol-related violence was significantly higher in cluster A and B patients, and cluster C subjects had the longest duration of alcohol dependence. Thus, the strongest influence of PD on alcoholism characteristics is found in cluster B subjects, as opposed to a moderate influence in cluster A and C patients.

Babor et al. (2002) evaluated the construct and predictive validity of six different subtyping classifications on 600 adolescents presenting for marijuana treatment. The classification schemes were gender, onset age, family history, externalizing disorders, internalizing disorders and temperament. Subgroups were compared in terms of substance use frequency and other problems. Each of the categorical classification schemes differentiated subtypes significantly on some or all of the construct validation measures after controlling for demographic factors, thereby indicating that each has valuable explanatory power from a theoretical perspective. Externalizing disorders, onset age, difficult temperament and internalizing disorders continued to add unique variance to discrimination after the effects of the other subtypes had been removed. At 12-month follow-up, there were no differences between subtypes on substance use frequency, but adolescents with higher levels of externalizing disorders and internalizing disorders continued to experience more substance use problems. Thus, categorical subtypes may have particular relevance to the development of treatment interventions as well as prevention measures.

The strength of the present study is the fairly large sample size and the detailed and standardized assessment of all subjects. However, subjects are not representative in general and it can be hypothesized that the probable rate for Type B subjects might be much higher in samples of younger patients with concomitant drug abuse or dependence, and in untreated alcohol-dependent subjects who are homeless or in prison than in treatment-seeking alcoholics. This may explain the lower rate of Type B than Type A patients in Babor's and Schuckit's samples as well. We studied a German inpatient sample of treatment-seeking patients who had a long history of previous inpatient treatments and consisted of heterogenous groups of alcohol-dependent subjects with a wide range of alcohol dependence age of onset. The age of onset reported in our study is in line with previous results of other German alcohol-dependent inpatient samples (e. g. Driessen et al. 1998; Tadic et al. 2005).

As only few studies have assessed the issue about the impact of the whole spectrum of personality disorders on alcoholism typology, results need to be replicated. To our knowledge, there are no studies concerning the relation between type of alcoholism and personality traits. Area studies including untreated alcohol-dependent subjects may be optimal, but not easy to carry out.

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