

Chronological Relationship between Antisocial Personality Disorder and Alcohol Dependence

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Key Words

Alcohol dependence · Comorbidity · Antisocial personality disorder · Conduct disorder

Abstract

Personality disorders, and particularly antisocial personality disorder (ASPD), frequently co-occur with alcohol dependence. ASPD is considered to be an important cofactor in the pathogenesis and clinical course of alcohol dependence. The chronological relationship between the onset of symptoms of ASPD and alcohol-dependence characteristics has not yet been studied in great detail and the role of ASPD in classification schemes of alcohol dependence as suggested by Cloninger and Schuckit has yet to be determined. We studied 55 alcohol-dependent patients to assess the prevalence and age at manifestation of ASPD, conduct disorder characteristics as well as alcohol dependence by employing the Semi-Structured Assessment for the Genetics of Alcoholism and the Structured Clinical Interview for DSM-III-R. Results indicate that the onset of ASPD characteristics precede that of alcohol dependence by some 4 years. This finding suggests that in patients with ASPD, alcohol dependence might be a secondary syndrome as suggested by previous research.

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Introduction

Patients diagnosed with alcohol dependence constitute a highly heterogeneous group. Starting with Carpenter [1] in 1850, numerous attempts have been made to define potential subgroups of alcohol-dependent subjects. A variety of variables have been used to subtype alcoholic subgroups such as age at onset of alcohol dependence, patterns and characteristics of drinking, genetic vulnerability, comorbidity and various behavioral characteristics such as those proposed by Cloninger et al. [2], Lesch [3], von Knorring et al. [4], Schuckit [5], Babor et al. [6] and review by Babor [7]. At present, there is no comprehensive classification taking into account all the potentially important factors including etiology, pathogenesis, course, prophylactic and therapeutic variables and prognosis of alcohol dependence.

Antisocial personality disorder (ASPD) is frequently associated with alcohol dependence as a comorbid condition [8, 9], and is considered to be important in the pathogenesis and clinical course of alcohol dependence. Prior research [8,10–12] reported earlier ages at onset for first intoxications, problem drinking and development of alcohol dependence in subjects with ASPD. In these comorbid patients, the course of alcohol dependence was noted to be more severe including more alcohol-related arrests, occupational and social consequences of drinking. Further-

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more, prior reports noted that these subjects are at an increased risk for higher average daily alcohol consumption and concomitant drug abuse or dependence [12]. In this context, Cloninger et al. [2] proposed two potential subtypes of alcoholics based on the Stockholm Adoption Study: type-1 or 'milieu-limited' alcoholism is associated with adult 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 a subsequent study with 34 alcohol-dependent inpatients, Hallman et al. [13] found a significantly higher frequency of ASPD in type-2 than in type-1 alcoholics. Anthenelli et al. [14] reported a 73% concordance rate between type-2 alcohol-dependent subjects and ASPD. Schuckit [5] established a primary versus secondary classification scheme of comorbid conditions in alcohol dependence. In this concept, it is hypothesized that there is a distinction between alcohol dependence occurring independent of preexisting psychiatric disorders, i.e. primary alcohol dependence, and those occurring as a consequence of another major psychiatric disorder, i.e. secondary alcohol dependence. Schuckit and Irwin [15] confirmed this hypothesis showing that Cloninger's type-2 alcoholism might represent a separate and independent diagnostic entity which is characterized mainly by ASPD and not alcohol dependence itself. Thus, alcohol abuse or dependence might be a frequent but secondary phenomenon occurring in the course of ASPD. Schuckit and Irwin [15] concluded that the premorbid course of ASPD is unique compared to alcohol-dependent subjects without comorbid conditions. Furthermore, the authors argued that the prognosis of patients with comorbid ASPD is less favorable not only due to alcohol-related problems but also for their increased likelihood of having an additional substance use disorder and showing violent and criminal behavior. Finally, ASPD itself may be genetically influenced by factors different from those of alcohol dependence. Schuckit and Irwin [15] suggested that ASPD was a separate and distinct diagnosis from alcohol dependence, with antisocial behavior precipitating before the age of 16, long before the potential onset of alcohol dependence.

However, the chronological relationship between the onset of ASPD and alcohol dependence is unclear. In light

of the potential role of ASPD in these modern classification schemes of alcohol dependence, many ASPD symptoms may be dismissed as nonspecific or as a consequence of the subject's alcohol dependence.

The aim of this study is to assess whether alcohol dependence is secondary to the diagnosis of ASPD and conduct disorder (CD). First we assessed the frequency of CD and ASPD characteristics in an inpatient sample of alcohol-dependent subjects. Second, we assessed the age at onset of alcohol dependence in alcoholic inpatients with CD, ASPD and without ASPD. Third, we assessed the influence of alcohol intoxication on the age at onset of antisocial traits in patients with CD and ASPD. Finally, we compared the age at onset of alcohol dependence and antisocial traits in alcohol-dependent subjects with CD and ASPD.

Subjects and Methods

During a period of 7 months, 55 patients ($m = 45$, $f = 10$) consecutively admitted to the Psychiatric Hospital of the Ludwig Maximilian University, Munich, were included in the study. All patients fulfilled the ICD-10 and DSM-III-R criteria for alcohol dependence and gave written informed consent to participate in the study. Exclusion criteria were severe organic and mental disorders, psychiatric axis I diagnoses (DSM-III-R), and concurrent psychotropic medication. After inpatient detoxification and an average 14 days of abstinence, trained research assistants conducted a face-to-face structured interview with each subject. First, each subject underwent the German Version of the Structured Clinical Interview for DSM-III-R Personality Disorders (SCID-II) [16] to assess CD and ASPD criteria.

For further assessment, we used a German version of the Semi-Structured Assessment for the Genetics of Alcoholism (SSAGA) [17, 18], originally developed for the Collaborative Study on Genetics of Alcoholism (COGA) project, to assess in detail the extent, consequences and course of alcohol dependence, including ages at onset of tolerance, withdrawal, abuse, loss of control, activities given up and consequences with family and friends, and ages at onset of antisocial behavior, including participation in fights, getting hurt in fights (passive fights), weapon use, battery, fine penalties and child neglect charges, using a time-line method. Furthermore, if at least 4 criteria for ASPD or 3 criteria according to DSM-III-R for CD were met, the ages at onset of CD and ASPD were computed using all relevant items provided by the SSAGA.

Dichotomous variables were compared using the χ^2 statistic. Quantitative measures were compared using Student's *t* test for paired samples to compare ages at onset of antisocial symptoms with or without the influence of alcohol, ages at onset of ASPD and alcohol dependence. One-way ANOVA was employed to compare ages at onset of alcohol symptoms of individuals diagnosed with either CD or adult antisocial disorder and controls. An α -significance level of 0.05 was considered to be significant. The Tukey HSD post hoc test was employed across groups when an overall significant difference was observed.

Table 1. Demography and drinking characteristics

	Total sample (n = 55)	Patients without antisocial traits (n = 44) group 1	Patients with conduct disorder (n = 7) group 2	Patients with adult ASPD (n = 11) group 3	Statistical analysis: groups 1–3 χ^2 or F value significance
Male sex	46 (84%)	30 (68%)	6 (86%)	11 (100%)	p < 0.05
Age, years	41.4 ± 9.27	42.6 ± 10.22	39.2 ± 6.42	38.2 ± 6.16	n.s.
Education, years	12.5 ± 3.63	13.0 ± 3.69	11.2 ± 3.60	12.4 ± 3.00	n.s.
Any school graduate	54 (95%)	37 (84%)	6 (87%)	9 (81%)	n.s.
Mean monthly income, DEM	2,900 ± 2,560	3,200 ± 2,650	2,500 ± 2,430	2,500 ± 2,210	n.s.
Average length of employment in preceding year, months	7.9 ± 5.03	8.8 ± 4.77	7.2 ± 5.08	5.5 ± 5.28	p < 0.05
Unemployed	28 (52%)	17 (38%)	4 (57%)	7 (63%)	p < 0.05
Married	17 (31%)	14 (32%)	1 (14%)	2 (18%)	p < 0.05
Divorced	27 (49%)	11 (24%)	2 (29%)	4 (36%)	n.s.
Mean daily alcohol intake, g	344.8 ± 195.9	297.6 ± 155.3	435.8 ± 233.7	431.2 ± 235.7	p < 0.001
Mean duration of alcohol dependence, years	29.4 ± 9.49	31.3 ± 10.02	26.5 ± 7.11	24.7 ± 7.41	p < 0.001
Age at onset of alcohol dependence, years	12.8 ± 8.05	12.6 ± 8.64	12.6 ± 6.77	13.5 ± 7.19	n.s.

n.s. = Nonsignificant.

^a Mean ± SD.

Results

As demonstrated in table 1 and 2, 18 of the total of 55 inpatients were diagnosed with an ASPD-related disorder, meeting either the criteria of one or both CD and adult ASPD. Significant differences concerning demography were revealed across groups including a higher rate of males, fewer months of employment in the preceding year, a higher rate of unemployment, and being married. Furthermore, a higher daily alcohol intake and an earlier age at onset of alcoholism was detected in groups 2 and 3 compared to group 1. Further sociodemographic variables and factors related to the subgroup's alcohol-dependence characteristics are provided in table 1.

Table 2 presents the prevalence estimates of specific personality disorders in this sample. Seven (12%) of the patients met criteria for CD only, 8 (14%) for the adult form of ASPD, 3 (7%) of whom met criteria for both CD and adult ASPD. All patients diagnosed with ASPD were male, except 1 single female subject with an isolated CD but no adult ASPD. The rates of other cluster A, B and C personality disorders, detected in our sample, are shown in table 2.

The mean ages at onset of alcohol-dependence characteristics are shown in figure 1. Each criteria of alcohol dependence is represented in: (1) patients with CD; (2) patients with ASPD, and (3) patients without a comorbid ASPD. Significant differences were found across

Table 2. Comorbid personality disorders in alcohol-dependent patients, SKID-II (DSM-III-R; n = 55)

<i>Cluster A</i>	
301.00 paranoid	20 (36%)
301.20 schizoid	6 (11%)
301.22 schizotypal	1 (1%)
<i>Cluster B</i>	
301.70 antisocial	4 (7%)
Conduct disorder	7 (12%)
Antisocial adult	8 (14%)
301.83 borderline	8 (14%)
301.50 histrionic	5 (9%)
301.81 narcissistic	8 (14%)
<i>Cluster C</i>	
301.82 avoidant	16 (29%)
301.60 dependent	9 (16%)
301.40 obsessive-compulsive	9 (16%)
301.84 passive-aggressive	4 (7%)

groups with regard to: ages at onset of tolerance (F value 9.15, d.f. 2, p < 0.01); withdrawal symptoms (F value 6.04, d.f. 2, p < 0.01); abuse (F value 6.82, d.f. 2, p < 0.01); loss of control (F value 3.83, d.f. 2, p < 0.05); given up activities (F value 12.60, d.f. 2, p < 0.01), and consequences with friends and family (F value 12.60, d.f. 2, p < 0.01). Post hoc tests revealed that all those differences

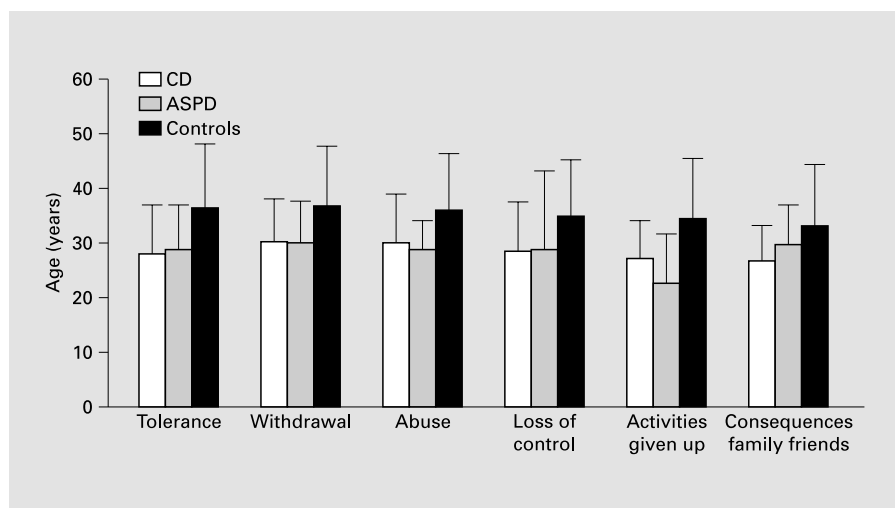


Fig. 1. Ages at onset of symptoms of alcoholism in controls, CD and adult ASPD individuals.

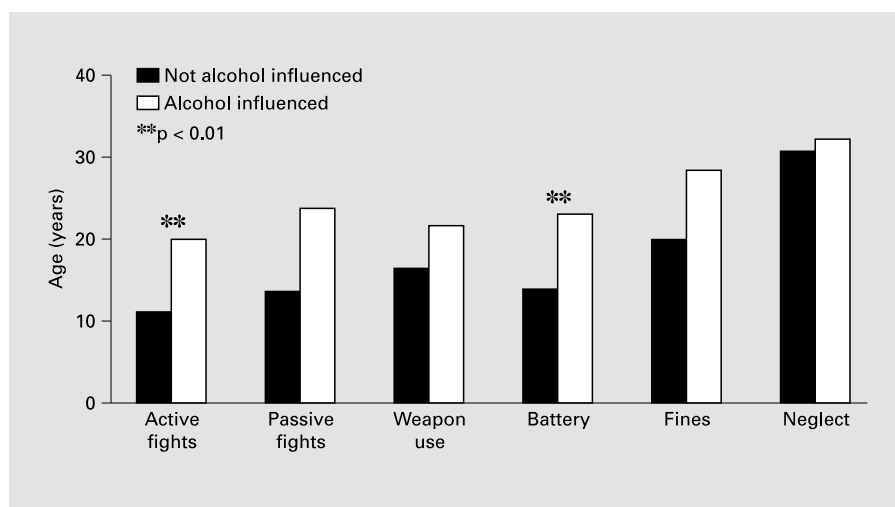


Fig. 2. Comparison of the influence of alcohol on the mean age at onset of antisocial traits in patients with ASPD and CD (n = 19).

were due to differences between either group 1 or 2 vs. group 3, while none of the group 1 vs. 2 comparisons yielded any statistical significance.

In a subsequent analysis, we compared the age at onset of relevant antisocial characteristics in a subgroup of patients with CD and ASPD with and without the influence of alcohol (n = 9). As shown in figure 2, first onset of non-alcohol-influenced active fights (T value 4.29, d.f. 8, $p < 0.01$) and battery (T value 2.58, d.f. 8, $p < 0.05$) manifested significantly earlier than the same characteristics under the influence of alcohol. Other ages at onset of antisocial characteristics, including involvement in passive fights, weapon use, fine penalties, or child-neglect charges did not significantly differ.

Finally, the mean ages at onset of alcohol dependence, CD and adult ASPD were compared. For this analysis, the

relevant data were available from 15 subjects. The mean age at onset of all potential antisocial symptoms in patients with CD and ASPD characteristics was 18.14 ± 5.2 years, significantly earlier than the average age at onset of alcohol dependence in this group of 22.6 ± 8.78 years (t value 2.67, d.f. 14, $p < 0.05$). These findings suggest that on average the onset of antisocial behavior manifests some 4 years earlier than the onset of alcoholism.

Discussion

The aim of this study is to assess alcohol-dependent patients with regard to their age at manifestation of ASPD and CD characteristics, and their age at onset of alcohol-dependence characteristics. The findings indicate that

symptoms of ASPD usually precede first symptoms of alcohol dependence by about 4 years. Furthermore, in line with previous research [2], alcohol-dependent individuals with antisocial characteristics presented a significantly earlier onset of alcoholism characteristics and an earlier onset of antisocial behavior, particularly violent behavior, not under the influence of alcohol. These results suggest that in these patients, alcohol dependence might be a secondary syndrome in the course of ASPD as suggested by Schuckit and Irwin [15]. Pertaining to the earlier onset of alcoholism characteristics, the findings might also reflect the high potential of violent behavior and aggressive traits occurring during late childhood and adolescence in these subjects. As shown in table 1, there are differences between patients with and without antisocial traits, and other demographic variables which might, at least in part, reflect a higher degree of social dysfunctioning. While more often male, patients with antisocial traits reported less employment in the preceding year, higher rates of unemployment, and were less often married. Also consistent with previous research, the daily alcohol consumption was higher in patients with antisocial traits compared to patients without antisocial traits. These are to some extent preliminary conclusions since we are presenting results of a relatively small sample in an ongoing study.

Some potential methodological problems concerning the instruments employed in this analysis deserve a comment. The SSAGA questionnaire, developed for the COGA project and well established in alcoholism research, is especially suited to document ages at onset and history of alcohol-dependence characteristics, including drinking patterns and consequences of alcohol dependence, ASPD and other axis-I disorders according to DSM-III-R, using a time-line method. Thus, the association between alcohol consumption and antisocial traits can be documented as well. Unfortunately, in the versions used for this analysis, the SSAGA is unable to record some antisocial traits independent of alcohol consumption. Some criteria important for diagnosis of ASPD, such as accumulation of debts, shoplifting, burglary, repeated unemployment, homelessness, and imprisonment, have not been assessed in the absence of alcohol dependence. It may be useful to revise the chapter of antisocial traits in subsequent versions of the SSAGA to discriminate better between antisocial traits under alcohol influence and those independent of alcohol influence, including the recent DSM IV criteria of ASPD. Furthermore, data concerning the association between CD and development of alcohol dependence were obtained retrospectively and their validity might be doubted. However, this point of

criticism would account for both patients with and without CD and therefore cannot explain the reported group differences. Finally, the retrospective assessment of personality as well as alcohol-related variables was shown to be of good validity and reliability [19].

As a secondary finding, high frequencies for some personality disorders, i.e. paranoid personality disorder and avoidant personality disorder, were detected in this sample. However, 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 these 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. Nevertheless, prior research reported a high comorbidity for axis-II disorders in alcoholics [20, 21]. Our results support the rates found for paranoid (20–44%), borderline (16–22%) and avoidant (18–20%) personality disorders as reported by Nurnberg et al. [22] and Morgenstern et al. [23]. Furthermore, a significant number of alcoholics might be affected by multiple personality disorders as Driessen et al. [24] recently reported. At least one personality disorder could be diagnosed in 33.6%, two personality disorders in 8.8%, and three personality disorders in 3.6% in their sample of 250 treatment-seeking alcoholics. However, the concept of CD and ASPD in DSM-III-R was reported to be of highest consistency due to its almost exclusive assessment of behavioral patterns including a tendency to deceive, lie and in general act in opportunistic ways without regard for the feelings or desires of others [25, 26]. 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 and might not be representative of all alcohol-dependent subjects. The frequency of full-blown ASPD at 7% in our sample may sound comparably low. We assessed patient's CD and ASPD characteristics separately. As Eppright et al. [27] have reported from a sample of 100 imprisoned juvenile offenders, CD is significantly linked to a subsequent full-blown ASPD. Furthermore, in their sample some adolescents with a number of antisocial characteristics before the age of 15 years could be found. Hesselbrock et al. [28] reported on a sample of 169 male alcoholics with a mean age of 39 years, 52% of whom had ASPD. Powell et al. [29] found a prevalence of 20% in an alcohol-dependent sample with an average age of 47 years. It can be hypothesized that the probable rate for ASPD 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.

Taken together, these preliminary results of antisocial behavior in alcohol-dependent inpatient subjects show, in line with previous research, that antisocial behavior man-

ifests earlier in life than characteristics of alcohol dependence suggesting alcoholism as a secondary phenomenon in these subgroup of alcoholics. Furthermore, those subjects also presented an earlier onset of alcohol-dependence criteria than alcoholics without antisocial traits.

References

- 1 Carpenter WB: On the Use and Abuse of Alcoholic Liquors in Health and Disease. Philadelphia, Lea & Blanchard, 1850.
- 2 Cloninger CR, Bohman M, Sigvardson S: Inheritance of alcohol abuse. *Arch Gen Psychiatry* 1981;38:861–868.
- 3 Lesch OM: Chronischer Alkoholismus – Typen und ihr Verlauf. Eine Langzeitstudie. Stuttgart, Thieme, 1985.
- 4 Von Knorring AL, Bohman M, Von Knorring L, Orelund L: Platelet MAO activity as a biological marker in subgroups of alcoholism. *Acta Psychiatr Scand* 1985;72:51–58.
- 5 Schuckit MA: The clinical implications of primary diagnostic groups among alcoholics. *Arch Gen Psychiatry* 1985;42:1043–1049.
- 6 Babor TF, Hofmann M, DelBoca FK, Hesselbrock V, Meyer RE, Dolinsky ZS, Rounsaville B: Types of alcoholics. I. Evidence for an empirically derived typology based on indicators of vulnerability and severity. *Arch Gen Psychiatry* 1992;49:599–608.
- 7 Babor TF: The classification of alcoholics. *Alcohol Health Res World* 1996;20:6–14.
- 8 Hesselbrock VM, Hesselbrock MN, Stabenau JR: Alcoholism in men patients subtyped by family history and antisocial personality. *J Stud Alcohol* 1985;46:59–64.
- 9 Lewis CE, Bucholz KK: Alcoholism, antisocial behavior and family history. *Br J Addict* 1991;86:177–194.
- 10 Rounsaville BJ, Dolinsky ZS, Babor TF, Meyer RE: Psychopathology as a predictor of treatment outcome in alcoholics. *Arch Gen Psychiatry* 1987;44:505–513.
- 11 Hesselbrock VM, Hesselbrock MN, Workman-Daniels KL: Effect of major depression and antisocial personality on alcoholism: Course and motivational patterns. *J Stud Alcohol* 1986;47:207–212.
- 12 Cadoret RJ, Troughton E, Widmer RB: Clinical differences between antisocial and primary alcoholics. *Compr Psychiatry* 1984;25:1–8.
- 13 Hallman J, von Knorring L, Orelund L: Personality disorders according to DSM-III-R and thrombocyte monoamine oxidase activity in type 1 and type 2 alcoholics. *J Stud Alcohol* 1996;75:155–161.
- 14 Anthenelli RM, Smith TL, Irwin MR, Schuckit MA: A comparative study of criteria for subgrouping alcoholics: The primary/secondary diagnostic scheme versus variations of the type1/type2 criteria. *Am J Psychiatry* 1994;151:1468–1474.
- 15 Schuckit MA, Irwin M: An analysis of the clinical relevance of type 1 and type 2 alcoholics. *Br J Addict* 1989;84:869–876.
- 16 Wittchen HU, Schramm E, Zaudig M, Spengler P, Rummeler R, Mombour W: Structured Clinical Interview for DSM-III-R, German version 2.0. Göttingen, Beltz, 1989.
- 17 Bucholz K, Cadoret R, Cloninger C, Dinwiddie S, Hesselbrock V, Nurnberger J, Reich T, Schmidt I, Schuckit M: A new, semi-structured psychiatric interview for use in genetic linkage studies: A report on the reliability of the SSAGA. *J Stud Alcohol* 1994;55:149–158.
- 18 Hesselbrock M, Easton C, Bucholz KK, Schuckit M, Hesselbrock V: A validity study of the SSAGA – A comparison with the SCAN. *Addiction* 1999;94:1361–1370.
- 19 Brown J, Kranzler HR, Del Boca FK: Self-reports by alcohol and drug abuse inpatients: Factors affecting reliability and validity. *Br J Addict* 1992;87:1013–1024.
- 20 DeJong CA, van den Brink W, Hartefeld FM, van der Wielen EG: Personality disorders in alcoholics and drug addicts. *Compr Psychiatry* 1993;34:87–94.
- 21 Nace EP, Davis CW, Gaspari JP: Axis II comorbidity in substance abusers. *Am J Psychiatry* 1991;148:118–120.
- 22 Nurnberg HG, Rifkin A, Doddi S: A systematic assessment of the comorbidity of DSM-III-R personality disorders in alcoholic outpatients. *Compr Psychiatry* 1993;34:47–454.
- 23 Morgenstern J, Langenbucher J, Labouvie E, Miller KJ: The comorbidity of alcoholism and personality disorders in a clinical population: Prevalence rates and relation to alcohol typology variables. *J Abn Psychol* 1997;106:74–84.
- 24 Driessen M, Veltrup C, Wetterling T, John U, Dilling H: Axis I and axis II comorbidity in alcohol dependence and the two types of alcoholism. *Alcohol Clin Exp Res* 1998;22:77–86.
- 25 American Psychiatric Association (APA): Diagnostic and Statistical Manual of Mental Disorders, ed 3, revised. Washington, American Psychiatric Press, 1987.
- 26 Cottler LB, Compton WM, Ridenour TA, Ben Abdallah A, Gallagher T: Reliability of self-reported antisocial personality disorder symptoms among substance abusers. *Drug Alcohol Depend* 1998;49:189–199.
- 27 Eppright TD, Kashani JH, Robinson BD, Reid JC: Comorbidity of conduct disorder and personality disorders in an incarcerated juvenile population. *Am J Psychiatry* 1993;150:1233–1236.
- 28 Hesselbrock MN, Meyer RE, Keener JJ: Psychopathology in hospitalized alcoholics. *Arch Gen Psychiatry* 1985;42:1050–1055.
- 29 Powell BJ, Penick EC, Othmer E, Bingham SF, Rice AS: Prevalence of additional psychiatric syndromes among male alcoholics. *J Clin Psychiatry* 1982;43:404–407.