

Antisocial Personality and Substance Abuse Disorders

James J. Collins, PhD; William E. Schlenger, PhD; and B. Kathleen Jordan, PhD

The relationship between antisocial personality (ASP) disorder and drug and alcohol disorders was examined using data from the Diagnostic Interview Schedule (DIS) gathered on a sample of 1,149 male prison inmates. The results of a linear canonical discriminant function analysis indicate differences among those with a DIS/ASP diagnosis that are related to the presence or absence of an accompanying substance abuse diagnosis: whites are more likely than nonwhites to receive the ASP diagnosis with a substance abuse diagnosis, and substance abuse appears to magnify ASP symptomatology. Diagnostic and clinical implications of findings are discussed.

Antisocial personality disorder (ASP) and the substance abuse disorders are often found together in the same person.¹⁻¹⁷ For example, the findings of Lewis *et al.*⁹ indicated that approximately two thirds of those diagnosed ASP were also diagnosed alcoholic, and approximately one third were diagnosed as drug dependent. The frequent co-occurrence of ASP and the substance abuse disorders raises questions about the relationship between these disorders. For example, are those patients who are diagnosed as having ASP who do not manifest a substance abuse disorder demographically different from those who meet the criteria for both diagnoses? Does the symptoma-

tology of ASP differ for those with a concurrent substance abuse disorder? This paper addresses these questions.

Previous research suggests that, although there is empirical regularity among those who are diagnosed ASP and/or have a substance abuse disorder, there is also some heterogeneity. Several researchers suggest the need to make a distinction between subcategories of the disorders. Schuckit¹⁴ suggests that there are primary and secondary alcoholics and that a subtype of secondary alcoholism is the sociopathic alcoholic. Schuckit considers primary alcoholics to be those who have no history of psychiatric disorder antedating alcohol abuse, whereas sociopathic alcoholism involves the onset of alcohol abuse with ongoing ASP. Lewis *et al.*¹⁸ make a similar distinction. Rada¹⁰ suggests that three groups should be distinguished: primary alcoholics, alcoholic sociopaths, and sociopathic

Drs. Collins, Schlenger, and Jordan are affiliated with the Center for Social Research and Policy Analysis, Research Triangle Institute, PO Box 12194, Research Triangle Park, NC 27709. Address reprint requests to Dr. Collins.

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alcoholics. He argues that the distinction between the latter two is not semantic but is instead a real difference in the onset and development of the two disorders.

When a distinction between primary and sociopathic alcoholics is made, a common finding is that primary alcoholics and sociopathic alcoholics differ in the age of onset of alcohol abuse disorder symptoms. By definition the DSM-III ASP diagnosis requires the onset of conduct disorder symptoms before age 15. Sociopathic alcoholics have been found to exhibit earlier drinking pathology than do primary alcoholics.^{14,15} Lewis *et al.*,^{9,18} in studies of separate samples, also found an earlier onset of alcohol problem symptoms in sociopathic alcoholics than in primary alcoholics. Hesselbrock *et al.*⁶ and Stabenau and Hesselbrock¹⁶ found that alcoholics with ASP had earlier onsets of first time drunk, first regular drinking, first regular drunkenness, and first recognition of a drinking problem. Rimmer *et al.*¹¹ found social history differences between primary alcoholics and sociopathic alcoholics.

Lewis *et al.*¹⁸ found that white men with ASP had a higher prevalence of alcoholism than did black men with ASP. Lewis *et al.*⁹ report that both men and women with ASP are at high risk of alcoholism.

Vaillant¹⁷ examined the variables that were correlated with alcoholism and sociopathy in a sample of 399 disadvantaged urban male subjects who did not show signs of serious youthful delinquency. Subjects were interviewed in adolescence and adulthood. He found

that the antecedents of alcoholism and sociopathy were different, and that there were both alcoholic sociopaths and sociopathic alcoholics in the sample. Vaillant¹⁷ argues that "most alcoholics are not premorbidly antisocial" (p. 321).

This recent work has established the strong association between ASP and alcohol abuse/dependence and has pointed to some of the features that distinguish between alcoholics with and without ASP. This work, however, leaves a number of questions unanswered. It has tended to focus on the alcohol disorder as the primary analytic category, rather than ASP, and therefore has not examined how specific ASP symptomatology is related to the presence of an accompanying substance abuse disorder.

This paper analyzes data collected from a large sample of convicted male felons upon their admission to a state prison system (most previous research on the relationship between ASP and substance abuse has been conducted on treatment populations). The National Institute of Mental Health Diagnostic Interview Schedule (DIS) was used to make a wide range of psychiatric diagnoses, including ASP, alcohol abuse/dependence, and drug abuse/dependence. (The DIS was developed over several years under the sponsorship of the National Institute of Mental Health.^{19,20}) This paper focuses on these disorder configurations and compares ASP/substance abuse subgroups on a variety of characteristics such as age, race, criminal history, ASP symptomatology, and temporal order of first

appearance of ASP and substance abuse symptoms.

Methods

In the Spring of 1983, interviews were conducted with 1,149 convicted male felons admitted to North Carolina prisons from the community. Interviews were conducted with consecutive new admissions at five different reception centers during the first days of the individual's incarceration. The five sites process all the male felons who enter the North Carolina prison system.

There is some reason to believe that the mental status of individuals may be atypical during this early incarceration period. Gibbs²¹ and Gunn and Robertson²² found that the mental state of incarcerated individuals was different in the beginning than later in the incarceration. This issue is not addressed here because we deal with the lifetime prevalence of psychiatric disorder, not with current prevalence. By an emphasis on specific lifetime behavioral symptoms, their severity, and their placement in time, the DIS instrument is also designed to make diagnoses that are not affected by temporary variations in mental status.

Interviews were conducted by 14 professional survey research interviewers not affiliated with the Department of Correction. Interviewers had been trained in the use of the interview instruments during a five-day classroom training session, with additional training at the data collection sites. Interviews were conducted in private or near-private circumstances and averaged approximately 1.5 hours. Version III of the Diagnostic Interview Schedule was

used. In addition to the DIS, the instruments covered demographics, criminal history, and drug and alcohol use at the time of the offense that resulted in incarceration. The interview instrument also included a brief version of the General Health Questionnaire.²³ Psychiatric diagnoses were made on the basis of responses to DIS questions using computer software developed specifically for this purpose. These diagnoses are referred to as DIS/DSM-III diagnoses.

The 1,149 completed interviews represent an 86.6 percent completion rate. Among 1,327 eligible inmates, 10.2 percent refused to participate, 2.6 percent were transferred to other institutions before the interview could be completed, and 0.6 percent were not interviewed for other reasons such as physical or mental incapacitation or a language barrier. Demographic characteristics of respondents are shown in Table 1.

Three quarters of the respondents were aged 30 years or younger. More than half of the respondents were black, and 74 percent had less than a high school education. More than two thirds lived in urban areas. Sentences were longer than three years for a majority of the respondents.

Results

ASP and Substance Abuse Disorder Prevalence DIS/DSM-III diagnoses indicated that 28.3 percent of the inmates met the criteria for a definite diagnosis of ASP. (DSM-III exclusion criteria were not used; individuals were classified as having the ASP disorder re-

Table 1
Characteristics of Inmate Respondents
(N = 1149)

Characteristic	N	%
Age		
18-20	239	20.8
21-24	314	27.3
25-30	307	26.7
31-40	192	16.7
≥41	97	8.4
Race		
White	513	44.6
Black	590	51.3
Other	32	2.8
Unknown	14	1.2
Education		
Less than high school	852	74.2
High school or more	296	25.9
Unknown	1	.0
Residence		
Urban	781	68.0
Rural	367	31.9
Unknown	1	.0
Sentence length		
≤3 years	541	47.1
>3 years	608	52.9

ardless of whether there was a concurrent diagnosis of mania or schizophrenia.) As expected, this prevalence is higher than that found in community surveys. The lifetime prevalence of ASP disorder ranged from 2.1 to 3.3 percent in New Haven, Baltimore, and St. Louis community studies.²⁴

The definite DIS/ASP diagnosis is given when there is onset of three or more DSM-III conduct disorder symptoms before age 15, and report of four or more adult DSM-III symptoms since age 18. (There is some overlap of the criteria for ASP and for the substance abuse disorders. Multiple times drunk and multiple drug use before age 15 are symptoms counted toward the ASP diagnosis. However, exclusion of these

symptoms from ASP does not have a marked effect on the prevalence; exclusion of both symptoms reduces the prevalence from 28.5 to 25.9 percent, a reduction of 9 percent.) The lifetime prevalence of alcohol abuse/dependence among the inmates was 49 percent, and 15 percent of subjects satisfied the criteria for a lifetime diagnosis of drug abuse/dependence for at least one of six drug types (opiates, cocaine, amphetamines, barbiturates, hallucinogens, or marijuana). These substance abuse disorder prevalences are also much higher than the prevalences found in the three recent community studies.²⁴

The percentages of inmates with and without the ASP diagnosis who satisfied the criteria for an alcohol or drug diagnosis are shown in Table 2. It is clear that those who satisfied the criteria for the ASP diagnosis are much more likely than those without the diagnosis to have a substance abuse disorder diagnosis. A total of 71 percent of those with ASP satisfied the criteria for the alcohol diagnosis, compared with 40 percent with no ASP diagnosis. Of inmates with ASP 28 percent also satisfied the criteria for a drug diagnosis; 10 percent of those without ASP satisfied the criteria for a drug diagnosis.

Features of ASP/Substance Abuse Configuration Multivariate analyses were conducted to determine whether individual characteristics and ASP symptomatology differed depending on the presence of a substance abuse disorder with ASP. Four ASP/substance abuse disorder configurations were specified; their distributions are shown in Table 3. As shown by the percentages in column

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Table 2
Presence of Alcohol and Drug Diagnoses among Inmates with and without Lifetime Antisocial Personality Diagnosis

Alcohol/Drug Diagnosis	ASP Dx		No ASP Dx		Total Sample	
	N	%	N	%	N	%
Alcohol abuse/dependence	229	71.3	321	40.2	550	49.2*
Drug abuse/dependence	91	28.3	84	10.4	175	15.4*

* Percentage of total sample with nonmissing data on these diagnoses. (Twelve cases were missing on ASP, 28 on alcohol diagnoses, and 16 on drug diagnoses.)

2, most of those who met the criteria for ASP also met the criteria for a substance abuse disorder; only 24 percent received the ASP diagnosis without an alcohol or drug diagnosis. Almost half of those with ASP had an alcohol diagnosis without a drug diagnosis. Slightly less than one quarter of those with ASP received *both* alcohol and drug diagnoses. Only 5 percent of those with ASP had a drug but no alcohol diagnosis. Because this group was small (n = 16), it was not included in the multivariate analyses.

A linear canonical discriminant function analysis was done using the three remaining ASP/substance abuse groups. Fourteen independent variables

were included in the discriminant model: nine variables described individual characteristics and previous deviant behaviors:

age at time of interview,
 years of education,
 race (white/nonwhite),
 age at first arrest,
 number of career arrests,
 multiple times drunk before age 15 (0,1),
 multiple illegal drug use before age 15 (0,1),
 current incarceration for a violent offense, (0,1),
 current incarceration for a drug-related offense (0,1).

An additional five variables were created as the number of symptoms the person reported in five major ASP symptom categories:

Table 3
Number of Respondents with Different ASP/Substance Abuse Configurations

Configuration	N	% of Those with ASP	% of All Respondents
ASP without alcohol or drug diagnosis	76	23.7	6.8
ASP with alcohol disorder but no drug disorder	155	48.2	13.9
ASP with drug disorder but no alcohol disorder	16	5.0	1.4
ASP with both alcohol and drug abuse disorders	74	23.1	6.6
Total	321	100.0	28.7

- aggression—six items, including starting fights and hitting a spouse;
- delinquency and crime—six items, including theft, juvenile court referral, and adult arrest;
- school or job problems—ten items, including truancy, poor school performance, and being fired from more than one job;
- sexual promiscuity—four items, including having 3 or more sexual partners outside marriage while married, and involvement in prostitution;
- irresponsibility—eleven items, including frequent lying or traffic tickets, failure to repay a debt, and failure to meet financial obligations.

The standardized canonical coefficients for the independent variables on the first and second canonical variates (or components) and mean group scores for each independent variable within ASP/substance abuse groups are shown in Table 4. The standardized coefficients indicate the relative importance of each variable to the two variates. The magnitude of each coefficient indicates the strength of the variables to account for membership in the three ASP/substance abuse groups, controlling for variation in group membership explained by the other variables in the model. The two canonical variates are independent of each other in the sense that the second component is estimated so that coefficients maximize group differences, and, additionally, the values on the second variate are not correlated with the values on the first.²⁵ The signs of the coefficients are not interpretable in a straightforward manner. Mean group scores and levels of statistical significance for each variable are provided in Table 4 to facilitate interpretation by showing how the mean values for the groups differ from each other.

The class means (i.e., the centroids) on the canonical variates show how the two canonical variates distinguished the ASP/substance disorder groups. The *F*-statistics indicate each variate accounts for statistically significant variation between the disorder groups. The means for the first variate are very different from each other and range between $-.839$ and 1.083 , indicating that the first canonical variate distinguishes all three groups from each other. The class means on the second variate are much less divergent, and two of the means, those for ASP with no substance abuse disorder and for ASP with alcohol and drug abuse disorders, are quite close ($.414$ and $.271$, respectively). This indicates two things: (1) the second variate accounts for less variation than the first (the canonical R^2 confirms this—being $.319$ for the first variate and $.106$ for the second), and (2) the second variate primarily distinguishes between those with ASP and those with alcohol abuse-dependence from the other two groups.

The standardized coefficients show that, using $.3$ as a cutoff value, race, multiple times drunk before age 15, and illegal drug use before age 15 are strong predictors of group membership on the first variate. Education has a coefficient of $.29$. The ASP symptom groupings are not strong predictors of membership in the ASP/substance abuse groups, although the delinquency-crime and irresponsibility symptom group coefficients approach the $.3$ value.

Important variables distinguishing group membership on the second variate are age, multiple times drunk before

Table 4
Standardized Canonical Correlation Coefficients and Mean Values for ASP Substance Abuse Groups

	Standardized Coefficients		Associated Mean Group Scores		
	1st Canonical Variate	2nd Canonical Variate	ASP/No Substance Abuse	ASP/Alcohol Abuse-Dependence	ASP/Alcohol and Drug Abuse-Dependence
Age at interview	-.003	-.429	25.4	26.8	25.1
Education (years)	.290	.138	9.6	9.6	10.2
Race (white = 1)	.412	-.202	.33***	.53***	.76***
Multiple times drunk before age 15	.482	-.644	.19***	.59***	.74***
Illegal drug use before age 15	.504	.309	.19***	.29***	.64***
Age at first arrest	-.021	-.238	17.3	17.6	16.5
Total career arrests	-.003	-.064	5.8	6.4	7.2
Incarcerated for violent offense	-.015	-.084	.23	.26	.16
Incarcerated for drug offense	-.042	.229	.12	.11	.16
School-job problems	-.023	.062	2.0	2.0	2.3
Aggression	.215	-.061	.9**	1.0**	1.3**
Delinquency-crime	.288	.184	1.8***	1.9***	2.4***
Sexual promiscuity	.166	-.177	1.7	1.9	2.0
Irresponsibility	.271	.599	2.8***	2.6***	3.5***
Canonical component class means					
ASP/no substance abuse	-.839	.414			
ASP/alcohol abuse-dependence	-.098	-.333			
ASP/alcohol and drug abuse-dependence	1.083	.271			
Canonical R^2	.319	.106			
F	5.52	2.51			
Significance	.0000	.003			

** Significance level < .01; *** Significance level < .001.

age 15, illegal drug use before age 15, and irresponsibility symptoms. Race, age at first arrest, and incarceration for a drug offense have coefficients higher than .2. The early drunkenness and drug use variables are important to both canonical components.

Examination of mean group scores helps in the interpretation of the standardized coefficients. Mean group scores for race show that 32 percent of those who are diagnosed as having ASP without a substance abuse disorder are white, whereas 76 percent of those who are diagnosed as having ASP with both alcohol and drug abuse diagnoses in addition are white. Thus, whites are 2.4 times more likely than blacks to receive the ASP diagnosis *and* drug and alcohol diagnoses. Alcohol and drug abuse before age 15 was reported by 19 percent of those who were diagnosed as having ASP without a substance abuse disorder and 64 to 74 percent of those who were diagnosed as having ASP and both substance abuse disorders. The latter percentages are 3.4 to 3.9 times higher than the former. The differences between means for race and the two early substance abuse variables are statistically significant.

Age and education are not important discriminators between ASP and substance abuse groups. Age at first arrest and number of career arrests are not strongly associated with group membership. Incarceration for a violent offense or a drug-related offense are not significant discriminators between those diagnosed as having ASP with and without substance abuse disorders.

Mean ASP symptom scores (i.e., average number of ASP symptoms) for the ASP/substance abuse groups show a fairly consistent pattern. Those who are diagnosed as having ASP with no substance abuse disorder have the lowest symptom scores; those who have ASP and alcohol abuse without drug abuse have the next highest; and those who have ASP and both substance abuse disorders have the highest. Differences in mean scores are statistically significant for aggression, delinquency-crime, and irresponsibility. The symptom scores are 15 to 44 percent higher for those whose ASP diagnosis is accompanied by alcohol and drug disorders in comparison to those who are diagnosed as having ASP without a substance abuse disorder. Apparently substance abuse magnifies ASP symptomatology.

The different demographic and behavioral profiles of ASP/substance abuse disorder groups is even more apparent if those diagnosed as having ASP are classified into only two groups—those who were diagnosed as having ASP without a drug or alcohol diagnosis and those who received one of these diagnoses in addition to the ASP diagnosis. Clear differences by race, early alcohol and drug abuse, and significantly higher symptom scores in three of five symptom groups are shown in Table 5. Although current age and years of education do not distinguish those diagnosed as having ASP with and without substance abuse, whites are disproportionately likely to receive ASP and substance abuse diagnoses. Among the inmates the average profile of someone

Table 5
Characteristics of Two Subgroups of Inmates with Antisocial Personality Disorder

Characteristic	Means and Significance Levels		
	ASP/No Substance Abuse Diagnosis	ASP/One or More Substance Abuse Diagnoses	F Ratio Probability
Age	25.4	26.3	.310
Years of education	9.6	9.8	.454
Age at first arrest	17.3	17.3	.958
Total career arrests	5.8	6.7	.414
Symptom group scores			
School-job problems	2.0	2.0	.747
Aggression	0.9	1.1	.020
Delinquency-crime	1.8	2.1	.012
Sexual promiscuity	1.7	2.0	.044
Irresponsibility	2.8	2.9	.571
	Percentages		
White	33.3	59.4	.000
Early alcohol abuse	19.2	60.7	.000
Early drug abuse	18.7	41.0	.001
Incarcerated for violent offense	23.3	21.8	.789
Incarcerated for drug offense	12.2	15.4	.521

with both ASP and a substance abuse diagnosis is a 26-year-old white man with less than a tenth grade education who showed early signs of substance abuse, was arrested for the first time at age 17, has a total of almost seven previous arrests, and has reported a comparatively high number of ASP symptoms. On the other hand, those subjects who were diagnosed as having ASP without a substance abuse disorder are black men averaging 25 years of age and 9.6 years of education, are not very likely to display early substance abuse, were arrested for the first time at age 17, have a total of six previous arrests, and reported fewer ASP symptoms.

Temporal Order of Symptoms During the interviews, inmates were asked at

what age they first became involved in various ASP and substance abuse symptoms. These data provide some information about the order of onset of the problem behavior. The average ages at which individuals reported manifesting the first ASP conduct disorder symptom, being drunk the first time, and having first used illegal drugs are shown in Table 6. It is clear that among these inmates ASP symptomatology precedes substance abuse. The first ASP symptom was reported to have occurred between ages 10.6 and 11.7 years, the first time drunk between 14.9 and 15.8 years, and the first illegal drug use between 16.1 and 17.5 years. Gitelman *et al.*²⁶ found a similar pattern in a study of men with attention deficit

Table 6
Mean Age of First ASP/Substance Abuse Symptom for Inmates Exhibiting Such Symptoms

	ASP/No Substance Abuse	ASP-Alcohol Disorder Only	ASP-Alcohol and Drug Disorder	All Inmates
1st ASP symptom	11.7	10.6	10.8	11.2
1st time drunk	15.8	15.0	14.9	15.2
1st illegal drug use	17.4	17.5	16.1	17.4

disorder with hyperactivity and a control group. The onset of conduct disorders was found to precede or to coincide with the onset of substance abuse disorders in both groups.

These data suggest the existence of conduct disorder *prior to* substance abuse and, thus, using Rada's¹⁰ characterization, are more consistent with the notion of "sociopathic substance abuser" rather than "substance abuser sociopath." It does not appear that substance abuse is etiologically important to the *onset* of ASP in this group of inmates. However, as shown in Table 4, substance abuse does tend to be present in persons with higher levels of ASP symptomatology.

Discussion

Three major clinical implications can be drawn from the ASP/substance abuse disorder findings: (1) Different ASP clinical entities appear to exist, depending on the presence of substance abuse; (2) because those who display ASP and a substance abuse disorder exhibit more serious behavioral pathology, and because more is known about the treatment of substance abuse than about the treatment of ASP, a logical approach may be to focus initial treatment efforts on the substance abuse

problem; and (3) treatment approaches may need to differ for whites and non-whites. These implications should be reviewed with caution because the study sample consists of prison inmates. It is possible that a general population sample might differ in ASP and substance abuse symptomatology.

The first implication suggests the need for continued investigation of the etiology and progression of the substance abuse disorders and ASP separately, as well as the relationship between the two. It is clear from this and other research that the two disorders are often found together; it is also clear that there is considerable variation in the onset and development of the disorders. The distinction between alcoholic sociopaths and sociopathic alcoholics may be a useful distinction but does not go very far toward the kind of understanding that addresses etiological and treatment questions.

The finding that men with both ASP and a substance abuse disorder typically report more ASP symptoms (even those symptoms not directly related to substance use) may have important implications for treatment. First, this finding suggests that any treatment system the service population of which includes substantial numbers of ASP

cases (e.g., prison-based treatment programs) should expect (and actively seek to identify) concurrent substance abuse and should provide the resources required for treating the substance abuse disorders. Second, because the treatment of ASP is notably difficult and because more is known about the treatment of substance abuse, a sensible strategy in the treatment of such cases may be to begin by focusing on the substance abuse. Doing so may help to foster a therapeutic alliance, which may be useful in the subsequent treatment of the ASP disorder.

The increased prevalence of the ASP diagnosis without a substance abuse disorder among nonwhites suggests that the progression of ASP may differ for whites and nonwhites. Clinical interventions may thus need to differ for racial groups. In the absence of substance abuse, treatment will need to deal directly with the ASP disorder.

The white-nonwhite difference in the ASP/substance abuse disorder configurations may be a function of unique genetic or developmental characteristics for whites and nonwhites. For example, whites may be genetically more susceptible than blacks to alcohol abuse or dependence and for this reason are more likely to have ASP with a substance abuse disorder. Or, the early developmental experiences of nonwhites may provide insulation against contracting both ASP and substance abuse disorders.

These hypotheses are speculative and need further study. Although the available data do not allow understanding of the etiology of ASP and the substance

abuse disorders, the data show clearly that, when both disorders are present, pathology is severe and results in very high personal and social costs.

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