

## The Natural History of Alcohol Abuse: Implications for Definitions of Alcohol Use Disorders

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*Is the DSM-III-R category of alcohol abuse validly differentiated from the DSM-III-R category of alcohol dependence, or is abuse primarily a mild, prodromal condition that typically deteriorates into dependence? A 4-year longitudinal epidemiologic study of male drinkers provided data to answer this question. The study used identical questions at baseline and follow-up. At follow-up, 70% of the subjects who were initially classified as alcohol abusers were still abusers or were classified as remitted. This contrasted significantly with outcome in the subjects who initially reported alcohol dependence. Although additional research is needed, these results indicate that alcohol abuse often has a course distinct from that of alcohol dependence.*

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The definitions of alcohol use disorders have changed considerably through the successive sets of diagnostic criteria developed for psychiatric research and clinical diagnosis. In the earlier Feighner criteria (1) and Research Diagnostic Criteria (2), only one alcohol use disorder, "alcoholism," was defined. In *DSM-III*, alcohol use disorders were divided into two categories, alcohol abuse and alcohol dependence. It is now clear that the abuse category contained many symptoms ordinarily considered to indicate dependence. Numerous factors, including research challenging the validity of the *DSM-III* distinction between abuse and dependence (3), led to considerable revision of the alcohol use disorders in *DSM-III-R*.

The *DSM-III-R* definition of alcohol dependence was heavily influenced (4) by the concept of alcohol dependence initially proposed by Edwards and Gross

(5). In *DSM-III-R*, the diagnostic criteria were modified to emphasize not only physiological dependence but also subjective indicators of impaired control, increased salience of drinking, and indirect indicators of impaired control such as continued drinking despite health or social problems. Abuse became a residual category for those who never met dependence criteria but who drink despite social, occupational, psychological, or physical problems related to alcohol or in hazardous situations such as driving. Before the publication of *DSM-III-R*, alcohol abuse as a category had been dropped entirely on the grounds that determining the diagnosis of a substance use disorder on the basis of its social consequences placed insufficient emphasis on the "essential process" of the disorder (5). The abuse category was reintroduced in response to the concerns of some clinicians who felt the need for a diagnosis when substance use led to impairment without dependence indicators. The statements in *DSM-III-R* that abuse applies to those "who have not yet developed . . . dependence" (italics added) (6) and to those "who have only recently started" taking the psychoactive substances (i.e., those who started drinking only recently) appear to indicate an assumption that abuse constitutes a mild condition prodromal to dependence.

If the most likely outcome of alcohol abuse is a diagnosis of alcohol dependence, then the validity of the distinction between abuse and dependence is somewhat challenged because the abuse category serves only to identify early, mild manifestations of the disorder of dependence. In this case, perhaps abuse should be dropped and the severity threshold for dependence lowered to include those who would now be diagnosed as nondependent abusers. However, if the assumption about the likely evolution of alcohol abuse into dependence is false, then dropping the abuse category and broadening dependence would add heterogeneity to dependence, which is already quite a heterogeneous category.

For the purposes of revising the criteria for alcohol use disorders in *DSM-IV*, as well as for better understanding the nature of the alcohol use disorders, information on the longitudinal relationship of abuse to dependence becomes especially important. In particular, follow-up studies of alcohol abusers in the general

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population offer the possibility of learning whether alcohol abuse remains a consistent condition or typically evolves into alcohol dependence. Concurrent follow-up of alcohol-dependent individuals provides the opportunity to determine whether the most likely outcome of abuse contrasts with the outcome of dependence.

Although follow-up studies of drinking (7-9) and drinking problems (10, 11) have been reported, they either focused entirely on consumption patterns (7-9) or used measures designed for other purposes (10, 11) and did not attempt to clearly differentiate aspects of alcohol abuse from alcohol dependence.

At this writing, *DSM-III-R* has been published for only 2 years. Clearly, not enough time has elapsed since its publication for the completion of studies designed specifically to examine the natural history of alcohol abuse as defined in *DSM-III-R*. However, a fresh look at some older data provides an unexpected source of information on this current research question. These data come from a 1973 follow-up study of men initially interviewed in a 1969 national survey of drinking practices and problems. The drinking practices and problems of the subjects were evaluated extensively in the 1969 survey and at the 1973 follow-up. Obviously, the *DSM-III-R* concepts of alcohol abuse and dependence were not evaluated specifically in this study. However, the richness of detail in the data allowed for the construction of variables analogous to the *DSM-III-R* categories of alcohol abuse and dependence for both the initial and the follow-up evaluations. Construction of these variables allowed us to test the hypothesis that the outcomes of subjects with initial indicators of alcohol abuse would differ from those of subjects with initial indicators of alcohol dependence.

## METHOD

The original study from which these subjects were drawn was the third in an ongoing series of national surveys of drinking practices and problems conducted by the Alcohol Research Group, a National Institute on Alcohol Abuse and Alcoholism research center affiliated with the University of California, Berkeley. The original 1969 sample consisted of 978 men aged 21 to 59 years and is described in considerable detail by Cahalan and Room (12). The sample was drawn according to standard principles of national probability sampling; all households within 100 primary sampling units were prelisted and every  $n$ th one was selected by office staff (not interviewers). Eligible men within households were enumerated and selected by a random number device. The men were personally interviewed by trained survey interviewers. The interview was fully structured and incorporated the knowledge and experience of this research group in conducting the earlier national surveys on drinking practices and problems.

In this survey, primary sample units from urban areas were somewhat oversampled with the intention of

obtaining a higher proportion of heavy drinkers in the sample. Weights were developed from the design of the sampling scheme to produce nationally representative rates. However, it was found that on virtually all variables aside from urbanicity, these weights produced only trivial differences in group comparisons (12). In 1969, 803 of the men were current drinkers.

In 1973, a follow-up study of these men was conducted. They were asked about their experiences with alcohol consumption and alcohol problems by using many of the same questions as those in the initial interview. The 3 years preceding the second evaluation constituted the time frame for the questions. Five hundred ninety-three men who had been current drinkers in the initial evaluation were followed up in 1973, a follow-up rate of 74%.

The questions used in constructing the present alcohol abuse and dependence variables were identical in the initial survey and at follow-up and used the same time frame (the preceding 3 years). The abuse and dependence indicators constructed from these items cannot be considered fully complete or perfect representations of abuse and dependence because not all aspects of the two disorders were covered, particularly for alcohol dependence. However, given the very limited amount of empirical research on the chronological relationships of abuse and dependence, we felt that the criteria were represented well enough to offer a useful empirical addition to theoretical work focused on this issue.

The areas covered in the indicators of *DSM-III-R* alcohol abuse included social, occupational, and physical problems as well as hazardous use (see table 1). The recent presence of these in men who were current drinkers (i.e., those who continued to drink despite these problems) was taken as a positive indicator of alcohol abuse.

Many but not all of the *DSM-III-R* criteria for alcohol dependence (criteria 1, 2, 3, 7, and 9) were represented in the data set (see table 1). Although the tolerance indicator is somewhat different from asking whether individuals needed to drink 50% more to get an effect (not included in the data set), the frequent consumption of a large amount of alcohol without accompanying intoxication seemed a reasonable proxy for the clinical concept of tolerance.

We did not include hazardous use or continued drinking despite problems among our dependence indicators because we wanted to keep the abuse and dependence categories separate. Note that the *DSM-III-R* criteria do not provide for entirely strict separation of abuse and dependence. Most aspects of the abuse criteria are embedded in the dependence criteria (criterion 4, hazardous use, and criterion 6, continued use despite problems). Therefore, a person meeting criteria for dependence might or might not also meet criteria for abuse. Also, an individual meeting only one of the criteria for abuse and only one for dependence would receive a diagnosis of abuse, not dependence, since three symptoms are required for dependence. For

**TABLE 1. Alcohol Problems Used to Construct Indicators of Alcohol Abuse and Alcohol Dependence**

Criterion	Representation From Items Included in the Data Sets
Alcohol abuse	
Recurrent social problems	Any of the following: 1. Threats by spouse to leave because of respondent's drinking 2. Respondent feels that his drinking has harmed his friendships, social life, home life, or marriage 3. Two or more of the following: a. Spouse objects to respondent's drinking b. Relatives object to respondent's drinking c. Friends object to respondent's drinking d. Neighbors object to respondent's drinking
Occupational problems	Two or more of the following: 1. Losing or nearly losing a job due to drinking 2. Quitting a job due to drinking 3. Being "high" or "tight" while on the job 4. Staying out of work due to hangovers 5. People at work object to respondent's drinking 6. Respondent feels drinking has harmed his work 7. Respondent feels drinking has harmed his employment or advancement opportunities
Health problems	One of the following: 1. A doctor suggested respondent cut down on drinking 2. Respondent feels drinking harmed his health
Hazardous use	Any of the following: 1. Injury to respondent due to his drinking 2. Injury to someone else due to respondent's drinking 3. Property damage due to respondent's drinking 4. Drinking and driving that resulted in legal problems
Alcohol dependence	
Often drinks more or longer than intended	One of the following: 1. Respondent found it difficult to stop drinking before completely intoxicated 2. Respondent kept on drinking after promising himself he would not
Desire or unsuccessful efforts to decrease drinking	Respondent tried to cut down or quit but did not manage to do so
A great deal of time spent drinking	Usually frequency of drinking three or more times a day
Marked tolerance	Respondent drank eight or more drinks at least once a week AND felt intoxicated once a month or less
Characteristic withdrawal symptoms	Respondent's hands shook a lot in the morning after drinking
Drinking for relief or avoidance of withdrawal symptoms	Respondent often drank first thing in the morning

the purposes of the present study, the level of overlap in the abuse and dependence categories seemed likely to obscure what might be learned about the predictive power of the categories when separated more cleanly. Therefore, three categories for subgrouping subjects were created to correspond to abuse and dependence but with the level of overlap reduced. The three categories were 1) neither abuse nor dependence indicators, 2) abuse indicators with no dependence indicators, and 3) dependence indicators with or without abuse indicators.

Of the 593 men who were current drinkers in the initial study, 71 (12%) were classified as abusers by the measure we constructed and 109 (18%) reported indicators of alcohol dependence. These 180 men were the subjects considered in this report. The demographic characteristics of all 593 men are given in table 2. Because weights were not developed specifically for the follow-up survey and weights for the original sample did not meaningfully influence most results aside from urbanicity (12), unweighted frequencies and proportions are presented. We used the standard chi-

square test with Yates's correction to test whether follow-up outcome differed between men who initially reported indicators of abuse and men who initially reported dependence indicators.

## RESULTS

Of the 71 men with initial indicators of alcohol abuse only, 50 (70%) reported indicators of alcohol abuse only (N=17) or remission (N=33) 4 years later, and the remainder, 30% (N=21), reported indicators of alcohol dependence with or without indicators of alcohol abuse. In contrast, of the 109 men with initial indicators of alcohol dependence, 50 (46%) still reported indicators of dependence 4 years later, and 59 (54%) reported indicators of abuse only (N=16) or remission (N=43). The differences in outcome between men with initial indicators of alcohol abuse only versus those with alcohol dependence were statistically significant ( $\chi^2=4.12$ ,  $df=1$ ,  $p<0.05$ ).

**TABLE 2. Demographic Characteristics and Presence of Alcohol Abuse or Dependence Indicators of 593 Male Drinkers at Initial Evaluation**

Demographic Characteristic	No Abuse or Dependence Indicators (N=413)		Abuse Indicators Without Dependence Indicators (N=71)		Dependence Indicators With or Without Abuse Indicators (N=109)		Total Sample (N=593)	
	N	%	N	%	N	%	N	%
Age (years)								
20-29	94	22.8	25	35.2	36	33.0	155	26.1
30-39	112	27.1	23	32.4	25	22.9	159	26.8
40-49	118	28.6	13	18.3	27	24.8	159	26.8
50-59	89	21.5	10	14.1	21	19.3	120	20.2
Marital status								
Married	370	89.6	56	78.9	87	79.8	513	86.5
Separated	2	0.5	4	5.6	5	4.6	11	1.9
Divorced	7	1.7	2	2.8	3	2.8	10	1.7
Widowed	1	0.2	0	0.0	0	0.0	3	0.5
Never married	33	8.0	9	12.7	14	12.8	56	9.4
Race								
White	393	95.2	61	85.9	93	85.3	547	92.2
Nonwhite	20	4.8	10	14.1	16	14.7	46	7.8
Education								
Graduate level	54	13.1	7	9.9	6	5.5	67	11.3
College degree	44	10.7	3	4.2	9	8.3	56	9.4
Some college	97	23.5	18	25.4	14	12.8	129	21.8
High school degree	137	33.2	25	35.2	37	33.9	199	33.6
Some high school	38	9.2	10	14.1	12	11.0	60	10.1
Grades 7-9	31	7.5	7	9.9	24	22.0	62	10.5
Less than grade 7	12	2.9	1	1.4	7	6.4	20	3.4

## DISCUSSION

The results reported here indicate that most of the men who initially reported alcohol abuse either remained in the abuse category 4 years later or had remitted from alcohol problems entirely. Alcohol abuse appears to pose a risk for later alcohol dependence, since about 30% of the initial abusers had evidence of alcohol dependence after 4 years. However, alcohol dependence was certainly not the inevitable fate of this group after a substantial period of follow-up. In contrast, about half of those with alcohol dependence indicators at initial interview reported alcohol dependence indicators at follow-up.

Several caveats about this study must be made. First, the *DSM-III-R* criteria for alcohol abuse and alcohol dependence were not represented fully, especially the criteria for alcohol dependence. Second, the sample included only men, leaving open entirely the question of the course of alcohol abuse in women. Third, a longer follow-up (or repeated follow-ups over a longer period of time) would have provided additional information about the eventual outcome of alcohol abuse and dependence. Fourth, these data were collected several years ago. Although assumptions are usually made about the universality of diagnostic criteria over time, we do not know if the same results would have been found if the study and the follow-up had been conducted more recently. Fifth, the sample sizes did not

allow analyses of predictors of change or stability in status.

In addition, some investigators may have concerns that the follow-up results were influenced by the fact that the interviews were fully structured and conducted by nonclinicians, possibly giving rise to greater denial on the part of subjects with alcohol problems. There are a number of reasons why we think that this did not have a major influence on the reporting of changed status at follow-up. First, research is inconclusive on whether clinician interviewers obtain higher rates of alcohol problems than nonclinician interviewers in general population samples (13, 14). Second, the same type of interviewer was used for the initial and follow-up interviews, and thus, the background of interviewers could not have differentially affected the rates only in the follow-up study. Third, although clinical skills can obviously be extremely helpful in reducing denial, the use of clinician interviewers can bring different rating problems, such as the influence of preconceptions on clinical ratings, even in the face of clear stories to the contrary from the subject or patient. Thus, the use of survey interviewers represents a trade-off, but certainly this method has its own strengths.

A measurement strength of this study is that all relevant questions were asked of all current drinkers. Instructions to skip questions according to diagnostic hierarchies were not used, resulting in complete information on all variables among all current drinkers. Rather than using what Wing (15) has called a "top-

down" approach, in which only questions concerning specific diagnostic criteria are covered, the interview was constructed with a "bottom-up" approach. In this later approach, specified areas of psychopathology are covered because of their expected relevance to many research purposes. Good coverage of the relevant domains allows later combination of items for many purposes, including specific algorithms designed to represent currently defined diagnostic criteria. Through this approach, the data were (arguably) complete enough to be used for our purposes many years later, even after ideas about specific definitions of alcohol use disorders had changed several times. Although an interview designed according to such principles today would clearly include many more questions directly assessing current concepts of alcohol dependence, the process of covering numerous domains completely with all subjects allows for later analyses with items either combined into categories, scaled into continuous measures, or examined individually. Such complete coverage of alcohol problems is probably not possible in an interview that must also cover numerous additional axis I adult psychiatric disorders. However, when the research focuses specifically on alcohol, the "bottom-up" approach may yield a great deal of additional information that can be used for a number of purposes.

Despite the problems in the present study, the results represent the only longitudinal general population data known to us on the course of alcohol abuse and its relationship to alcohol dependence. To us, the results argue that a decision to drop alcohol abuse from *DSM-IV* and lower the threshold of alcohol dependence to include alcohol abusers would be premature at this point. According to these data, making such a change in the diagnostic criteria would increase the heterogeneity of a category that is already quite heterogeneous, decreasing both clinical and research utility. At the same time, additional longitudinal research on the natural history of alcohol abuse and dependence is urgently needed. This research should be conducted in samples of both men and women and should proceed with instruments designed to assess dependence indi-

cators fully and accurately. Sample sizes should be large enough to evaluate the predictive power of subject and environmental characteristics on stability or change in status. Such research would lead to more valid definitions of alcohol use disorders and a better general understanding of these disorders.

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