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MEASUREMENTS, INSTRUMENTS, SCALES, TESTS

Construct Validity for Alcohol Dependence as Indicated by the SUDDS-IV

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ABSTRACT

Objective. This study considers the diagnostic construct validity of the DSM-IV (Diagnostic and Statistical Manual-IV) for ''alcohol dependence''. Previous reports have indicated that ''dependence'' constitutes a more distinct and pronounced syndrome than ''alcohol abuse''. *Method*. Data were collected in 2000–2001 on 1340 male and female inmates evaluated for ''substance use disorders'' using the SUDDS-IV, a detailed structured diagnostic interview, to collect data on all of the DSM-IV diagnostic criteria for ''abuse'' and ''dependence''. *Results*. Dependent individuals tended to produce

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distinct and extensive symptom profiles that distinguished them from individuals without a diagnosis or those meeting abuse criteria. *Conclusions*. Alcohol dependence as defined by the DSM-IV appears to be quite distinct from abuse and can be identified unequivocally for the majority of dependent cases.

Key Words: Diagnosis; Diagnostic orphan; Construct validity; Reliability; SUDDS-IV; Dependence.

INTRODUCTION

Considerable discussion has focused on the question of whether alcoholism, or "alcohol dependence", constitutes a discrete syndrome or disease and whether the DSM-IV (1) adequately defines "alcohol dependence". Unfortunately, both philosophical debate and research studies frequently have failed to adequately specify their definitions of what constitutes alcoholism, or "alcohol dependence".

When researchers have carefully considered what symptoms and behaviors define "alcohol abuse" and "dependence", the distinctions between these two diagnostic conditions and their respective definitions come into critical focus. Some researchers have determined that "dependence" is not only a discrete syndrome, but that it is more distinct from "abuse" than "abuse" is distinct from no diagnosis (2). In other words, "alcohol dependence" appears to be the key syndrome defining what most would call alcoholism. Longitudinal studies also reveal that meeting "alcohol dependence" criteria predicts a chronic and more severe course while "abuse" appears less persistent with milder symptoms and lack of progression to "dependence" (3).

Despite these findings and their implications, many researchers persist in either failing to identify and define the diagnosis or in lumping "abuse" together with "dependence". Even otherwise rigorous randomized clinical studies often do not even identify the diagnostic composition of their sample. A recent review of randomized clinical trials reported in major journals found that over 20% failed to report the diagnostic composition of the sample and an additional 43% failed to note how they arrived at the diagnostic determinations (4).

If "alcohol dependence" is a more discrete and severe condition than "abuse", as defined by the DSM-IV criteria, a careful and detailed consideration of the diagnostic criteria via specific symptoms and behaviors should point out the distinctions among individuals meeting

criteria for ''dependence'', ''abuse'', or no diagnosis. The nature and extent of problems should also reflect differentials of severity.

The current study analyzes data from a large number of individuals evaluated for ''alcohol dependence'' and ''abuse'' using a fully structured interview, the SUDDS-IV (Substance Use Disorder Diagnostic Schedule-IV). The SUDDS-IV is designed to document the seven ''dependence'' criteria and four ''abuse'' criteria of the DSM-IV through the use of specific behaviorally oriented questions (5,6). Although the SUDDS-IV provides data for determining substance specific diagnoses for all the substance categories specified by the DSM-IV, only alcohol use-related symptoms will be considered in the current discussion. The rationale for this is that ''alcohol dependence'' has been the focus of much of the debate and ''alcohol dependence'' is the most prevalent substance of abuse diagnosis in most populations (7–12).

METHODS

The Minnesota Department of Corrections routinely evaluates inmates entering the state prison facilities for ''substance use disorders''. For this analysis, data were extracted from the computer files generated on these routine evaluations conducted during the fourth quarter of 2000 and the first quarter of 2001. The demographic summaries for 1340 inmates (1209 men and 131 women) evaluated during this time are presented in Table 1. The mean age was 31, and approximately 60% were between the ages of 25 and 45. Almost half (49%) were Caucasian, and African-Americans represented the largest minority group (33%). Native Americans were the second most prevalent minority group (9%) followed by Hispanics (6%). The remainder was comprised of Asians or persons of mixed ethnicity. Over a third (36%) had not graduated from high school and fewer than 13% had any posthigh school education or training. Almost two-thirds had never married and only 13% were married at the time of incarceration. Most (53%) were working full-time prior to incarceration and 14% were employed part time.

The automated version of the SUDDS-IV (Substance Use Disorder Diagnostic Schedule-IV) adapted for correctional applications was utilized as a computer-prompted interview. This version of the diagnostic interview considers the time frame for the 12 months prior to incarceration. Counselors asked the questions as they appeared on the screen and recorded the inmates' answers on laptop computers. The program is designed to export a tab-delimited text file that can be entered into

Table 1. Selected sample demographics.

Gender: 90% (1209) males 10% (131) females	
Age:	
16–20	12%
21–29	37%
30–39	31%
40–49	16%
50+	4%
Mean = 31	
Median = 30	
Ethnic origin:	
Asian	1%
African-American	33%
Hispanic/Latino[a]	6%
Native American	9%
Caucasian	49%
Biracial/multiracial	2%
Marital status:	
Never married	65%
Married	13%
Separated	4%
Divorced	17%
Widowed	1%
Education:	
Not a high school graduate	36%
High school only	52%
Voc/tech/business	8%
Associate degree	3%
College graduate (4 yr, +)	1%
Employment prior to incarceration:	
Working full-time	53%
Working part-time	14%
Unemployed	13%
Not working by choice	20%

[a]This is not an ethnic category although it is often used as such. It represents a language and/or cultural designation from a broad variety of countries manifesting a range of acculturation indices which this study was not designed to explore.

SPSS (Statistical Package for the Social Sciences) or other statistical software.

Alcohol was the most common "substance of abuse" with almost half of the sample (46%) meeting a diagnosis for "abuse" (16%) or "dependence" (30%). Almost a third (31%) had a diagnosis for "marijuana abuse" or "dependence" and 16% had a "substance use disorder" diagnosis for cocaine.

If the SUDDS-IV items tap a homogeneous syndrome, internal consistency for the items defining "dependence" according to DSM-IV criteria should be high. If "abuse" is a less consistent syndrome, internal consistency for abuse items should be lower. Furthermore, the distribution of symptoms and their respective diagnostic categories should reflect a clear syndrome for "alcohol dependence" that is distinct from "abuse" and those not meeting diagnostic criteria. Analyses of the data began by exploring the internal consistency reliability of the "abuse" and "dependence" items.

Analyses also considered the profiles of symptoms and positive diagnostic criteria produced by three alcohol diagnostic groups: "dependent" cases, those meeting abuse criteria only, and diagnostic orphans. This latter group consists of those who do not meet "abuse" criteria, but do acknowledge some symptoms of "dependence" without reaching any alcohol diagnostic threshold as prescribed by the DSM-IV.

The SUDDS-IV uses between two to five questions to address each of the seven criterion for "alcohol dependence" and from three to six questions for each of the four "abuse" criterion. For example, the withdrawal criterion is covered by two questions on whether the individual experience withdrawal symptoms and another on whether alcohol or other substances were used to relieve withdrawal. Five questions are used to identify ways in which alcohol use was related to giving up or reducing participation in important activities. Positive responses to one or more of the questions for a given criterion count as being positive for that criterion. While it is possible to reach "dependence" criteria with only three positive responses, fewer than 2% of the cases met such minimal criteria. Half of those who meet "dependence" criteria endorsed 11 or more of the dependence items.

RESULTS

Of the 1340 cases, 617 (46%) were negative for any DSM-IV alcohol diagnostic indications, and 620 (46%) met criteria for "alcohol abuse"

(218, or 16%) or "dependence" (402, or 30%). An additional 103 (8%) could be considered "diagnostic orphans" in that they reported at least one symptom for "dependence", but did not acknowledge any "abuse" items. "Diagnostic orphans" have been of concern to some researchers since they might be an indication of construct validity weaknesses in the diagnostic criteria (13).

Internal consistency reliability analyses revealed that the Cronbach Alpha coefficient for the 24 items defining "dependence" was 0.964 indicating a high level of internal consistency reliability. The Alpha coefficient for the 14 "abuse" items was 0.890; also suggesting good internal consistency. The fact that high internal consistency is easier to achieve with a longer scale could account, in part, for the differential between the "abuse" and "dependence" items. While the findings are consistent with the expectation that "dependence" may be the more defined syndrome, the differential is modest.

The sample had a sufficient number of African-Americans, Hispanics, Native Americans, and Caucasian males to make comparisons. The internal consistency coefficients for "alcohol dependency" varied from 0.929 to 0.966, and for abuse the variation was from 0.842 to 0.900. Within each ethnic group, the coefficient for dependence was always higher than that for abuse.

The profiles formed by the items reveal substantial differentials between the three diagnostic groups under consideration. The dependent cases reported an average of 12 of 24 possible "alcohol dependence" items (median = 11). Approximately 87% reported five or more "dependence" symptoms, and over a third reported 16 or more positive "dependence" indications. The average total number of positive symptoms including "abuse" items reported by the dependent cases is 18, and the median is 17. In contrast, the "abuse" cases report an average of only 3.5 items (median of 3) for either "abuse" or "dependence", and the "diagnostic orphans" report an average of only one item. Only 23% of the "diagnostic orphans" report two symptoms, and only four cases reported three.

There was variation in prevalence of dependence between the ethnic subgroups for males. Hispanics[a] had the lowest prevalence of alcohol dependence with 22% and Native Americans had the highest (38%). However, for those who met dependence criteria, there were no

[a]The reader is reminded that "Hispanic" is a language or cultural designation and not an ethnic group not withstanding its continued use as an ethnic group in the literature.

significant differences among the ethnic groups for the number of positive dependence categories or symptoms.

The number of "dependence" and "abuse" criteria noted in the three diagnostic groups, "dependence", "abuse", and "diagnostic orphans", are summarized in Table 2. The findings suggest that those meeting criteria for "alcohol dependence" do constitute a very distinct subgroup of individuals who exhibit a very distinct pattern of both "abuse" as well as "dependence" criteria.

Of the dependent cases, only 15% met the minimal criteria of positive responses in only three categories. Seventy percent were positive in five or more categories, and more than a third were positive in all seven of the "dependence" categories. In addition, these individuals tended to have extensive indications of "abuse" as well as "dependence". Virtually all (96%) met at least one "abuse" category, and 90% had positive findings for at least two "abuse" categories. Almost half (45%) met all four "abuse" criteria.

In contrast, the "abuse" only cases produced a dramatically different distribution of abuse criteria. Over a third (38%) were positive in only one of the four "abuse" categories and only 3% were positive in all four

Table 2. Distribution of positive diagnostic categories.

Diagnostic criteria	Diagnostic orphans $n = 103$	Abuse only $n = 218$	Dependence $n = 402$
Number of dependence criteria			
0		40%	
1	80%	30%	
2	20%	30%	
3			15%
4			15%
5			16%
6			18%
7			36%
Number of abuse criteria			
0			4%
1		35%	6%
2		38%	12%
3		21%	33%
4		3%	45%

"abuse" categories. By definition, the "abuse" only cases could not be positive for three of the "dependence" criteria, but 40% were completely negative for all "dependence" categories and only 30% met criteria for two "dependence" categories.

By definition, the "diagnostic orphans" had to have at least one positive "dependence" category to be in this classification. The vast majority (80%) of these cases met diagnostic criteria for only one "dependence" category. Thus, the "diagnostic orphans" appear to be even milder cases than the "abuse" cases and are not likely to justify a diagnosis.

Table 3 presents a comparison of the specific positive categories for "abuse" and "dependence" for the three subgroups. The dependent cases have positive findings that range from a low of 61% for legal problems among the "abuse" criteria to a high of 87% for excessive time spent using among the "dependence" categories. The extensive number of positive findings in each of the "dependence" and "abuse" categories shows that the dependent cases also manifest "abuse" indications as well as "dependence" criteria as was indicated by the number of positive diagnostic criteria.

In contrast, dangerous behavior related to use (usually driving under the influence) is the most prevalent criteria for the "abuse"

Table 3. Proportion of individuals positive for dependence and abuse criteria.

Diagnostic criteria	Diagnostic orphans $n=103$	Abuse only $n=218$	Dependence $n=402$
Dependence criteria			
Tolerance	64%	21%	81%
Withdrawal	3%	3%	62%
Unplanned/excessive use	15%	19%	71%
Desire/attempts to restrict use	4%	7%	73%
Excessive time spent using/recovering	11%	12%	87%
Sacrifice of activities to use	1%	6%	78%
Medical/psychological consequences	21%	21%	83%
Abuse criteria			
Failure to fulfill role obligations	0%	17%	77%
Use causing danger to self or others	0%	69%	85%
Legal consequences	0%	51%	61%
Interpersonal conflicts	0%	53%	87%

cases. Legal problems and interpersonal conflicts are also endorsed by a majority of the "abuse" cases. Interestingly, relatively few (17%) of the "abuse" cases admit that their use of alcohol interfered with work or ability to fulfill role obligations. However, over three-fourths of the dependent cases admitted to such problems. The most prevalent "dependence" criteria reported by the "abuse" cases were for tolerance, unintended use, and physical or psychological consequences. 'Blackouts' accounted for many in the latter category.

By definition, the "diagnostic orphans" do not have positive "abuse" findings. Interestingly, the most prevalent "dependence" indication for this group is tolerance to alcohol. This category accounts for almost two-thirds of the "diagnostic orphans". As with the "abuse" cases, unintended use and consequences are the second and third most prevalent "dependence" category endorsed.

DISCUSSION

The high internal consistency reliability coefficients for "dependence" suggest that it is a homogeneous syndrome. This is also consistent with the observation that the clinical profiles are quite pronounced for the dependent cases. In short, the results of this structured interview suggest that "alcohol dependence" forms a discrete and clearly identifiable syndrome.

"Abuse" is a much less distinct syndrome. A large proportion of those meeting the DSM-IV criteria for "abuse" exhibit marginal symptomatology. Almost 40% report problems in only one category of "abuse", and most of these have endorsed only one symptom. Only 30% report more than three "abuse" symptoms. Even when "dependence" symptoms are included, the proportion reporting more than three symptoms of either "abuse" or "dependence" is only about 45%. This would suggest that the "abuse"-only cases are quite distinct from the "dependence" cases and that these distinct diagnostic groups should not be mixed together in treatment outcomes research.

The findings on "abuse" present the potential for making two arguments.

- First, one could argue that the current criteria for "abuse", as operationalized here, provide too low a threshold for the syndrome. Allowing a diagnosis for problems in only one area may be overly inclusive. At a minimum, multiple problems within the same diagnostic category could be required.

- The second argument is that the four abuse criteria are simply aspects of "dependence" and should just be included as part of the criteria for "dependence". This argument is supported by the observation that scales composed of the number of positive "dependence" and "abuse" symptoms correlate at $r = 0.891$, a correlation that would suggest equivalent scales for many psychological constructs. Variables formed by the number of positive categories also correlate highly ($r = 0.846$).

The so-called "diagnostic orphans" do not appear to represent a challenge to the DSM-IV criteria. The majority seem to be defined by individuals who report being able to drink more without the same effect as they initially could. Such tolerance could simply be the result of being accustomed to drinking or actual moderate physiological tolerance. This construct is one of the more subjective as compared to the more behavioral criteria such as setting rules for use or sacrificing other activities to use.

In point of fact, the DSM-IV intent is to define tolerance as a marked differential of ability to tolerate greater quantities rather than simply being able to drink somewhat more without feeling the effects. The construct of tolerance for alcohol is defined by two variables on the SUDDS-IV. One simply asks whether the individual can drink more without feeling the effects; the other identifies tolerance as drinking the equivalent of a fifth of liquor in a day.

Over a third (37%) of the "diagnostic orphans" are accounted for by the more benign of the two tolerance variables, and almost a third (31%) are accounted for by the reported ability to drink the equivalent of a fifth of liquor in a day. The remaining 33 "diagnostic orphans" account for fewer than 3% of all cases in the sample.

Two items, using more than intended or for longer than intended, account for most of the remaining "diagnostic orphans". One can argue, that in the absence of other problems, these are relatively benign indications unless the behaviors are extreme.

In contrast to the multiplicity of problems characterizing the dependent cases, the "diagnostic orphans" do not appear to be an indication of weakness in the criteria. Rather, the findings suggest that "dependence" as defined by the DSM-IV appropriately excludes individuals with isolated or circumscribed issues or problems with alcohol who do not warrant a diagnosis of either "abuse" or "dependence".

The diagnostic findings of the study have implications for treatment design, staffing, staff training, and program evaluation. Those who meet

"dependence" criteria may have different treatment needs and goals than substance misusers who are not dependent. Dependent individuals can be expected to require more intensive and distinct services as compared to "abusers". Treatment programs serving dependent persons are also likely to have greater difficulty achieving positive outcomes as compared to programs serving only abusers in light of differential prognoses (3,14). Treatment staff should be capable of making differential diagnoses and design appropriate treatment plans for diagnostically distinct subgroups.

As with research, clinical programs designed for inmate populations need to consider ethical implications imposed by the fact that these individuals are susceptible to coercion and are under scrutiny and physical control. Protection of the inmates' rights and safeguards for their ethical treatment must be kept in mind.

Policies that promote appropriate clinical services are likely to have positive impacts on societal goals such as reduction of criminal recidivism. Given that many inmates are incarcerated for offenses related to their substance abuse, it is logical to expect that dependent individuals are more likely to reoffend if their addictions are not addressed.

The current study does have some limitations. The most obvious is that one state prison sample may not be representative of other populations such as might be found in treatment facilities or even other correctional systems. Generalizability may be particularly limited for the female sample, which is relatively small in the current study.

While the counselors administering the SUDDS-IV reported no known instance or indication of false positive findings for dependence, the possibility of negative falsification was not systematically explored through other collateral inquiry. For approximately 5% of the cases, the counselors noted some suspicion of false negative responses, but this was neither systematically documented nor confirmed. Using other instruments or collateral data might identify additional cases with questionable negative findings.

The study limitations, however, do not negate the key findings of the analyses. The vast majority of dependence cases segregate into a subgroup with a distinct and pronounced profile of substantial problems related to alcohol. It is doubtful that any reporting bias would account for this distinction.

Additional studies using the SUDDS-IV in conjunction with other structured interviews might produce more definitive findings and could be used to explore the respective utility of the SUDDS-IV and other interviews.

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RESUMEN

Objetivo. Este estudio considera la validez de constructo diagnóstica para la dependencia de alcohol del DSM-IV (Manual de Diagnóstico y Estadística-IV). Informes previos han indicado que la dependencia constituye un síndrome más distinto y marcado que el abuso de alcohol. *Método*. Datos fueron tomados y evaluados para desórdenes de uso de sustancias en 1340 hombres y mujeres usando entrevistas diagnósticas detalladas y estructuradas. Para obtener estos datos, se utilizó todos los criterios diagnósticos de DSM-IV para abuso y dependencia. *Resultados*. Individuos dependientes tienden a presentar distintos y extensos perfiles síntomáticos que los distinguen de individuos sin una diagnosis o de individuos que reúnen los criterios de abuso. *Conclusiones*. La dependencia de alcohol según definida por el DSM-IV parece ser bastante distinta del abuso y se puede identificar inequívocamente en la mayoría de los casos de dependencia.

RÉSUMÉ

Objectif. Cette étude considère la validité du concept diagnostique du MDS-IV (Manuel Diagnostique et Statistique-IV) pour la dépendance d'alcool. Les rapports précédents ont suggéré que la dépendance fait partie d'un syndrome plus distinct et prononcé que celui de l'abus de l'alcool. *Méthode*. Les données sur 1.340 hommes et femmes évalués pour des troubles de l'usage de stupéfiants ont été rassemblées en se servant d'un entretien diagnostique bien structuré et détaillé, pour recueillir des données sur tous les critères diagnostiques du MDS-IV pour l'abus

et la dépendance. *Résultats*. Les individus dépendants avaient tendance à produire des profils de symptômes qui les distinguaient des individus qui n'ont pas eu de diagnostique ou de ceux qui ont satisfait les critères de l'abus et de dépendance. *Conclusions*. La dépendence d'alcool comme elle est décrite par le MDS-IV se sépare assez nettement de l'abus, et peut se faire identifier sans aucun doute pour la plupart des cas dépendants de l'alcool.

THE AUTHORS

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