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Short communication

Diagnostic orphans for alcohol use disorders in a treatment-seeking psychiatric sample

Lara A. Ray [a,*], Robert Miranda Jr. [a], Iwona Chelminski [b], Diane Young [b], Mark Zimmerman [b]

[a] *Center for Alcohol and Addiction Studies, Brown University, Providence, RI, USA*
[b] *Department of Psychiatry and Human Behavior, Brown Medical School, Providence, RI, USA*

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Abstract

Individuals who endorse one or two of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) criterion items for alcohol dependence but do not meet criteria for either alcohol abuse or dependence have been referred to in the literature as "diagnostic orphans." The goal of the present study is to compare diagnostic orphans for alcohol use disorders (AUD) to patients with lifetime DSM-IV alcohol abuse, alcohol dependence, and those with no-AUD symptoms on a series of demographic, diagnostic, and clinical measures. Participants were treatment-seeking psychiatric outpatients ($n = 1793$; 61.5% women) who completed an in-depth, face-to-face diagnostic evaluation for DSM-IV axis I and axis II disorders. Results revealed that diagnostic orphans were younger, had a higher frequency of family history positive for alcoholism, and higher rates of cannabis dependence, as compared to the no-AUD symptoms group. Diagnostic orphans differed significantly from patients with alcohol abuse and dependence on a number of demographic, diagnostic, and clinical measures. Most notably, on a lifetime basis, diagnostic orphans were less likely to meet diagnostic criteria for various substance use disorders, as compared to individuals with alcohol abuse and dependence. Taken together, these results generally do not support combining diagnostic orphans to individuals with alcohol abuse.

Keywords: Diagnostic orphans; Alcohol; DSM-IV; Alcohol use disorders

1. Introduction

The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; American Psychological Association, 1994) conceptualizes alcohol abuse and dependence as orthogonal to one another and proposes different criteria sets for each disorder. Individuals who meet one or two dependence symptoms but no abuse symptoms do not receive an alcohol use disorder (AUD) diagnosis and have been described in the literature as "diagnostic orphans" (Kaczynski and Martin, 1995). Few studies to date have compared diagnostic orphans to individuals with alcohol dependence (AD), alcohol abuse (AB), and no-AUD symptoms (no-AUD). In an adolescent sample, diagnostic orphans were more similar to patients with AB than to those with AD and no-AUD on alcohol use patterns, substance use, and substance-related diagnoses (Pollock and Martin, 1999). Similar findings were reported in a sample of individuals deemed at risk for the development of AUD (Sarr et al., 2000) and in a longitudinal study of sons of alcohol dependent parents and controls (Eng et al., 2003), such that diagnostic orphans more closely resembled individuals with AB than those with AD or no-AUD on measures of drinking and substance use. Conversely, diagnostic orphans differed significantly from individuals with AD in community (Hasin and Paykin, 1998) and nationally representative (Hasin and Paykin, 1999) samples by reporting lower alcohol use, drug use, and family history of alcoholism. Together, studies suggest that diagnostic orphans may be phenotypically similar to alcohol abusers yet do not receive an AUD diagnosis according to the current DSM-IV nosology.

No studies to date have examined diagnostic orphans in treatment-seeking general psychiatric samples. This is especially relevant as seeking treatment is related to a number of clinical, social, and demographic factors (Alegria et al., 2000;

* Corresponding author at: Brown University Center for Alcohol and Addiction Studies, Box G-S121-4, Providence, RI 02912, USA. Tel.: +1 401 863 6627; fax: +1 401 863 6647.
E-mail address: Lara_Ray@brown.edu (L.A. Ray).

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Goodwin et al., 2002), suggesting that studies of psychiatric disorders in the general population should be replicated in clinical populations to provide the practicing clinician with information that might have more direct clinical utility. Moreover, as highlighted by the DSM-V Substance Use Disorders Workgroup (Schuckit and Saunders, 2006), further research is needed to determine how diagnostic orphans are best handled in the context of orthogonal abuse and dependence categories. To that end, the present study from the Rhode Island Methods to Improve Diagnostic Assessment and Service (MIDAS) seeks to extend the literature by examining a treatment-seeking psychiatric sample and comparing diagnostic orphans to patients with lifetime AB, AD, and no-AUD on demographic, diagnostic, and clinical characteristics.

2. Method

2.1. Participants

The current report is based on 1793 (61.5% women) patients, out of 1800, for whom complete AUD symptom-level data were available. Of the1793 patients, 942 (52.5%) reported no DSM-IV AUD symptoms in their lifetime (i.e., no-AUD group), 127 (7.1%) were diagnostic orphans as they never received a diagnosis of AB or AD but reported one or two AD symptoms in their lifetime, 328 (18.3%) met lifetime criteria for AB (without ever receiving the diagnosis of AD) and 396 (22.1%) met lifetime criteria for AD. Of those with an AUD diagnosis 43% met current criteria for AB and 23% met for current AD. The AD symptoms most frequently endorsed by diagnostic orphans were: (1) drinking more than intended (39.7%), (2) tolerance (33.3%), and (3) spending a great deal of time drinking or recovering (28.4%). Principal diagnoses in the sample were: 48% depressive disorder, 17% anxiety disorders, 6% bipolar disorder, 2% AUD, 2% impulse control disorders, and 25% other diagnoses. Demographics are presented in Table 1.

2.2. Procedures and measures

Participants were recruited from the Rhode Island Hospital Department of Psychiatry's outpatient practice (Zimmerman, 2003). The MIDAS project represents an integration of research assessment methodology into a community-based outpatient practice affiliated with an academic medical center which predominantly treats individuals with medical insurance on a fee-for-service basis. During a telephone screen, patients were invited to complete a face-to-face diagnostic battery prior to meeting with their treating clinician. The institutional review board approved the research protocol and written informed consent was obtained from each participant. Diagnostic raters for the MIDAS project included 4 research assistants with bachelor's degrees, 12 Ph.D. level psychologists, and 2 psychiatrists. All raters received 3 months of training during which they observed interviews, and they were observed and supervised in their administration of evaluations. Ongoing supervision of the raters consisted of weekly diagnostic case conferences and every case was reviewed by the senior author.

Table 1
Demographic characteristics by AUD diagnostic group in treatment-seeking psychiatric outpatients

	Group 1 No-AUD Dx ($n = 942$)	Group 2 Dx orphan ($n = 127$)	Group 3 Alc abuse ($n = 328$)	Group 4 Alc dep (n = 396)	$F(3/1789$ d.f.) or χ^2 (3 d.f.)	Group comparisons		
						1 vs. 2	2 vs. 3	2 vs. 4
Age, *M* (S.D.)	38.6 (13.8)	35.8 (13.3)	36.0 (10.9)	37.5 (10.6)	4.43*	*		
Gender: female (%)	71.8	68.5	47.9	46.0	110.6**		**	**
Ethnicity: Caucasian (%)	85.4	90.6	93.0	86.1	14.5*			
Marital status (%)					22.8*			
Single	28.9	36.2	32.6	33.1				
Married/living together	49.6	41.7	47.6	40.7				
Divorced/separated	18.9	20.5	19.8	24.7				
Widowed	2.6	1.6	0.0	1.5				
Education (%)					21.2*			*
Less than high school diploma	11.2	9.5	6.4	13.6				
High school graduate	22.8	24.4	22.6	24.5				
Some college	39.2	32.2	43.6	40.9				
College degree or higher	26.8	33.9	27.4	21.0				

* $p < .05$.
** $p < .001$.

The Structured Clinical Interview for DSM-IV Disorders (SCID-I/P, version 2.0; First et al., 1995) was used to diagnose axis I disorders and the Structured Interview for DSM-IV Personality (SIDP-IV; Pfohl et al., 1997) assessed axis II disorders. Clinical Global Impression-Severity of depression (CGI-S; Guy, 1976) and Global Assessment of Functioning (GAF) ratings were recorded and the Family History-Research Diagnostic Criteria (FH-RDC; Andreasen et al., 1977) assessed family history of psychiatric disorders among first-degree relatives. During the course of the study, joint-interview diagnostic reliability information has been collected on 47 patients and the interrater reliability of the psychiatric diagnoses obtained in the MIDAS study is adequate (for details see Zimmerman and Mattia, 1999; Zimmerman et al., 2005).

2.3. Statistical analyses

The data analytic approach consisted of the following three steps. First, we compared the four groups by performing one-way analysis of variance (ANOVA) for continuous variables and Chi-squares for categorical variables of interest. Second, significant main effects of group were followed-up with planned comparisons between diagnostic orphans and AB, AD, and no-AUD. Third, multivariate logistic regression analyses evaluated the combination of characteristics that distinguished diagnostic orphans from each the other diagnostic groups. Analyses were performed using SAS Statistical Software (SAS, 2003), statistical significance was set at $p < .05$, and all tests were two-tailed.

3. Results

3.1. Demographics

There was a main effect of diagnostic group on age, gender, ethnicity, marital status, and education ($p < .05$), see Table 1. Planned comparison indicated that diagnostic orphans were, on average, younger than the no-AUD group, significantly more likely to be females as compared to AB and AD patients, and had higher levels of education than AD patients.

3.2. Diagnostic and clinical characteristics

As shown in Table 2, diagnostic orphans were more likely to meet lifetime DSM-IV criteria for cannabis dependence than patients with no-AUD. Diagnostic orphans were less likely than abusers to meet lifetime criteria for any substance use disorder, stimulant/cocaine abuse or dependence, cannabis abuse, and any other drug abuse or dependence. Similar findings were noted when comparing diagnostic orphans to AD participants, including higher rates of anxiety, impulse control disorders, and ASPD among AD patients. Diagnostic orphans were more likely to have a family history positive for alcoholism, as compared to the no-AUD group, and were less likely to have a family history positive for alcoholism than patients with AD. Diagnostic orphans had higher GAF ratings than AD patients and were less likely to have a history of psychiatric hospitalizations or suicide attempts, both dichotomous yes/no variables.

3.3. Multivariate analyses

Logistic regression analyses evaluated the combination of variables that distinguished diagnostic orphans from each of the other groups. Given the univariate results of comparisons between diagnostic orphans and the no-AUD group, we conducted a multivariate logistic regression in which age, lifetime cannabis dependence, and family history of alcoholism were included in the model simultaneously to predict group membership. Results revealed that cannabis dependence [odds ratio = 3.43, Wald-$\chi^2(1) = 9.76$, $p < .01$] and family history of alcoholism [odds ratio = 1.49, Wald-$\chi^2(1) = 4.07$, $p < .05$] remained significant predictors of group membership, whereas age dropped to a statistical trend level ($p = .069$). Conversely, only two variables distinguished between diagnostic orphans and patients with AB in the multivariate model, gender [odds ratio = 2.04, Wald-$\chi^2(1) = 9.02$, $p < .01$] and any drug abuse other than cannabis/stimulant/cocaine [odds ratio = 10.44, Wald-$\chi^2(1) = 3.95$, $p < .05$]. Analyses comparing diagnostic orphans to AD patients suggested the following predictors of group membership: gender [odds ratio = 2.49, Wald-$\chi^2(1) = 11.97$, $p < .001$], any substance use disorder [odds ratio = 4.81, Wald-$\chi^2(1) = 5.19$, $p < .05$], drug abuse other than cannabis/stimulant/cocaine [odds ratio = 5.97, Wald-$\chi^2(1) = 3.82$, $p = .05$], and family history of alcoholism [odds ratio = 1.67, Wald-$\chi^2(1) = 4.27$, $p < .05$].

4. Discussion

This study sought to extend findings from epidemiological, community, and adolescent samples by examining diagnostic orphans for AUD in a general psychiatric outpatient sample. Results suggested that diagnostic orphans were younger, had a higher frequency of family history positive for alcoholism, and higher rates of cannabis dependence, as compared to those with no-AUD diagnosis. Multivariate analyses revealed that family history and cannabis dependence remained significant predictors of diagnostic status. Specifically, the odds of being a diagnostic orphan versus having no-AUD diagnosis or symptoms was 1.49 times higher for patients with a family history of alcoholism, which is consistent with previous finding using a nationally representative sample (Hasin and Paykin, 1999). The findings regarding cannabis dependence are intriguing, as a previous study of adolescents found no significant differences in the prevalence of lifetime DSM-IV cannabis use disorders among diagnostic orphans and drinkers with no-AUD (Pollock and Martin, 1999). By contrast, a longitudinal study of adults suggested that the drug use histories of diagnostic orphans fell between the histories of the no-AUD and AB groups (Eng et al., 2003). This study provided more fine-grained analyses of various substance use disorders and suggested that diagnostic orphans are 3.43 times more likely to meet DSM-IV lifetime criteria for cannabis dependence as compared to those with no-AUD. The mechanisms underlying this relationship are unclear, and may be different for adolescents and adults, which warrants further research.

Table 2
Diagnostic and clinical characteristics by AUD diagnostic group in treatment-seeking psychiatric outpatients

	Group 1 No-AUD Dx ($n = 942$)	Group 2 Dx orphan ($n = 127$)	Group 3 Alc abuse ($n = 328$)	Group 4 Alc dep ($n = 396$)	χ^2 (3 d.f.)	Group comparisons		
						1 vs. 2	2 vs. 3	2 vs. 4
Axis I disorders, lifetime (%)								
Major depressive disorder	72.9	72.4	72.3	72.2	<1.0			
Bipolar disorder (I or II)	5.9	9.5	5.8	10.6	11.0*			
Any anxiety disorder	61.0	66.9	57.9	76.0	34.2**			*
Panic disorder	22.0	25.2	20.1	30.6	14.3*			
Social anxiety disorder	29.1	35.4	29.6	39.4	15.2*			
Generalized anxiety disorder	17.0	17.3	16.8	21.7	4.7			
PTSD	17.4	18.9	14.9	35.4	64.0**			**
Any psychotic disorder	2.8	2.4	4.0	4.3	2.9			
Any impulse control disorder	15.8	15.8	23.2	26.3	23.7**			*
Any substance use disorder	9.7	14.2	41.8	56.6	372.6**		**	**
Stimulant/cocaine abuse	2.7	3.2	14.3	26.3	185.7**		**	**
Stimulant/cocaine dependence	2.2	3.2	9.8	21.0	141.4**		*	**
Cannabis abuse	6.1	10.2	27.1	32.6	183.1**		**	**
Cannabis dependence	2.2	8.7	9.8	18.4	106.7**	**		*
Any other drug abuse	2.2	1.6	16.8	25.8	198.5**		**	**
Any other drug dependence	1.5	1.6	6.4	15.7	111.7**		*	**
Axis II disorders (%)								
Cluster A	4.2	4.4	3.0	9.0	11.4*			
Cluster B	7.0	10.9	13.3	22.3	59.4**			*
Cluster C	18.7	24.6	20.3	30.7	15.2**			
ASPD	3.3	2.5	8.1	12.9	45.8		*	*
Clinical characteristics								
Number of DSM-IV alcohol dependence symptoms, *M* (S.D.)	0	1.31 (0.46)	0.83 (0.79)	4.74 (1.38)	1407.0**			
GAF rating, *M* (S.D.)	54.5 (10.6)	54.9 (10.8)	53.9 (10.3)	50.3 (10.7)	16.03**			**
CGI-S rating, *M* (S.D.)	2.24 (1.21)	2.24 (1.22)	2.13 (1.18)	2.40 (1.23)	3.22*			
History of hospitalization (%)	19.3	20.5	23.2	37.1	49.5**			**
Family history of alcoholism (%)	31.0	40.5	39.3	55.0	67.3**	*		*
History of suicide attempt (%)	17.0	22.1	19.2	32.8	42.8**			*

* $p < 05$.
** $p < .001$.

Diagnostic orphans differed significantly from patients with AB and AD on a number of clinical characteristics. Most notably, diagnostic orphans were less likely to meet lifetime criteria for various substance use disorders, as compared to patients with AB and AD. These results suggest that in general psychiatric practice, diagnostic orphans may be more dissimilar to alcohol abusers than what was reported in non-treatment-seeking adult (Eng et al., 2003) and adolescent (Pollock and Martin, 1999) samples, and generally do not support combining adult diagnostic orphans to patients with AB.

The AD symptoms most frequently endorsed by diagnostic orphans were: drinking more than intended (39.7%), tolerance (33.3%), and spending a great deal of time drinking (28.4%), with the first two symptoms also commonly endorsed in previous studies (Eng et al., 2003; Hasin and Paykin, 1998; Sarr et al., 2000). Item Response Theory (IRT) analyses of MIDAS patients endorsing $\geq$1 AUD symptom revealed that the three most frequently endorsed symptoms by diagnostic orphans in this study had the lowest severity estimates (L.A. Ray et al., personal communication). Diagnostic orphans' lower overall severity relative to AB and AD patients in the present study may be partially due to the specific symptoms they endorsed, in addition to the sub threshold nature of this group.

This study has a number of strengths and limitations. Limitations include the cross-sectional and retrospective design and a sample composed of patients seeking psychiatric treatment. The MIDAS dataset does not contain information on age of substance use offset; therefore, it was not possible to elucidate the course of alcohol use disorders in the sample. This study is based on lifetime analyses, which although similar to previous studies (e.g., Hasin and Paykin, 1999), is limited by the lack of information regarding the temporal relationship among diagnostic and clinical variables of interest. Strengths of this study include data culled from a large sample that is representative of psychiatric outpatients and its thorough diagnostic battery.

In conclusion, these findings generally do not support combining adult diagnostic orphans to those with AB as the two groups differed on several clinical variables. Further research is required before the clinical and treatment implications of identifying diagnostic orphans can be fully understood. Importantly, further studies of diagnostic orphans for other substances are needed as the current DSM-IV system does not provide modifications for the various classes of substances of abuse.

Conflict of interest

None.

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