Characteristics of First-Time Alcohol Treatment Seekers: The COMBINE Study*

JOSEPH S. LoCASTRO, PH.D.,[†] JENNIFER SHARPE POTTER, PH.D.,[†] DENNIS M. DONOVAN, PH.D.,[†]
DAVID COUPER, PH.D.,[†] AND KIMBERLY W. POPE, B.A.[†]

Department of Psychiatry, Boston University School of Medicine, Boston, Massachusetts, and Veterans Affairs Boston Healthcare System, Boston, Massachusetts

ABSTRACT. Objective: The current study compared alcoholics who entered treatment for the first time with those who had reported one or more prior treatment experiences using a large sample ($N = 1,362$) of alcoholics who entered the National Institute on Alcohol Abuse and Alcoholism-sponsored COMBINE (Combining Medications and Behavioral Interventions) Study of pharmacological and behavioral treatment efficacy. **Method:** Participants were categorized into three prior-treatment groups: (1) treatment naive ($n = 691$, 50.73%), (2) one to two prior treatments ($n = 380$, 27.90%), or (3) three or more prior treatments ($n = 291$, 21.37%). Groups were compared at baseline on multiple drinking and psychosocial variables. **Results:** The treatment-naïve group was more likely to be female, educated, married, and employed. They reported the lowest levels of drinks per drinking day, average drinks per day, alcohol dependence, craving, and alcohol-related consequences;

but, they had the oldest age at onset of alcohol problems. Both the treatment-naïve group and the one-to-two prior-treatment group had lower percentage days abstinent within the prior 30 days, compared with the three-or-more group (22% and 25% vs 32%, respectively). The treatment-naïve group reported the least commitment to an abstinence goal (43% vs 70% and 80%, respectively) and the lowest mean number of Alcoholics Anonymous meetings attended (0.86 vs 3.10 vs 6.91, respectively). They also reported fewer psychological symptoms, less distress, and higher levels of quality of life on physical, emotional, and environmental domains, as well as social relationships. **Conclusions:** Results suggest that a greater understanding of treatment-naïve versus treatment-experienced clients may provide a better profile of help-seeking behavior and may suggest different approaches to treatment. (*J. Stud. Alcohol Drugs* 69: 885-895, 2008)

A SMALL BODY OF RECENT STUDIES has found that treatment-naïve clients who are entering substance-use treatment for the first time differ significantly from treatment-experienced clients in various pretreatment characteristics and posttreatment outcomes (Cacciola et al., 2005; Grella and Joshi, 1999; Hser et al., 1997, 1999b). However, these studies have focused primarily on individuals entering drug treatment rather than alcohol treatment programs. Relatively little research has been conducted on the pretreatment characteristics of alcohol-dependent individuals entering treatment for the first time, compared with treatment-experienced clients. Most of these alcohol studies have focused on a convenience sample of individuals who are untreated and compared with those who entered treatment over a follow-

up period (Humphreys et al., 1997; Moos and Moos, 2003, 2005; Timko et al., 1995, 1999, 2000). Other alcohol studies have used probability samples of individuals surveyed in the general population and compared those who are untreated versus treated for alcohol use (Bischof et al., 2001; Cunningham et al., 2000; Sobell et al., 1996). In contrast, the present study examines differences between diagnosed alcohol-dependent individuals who have entered treatment for the first time versus those who have prior treatment experiences. This analysis uses a large sample of alcohol-dependent individuals who are treatment seekers in the National Institute on Alcohol Abuse and Alcoholism (NIAAA)-sponsored COMBINE (Combining Medications and Behavioral Interventions) Study (Anton et al., 2006).

Previous studies of clients seeking drug treatment find that about 50% are seeking treatment for the first time (Anglin et al., 1997; Cacciola et al., 2005; Claus et al., 1999). The two groups vary widely with regard to their drug-use histories; the social contexts of their substance use; their treatment needs, motivations, and expectations; and their psychological and physical health (Cacciola et al., 2005; Hser et al., 1997; Neale et al., 2007). These differences may have implications for the conditions under which participants seek help, the type of treatment they select, and the likelihood of a successful treatment outcome. Cacciola et al. (2005) compared treatment outcomes of patients with substance dependence who are treatment naïve with treatment-experienced clients. At

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[†]Correspondence may be sent to Joseph S. LoCastro, Psychology Service (116B), Veteran Affairs Boston Healthcare System, 150 South Huntington Avenue, Boston, MA 02130 or via email at: joseph.locastro@va.gov. Jennifer Sharpe Potter is with Harvard University Medical School, Boston, MA, and McLean Hospital, Belmont, MA. Dennis M. Donovan is with the Alcohol and Drug Abuse Institute, University of Washington, Seattle, WA. David Couper is with the Department of Biostatistics, University of North Carolina, Chapel Hill, NC. Kimberly W. Pope at the time of the study was with Boston University School of Medicine, Boston, MA.

treatment initiation, treatment-experienced clients were more likely to be male, were older, were less likely to be employed, were less likely to live with a substance user, perceived their substance-use problem to be more serious, and had a more severe drug-use problem. Several other studies have shown that first-time drug treatment seekers tend to identify fewer severe drug problems, report fewer additional psychiatric problems, and have fewer "life" problems, compared with those who report prior treatment experiences (Cacciola et al., 2005; Claus et al., 1999; Grella and Joshi, 1999; Hser et al., 1999a). Perhaps more importantly, treatment-naïve drug-dependent patients were less likely to acknowledge the severity of their substance use and were less likely to display the treatment-related factors (i.e., motivation for change and desire for treatment) associated with successful treatment outcome than treatment-experienced patients (Cacciola et al., 2005; Claus et al., 1999; Hser et al., 1997; Zule et al., 1997).

The present study, part of the larger COMBINE Study (Anton et al., 2006; COMBINE Study Research Group, 2003), provides a unique opportunity to examine a very large alcohol-dependent sample in which approximately 51% of participants entering treatment in the COMBINE Study were previously untreated. The design of the present study allows comparisons between treatment-naïve and treatment-experienced participants across a number of baseline measures, including demographics, alcohol consumption, alcohol-related problems, motivation, craving, and psychological and social functioning. The COMBINE Study was sponsored by the NIAAA and is a large, multisite, randomized, controlled trial comparing two medications—naltrexone (ReVia) and acamprosate (Campral)—evaluated both singly and in combination in the context of two variations of behavioral intervention: (1) a medical model (medical management) (Pettinati et al., 2004) and (2) a specialist model (combined behavioral intervention) (Longabaugh et al., 2005). In view of the high prevalence of first-time treatment seekers in the COMBINE Study, differentiating their characteristics from treatment-experienced clients may provide a better understanding of the factors related to help-seeking behavior and treatment selection and may help explain subsequent treatment outcomes.

Method

Participant recruitment

The general study methods have been previously described (Anton et al., 2006; COMBINE Study Research Group, 2003; Hosking et al., 2005). Approximately 5,000 participants were recruited by public advertisements, outside community resources, and clinical referrals at 11 participating sites across the continental United States. They were subsequently screened by telephone or in person. All

in-person screened individuals signed an informed consent form approved by each site's institutional review board and accompanied by a certificate of confidentiality provided by NIAAA.

Three strict inclusion eligibility criteria were established: (1) Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV; American Psychiatric Association, 1994) criteria for alcohol dependence; (2) a minimum of 4 days and a maximum of 21 days of abstinence immediately before time of randomization; and (3) more than 14 drinks (females) or 21 drinks (males) per week, with at least 2 heavy drinking days (defined as ≤ 4 drinks/day for females and ≤ 5 drinks/day for males) during a consecutive 30-day period within the 90 days before baseline evaluation. Exclusion criteria included the following six elements: (1) a recent history of other substance use (other than nicotine or cannabis) by report or urine drug screen, (2) psychiatric disorder requiring medication, (3) unstable medical conditions (e.g., serum liver enzymes more than three times normal), (4) more than 7 days of inpatient treatment for substance-use disorders in the 30 days before randomization, (5) taking either study medication within the past month, and (6) planned continued participation in any pre-occurring alcohol treatment during the treatment phase of the study. Subjects were required to have completed any necessary detoxification and a minimum of 4 days of abstinence before randomization and initiation of study pharmacotherapy. Using baseline assessment information, 1,383 participants (428 women) meeting the inclusion and exclusion criteria were enrolled and randomized into the COMBINE Study for pharmacological and behavioral treatment. The onset of alcohol dependence occurred around age 30, with indicators suggesting a moderate-to-severe level of alcohol dependence. They reported drinking on nearly 75% of the days during the prebaseline assessment window, consuming an average of more than 12 standard drinks per drinking day. A total of 2.3% of subjects were medically detoxified, and 7.7% received inpatient treatment in the 30 days before randomization, with no differences between treatment groups. The present study directly compared those who were entering treatment for the first time (50.7% treatment naïve) with those who have had a number of prior treatment experiences (49.3% treatment experienced).

Participant inclusion in prior-treatment groups

Of the 1,383 study participants, 1,362 answered "yes or no" to the question: "Have you ever been in any kind of treatment for alcohol problems?" For the 671 (49.3%) subjects who answered "yes," a subsequent question was asked to obtain a measure of the number of prior treatment experiences: "If yes, how many times have you participated in the following: Medical detoxification without treatment; outpatient treatment—medications; outpatient treatment—

counseling; intensive outpatient/day hospital treatment; and inpatient/residential treatment?" (Note: mutual help groups—e.g., Alcoholics Anonymous [AA]—were not included as a treatment type.) The mean (SD) number of all prior treatments for the total sample was 2.6 (7.9). From these data, the 1,362 participants were then categorized into three groups: (1) Group A: no prior treatments ($n = 691$, 50.7%); (2) Group B: one to two prior treatments ($n = 380$, 27.9%) (mean number of prior treatments = 1.4); and (3) Group C: three or more prior treatments ($n = 291$, 21.4%) (mean number of prior treatments = 10.6). A group of 24 participants who said yes to having had prior treatment, but did not indicate the number of treatments, was included in Group B (one-to-two prior-treatment category) based on their similarity to this group on several alcohol consumption variables.

Assessment

Assessments were performed at baseline and are described more fully in a previous COMBINE Study article (Gastfriend et al., 2005). On average, the battery of assessments took about 4.75 hours to complete. Drinking self-report measures and other measures thought to be sensitive to subject reactivity were conducted early in the assessment period. Subjects were evaluated for alcohol consumption and other primary drinking-related variables. A standard drink was 10 oz of beer, 4 oz of wine, or 1 oz of 100-proof distilled spirits.

Baseline data for this study were obtained from the following 16 measures: (1) Baseline Demographic Form measured age, gender, marital status, and ethnicity; (2) Form 90–At Intake Revised/Economic Data (AIR/ED; Miller, 1996; Tonigan et al., 1997) measured number of times arrested, education, employment history, percentage days abstinent, drinks per drinking day, drinks per day, and mutual help attendance; (3) the revised Clinical Institute Withdrawal Assessment–Alcohol (CIWA; Sullivan et al., 1989) measured the severity of alcohol withdrawal syndrome; (4) Treatment Experiences and Expectancies Questionnaire (Donovan, D., 2002, unpublished) measured the number of prior alcohol treatments and commitment to abstinence goal (Hall et al., 1990); (5) Alcohol Dependence Scale (ADS; Skinner and Allen, 1982); (6) Structured Clinical Interview for DSM-IV (SCID) Module E (Spitzer et al., 1992) measured alcohol abuse/dependence diagnosis, severity of dependence (symptoms), and age at onset of problem drinking; (7) Alcohol Abstinence Self-Efficacy (DiClemente et al., 1994) measured temptation to drink in high-risk situations and confidence that the individual will not drink; (8) Composite Outcome Index (Cisler and Zweben, 1999) measured an index of clinical status derived from both alcohol consumption and alcohol-related problems; (9) Short Form University of Rhode Island Change Assessment (DiClemente and Prochaska, 1998) measured readiness to change; (10)

Drinker Inventory of Consequences (DrInC) (Miller et al., 1995) measured total consequences, physical consequences, relationship consequences, intrapersonal consequences, impulsive actions, and social responsibility; (11) Obsessive-Compulsive Drinking Scale (OCDS; Anton et al., 1996; Roberts et al., 1999) measured craving; (12) Brief Symptom Inventory (Derogatis, 1993) measured psychiatric symptoms; (13) Perceived Stress Scale (Cohen et al., 1983); (14) Short Form–12 (SF-12) (Ware and Sherborne, 1992) measured quality-of-life physical health components summary and mental health components summary; (15) Important People Inventory (Longabaugh et al., 1998) measured number of people in the network, number of people in the network who are drinkers, and number of people in the network who are generally supportive of the person; and (16) World Health Organization Quality of Life Inventory (WHO-QOL-26) (Szabo, 1996) measured domains of physical health, psychological health, social relationships, and environment. Also, a complete blood count, liver and kidney function tests, γ -glutamyltransferase (GGT), and carbohydrate-deficient transferrin (%CDT) (Anton et al., 2001, 2002) were measured.

Statistical method

Comparisons of baseline characteristics of the three treatment groups—(1) treatment-naïve group, (2) one-to-two prior-treatment group, and (3) three-plus prior-treatment group—were performed using univariate statistics. Chi-squares were conducted for categorical data, and analyses of variance were conducted for differences between means. The Tukey honestly significant difference (HSD) was used to test comparisons between the means of the three treatment groups, adjusting for multiple pairs testing. To assess the relative association of baseline variables to prior-treatment groups, three logistic regressions were performed. For these logistic regression analyses, the middle group of one to two prior treatments was combined with the three-plus group to form a prior-treatment group, which was compared with the treatment-naïve group. Three logistic regression models were conducted for (1) drinking variables, (2) drinking-related variables, and (3) nondrinking variables. Each model adjusted for demographics as control variables (i.e., gender; race; and years of education, marriage, and age) and study site region. SAS Version 8.2 (SAS Institute, Inc., Cary, NC) was used for all analyses.

Results

Comparisons on demographic variables

Baseline comparisons of the three treatment groups indicated significant differences on several demographic variables (Table 1). Compared with the groups that had reported one to two prior treatments or three or more prior treatments,

TABLE 1. Baseline comparisons of prior treatment groups on demographics

Variable	No prior treatment	1-2 prior treatments	≥3 prior treatments	F/χ^2	p
Age, mean (SD)	44.98 (10.62)	44.43 (9.88)	43.68 (9.64)	$F = 1.69$	NS
Male, %	63.82	74.74	72.85	$\chi^2 = 16.45$	<.001
Married, %	47.18	43.95	28.52	$\chi^2 = 41.97$	<.0001
Race/ethnicity, %				$\chi^2 = 8.62$	NS
White	76.70	77.37	78.01		
Black	6.95	6.58	10.31		
Hispanic	12.45	11.32	7.56		
Other	3.91	4.74	4.12		
Education, % ≤ HS	25.48	30.46	37.10	$\chi^2 = 13.37$	<.001
Weeks employed, %	92.51	88.89	80.21	$F = 23.27$	<.0001

Notes: NS = not significant; HS = high school.

those who had reported no previous treatment were more likely to be female, married, and employed. A higher percentage of participants in the treatment-naïve group reported greater than a high school education. However, the three groups did not differ on age or race.

Comparisons on alcohol consumption and severity

The three treatment groups differed significantly (at $p < .001$) from each other on nearly all alcohol consumption and severity measures (Table 2). The group with three or more prior treatments reported a greater number of drinks per drinking day and drinks per day than the one-to-two prior-treatment group, who in turn reported more drinks per drinking day and drinks per day than the treatment-naïve group. The three groups did not differ on number of heavy drinking days. Interestingly, the group with three or more prior treatments had more percentage days abstinent within the 30 days before randomization than both the one-to-two prior-treatment group and the treatment-naïve group (32% vs 25% and 22%, respectively). Analyses of both measures of alcohol severity (ADS and SCID [DSM-IV] symptom counts) found that those who had three or more prior treatments reported greater alcohol severity than the one-to-two prior-treatment group, who in turn showed greater severity than the treatment-naïve group. The three groups did not differ on the biological measure (%CDT) of alcohol consumption or on the measure of intake withdrawal symptoms (CIWA). The participants reporting no prior treatment had a significantly lower measure of liver function (GGT), compared with the other two prior-treatment groups.

Comparisons on drinking-related variables

As seen in Table 2, baseline scores for measures of both alcohol-related problems (DrInC) and craving (OCDS) were lowest for the participants reporting no prior treatment. The DrInC and OCDS scores were slightly higher for the one-to-two prior group and were the highest for the group reporting three or more prior treatments. Analysis of the Composite

Outcome Index, a measure of drinking status based on an integration of consumption and problems, found that the three groups differed significantly on the percentage who were categorized as “heavy drinking with problems” ($p < .0001$). The treatment-naïve group had the lowest percentage (71%), the one-to-two prior-treatment group had a higher percentage (81%), and the three-plus prior-treatment group had the highest percentage (86%). Interestingly, although the three groups were approximately the same age at baseline (about 44 years old), participants reporting no prior treatment had the oldest age at onset of problem drinking (mean age = 33.58 [16.20]), compared with those who had one-to-two prior treatments (mean age = 30.92 [13.04]) or those who had three or more prior treatments (mean age = 28.86 [14.52]) ($p < .001$). The treatment-naïve group reported the lowest mean number of AA meetings attended (mean = 0.84 [5.08]), whereas the one-to-two prior-treatment group reported a higher attendance (mean = 3.10 [8.72]), and the three-plus prior-treatment group reported the highest attendance (mean = 6.91 [15.46]) ($p < .001$). Prevalence of AA attendance differed across groups, with 66 participants (9.6%) of the treatment-naïve group, 99 participants (26.1%) of the one-to-two prior-treatment group, and 122 participants (41.9%) of the three-plus prior-treatment group attending AA. Also, of those who attended any AA, the three-plus prior-treatment group attended the greatest mean number of AA meetings (mean = 16.49 [20.34]) within the reported time period, compared with the no-prior-treatment group (mean = 8.76 [14.27]).

Comparisons on nondrinking variables

The three treatment groups differed significantly ($p < .001$) on several nondrinking variables, including physical, psychological, and social status (Table 3). Results from both the Brief Symptom Inventory Global Severity Index and the Perceived Stress Scale found that the treatment-naïve group reported fewer psychological symptoms and less distress than the one-to-two prior-treatment group, and both groups reported fewer symptoms and distress than the group with

TABLE 2. Baseline comparisons of prior treatment groups on alcohol-specific variables

Alcohol-specific variables	Mean (SD)	$F^{\dagger}/\chi^2$	Tukey HSD*	Alcohol-specific variables	Mean (SD)	$F^{\dagger}/\chi^2$	Tukey HSD*
Percentage days abstinent ^a				CIWA			
No prior treatments	22.24 (23.63)	17.46	c > a, b	No prior treatments	1.51 (1.77)	2.9 (ns)	
1-2 prior treatments	24.91 (26.47)			1-2 prior treatments	1.66 (1.71)		
≥3 prior treatments	32.49 (25.50)			≥3 prior treatments	1.80 (1.88)		
Drinks per drinking day ^a				DrInC			
No prior treatments	10.63 (6.50)	59.64	c > a, b b > a	No prior treatments	41.87 (18.85)	64.57	c > a, b b > a
1-2 prior treatments	12.56 (6.92)			1-2 prior treatments	50.35 (20.10)		
≥3 prior treatments	16.40 (10.31)			≥3 prior treatments	56.66 (20.42)		
Drinks per day ^a				OCDS			
No prior treatments	8.22 (5.81)	17.45	c > a, b b > a	No prior treatments	23.82 (7.15)	29.79	c > a, b b > a
1-2 prior treatments	9.34 (6.33)			1-2 prior treatments	26.13 (7.42)		
≥3 prior treatments	10.82 (7.54)			≥3 prior treatments	27.67 (8.60)		
Heavy drinking days ^{a,b}				Composite Outcome Index			
No prior treatments	19.71 (8.66)	2.39 (ns)		Heavy drinking with problems, ^c %		$\chi^2 = 27.88^{\S}$	
1-2 prior treatments	20.00 (8.81)			No prior treatments	71.26		
≥3 prior treatments	18.61 (8.07)			1-2 prior treatments	80.75		
ADS				≥3 prior treatments	85.61		
No prior treatments	14.45 (6.46)	98.97	c > a, b b > a	Age at onset of problem drinking			
1-2 prior treatments	17.18 (6.67)			No prior treatments	33.58 (16.20)	9.81	a > b, c
≥3 prior treatments	21.11 (7.81)			1-2 prior treatments	30.92 (13.04)		
SCID DSM-IV Module E-symptom count				≥3 prior treatments	28.86 (14.52)		
No prior treatments	5.14 (1.31)	65.4	c > a, b b > a	Mean no. of AA meetings attended			
1-2 prior treatments	5.72 (1.23)			No prior treatments	0.84 (5.08)	44.66	c > b, a b > a
≥3 prior treatments	6.07 (1.08)			1-2 prior treatments	3.10 (8.72)		
%CDT (mean)				≥3 prior treatments	6.91 (15.46)		
No prior treatments	3.28 (1.87)	3.45 (ns)		Mean no. of AA meetings for those attending AA			
1-2 prior treatments	3.62 (2.50)			No prior treatments (n = 66)	8.76 (14.27)	4.89	c > a
≥3 prior treatments	3.59 (2.20)			1-2 prior treatments (n = 99)	11.81 (13.71)		
GGT (mean)				≥3 prior treatments (n = 122)	16.49 (20.34)		
No prior treatments	59.66 (72.27)	7.73	a < b, c				
1-2 prior treatments	75.08 (83.12)						
≥3 prior treatments	84.93 (152.33)						

Notes: All values in the $F^{\dagger}/\chi^2$ columns are F values unless indicated as χ^2 . HSD = honestly significant difference; ns = not significant; ADS = Alcohol Dependence Scale; SCID = Structured Clinical Interview for DSM-IV; CDT = carbohydrate-deficient transferrin; GGT = (γ-glutamyltransferase; CIWA = Clinical Institute Withdrawal Assessment; DrInC = Drinker Inventory of Consequences; OCDS = Obsessive Compulsive Drinking Scale; AA = Alcoholics Anonymous. ^aThe 30 days before randomization was the time frame used to tabulate percentage days abstinent, drinks per drinking day, drinks per day, and heavy drinking days; ^b“heavy drinking” was defined as four or more drinks per drinking day for women and five or more drinks per drinking day for men; ^cfor the Composite Outcome Index, *problems* were defined as endorsing three or more DrInC items that occurred at a frequency of at least two or more times per week, and *heavy drinking* was defined as four or more drinks per drinking day for women and five or more drinks per drinking day for men.

*For all Tukey values, $p < .05$; key to Tukey comparisons: a = no prior treatments, b = 1-2 prior treatments, c = ≥3 prior treatments; [†]for all univariate F values $p < .001$ unless stated as ns; [§] χ^2 significant at $<.0001$.

three or more prior treatments. The three groups did not differ on “number of people in their network,” “number of people who are drinkers in their network,” or degree of general support from people in their network. In general, on the two measures of quality of life (WHO-QOL and SF-12), the participants who were treatment-naïve reported better physical health, better emotional health, more satisfaction with their social relationships, and more satisfaction with their environments than those who had reported one to two prior treatments or those who had reported three or more prior treatments.

Comparisons on alcohol abstinence commitment, self-efficacy, and motivation

As seen in Table 4, results from the question of commitment to the goal of abstinence found that a smaller per-

centage of the treatment-naïve group had committed to an abstinence goal (42.55%), compared with those with one to two prior treatments (70.00%) or those with three or more prior treatments (80.07%) ($p < .0001$). Also, the treatment-naïve group showed significantly less motivation to change than either the one-to-two prior-treatment group or the three-or-more prior-treatment group. Interestingly, the three groups did not differ on either the temptation or confidence subscales of the Abstinence Self-Efficacy Scale.

Baseline predictors of prior treatment versus no prior treatment

Three logistic regressions were performed to assess those baseline variables that best discriminated between the prior-treatment group and the no-prior-treatment group (Table 5). To compare those in the treatment-naïve group with those

TABLE 3. Baseline comparisons of prior treatment groups on nondrinking secondary variables

Nondrinking secondary variables	Mean (SD)	<i>F</i> [‡]	Tukey HSD*
Brief Symptom Inventory: Global Severity Index			
No prior treatments	0.58 (0.50)	15.09	c > a, b
1-2 prior treatments	0.68 (0.53)		b > a
≥3 prior treatments	0.78 (0.55)		
Perceived Stress Scale: Total score			
No prior treatments	0.38 (2.86) ^a	15.6	c > a, b
1-2 prior treatments	0.92 (2.97) ^a		b > a
≥3 prior treatments	1.50 (2.97) ^a		
Important people: No. of people in network			
No prior treatments	6.08 (3.13)	2.73 (ns)	
1-2 prior treatments	6.39 (3.15)		
≥3 prior treatments	6.55 (3.08)		
Important people: No. of people who are drinkers			
No prior treatments	3.41 (2.30)	0.19 (ns)	
1-2 prior treatments	3.41 (2.38)		
≥3 prior treatments	3.32 (2.37)		
Important people: Generally supportive of you			
No prior treatments	4.85 (0.84)	1.63 (ns)	
1-2 prior treatments	4.77 (0.90)		
≥3 prior treatments	4.76 (0.88)		
WHO-QOL: Domain 1—physical health			
No prior treatments	27.77 (4.22)	13.02	c < a, b
1-2 prior treatments	27.23 (4.23)		
≥3 prior treatments	26.24 (4.41)		
WHO-QOL: Domain 2—psychological			
No prior treatments	21.46 (3.96)	12.38	a > b, c
1-2 prior treatments	21.07 (3.94)		
≥3 prior treatments	20.07 (3.90)		
WHO-QOL: Domain 3—social relationships			
No prior treatments	10.14 (2.62)	9.02	a > b, c
1-2 prior treatments	9.65 (2.66)		
≥3 prior treatments	9.42 (2.55)		
WHO-QOL: Domain 4—environment			
No prior treatments	30.56 (5.21)	18.3	a > b, c
1-2 prior treatments	29.62 (5.61)		b > c
≥3 prior treatments	28.28 (5.47)		
SF12-physical component summary			
No prior treatments	0.36 (0.77)	9.45	a > b, c
1-2 prior treatments	0.19 (0.89)		
≥3 prior treatments	0.14 (0.88)		
SF12-mental component summary			
No prior treatments	1.28 (1.10) ^b	17.06	c < a, b
1-2 prior treatments	1.13 (1.10) ^b		
≥3 prior treatments	0.83 (1.09) ^b		

Notes: HSD = honestly significant difference; ns = not significant; WHO-QOL = World Health Organization Quality of Life Inventory; SF-12 = Short Form-12. ^aA constant of 3.0 was added to scores for ease of interpretation; ^ba constant of 2.0 was added to scores for ease of interpretation.

*For all Tukey values $p < .05$; [‡]for all univariate F values, $p < .001$ unless stated as ns.

who had any number of prior treatments, we combined the one-to-two prior-treatment group with the three-plus group. Three logistic regression models were conducted for drinking variables, drinking-related variables, and nondrinking variables. Each model adjusted for demographic variables as control variables (gender; race; and years of education, marriage, and age) and study site region. Of these demographic variables, being female was found to have the greatest association with the treatment-naïve group ($p < .0001$). Of the baseline drinking variables, higher levels of alcohol dependence (ADS) and SCID symptoms showed the greatest association with having had prior treatments. For the drinking-related variables, a younger age at onset of

problem drinking, greater problems (DrInC), and attending AA had the greatest association with prior treatment. Of the nondrinking variables, the greatest association with prior treatment was poorer physical health and poorer mental health (SF-12).

Discussion

Demographic comparisons

Approximately 51% of participants who entered into the COMBINE treatment study were seeking alcohol treatment for the first time. It is noteworthy that this proportion of

TABLE 4. Baseline comparisons of prior treatment groups on alcohol abstinence commitment, self-efficacy, and motivation

Variables	% or mean (SD)	$F^{\dagger}/\chi^2$	Tukey HSD*
Commitment to abstinence goal ^a			
No prior treatments	42.55%	$\chi^2 = 173.94^{\S}$	
1-2 prior treatments	70.00%		
≥3 prior treatments	80.07%		
Abstinence self-efficacy–temptation ^b			
No prior treatments	3.08 (0.72)	$F = 1.55$ (NS)	
1-2 prior treatments	3.16 (0.77)		
≥3 prior treatments	3.13 (0.89)		
Abstinence self-efficacy–confidence ^b			
No prior treatments	2.65 (0.70)	$F = 2.54$ (NS)	
1-2 prior treatments	2.59 (0.78)		
≥3 prior treatments	2.53 (0.79)		
Motivation/readiness to change ^c			
No prior treatments	10.35 (1.52)	$F = 21.62$	a < b, c
1-2 prior treatments	10.84 (1.47)		
≥3 prior treatments	10.94 (1.56)		

Notes: HSD = honestly significant difference; NS = not significant. ^aFrom Treatment Experiences and Expectations Scale (Item 6); ^bAlcohol Abstinence Self Efficacy Scale, AASE; ^cfrom the Short Form University of Rhode Island Change Assessment.

*For all Tukey values $p < .05$; [†]for all univariate F values $p < .001$ unless stated as NS; [§] χ^2 significant at $<.0001$.

treatment-naïve participants seems to remain consistent over studies, although studies vary on whether treatment entry is based on a clinical admission, a naturalistic/self-selection, or a randomized clinical trial, such as the COMBINE Study (Cacciola et al., 2005; Cunningham et al., 2000; Moos and Moos, 2003).

Those participants who entered treatment for the first time, compared with those with one-to-two and three or more prior treatments, were more likely to be female, were more likely to be married and employed, and were more highly educated. Thus, although the groups did not differ on age or race, those entering treatment for the first time seemed to have a more stable social and economic status.

TABLE 5. Logistic regression of prior treatment versus no prior treatment groups by drinking and nondrinking variables

Variables	Odds ratio (CI)	p
Model 1, drinking variables ^a		
Percentage days abstinent	1.01 (1.00-1.02)	.293
Drinks per drinking day	1.04 (0.98-1.10)	.191
Drinks per day	0.99 (0.92-1.06)	.675
ADS	1.06 (1.03-1.08)	<.0001
SCID DSM-IV Module E–symptom count	1.29 (1.15-1.45)	<.0001
%CDT	1.06 (0.99-1.13)	.077
GGT ^a	1.14 (0.98-1.38)	.091
CIWA	1.02 (0.94-1.09)	.695
Model 2, drinking-related variables ^b		
Age at onset of problem drinking	0.99 (0.98-1.00)	.01
OCDS	1.02 (1.00-1.04)	.069
DrInC	1.02 (1.01-1.03)	<.0001
AA attendance, yes/no	3.86 (2.74-5.42)	<.0001
Model 3, nondrinking variables ^b		
Brief Symptom Inventory: Global severity	1.26 (0.90-1.75)	.173
WHO-QOL: Domain 1–physical health	1.04 (0.99-1.09)	.104
WHO-QOL: Domain 2–psychological	1.04 (0.98-1.09)	.173
WHO-QOL: Domain 3–social relationships	0.99 (0.94-1.05)	.678
WHO-QOL: Domain 4–environment	0.99 (0.96-1.02)	.423
SF-12, physical component summary	0.67 (0.55-0.81)	<.0001
SF-12, mental component summary	0.71 (0.59-0.86)	<.001

Notes: CI = confidence interval; ADS = Alcohol Dependence Scale; SCID DSM-IV = Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition; CDT = carbohydrate-deficient transferrin; GGT = (γ -glutamyltransferase; CIWA = Clinical Institute Withdrawal Assessment-Alcohol; OCDS = Obsessive-Compulsive Drinking Scale; DrInC = Drinker Inventory of Consequences; AA = Alcoholics Anonymous; WHO-QOL = World Health Organization Quality of Life Inventory; SF-12 = Short Form-12. ^aGGT scale changed by a factor of 100 to make the odds ratio and CI more meaningful;

^ball three models included the demographic variables of gender, race, years of education, marriage, age, and region of study site.

These findings are similar to other studies of drug misusing populations (Cacciola et al., 2005) and perhaps explain why the more stable treatment-naïve participants did not enter treatment in the past. In fact, there is evidence that being married, female, and employed are predictive of better drug (Cacciola et al., 2005) and alcohol (Timko et al., 1999, 2002) recovery.

Our findings point to an interesting speculation regarding women entering treatment. The majority of the treatment-naïve group was female and had a later age at onset of problem drinking but entered treatment at the same age as the other groups. These findings suggest that it is quite possible that women enter treatment after fewer years of drinking. This conclusion is supported by similar findings from Project MATCH (Matching Alcoholism Treatments to Client Heterogeneity) (Randall et al., 1999). In addition, Timko et al. (2002), in a study of gender differences in previously untreated alcoholics, found that women at baseline were less depressed, were more likely to be employed, were less likely to have legal problems, and had had fewer days intoxicated than men. This may have important implications for treatment selection and approaches for women seeking alcohol-specific treatment in regard to their greater stability in psychosocial and alcohol status. It should be noted, however, that even after controlling for several demographic variables, including gender, there were still substantial differences between the treatment-naïve and treatment-experienced groups in logistic regression models.

Comparisons of alcohol consumption, severity, and drinking-related factors

Comparisons across the three treatment groups on alcohol consumption and severity found that those who enter treatment for the first time have the lowest levels of drinks per drinking day, the lowest average drinks per day, the lowest alcohol diagnosis score, and the least alcohol dependence. Those with three or more prior treatments have the highest level on these measures, whereas the one-to-two prior-treatment group fell in the middle range. However, the three-or-more prior-treatment group reported greater percentage days abstinent than the other two groups within the 30 days before randomization. Supporting this finding, other studies have found that treatment-experienced patients slow down their drinking before entering treatment and are more likely to become abstainers than nonproblem drinkers (Humphreys et al., 1997; Timko et al., 1999). The results from the present study may help explain this higher prevalence of abstinence in treatment-experienced alcoholics. One such explanation is the different levels of commitment to abstinence. The present study found that 80% of those with three or more prior treatments and 70% of those with one to two prior treatments had committed to the goal of abstinence, compared with only 43% of those in treatment for the first time. Furthermore,

this greater commitment to abstinence by treatment-experienced alcoholics may be explained by the present study's findings that treatment-experienced alcoholics report greater AA attendance, which promotes expressed commitment to abstinence. Although speculative, our findings may have implications for treatment prescriptions; multiple treatment seekers may do better in abstinence-based programs that emphasize AA attendance, whereas first-time seekers may adhere better to programs that emphasize motivational enhancement and cognitive-behavioral therapy relapse prevention skills. This may be especially helpful for the treatment-naïve participants who, in the present study reported the least motivation to change, compared with the treatment-experienced participants. The one-to-two prior-treatment group seems to represent the midrange of severity and may require a combination of different treatment approaches depending on their degree of severity.

On the biological measures of alcohol consumption (CDT) and withdrawal symptoms (CIWA), the three groups did not differ. This may be an artifact of the study inclusion criteria that required similar minimum entry levels of alcohol consumption. However, reflective of their past higher levels of alcohol consumption and dependence, both prior-treatment groups were higher on liver function tests (GGT) than the treatment-naïve group. These biological indicators give some validation of the self-reported alcohol consumption variables that were reported among the three groups.

The present study found a pattern of group differences for several drinking-related variables. Those who had previously experienced treatment reported a greater number of drinking-related problems (DrInC), had greater craving (OCDS), and were more likely to be categorized as "heavy drinking with problems" in the Composite Outcome Index, compared with those in treatment for the first time. Also, those with prior-treatment histories reported a younger age at onset of problem drinking than the treatment-naïve group, although all groups were the same age (44 years old) at baseline entry into treatment. Other measures of physical and psychosocial functioning indicated that those with prior treatment reported more psychological symptoms and distress, but their social network did not differ in regard to the number of people and the number of alcoholics in their network or degree of general support. In addition, those with prior treatment reported lower levels of quality of life, including physical, emotional, social relationships, and environmental domains. These findings are consistent with other studies (George and Tucker, 1996; Tucker, 1995) that found that help seekers, compared with untreated alcoholics, reported greater alcohol-related psychosocial problems, less network encouragement to drink, and more network encouragement to seek help. They also found that general measures of social support did not differentiate the two groups. In addition, it is important to note that the results from the drinking-related variables in the present study of alcohol-dependent individuals are similar

to previous studies of drug-dependent individuals. Perhaps predictive characteristics of treatment-seeking behavior follow similar paths regardless of the chemical dependency.

Conclusions

Previous treatment experiences may have implications for recovery outcomes. A series of studies over an 8-year follow-up (Moos and Moos, 2003, 2005; Timko et al., 1995, 1999, 2000) compared four groups of previously untreated alcoholics: (1) those who never get treatment, (2) those who are first-time treatment seekers, (3) those who get additional treatment, and (4) those who delay treatment entry. These studies found that first-time and additional-treatment seekers had better alcohol recovery than those who received no help or those who had delayed receiving help. Also, the additional treatment seekers were not able to overcome their more severe problems to catch up to the level of recovery of the first-time treatment seekers. The findings of the present study help explain these differential recoveries based on prior-treatment experience. Although the present study found that first-time treatment seekers are more stable and have fewer severe alcohol problems, they were also found to be less likely to possess certain other characteristics typically related to successful outcomes, such as motivation for change or commitment to abstinence (Anglin et al., 1997; Blume et al., 2006; Cacciola et al., 2005; Hser et al., 1999b). This suggests that help-seeking behavior is related to specific characteristics of the treatment seeker, which may in turn contribute to the motivation of the individual to seek help, but not necessarily to abstain from alcohol (Donovan and Rosengren, 1999; Ojesjo, 2000). It is encouraging to observe that those who have the most severe problems are the ones who are most likely to seek treatment and return to it when needed. Perhaps the path of help seeking is on a continuum of severity of psychosocial and alcohol problems. Although natural recovery can reach up to 77% without formal help (Bischof et al., 2001; Cunningham et al., 2000; Sobell et al., 1996), such recoveries are less common among alcoholics with more severe alcohol problems (Cunningham, 1997). However, those who cannot recover on their own naturally and who seek treatment for the first time are motivated, perhaps, by the accumulation of alcohol-related problems and the lack of relapse prevention skills.

The present study extends the progression of help seeking to those who have had multiple treatment experiences. Treatment-experienced clients report even greater need for treatment than the first-time seekers by describing themselves as more severe alcoholics with lower levels of psychosocial functioning and quality of life. It may be important for alcohol treatment providers to understand that alcoholics with multiple prior treatments are quantitatively and qualitatively different from first-time help seekers. These multiple treatment seekers may require more continuous

treatment episodes based on abstinence approaches that also focus on a multiplicity of psychosocial needs. In contrast, first-time treatment seekers who report less motivation and commitment to abstinence may benefit more from cognitive-behavioral approaches that enhance motivation and build relapse prevention skills. Further exploration of the treatment outcomes of the COMBINE Study may contribute to our understanding of how prior treatment experiences relate to differential effects of behavioral and pharmacological treatment approaches.

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