

## ORIGINAL PAPER

Mauro Barbosa Terra · Helena Maria Tannhauser Barros · Airton Tetelbom Stein · Ivan Figueira  
Luciana Dias Athayde · Luiz Henrique Palermo · Leticia Piccoli Tergolina · Joana Stela Rovani  
Dartiu Xavier da Silveira

## Predictors of engagement in the Alcoholics Anonymous group or to psychotherapy among Brazilian alcoholics

### A six-month follow-up study

Received: 17 July 2006 / Accepted: 7 December 2006 / Published online: 1 April 2007

**Abstract** *Objective* To ascertain factors associated with engagement of patients with alcohol dependence in Alcoholics Anonymous (AA) groups and psychotherapy. *Methods* About 300 hospitalized alcoholics were interviewed at hospitalization and again 3 and 6 months thereafter. Assessment included the administration of standardized instruments. Determinants of engagement in both interventions were assessed through logistic regression analysis. *Results* Higher educational level was predictive of engagement in AA after 6 months (OR = 2.19; CI 1.08–4.41). Engagement in psychotherapy after 6 months was related to having a university degree (OR = 3.60; CI 1.6–7.9), to a comorbid depressive disorder (OR = 3.47; CI 1.8–6.5), to the use of other drugs together with alcohol (OR = 3.08; CI 1.5–6.19), to previous treatment (OR = 2.87; CI 1.29–6.40), and to having a high school

degree (OR = 2.44; CI 1.24–4.80). The presence of substance-induced anxiety disorder was associated with non-engagement in psychotherapy (OR = 0.27; CI 0.63–0.003). *Conclusion* The identification of predictors of engagement is important to guide clinicians in the choice of the treatment strategies that are more likely to be successful.

**Key words** alcohol · treatment · adherence · alcoholic anonymous · alcohol dependence

M.B. Terra (✉) · L.D. Athayde · L.H. Palermo · L.P. Tergolina  
J.S. Rovani  
Department of Psychiatry and Forensic Medicine  
Fundação Faculdade Federal de Ciências Médicas de Porto Alegre  
R. Sarmento Leite, 245 Centro  
Porto Alegre, RS, CEP 90050-170 Brazil  
Tel.: +55-51-33347471  
E-Mail: mabarte@portoweb.com.br

H.M.T. Barros  
Division of Basic and Clinical Pharmacology  
Fundação Faculdade Federal de Ciências Médicas de Porto Alegre  
Porto Alegre, RS, Brazil

A.T. Stein  
Department of Preventive Medicine  
Fundação Faculdade Federal de Ciências Médicas de Porto Alegre  
Porto Alegre, RS, Brazil

I. Figueira  
Department of Psychiatry  
Universidade Federal do Rio de Janeiro  
Rio de Janeiro, RJ, Brazil

D.X. da Silveira  
Department of Psychiatry  
Universidade Federal de São Paulo  
Sao Paulo, SP, Brazil

### Introduction

In the Epidemiological Catchment Area study (ECA), alcohol abuse/addiction was considered as the second leading mental disorder in the United States (US), with a lifetime prevalence fluctuating between 11% and 16% [33]. In the National Longitudinal Alcohol Epidemiologic Survey, lifetime and 12-month prevalences of alcohol dependence were estimated at 13.3% and 4.4%, respectively. Men were significantly more likely than women to use alcohol [16]. In the National Comorbidity Survey Replication, lifetime prevalence of substance use disorders was 14.6% [22].

Data from third world countries are scantier [6]. In Brazil the estimates of alcohol abuse and associated problems come mainly from hospitalized patients [25]. Dependence rates from 7.6% to 9.2% were reported for Brasília, São Paulo and Porto Alegre in a study based on DSM-III [1].

In the Study of Prevalence of Mental Disorders in the metropolitan region of Porto Alegre—Brazil, which is part of the Multicentric Study of Neurologic and Psychiatric Morbidity in Brazilian urban areas, alcohol-related disorders, including abuse and addiction, had an estimated lifetime prevalence of 8.8%. Concerning gender differences in the disorders of use of psychoactive substances, there is a remark-

able difference between men and women in the prevalence of alcohol use disorders: 19.6% and 2.7%, respectively, with a relative risk of 7.13 [5]. In a population sample representative of the city of Porto Alegre, including 1,091 people, a lifetime prevalence of 9.3% was found for alcohol dependence and of 15.5% for heavy use of alcohol [30].

According to the First National Survey of Psychotropic Drug Use in Brazil, lifetime use of alcohol in the 107 largest cities of Brazil was 68.7%. Alcohol use was greater in men than in women, with a differential profile of about 20 percentage points. The prevalence of alcohol dependence was also much higher among men (17.1%) than among women (5.7%). Overall, the dependence on alcoholic beverages was estimated as 11.2%. In reference to this population, there would be about 5,283,000 alcohol dependents in the Brazilian cities included in the study. A statistical expansion of these data allows to estimate that about 12,791,000 Brazilians between 12 and 65 years of age would be dependent on alcohol when the study was carried out [8].

### ■ Psychotherapy

Alcoholism can be treated in several ways. In an evidence-based psychotherapeutic approach, the focus is on the situation in which the patient engages in drinking, on the driving forces of drinking behavior, on the expected outcomes, and on alternative ways of dealing with these situations [35].

### ■ Alcoholics Anonymous

The AA groups are another choice. AA is an informal treatment adjunct to professional care. Physicians can refer their patients to AA meetings as part of a multiple treatment strategy. As the patient enters the AA, he or she associates with a group of people who are not using alcohol, learns that it is possible to participate in social gatherings without drinking, and receives a model of recovery based on the achievements of the sober members of the group [35]. The positive effect of self-help groups is, amongst other factors, attributed to a change in the social network. Participants gain new abstinent friends and learn new coping strategies [20].

In Brazil, the first AA groups were organized in 1947. In 1997 there were 5,700 groups encompassing 120,000 members [24].

Although AA claims a sobriety rate of 75% to 81% for alcoholics heavily adherent to the program [11, 38, 40], other sources estimate that 50% of AA participants leave the treatment within the first 3 months [10, 12] and 60% of AA participants leave the treatment within 6 months [15]. Furthermore no more than 35% of the patients referred to the AA attend the meetings consistently [7]. The mere attendance to the meetings is a poor indicator of the commitment of individuals who are encouraged to attend AA meet-

ings. Perhaps the unwillingness to make use of other aspects of AA can be responsible for the high percentage of treatment withdrawal or inconsistent attendance to the meetings. Those who place a high value on their own feelings and are skilful in sharing them with other people are more frequently engaged in AA groups [7].

The evaluation of AA treatment outcomes for alcohol dependence is essential, because treatment choices are various and the population of dependents seeking treatment is quite heterogeneous. The several scales created for this purpose include the Addiction Severity Index (ASI), the Leeds Dependence Questionnaire (LDQ), and the Alcoholics Follow-up Scales (Escala de Seguimento de Alcoolistas—ESAs). There is an implicit consensus in these instruments that the sole assessment of substance consumption is not a reliable parameter for the evaluation of treatment modalities [9].

### ■ Predictors of adherence

The presence of comorbid disorders can affect the prognosis and treatment of a given disorder. Patients with a dual diagnosis experience increased rates of hospitalization, use of emergency services, more violence and criminal behavior [17]. Moreover, they also need problem management and special treatment in the case of substance abuse with concomitant major mental disorder [37]. Patients with a mental disorder associated to psychoactive substance addiction present more severe and persistent clinical picture, being more resistant to treatment than patients with a single disorder [3].

In treating patients with a dual diagnosis, the awareness of the conditions that make it more difficult for certain groups of patients to adapt to the proposed treatment is crucial, and some specific measures can be taken to lessen these difficulties [21]. There are evidences that patients with a dual diagnosis of alcoholism (or misuse of other drugs) and a mental disorder require different interventions once the comorbid psychiatric disorders interfere in addiction treatment [4, 26].

Specific personalities can be predictive of abstinence or engagement in self-help groups in the case of recently detoxified alcoholics, and this may be of therapeutic as well as prognostic value. On the other hand, introverts are less frequently observed in self-help groups meetings [18]. Alcoholics with social phobia may have more difficulty to engage in or benefit from treatments that require their active participation in groups, which are often used to treat patients with drug addiction, such as AA groups [32]. Indeed, social phobia, even in milder forms, can prevent the drug dependent patient from benefiting from treatment, particularly if such activities as group psychotherapy or self-help groups such as AA and NA (Narcotic Anon-

ymous) meetings are included, thus decreasing adherence and placing the patient at risk of relapse [41].

Despite its popularity and the belief that AA is an effective intervention for alcoholism, relatively few studies concerning the benefits and adherence to AA groups have been performed [19, 23, 31]. Since most of the research works have been carried out in the United States, they cannot be generalized to other contexts because of cultural differences. Furthermore, it is also of paramount importance to compare the effectiveness of this type of treatment among people with different comorbidities associated with alcoholism that can affect adherence to AA, such as social phobia. A significantly smaller attendance to AA or NA has already been noted among patients with schizophrenia or schizoaffective disorder [19].

## ■ Objective

The aim of this exploratory study is to determine which factors, such as presence of comorbidities and social demographic variables, are associated with engagement in psychotherapy or AA treatment groups among alcoholics during 6 months after a period of hospitalization.

## Methods

### ■ Participants

Alcoholic patients hospitalized in two mental hospitals and in a drug addiction ward of a general hospital in Porto Alegre—Brazil were interviewed. The participants' age ranged from 20 to 60 years. To be included in the study they should fulfill the diagnostic criteria for past year alcohol dependence according to the SCID-I/P (Semi-structured clinical interview based on APA-1994 DSM-IV) [13]. Also, they should have been referred to AA and to psychotherapy by their physician, live in Porto Alegre, and have a telephone number for contact.

Exclusion criteria were: having a past year diagnosis of schizophrenia or presenting other psychotic disorders, mental retardation, confusional states, anti-social personality disorder, presence of uncompensated cirrhosis or any debilitating physical condition. Patients were excluded based on the information available in medical records or through psychiatric assessment.

Considering that the frequency of social phobia among alcoholics is about 33% [37] and non-adherence to AA among non-phobic alcoholics is 50% [10], it was inferred that among phobic alcoholics it would be 70%, thus reaching a relative risk of 1.40. So, for a confidence interval of 95% and power of 80%, the required sample size for the study was estimated as 69 phobic and 207 non-phobic patients. A surplus of 15% was added to compensate for possible losses and non-responses.

All patients committed to hospitals from March 2002 to January 2004 were included.

### ■ Procedures

This is a follow-up study, which characterized the cohort outline. It was performed in 3 steps. In the first, when patients were still hospitalized, they were invited to take part in the study and informed of the research aims and interviewing procedures. They were asked to sign a free informed consent form. After being abstinent for at least one week, the patients were interviewed by psychiatrists previously trained for this study.

The patients were interviewed again 3 months after hospital discharge, the interviewers this time being undergraduate medical students and graduates specializing in psychiatry who were trained in the application of the instruments but remaining unaware in terms of the objectives of the study. The interviews were performed in the patients' homes, preferentially in the absence of family members.

Attendance to AA twice a week or more was considered as strong engagement, weekly or biweekly as partial engagement, and monthly or occasional as weak engagement; and not attending at all was considered as non-engagement. Still, questions were made focusing on alcohol intake and participation in psychotherapy, as well as about the interviewer's perception of the reliability of the interviewee's responses. Attendance of at least once a month was considered as engagement to individual psychotherapy or to group therapy using cognitive-behavior methods. At the third stage, which was performed 6 months after the first contact, the same procedures of the previous stage were performed.

### ■ Measures

At a first step SCID-I/P was applied to all patients in order to determine the presence of Axis I mental disorders (alcohol or other psychoactive substances dependence, anxiety disorders and depressive disorder). In addition, adapted ESA Scale (Alcoholics Follow-up Scale) or ESA-women (Female Alcoholics Follow-up Scale) were administered, as well as scales for evaluation of treatment effectiveness for alcohol dependence [2, 9]. The latter are based on five different scores, based on data from the preceeding 4 weeks, for the following areas: alcohol intake (weight 5), family relationship (weight 4), occupational status (weight 3), leisure (weight 1), and organic components (weight 3). In order to increase the study's feasibility, the ESA scale was used here without the items of the organic component, since the need for blood sampling to determine gamma-glutamyltransferase (Gamma-GT) serum levels was likely to increase the number of losses in the sample. An overall score for each patient was obtained ranging from a minimum of 13 and a maximum of 65. The smaller the score, the greater the impairment due to alcohol use.

At the second and third stages, the ESA scale was administered again, as well as a questionnaire specifically developed to assess the patients' relationship with AA (attendance frequency, behavior in the group).

Periodic assessments of the performance of interviewers were carried out. The kappa test was used in order to assess concordance in the application of instruments; a result of 0.86 was obtained for the use of SCID-I [14].

### ■ Statistical analysis

In the statistical analysis of data, the presence of association between categorical variables was determined by using the chi-square test of independence or Fisher's exact test, when the former did not meet the requirements. Mann-Whitney's test was used for non-parametric analysis, i.e. when data distribution in the sample was not normal. The results were generated in the statistical software package SPSS for Windows (Statistical Package for the Social Sciences) [34]. The level of significance used was  $p < 0.05$ .

Logistic regression analyses were carried out in order to examine variables potentially related to adherence or non-adherence to treatment such as: anxiety or depressive disorders, family history of alcoholism, and use of other drugs.

### ■ Ethical aspects

The research project was submitted to the Research Ethical Committee of UNIFESP and other institutions where the interviews were held for evaluation of ethical aspects.

## Results

### ■ Social demographic characteristics

About 10% of all interviewees were excluded upon the first interview. A total of 300 patients were included in the first stage, 266 patients were interviewed in the second stage and 257 in the third, with 11.3% of losses for the second stage and 14.3% for the third. A comparison of lost patients with those who were followed up failed to show statistically significant differences concerning age, gender, marital status, schooling, presence of an alcoholic in the family, occurrence and number of previous hospital commitments, association with other drugs, mean score in ESA scale, and presence of anxiety or depressive disorders. The only difference found was that lost patients less frequently underwent at least once to treatment previously (63.3%) as compared to followed-up patients (76.7%) ( $p = 0.04$ ).

Men predominated in the sample (91.7%). Mean age was  $41.5 \pm 8.6$  years. The subgroup of patients who were married or living-as-married was the largest, accounting for 43% of the sample. Patients who had completed or went to elementary school comprised 53% of the sample.

### ■ Comorbidities

Anxiety disorders were diagnosed in 59% of the interviewees. The following specific frequencies were found: 30.6% for specific phobia, 24.7% for social phobia, 22.2% alcohol induced-anxiety disorder, 19.3% generalized anxiety disorder, 5% for obsessive-compulsive disorder, 4.6% for post-traumatic stress disorder, 2% for panic disorder with agoraphobia, 0.6% for panic disorder without agoraphobia, and 0.3% for isolated agoraphobia. Among depressive disorders, 24% of the patients of the sample presented major recurrent depressive disorder, 7.3% presented major depressive disorder, single episode, and 5.2% suffered from dysthymic disorder.

### ■ Engagement and abstinence

At the 3-month follow-up, among the abstinent patients ( $n = 96$ ), 35.1% adhered neither to AA nor to psychotherapy, 28.9% adhered only to psychotherapy, 11.3% adhered only to AA, and 24.7% to both types of treatment. Among the non-abstinent patients ( $n = 170$ ), 68.6% did not adhere to any of the proposed treatment interventions, 21.3% adhered only to psychotherapy, 3.6% adhered only to AA, and 6.5% to both.

At the 6-month follow-up, 40.3% of the abstinent patients ( $n = 62$ ) adhered neither to AA nor to psychotherapy, 24.2% adhered only to psychotherapy, 12.9% only to AA, and 22.6% to both. Among the non-abstinent patients ( $n = 195$ ), 66.2% did not

adhere to any treatment, 19.5% adhered only to psychotherapy, 3.6% only to AA, and 10.3% to both treatments. Those who adhered to some type of treatment remained abstinent more frequently than those who were not being treated, at both the 3-month ( $OR = 4.06$ ;  $CI: 2.31-7.13$ ;  $p < 0.001$ ) and the 6-month ( $OR = 2.94$ ;  $CI: 1.57-5.54$ ;  $p < 0.001$ ) follow-ups.

### ■ Engagement in AA

Taking engagement to AA at the 6-month follow-up as outcome, adherent (poor, partial and strong) and non-adherent patients showed statistically significant differences in the following variables: schooling ( $p = 0.001$ ), alcohol use 3 months after discharge ( $p = 0.008$ ), engagement in psychotherapy at the 3-month follow-up ( $p = 0.0001$ ), and mean score in the ESA scale at the 3-month follow-up ( $p = 0.053$ ). Other variables such as age, gender, marital status, previous treatment or hospitalization, use of other drugs, and comorbidity with anxiety disorders or depression, did not present statistically significant differences (Tables 1 and 2).

Logistic regression for the outcome “engagement in AA at the 6-month follow-up” was performed and indicated an odds ratio of 2.80 ( $CI: 1.43-5.49$ ) for engagement in psychotherapy at a 3-month follow-up and of 2.19 ( $CI: 1.08-4.41$ ) for the patient having a high school or university degree (Table 3).

The variables “mean score in ESA scale at the 3-month follow-up” and “use of alcohol 3 months after discharge” were not included in the logistic regression due to a likely overlap with engagement in psychotherapy.

### ■ Engagement in psychotherapy

Taking engagement in psychotherapy at the 6-month follow-up as outcome, adherent and non-adherent patients showed statistically significant—or almost significant—differences for the following variables: gender ( $p = 0.057$ ), schooling ( $p < 0.001$ ), previous treatment ( $p = 0.003$ ), association of alcohol with other drugs ( $p = 0.065$ ), presence of depressive disorder ( $p = 0.001$ ) or substance-induced anxiety disorder ( $p = 0.078$ ), and engagement to AA at the second stage ( $p = 0.023$ ). Other variables such as marital status, presence of alcoholics in the family, other anxiety disorders or use of alcohol after discharge were not significantly different (Tables 4 and 5).

Logistic regression for the outcome “engagement in psychotherapy at the 6-month follow-up” was performed and indicated an odds ratio of 3.60 for the patient having a university degree (be it concluded or not), of 3.47 for the presence of depressive disorder, of 3.08 for the presence of association with other drugs, of 2.87 for being treated previously, of 2.61 for engagement in AA at the 3-month follow-up, and of



**Table 1** Social demographic characteristics, clinical progress and comorbid mental disorders of alcoholics adhering or not adhering to AA

Variables	Adherence at 3 months		<i>p</i>	Adherence at 6 months		<i>p</i>
	No ( <i>n</i> = 214)	Yes ( <i>n</i> = 52)		No ( <i>n</i> = 208)	Yes ( <i>n</i> = 49)	
Age <sup>a</sup>	41.54 (±8.54)	42.09 (±8.18)	0.670	41.34 (±8.02)	43.49 (±8.81)	0.100
Gender <sup>b</sup>						
Male	193 (90.2)	50 (96.2)		191 (91.8)	44 (89.8)	
Female	21 (9.8)	2 (3.8)	0.269	17 (8.2)	5 (10.2)	0.581
Marital status <sup>b</sup>						
Single	60 (28.0)	13 (25.0)		58 (27.9)	12 (24.5)	
Married	85 (39.7)	29 (55.8)		88 (42.3)	23 (46.9)	
Divorced	69 (32.2)	10 (19.2)	0.080	62 (29.8)	14 (28.6)	0.825
Schooling <sup>b</sup>						
Elementary school	115 (53.7)	21 (40.4)		116 (55.8)	15 (30.6)	
High school	65 (30.4)	17 (32.7)		64 (30.8)	18 (36.7)	
College	34 (15.9)	14 (26.9)	0.113	28 (13.4)	16 (32.7)	0.001 <sup>c</sup>
Previous treatment <sup>b</sup>	160 (74.8)	40 (76.9)	1.000	159 (76.4)	38 (77.6)	0.859
Previous hospitalization <sup>b</sup>	143 (66.8)	30 (57.7)	0.257	139 (66.8)	31 (63.3)	0.620
ESA (initial) <sup>a</sup>	32.46 (±9.60)	33.65 (±8.15)	0.408	32.68 (±9.47)	33.20 (±8.43)	0.724
Alcoholic in the family <sup>b</sup>	178 (83.2)	41 (78.8)	0.543	175 (84.1)	38 (77.6)	0.293
Drug association (twelve month period) <sup>b</sup>						
Only alcohol	147 (68.7)	39 (75.0)		150 (72.1)	33 (67.3)	0.626
Alcohol + cocaine	27 (12.6)	7 (13.5)		26 (12.5)	7 (14.3)	
Alcohol + cocaine + marijuana	17 (7.9)	3 (5.8)		15 (7.2)	3 (6.1)	
Alcohol + marijuana	15 (7.0)	2 (3.8)		9 (4.3)	6 (12.2)	
Alcohol + benzodiazepine	2 (0.9)	1 (1.9)		3 (1.4)	0 (0.0)	
Alcohol + Other drugs	6 (2.8)	0 (0.0)	–	5 (2.4)	0 (0.0)	–
Depressive disorder <sup>b</sup>	69 (32.2)	17 (32.7)	1.000	70 (33.7)	13 (26.5)	0.398
Generalized anxiety disorder <sup>b</sup>	44 (20.6)	8 (15.4)	0.443	39 (18.8)	9 (18.4)	1.000
Substance-induced anxiety disorder <sup>b</sup>	45 (21.0)	8 (15.4)	0.441	45 (21.6)	10 (20.4)	1.000
Specific phobia <sup>b</sup>	72 (33.6)	15 (28.8)	0.621	72 (34.6)	15 (30.6)	0.737
Social phobia <sup>b</sup>	54 (25.2)	10 (19.2)	0.470	52 (25.0)	9 (18.4)	0.368
Anxiety disorder in general <sup>b</sup>	129 (60.3)	23 (44.2)	0.042	125 (60.1)	24 (49.0)	0.198

<sup>a</sup> Variables appearing as means (standard deviation)<sup>b</sup> Variables appearing as frequency (percentage)<sup>c</sup> Statistically significant differences at the level of 0.05

–Impossibility of performing appropriate test

**Table 2** Results at 3-month follow-up of alcohol dependents according to adherence or non-adherence to AA at the 6-month follow-up

Variables	Non-adherence at 6 months	Adherence at 6 months	Total	<i>p</i>
Alcohol use after discharge <sup>a</sup>	130 (66.3)	22 (44.9)	152 (62.0)	0.008 <sup>b</sup>
Engagement in psychotherapy <sup>a</sup>	62 (31.6)	30 (61.2)	92 (37.6)	0.0001 <sup>b</sup>
ESA <sup>c</sup>	43.30 (±13.8)	47.05 (±13.5)	44.27 (±13.85)	0.053 <sup>b</sup>

<sup>a</sup> Variables appearing as frequency (percentage)<sup>b</sup> Statistically significant differences at the level of 0.05<sup>c</sup> Variables appearing as means (standard deviation)

–Impossibility of performing appropriate test

2.44 for going to high school or having a high school degree, these variables being associated with engagement in psychotherapy, and of 0.27 for the presence of substance-induced anxiety disorder, this variable being associated with non- engagement in psychotherapy (Table 6). The variable “gender” was initially included, but lost its significance in the final model.

## Discussion

### ■ Engagement in AA

In the final model of logistic regression taking engagement in AA as outcome, the predictors of

engagement in AA at a 6-month follow-up were engagement in psychotherapy at the 3-month follow-up and the patient having a high school or college degree.

The findings support the notion that combined treatments can add up and be more effective, since one increases engagement in the other. Another study has concluded that the frequency of attendance to psychotherapy can be increased by integration to AA concepts, while engagement in AA can be greater if psychotherapy is focused on comorbid mental disorders [39]. A joint action of AA and psychotherapy would be desirable to facilitate patient recovery [29, 36].

**Table 3** Final model of logistic regression taking engagement in AA as outcome

	<i>p</i>	OR	CI 95% for OR	
			Inferior	Superior
High school or university degree	0.028	2.192	1.089	4.410
Elementary school		1.000		
Engagement in psychotherapy at 2nd step	0.003	2.806	1.433	5.496
Non-engagement in psychotherapy at 2nd step		1.000		
Constant	0.000	0.056		

**Table 4** Social demographic characteristics, clinical progress and comorbid mental disorders of alcoholics adhering or not adhering to psychotherapy

Variables	Adherence at 3 months		<i>p</i>	Adherence at 6 months		<i>p</i>
	No ( <i>n</i> = 167)	Yes ( <i>n</i> = 99)		No ( <i>n</i> = 169)	Yes ( <i>n</i> = 87)	
Age <sup>a</sup>	41.56 (±8.35)	41.77 (±8.67)	0.846	41.49 (±7.90)	42.31 (±8.82)	0.451
Gender <sup>b</sup>						
Male	154 (92.2)	89 (89.9)		159 (94.1)	75 (86.2)	
Female	13 (7.8)	10 (10.1)	0.08	10 (5.9)	12 (13.8)	0.057 <sup>c</sup>
Marital status <sup>b</sup>						
Single	48 (28.7)	25 (25.3)		52 (30.8)	18 (20.7)	
Married	70 (41.9)	44 (44.4)		69 (40.8)	42 (48.3)	
Divorced	49 (29.3)	30 (30.3)	0.824	48 (28.4)	27 (31.0)	0.223
Schooling <sup>b</sup>						
Elementary school	101 (60.5)	35 (35.4)		101 (59.8)	29 (33.3)	
High school	45 (26.9)	37 (37.4)		47 (27.8)	35 (40.2)	
College	21 (12.6)	27 (27.3)	0.190	21 (12.4)	23 (26.4)	0.000 <sup>c</sup>
Previous treatment <sup>b</sup>	121 (72.5)	79 (79.8)	0.190	120 (71.0)	76 (87.4)	0.003 <sup>c</sup>
ESA (initial) <sup>b</sup>	32.2 (±10.08)	33.50 (±7.88)	0.450	32.53 (±9.94)	33 (±7.71)	0.426
Alcoholic in the family <sup>b</sup>	138 (82.6)	81 (81.8)	0.869	144 (85.2)	68 (78.2)	0.165
Drug association (twelve month period) <sup>b</sup>						
Only alcohol	125 (74.9)	61 (61.6)		130 (76.9)	53 (60.9)	
Alcohol + cocaine	13 (7.8)	21 (21.2)		17 (10.1)	16 (18.4)	
Alcohol + cocaine + marijuana	12 (7.2)	8 (8.1)		11 (6.5)	7 (8.0)	
Alcohol + marijuana	10 (6.0)	7 (7.1)		8 (4.7)	7 (8.0)	
Alcohol + benzodiazepine	2 (1.2)	1 (1.0)		0 (0.0)	2 (2.3)	
Alcohol + Other drugs	5 (3.0)	1 (1.0)	0.041 <sup>c</sup>	3 (1.8)	2 (2.3)	0.065
Depressive disorder <sup>b</sup>	41 (24.6)	45 (45.5)	0.001 <sup>c</sup>	43 (25.4)	40 (46.0)	0.001 <sup>c</sup>
Generalized anxiety disorder <sup>b</sup>	31 (18.6)	21 (21.2)	0.633	27 (16.0)	21 (24.1)	0.129
Substance-induced anxiety disorder <sup>b</sup>	38 (22.8)	15 (15.2)	0.154	42 (24.9)	13 (14.9)	0.078
Specific phobia <sup>b</sup>	54 (32.3)	33 (33.3)	0.893	59 (34.9)	28 (32.2)	0.679
Social phobia <sup>b</sup>	44 (26.3)	20 (20.2)	0.300	38 (22.5)	23 (26.4)	0.536
Anxiety disorder in general <sup>b</sup>	96 (57.5)	56 (56.6)	0.899	96 (56.8)	52 (59.8)	0.690

<sup>a</sup> Variables appearing as means (standard deviation)<sup>b</sup> Variables appearing as frequency (percentage)<sup>c</sup> Statistically significant differences at the level of 0.05

## ■ Engagement in psychotherapy

The variables presenting differences between adherent and non-adherent patients were included in the logistic regression. In the final model, the predictors of engagement in psychotherapy at a 6-month follow-up were: higher educational background; presence of addiction to other drugs; patient having been treated previously, presence of depressive disorder; and engagement in AA at the 3-month follow-up. Substance-induced anxiety disorder emerged as a predictor of non-engagement.

These results raise the hypothesis that alcoholics addicted to other drugs may use psychotherapy more often than those addicted to alcohol only, and perhaps the latter may better adapt to treatments like AA groups. Alcoholics with depressive disorder remain

longer in psychotherapy as well; this might in part be due to their continuing need for medication after discharge. Another study has also found that psychoactive drug users with depression visited mental health services 2.5 more often than non-depressed ones [21]. The fact that the patients had already been treated previously and had higher educational background would also favor their engagement in psychotherapy. Concerning engagement in AA, this finding reinforces the approach of using complementary treatments for alcohol dependence, because they may have an interactive effect. The fact that the presence of substance-induced anxiety disorder is related to non-engagement in psychotherapy may be due to symptom remission after an initial abstinence period, making the patients feel a diminished need for remaining in psychotherapy.

**Table 5** Results at the 3-month follow-up of alcohol dependents according to adherence or non-adherence to psychotherapy at the 6-month follow-up

Variables	Non-adherence at 6 months	Adherence at 6 month	Total	<i>p</i>
Alcohol use after discharge <sup>a</sup>	102 (65.0)	49 (56.3)	151 (61.9)	0.216
Engagement in AA <sup>a</sup>				
Strong	14 (8.9)	10 (11.5)	24 (9.8)	
Partial	9 (5.7)	14 (16.1)	23 (9.4)	
Poor	1 (0.6)	2 (2.3)	3 (1.2)	
Non-adherence	133 (84.7)	61 (70.1)	194 (79.5)	0.023 <sup>b</sup>
ESA <sup>c</sup>	43.77 (±14.45)	46.02 (±12.48)	44.27 (±13.85)	0.223

<sup>a</sup> Variables appearing as frequency (percentage)

<sup>b</sup> Statistically significant differences at the level of 0.05

<sup>c</sup> Variables appearing as means (standard deviation)

**Table 6** Final model of logistic regression taking engagement in psychotherapy as outcome

	<i>p</i>	OR	CI 95% for OR	
			Inferior	Superior
Schooling				
College	0.002	3.609	1.628	7.999
High school	0.009	2.449	1.247	4.807
Elementary school		1.000		
Previous treatment	0.010	2.875	1.290	6.406
No previous treatment		1.000		
Depressive disorder	0.000	3.476	1.832	6.593
No depressive disorder		1.000		
Substance-induced anxiety disorder	0.003	0.273	0.117	0.635
No substance-induced anxiety disorder		1.000		
Use of alcohol and other drugs	0.002	3.083	1.534	6.196
Use of only alcohol		1.000		
Engagement in AA at 2nd step	0.009	2.618	1.267	5.408
Non-engagement in AA at 2nd step		1.000		
Constant	0.000	0.169		

The fact that the variable “use of alcohol after discharge” is not different between adherents and non-adherents to psychotherapy at the 6-month follow-up is remarkable. The mean score in the ESA scale, however, indicated differences, being higher for adherents, showing these patients were less impaired.

Those who stayed in the study may be more likely to adhere to treatment than those who did not, since patients who dropped out reported previous treatment less often than adhered patients.

### ■ Limitations of the study

The limitations of this exploratory study include the fact that the sample comprised mostly men and alcoholic inpatients, which may make it difficult to generalize the data for both women and outpatients. In addition, it should be mentioned that, in order to minimize losses, blood samples for determination of gamma-GT were not collected from patients, thus precluding the use of the ESA scale in its original form. However, the gamma-GT test is not neither highly specific nor sensitive [27, 28], and the responses given by the patients appeared trustworthy in

most of the cases. Furthermore, the contributions of comorbidities other than anxiety and depressive disorders were not assessed with either for the outcomes. It is also important to consider this analyses as a preliminary exploratory evaluation. The elevated number of variables investigated may have altered the results due to type I error.

These results should also be interpreted with caution since many variables may not really be predictive of the outcome, but just associated to it. The fact that this was a self-selective sample, as well as its small size, may also have influenced the results. Together with the statistical power of the analyses, they have to be considered as possible limitations of the present investigation.

As positive aspects of the study we may highlight that, as this was a longitudinal study with subjective outcomes that therefore were subject to measurement biases, we were careful enough not to disclose the aims of the study to the interviewers in the distinct follow-up steps. The small number of losses given the type of patients can also be considered as a positive feature.

■ **Acknowledgments** This study has been partly funded by research support agencies (FAPERGS and FAPESP). H. M. T. Barros receives a IC Research Productivity grant from CNPq.

## References

- Almeida Filho N, Mari JJ, Coutinho E, França JF, Fernandes JG, Andreoli SB, et al. (1992) Estudo multicêntrico de morbidade psiquiátrica em áreas urbanas brasileiras (Brasília, São Paulo, Porto Alegre). *Rev ABP-APAL* 14:93-104
- Andrade AG, Bernick MA, Brunfentrinker P, Negro Jr PJ (1988) Dados de confiabilidade sobre uma entrevista semi-estruturada para avaliação de tratamentos de alcoolistas: escala de severidade de alcoolismo - ESA. *Rev ABP-APAL* 10(1):1-4
- Brady TM, Krebs CP, Laird G (2004) Psychiatric comorbidity and not completing jail-based substance abuse treatment. *Am J Addict* 13:83-101
- Burns L, Teesson M, O' Neill K (2005) The impact of comorbid anxiety and depression on alcohol treatment outcomes. *Addiction* 100(6):787-796
- Busnello ED, Pereira MP, Knapp WP, Salgado CAI, Taborda JGV, Knijnik L, et al. (1992) Morbidade psiquiátrica na população urbana de Porto Alegre. *J Bras Psiquiatr* 41(10):507-512
- Caetano R (1984) Problemas relacionados com el consumo de alcohol en America Latina. Revision Bibliografica. *Bol Of Sanit Panam* 97:497-504
- Caldwell PE, Cutter HSG (1998) Alcoholics anonymous affiliation during early recovery. *J Subst Abuse Treat* 15:221-228
- Carlini EA, Galduróz JCF, Noto AR, Nappo AS (2001) I Levantamento domiciliar sobre o uso de drogas psicotrópicas no Brasil: estudo envolvendo as 107 maiores cidades do país. São Paulo: CEBRID - Centro Brasileiro de Informações Sobre Drogas Psicotrópicas: UNIFESP - Universidade Federal de São Paulo, São Paulo
- Castel S, Formigoni MLOS (1999) Escalas para avaliação de tratamentos de dependência de álcool e outras drogas. *Rev Psiq Clin* 26(1):1-5
- Chappel JN (1993) Long-term recovery from alcoholism. *Psychiatr Clin North Am* 16(1):177-187
- Connors GJ, Tonigan JS, Miller WR (2001) A longitudinal model of intake symptomatology, AA participation and outcome: retrospective study of the project MATCH outpatient and aftercare samples. *J Stud Alcohol* 62:817-825
- Fiorentine R (1999) After drug treatment are 12-step programs effective in maintaining abstinence? *Am J Drug Alcohol Abuse* 25:93-116
- First MB, Spitzer RL, Gibson M, Williams JB (1996) Structured clinical interview for DSM-IV Axis I disorders - patient edition (SCID I/P, Version 2.0). American Psychiatric Association, Washington DC
- Gordis L (1996) Epidemiology. WB Saunders, Pennsylvania
- Gossop M, Harris J, Best B, Lan-Ho M, Manning V, Marshall J, et al. (2003) Is attendance at alcoholics anonymous meetings after inpatient treatment related to improved outcomes? A 6-month follow-up study. *Alcohol Alcohol* 38(5):421-426
- Grant BF (1997) Prevalence and correlates of alcohol use and DSM-IV alcohol dependence in the United States: results of the National Longitudinal Alcohol Epidemiologic Survey. *J Stud Alcohol* 58(5):464-473
- Helzer PE, Pryzbeck TR (1998) The co-occurrence of alcoholism with other psychiatric disorders in the general population and its impact on treatment. *J Stud Alcohol* 49:219-224
- Janowsky DS, Boone A, Morter S, Howe L (1999) Personality and alcohol/substance-use disorder patient relapse and attendance at self-help group meetings. *Alcohol Alcohol* 34(3):359-369
- Jordan LC, Davidson WS, Herman SE, BootMiller BJ (2002) Involvement in 12-step programs among persons with dual diagnoses. *Psychiatr Serv* 53(7):894-896
- Kaskutas LA, Bond J, Humphreys K (2002) Social networks as mediators of the effect of Alcoholics Anonymous. *Addiction* 97:891-900
- Kelly JF, McKellar JD, Moos R (2003) Major depression in patients with substance use disorders: relationship to 12-step self-help involvement and substance use outcomes. *Addiction* 98:499-508
- Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE (2005) Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry* 62(6):593-602
- Kownacki RJ, Shadish WR (1999) Does alcoholics anonymous work? The results from a meta-analysis of controlled experiments. *Subst Use Misuse* 34:1897-1916
- Makela K (1997) Identidade existencial e Alcoólicos Anônimos como um movimento de auto-ajuda. 12ª Conferência da Sociedade Brasileira para Pesquisa de Alcool e Drogas, Recife
- Masur J, Jorge MR (1986) Dados relacionados a bebidas alcoólicas e alcoolismo no Brasil: Uma revisão. *Rev ABP-APAL* 8:157-165
- Mckay JR (2005) Co-occurring substance dependence and depression: practical implications and next questions. *Addiction* 100(12):1755-1757
- Monteiro MG, Masur J (1985) Diagnostic of alcoholism: how useful is the combination of gamma-glutamyltransferase with different biochemical markers? *Drug Alcohol Depend* 16(1):31-37
- Monteiro MG, Masur J (1986) Value of serum gamma-glutamyltransferase in the diagnosis of alcoholism. *Rev Assoc Med Bras* 32(1-2):25-30
- Moos RH, Moos BS (2005) Paths of entry into alcoholics anonymous: consequences for participation and remission. *Alcohol Clin Exp Res* 29(10):1858-1868
- Moreira LB, Fuchs FD, Moraes RS, Bredemeier M, Cardozo S, Fuchs SC (1996) Alcoholic beverage consumption and associated factors in Porto Alegre, a southern Brazilian city: a population-based survey. *J Stud Alcohol* 57:253-259
- Morgenstern J, Labouvie E, McCrady BS, Kahler CW, Frey RM (1997) Affiliation with alcoholics anonymous after treatment: a study of its therapeutic effects and mechanisms of action. *J Consult Clin Psychol* 65:768-777
- Myrick H, Brady KT (1997) Social phobia in cocaine-dependent individuals. *Am J Addict* 6:99-104
- Regier DA, Farmer ME, Rae DS, Locke BZ, Keith SJ, Judd LL, et al. (1990) Comorbidity of mental disorders with alcohol and other drug abuse. *JAMA* 264:2511-2518
- SPSS Incorporation (1997) Statistical package for social science - SPSS. Release 8.0.SPSS Inc, Chicago
- Schuckit MA (1999) Transtornos relacionados ao álcool. In: Kaplan HI, Sadock BJ (eds) *Tratado de Psiquiatria*. 6a ed. Artmed, Porto Alegre, pp 838-855
- Steigerwald F, Stone D (1999). Cognitive restructuring and the 12-step program of alcoholics anonymous. *J Subst Abuse Treat* 16(4):321-327
- Terra MB, Figueira I, Barros HMT (2004) Impact of alcohol intoxication and withdrawal syndrome on social phobia and panic disorder in alcoholic inpatients. *Rev Hosp Clin Fac Med S Paulo* 59(4):187-192
- Thurstin AH, Alfano AM, Nerviano VJ (1987) The efficacy of AA attendance for aftercare inpatient alcoholics: some follow-up data. *Int J Addict* 22:1083-1090
- Tómasson K, Vaglum P (1998) Psychiatric co-morbidity and aftercare among alcoholics: a prospective study of a nationwide representative sample. *Addiction* 93(3):423-431
- Vederhus JK, Kristensen O (2006) High effectiveness of self-help programs after drug addiction therapy. *BMC Psychiatry* 23(6):35
- Zimmerman G, Pin MA, Krenz S, Bouchat A, Favrat B, Zullino DF, et al. (2004) Prevalence of social phobia in a clinical sample of drug dependent patients. *J Affect Dis* 83(1):83-87