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Lifetime and Current Mood and Anxiety Disorders in Short-Term and Long-Term Abstinent Alcoholics

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Abstract

BACKGROUND—A high prevalence of comorbid mood and anxiety disorders has been demonstrated in alcoholics. We examined lifetime and current mood and anxiety diagnoses and symptoms in long-term (mean 7.6 years; $n = 110$) and short-term (mean 10.1 weeks; $n = 101$) abstinent alcoholics (LTAA and STAA) and non substance abusing controls (NSAC; $n = 82$). All alcoholics met DSM-IV lifetime alcohol dependence criteria. About half of each alcoholic group had lifetime drug dependence.

METHODS—Alcohol use was assessed using timeline follow-back methodology and drug and alcohol use disorders were diagnosed using the AUDADIS-IV. Lifetime and current mood and anxiety disorder diagnoses and symptom counts were gathered using the c-DIS.

RESULTS—Over 60% of STAA and LTAA had a lifetime internalizing diagnosis vs. about 15% of NSAC, with no difference between STAA and LTAA. The Group effect on lifetime diagnoses was independent of comorbid drug dependence or gender and was of comparable size for mood and anxiety disorders. Current diagnoses showed a similar pattern, except that STAA had more current mood diagnoses than LTAA. Excluding individuals with lifetime internalizing diagnoses, alcoholics still had more mood and anxiety symptoms than controls.

CONCLUSIONS—1) The presence of a lifetime mood or anxiety diagnosis or of a current anxiety diagnosis did not differ between STAA and LTAA, suggesting that such diagnoses do not impact one's ability to achieve or maintain abstinence. 2) Prevalence of mood and anxiety diagnoses were unaffected by presence of a comorbid substance use disorder, and 3) excluding individuals with a mood or anxiety diagnosis does not eliminate mood and anxiety symptom count differences between groups.

Keywords

abstinence; alcohol; anxiety disorder; mood disorder

Introduction

Over the past two decades, the pervasiveness of psychiatric comorbidity in substance use disorders (SUDs) has been documented in large epidemiological studies (BF Grant et al. 2004a; BF Grant et al. 2004b; BF Grant et al. 2004c; BF Grant et al. 2009; BF Grant, Dawson, D.A. 2006; D Hasin, Stinson, FS, Ogburn, E, Grant, B 2007; Kessler et al. 1997; Regier et al. 1990), and has been shown to be greater in treated vs. untreated samples

(Helzer and Pryzbeck 1988; Regier et al. 1990; Tomasson and Vaglum 1995). An analysis of six studies participating in the International Consortium in Psychiatric Epidemiology reported strong associations of anxiety, mood, and antisocial personality disorders (ASPD) with substance use disorders, even in the context of large differences in the prevalence of these disorders across study sites (Merikangas et al. 1998).

The literature on the effects of psychiatric disorders on SUD treatment outcome has not yielded uniform results. Some studies reported a negative association between psychiatric comorbidity and treatment outcome (e.g., (Burns et al. 2005; Greenfield et al. 1998; DS Hasin and Grant 2002; Hesselbrock et al. 1985; Loosen et al. 1990; Rounsaville et al. 1987; Schuckit 1983)). In contrast, Chi and colleagues (Chi et al. 2006) showed that SUD individuals with psychiatric comorbid disorders (104 Ss of 747) had one year SUD outcomes comparable to individuals with no comorbid psychiatric disorders. Bischof et al. (Bischof et al. 2005) contacted 4,075 individuals (response rate: 70.2%) in Northern Germany, of whom 3.8% met DSM-IV lifetime criteria for alcohol dependence and 1.3% were alcohol dependent in the last year. The percentage who remitted from alcohol dependence without formal help was almost identical for individuals with vs. without comorbid psychiatric disorders. Utilization of formal help was also unrelated to psychiatric comorbidity - comorbidity was no greater in individuals who availed themselves of treatment than in those who did not.

In 2007, we examined psychiatric disorders in long-term abstinent alcoholics (LTAA) compared to non substance abusing controls (NSAC) (Di Sclafani et al. 2007), using the computerized Diagnostic Interview Schedule (c-DIS) (Blouin et al. 1988; Robins et al. 1995) for psychiatric diagnoses and symptom counts. LTAA had a higher prevalence than NSAC of lifetime mood, anxiety, and externalizing disorder diagnoses and a greater prevalence than NSAC of current mood and anxiety diagnoses. Finally, there was no association of duration of abstinence with lifetime or current psychiatric diagnoses, consistent with psychiatric diagnoses having little effect on relapse. Our results were consistent with: 1) the presence of a lifetime psychiatric diagnosis not militating against achieving long-term abstinence, 2) abstinence being maintained in the presence of a current mood or anxiety disorder, and 3) a current diagnosis of ASPD not being compatible with long-term abstinence. The ASPD findings have been followed up with a recent publication showing that current ASPD symptoms are reduced to control values in long-term abstinence (Fein G and Fein D 2012). The current study replicates and expands on our 2007 study (Di Sclafani et al. 2007) by not only including LTAA and NSAC samples about twice the size of the earlier study, but also including short-term abstinent alcoholics (STAA, 6–15 week abstinent) to assess whether comorbid mood and/or anxiety diagnoses impact achieving very long-term abstinence. Moreover, both alcoholic groups included subsamples with comorbid illicit drug dependence, and we expanded the c-DIS interview to ascertain currency of all endorsed symptoms.

Materials and Methods

Participants

A total of 293 individuals, 34.8–60.9 years of age were recruited from the Honolulu area by postings at AA meetings, community and treatment centers and participant referrals. STAA (n = 101, 40 women and 61 men) met DSM-IV criteria for lifetime alcohol dependence, were between 34.8 and 59.9 years of age (mean = 50.0 years), and were abstinent from 5.3–15.6 weeks (mean = 10.1±2.7). LTAA (n= 110, 52 women and 58 men) also met DSM-IV criteria for lifetime alcohol dependence, were between 35.0 to 60.8 years of age (mean = 48.7 years), and were abstinent from 78.1– 1678.6 weeks (mean = 394±350 weeks). NSAC (n =82, 42 women and 40 men) were between 35.3 and 60.9 years of age (mean = 48.6

years). NSAC had a lifetime drinking average of less than 30 standard drinks per month with no periods of drinking more than 60 drinks per month, and no lifetime history of alcohol or substance abuse or dependence. A standard drink was defined as 12 oz beer, 5 oz of wine or 1.5 oz of liquor. Subject psychiatric diagnoses were ascertained using the c-DIS.

Exclusion criteria for all groups were: 1) significant history of head trauma or cranial surgery, 2) history of diabetes, stroke, or hypertension that required medical intervention, 3) history of significant neurological disease, 4) laboratory evidence of hepatic disease, 5) clinical evidence of Wernicke-Korsakoff syndrome, 6) reported evidence of benzodiazepine use and 7) lifetime or current diagnosis of schizophrenia or schizophreniform disorder as determined by the c-DIS interview; (Bucholz et al. 1991; Erdman et al. 1992; Levitan et al. 1991; Robins LN 1998). After complete description of the study to the subjects, written informed consent was obtained.

Procedures

NSAC were asked to abstain from alcohol for 24 hours prior to any lab visit. A breathalyzer test (Intoximeters, Inc., St. Louis, MO) was administered to all participants and a 0.00 alcohol concentration was required before any further procedures were done. A rapid oral fluid drug screen test (Innovacon Inc., San Diego, CA) for THC, methamphetamines, cocaine, opioids, and PCP was administered to all participants, with a negative result required as inclusion criterion. Participants were compensated for their time and travel expenses. The data presented here were from the first day clinical and psychiatric assessments. The study was reviewed and approved by an independent human subjects research review committee (E&I Review Services, LLC, Corte Madera, CA).

Alcohol, Substance and Nicotine Use Measures

Participants were interviewed on their lifetime use of alcohol and each drug of abuse that they had taken (including nicotine) using the timeline follow-back methodology (Skinner and Allen 1982; Skinner and Sheu 1982; Sobell and Sobell 1992), with criteria for abuse or dependence gathered using the Alcohol Use Disorder and Associated Disabilities Interview Schedule-IV (AUDADIS-IV) (Grant BF et al. 2001). These procedures yielded the following measures: Alcohol use duration and average dose, alcohol peak use duration and peak use dose, abstinence duration, Alcohol/Cocaine/Methamphetamine/THC dependence diagnosis and age of diagnosis, and lifetime and current Nicotine dependence diagnosis.

Family History of Problem Drinking and Drug Problems

The Family Drinking Questionnaire (1985) was administered with regard to drinking and with regard to other drugs of abuse. Participants rated family members as abstainers, users with no problem, or problem users. The Family History Density of Alcohol Problems was the proportion of first-degree relatives identified as problem drinkers. The Family History Density of Drug Problems was the proportion of first-degree relatives identified as problem substance users.

Psychiatric Diagnoses

The c-DIS was administered to all participants by a research associate who asked the c-DIS questions and helped navigate through the c-DIS decision tree. This also allowed the research associate to compare the participants' answers to their phone screen and other volunteered information. The c-DIS assessed for the following current and lifetime diagnoses in the mood and anxiety domains: bipolar disorder, dysthymia, hypomania, mania, major depressive disorder (MDD), agoraphobia, compulsive disorder, obsessive disorder, panic disorder, posttraumatic stress disorder (PTSD), and social phobia.

Statistical Analysis

Diagnosis prevalences were compared using chi-square, and odds ratios were computed as measures of effect size, with groups also being compared stratified by sex. Comparisons were made between each abstinent alcohol dependent group and controls (STAA vs. NSAC and LTAA vs. NSAC), between alcohol dependent groups (STAA vs. LTAA), and between all abstinent alcoholics and controls. Additional comparisons were also made between those with vs. those without lifetime dependence on another (other than alcohol, nicotine or caffeine) substance. For integer scale demographics, alcohol use and symptom count measures, analyses used the General Linear Model implementation of the analysis of variance, and partial η^2 (proportion of variance of the dependent variable independently accounted for by the affect being examined) measured effect size. Sex was used as an independent factor for all GLM analyses. Although Family History Density of Alcohol Problems and Family History Density of Drug Problems are presented in Table 1 as proportions, statistical analyses and effect sizes were computed after arcsin transformation.

Results

Demographics and Substance Use

Table 1 presents demographic, alcohol use and substance dependence diagnosis data. LTAA and NSAC were of comparable age and were 2–3 years older than STAA. STAA and LTAA were comparable in education but had less education than controls. STAA and LTAA had a higher family density of alcohol and drug problems than controls, but did not differ from each other on either measure. Alcoholics drank over twenty times as much as controls, but LTAA and STAA did not differ in alcohol consumption. On average STAA were abstinent about 10 weeks, and LTAA were over 6 years abstinent. In STAA and LTAA, all participants had a lifetime Alcohol Dependence diagnosis. Within STAA, 61% had comorbid lifetime drug dependence diagnoses with the types of drug dependence as follows: 6% marijuana, 10% methamphetamine, 18% cocaine, 5% marijuana and cocaine, 6% marijuana and methamphetamine, 12% methamphetamine and cocaine, 2% marijuana, cocaine and methamphetamine, and 3% with an opioid or other drug dependence. Within LTAA, 56% had a comorbid lifetime drug dependence diagnosis with the types of drug dependence as follows: 5% marijuana, 6% methamphetamine, 15% cocaine, 5% marijuana and cocaine, 6% marijuana and methamphetamine, 19% methamphetamine and cocaine, 6% marijuana, cocaine and methamphetamine, and 1% with an opioid or other drug dependence. The prevalence of lifetime and current cigarette smoking was much greater in both STAA and LTAA than controls (see Table 1), but STAA and LTAA did not differ, nor did men and women.

Lifetime diagnoses

Table 2 shows lifetime diagnoses of mood disorders in STAA, LTAA, and NSAC. Women had more lifetime mood disorders (50.7%) than men (37.1%) ($\chi^2 = 5.51$, $p = .019$). Compared to a 22 percent prevalence in controls, more than half of STAA (51.5%, $\chi^2 = 16.71$, $p < .000$) and LTAA (51.8%, $\chi^2 = 17.61$, $p < .000$) had a lifetime mood disorder diagnosis, with no difference between STAA and LTAA ($\chi^2 = .002$, $p = .961$). The comparisons among groups in mood diagnosis rates did not differ by gender. In each group, about $\frac{3}{4}$ of subjects with a lifetime mood diagnosis had a Major Depressive Disorder (MDD) diagnosis, with comparisons among groups for MDD mirroring comparisons for mood disorders. For mania and bipolar disorder, prevalences were much lower (all below 13%), resulting in lower power (although odds ratios were similar to those for MDD, only one of which – mania comparing LTAA and NSAC – was statistically significant). Dysthymia was not included because only two subjects had a lifetime diagnosis. Groups STAA and LTAA combined, were also separated into those dependent on alcohol only (AO) and those

dependent on alcohol and other drugs of abuse (AAD), with no differences between AO or AAD in any of the above comparisons (all $\chi^2 = 1.870$ and all $p = .172$).

Table 2 also shows lifetime anxiety disorder diagnoses. Women had a higher prevalence of lifetime anxiety diagnoses (34.3%) than men (15.1%) ($\chi^2 = 14.8$, $p < .001$). Compared to a 8.5% prevalence in controls 25.7% of STAA ($\chi^2 = 9.06$, $p = .003$) and 33.6% of LTAA ($\chi^2 = 16.76$, $p < .0001$) had a lifetime anxiety disorder. Although odds ratios show a greater difference in prevalence of LTAA vs. NSAC compared to STAA vs. NSAC, rates for STAA and LTAA did not differ ($\chi^2 = 1.57$, $p = .211$). The comparisons among groups in anxiety diagnoses did not differ between men and women. In each group, over 80% of subjects with a lifetime anxiety diagnosis had a Post-Traumatic Stress Disorder (PTSD) diagnosis, with comparisons among groups for PTSD mirroring the comparisons for anxiety disorders. For agoraphobia and panic disorder, prevalences were much lower, resulting in lower power for groups comparisons (only one of which – agoraphobia comparing LTAA and NSAC - was statistically significant, although odds ratios were similar to those for PTSD). Other anxiety disorders, such as compulsive disorder, obsessive disorder, and social phobia, were not displayed because of extremely low prevalence. Within the combined LTAA and STAA groups, AO or AAD did not differ in anxiety diagnoses (odds ratio = 0.91, $\chi^2 = 0.89$, $p = .77$).

Current diagnoses

Table 2 shows current mood disorder diagnoses. Women had a trend toward more current mood disorders (28.4%) than men (18.9%) ($\chi^2 = 3.68$, $p = .055$). Compared to a 4.9 percent prevalence of a current mood diagnosis in controls, more than 1/3 of STAA (35.6%, $\chi^2 = 25.08$, $p < .000$) and 1/4 of LTAA (25.5%, $\chi^2 = 14.32$, $p < .000$) had a current mood diagnosis, with no difference between STAA and LTAA ($\chi^2 = 2.59$, $p = .108$). In alcoholics, about 38% of women had a current mood diagnosis compared to about 24% of men. The comparisons among groups did not differ by gender. In each group, about 2/3 of subjects with a current mood diagnosis had a Major Depressive Disorder (MDD) diagnosis. For current MDD, there was higher prevalence in LTAA and STAA compared to NSAC. However, in comparison to lifetime MDD, where prevalence in LTAA and STAA were comparable, for current MDD, the prevalence was higher in STAA (26.7%) compared to LTAA (14.5%) (odds ratio = 2.14, $\chi^2 = 4.82$, $p = .028$). For mania and bipolar disorder, prevalences were much lower (all 10% or lower), resulting in low power for groups comparisons (only one of which – current bipolar disorder comparing LTAA and NSAC - was statistically significant, although odds ratios were similar to those for MDD). Within the combined LTAA and STAA groups, AO or AAD did not differ in current mood diagnoses (odds ratio = 1.27, $\chi^2 = 0.63$, $p = .43$).

Table 2 also shows current diagnoses of anxiety disorders. Women had a higher prevalence (14.9%) than men (6.3%) ($\chi^2 = 5.90$, $p < .015$). Compared to a 2.4% prevalence in controls 13.9% of STAA ($\chi^2 = 7.40$, $p = .007$) and 12.7% of LTAA ($\chi^2 = 6.51$, $p < .011$) had a current anxiety diagnosis, with no difference between LTAA and STAA. Group comparisons were unaffected by gender. Over 80% of individuals with a current anxiety diagnosis had PTSD, with comparisons for PTSD mirroring the comparisons for anxiety diagnoses. For agoraphobia and panic disorder, only 2 individuals had any current diagnosis. Within the combined LTAA and STAA groups, AO or AAD did not differ in anxiety diagnoses (odds ratio = 0.91, $\chi^2 = 0.89$, $p = .77$). For mood diagnoses, the odds of having a current diagnosis given a lifetime diagnosis is much greater for LTAA and STAA than for NSAC and the rate for STAA is much larger than that for LTAA. This pattern is most apparent for a diagnosis of MDD. For anxiety diagnoses, the pattern of prevalence and odds ratios are in the same direction as for mood diagnoses, but are not statistically significant.

Mood and Anxiety Symptoms

Table 3 shows mood disorder symptom counts (both lifetime and current) for individuals with a lifetime mood diagnosis and anxiety disorder symptom counts for individuals with a lifetime anxiety diagnosis. No comparison showed any differences by group or gender. There were also no differences between AO and AAD. In other words, although there were more individuals with diagnosable mood or anxiety disorders in the alcoholic groups, there was no evidence that those with a mood or anxiety diagnosis had more mood or anxiety symptoms than controls with a similar diagnosis.

Table 3 also shows mood and anxiety symptom counts (both lifetime and current) for individuals without a lifetime mood or anxiety diagnosis (i.e., with fewer symptoms than needed to reach lifetime diagnostic thresholds). In this data, alcoholics (STAA and LTAA) had more lifetime ($F_{1,64} = 8.28, p = .005, es = 4.8\%$) and current ($F_{1,223} = 7.9, p = .005, es = 3.4\%$) mood symptoms than NSAC, but did not differ from each other, nor were there effects of sex nor of comorbid lifetime drug dependence. A similar pattern was present when examining anxiety symptoms in individuals without a lifetime anxiety disorder diagnosis, except that the effect sizes comparing alcoholics to controls were about 50% larger for anxiety symptoms than the effects for mood symptoms.

Discussion

We found more mood diagnoses in LTAA and STAA than controls, with odds ratios close to four. In our earlier study, given the very high prevalence (14 of 23 = 61%) of MDD observed in female controls, the increased prevalence of mood disorders in LTAA was present in men only (Di Sclafani et al. 2007). In the current study, the lifetime prevalence of mood disorders in controls was more comparable for men and women, much closer to the ratio of mood disorders in men and women seen in epidemiological studies (e.g. Grant BF et al. 2009). The higher prevalence of mood disorders in abstinent alcoholics (LTAA and STAA) vs. controls in the current study did not differ by gender (comparisons between abstinent alcoholic vs. controls show similar group effect sizes when men and women were analyzed separately), and holds across mood diagnoses (MDD, Bipolar 1, and Manic Disorder). This higher prevalence of lifetime mood diagnoses in abstinent alcoholics was unaffected by lifetime dependence on other drugs of abuse. If having a lifetime mood diagnosis increases the likelihood of alcohol or drug relapse, the prevalence of mood disorders in LTAA would be lower than in STAA. However the almost identical prevalence of lifetime mood diagnoses in STAA and LTAA strongly supports the contention that such a diagnosis does not impact the likelihood of progression from 6–15 weeks abstinence to multi-year abstinence.

The data for lifetime anxiety diagnoses were highly similar to those for lifetime mood diagnoses. We found a higher prevalence of anxiety diagnoses in abstinent alcoholics (LTAA and STAA) compared to controls, with odds ratios between three and six, and no difference between LTAA and STAA. The lifetime prevalence of anxiety disorders was higher in women than men, but comparisons between abstinent alcoholics and controls were unaffected by gender. This finding holds across anxiety diagnoses (PTSD, Agoraphobia, and Panic Disorder), and was unaffected by comorbid drug dependence. If having a lifetime anxiety diagnosis increases the likelihood of alcohol or drug relapse, prevalence of anxiety disorders should be lower in LTAA than STAA. However the numerically (but not statistically) higher prevalence of lifetime anxiety diagnoses in LTAA vs. STAA strongly supports the contention that such diagnoses have no effect on an individual progressing from 6–15 weeks abstinence to multi-year abstinence.

Similarly if current mood or anxiety diagnoses increases the likelihood of alcohol or drug relapse, then rates of both disorders should be less in LTAA compared to STAA. As indicated by our results, current diagnoses were also higher in abstinent alcoholics compared to controls. Although the prevalence of current diagnoses were lower than lifetime diagnoses for all groups (current diagnoses are a subset of lifetime diagnoses), the differences between abstinent alcoholics and controls were larger. This suggests that abstinent alcoholics are even more likely to have a current diagnosis than controls in the middle-aged samples studied here. This would be consistent with greater recovery from lifetime mood and anxiety diagnoses in the middle-aged control samples than in the alcoholic samples.

Our study also found a higher prevalence of MDD in STAA than LTAA. MDD is a common mood disorder amongst alcoholics (Petrakis et al. 2002). Our result suggests either that those with MDD experience fewer symptoms as abstinence durations become longer or that STAA with a current MDD diagnosis are less likely to achieve long term abstinence. In this light, a six year study of abstinent alcoholics found those who relapsed had significantly more lifetime major depressive diagnosis than those who remained abstinent (Landheim et al. 2006). It has also been suggested that the comorbidity of anxiety and depressive symptoms predict the reoccurrence of alcohol dependence (Boschloo 2012). However, as shown in Figures 1 and 2 (for lifetime and current diagnoses, respectively), the prevalence of comorbid mood and anxiety diagnoses is comparable for STAA and LTAA, suggesting that the effect of having both diagnoses is not much different than the effect of either diagnosis separately.

It is important to emphasize that the STAA sample consists of individuals with 6–15 weeks of abstinence (averaging 10.1 ± 2.7 weeks abstinence). The current paper is silent with regard to whether comorbid mood and anxiety disorders have an effect on achieving and maintaining abstinence prior to the abstinence durations of our STAA. Comorbidities may be higher in individuals initiating abstinence than in our STAA and some individuals with comorbidities may be more likely to relapse prior to 6–15 week abstinence. This is only an issue if the prevalence of lifetime internalizing disorders in individuals initiating abstinence is higher than the prevalence in our STAA. If such an effect exists, it would pertain to a relatively small proportion of individuals initiating abstinence. Additionally, given the samples of about 100 subjects per group, the statistical power of the current study is limited. In particular, although we have limited power to rule out any effect of internalizing disorders on abstinence, we are comfortable concluding that there are no large effects impacting the likelihood that an individual will progress from 6–15 weeks abstinence to multi-year abstinence.

The examination of mood and anxiety symptom counts in individuals without (Table 3) a mood or anxiety disorder diagnosis shows that excluding individuals with a diagnosis does not get rid of mood and anxiety disorder differences between alcoholics and controls. Among individuals without a diagnosis, both mood and anxiety disorder symptom counts (sub diagnostic threshold) are much larger in the STAA and LTAA samples. This strongly suggests that efforts to be rid of mood and anxiety disorder differences between alcohol dependent and control samples by excluding individuals with mood or anxiety diagnoses are only partial solutions at best and do not address sub-diagnostic differences in mood and anxiety disturbance between groups.

Finally, we believe our study strongly supports the contention that the bulk of the mood and anxiety disorder diagnoses observed in our abstinent substance abusing samples have a life independent of the comorbid substance use disorder. The strongest evidence for this is displayed in Figure 2, which shows that over a quarter of multi-year abstinent substance dependent individuals have a current mood or anxiety disorder. Were such disorders

secondary to the substance use, one would have conjectured that the majority of disorders would have resolved over multiple years of abstinence. We acknowledge that our study did not directly evaluate primary or secondary diagnosis of psychiatric vs. substance use disorders, but, as stated above, we believe our data strongly suggests that the majority of mood and anxiety disorders studied here were primary and not secondary to substance use disorders.

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LIFETIME DIAGNOSES

Figure 1. Proportions of Lifetime Internalizing Diagnoses for NSAC, STAA and LTAA groups. Group comparisons, represented in the pie charts, show that both STAA and LTAA have higher diagnoses for Mood, Anxiety and comorbid Mood and Anxiety than NSAC. STAA and LTAA have similar proportions for Mood, Anxiety and comorbid Mood and Anxiety diagnoses.

Figure 2.

Proportions of Current Internalizing Disorder Diagnoses for NSAC, STAA and LTAA groups. Group comparisons, represented in the pie charts, show that both STAA and LTAA have higher diagnoses for Mood, Anxiety and comorbid Mood and Anxiety than NSAC. STAA and LTAA have similar proportions for Mood, Anxiety and comorbid Mood and Anxiety diagnoses.

Table 1

Demographics, Alcohol Use and Clinical Variables

	STAA										LTAA										NSAC										Effect Size			
	Female					Male					Female					Male					STAA vs NSAC					LTAA vs NSAC					STAA vs LTAA		Women vs Men	
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	Partial ²												
Demographics																																		
Age(y)	40	46.0	6.2	61	45.9	7.2	52	48.6	6.6	58	48.8	6.9	42	49.7	7.8	40	47.5	6.8	3.3*			0.0	3.8**		0.3									
Years of education	40	13.3	2.2	61	13.4	2.1	52	13.5	2.2	58	13.6	2.4		16.3	2.8	40	15.5	3.9	16.9***			14.6***	0.2		0.3									
Ethnicity																																		
Caucasian	12			34			19						15			27			N/A			N/A	N/A		N/A									
African American	1			2			1						4						N/A			N/A	N/A		N/A									
Asian				6			7						11			6			N/A			N/A	N/A		N/A									
Latino/Hispanic	1						1												N/A			N/A	N/A		N/A									
American Indian	2			1									1						N/A			N/A	N/A		N/A									
Pacific Islander	6			6			7						2			2			N/A			N/A	N/A		N/A									
Other																			N/A			N/A	N/A		N/A									
Bi/Multi-Racial	18			12			17						11			5			N/A			N/A	N/A		N/A									
Prop of 1 st degree relative drinkers ^a	40	0.4	0.3	61	0.3	0.3	52	0.4	0.3	58	0.3	0.3	42	0.2	0.2	40	0.1	0.2	7.7***			10.2***	0.0		4.4***									
Prop of 1 st degree relative problem drug users ^d	40	0.3	0.4	61	0.2	0.2	52	0.3	0.3	58	0.2	0.3	42	0.1	0.2	40	0.0	0.1	13.8***			13***	0.0		2.4**									
Alcohol use variables																						Partial ²												
Duration of alcohol use (mo)	40	313.8	96.2	61	340.6	102.7	52	286.8	110.7	58	298.4	107.7	42	233.0	159.7	40	231.8	152.6	11.9 ^b			5.0 ^b	2.6*		0.6									
Average alcohol dose (drinks/mo)	40	154.2	108.7	61	216.5	194.7	52	184.7	150.4	58	212.1	160.2	42	7.7	7.5	40	9.3	9.2	33.6 ^b			39.2 ^b	0.2		1.8*									
Duration of peak use (mo)	40	79.8	67.3	61	108.5	101.2	52	99.6	81.0	58	110.7	97.6	42	72.3	73.3	40	84.8	67.1	0.9 ^b			2.5 ^b	0.4		1.1									
Peak dose (drinks/mo)	40	334.4	225.3	61	430.8	381.7	52	334.1	290.8	58	369.1	273.7	42	16.4	15.3	40	16.4	15.2	35.6 ^b			38.0 ^b	0.3		1.3									
Abstinence duration (wks)	40	10.2	2.9	61	10.2	2.7	52	446.7	353.1	58	346.3	344.0	42	N/A	N/A	40	N/A	N/A	N/A ^b			N/A ^b	36.9 ^b		1.7									
SUD Dx varieties																						Partial ²												
Alcohol dependence Dx Age	40	24.7	9.6	61	23.9	8.0	52	22.0	8.8	58	21.0	6.2	42	N/A	N/A	40	N/A	N/A	N/A			N/A	2.9*		0.1									
Cocaine dependence Dx Age	40	24.5	7.5	61	25.2	8.4	52	27.0	9.2	58	23.5	6.1	42	N/A	N/A	40	N/A	N/A	N/A			N/A	0.1		1.3									

											Effect Size			
	STAA										NSAC			
	Female					Male					Female		Male	
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	N	Mean	SD	Partial ²
<i>Demographics</i>														
Meth dependence Dx Age	40	28.7	6.2	61	26.6	7.3	58	25.9	6.7	42	42	N/A	N/A	1.0
THC dependence Dx Age	40	28.6	16.1	61	16.3	5.4	52	15.1	2.7	42	40	N/A	N/A	9.3
<i>Smoking Variables</i>														
Lifetime Nicotine Dependence	13	32.5		17	27.9		19	36.5		3	2	7.1		6.5**
Current Nicotine Dependence	10	25		14	23%		12	23.1		1	0	2.4		25.3***

Effect is significant:

p .05*,

p .01**,

p .001***

^aNumbers in the table are proportions, effect size measures are performed on archsine transformed proportions

^bStatistical comparisons are invalid since this variable is related to the inclusion criteria

Table 2

Internalizing Disorder Diagnoses

	STAA						LTAA						NSAC						Odds Ratios					
	Female			Male			Female			Male			Female			Male			STAA vs. NSAC	LTAA vs. NSAC	STAA vs. LTAA	Women vs. Men		
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%				
Lifetime Disorder Dx	24	60.0	28	45.9	33	63.5	24	41.4	11	26.2	7	17.5	3.77***	3.82***	0.99	1.75*								
	19	47.5	22	36.1	22	42.3	19	32.8	7	16.7	7	17.5	3.32***	2.89**	1.15	1.29								
Mood	2	5.0	4	6.6	7	13.5	4	6.9	2	4.8	0	0.0	2.53	4.44*	0.57	1.69								
MDD	4	10.0	6	9.8	9	17.3	5	8.6	4	9.5	0	0.0	2.14	2.84	0.75	1.95								
Manic	15	37.5	11	18.0	26	50.0	11	19.0	5	11.9	2	5.0	3.71**	5.43***	0.68	2.94***								
Bipolar	13	32.5	9	14.8	23	44.2	7	12.1	4	9.5	2	5.0	3.53**	4.75***	0.74	3.33***								
Anxiety	4	10.0	3	4.9	6	11.5	5	8.6	2	4.8	0	0.0	2.98	4.44*	0.67	1.86								
PTSD	1	2.5	1	1.6	3	5.8	2	3.4	1	2.4	0	0.0	1.64	3.86	0.42	2.02								
Agoraphobia																								
Panic																								
Current Disorder Dx	STAA						LTAA						NSAC						Odds Ratio					
	Female			Male			Female			Male			Female			Male			STAA vs. NSAC	LTAA vs. NSAC	STAA vs. LTAA	Women vs. Men		
N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%					
Mood	19	47.5	17	27.9	16	30.8	12	20.7	3	7.1	1	2.5	10.80***	6.66***	1.62	1.70								
MDD	14	35.0	13	21.3	7	13.5	9	15.5	1	2.4	1	2.5	14.59***	6.81**	2.14*	1.16								
Manic	2	5.0	3	4.9	5	9.6	2	3.4	1	2.4	0	0.0	4.22	5.50	0.77	1.96								
Bipolar	4	10.0	4	6.6	8	15.4	3	5.2	2	4.8	0	0.0	3.44	4.44*	0.77	2.53*								
Anxiety	8	20.0	6	9.8	10	19.2	4	6.9	2	4.8	0	0.0	6.44**	5.83*	1.10	2.61*								
PTSD	8	20.0	6	9.8	9	17.3	4	6.9	2	4.8	0	0.0	6.44**	5.36*	1.20	2.46*								

Effect is significant:

p .05*,

p .01**,

p .001***

Note. MDD = major depressive disorder; PTSD = post-traumatic stress disorder

Table 3

Internalizing Symptom Counts

	STAA			LTAA			NSAC		Effect Size (Partial ²)			
	ALC	ALC+DRG		ALC	ALC+DRG				(STAA & LTAA) vs.NSAC	STAA vs. LTAA	ALC vs. ALC+DRG	Women vs. Men
	N=24	N=28		N=25	N=32		N=18					
	Mean	SD	Mean	SD	Mean	SD	Mean	SD				
Lifetime Mood Diagnosis												
Lifetime Symptom Count	26.38	8.70	28.79	13.12	27.68	14.42	24.84	11.05	23.17	11.02	0.0	0.5
Current Symptom Count	4.53	2.65	4.89	3.90	5.92	4.42	3.75	1.88	5.00	2.16	1.2	0.1
	STAA			LTAA			NSAC		Effect Size (Partial ²)			
	ALC	ALC+DRG		ALC	ALC+DRG				(STAA & LTAA) vs.NSAC	STAA vs. LTAA	ALC vs. ALC+DRG	Women vs. Men
	N=10	N=16		N=15	N=22		N=7					
	Mean	SD	Mean	SD	Mean	SD	Mean	SD				
Lifetime Anxiety Diagnosis												
Lifetime Symptom Count	24.10	9.13	30.75	13.62	27.60	13.51	25.91	14.08	24.71	17.91	0.4	0.0
Current Symptom Count	11.83	8.40	17.63	13.53	16.67	11.93	19.63	11.10	5.00	5.66	3.8	0.5
	STAA			LTAA			NSAC		Effect Size (Partial ²)			
	ALC	ALC+DRG		ALC	ALC+DRG				(STAA & LTAA) vs.NSAC	STAA vs. LTAA	ALC vs. ALC+DRG	Women vs. Men
	N=15	N=34		N=23	N=30		N=64					
	Mean	SD	Mean	SD	Mean	SD	Mean	SD				
Sub Diagnostic Mood Disorder												
Lifetime Symptom Count	3.27	3.60	2.65	4.25	6.83	12.41	4.13	6.00	1.34	2.90	1.9	0.3
Current Symptom Count	1.95	2.70	1.16	2.42	1.33	2.75	0.78	1.25	0.13	0.42	1.7	0.0
	STAA			LTAA			NSAC		Effect Size (Partial ²)			
	ALC	ALC+DRG		ALC	ALC+DRG				(STAA & LTAA) vs.NSAC	STAA vs. LTAA	ALC vs. ALC+DRG	Women vs. Men
	N=29	N=46		N=33	N=40		N=75					
	Mean	SD	Mean	SD	Mean	SD	Mean	SD				
Sub Diagnostic Anxiety Disorder												

	STAA			LTAA			NSAC		Effect Size (Partial ²)			
	ALC		ALC+DRG	ALC	Mean	SD	Mean	SD	STAA vs. LTAA	ALC vs. ALC+DRG	Women vs. Men	
	N=24		N=28	N=25	N=32		N=18		(STAA & LTAA) vs. NSAC			
	Mean	SD	Mean	Mean	Mean	SD	Mean	SD	LTAA) vs. NSAC			
Lifetime Mood Diagnosis												
Lifetime Symptom Count	9.90	10.14	8.74	7.82	8.03	6.84	3.60	5.87	8.1***	0.5	0.0	1.4
Current Symptom Count	6.67	7.97	6.61	5.33	3.17	5.02	1.41	3.81	5.1***	2.7*	0.4	0.5

Effect is significant:

p .05*,

p .01**,

p .001***