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CHARACTERIZING GENDER DIFFERENCES IN TREATMENT SEEKERS

Ben Lewis, Ph.D. and **Sara Jo Nixon, Ph.D.**
University of Florida, Department of Psychiatry, Gainesville, FL, 32610, USA

Abstract

Background—Available evidence suggests women may be more vulnerable to the effects of chronic alcohol consumption than men. The few investigations of gender differences in treatment-seeking populations have often involved study samples restricted by selection criteria (e.g., age, education). The current study examined gender differences in a heterogeneous sample of individuals seeking treatment for a substance use disorder. We examined alcohol drinking levels, age at drinking milestones (e.g., first drink, first intoxication), and progression from milestones to alcohol problems or treatment. Additionally, family history, spousal alcoholism, and nicotine use were analyzed.

Methods—Participants included men (*n*=274) and women (*n*=257) in substance abuse treatment facilities. Participants completed inventories quantifying affect, intellectual ability, and drinking consequences. A family tree for substance use and personal histories for alcohol and nicotine use, including chronicity, frequency, and regularity, were collected.

Results—Telescoping was not observed when progression from drinking milestones to alcoholism or alcohol problems was compared between men and women. In contrast, when considered as progression to treatment, marked telescoping effects were detected, with women entering treatment more rapidly by approximately four years. Familial differences included a greater proportion of women reporting alcoholic parents (73% women; 61% men) and alcoholic spouses (58% women; 38% men). Smoking behaviors were similar between genders, however men reporting higher levels of alcohol consumption reported greater intensity of chronic smoking. Smoking and drinking behaviors were correlated among men, but not women. Rates of pre-treatment drug problems were equivalent between genders.

Conclusions—When contrasted with the available literature, our data were only partially supportive of gender-contingent telescoping. While women did not experience alcohol problems or alcoholism earlier than men, they progressed to treatment more quickly. These results highlight the importance of carefully considering the sample and specific outcome variables when interpreting gender differences.

Keywords

Gender Differences; Alcohol; Telescoping; Psychosocial Correlates

Introduction

Gender differences in the etiology, progression, and consequences of substance use remain an important area of study. Epidemiological studies reveal that historical differences (e.g.,

Address for Correspondence: PO Box 100256, Gainesville, FL 32610, Fax: 352-294-0197, Telephone: 352-294-4920, benlewis@ufl.edu.

lifetime dependence rates, quantities of alcohol consumed) have narrowed between men and women in recent decades. For example, in a study by Keyes and colleagues (2010), among the oldest cohort examined (born 1934–1943), the age at alcohol use onset was 19.1 for men, and 22.1 for women. In contrast, for cohorts born over the next four decades (1944–1983) this gap narrowed, with the youngest cohort (born 1974–1983) initiating use at 17.1 and 17.5, for men and women, respectively. Although this pattern is consistent with other population data (Grucza et al., 2008; Keyes et al., 2008), current evidence suggests that at equivalent levels of consumption women may be at greater risk of alcohol-related disorders, relative to men (Brady and Randall, 1999; Nolen-Hoeksema and Hilt, 2006). These findings reinforce the need for further research examining gender-contingent effects on drinking behavior.

Previous work suggests men experience drinking milestones (e.g., first drink, first intoxication) at earlier ages (Greenfield et al., 2010; Randall et al., 1999), despite progressing more slowly from early milestones to a variety of adverse events. However, recent investigation of gender differences in drinking patterns and rapidity of disease progression (i.e., 'telescoping') among treatment-seekers is largely lacking. Although several recent examinations have pointedly addressed this issue, ambiguity regarding differential rates of progression, milestone ages, and overall drinking patterns in this population persist (e.g., see Diehl et al., 2007 vs. Randall et al., 1999). Furthermore, these examinations utilize subsamples that restrict intra-group variability. While necessary for empirical study, these exclusions somewhat limit extrapolation to the broader population of treatment seekers. Thus, while sex differences among some clinical sub-populations have received attention, examinations in more generalized treatment-seeking populations are rare.

The current study was conducted to examine issues surrounding telescoping, drinking behavior and drinking-related variables among a broad, heterogenous group of inpatient treatment-seeking individuals, with specific attention to differences between men and women. To investigate disease progression, we questioned whether women and men differed in the time intervals between drinking milestones (i.e., ages at first drink, first intoxication, initiation of regular consumption, development of alcoholism or problem drinking, and initial treatment entry). Additionally, we investigated drinking levels, milestone ages, and variables presumably related to dependence onset, severity, and/or relapse risk, including nicotine dependence, substance use problems, family history of alcoholism, and spousal alcohol use.

Materials and Methods

All procedures were approved by the Medical Institutional Review Board at the University of Florida. Participants (N=650) provided written informed consent prior to study involvement, and were compensated for their time. Data presented here were gathered from group surveys, administered in the context of a screening session to determine eligibility for future experimental participation. Information was collected by trained research assistants from inpatients in treatment programs at two publicly funded substance abuse treatment facilities. Coverage areas for these facilities included counties throughout North Florida. All data were collected within a 27-month period from 2006 to 2009. No diagnostic information was obtained at this level of recruitment. All participants were adults (aged 18 or older). For the current analysis, which focuses on alcohol use, persons reporting no alcohol use in the six months prior to treatment were excluded (n=119), leaving a sample of 531 persons. Thus, inclusionary criteria for the current study were limited to being an adult who consumed alcohol prior to treatment and provided consent to participate.

Participants completed a questionnaire packet including inventories for depressive symptoms (BDI-II; Beck, 1996) and state anxiety (AI; Spielberger, 1983) and assessments for general intellectual abilities, including verbal and abstracting skills (Shipley Institute of Living Vocabulary and Abstracting Tests; SILS-V and SILS-A [Zachary, 1986]). Participants also provided a detailed four-generation family tree (adapted from Mann et al., 1985) for substance use (including nicotine), as well as personal histories of alcohol and nicotine use which included chronicity, frequency, and regularity of use. The Drinker Inventory of Consequences (DrInC-2R; Forcehimes et al., 2007; Miller et al., 1995) was used to assess negative consequences of drinking in the three months prior to treatment initiation. Consequences were measured across five dimensions, including physical (e.g., hangovers, sleeping disruption; 8 items), interpersonal (e.g., relationship/family issues; 10 items), intrapersonal (e.g., guilt, shame; 8 items), impulse (e.g., drinking and driving; 12 items), and social consequences (e.g., work/financial issues; 7 items).

Drinking behaviors were indexed using the Quantity-Frequency Index (QFI; Cahalan et al., 1969), which quantifies average consumption in ounces per day of absolute alcohol over the preceding six months. Maximum QFI (MaxQFI) was also obtained, indexing the greatest volume (oz.) of single-day alcohol consumption achieved, again over the preceding six months. In addition to collecting similar quantity/frequency information for nicotine use, a derived measure of lifetime nicotine consumption, ‘pack years’, commonly used in smoking literature (e.g., Poullis et al., 2012) was computed. Pack years was derived by multiplying daily nicotine consumption (packs/day, weighted for cigar smoking) by years since smoking initiation (Prignot, 1987). Participants also completed a substance use questionnaire. Although regular drug use was commonly reported by this population (*n*=488), in-depth analysis examining the relationships between drinking variables and drug use histories was beyond the scope of the current study, which focuses on gender differences. Analysis was thusly conducted to characterize usage, and was limited to participants’ response to current or past ‘problem’ drug use.

Preliminary Analyses and Research Strategy

In order to characterize drinking levels participants were divided into high and low-alcohol consuming groups based on their QFI scores (*M*=7.62, *SD*=8.81, *Range*=0.01–50.70), using a median split of 4.56 oz. alcohol per day. As expected, the QFI of Low QFI individuals (M=1.47, SD=1.41, Range=0.01–4.52) differed from High QFI individuals (M=13.92, SD=8.76, Range =4.61–50.70), $F(1,522)=511.98$, $p<.001$. No effect of or interaction with Sex was detected following ANOVA analysis.

Sex and QFI Group constituted the major variables of interest in this investigation. ANOVA (2 [men vs. women] × 2 [Low QFI vs. High QFI]) were performed across seven domains, including demographic/affective measures, maximum QFI, telescoping to alcoholism/problems, telescoping to treatment, family history, DrInC measures and nicotine use. Bonferroni corrections were applied within each domain. Where appropriate, chi-square and correlational analyses were also utilized. Examination of problem drug use was limited to chi-square analysis, designed to describe potential differences between men/women and High/Low QFI groups.

Results

Demographics

Participants (*N*=531) were aged 18–70 and included male (51.6%, *n*=274) and female (48.4%, *n*=257) drinkers (any QFI > 0 reported in the 6 months prior to treatment). Participants were primarily Caucasians (62.1%, *n*=330, 175 women) and African Americans

(31.3%, *n*=166, 69 women). American Indians (1.5%, *n*=8, 2 women) and Hispanics (3.0%, *n*=16, 6 women) were also represented, as were individuals endorsing 'other' group identification (1.7%, *n*=9, 4 women); 2 participants failed to provide racial/ethnic information.

ANOVA using demographic and affective variables revealed age differences, with men (*M*=38.50) older than women (*M*=33.08), $F(1,527)=32.74$, $p<.001$. No effect or interaction of QFI group was noted for age. Neither education, BDI, AI, SILS-V nor SILS-A yielded any significant result (all Fs < 4.77, all ps > .03, $\alpha = .008$). Descriptive data for these variables are presented in Table 1, below.

ANOVA revealed a main effect of Sex on MaxQFI, with men reporting greater maximal drinking volumes, $F(1,455)=10.46$, $p=.001$. Additionally, a main effect of QFI Group was detected, with High QFI drinkers reporting greater maximal drinking volumes, $F(1,455)=121.04$, $p<.001$. No Sex by QFI Group interaction was noted. Maximum QFI is presented in Table 1, below.

Drinking Milestones

Drinking milestones included ages at first drink, first intoxication, initiation of regular consumption, initial alcoholism/alcohol problems, and initial treatment entry. Due to limits of the questionnaires used, age at treatment entry was only calculable for those individuals in treatment for the first time. ANOVA performed on drinking milestones revealed no main or interaction effects of QFI Group. Sex effects were noted for the age at first drink, first intoxication, and age at treatment entry, $F(1,503)=7.34$, $p=.007$; $F(1,485)=8.36$, $p=.004$; and $F(1,243)=7.33$, $p=.007$, respectively. In the cases of the first drinking and intoxication experiences, this effect was driven by older ages among women (i.e., men experienced first drink and initial intoxication at earlier ages). The opposite pattern was noted for age at initial treatment entry, with women entering first treatment at a younger age. Descriptive data for these ages are depicted in Table 2.

To aid interpretation of treatment entry analyses, and to describe potential differences between High and Low QFI drinkers in this population, a chi-square analysis was performed, examining the sex distribution by treatment episode. Treatment was used as a binary variable (first treatment episode vs. previous treatment). This analysis ($\chi^2=7.93$, $p=.005$) suggested that the group who had received treatment previously was composed of a greater proportion of men (*n*=151; 57.6% of men were returning to treatment; 57.4% of those returning to treatment were men). Conversely, among individuals in treatment for the first time, women were overrepresented (*n*=136; 54.85% of women were receiving their first treatment; 55.1% of first time treatment seekers were women). These frequencies are presented in Table 3, below.

Telescoping

Telescoping to Alcoholism or Alcohol Problems—Two sets of telescoping variables were considered. The first set was computed by subtracting the ages at initial drinking experience, initial intoxication, and initiation of regular drinking from the age at which participants reported initial alcoholism or problems with alcohol (alcoholism/problems). In this manner, three telescoping variables were produced (see Table 4 for descriptive data). Derived telescoping variables included '1st Drink to Alc/Probs' ($M_{[M]}=9.74$; $M_{[W]}=8.94$), '1st Intox to Alc/Probs' ($M_{[M]}=7.40$; $M_{[W]}=6.31$), and 'Regular Use to Alc/Probs' ($M_{[M]}=4.46$; $M_{[W]}=3.15$). ANOVA revealed no effects of Sex or QFI Group on any of the three variables (all Fs < 4.99, all ps > .026, $\alpha = .017$).

Telescoping to Treatment—The second set of telescoping variables was computed among the subset of individuals in treatment for the first time, subtracting the ages at drinking milestones from their current age (see Table 4 for descriptive data). Thus, derived telescoping variables included '1st Drink to Treatment' ($M_{[M]}$=22.96; $M_{[W]}$=18.14), '1st Intox to Treatment' ($M_{[M]}$=20.68; $M_{[W]}$=15.52), 'Regular Use to Treatment' ($M_{[M]}$=18.15; $M_{[W]}$=13.04), and 'Alc/Probs to Treatment' ($M_{[M]}$=14.52; $M_{[W]}$=10.27). ANOVA revealed consistent effects for ages at initial drink, intoxication, regular drinking, and alcoholism/problems, $F(1,232)=12.35$, $p<.001$; $F(1,236)=13.89$, $p<.001$; $F(1,204)=13.31$, $p<.001$; and $F(1,167)=8.64$, $p<.001$, respectively. In all cases, the duration between drinking milestones and entry into treatment was significantly lower among women. No effects of or interactions with QFI were noted (all Fs < 2.22, all ps > .137, $\alpha = .012$).

Since the 'telescoping to treatment' analyses were restricted to individuals in treatment for the first time, 'telescoping to alcoholism/alcohol problems' were re-analyzed using only this subsample. No significant effects were noted.

Drinker Inventory of Consequences

Analyses of DrInC measures revealed no Sex effects (all Fs < .59) in severity of drinking consequences. High QFI individuals tended to indicate more severe drinking consequences, as reflected by DrInC total score $F(1,393)=138.72$, $p<.001$. Findings across DrInC subscales were consistent with these results, including physical, $F(1,393)=143.72$, $p<.001$; interpersonal, $F(1,393)=115.39$, $p<.001$; intrapersonal, $F(1,393)=138.08$, $p<.001$; impulse, $F(1,393)=89.44$, $p<.001$; and social consequences, $F(1,393)=127.75$, $p<.001$. Interactions between Sex and QFI Group failed to meet adjusted alpha levels ($\alpha = .01$), however their pattern appeared notable. Relative to Low QFI men, Low QFI women reported fewer negative consequences. In contrast, relative to High QFI men, High QFI women reported greater consequences. This interaction was consistent across total DrInC score, $F(1,393)=3.02$, $p=.083$, and physical, $F(1,393)=4.09$, $p=.044$, interpersonal, $F(1,393)=4.60$, $p=.032$, impulse, $F(1,393)=2.96$, $p=.086$, and social subscales $F(1,393)=3.37$, $p=.067$, but not the intrapersonal subscale. Descriptive statistics for these measures are displayed in Table 5.

In a follow-up investigation, DrInC analyses were repeated among the subset of individuals in treatment for the first time. Again, no effect of Sex, nor interaction between Sex and QFI Group, was noted. Consistent with the overall population, individuals in the High QFI group reported more negative consequences across all subscales (all p's < .001), and displayed a similar pattern of interactions on the physical, $F(1,184)=3.80$, $p=.053$, impulse, $F(1,184)=5.03$, $p=.026$, and social subscales, $F(1,184)=3.49$, $p=.063$.

Nicotine Use

Approximately 89.3% (n=474) of the sample endorsed 'regular smoking' status. Chi-square analyses revealed no sex differences in smoking status; approximately 88.0% of men (n=241) and 90.7% of women (n=233) were regular smokers. Similarly, no difference in smoking status by QFI Group was noted; approximately 89.1% of Low QFI Group (n=237) and 89.4% of High QFI Group (n=237) were regular smokers. Descriptive data for nicotine use variables are presented Table 6, below.

Among smokers, no differences in daily cigarette consumption or age at smoking initiation were detected as a function of Sex or QFI Group. Years since smoking initiation was greater among men, $F(1,462)=17.45$, $p<.001$. No effect of or interaction with QFI Group was noted. The ANOVA examining 'pack years', a computed variable based on daily nicotine consumption and smoking chronicity, noted an interaction between Sex and QFI Group,

$F(1,449)=10.90$, $p=.001$. Post hoc comparisons suggested the interaction was driven by increased pack years among High QFI men, who reported approximately 10 greater pack years than all other groups (all ps < .001). There were no differences among these three groups (all ts < .43, all ps > .669, $\alpha = .012$).

The extent to which relationships between drinking behaviors and nicotine use variables may have differed as a function of sex was of particular interest. To explore these issues 'daily cigarettes' and 'pack years' were correlated with QFI for men and women. For men, both pack years and daily cigarette consumption were significantly correlated with QFI (r=.24, p<.001 and r=.31, p<.001, respectively). No such relationship was detected among women (rs < .11, ps > .100).

Problem Use of Additional Substances

Approximately 83.1% (n=441) of the participant population (N=531) endorsed past problem substance use (Men = 81.02%; Women = 85.21%). Chi square analyses by sex revealed no difference in the reporting of a past substance use problem. All drugs or drug classes for which problem use was reported by at least 5% of the population were further analyzed. This included marijuana, stimulants, narcotics/pain medications, and benzodiazepines/ muscle relaxants, and excluded hallucinogens and barbiturates. Sex-contingent differences emerged for 'Narcotics/Pain Medications', $\chi^2=7.11$, $p=.008$ and 'Benzodiazepines/ Muscle Relaxants', $\chi^2=20.00$, $p<.001$. These differences reflected the higher percentages of women reporting problem use. When problem use was further examined between high and low QFI groups, only a difference in benzodiazepine/muscle relaxant use among women was noted, $\chi^2=7.17$, $p=.007$, wherein more High QFI women (36.84%) appeared to report problem use, relative to Low QFI women(21.68%). Participant problem use is reported in Table 7 as percentage endorsement, separated by Sex and QFI Groups.

Familial Influence

Participants were designated as either family history negative (FH-) or family history positive (FH+), based on self-reported parental alcoholism (with FH+ indicating at least one alcoholic parent). Chi-square analyses revealed differences in family history as a function of participant sex, $\chi^2=9.42$, $p=.002$. Women appeared over-represented among FH+ individuals; 73.1% women (n=188) were FH+, relative to 60.6% (n=166) of men. In order to further describe these distributions chi-square analyses were repeated individually for the High and Low QFI groups. Among Low QFI individuals, no differences in sex distribution relative to family history were noted. Among High QFI individuals (n=265), the disproportionate distribution of women in the family history positive group persisted (78.9% women [n=90] vs. 60.3% of men [n=91]), $\chi^2=10.47$, $p=.001$. Frequencies for these analyses are presented in Tables 8a–8c.

To further investigate familial influence, family history of alcoholism was described by dividing the number of alcoholic family members by total family members (weighted for immediate family), to provide a density ratio (M=.26, SD=.21, n=531). The ANOVA failed to detect significant differences in family history as a function of Sex, QFI group, or their interaction (all Fs < 1.82, all ps > .178, $\alpha = .05$).

Marital status and spousal alcohol consumption were also considered. At time of screening, approximately 59.5% (n=304; 162 men) of participants had never been married, 10.4% (n=53; 23 men) were currently married, and 30.1% (n=154; 76 men) were separated, divorced, or widowed. Chi-square analyses using these three marital categories detected no differences as a function of sex ($\chi^2=2.03$, $p=.036$). Spousal drinking status was determined by participant report, and designated as either alcoholic or non-alcoholic (including social

drinkers and abstainers). 105 (45 men) participants provided information regarding their current or previous spouses' drinking habits. Chi-square analyses indicated differences in spousal drinking by participant sex, χ^2=4.35, p=.037. In order to clarify potential relationships between spousal drinking status and Sex, another analysis was repeated for separated or previously married (i.e., divorced, widowed) individuals (n=70; 33 men); no differences were detected (χ^2=0.94, p=.331). Finally, chi-square analysis of married participants (n=35; 12 men), adjusted with Fisher's Exact Test, revealed disproportionate distribution, χ^2=5.11, p=.035. The group of married individuals reporting spousal alcoholism contained a greater proportion of women (83.3% of married individuals reporting spousal alcoholism were female; 65.2% of married women reported spousal alcoholism). In contrast, among married men, only 25% reported spousal alcoholism (see Table 9 for analysis).

Discussion

The current study examined a population of treatment-seeking drinkers, grouped by sex and daily drinking patterns prior to treatment. Sex appeared to have only weak, if any, relationships with pre-treatment drinking levels or progression to initial drinking problems. In contrast, women appeared to progress more quickly to treatment and reported greater degrees of parental and spousal alcohol abuse. Men appeared to reach early drinking milestones at younger ages and High QFI men had more extensive nicotine use histories.

Consistent with other studies, men were approximately five years older than women. Among individuals entering treatment for the first time, men were older ($M_{[M]}$=35.1; $M_{[W]}$=31.6). Additionally, a greater proportion of men were returning to treatment, relative to the greater proportion of women entering treatment for the first time. No differences were noted for other basic demographic characteristics or affective measures.

Daily Drinking

No sex difference in daily alcohol consumption prior to treatment was detected. This conclusion contrasts with recent studies of treatment-seeking populations. Greenfield and colleagues (2010) report significant gender divergence in daily drinking (1.62 oz/day higher consumption in men), as do Diehl and colleagues (2007; 1.05 oz/day). The magnitude of difference in the current study was greater (1.78 oz/day), despite failing to reject the null hypothesis. Importantly, intra-group variance in both Greenfield and Diehl's samples were relatively low, perhaps due to more stringent selection criteria (e.g., excluding for previous drug dependence; use of age/education matched men; minimum alcohol consumption requirements). Drinking patterns also appeared to differ between studies; Greenfield's and Diehl's groups reported alcohol consumption among women at 3.58 and 5.40 oz/day, respectively, relative to 6.71 oz/day in the current study. These contrasts highlight the importance of considering sample selection when evaluating gender differences, and suggest conclusions concerning daily drinking behavior may be particularly sensitive to such issues.

Telescoping

A primary focus of the current study was to examine the progression from early to late drinking milestones. Men reported earlier ages at first alcohol consumption and initial intoxication. No significant sex effect was noted for age at initiation of regular drinking. However, the magnitude of difference for this period (1.20 yrs) was greater than for either first consumption (1.07 yrs) or first intoxication (0.92 yrs), suggesting that despite failure to reach statistical significance, age differences at all three milestones remained consistent, with men reaching each approximately one year earlier than women. In contrast, alcoholism/problems appeared to occur shortly after age 21, regardless of sex (M=21.49 and M=21.10 for men and women, respectively).

Two groups of telescoping measures were considered, using age at alcoholism/problems and age at treatment entry as outcome variables. Regardless of the milestone used, when age at alcoholism/problems was the primary outcome, men and women failed to differ in rapidity of progression. This conclusion is supported by a recent population study (Keyes et al., 2010). Comparison to additional work is hindered by differing milestone selection. For instance, Diehl and colleagues (2007) assessed duration from 'continuous consumption' to 'dependence'. Randall and colleagues (1999) assessed 'drunk regularly' to 'first problems'. The current study used 'regular use' to 'alcoholism or alcohol problems'. Despite their variation,, regardless of the specific study, women progressed more rapidly through these milestones by approximately 1.5 years (1.6, 1.4 and 1.4 yrs, respectively). In contrast to this consistency, the statistical conclusions of these studies differed. Only the current work failed to detect significant telescoping differences, again highlighting interpretational issues with respect to sample variability (i.e., heterogeneous vs. homogenous samples).

Comparison with other large, heterogenous samples is limited by the paucity of current reports. In one exception, Johnson and colleagues (2005) investigated telescoping using a national sample of treatment-seeking individuals from a wide range of treatment modalities, including both in- and outpatient programs. This investigation failed to note differences in either 'age at first regular alcohol use' or 'age at first regular alcohol use to intoxication' as a function of gender. When the rate of progression between these time points was calculated, women demonstrated a significant telescoping effect. Women progressed from regular use to regular intoxication approximately 2.5 years more quickly than men. The current study did not collect 'regular intoxication' age, nor did the Johnson study report ages at initial consumption, intoxication, or onset of problems. A common milestone used in both studies, age at regular use, appeared to differ markedly. The current study reports ages of 17.6 and 18.8 yrs for men and women, respectively. In the Johnson investigation, these ages differed by approximately 10 years, with men and women reporting regular use at 27.2 and 28.3 years, respectively (despite comparable ages between study samples). Speculatively, this contrast may relate to the inclusion of outpatient individuals in less intensive treatment modalities (i.e., therapeutic communities), or the difference in data collection dates (1999–2000 *vs*. 2006–2009). Regardless, the difference suggests caution when considering the applicability of results from the current report to outpatient populations.

When age at initial treatment entry was considered as the primary outcome measure, we found marked sex differences. Relative to men, women exhibited shorter durations between milestones (i.e., ages at first drink, intoxication, regular drinking) and treatment entry, primarily due to differential progression from problem drinking to treatment entry. Following the development of alcoholism/problems, women entered treatment 4.25 years earlier than men. Differences in age at treatment entry are noted in the earlier literatures (e.g., Piazza et al., 1989; Schuckit et al., 1998), and current work (Diehl et al., 2007). In addition to updating previous observations, these data indicate that even among broad, heterogeneous samples, this disparity in progression to treatment is marked.

Drinker Inventory of Consequences

Perhaps not surprisingly, individuals reporting greater quantities of alcohol consumption indicated more alcohol-related negative consequences. There was no sex difference on total DrInC-2R score, or any subscale. However, the pattern of interaction effects suggested that at high levels of consumption, women may be at increased risk relative to men for alcohol-associated consequences. When the subset of individuals in treatment for the first time was analyzed separately, consequences remained equivalent for men and women. Gender equivalence, when considered with the younger age and earlier treatment entry noted for women in this sample, supports a telescoping effect. Further, these results argue against the

interpretation that earlier treatment entry among women is due to lowered treatment-seeking threshold (i.e., treatment-seeking following fewer negative consequences, relative to men).

Smoking

Tobacco smoking represents a significant risk factor to morbidity among alcohol-abusing populations (Littleton et al., 2007), and is considered a risk factor for the development of alcohol abuse/dependence. Women appear at risk for several smoking-related outcomes, including myocardial infarction (Prescott et al., 1998) and chronic obstructive pulmonary disease (Dransfield et al., 2006). Compounding this issue, women may have more difficulty maintaining smoking abstinence (Scharf and Shiffman, 2004). Thus, particular attention was paid to smoking behaviors among this sample.

Approximately 89% of the study sample reported regular smoking, within the upper range of estimation for alcohol dependent populations in earlier studies (e.g., Miller and Gold, 1998; Durazzo and Meyerhoff, 2007). Analysis of the combined measure of smoking quantity and frequency, labeled ‘pack years’, revealed a Sex by QFI group interaction: men in the High QFI group reported 26.1 pack years, in contrast to other groups who all reported approximately ~15±1 pack years. Higher pack years was expected among men, due to the relationship between chronicity and age (older individuals would be expected to have longer smoking histories), however the marked difference between High QFI men (26.1 pack years) and Low QFI men (15.7 pack years) is not well explained by their difference in age (39.6 and 37.2, respectively). Taken together with the correlation between QFI and pack years among men, but not women, these data highlight that men may be at greater risk for the combined complications of alcohol and smoking.

Familial Influence

Although proportions were high for both men and women, more women reported at least one alcoholic parent; when investigated further, this difference persisted only among high QFI women. Considering potential spousal influence, the proportion of women in the group of married individuals reporting spousal alcoholism was striking (83.3%; n=15). These results should be considered cautiously, as the group of married individuals providing spousal drinking information (n=35) was small. Both spousal and parental results are consistent with the early (e.g., McKenna and Pickens, 1981; Midanik, 1983) and recent (Morgan et al., 2010) literatures. Numerous factors may contribute to these differences (e.g., alcohol-abusing women may be less likely to separate from partners with alcohol problems, or may be more likely to engage in assortive mating), and should be examined in further study. However, these data provide continued evidence that within treatment-seeking populations familial/spousal relationships may be particularly important.

Interpretational Issues & Limitations

This study’s inclusionary criteria restricted the sample population to adult residents of substance abuse treatment facilities who were active drinkers prior to treatment entry. Thus the sample constituted a broad, heterogenous population of treatment-seeking drinkers. As such, our results should not be considered inconsistent with other work (e.g., Diehl et al., 2007), but rather provide complementary information. When compared with these other works, our data suggest some sex-contingent effects (i.e., telescoping to treatment entry) may be ubiquitous, whereas some (e.g., daily alcohol consumption, progression to alcohol problems) appear particularly sensitive to the population under study.

A major difference between this and other available gender/telescoping literature is the inclusion of individuals with comorbid substance abuse issues. Drug use in this sample was common, with greater than 80% of individuals reporting previous problem use. Comorbid

substance use is likely to affect telescoping trajectories of alcohol use. The inclusion of substance users constitutes a weakness when attempting to disentangle the specific involvement of gender in telescoping, but a strength when characterizing gender differences among a more general treatment-seeking sample. However, the potentially limited applicability of these data to some specific subpopulations (e.g., alcohol dependent individuals with no comorbid substance use) should be considered. Additional investigation in these specific subpopulations, as well as outpatient treatment-seekers and non-treatment-seeking problem drinkers may be required to elucidate other gender effects.

These data were gathered from group surveys, in the context of a screening session to determine eligibility for an experimental study. The nature of the data collection precluded measures that require one-on-one interviewing (e.g., Diagnostic Interview Schedule, Timeline Follow-back). While not detracting from the current findings, the inclusion of diagnostic data and more detailed alcohol use patterns in future examination of these gender-contingent effects may reveal further complexity. An additional limitation involves the analysis of initial entry into treatment. Survey materials did not collect age at initial treatment entry. Extrapolation of this measure was only possible for individuals in treatment for the first time (using their current age). Thus, it remains possible that individuals returning to treatment may have demonstrated a differential pattern of gender-contingent telescoping, however evidence from the current literature is inconsistent with this hypothesis.

Participants were drawn from two large providers serving varied urban and suburban counties. However, participants were drawn only from the state of Florida. Relative to national averages, Florida may be considered a representative state when considering incidence of substance use/abuse (SAMHSA, 2009), consistently appearing either at or somewhat below average national percentages. However, the possibility that sociocultural effects related to geographic location may have influenced the current conclusions remains; future work examining more geographically varied samples will aid in this determination.

Summary

The current study describes a heterogeneous treatment-seeking population of male and female drinkers. Taken together, our results suggest that although differences in drinking behaviors persist, observations of convergence between male and female drinking patterns are at least partially supported. Familial differences included a greater proportion of women reporting alcoholic parents and alcoholic spouses. Daily smoking behaviors and ages at initiation appeared similar between men and women, however men reporting high levels of alcohol consumption had markedly elevated smoking histories. Smoking and drinking behaviors were correlated among men, but not women, suggesting men may be particularly at risk for comorbid smoking/drinking issues. Finally, when telescoping was defined by rate of progression to alcoholism or alcohol problems, little evidence for telescoping was noted; in contrast, when the outcome was defined by treatment entry, a marked telescoping effect was detected, with women entering treatment earlier, despite reporting equivalent negative consequences of drinking. Although this updated description of an inpatient treatment-seeking population is important, more detailed measures (e.g., diagnostic interviewing etc.) might be utilized in future study to expand the depth and breadth of our observations, allowing for more nuanced interpretation of these complex issues.

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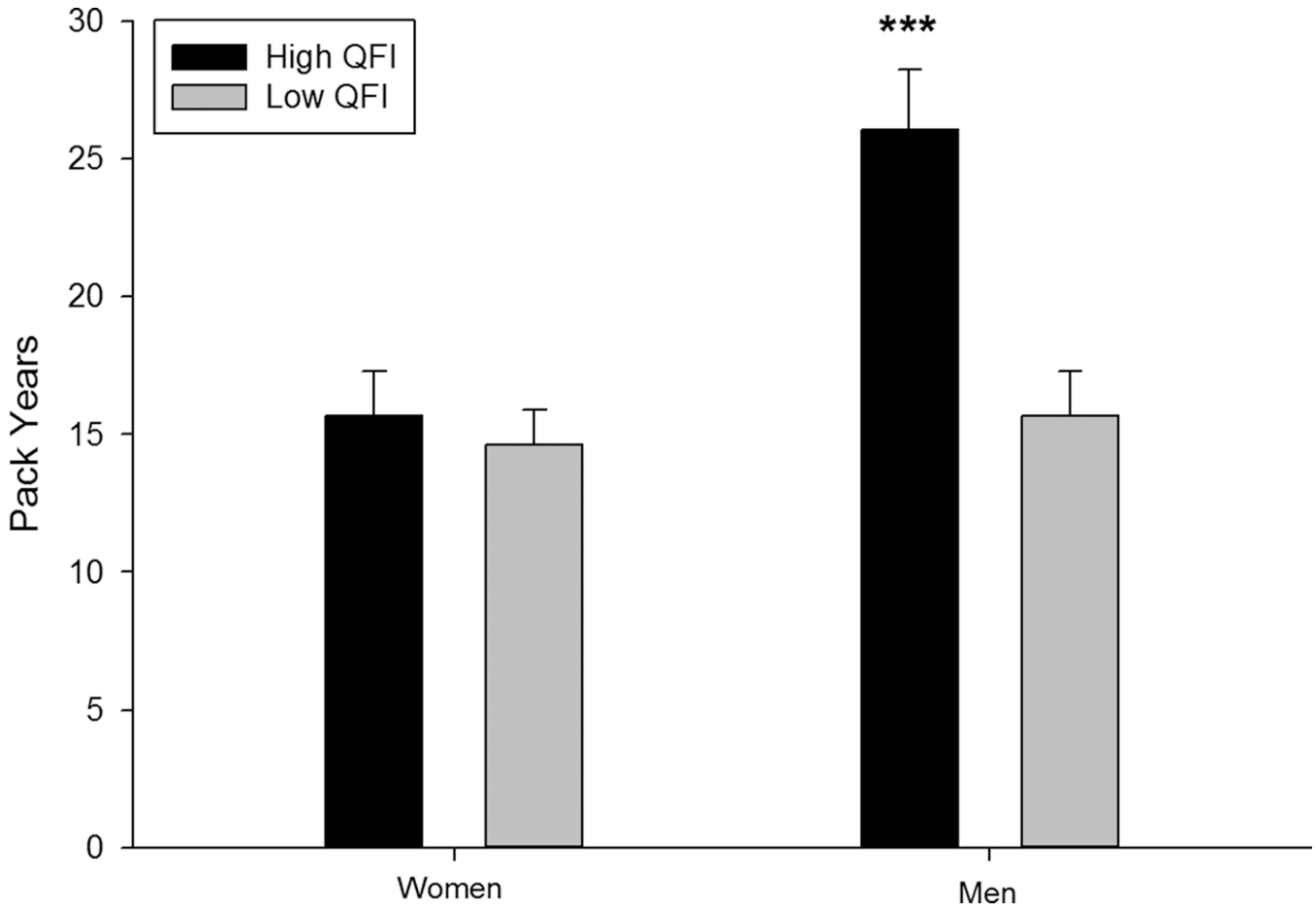

Figure 1. Pack Years by Sex and QFI Group

Mean (± SE) pack years, separated by Sex and QFI Group. ANOVA revealed an interaction between Sex and QFI Group, $F(1,449)=10.90$, $p=.001$. Post hoc comparisons indicated High QFI men differed from all other groups (all ps < .001).

Table 1

Demographic and Drinking Measures (by Sex and QFI Group)

	Men			Women		
Demographic Measures	**Total** M*(SD)(n)*	**Low QFI** M*(SD)(n)*	**High QFI** M*(SD)(n)*	**Total** M*(SD)(n)*	**Low QFI** M*(SD)(n)*	**High QFI** M*(SD)(n)*
Age (yrs) *(Range: 18–70)*	**38.50** *(11.12)* *(274)*	**37.18** *(11.36)* *(123)*	**39.57** *(10.84)* *(151)*	**33.08** *(9.86)* *(257)*	**32.78** *(9.46)* *(143)*	**33.46** *(10.38)* *(114)*
Education (yrs) *(Range: 5–20)*	**12.39** *(2.20)* *(265)*	**12.18** *(2.09)* *(119)*	**12.56** *(2.28)* *(146)*	**12.32** *(2.23)* *(252)*	**12.5** *(2.35)* *(142)*	**12.08** *(2.06)* *(110)*
BDI[a] *(Range: 0–68)*	**16.71** *(10.31)* *(274)*	**15.63** *(9.02)* *(123)*	**17.58** *(11.20)* *(151)*	**18.28** *(11.24)* *(256)*	**17.17** *(11.10)* *(143)*	**19.67** *(11.31)* *(113)*
AI[b] *(Range: 20–90)*	**53.79** *(12.08)* *(274)*	**53.23** *(11.15)* *(123)*	**54.24** *(12.82)* *(151)*	**56.19** *(12.24)* *(255)*	**55.23** *(11.21)* *(142)*	**57.41** *(13.38)* *(113)*
SILS-V[c] *(Range: 7.1–20.6)*	**15.60** *(2.54)* *(267)*	**15.39** *(2.51)* *(121)*	**15.77** *(2.56)* *(146)*	**15.33** *(2.16)* *(254)*	**15.56** *(2.14)* *(142)*	**15.03** *(2.17)* *(112)*
SILS-A[c] *(Range: 8.4–20.5)*	**13.59** *(3.14)* *(269)*	**13.66** *(3.16)* *(119)*	**13.54** *(3.14)* *(150)*	**13.85** *(2.56)* *(250)*	**14.00** *(2.54)* *(139)*	**13.65** *(2.59)* *(111)*
Drinking Measures						
QFI[d] *(Range: .01 – 50.7)*	**8.49** *(9.07)* *(270)*	**1.71** *(1.48)* *(123)*	**14.16** *(8.88)* *(147)*	**6.71** *(8.44)* *(256)*	**1.26** *(1.31)* *(143)*	**13.60** *(8.62)* *(113)*
MaxQFI[e] *(Range: .19 – 78.7)*	**17.64** *(13.69)* *(244)*	**11.43** *(9.62)* *(113)*	**23.01** *(14.42)* *(131)*	**13.21** *(11.46)* *(215)*	**7.89** *(6.48)* *(118)*	**19.67** *(12.84)* *(97)*

[a] Beck Depression Inventory, 2nd ed. (Beck et al., 1996)

[b] Anxiety Inventory (Spielberger, 1983); age corrected

[c] Shipley Institute of Living Scale (Zachary, 1986); mental age

[d] Quantity Frequency Index (Cahalan et al. 1969)

[e] Maximum Alcohol (oz) in a single 24 hr period

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Table 2

Drinking Milestone Ages Separated by Sex and QFI Group

	Men			Women		
Milestones	**Total** **M*(SD)(n)***	**Low QFI** **M*(SD)(n)***	**High QFI** **M*(SD)(n)***	**Total** **M*(SD)(n)***	**Low QFI** **M*(SD)(n)***	**High QFI** **M*(SD)(n)***
1st Drink *(Range: 1 – 27)*	**11.50** *(3.92)* *(260)*	**11.63** *(4.21)* *(115)*	**11.40** *(3.69)* *(145)*	**12.57** *(4.58)* *(247)*	**12.78** *(4.40)* *(139)*	**12.31** *(4.81)* *(108)*
1st Intoxication *(Range: 10 – 35)*	**14.71** *(2.86)* *(254)*	**15.10** *(3.32)* *(115)*	**14.38** *(2.39)* *(139)*	**15.63** *(3.71)* *(235)*	**15.79** *(3.79)* *(133)*	**15.43** *(3.61)* *(102)*
Regular Use *(Range: 10 – 52)*	**17.59** *(4.10)* *(242)*	**18.14** *(3.98)* *(100)*	**17.20** *(4.15)* *(142)*	**18.79** *(5.99)* *(208)*	**19.01** *(6.17)* *(107)*	**18.55** *(5.83)* *(101)*
Alcoholism/Probs *(Range: 6 – 54)*	**21.49** *(8.38)* *(211)*	**22.28** *(1.63)* *(72)*	**21.08** *(8.09)* *(139)*	**21.10** *(7.56)* *(186)*	**22.13** *(8.41)* *(83)*	**20.26** *(6.73)* *(103)*
Treatment Age[a] *(Range: 18 – 56)*	**35.13** *(10.08)* *(111)*	**34.07** *(10.08)* *(54)*	**36.14** *(10.07)* *(57)*	**31.65** *(9.22)* *(136)*	**31.42** *(8.56)* *(84)*	**32.04** *(10.28)* *(52)*

[a] Available only for individuals in their first treatment

Table 3

Treatment Frequency among Men and Women

		Treatment		
	Sex	**Initial**	**Returning**	**Total**
Frequency	Male	**111**	**151**	**262**
Total %		21.76%	29.61%	51.37%
Row %		42.37%	57.63%	
Column %		44.94%	57.41%	
	Female	**136**	**112**	**248**
		26.67%	21.96%	48.40%
		54.84%	45.16%	
		55.06%	42.59%	
	Total	**247**	**263**	**510**
		48.43%	51.57%	100.0%

χ^2=7.93, *p*=.005; treatment frequency information unavailable for 21 participants

Table 4

Telescoping Measures, Separated by Sex and QFI Group

Telescoping	**Men**			**Women**		
Alcoholism/Problems	**Total M(*SD*)(*n*)**	**Low QFI M(*SD*)(*n*)**	**High QFI M(*SD*)(*n*)**	**Total M(*SD*)(*n*)**	**Low QFI M(*SD*)(*n*)**	**High QFI M(*SD*)(*n*)**
1st Drink to Alc/Probs (yrs) *(Range: 0 – 51)*	**9.74** *(8.43)* *(207)*	**9.96** *(8.53)* *(70)*	**9.63** *(8.41)* *(137)*	**8.94** *(7.66)* *(179)*	**9.77** *(8.19)* *(82)*	**8.25** *(7.24)* *(97)*
1st Intox to Alc/Probs (yrs) *(Range: 0 – 38)*	**7.40** *(7.47)* *(210)*	**7.90** *(7.92)* *(70)*	**7.15** *(7.25)* *(140)*	**6.31** *(6.80)* *(176)*	**7.26** *(7.68)* *(80)*	**5.52** *(5.91)* *(96)*
Regular Use to Alc/Probs (yrs) *(Range: 0 – 36)*	**4.46** *(6.25)* *(186)*	**5.00** *(6.57)* *(59)*	**4.20** *(6.10)* *(127)*	**3.15** *(4.90)* *(151)*	**3.22** *(5.34)* *(68)*	**3.10** *(4.54)* *(83)*
Treatment						
1st Drink to Treatment (yrs) *(Range: 2 – 47)*	**22.96** *(10.38)* *(106)*	**22.31** *(10.09)* *(51)*	**23.56** *(10.70)* *(55)*	**18.14** *(9.94)* *(130)*	**17.97** *(9.41)* *(81)*	**18.41** *(10.84)* *(49)*
1st Intox to Treatment (yrs) *(Range: 1 – 46)*	**20.68** *(10.44)* *(109)*	**19.31** *(10.26)* *(52)*	**21.93** *(10.53)* *(57)*	**15.52** *(9.66)* *(131)*	**15.04** *(8.81)* *(83)*	**16.35** *(11.02)* *(48)*
Regular Use to Treatment (yrs) *(Range: 0 – 46)*	**18.15** *(10.01)* *(98)*	**17.78** *(9.91)* *(42)*	**18.43** *(10.16)* *(56)*	**13.04** *(9.56)* *(110)*	**12.79** *(8.04)* *(63)*	**13.36** *(11.38)* *(47)*
Alc/Probs to Treatment (yrs) *(Range: 0 – 38)*	**14.52** *(9.83)* *(79)*	**15.04** *(9.44)* *(28)*	**14.23** *(10.12)* *(51)*	**10.27** *(8.96)* *(92)*	**9.59** *(8.07)* *(47)*	**10.98** *(9.85)* *(45)*

Table 5

Drinker Inventory of Consequences (DrInC), by Sex and QFI Group

	Men			Women		
DrInC Scales	**Total** M*(SD)(n)*	**Low QFI** M*(SD)(n)*	**High QFI** M*(SD)(n)*	**Total** M*(SD)(n)*	**Low QFI** M*(SD)(n)*	**High QFI** M*(SD)(n)*
Total *(Range: 0 – 135)*	**60.38** *(36.76)* *(191)*	**42.47** *(34.78)* *(87)*	**75.36** *(31.40)* *(104)*	**57.60** *(38.66)* *(206)*	**38.46** *(32.34)* *(117)*	**82.75** *(31.24)* *(89)*
Physical *(Range: 0 – 24)*	**9.82** *(6.63)* *(191)*	**6.58** *(6.15)* *(87)*	**12.53** *(5.77)* *(104)*	**9.45** *(7.16)* *(206)*	**5.84** *(5.35)* *(117)*	**14.19** *(6.44)* *(89)*
Interpersonal *(Range: 0 – 30)*	**14.28** *(9.21)* *(191)*	**10.33** *(9.08)* *(87)*	**17.59** *(7.97)* *(104)*	**13.51** *(9.80)* *(206)*	**8.81** *(8.37)* *(117)*	**19.68** *(7.97)* *(89)*
Intrapersonal *(Range: 0 – 24)*	**12.76** *(8.22)* *(191)*	**8.44** *(7.67)* *(87)*	**16.37** *(6.83)* *(104)*	**12.11** *(8.39)* *(206)*	**8.30** *(7.38)* *(117)*	**17.11** *(6.91)* *(89)*
Impulse *(Range: 0 – 36)*	**14.42** *(8.85)* *(191)*	**11.04** *(7.97)* *(87)*	**17.24** *(8.58)* *(104)*	**14.14** *(8.73)* *(206)*	**10.27** *(7.80)* *(117)*	**19.22** *(7.17)* *(89)*
Social *(Range: 0 – 21)*	**9.43** *(6.64)* *(191)*	**6.44** *(6.31)* *(87)*	**11.92** *(5.85)* *(104)*	**8.40** *(6.56)* *(206)*	**5.12** *(5.40)* *(117)*	**12.72** *(5.34)* *(89)*

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Table 6

Nicotine-Related Measures (Self-Reported Regular Smokers Only)

	Men			Women		
Smoking Measures	**Total M(*SD*)(*n*)**	**Low QFI M(*SD*)(*n*)**	**High QFI M(*SD*)(*n*)**	**Total M(*SD*)(*n*)**	**Low QFI M(*SD*)(*n*)**	**High QFI M(*SD*)(*n*)**
Cigarettes (Daily)[a] *(Range: 1–60)*	**18.00** *(10.38)* *(228)*	**15.66** *(9.08)* *(100)*	**19.83** *(10.98)* *(128)*	**16.73** *(9.27)* *(223)*	**16.58** *(9.28)* *(126)*	**16.94** *(9.31)* *(97)*
Smoking Initiation (Age) *(Range: 7–55)*	**17.21** *(7.25)* *(234)*	**18.26** *(8.65)* *(101)*	**16.42** *(5.89)* *(133)*	**16.40** *(4.76)* *(233)*	**16.65** *(5.17)* *(132)*	**16.07** *(4.18)* *(101)*
Smoking Duration (yrs) *(Range 0–61)*	**21.14** *(12.15)* *(233)*	**18.95** *(12.46)* *(101)*	**22.82** *(11.69)* *(132)*	**16.48** *(10.12)* *(233)*	**16.12** *(9.71)* *(132)*	**16.96** *(10.67)* *(101)*
Pack Years *(Range 0–155)*	**21.54** *(21.79)* *(227)*	**15.68** *(15.83)* *(99)*	**26.08** *(24.57)* *(128)*	**15.10** *(14.73)* *(226)*	**14.64** *(13.67)* *(127)*	**15.69** *(16.05)* *(99)*

[a] Limited to participants who smoked cigarettes; cigar-only smokers (*n*=6) omitted.

Table 7

Endorsement of Problem Drug Use by Sex and QFI Group

Drug/Drug Class	Men			Women		
	Total *% (n)* [N= 274]	Low QFI *% (n)* [N=123]	High QFI *% (n)* [N=151]	Total *% (n)* [N=257]	Low QFI *% (n)* [N=114]	High QFI *% (n)* [N=143]
Any Problem Use	**81.02** *(222)*	**86.99** *(107)*	**76.16** *(115)*	**85.21** *(219)*	**84.21** *(96)*	**86.01** *(123)*
Stimulants	**71.17** *(195)*	**78.05** *(96)*	**65.56** *(99)*	**71.98** *(185)*	**68.42** *(78)*	**74.83** *(107)*
Marijuana	**40.88** *(112)*	**44.72** *(55)*	**37.75** *(57)*	**35.02** *(90)*	**32.17** *(46)*	**38.60** *(44)*
Narcotics and/or Pain Medications	**24.45** *(67)*	**24.39** *(30)*	**24.50** *(37)*	**35.02** *(90)*	**34.27** *(49)*	**35.98** *(41)*
Benzodiazepines and/or Muscle Relaxants	**12.77** *(35)*	**13.01** *(16)*	**12.58** *(19)*	**28.40** *(73)*	**21.68** *(31)*	**36.84** *(42)*

Drug Classes with < 5% problem usage omitted (i.e., hallucinogens, barbiturates)

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Table 8

a. Parental Alcoholism among Men and Women

		Parental Alcoholism		
	Sex	**FH−**	**FH+**	**Total**
Frequency	Male	**108**	**166**	**274**
Total %		20.34%	31.26%	51.60%
Row %		39.42%	60.58%	
Column %		61.02%	46.89%	
	Female	**69**	**188**	**257**
		12.99%	35.40%	48.40%
		26.85%	73.15%	
		38.98%	53.11%	
	Total	**177**	**354**	**531**
		33.33%	66.67%	100.0%

b. Parental Alcoholism among Low QFI Men and Women

		Parental Alcoholism		
	Sex	**FH−**	**FH+**	**Total**
Frequency	Male	**48**	**75**	**123**
Total %		18.05%	28.20%	46.24%
Row %		39.02%	60.98%	
Column %		51.61%	43.35%	
	Female	**45**	**98**	**143**
		16.92%	36.84%	53.76%
		31.47%	68.53%	
		48.39%	56.65%	
	Total	**93**	**173**	**266**
		34.96%	65.04%	100.0%

c. Parental Alcoholism among High QFI Men and Women

		Parental Alcoholism		
	Sex	**FH−**	**FH+**	**Total**
Frequency	Male	**60**	**91**	**151**
Total %		22.64%	34.34%	56.98%
Row %		39.74%	60.26%	
Column %		71.43%	50.28%	
	Female	**24**	**90**	**114**

c. Parental Alcoholism among High QFI Men and Women

		Parental Alcoholism		
	Sex	**FH−**	**FH+**	**Total**
		9.06%	33.96%	43.02%
		21.05%	78.95%	
		28.57%	49.72%	
	Total	**84**	**181**	**265**
		31.70%	68.30%	100.0%

χ^2=9.42, *p*=.002

χ^2=1.66, *p*=.198

χ^2=10.47, *p*=.001

Table 9

Spousal Alcoholism among Married Men and Women

		Spousal Alcoholism		
	Sex	**SA−**	**SA+**	**Total**
Frequency	Male	**9**	**3**	**12**
Total %		25.71%	8.57%	34.29%
Row %		75.00%	25.00%	
Column %		52.94%	16.67%	
	Female	**8**	**15**	**18**
		22.86%	42.86%	65.22%
		34.78%	65.71%	
		47.06%	83.33%	
	Total	**17**	**18**	**35**
		48.57%	51.43%	100.0%

χ^2=5.11, *p*=.035 (Fisher's Exact Test)