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Alcoholics Anonymous-Related Benefit for Urban Native Americans: Does Urban Native American Gender Moderate AA Engagement and Outcomes?

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Abstract

Alcoholics Anonymous (AA) is one of the most commonly accessed resources for individuals seeking to reduce their drinking. How urban Native Americans fare in AA is only beginning to be investigated in spite of circumstantial evidence suggesting that a majority of treatment-seeking urban Native Americans will receive 12-step treatment. Even less is known about Native American gender differences with regard to AA-related benefit. The current study addressed this gap by investigating urban Native American gender differences in AA attendance rates and outcomes. To this end, as part of two larger NIH-funded studies we recruited 63 Native American men and women and followed them for 9 months in this naturalistic study (n= 35 males, n = 28 females). Urban Native Americans significantly reduced their drinking over the study period, and AA attendance explained, in part, increased abstinence of study participants. No significant differences in AA attendance and drinking outcomes were observed between Native American men and women; however, descriptively men reported greater reductions in hazardous drinking relative to women. Clinical implications and future directions are discussed.

Keywords

addictions; Alcoholics Anonymous; Native Americans; moderation

Alcoholics Anonymous (AA) is one of the most popular resources sought by individuals trying to change their alcohol use in the United States, with an estimated 1.2 million members in the U.S. alone (AA, 2016). In part, this can be explained because AA is widely available, very accessible, and free. Ease of access also probably explains why AA is attended by individuals of diverse backgrounds, socioeconomic classes, and age groups (AA 2014 Membership Survey). Sufficient evidence has now accumulated to consider AA attendance alone and in combination with formal treatment as an “evidence-based” approach (Kaskutas, 2009). Important nuances continue to be identified, however, in how different populations engage in AA prescribed activities and in how such practices predict later

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changes in drinking. To illustrate, Tonigan and colleagues (2002) reported that Hispanics attended AA significantly less often than non-Hispanic Whites, but that Hispanic AA members reported higher commitment to AA principles. Likewise, it has been shown that adults with social anxiety, phobia, and attachment disorders are significantly less likely to engage in prescribed AA social activities such as acquiring a sponsor relative to adults without such disorders (Jenkins & Tonigan, 2011; Smith & Tonigan, 2009; Thevos et al., 2001; Book et al., 2009). Counter-intuitively, in both examples just cited the magnitude of AA-related benefit did not differ between Hispanic and non-Hispanic Whites nor between adults with and without anxiety disorders.

How urban Native Americans (UNA) fare in AA is only beginning to be empirically studied. This is remarkable for several reasons. Foremost, as of 2011 a large majority (>70%) of Native Americans reside in urban areas in the United States (U.S. Census, 2010). These UNA adults face a confusing array of overlapping federal, municipal and tribal resources intended to aid Native people with alcohol problems. Most often, these individuals either receive 12-step treatment or behavioral treatment that includes AA referral or, as common, they seek help directly through community-based AA (Hesselbrock et al. 2003; Tonigan et al., 2013). To date, only one longitudinal study has investigated UNA AA participation and outcomes (Tonigan et al., 2013). Findings were surprising and did not support the widely voiced opinion that, because of cultural factors, 12-step programs were unattractive and/or ineffective for UNA adults. Specifically, Tonigan and colleagues reported that rates of AA attendance did not differ between UNA and non-Hispanic whites during early AA affiliation, and that AA attendance was equally beneficial in predicting increased abstinence for both racial groups. Not expected, UNA reported significantly lower rates of AA dropout relative to non-Hispanic Whites.

Not investigated by Tonigan and colleagues was the question of whether UNA gender moderated the attractiveness and/or utility of AA affiliation. Historically, strong opinions pro and con have been voiced about the efficacy of AA for men and women. Table 1 displays selected characteristics of twelve studies that explicitly contrasted gender differences in AA attendance. As background, Hedges g represents the effect size adjusted for small sample bias when male and female AA attendance rates were contrasted. Positive g values in Table 1 denote higher AA attendance among males while negative g values indicate higher AA attendance among females. Inspection of Table 1 raises three points. First, the potential influences of ethnic/racial factors on investigations into AA gender differences have been largely ignored in the literature. One notable exception is Zemore and colleagues (2009) who examined gender differences *within* a Latino sample. Noteworthy, this within group contrast also yielded the largest effect size estimate in Table 1 ($g = .38$). Second, what is currently known about gender differences in AA attendance appears to be largely influenced by the behaviors and beliefs of non-Hispanic White study participants. And, third, meta-analytically combining the twelve effect sizes in Table 1 indicates that, overall, males and females do not differ in rates of AA attendance ($g = -.05$).

The general purpose of this study was to investigate AA-related gender differences among adult UNA with alcohol problems. To this end, this study had three specific aims. First, we sought to compare male and female UNA on pre-recruitment characteristics that reflected

both alcohol problem severity and initial efforts to reduce alcohol use. Our second aim focused on the identification of UNA gender differences in AA engagement patterns and alcohol use during the nine months of study participation. Finally, our third aim formally tested the hypothesis that UNA gender moderated the association between frequency of AA attendance and increased abstinence and reductions in drinking intensity, again over the nine-month course of study participation.

The study sample was formed by merging data from two single-group longitudinal studies investigating how drinking reductions occur in relation to AA attendance (R21-AA016974, R01-AA014197, Tonigan PI). Merging of these data was possible because the two studies (1) used recruitment strategies at the same locations, (2) inclusion criteria were identical, (2) follow-ups were done every three months, and (3) the two studies used a common assessment core measuring 12-step attendance and practices, alcohol use and demographics. Participants early in AA affiliation were recruited in a large Southwestern city. Early AA affiliation was defined as having no more than 16 weeks of lifetime AA attendance. Recruitment sites included substance abuse treatment programs, AA meetings, flyers and advertisements, and homeless shelters. No effort was made to specifically recruit UNA in either study. Inclusion criteria included attending at least one AA meeting in the prior 90-days, using alcohol in the prior 90 days, and meeting Diagnostic and Statistical Manual of Mental Disorders (4th ed., DSM-IV; American Psychiatric Association, 2000) criteria for alcohol dependence or abuse. Prospects were also excluded if they were less than 18 years old, or if they reported being abstinent from alcohol for 12 months or longer at any time in their life after recognizing they had an alcohol-related problem. Past or current drug abuse or dependence was not exclusion criteria. For this study, participants had to self-identify as UNA. All procedures were approved by the University of New Mexico institutional review board (UNM Protocol No's. 24028 and 27147).

Procedure

After on-site screening, informed consent was done at the research center. Participants then completed interviews, questionnaires, and a urine toxicology screen. Follow-up interviews were scheduled at 3, 6, 9, 12, 18, and 24 months in one study and at 3, 6, and 9 months in the second study. Thus, only data from baseline, 3, 6, and 9-month interviews were merged across the two studies. Participants in each study were compensated \$50 at the end of each interview. A breathalyzer test was used to confirm that their BAC was .05 or lower before signing informed consent and at each assessment interview. Neither study provided an intervention. Referrals to treatment programs were made when participants were interested or if research staff deemed it necessary, however.

Measures

Demographic interview

Items included age, gender, years of education, marital and employment status, and self-reported race. There were ten racial categories, two of which were "American Indian or Alaskan Native". Selection of either of these options was used to identify participants suitable to the aims of this study.

Substance use and treatment

The Alcohol Dependence Scale (ADS; Skinner & Horn, 1984) was administered to assess severity of alcohol dependence at baseline. The Form 90 (Miller, 1996) is a calendar-based semi-structured interview and was used to collect participant retrospective report of daily alcohol use. Two alcohol measures were computed from the Form 90. Drinks per drinking day (DPDD) was defined as number of drinks consumed per drinking day divided by the number of drinking days in the period. Proportion of days abstinent from alcohol (PDA) was defined as the number of alcohol-abstinent days in an assessment window divided by the total number of days in the window. Satisfactory reliability for the Form 90 has been reported for the measures of PDA ($r = .79$ for outpatient samples; $r = .97$ for aftercare samples), and DPDD ($r = .94$; $r = .95$), (Tonigan et al., 1997; Westerberg et al., 1998).

Help Seeking

One item from the Form 90 interview was used to compute the proportion of days 12-step meetings were attended in an assessment window. Specifically, reported number of days of 12-step attendance was divided by the total number of days in an interview period. No effort was made to tally the types of AA meetings attended or the types of 12-step programs attended, e.g., CA or NA. The Form 90 also asked about formal treatment experiences in an assessment period. Number of days of formal treatment for alcohol, drug, or emotional problems (inpatient and outpatient) was recorded and then summed. This sum was then divided by the total number of days in a follow-up to summarize the proportion of day's formal treatment.

Results

A total of 63 UNA adults were recruited and consented in the two parent studies, 35 (55.6%) males and 28 (44.4%) females. Follow-up rates for these 63 participants were 94%, 89%, and 90% at the 3, 6, and 9-month interviews, respectively. Table 2 displays selected demographic, alcohol use, and help-seeking activities of these study participants for the 90-day period prior to study admission. Few baseline differences were observed between male and female participants. With the exception that the female UNA participants were, on average, significantly older than male participants and the trend ($p < .059$) for males to report more days paid for work relative to the females, the two genders reported similar, and high levels, of drinking intensity and alcohol dependence. Mean ADS scores, for example, were in the high range, and males and females reported drinking between 17.84 and 15.69 standard drinks per drinking occasion, respectively. Actual proportion of days of abstinence prior to study admission, however, was relatively high in this sample in comparison to "typical" clinical samples. Specifically, on average, males reported not consuming alcohol on about 63% of the 90 days before admission and females reported even higher rates of alcohol-free days, 70%. Finally, both genders reported initiating help-seeking behaviors in the 90-day period before study enrollment. On average, for example, participants reported attending AA between 12 and 18 days in the 90-day period before recruitment and, regarding formal treatment, males reported, on average, about 5 days of treatment while females reported about 9 days of formal treatment.

Table 3 shows the help-seeking behaviors and reported alcohol use over the nine-months of the study by UNA gender. For the three measures in Table 2 labeled percent (%) chi square tests were conducted at each of the three follow-up periods to assess if rates on a given measure were related to participant gender (9 chi squares). For percent attending AA, no relationship was observed at any follow-up between AA attendance (yes/no) and participant gender, largest obtained chi square, $X^2(1) = .84$, $p < .34$. Likewise, no relationship was found between participant gender and the reporting of attending formal treatment at any follow-up, largest obtained $X^2 = 1.94$, $p < .18$. In contrast, a significantly higher proportion of male participants reported complete abstinence at the three month follow-up relative to female participants, $X^2(1) = 4.14$, $p < .042$. This difference was not found at the six-month follow-up but trended at the nine-month follow-up with, again, males reporting higher rates of complete abstinence relative to female study participants, $X^2(1) = 3.54$, $p < .060$.

GLM repeated measures analyses were separately preformed on the remaining four measures in Table 2. A total of 56 participants (29 male and 27 females) had complete data necessary to be included in these analyses. Baseline values of the dependent measure were entered as fixed covariates in each analysis and given the exploratory nature of the analyses and small sample size all interactions were tested against a Type I error rate of .10. Results of these tests are summarized in Table 4. With two exceptions, none of the gender, time, or gender by time interactions was significant. One main effect of gender was found; on average, the *marginal* mean for PDA was significantly higher for males relative to females. Depicted in Figure 1, a gender x time interaction was found for the DPDD dependent measure. Adjusted for baseline differences in DPDD, on average males reported a steady and sharp decline over nine months in the number of drinks per drinking occasion. In contrast, the drinking intensity of the female participants remained relatively constant over time with a slight elevation in intensity at the six-month follow-up.

Using multi-level modeling the next two analyses addressed our third question of interest. Namely, is there a differential relationship by gender between frequency of AA attendance and increased abstinence (PDA) and reductions in drinking intensity (DPDD)? To this end, and following Raudenbush and Bryk (2002) recommendations, we first assessed the parameter estimates in the unconditional models for PDA and DPDD to correctly specify terms in the conditional models followed by examining the conditional models of interest which entered proportion days AA as a time-varying covariate (level 1) and gender (dummy coded) in level 2. The cross-level gender x AA term represented the hypothesized interaction of interest and was tested via the t-statistic. In these analyses, four values of the dependent measure (PDA or DPDD) were nested within individuals (baseline, 3, 6, and 9-months) and these were simultaneously predicted by the time-varying covariate AA attendance, also collected at baseline, 3, 6, and 9-months.

Considering PDA first, in the unconditional model both the intercept and mean growth rate of PDA were significant, $t(232) = 23.74$, $p < .001$ and $t(232) = 3.50$, $p < .001$, respectively. Continuing, the correlation between individual baseline PDA (initial status) and rate of change in PDA over time was positive, $r = .45$, indicating that individuals entering the study with higher PDA values also tended to report the largest gains in PDA over time. Tests of homogeneity indicated that the initial status of PDA was significantly different among

participants, $X^2(54) = 77.13$, $p < .02$, but that rate of change in PDA was relatively homogeneous, $t(56) = 56.71$, $p < .37$. Consequently, in the conditional model the intercept was specified as a random effect while the time term was specified as a fixed effect. In the conditional model, a significant and positive association was found between frequency of AA attendance and PDA for female participants, $t(56) = 2.15$, $p < .04$, $b = .27$, and the direction and magnitude of this association did not differ for males, $t(56) = .05$, $p < .96$.

In the unconditional model with DPDD as the dependent measure the intercept and mean growth rate were significant, $t(232) = 13.07$, $p < .001$ and $t(232) = -6.35$, $p < .001$, respectively. The correlation between initial DPDD status and change over time in DPDD was strongly negative, $r = -.96$, indicating that the largest reductions over time in drinking intensity were among participants reporting the highest drinking intensity at baseline. As with PDA, homogeneity tests indicated that the intercept should be specified as a random effect, $X^2(54) = 105.53$, $p < .001$, and the time term should be specified as a fixed effect in the conditional model, $X^2(54) = 58.90$, $p < .30$. No association was found between frequency of AA attendance and reductions in drinking intensity for females, $t(56) = -1.06$, $p < .30$, and males, $t(56) = -1.30$, $p < .20$.

Discussion

UNA's significantly reduced their drinking over a nine-month period, and AA attendance served an important role in this process. Similarities between male and female UNA far outweighed the limited number of gender differences we identified, both in pre-recruitment alcohol use and severity measures as well as in patterns of AA engagement over the nine-months of study participation. Consistent with our meta-analytic summary in Table 1, therefore, we found that males and females were similar in the extent that AA would be attended ($g = .05$), and that both genders reported attending AA about as often over nine-months ($g = .16$). Likewise, we found that UNA gender did not moderate the significant and positive association between AA attendance and increased abstinence. Awaiting replication with a larger sample, preliminary evidence suggests that, in general, clinical referral to AA is beneficial for both male and female UNA Native Americans seeking to reduce their alcohol use.

We believe that such a replication is especially important given the *pattern* of effect sizes we obtained when contrasting male and female participants on measures of alcohol use at the nine-month follow-up. Specifically, effect sizes of a moderate magnitude (Cohen, 1988) were found on measures of complete abstinence, increased frequency of abstinent days, and reductions in drinking intensity, and all of these effect sizes favored urban Native American males. Failure to observe any gender by AA interactions on our drinking measures suggests that either UNA males were accessing additional resources relative to females or, alternatively, female UNA faced additional challenges to achieve drinking reductions relative to males. Either way, our findings indicate the need to assess a broad array of abstinence-based social resources beyond AA participation when investigating UNA recovery from alcohol problems.

This study has several limitations. First, statistical power was low to detect gender differences. While supporting our inferential tests with estimates of effect size was one approach to contend with this limitation, we acknowledge that conclusions may differ with a larger sample of UNA. Second, study inclusion criteria required that participants reported attending at least one AA meeting in the 90-day period before recruitment. As such, our findings apply only to those UNA's who elect to attend AA, which may or may not be representative of the larger population of UNAs. And, third, while our measures of self-reported AA attendance have demonstrated reliability (Tonigan, 1997; Westerberg, 1998) our assessments did not discriminate between attendance at mainstream AA meetings and AA meetings adapted to meet the specific cultural needs of UNAs. Future research making such discriminations may identify important nuances that were missed in this study.

In sum, our findings indicate that AA referral is appropriate for both male and female UNA. Both male and female UNA reported significant benefit from AA attendance, and the magnitude of AA-specific benefit did not differ by UNA gender. With this said, UNA males reported, in general, higher rates of alcohol abstinence and larger reductions in drinking intensity over the course of the nine-month study relative to UNA females. Whether these differential gains represented additional challenges for female UNA to recover or the ability of male UNA to access additional resources is unclear but warrants future attention.

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FIGURE 1.
Drinking Intensity of Urban Native American Adults by Gender and Time

Table 1

Summary of Gender Contrasts in Rates of AA Attendance.

Author	Year Published	% Non-Hispanic White	# of males	# of females	Hedges g
Bodin	2006	-	45	48	-.17
Grella	2003	44.0	211	189	.07
Hser	2003	39.9	226	285	-.27
Kingree	2000	51.0	78	28	.00
Krentzman	2012	80.4	180	96	-.21
Moos	2006	80.3	72	79	-.32
Sandoz	1995	-	35	17	.00
Sandoz	1996	91.6	38	29	.65
Timko	2002	82.0	205	209	.058
Timko	2005	86.1	236	230	-.15
Wilbrodt	2010	-	360	560	-.26
Zemore	2009	0	424	132	.38

SUMMARY: $g = -.052$ (CI 95% ; -.088 to -.017); Q Statistic $\chi^2 (11) = 31.47, p < .01$

Table 2

Urban Native American Baseline Sample Characteristics by Study Participant Gender

	Male Native American (n = 35)	Female Native American (n = 28)	
Demographics			
Age (years)	34.29 (9.72)	39.29 (9.69)	p < .047
Education (years)	13.37 (2.54)	13.04 (2.55)	p < .605
Days Paid for Work	46.44 (41.72)	24.68 (47.23)	p < .059
Marital % (cohabitating)	23.50% (8)	25.00% (7)	p < .890
Substance Use			
ADS ^a Total	49.12 (8.20)	51.96 (9.19)	p < .211
DPDD ^b	17.84 (10.99)	15.69 (9.51)	p < .419
PDA ^c	.63 (.29)	.70 (.28)	p < .356
Help Seeking			
Proportion Days Formal Trt	.06 (.11)	.10 (.16)	p < .278
Proportion Days AA Attendance	.22 (.20)	.14 (.20)	p < .110

^aAlcohol Dependence Scale^bDrinks Per Drinking Day^cProportion Alcohol Abstinent days

Table 3
Help-seeking and Alcohol Use by Urban Native American Gender Over 9-Months

	Intake	3-Months	6-Months	9-Months	g
Help-Seeking					
% Attending AA					
Male	100%	90.3%	75.9%	83.3%	.05
Female	100%	82.1%	85.2%	81.5%	
Proportion Days AA (SD)					
Male	.22 (.20)	.28 (.25)	.23 (.28)	.21 (.26)	.16
Female	.14 (.20)	.27 (.26)	.20 (.25)	.17 (.23)	
% Attending Treatment					
Male	55.9%	51.6%	41.4%	26.7%	.37
Female	57.1%	53.6%	51.9%	44.4%	
Proportion Days Treatment (SD)					
Males	.06 (.11)	.11 (.19)	.06 (.12)	.04 (.08)	.14
Females	.10 (.16)	.12 (.21)	.03 (.05)	.03 (.06)	
Alcohol Use					
% Completely Alcohol Abstinent					
Males	0	41%	34%	50%	.51
Females	0	22%	23%	35%	
Proportion Abstinent Days (SD)					
Males	.63 (.29)	.87 (.23)	.87 (.22)	.90 (.17)	.57
Females	.70 (.28)	.77 (.33)	.76 (.32)	.75 (.34)	
Drinks per Drinking Day (SD)					
Males	17.84 (10.99)	11.18 (14.23)	9.40 (10.69)	5.01 (6.53)	.62
Females	15.69 (9.51)	9.53 (6.75)	10.78 (8.48)	9.51 (7.96)	

Table 4

Summary of Changes in Help-Seeking and Alcohol Use by Urban Native American Gender

Dependent Measure	df	MS	F	p	g
Proportion Days AA Attendance					
Gender	1	.008	.06	.81	
Time	2	.013	.50	.61	
Gender x Time	2	.003	.11	.89	
Proportion Days Treatment					
Gender	1	.045	2.17	.15	
Time	2	.019	1.69	.18	
Gender x Time	2	.002	.14	.87	
Proportion Abstinent Days					
Gender	1	.908	7.39	.009	
Time	2	.010	.23	.80	
Gender x Time	2	.021	.48	.62	
Drinks per Drinking Day					
Gender	1	193.23	1.08	.30	
Time	2	37.37	.86	.43	
Gender x Time	2	116.98	2.68	.07	