Published in final edited form as:

Alcohol Treat Q. 2020 ; 38(1): 50–67. doi:10.1080/07347324.2019.1616512.

Urban American Indian Adult Participation and Outcomes in Culturally Adapted and Mainstream Alcoholics Anonymous Meetings

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Abstract

Very little is known about American Indian (AI) adults' participation in Alcoholics Anonymous (AA) despite their elevated rates of negative sequelae due to heavy alcohol consumption and alcohol use disorders. This study sought to fill that gap and examined the engagement in AA by urban Southwest AI (S-AI) adult problem drinkers and whether enculturation and acculturation accounted for type of AA attended (mainstream versus culturally adapted AA; CA-AA). Additionally, we compared three and six-month drinking outcomes of urban S-AI adults by type of meeting attended. Sixty-one urban S-AI adults were consented and assessed at baseline, three and six-months. We examined the association between frequency of AA attendance and differences between types of meetings attended regressed on the outcomes of proportion abstinent days and drinks per drinking day. Results indicate that AA attendance is the model approach and assists urban S-AI adults in reducing their drinking. Despite higher engagement among those attending both AA and CA-AA, this did not translate into differential AA-related benefit which speaks to the need for additional research to assist AI adults in effectively reducing their alcohol use.

Keywords

Alcoholics Anonymous; urban American Indian adults; 12-step facilitation; mutual help groups

INTRODUCTION

American Indian (AI) adults have the highest rate of alcohol abstinence as well as the highest rate of binge drinking relative to White, Latinx, and African American adults (Chartier & Caetano, 2010). The list of elevated social, medical, and personal consequences associated with AI adults binge drinking relative to other ethnic and racial groups is staggering with high rates of alcohol-related depression (CDC, 2008) and violent crime (Rosay, 2016). One in ten AI deaths, for example, is associated with alcohol use, with traffic

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accidents and liver disease accounting for a majority of these deaths (CDC, 2008). Among urban AI adults screened positive for alcohol abuse in a primary care setting, 46% reported having been physically hurt by a relative (Shore et al., 2002).

The last 20 years has witnessed an exodus of individuals from reservations to metropolitan areas. In 1990, for example, 66% of the AI population in the United States resided in urban areas. By 2012, 78% of the AI population reported living in large metropolitan areas (U.S. Census, 2012). This migration has placed significant strains on behavioral health care services for urban AI people, which, for alcohol treatment, relies heavily upon the 12-step treatment model. Research suggests that a majority of urban AI adults seeking to reduce their drinking are also introduced to the 12-step treatment model. Twelve-step attendance is frequently reported by urban AI adults as they present for “mainstream” alcohol treatment. Hesselbrock et al. (2003), for example, reported that 77% of male and 73% of female urban Alaska Natives in residential alcohol treatment reported prior AA attendance. Likewise, 92% of the urban AI clients ($n = 25$) in Project MATCH (Villanueva et al., 2007) reported AA attendance immediately before treatment, and 56% of these AI adults reported 12 step work in treatment. Together, these studies suggest that AI have had exposure to AA including attendance and step-work.

Access to Indian Health Service (IHS) behavioral health care is very limited for AI people who reside in urban areas, so IHS has contractual arrangements with 34 non-profit agencies (Urban Indian Health Organizations - UIHO) in major cities. Only 54% of these agencies provide behavioral substance use treatment, however. The remaining UIHO agencies have limited substance use treatment and refer to public providers (41%) or have no resources at all (5%) (UIHI, 2012). It is estimated that 88% of public treatment providers in the U.S. encourage 12-step meeting attendance either “often” or “sometimes” (SAMHSA, 2010). Noteworthy, AA referral is specifically listed as a resource for urban AI people on all 34 UIHO agency websites. And, third, it is important to note that AA itself has historically made significant efforts to attract AI adult problem drinkers. In the AA literature (Alcoholics Anonymous, 2001), for instance, a personal story is included of a AI woman in recovery (pgs. 458–469), and AA service pamphlets specifically target AI adult problem drinkers, e.g., AA for the Native North American, (AA World Services, 2013). AA seems particularly important for AI adults given the paucity of substance use disorder treatment options.

However, the acceptability and efficacy of AA for urban AI adults has been hotly debated. Spicer (2001), for example, suggested that the emphasis in AA on alcohol use disorder as a spiritual malady thus necessitating a spiritual remedy is congruent with AI beliefs about recovery and may actually facilitate AA affiliation. Others have posited that AA’s endorsement of the medical model conflicts with AI beliefs about the etiology of alcoholism and may serve as a barrier to AA affiliation (Kinney & Copans, 1989). In terms of AA practices, Kinney and Copans (1989) stated that the confessional aspect of sharing personal stories in AA was inconsistent with AI customs of privacy and avoidance of public self-disclosure. Alternatively, the flexibility of local AA groups to structure and conduct meetings as they choose has facilitated cultural adaptations including Native customs such as talking circles and the medicine wheel (Coyhis & Simonelli, 2008; White Bison, 2002). More recently, Evans and colleagues (2012) have concluded that when AI communities and

African Americans, culturally tailor core ideas and meeting practices, their affiliation rates and benefits of involvement improve.

Tonigan and colleagues (2013) offered one of the few longitudinal perspectives to assess how urban AI adult problem drinker's fare in AA. Overall, they reported that AI and White adults did not differ in their trajectories of AA meeting attendance from baseline to 9-month follow-up. Unexpectedly, AA attrition was significantly higher for Whites relative to AI adults. Here, 82% of the AI adults reported sustained AA attendance over 9-months while only 65.3% of the Whites reported sustained AA attendance. Large pre-post gains in abstinence were found for both AI adults ($d = 0.60$) and Whites ($d = 0.72$) and participant racial status did not moderate the significant and positive lagged association between frequency of AA attendance and increases in abstinence. This study had limitations, however. First, Tonigan et al, did not collect data on the specific types of 12-step meetings attended by AI adults. It is plausible that the attractiveness and benefit of AA was associated with attendance at culturally adapted AA (CA-AA) 12-step meetings. Second, this study did not include any measures of acculturation and enculturation despite these constructs forming the basis for most arguments related to the potential engagement of urban AI adults in mainstream or culturally adapted AA. And, third, Tonigan et al's longitudinal study excluded adults with extensive treatment and 12-step histories. It is therefore unclear if findings generalize to the more common situation where urban AI people have fragmented yet repeated treatment and 12-step experiences.

The purpose of this study was to address these important limitations in our understanding of urban AI engagement in community-based AA. Specifically, this study had three aims. First, we sought to document the types (mainstream AA vs CA-AA) and nature of AA meetings initially attended by urban AI adult problem drinkers in a large city in the Southwest. Related, we sought to identify individual-level characteristics that would discriminate attendance at these different types of meetings. Noteworthy, the study was conducted in a metropolitan area that has the seventh largest urban AI population in the United States, and both mainstream and specialized CA-AA meetings are widely available in this community. Further, our study had much broader inclusion criteria and did not exclude participants based upon the extent of past treatment and 12-step histories. Our second aim investigated the influence of self-reported enculturation and acculturation in accounting for AA attendance. Many arguments about the acceptability and effectiveness of AA for urban AI adults are grounded in these constructs and, to our knowledge, this study will be the first to conduct a prospective test of whether enculturation or acculturation are germane in considering the nature of AI affiliation with AA. And, third, we sought to compare the three and six-month drinking outcomes of urban AI adults who initially self-selected to attend different types of 12-step groups.

METHODS

Procedures

Recruitment procedures included posting flyers in AA clubs and outpatient treatment and community centers commonly accessed by urban AI adults. Interested prospective participants contacted study staff by telephone and a quick screen was conducted.

Potentially eligible and interested prospective participants were then scheduled an appointment at our research center for the purpose of making a final eligibility determination and obtaining informed consent. Exclusion criteria included inability to perform informed consent and pending legal convictions. Study inclusion criteria included: (1) attended at least one AA meeting in the prior 3-months, (2) consumed alcohol in the prior 3-months, (3) self-identified as an urban AI adult, (4) 6th grade English reading level, (4) ability to provide documented informed consent, (5) 18 years and older, and (6) total Alcohol Dependence score (ADS) ≤ 8 . After documentation of informed consent, participants then completed a baseline assessment that included interviews and self-report questionnaires (~ 2 hours). Three and six-month follow-up interviews were then scheduled. All baseline, 3-month and 6-month assessments were conducted at the research center. Participants were reimbursed \$50 for each completed assessment for a total of \$150 for full compliance.

A total of 151 phone screens were conducted and 68 (45%) prospective participants were deemed ineligible. Of the remaining 83 eligible prospective participants, 21 (25%) declined participation for reasons including not coming in for the final eligibility determination interview, concern about the commitment to participate in a nine-month study, and transportation problems (the study did provide fare for public transportation). Sixty-two Southwest-AI (S-AI) adults provided informed consent but one of these participants was excluded from all analyses (but allowed to continue in the research protocol) because of discrepant eligibility information obtained in the in-depth baseline interview. All recruitment, consenting, and study procedures were approved by the UNM institutional review board.

Measures

Demographics: This 33-item interview collected basic demographic data, e.g., age, marital and employment status, and level of educational attainment. Sixteen items inquired about the nature of education received by participants (reservation vs. non-reservation-based), years living on the reservation/pueblo, and frequency of visits to the reservation/pueblo to visit family/friends and to participate in traditional tribal ceremonies. Tribal affiliation variables were collected during the in-person demographic interview.

Twelve Step Participation Questionnaire 2.0 (TSPQ₂): Adapted from the Alcoholics Anonymous Inventory (AAI; Tonigan et al., 1996), the original TSPQ had 13 items that ask about the nature and extent that participants engage in 12-step prescribed activities, e.g., have you celebrated an AA birthday, have you called a 12-step member for help, and are you currently required by a court or judge to attend 12-step meetings. Additional items were added in this study to better understand participant attendance in AA mainstream and CA specialty meetings. Specifically, frequency of attendance in these two types of meetings was collected for the past 90 days, past year, and lifetime. Although there is heterogeneity between many tribal communities, a measure with twenty-one items was added to capture common or potential cultural adaptations to AA specialty meetings. Items asked about how helpful different types of AA meeting were and to identify the frequency of fifteen specific practices in CA-AA meetings, e.g., sweat lodges, talking circles, medicine wheel, reading of

Indian Prayer, reading of walking the red road. These latter 15 items were 5-point Likert scaled with anchors of “Never” and “Always.”

Enculturation: AI enculturation was measured using the 17-item American Indian Enculturation Scale (AIES: Winterowd et al., 2008) which covers the endorsement of traditional practices and social ties with Tribal members. Sample items include, (how much do you participate in) attend pow-wows, attend Indian ceremony, attend Indian dances, eat or cook Indian food, and, use or know the Indian language. All items use a seven-point response set and total AIES scores could range from 17 to 119. Cronbach alpha for this 17-item measure in this sample was 0.91.

Acculturation: S-AI acculturation was assessed using the 20-item Native American Acculturation Scale (NAAS: Garrett & Pichette, 2000). All items use a five-point Likert scale with anchors that reflect an exclusive AI affiliation or, in contrast, a wholly non-AI affiliation. Sample items include, *Who do you associate with now in your community* (anchors, Only AI, Only non-AIs), *How would you rate yourself* (anchors, Very AI, Very non-AI), and, *Do you* (anchors, Read only tribal language, Read only English). Cronbach alpha for this 20-item measure in this baseline sample was 0.82.

Form 90: The Form 90 (Miller & DelBoca, 1996) is a retrospective calendar-based semi-structured interview used to collect reports of healthcare utilization, and daily alcohol and drug use. Two alcohol use measures were computed from the Form 90. Proportion of days abstinent from alcohol (PDA) was defined as the number of alcohol-abstinent days in an assessment period divided by the total number of days in the period. Drinks per drinking day (DPDD) was defined as number of drinks consumed per drinking day divided by the number of drinking (i.e., non-abstinent) days in the period. Tonigan and colleagues (1997) have reported satisfactory reliability for the Form 90 measures of PDA ($r = 0.79$ for outpatient samples; $r = 0.97$ for aftercare samples), and DPDD ($r = 0.94$ for outpatient samples; $r = 0.95$ for aftercare samples). The Form 90 also collected information on the number of days that participants received various forms of health care in an assessment window, with interest in this study focusing on days outpatient and residential alcohol treatment. Proportion days outpatient and residential treatment received in an assessment period was calculated as the number of days a treatment was received divided by the number of days in an assessment window.

The Short Inventory of Problems (SIP): is abstracted from the 50-item Drinker Inventory of Negative Consequences (Miller et al., 1995) and is a 15-item self-report questionnaire that assesses the experiencing of adverse alcohol-related consequences in five domains: physical, interpersonal, intrapersonal, social responsibilities, and impulsivity. All items use a 4-point scale that ranges from 0 = never to 4 = daily. Cronbach alpha for the total SIP score in this sample was 0.94.

The Alcohol Dependence Scale: (ADS: Skinner, 1984) is a 25-item screening measure that identifies the extent and severity of alcohol dependency. Total ADS scores can range from 0 to 47, with values of 1–13 indicating low dependency, scores of 14–21 intermediate

dependency, and cut-off scores of 22–30 representing substantial dependency, and 31–47 severe alcohol dependency. Baseline Cronbach alpha was 0.90 in this sample.

Data Analysis—Percentages were calculated for categorical variables and means (with standard deviations) for continuous variables. Bivariate analyses such as chi-square and t-tests were performed to examine the relationship between the independent and dependent variables. Logistic regression (LR) was performed with the primary predictor of interest, along with other pre-specified covariates. Two lagged multilevel models (MLM) were conducted to examine the association between frequency of AA attendance and two drinking outcomes (PDA and DPDD) and whether the magnitude of this association differed between urban S-AI attending AA only or both AA and CA-AA. All analyses were performed using SPSS version 24 and HLM 6.04 the alpha threshold for statistical significance was 0.05.

RESULTS

Aim 1

In the 90-day period before study recruitment, participants reported, on average, attending an AA mainstream meeting about once every four days ($mean = 0.27$ days/90, $SD = 0.33$) and an CA-AA specialty meeting about once every ten days ($mean = 0.12$, $SD = 0.21$). No association was observed between frequency of attendance in these two types of AA step meetings, $r = 0.19$, $p < 0.14$. Descriptively, type of 12-step meetings attended by urban S-AI participants fell into one of two categories; S-AI participants who reported attending *only* mainstream AA meetings ($n = 31$) and participants who reported attending *both* mainstream and CA-AA specialty meetings ($n = 30$). No participant reported attending only CA-AA specialty meetings.

Table 1 displays and contrasts the two categories of urban S-AI 12-step attenders on key demographic, tribal affiliation, and substance use variables collected at baseline. Participants who were single were significantly more likely to attend mainstream AA meetings although, at the trend level, participants attending both types of 12-step meetings tended to be male, were modestly older, and reported higher family incomes (trend level). Regarding Tribal affiliation and contact, the two groups did not differ in the proportion of participants who had lived on the reservation, had attended BIA schools, and who had family/friends still living on the reservation. In contrast, a larger proportion of participants who attended both AA and CA-AA meetings reported significantly more contact with family/friends on the reservation and attendance at traditional Tribal ceremonies relative to participants who only attended AA. There were no significant between-group differences on baseline alcohol use measures (PDA, DPDD) and alcohol-related consequences (SIP) although there was a trend for participants attending both types of 12-step meetings to report higher drinking intensity (DPDD) when drinking occurred. Likewise, the two groups of 12-step attenders did not differ in their extent of alcohol use disorders at baseline (ADS); on average, study participants fell into the ADS category of “substantial” alcohol dependency (range, 9 to 45).

Table 2 shows the lifetime and recent (past 90-days) help-seeking behaviors of study participants. No between-group differences in *lifetime* treatment histories were observed. Specifically, the vast majority of participants had prior alcohol treatment although such

treatment was rarely received on the reservation. Almost half of the participants reported (in their lifetime) being required to attend community-based AA during treatment, but only a low percentage of participants were actually encouraged to attend CA-AA specialty meetings. A two (type of AA meeting; AA and CA-AA) by four (treatment and AA referral; no treatment, treatment with no AA requirement, treatment and AA required, and treatment with referral to AA that included traditional S-AI practices). Chi Square indicated that current attendance in AA with culturally adapted practices was unrelated to whether past referral to such meetings had occurred, $X^2(3) = 1.80, p < 0.61$. Considering the 90-days before recruitment, participants that attended both types of AA meetings reported, on average, more frequent outpatient treatment (trend level) and nearly double the rate of AA mainstream attendance relative to urban S-AI participants who attended only AA. No association, however, was found within each of the two groups of 12-step attenders between frequency of treatment and AA attendance in the 90-days before recruitment. A majority of the participants ($n = 35$; 57.3%) reported at least one outpatient treatment session in the prior 90-days and 16.3% ($n = 10$) reported at least one overnight stay for alcohol treatment.

Practicing of prescribed 12-step behaviors is reported in Table 3 by type of AA meetings attended. The two groups reported significantly different levels of engagement in a number of mainstream AA prescribed activities. Specifically, adults who attended both AA and CA-AA meetings reported, on average, significantly higher levels of considering themselves members, acquiring a sponsor, reading AA approved literature, having a spiritual awakening, and talking with other S-AI AA members after meetings relative to urban S-AI adults who only attended mainstream AA meetings. At the trend level, urban S-AI adults attending both types of AA meetings also reported a higher rate of celebrating an AA birthday and calling other AA members for help. We also examined the types of culturally adapted practices that occurred in CA-AA meetings. In descending order of endorsement, participants attending adapted AA meetings reported that meetings included (sometimes to always) the burning of sage (67%), talking circles (57%), reading AI traditions (57%), and reading or signing of the Indian Prayer (50%).

Aim 2

This aim investigated the extent that self-reported enculturation and acculturation predicted the type of 12-step meetings attended by urban S-AI participants. At baseline, enculturation and acculturation scores (all participants) were significantly and negatively correlated, $r = -0.62, p < 0.01$, and the magnitude of this association did not differ beyond sampling error between the two AA groups (AA only, $r = -0.59$; AA & CA-AA combined, $r = -0.67$). Likewise, on average, the two types of 12-step attenders did not differ on mean acculturation scores (AA only $mean = 61.71, SD = 9.47$; CA-AA combined $mean = 59.63, SD = 10.78$; $F(1, 59) = 0.64, p < 0.43$) nor on mean enculturation values, (AA only $mean = 38.29, SD = 23.78$; CA-AA combined, $mean = 42.10, SD = 20.83$; $F(1, 59) = 0.44, p < 0.51$).

As a preliminary step, Table 4 shows the bivariate correlations between our two constructs of interest and selected measures of tribal affiliation, recent alcohol use and help seeking behaviors. As shown, significant and theoretically consistent correlations were found between tribal affiliation variables and our two constructs of interest. Specifically,

enculturation scores were significantly and positively associated with both years a participant lived on the reservation and frequency of attending traditional ceremonies and practices on the reservation. In contrast, acculturation scores had significant and negative associations with these tribal affiliation variables. No other correlations in Table 4 were significant although the direction of correlations between acculturation and enculturation and frequency of attendance at AA and CA-AA meetings in the prior 90-days was consistent with our predictions; enculturation was positively associated with CA-AA meetings and negatively associated with AA only meetings while the reverse situation was present with acculturation scores.

An LR was conducted to examine the role, if any, that enculturation and acculturation served in predicting type of 12-step attendance reported by participants. Type of AA meeting attended served as the dependent measure and was dummy coded (AA (0), $n = 31$ versus CA-AA (1), $n = 30$). Baseline values of enculturation and acculturation were jointly entered in step one of the LR. The omnibus LR was not significant, $X^2(2) = 0.70$, $p < 0.70$, and neither construct of interest uniquely predicted Type of AA group membership, (acculturation $b = -0.016$, $p < 0.62$; enculturation $b = 0.003$, $p < 0.83$).

Aim 3

This aim compared the drinking outcomes of urban S-AI adults self-selecting to attend AA alone versus attending CA-AA meetings. As a preliminary step we examined study attrition rates, both overall and by type(s) of 12-step meetings attended. 82% ($n = 50$) of the sample was interviewed at 3-months and 70% ($n = 43$) were interviewed at the 6-month follow-up. Eleven participants (18%) missed *both* the 3 and 6-month follow-up interviews. Unprotected t-tests indicated that attrition status (yes/no) was unrelated to baseline PDA, DPDD, enculturation, acculturation, and frequency of past year and lifetime 12-step attendance at both the 3 and 6-month follow-up interviews. We conducted two 2×2 chi square tests to identify potential differential attrition at 3 and 6-months by type of 12-step group. On one dimension was type of 12-step group attended (AA alone versus CA-AA) and on the second-dimension attrition status (yes/no). Study attrition was unrelated to self-selected 12-step group membership at three-months ($p < 0.35$); 7 lost in the AA alone group and 4 lost in the CA-AA group), but at six-months significantly more participants were lost in the AA alone group relative to the CA-AA group, $\chi^2(1) = 4.81$, $p < 0.03$, (13 lost in AA alone group and 5 lost in CA-AA group). T-tests indicated that, *within* the AA alone group, no mean differences were present on baseline PDA and DPDD between lost and interviewed participants.

Table 5 displays means (SD) of three measures of drinking outcome by self-selected Type of 12-step meeting attended, baseline to the six-month follow-up. Considering the entire sample first (ignoring type of 12-step meeting attended), pre-post changes in proportion abstinent days (PDA) and drinking intensity (DPDD) were large and indicated substantial improvement in drinking status. Specifically, the magnitude of improvement from baseline to the six-month interview in PDA was, $d = 0.72$, and DPDD decreased, $d = -1.02$.

In the lagged MLM analyses, AA attendance at baseline and three-months predicted drinking outcome at three and six-months, by necessity time was restricted to the linear

effect, and the cross-level interaction was computed by first dummy coding type of AA meeting attended (0 = AA only; 1 = CA-AA) in level two and then entering the product term, AA type (level 2) x frequency AA meeting attendance (level 1). Regarding the PDA outcome, AA attendance was not associated with increased abstinence for the *entire* sample, $t(78) = 0.94$, $p < 0.35$; $b = 0.07$. Test of the cross-level interaction, however, indicated that frequency of AA attendance and increased abstinence were significantly and positively associated for the AA only group, $b = 0.14$, $t(77) = 2.49$, $p < 0.015$, but not for urban S-AI attending both AA and CA-AA, $b = -0.09$, $t(77) = -0.894$, $p < 0.375$. In contrast, and considering the entire sample, drinking intensity (DPDD) and frequency of AA attendance were significantly and negatively associated, $b = -5.707$, $t(78) = -2.177$, $p < 0.032$. Test of the cross-level interaction indicated that type of AA meeting attended did not moderate this overall association, $t(77) = 1.539$, $p < 0.128$.

Post hoc analyses were done to assess the robustness of aim 3 findings. Specifically, we conducted a second wave of lagged MLM analyses (identical to those just reported), but this time we included five baseline covariates to adjust for group characteristics reported in Table 1. Covariates included participant age, gender, income, frequency of contact with friends and family on the reservation, and attendance at ceremonies on the reservation. The inclusion of the covariates eliminated the significant cross-level interaction between type of AA group attended and increased PDA, $t(72) = -0.45$, $p < 0.66$. Consistent with our initial analyses, no cross-level interaction was observed between type of AA meeting attended and reductions in DPDD with the five covariates in the model, $t(72) = 1.60$, $p < 0.11$. Noteworthy, and for both PDA and DPDD, inspection of graphs indicated no qualitative change in between-group slopes with and without covariates in the analyses.

DISCUSSION

Findings offer a rare view of the initial efforts of urban S-AI adults trying to reduce their alcohol use by participating in AA. It appears that urban S-AI adults follow two distinct paths when approaching community-based AA, and that higher engagement and endorsement of AA principles and practices are manifest when urban S-AI adults attend *both* mainstream and CA-AA meetings. Contrary to expectations, cultural identity was not predictive of the type of AA meetings attended by urban S-AI adults. Highly enculturated urban S-AI adults were as likely to exclusively attend mainstream AA meetings as highly acculturated participants and vice versa. Our findings also underscore the elusive nature of the factors and individual characteristics that predict which pathway into AA urban S-AI adults may self-select, especially so given the large number of contrasts conducted in this study.

Specifically, of 25 between-group contrasts, only two reached an unprotected level of statistical significance; urban S-AI adults who attended only AA mainstream meetings were younger and more participants who reported attending both mainstream and CA-AA meetings also reported, at a higher frequency, visiting friends on the reservation. No between-group differences were observed on overlapping measures of tribal affiliation, however. No between-group differences, for example, were observed in the proportion of participants in the two groups who attended traditional ceremonies on the reservation or who

reported having family and friends living on a reservation. Also perplexing, type of 12-step meeting attendance was unrelated to past recommendations to attend traditional CA-AA meetings, severity of current alcohol problems, and whether a participant had lived on a reservation or pueblo.

Strong evidence suggests that our findings of enculturation and acculturation were not a measurement artifact. Specifically, our measures of enculturation and acculturation seemed to have good divergent and convergent validity. First, as reported in the literature (e.g., Winderowd et al., 2008) our two constructs were significantly and negatively correlated. Second, our measure of enculturation, the AIES, was significantly and positively correlated with years spent on the reservation and frequency of visits for traditional ceremonies while our measure of acculturation, the NAAS, was significantly and negatively associated with these measures. Given the clear cultural practices and distinctions between AA mainstream and S-AI specialty AA meetings why, then, the absence of an association between our measures of cultural identity and type of AA meeting attended? Arguably, the directions and signs of the observed bivariate correlations between the AIES, NAAS, and measures of frequency of mainstream and CA-AA specialty meetings were consistent with predictions (Table 4). Here, one may assert that our tests were statistically underpowered to detect small associations. Post hoc power analyses indicated that with desired power of 0.80, two-tailed, $\alpha = 0.05$, and a sample size of 61 we would require a bivariate correlation of 0.35 to reject the null hypothesis. According to Cohen's criteria (1988) this study only had the sensitivity to detect a medium-to-large association. Another possibility stems from the finding that clinical referral to S-AI specialty AA meetings was rare. Therefore, participants may have been unaware of CA-AA specialty meetings or, more likely, there are many more mainstream AA meetings available and participants may have thought it was more desirable to attend mainstream AA meetings.

Overall, study participants reported substantial alcohol dependency as well as few resources to support behavioral change. Roughly one in four of the participants were homeless, for example, and 70% of the participants reported that they were unemployed. Consistent with *mainstream* treatment-seeking samples in the United States, the early efforts of these urban S-AI participants to reduce alcohol use should not be interpreted as their *first* change effort. Specifically, most urban S-AI participants reported several previous formal alcohol treatment experiences, with only 15% of the sample reporting no lifetime treatment for alcohol problems. Relatedly, a previous study with S-AI participants who had resolved alcohol use disorder found that early efforts to change were informal (e.g., cutting down, reading material, and talking with friends or family), a high percentage attended AA, and they endorsed, on average, 12 of 18 change efforts queried (Venner & Feldstein, 2006). Noteworthy, only a small percentage of the urban S-AI adults in this sample reported receiving reservation-based alcohol treatment while a majority of participants reported that they had been required in treatment to attend AA meetings and/or had been court mandated to attend a community-based 12-step program in their lifetime. Collectively, our findings confirm the that for a variety of reasons, the 12-step model is the modal form of behavioral "intervention" provided to urban S-AI adults with alcohol use disorders.

In general population AA samples, the salutary effect of AA is typically found on measures of alcohol abstinence and much less often on measures of drinking intensity (e.g., Montes & Tonigan, 2017), a pattern of findings generally explained by the abstinence violation effect (Curry et al., 1987). Our study of urban S-AI identified the opposite AA benefit; namely, AA attendance was associated with significant reductions in drinking intensity *regardless* of type of AA meeting attended. In contrast, AA attendance was associated with increased proportion of abstinent days for only those urban S-AI who attended mainstream AA meetings. While the percent of participants reporting complete alcohol abstinence at six-months was 33% and 48% for S-AI attending mainstream and CA-AA, respectively, this improvement did not appear to be associated with AA attendance. Our findings may be partially explained by the unique drinking profile of S-AI with alcohol use disorders. Specifically, baseline values of proportion of abstinent days (prior 90-days) was high relative to non-S-AI samples. This may have produced a ceiling effect that allowed for only marginal gains on this abstinence-based measure. In contrast, on average participants reported high levels of drinking intensity at baseline thus permitting large pre-post reductions on this alcohol use measure (Hedges $g = 1.01$). This explanation does not account for the finding that attendance at only mainstream AA meetings by urban S-AI adult was associated with increased abstinence, however. The reasons for this association are unclear and are especially vexing in the context that participants reporting both AA and CA-AA attendance were significantly more engaged in 12-step prescribed activities and attended 12-step meeting more often. We recommend that future investigations recruit larger samples of urban S-AI adults to discern if our abstinence-based findings are an artifact of inadequate statistical power.

A number of clinical implications arise in connection to study findings. First, it appears that many urban S-AI adult problem drinkers will already have extensive community-based AA histories as they present for treatment. These histories should be considered when initiating treatment-based AA referral. Barriers to sustained AA affiliation should be identified and resolved and prescribed AA behaviors deemed beneficial by the patient in the past should be reinforced and supported. Second, many urban S-AI adults appear to initiate, in parallel, alcohol treatment and community-based AA attendance. Regardless of therapeutic orientation of a treatment program, continued AA attendance should be supported. Tonigan and colleagues (2013), for example, reported that urban AI adults derived equal AA-related benefit as Hispanic and non-Hispanic White problem drinkers and there is little reason to suspect that such attendance has iatrogenic effects, which our study also seems to support.

This study had a number of limitations. First, eligibility criteria included the stipulation that prospective participants had attended at least one AA meeting in the 90-days before recruitment. As such, our findings pertain only to urban S-AI adults who had successfully overcome the substantial social and cultural barriers to attending a community-based mutual-help program. Second, 25% of the prospective participants who appeared eligible (but who had yet to have a final eligibility determination) declined to participate in the study. How, if at all, these prospective participants systematically differed from consented urban S-AI adults is unknown. Third, recruitment challenges resulted in a sample size that precluded detecting small-to-medium associations between constructs of interest, e.g., low statistical power. A substantially larger sample of urban AI adults is recommended to definitively

determine how, if at all, cultural identity is associated with self-selection into different types of community-based 12-step programs. Fourth, this study recruited urban S-AI adults in a large city in the Southwest, with the main Indigenous group in the sample being from a large Southwestern tribe ($n = 26$; 43%). The degree that study findings generalize to other tribal members in other regions in the United States is unclear, especially because the cultural adaptations of AA may also vary by region.

With these limitations in mind, this study offered a unique perspective to view how urban S-AI adults with alcohol use disorders access and respond to AA. Findings confirmed that 12-step treatment and AA referral is the modal approach provided to urban S-AI adults seeking to reduce their alcohol use. It also appears that urban S-AI adults were equally divided between attending AA mainstream and culturally adapted AA meetings, and that self-selection into these different types of AA meetings was independent of clinical recommendations about what types of meetings to attend. Likewise, participant characteristics, substance use severity, and cultural identity were identified as poor predictors of the types of AA meetings attended by study participants. While urban S-AI adults attending both mainstream and S-AI adapted AA meetings reported significantly higher rates of engagement in AA prescribed activities relative to participants who only attended mainstream AA meetings, this did not translate into differential AA-related benefit which speaks to the need for additional research to assist AI adults in effectively reducing their alcohol use.

Financial acknowledgements

Funding for this study was provided by a grant from the National Institute on Alcohol Abuse and Alcoholism, (R21 AA023042, PI: Tonigan and T32AA018108, PI: McCrady).

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Table 1.

Baseline Characteristics of the Urban Native American Sample by Type(s) of 12-Step Meetings Attended (90-days before consenting, $n = 61$): Percent, Means, (SD)

	AA Only ($n = 31$)	CA-AA ($n = 30$)	p
Demographics			
% Male	41.9 ($n = 13$)	60.0 ($n = 18$)	0.16
% Homeless	25.8 ($n = 8$)	23.3 ($n = 7$)	0.99
% Single	71.0 ($n = 22$)	46.7 ($n = 14$)	0.03
% Unemployed	70.0 ($n = 21$)	70.0 ($n = 21$)	0.99
Age in Years	41.29 (9.90)	45.37 (9.48)	0.11
Family Income	7,496 (10,787)	13,161 (13,658)	0.08
Education in Years	13.26 (2.07)	13.87 (2.18)	0.27
Tribal Affiliation & Contact			
% Lived on Reservation/Pueblo	67.7 ($n = 21$)	76.7 ($n = 23$)	0.44
% Attended BIA Schools on Reservation	35.5 ($n = 11$)	30.0 ($n = 9$)	0.86
% Family/Friends live on Reservation	87.1 ($n = 27$)	83.3 ($n = 25$)	0.68
% Visit Family/Friends on Reservation	12.9 ($n = 4$)	40.0 ($n = 12$)	0.01
% Attend Traditional Tribal Activities	54.8 ($n = 17$)	73.3 ($n = 22$)	0.13
Pre-Baseline Substance Use (past 90-days)			
Proportion Abstinent Days (PDA)	0.58 (.29)	0.67 (.30)	0.24
Drinks per Drinking Day (DPDD)	12.86 (7.77)	17.62 (10.90)	0.053
Total SIP Score	14.81 (4.45)	14.10 (6.40)	0.62
ADS	22.94 (7.36)	25.80 (10.08)	0.21

Table 2.Lifetime and Current Help-Seeking Behaviors of Urban Native American Problem Drinkers (*n*= 61)

Help-Seeking	AA Only (<i>n</i> = 31)	CA-AA (<i>n</i> = 30)	<i>p</i>
% Reporting Having Alcohol Trt (lifetime)	80.6 (<i>n</i> = 25)	90.0 (<i>n</i> = 27)	0.30
Mean # Alcohol Treatments (lifetime)	2.40 (2.37)	2.86 (2.40)	0.46
% Required in Treatment to attend 12-step mtgs (lifetime)	41.9 (<i>n</i> = 13)	50.0 (<i>n</i> = 15)	0.52
% Recommended attend AA/ Trad practices (lifetime)	19.4 (<i>n</i> = 6)	23.3 (<i>n</i> = 7)	0.52
% Court mandated to Attend AA (lifetime)	64.5 (<i>n</i> = 20)	63.3 (<i>n</i> = 19)	0.92
% Court Mandated to Attend AA (past 90 days)	6.5 (<i>n</i> = 2)	13.3 (<i>n</i> = 4)	0.36
% Reporting Reservation-based Alcohol Trt (lifetime)	6.5 (<i>n</i> = 2)	13.3 (<i>n</i> = 4)	0.36
Proportion Outpatient Treatment Days (past 90)	0.06 (0.10)	0.13 (0.18)	0.053
Proportion Residential Treatment Days (past 90)	0.03 (0.11)	0.08 (0.17)	0.22
Proportion Days AA Attendance (past 90)	0.14 (0.23)	0.23 (0.25)	0.049
Proportion Days CA-AA Attendance (past 90)	NA	0.20 (0.34)	-----

Table 3.Engagement in Prescribed 12-Step Activities by Type of 12-Step Meeting Attended ($n = 61$)

Prescribed 12-Step Activity	AA only ($n = 31$)	CA-AA ($n = 30$)	p
Consider oneself a 12-Step member (%)	35.5 ($n = 11$)	63.3 ($n = 19$)	0.029
Celebrate 12-Step Birthday (%)	32.3 ($n = 10$)	53.3 ($n = 16$)	0.095
Acquired a 12-Step Sponsor (%)	25.8 ($n = 8$)	60.0 ($n = 18$)	0.006
Read 12-Step Literature (%)	80.6 ($n = 25$)	100.0 ($n = 30$)	0.003
Called 12-Step Member for Help (%)	35.5 ($n = 11$)	60.0 ($n = 18$)	0.054
After meeting talk with “general” members (%)	32.3 ($n = 10$)	40.0 ($n = 12$)	0.53
After meeting talk with NA members (%)	22.6 ($n = 7$)	50.0 ($n = 15$)	0.025
Had a 12-Step Spiritual Awakening (%)	41.9 ($n = 13$)	70.0 ($n = 21$)	0.026
Number 12 Steps Ever “worked”	4.19 (4.48)	4.133 (3.51)	0.95
How Helpful is AA Attendance?	3.74 (1.18)	4.20 (1.19)	0.14
How Helpful are Native American AA Meetings?	2.27 (1.28)	3.70 (1.39)	0.001

Table 4.

Bivariate Correlations Between Acculturation and Enculturation Baseline Scores and Measures of Tribal Affiliation, Alcohol Use, and Help-Seeking Behaviors ($n= 61$)

	Enculturation	Acculturation
Tribal Affiliation		
Years lived on the Reservation/Pueblo	0.46**	-0.72**
Frequency of Visits for Traditional Practices	0.32*	-0.26*
Frequency of Visits for Family/Friends	0.20	-0.19
Alcohol Use (past 90-days)		
Proportion Abstinent Days (PDA)	0.17	-0.17
Drinks per Drinking Day (DPDD)	0.08	-0.02
Total Alcohol Consequences (SIP)	-0.03	0.11
Help-Seeking Behaviors (past 90-days)		
Frequency of Outpatient Sessions	0.16	-0.17
Frequency of residential Treatment Sessions	-0.19	0.01
Frequency of AA Mainstream Meetings Attended	-0.11	0.14
Frequency of CA-AA Specialty Meetings Attended	0.19	-0.17

Table 5.

Means (SD) of AA Attendance and Three Measures of Alcohol Use at Baseline, Three and Six-Month Follow-up by Type of AA Meeting Attended

	Baseline	Three-Months	Six-Months
Proportion Abstinent Days ¹			
AA Only	0.58 (0.29)	0.85 (0.20)	0.86 (0.15)
AA and CA-AA	0.67 (0.30)	0.75 (0.32)	0.81 (0.32)
Drinks per Drinking Day ²			
AA Only	12.86 (7.77)	6.54 (6.97)	6.72 (5.90)
AA and CA-AA	17.62 (10.90)	9.11 (10.36)	6.49 (7.44)
Proportion AA Days ³			
AA Only	0.12 (0.20)	0.14 (0.23)	0.16 (0.28)
AA and CA-AA	0.28 (0.28)	0.23 (0.25)	0.19 (0.24)
Percent Alcohol Abstinent			
AA only	0%	38% (9 of 24)	33% (6 of 18)
CA-AA	0%	35% (9 of 26)	48% (12 of 25)

¹ = Proportion Abstinent Days = Number of days abstinent in assessment window divided by total number of days in assessment window.

² = Drinks per Drinking Day = Number of drinks on a drinking day divided by number of drinking days (abstinent days excluded).

³ = Proportion AA Days = Reported number of days AA attended in an assessment window divided by the total number of days in an assessment window.