Longitudinal Study of Urban American Indian 12-Step Attendance, Attrition, and Outcome

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ABSTRACT. Objective: Strong opinions have been voiced about the “fit” between 12-step treatment, community-based 12-step practices, and American Indian beliefs and values. Little is known, however, about the relative benefit of 12-step programs for urban American Indians, although they are the most widely accessed type of treatment by American Indians. This study investigated rates of 12-step attendance, attrition, and substance use outcomes for American Indians for 9 months relative to non-Hispanic White participants. **Method:** This study compared urban American Indian ($n = 63$) and non-Hispanic White ($n = 133$) 12-step attendance, attrition, and substance use over 9 months. The sample was formed by merging data from two prospective single-group longitudinal studies investigating behavior change in community-based 12-step programs. Participants were interviewed at baseline and at 3-, 6-, and 9-month follow-ups. No intervention was provided. Participants were recruited from Alcoholics Anonymous meetings in the community and as they presented for outpatient substance use disorder treatment.

Substance use and patterns of 12-step attendance were measured using the Form 90 calendar-based interview, and the General Alcoholics Anonymous Tools of Recovery was administered to assess the adoption of prescribed 12-step practices and beliefs. **Results:** Trajectories in 12-step meeting attendance over 9 months did not differ between American Indian and non-Hispanic White participants. However, American Indian participants discontinued 12-step attendance significantly less often than non-Hispanic White participants. Higher rates of 12-step attendance predicted increased alcohol abstinence and decreased drinking intensity for both American Indian and non-Hispanic White participants. Twelve-step attendance was unrelated to later illicit drug use for both American Indian and non-Hispanic White participants. **Conclusions:** Community-based 12-step program attendance is associated with drinking reductions among urban American Indians. (*J. Stud. Alcohol Drugs*, 74, 514–520, 2013)

CAN MEMBERS OF A CULTURE that was historically exploited through the introduction of alcoholic beverages be expected to seek help for alcohol-related problems from the very culture that a century earlier sought their destruction? This is the underlying and poignant question when examining whether, and to what extent, urban American Indians will attend and benefit from community-based 12-step programs like Alcoholics Anonymous (AA), which may be viewed by some as a White-dominated organization. Surprisingly little empirical attention has focused on this question despite reports that AA and 12-step-oriented programs are the most widely available forms of treatment on reservations (Kinney and Copans, 1989; Schacht and Baldwin, 1997). The absence of 12-step research among American Indians is even more perplexing because key predictors of AA affiliation are disproportionately reported among American Indians. Such predictors include severity of alcohol dependence,

heavy episodic drinking, and loss of control when drinking (e.g., Gilder et al., 2008).

Conflicting opinions have been voiced about the attractiveness of 12-step programs for American Indians. At the philosophical level, for example, it has been suggested that AA's endorsement of the medical model conflicts with American Indian beliefs about the etiology of alcoholism and, as a result, may serve as a barrier to AA affiliation and benefit (Kinney and Copans, 1989). In contrast, others have argued that AA's emphasis on spiritual practices is congruent with American Indian beliefs about recovery from alcoholism and, hence, may facilitate engagement in AA (Spicer, 2001). Concern has also been expressed about the clash between deeply rooted cultural values, with AA characterized as a predominantly European Christian-based social collective that, according to different authors, may or may not accommodate American Indian cultural norms, values, and beliefs (e.g., Timko, 2008). Further, some American Indians feel that self-identifying as powerless over alcohol unpleasantly mirrors ongoing feelings of powerlessness due to colonization of American Indians by European Americans (Duran and Duran, 1995). Conflicting views about the fit between AA and American Indians also have been voiced at the practical level. Kinney and Copans (1989), for instance, stated that the confessional aspect of sharing personal stories in AA meetings was inconsistent with American Indian

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customs regarding public self-disclosure. Alternatively, the autonomy of local AA groups to structure and conduct meetings as they choose has been seen as offering sufficient flexibility to include Native customs such as talking circles, the medicine wheel, and sweat lodges (Coyhis and Simonelli, 2008; White Bison, 2002).

Only two empirical studies have investigated AA attendance among American Indians, and both were cross-sectional studies that did not examine the association between AA attendance and alcohol use. In the first study, Beals et al. (2006) reported that 38.9% of American Indian respondents with substance use disorders sought help, 41% of whom reported attending 12-step programs (24% of the total sample reported only attending 12-step programs). Of note, participants who reported AA attendance alone or in combination with formal treatment had significantly higher scores, on average, on a measure of general spirituality relative to American Indians who did not attend AA. Because of the cross-sectional nature of Beals et al.'s work, it is unclear whether the higher endorsement of general spirituality preceded the initiation of AA attendance or, alternatively, reflected the influence of 12-step spirituality on participant survey responses. In contrast, respondents who sought help, but not through AA, endorsed at a higher rate a measure of culture-specific spiritual practices relative to participants who did attend AA.

In a second study, Hesselbrock et al. (2003) reported that a majority of Alaska Natives in residential treatment for alcoholism reported some prior AA attendance (77% of males, 73% of females). This AA prevalence rate, however, was significantly lower relative to African American, White, and Hispanic rates of self-help exposure in this sample (range: 84%–92%). However, manual-guided 12-step therapies with non-Native participants frequently achieve similar rates of AA facilitation as those reported by Hesselbrock for American Indians and are regarded as highly successful (e.g., Project MATCH Research Group, 1997). Collectively, then, these findings suggest that many American Indians may initially attend AA. Critical questions remain, however. First, because these studies did not assess frequency of AA attendance over time, one cannot determine the percentage of American Indians who sustained or dropped out of AA. Second, to date we know very little about how, and to what extent, 12-step participation is helpful to those American Indians who remain active in AA.

As an initial effort to address these questions, we focused on urban American Indians in determining the attractiveness and effectiveness of AA. This decision was based on utilitarian considerations and available data: In 1970 about 38% of American Indians were urban dwellers, and this percentage has increased steadily to 61% in 2000. By 2010, the ratio of urban to reservation American Indians was estimated to be 10 to 1 (U.S. Census Bureau, 2010). Recognizing that disparities in alcohol use severity may argue in favor of the

need for reservation-based research, one may also assert that the study of urban American Indians promises to benefit larger numbers of American Indians afflicted with alcohol problems. Ultimately, research in both areas is crucially needed.

This study had three aims. First, we sought to compare urban American Indian and non-Hispanic White 12-step attendance and commitment to prescribed 12-step practices during early affiliation. To the best of our knowledge, this is the first longitudinal study of American Indian 12-step participation with a rigorous design and comparison group. Second, we investigated 12-step attrition over 9 months to determine if urban American Indians were more likely than non-Hispanic Whites to discontinue 12-step attendance. Here, higher rates of 12-step attrition by American Indians would support the commonly voiced opinion that mainstream 12-step ideology and practice clash with traditional American Indian values and beliefs about recovery. Third, we examined whether participant racial/ethnic group membership moderated the benefit of 12-step attendance, with *benefit* defined as the proportion of alcohol-abstinent days, number of drinks per drinking day when drinking did occur, and a conservative measure of the proportion of illicit drug use days.

Method

The sample for this study was formed by merging data from two prospective single-group longitudinal studies investigating common and 12-step-specific behavior change mechanisms (R21-AA016974, R01-AA014197, Principal Investigator: J. Scott Tonigan). Merging of these data sets was possible because the two studies (a) used recruitment strategies that targeted the same locations; (b) had identical eligibility criteria; (c) had follow-ups every 3 months; and (d) used a common core of instruments measuring substance use, 12-step attendance and practices, and demographics. Participants early in AA affiliation were recruited in a large southwestern U.S. city. Early AA affiliation was defined as having no more than 16 weeks of lifetime AA attendance. Recruitment sources included substance use disorder treatment programs, community mainstream AA meetings, public flyers and advertisements, and community shelters. No effort was made to specifically recruit American Indians through American Indian-focused health care clinics. Inclusion criteria included attending at least one AA meeting in the prior 90 days; drinking alcohol in the prior 90 days; and meeting *Diagnostic and Statistical Manual of Mental Disorders, Text Revision, Fourth Edition* (American Psychiatric Association, 2000), criteria for alcohol dependence or abuse. Prospects were excluded if they were less than 18 years of age 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. Participants were not excluded be-

cause of past or current drug abuse or dependence. For this particular investigation, participants also had to self-identify as non-Hispanic White or American Indian. All procedures were approved by the institutional review board at the University of New Mexico (UNM Protocol Nos. 24028 and 27147).

Procedure

After initial on-site screening, informed consent was obtained at the research center. Afterward, participants completed semi-structured interviews, self-report questionnaires, and urine toxicology screens. Follow-up interviews were scheduled at 3, 6, and 9 months in one study; in the second study, follow-ups were at 3, 6, 9, 12, 18, and 24 months. Only data from baseline, 3-, 6-, and 9-month interviews were merged across the two studies and are included in the present analysis. All measures relevant to this study were included at each follow-up assessment in both studies with the exception of the demographic interview and Alcohol Dependence Scale (Skinner and Horn, 1984), which were administered in both studies only at baseline. Participants in each study were paid \$50 for the completion of each interview. Neither study provided an intervention. However, participants were given referrals to treatment programs if interested or if research staff deemed it to be appropriate. A breath alcohol analysis test verified that participants' estimated blood alcohol concentration was .05% or less before they signed informed consent and at each assessment interview.

Measures

Demographic interview. Items included age, level of education, relationship and employment status, and self-reported race/ethnicity. There were ten racial/ethnic categories, two of which were "American Indian or Alaskan Native" and "White not of Hispanic origin." The baseline selection of either of these options was used to identify participants suitable for the aims of this study.

Substance use and treatment. The Form 90 (Miller, 1996) is a retrospective calendar-based semi-structured interview used to collect reports of daily alcohol and other drug use. Three substance use measures were computed from the Form 90. The 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 the number of drinks consumed per drinking day divided by the number of drinking (i.e., non-abstinent) days in the period. Maximum proportion illicit drug use days was calculated similarly (days use / days in assessment period), with the highest frequency of use across six classes of illicit drugs being used as the numerator. This is a conservative estimate of drug use days when multiple drugs were used in a period

but on different days (i.e., it only accounts for the drug used most frequently in a period). 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 ($r = .94$ and $r = .95$, respectively) and to evaluate frequency of days use of six drug categories, e.g., cocaine use ($r = .77$) and marijuana use ($r = .80$; Tonigan et al., 1997; Westerberg et al., 1998). The 25-item Alcohol Dependence Scale was administered at intake to assess participants' initial severity of alcohol dependence.

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 period. Here, 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 meetings attended (e.g., mainstream or specialty American Indian) or the types of 12-step programs attended (e.g., AA or Narcotics Anonymous [NA]). The Form 90 also inquired about formal treatment received during an assessment period. The number of days residential and/or outpatient treatment for alcohol, other drug, or emotional problems was recorded and then summed. The total number of days formal treatment was received was then divided by the total number of days in an assessment period to derive the proportion of days formal treatment had been received.

The General Alcoholics Anonymous Tools of Recovery (GAATOR; Montgomery et al., 1995) consists of 24 self-report items that indirectly assess the extent to which a participant has practiced the 12 steps. Each item represents one step (e.g., "I have told others about my spiritual experience" corresponds with Step 11; "I have found character defects I am willing to give up" corresponds with Step 6). Using a 4-point Likert scale (*definitely false*, *false*, *true*, and *definitely true*), participants indicate the degree to which they have practiced a given step-related behavior in the previous 90 days. Item responses were summed to derive an overall GAATOR score, with total possible scores ranging from 24 to 96. Study aims were tested using HLM (Version 6) (Scientific Software International; Raudenbush and Bryk, 2002).

Results

A total of 383 participants were in the combined data set, and 196 (51%) were identified across the two studies as American Indian ($n = 63$) or non-Hispanic White ($n = 133$). Of the excluded participants, 42% were Hispanic ($n = 160$), 2% were African American ($n = 9$), and the remaining 4% ($n = 16$) identified themselves as "other." (Note: Sum of participants by ethnicity is 381 due to rounding.) Table 1 provides the demographic, substance use, and help-seeking behaviors of the 196 American Indian and non-Hispanic White participants at baseline. As a group, American Indian participants were younger and reported higher alcohol dependence

TABLE 1. Baseline characteristics of 12-step study sample ($N = 196$)

Variable	Non-Hispanic White ($n = 133$) % (n) or M (SD)	American Indian ($n = 63$) % (n) or M (SD)	p
Demographics			
Gender (male)	62.4% (83)	55.6% (35)	<.45
Age (years)	39.60 (9.44)	36.51 (9.95)	<.04
Education (years)	13.30 (2.79)	13.22 (2.53)	<.85
Unemployed	62% (82)	68% (43)	<.37
Marital (single, never married)	42% (56)	51% (32)	<.08
Substance use			
Alcohol Dependence Scale total	46.77 (9.71)	50.40 (8.70)	<.01
Drinks per drinking day	15.29 (11.09)	16.87 (10.33)	<.35
Proportion alcohol abstinent days	.54 (.31)	.66 (.29)	<.02
Proportion drug days	.23 (.34)	.14 (.26)	<.09
Help seeking			
Proportion days formal treatment	.08 (.15)	.07 (.14)	<.93
Proportion days AA attendance	.22 (.22)	.19 (.20)	<.38
Total GAATOR score	64.05 (12.76)	64.82 (10.26)	<.69

Notes: AA = Alcoholics Anonymous; GAATOR = General Alcoholics Anonymous Tools of Recovery.

severity on the Alcohol Dependence Scale. Nevertheless, American Indian participants also reported, on average, significantly higher PDA relative to non-Hispanic Whites. Help seeking in the 90 days before study recruitment was relatively equivalent for both groups. Participants reported attending about 7–8 days of formal treatment in the past 90 days and were similar in their endorsement of 12-step-related beliefs and practices as measured by the GAATOR.

Preliminary analyses were conducted to assess the integrity of the planned comparisons. Overall sample attrition was low (8.2%, 9.7%, and 10.7% for the 3-, 6-, and 9-month interviews, respectively); no differential attrition rate by racial/ethnic group was observed at any follow-up; and largest obtained chi-square statistic was $\chi^2(1) = 0.43$, $p < .52$. To assess the viability of pooling data across the two studies, we used t tests (with Study as the between-subject factor), and all baseline continuous measures reported in Table 1 were considered dependent measures. Of the 10 t tests, only one was significant without protection for inflated type I error. For unknown reasons, Study 2 participants ($n = 130$) reported, on average, 17.20 ($SD = 11.58$) DPDD, whereas participants in Study 1 ($n = 66$) reported 12.97 ($SD = 8.62$) DPDD, $t(193) = -2.61$, $p < .01$. No mean racial differences were found on baseline PDA and number of illicit drug use days.

Aim 1. Table 2 displays self-reported help seeking and substance use of the sample during study participation. A random-coefficient regression analysis (Raudenbush and Bryk, 2002) was used to assess whether the two racial groups differed in changing rates of 12-step attendance from intake through the 3-, 6-, and 9-month follow-up. This analysis first indicated, ignoring racial group membership, that rates of 12-step attendance for the overall sample did not change over time ($b = -0.01$), $t(725) = -1.53$, $p < .13$,

and that, on average, participants reported attending AA at intake about once every 4 days ($b = 0.24$), $t(194) = 13.59$, $p < .001$. Significant heterogeneity in individual change trajectories in rates of 12-step attendance, however, was observed, $\chi^2(181) = 237.32$, $p < .003$. Including a dummy-coded term to represent racial group membership (0 = non-Hispanic White, 1 = American Indian), we found that the two groups did not differ, at baseline, on average proportion days of AA attendance ($M_{\text{non-Hispanic White}} = .25$; $M_{\text{American Indian}} = .22$), and that changes over time in rates of 12-step attendance did not differ between the two groups (non-Hispanic White: $b = -0.01$; American Indian: $b = 0.004$).

We repeated this analysis strategy using a composite measure of endorsement of 12-step prescribed practices and beliefs, the GAATOR (intake, 3-, 6-, and 9-month follow-up). The unconditional model indicated that (a) the baseline value of the GAATOR was significantly different than zero ($M = 64.73$, $SD = 11.57$), $t(193) = 68.60$, $p < .001$; (b) GAATOR scores did not change, on average, over the course of the study ($b = 0.16$), $t(687) = 0.48$, $p < .63$; and (c) individuals differed significantly in their change trajectories, $\chi^2(178) = 279.45$, $p < .001$. The conditional model that included the dummy-coded racial variable yielded null findings: The two groups did not differ, on average, on endorsement of 12-step practices at baseline, $t(192) = .63$, $p < .53$, nor did they differ significantly in changes in prescribed 12-step practices (GAATOR) over the course of the study (non-Hispanic White: $b = 0.05$; American Indian: $b = 0.41$), $t(192) = 0.54$, $p < .59$.

Aim 2. A random-coefficient regression model using a Bernoulli function was done to determine whether rates of 12-step attrition differed by racial group. Here, the self-reported proportion of days of 12-step attendance at 3, 6, and 9 months was recoded such that a value of 0 was assigned

TABLE 2. Help seeking and substance use: Baseline to 9-month follow-up—proportions, means (*SD*), and percentages

Variable	Baseline	3 month	6 month	9 month
Help seeking				
Proportion days AA				
American Indian	.19 (.20)	.28 (.25)	.21 (.27)	.19 (.24)
Non-Hispanic White	.22 (.22)	.31 (.35)	.23 (.30)	.19 (.27)
Total GAATOR score, <i>M</i> (<i>SD</i>)				
American Indian	64.82 (10.26)	67.64 (11.37)	66.79 (13.52)	67.38 (14.10)
Non-Hispanic White	64.05 (12.76)	65.04 (13.72)	64.03 (15.02)	64.26 (15.77)
Proportion days formal treatment				
American Indian	.07 (.21)	.11 (.20)	.05 (.09)	.04 (.07)
Non-Hispanic White	.08 (.15)	.12 (.21)	.11 (.21)	.06 (.13)
Substance use				
Proportion days alcohol abstinent				
American Indian	.66 (.29)	.82 (.28)	.81 (.28)	.83 (.27)
Non-Hispanic White	.54 (.31)	.77 (.31)	.77 (.32)	.77 (.33)
Drinks per drinking day, <i>M</i> (<i>SD</i>)				
American Indian	16.87 (10.33)	10.40 (11.25)	10.07 (9.62)	7.14 (7.53)
Non-Hispanic White	15.29 (11.09)	7.94 (11.08)	6.18 (7.81)	6.54 (8.73)
Percentage alcohol abstinent				
American Indian	0%	31%	27%	39%
Non-Hispanic White	0%	36%	40%	39%
Proportion days drug use				
American Indian	.14 (.26)	.06 (.18)	.09 (.23)	.06 (.20)
Non-Hispanic White	.23 (.34)	.12 (.27)	.16 (.31)	.13 (.30)

Notes: AA = Alcoholics Anonymous; GAATOR = General Alcoholics Anonymous Tools of Recovery.

for a given time frame if no 12-step attendance was reported and a value of 1 was assigned if any 12-step attendance was reported. The unconditional model indicated that 12-step dropout significantly increased over time ($b = 0.42$; odds ratio = 1.54), $t(530) = 3.53$, $p < .001$. We next entered the dummy-coded term to determine if changes in 12-step attrition over time were moderated by participant race. Findings showed that non-Hispanic Whites ($b = 0.59$) were significantly more likely to report discontinuing 12-step attendance over time relative to American Indian participants ($b = 0.05$), $t(529) = -2.19$, $p < .029$. The odds ratio of 12-step dropout was 1.75 for non-Hispanic Whites and 1.1 for American Indian participants.

Aim 3. Three lagged hierarchical linear models were conducted to determine if racial status interacted with the proportion of days of 12-step attendance (intake, 3-, and 6-month) in predicting PDA, DPDD, and illicit drug use days for months 3, 6, and 9. As background, the unconditional hierarchical linear models indicated, for the entire sample, that 12-step attendance significantly predicted later increases in abstinence (PDA: $b = 0.09$), $t(526) = 2.13$, $p < .034$; reduced drinking intensity (DPDD: $b = -2.96$), $t(526) = -2.30$, $p < .022$; but was unrelated to days of illicit drug use ($b = 0.003$), $t(525) = 0.084$, $p < .93$. Entering the racial dummy-coded term addressed the question, “Do the two racial groups report relatively equal or different benefit (over time)

in attending 12-step programs?” The racial term did not interact with 12-step attendance in predicting later PDA, $t(524) = -0.82$, $p < .41$. Likewise, the relationship between 12-step attendance and later illicit drug use was not moderated by racial status, $t(523) = 0.46$, $p < .64$. In contrast, we found that racial status significantly moderated the effectiveness of 12-step attendance to reduce later drinking intensity over time, when drinking occurred, DPDD: $t(524) = 2.79$, $p < .006$. For the non-Hispanic White participants, 12-step attendance was predictive of decreased DPDD over the course of the study ($b = -4.76$). Among American Indian participants, however, 12-step attendance was predictive of later increases in drinking intensity over time ($b = 2.81$). Post hoc analyses indicated that the “source” of this moderated effect was in the lag between 6-month 12-step attendance and 9-month DPDD and resulted because of a single outlier. The removal of this case from the analysis eliminated this significant interaction, with the relationship between 12-step attendance and later DPDD now being significant and negative for both racial groups (e.g., higher 12-step attendance predictive of lower drinking intensity when drinking occurred).

Discussion

This study offers a rare longitudinal perspective of urban American Indian 12-step attendance, attrition, and

substance use outcomes. Overall, our findings indicate that urban American Indians attended 12-step meetings as often, endorsed 12-step beliefs and practices as much, and reported similar patterns of 12-step attendance over time compared with the non-Hispanic White participants. Further, American Indian participants tended to remain affiliated with community-based 12-step programs at higher rates over 9 months relative to non-Hispanic White adults. No racial differences were found in the lagged and beneficial relationships between 12-step attendance and later alcohol use after correcting for one extreme outlier case. For both groups, frequency of 12-step attendance significantly predicted increased alcohol abstinence and reductions in drinking intensity. In contrast, 12-step attendance and frequency of later illicit drug use were unrelated for both racial groups. Collectively, then, our findings support the view that 12-step programs provide benefit to those urban American Indians who elect to attend them for alcohol-related problems. Only two (3%) of the American Indian participants with follow-up data, for example, discontinued their 12-step attendance throughout the entire 9 months of study follow-up, and pre-post increases in proportion of abstinent days among American Indian participants were clinically meaningful ($d = 0.60$); reductions in drinking intensity when drinking did occur were, on average, substantial ($d = 1.07$).

We found no evidence that 12-step attendance had iatrogenic effects among American Indian participants. Indicators of adverse effects that we considered included reporting lower rates of adopting prescribed behavioral and spiritual precepts in the 12 steps, declining AA attendance over time, higher AA attrition, and reduced benefit between 12-step attendance and reductions in alcohol use. None of these indicators suggested that clinical referral to 12-step programs was contraindicated for American Indian individuals with substance use disorders. The findings did indicate, however, that 12-step attendance was unrelated to observed reductions in illicit drug use for both American Indian and non-Hispanic White participants. Illicit drugs used by participants primarily included marijuana, cocaine, and opiates. As a result, referral to 12-step programs for problems with illicit substances may not be warranted.

Limitations

An important segment of urban American Indian problem drinkers seeking to reduce their alcohol use was excluded from the study. Specifically, we required that study participants had to have attended at least one AA meeting in the prior 90 days. Excluded American Indian problem drinkers either did not wish to affiliate with 12-step programs or they were unable to overcome perceived barriers to 12-step affiliation. As such, study participants may represent a self-selected sample that was favorably biased toward 12-step programs. Available data do not amplify these concerns,

however. Specifically, this study was conducted in a state where 9.4% of the population is American Indian (U.S. Census, 2010). The percentages of American Indians in the two study samples were 17.1% and 15.4%, and there was no intentional effort to recruit American Indian participants. If anything, it would seem that American Indian problem drinkers were overrepresented relative to other racial groups in our sample. Likewise, baseline comparisons of American Indian and non-Hispanic White participant drinking in this study were consistent with previous studies in which American Indians have high rates of abstinence but also tend to consume more alcohol when they do drink (Substance Abuse and Mental Health Services Administration, 2011). At the other end of the spectrum, eligibility criteria also excluded adults with extensive treatment and 12-step histories to control for past learning effects. As a result, findings may not generalize to urban American Indians with extended successful or unsuccessful past 12-step experiences.

Some measurement limitations should also be noted. First, we have no data on the specific types of 12-step meetings attended by our participants during follow-up, and it is plausible that the observed 12-step benefit among the American Indian participants was tied to attendance at specialty 12-step meetings for American Indians. Furthermore, no attempt was made to discriminate between the types of 12-step programs that were attended during follow-up (e.g., AA or NA). A significant improvement in future work would be to collect such information. Second, it seems reasonable that the extent of acculturation of American Indian participants would influence both the initial attractiveness of, and later comfortability with, 12-step practices. Ultimately, the saliency of the appropriateness of community-based 12-step programs for American Indians may hinge on the extent to which a tribal member has been acculturated to the values, beliefs, and practices of the Eurocentric culture. We recommend the inclusion of such measures when investigating 12-step use and outcomes among American Indian problem drinkers. Third, it is common for American Indians to make use of multiple sources for help in reducing problematic substance use (Beals et al., 2006). We did not measure traditional types of help seeking, however. Such practices may have been occurring concurrently with study participation and potentially account for some reductions in substance use. Fourth, we did not determine whether the initiation of 12-step attendance was court mandated. Although there is no tangible evidence to suggest that American Indian participants were more likely to be court mandated relative to non-Hispanic White adults, the possibility remains that higher rates of sustaining 12-step attendance among American Indian participants may have reflected the influence of external factors.

In sum, our findings provide a unique perspective to judge the experiences of American Indians attending 12-step meetings in a large urban center. Overall, American Indians

attended community-based 12-step programs at similar rates as non-Hispanic Whites, and both groups sustained relatively high engagement in 12-step prescribed activities over a 9-month period. In fact, American Indian participants were significantly less likely than non-Hispanic Whites to drop out of 12-step programs. In addition, the frequency of 12-step attendance predicted increased alcohol abstinence and reductions in drinking intensity among both American Indian and non-Hispanic White participants. Illustrating this relative parity in benefit, about two of five participants within each ethnic group reported complete alcohol abstinence at the 9-month interview. Future research should focus on how, if at all, urban American Indians who attend 12-step programs may differ from those who do not attend, how acculturation may moderate the attractiveness of 12-step programs among urban American Indians, and the extent to which urban American Indians attend specialty 12-step meetings.

References

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders, text revision* (4th ed.). Washington, DC: Author.
- Beals, J., Novins, D. K., Spicer, P., Whitesell, N. R., Mitchell, C. M., & Manson, S. M., & the American Indian Service Utilization, Psychiatric Epidemiology, Risk, and Protective Factors Project Team. (2006). Help seeking for substance use problems in two American Indian reservation populations. *Psychiatric Services*, 57, 512–520.
- Coyhis, D., & Simonelli, R. (2008). The Native American healing experience. *Substance Use & Misuse*, 43, 1927–1949.
- Duran, E., & Duran, B. (1995). *Native American postcolonial psychology*. Albany, NY: State University of New York (SUNY) Press.
- Gilder, D. A., Lau, P., Corey, L., & Ehlers, C. L. (2008). Factors associated with remission from alcohol dependence in an American Indian community group. *American Journal of Psychiatry*, 165, 1172–1178.
- Hesselbrock, V. M., Hesselbrock, M. N., & Segal, B. (2003). Alcohol dependence among Alaskan natives and their health care utilization. *Alcoholism: Clinical and Experimental Research*, 27, 1353–1355.
- Kinney, J., & Copans, S. (1989). Native American alcohol and substance use. In J. Kinney & S. Copans (Eds.), *Alcohol use and its medical consequences* (pp. 141–165). Hanover, NH: Project Cork Institute, Dartmouth Medical School.
- Miller, W. R. (1996). *Form 90: A structured assessment interview for drinking and related behaviors (test manual)*. Project MATCH Publication Vol. 5, NIH Publ. No. 96-4004. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism.
- Montgomery, H. A., Miller, W. R., & Tonigan, J. S. (1995). Does Alcoholics Anonymous involvement predict treatment outcome? *Journal of Substance Abuse Treatment*, 12, 241–246.
- Project MATCH Research Group. (1997). Matching Alcoholism Treatments to Client Heterogeneity: Project MATCH posttreatment drinking outcomes. *Journal of Studies on Alcohol*, 58, 7–29.
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Newbury Park, CA: Sage.
- Schacht, R. M., & Baldwin, J. (1997). *The vocational rehabilitation of American Indians who have alcohol or drug abuse disorders: Executive summary* (NIDRR Grant No. H133B30068). Washington, DC: U.S. Department of Education.
- Skinner, H. A., & Horn, J. L. (1984). *Alcohol Dependence Scale (ADS) user's guide* (pp. 1–38). Toronto: Addiction Research Foundation.
- Spicer, P. (2001). Culture and the restoration of self among former American Indian drinkers. *Social Science & Medicine*, 53, 227–240.
- Substance Abuse and Mental Health Services Administration. (2011). *Results from the 2010 National Survey on Drug Use and Health: Summary of national findings* (Office of Applied Studies, NSDUH Series H-41, HHS Publication No. SMA 11-4658). Rockville, MD: Author. Retrieved from: <http://www.samhsa.gov/data/NSDUH/2k10NSDUH/2k10Results.htm>
- Timko, C. (2008). Outcomes of AA for special populations. *Recent Developments in Alcoholism*, 18, 373–392.
- Tonigan, J. S., Miller, W. R., & Brown, J. M. (1997). The reliability of Form 90: An instrument for assessing alcohol treatment outcome. *Journal of Studies on Alcohol*, 58, 358–364.
- U. S. Census Bureau. (2010). *The American Indian and Alaska Native population: 2010*. Retrieved from <http://www.census.gov/2010census/data000>
- Westerberg, V. S., Tonigan, J. S., & Miller, W. R. (1998). Reliability of Form 90D: An instrument for quantifying drug use. *Substance Abuse*, 19, 179–189.
- Witbrodt, J., Mertens, J., Kaskutas, L. A., Bond, J., Chi, F., & Weisner, C. (2012). Do 12-step meeting attendance trajectories over 9 years predict abstinence? *Journal of Substance Abuse Treatment*, 43, 30–43.
- White Bison. (2002). *The red road to wellbriety: In the Native American way*. Colorado Springs, CO: Author.