

THE IMPLICATIONS OF CULTURAL ORIENTATION FOR SUBSTANCE USE AMONG AMERICAN INDIANS

Mindy Herman-Stahl, Ph.D., Donna L. Spencer, M.A., and
Jessica E. Duncan, M.P.H.

Abstract: American Indians were interviewed about their participation in traditional culture and their substance use behaviors. Analyses indicated that cultural orientation differed by age and employment status. Bicultural or less Indian oriented individuals were more likely to misuse alcohol than their more Indian oriented counterparts. The implications of cultural orientation for substance use behaviors are discussed. The need for more precise conceptualization and measurement of acculturation is recommended.

American Indians have a long and tumultuous history with alcohol. Prior to the introduction of alcohol by European travelers, traders, and settlers in North America, American Indians had little experience with intoxicating beverages (Beauvais, 1998). Historical accounts suggest that American Indians were pressured to drink by Europeans to seal trade agreements or acknowledge special occasions (May, 1989). Some researchers suggest that American Indians who prized the experience of altered states of consciousness turned to alcohol use to induce dream seeking. Historians also suggest that following forced movement onto reservations and alienation from traditional work, many American Indians drank to relieve boredom and despair (Mail & Johnson, 1993). Settlers soon became weary of American Indian drinking and passed colonial laws prohibiting the sale of alcohol to them. Prohibition was enforced until 1953, although many tribes retain dry policies to this day. Throughout this unfortunate history, drinking became part of the way of life for many American Indians.

Ethnographic and epidemiological studies of American Indians continue to highlight patterns of excessive alcohol use and its destruction to individuals, families, and communities. Although many American Indians abstain completely from drinking alcohol, those who do drink tend to have

more problems associated with their use than non-American Indian drinkers. American Indian drinkers are more likely to drink large quantities, suffer blackouts, and experience a higher proportion of alcohol-related problems than non-American Indian drinkers (May, 1994). Substance use disorders, diagnosed by the extent and duration of symptoms that impair social, psychological, employment, and recreational functioning and cause physical harm, are unusually high among American Indians. Research suggests that one-quarter to one-third of adult American Indians have a past year substance use problem, and as many as three-quarters of males and 40% of females may experience a lifetime substance use disorder (Bray, Dalberth, Herman-Stahl, Walker, & Sanchez, 1999; Herman-Stahl & Chong, 2002; Kinzie et al., 1992; Leung, Kinzie, Boehnlein, & Shore, 1993; Manson, Shore, Baron, Ackerson, & Neligh, 1992). These prevalence rates are approximately three times higher than that of the general adult population as found in national epidemiologic studies (Kessler et al., 1994; Regier et al., 1988).

Many American Indian people strongly believe that their abrupt detachment from traditional culture is at the root of their problems with alcohol (Beauvais, 1998; May, 1982). Culture refers to the "...framework, beliefs, expressive symbols, and values in terms of which individuals define their world, express their feelings, and make judgments...It is the fabric of meaning in terms of which human beings interpret their existence and guide their actions" (O'Neil & Mitchell, 1996, p. 566). Losing touch with these important traditions, rituals, and values may have alienated American Indians from their usual forms of coping and behavioral expectations (LaFromboise, 1988; May, 1982; Oetting & Beauvais, 1990-91). Moreover, as traditional means of achieving family honor and well being disappeared, many individuals lost the ability to be successful in the traditional way of life (O'Neil & Mitchell, 1996).

Indeed, research suggests that constructs related to the extent to which ethnic minorities identify with and participate in their own traditional culture and/or other cultures (including the dominant culture) are important for psychological well being (Aponte & Barnes, 1995; Castro, Proescholdbell, Abeita, & Rodriguez, 1999; James, Kim, & Armijo, 2000; Marin, 1992; Phinney, 1990; Roosa, Dumka, Gonzales, & Knight, 2002; Vega, Zimmerman, Gil, Warheit, & Apospori, 1993). It is from this evidence that constructs related to cultural identification have begun to receive attention in research on substance use and abuse among ethnic minority adolescents and adults, including American Indians (De La Rosa, Vega, & Radisch, 2000).

Relevant constructs include acculturation, ethnic identity, enculturation, cultural orientation, biculturalism, and ethnic identification. *Acculturation* has traditionally been conceived as a process of assimilation into the majority culture (Aponte & Barnes, 1995); *ethnic identity* is the part of an individual's social identity stemming from attachment to a cultural group (Zimmerman, Ramirez-Valles, Washienko, Walter, & Dyer, 1996); *enculturation* is the process by which individuals identify with their own minority

culture (Zimmerman, et al., 1996); *cultural orientation* refers to the independent identification with both the minority and majority culture (Oetting & Beauvais, 1990-91); *biculturalism* is the extent to which individuals are oriented towards both their own and the majority culture (Birman, 1998); and *ethnic identification* is the action of associating oneself with an ethnic or cultural group and the degree of connectedness one feels with this group (Bates, Beauvais, & Trimble, 1997). Similar to other researchers (Castro et al., 1999; Oetting & Beauvais, 1990-91; Roosa, et al., 2002), we use the term "cultural orientation" in this article to denote an individual's identification with and participation in his/her own culture as well as the dominant culture. Cultural orientation is a multidimensional, multidirectional process through which identification to the traditional and dominant culture occurs independently yet simultaneously (Oetting & Beauvais, 1990-91; Roosa et al., 2002).

Issues of cultural orientation may be particularly complex for American Indians. First, unlike some ethnic groups who voluntarily immigrated, American Indians experienced the effects of a majority culture that forced its beliefs, values, and practices on them and removed them from their ancestral lands (Aponte & Barnes, 1995). Second, many American Indians reside on geographically remote reservations that are isolated from mainstream culture. Third, American Indians have faced institutionalized policies that have demeaned their culture and disrupted the normative process of passing on their heritage (e.g., boarding schools). Finally, American Indians live under unique circumstances of having politically sovereign land yet being largely dependent on the federal government.

Research investigating the link between cultural orientation and substance use among American Indians is scant and inconsistent. Anthropological studies have shown support for the hypothesis that the high rates of alcohol use among American Indians is due, in part, to the break-up of traditional culture (Whittaker, 1963). However, this theory has not been consistently borne out in empirical analysis. In a study of drinking patterns of American Indians affiliated with diverse tribes, traditionalism was no longer significant when family history of drinking, psychological stress, and gender were added to the predictive model (Weisner, Weibel-Orlando, & Long, 1984). In a ten-year longitudinal study of American Indian alcoholics, Westermeyer and Neider (1985) found that cultural affiliation was strongly linked with substance use, depressive symptoms, and legal problems at baseline but not at follow-up. Moreover, in a study of adolescent American Indians, ethnic identity did not predict alcohol involvement either directly or indirectly; rather, alcohol use was associated with peer alcohol involvement and family sanctions (Bates et al., 1997). Research by Oetting and Beauvais (1990-91) on orthogonal cultural identification indicated that bicultural youth or youth with strong ties to either Anglo or Indian culture fared better in terms of socio-emotional adjustment than youth who were marginalized from both cultures (Oetting, Swaim, & Chiarella, 1998). However, their findings on cultural

identification and substance use were inconclusive: One study showed that bicultural adolescents were less likely to use drugs, while results from a second study indicated no relationship (Oetting & Beauvais, 1990-91).

Given inconsistencies in research findings and the fact that many programs incorporate traditionalism and cultural identity as important protective factors for the prevention and treatment of substance abuse among American Indians, more research is needed to elucidate the links between cultural orientation and substance use. Our study goes beyond unidimensional measures of acculturation, such as language fluency, to encompass a broader scope of culturally-relevant indicators including friendship patterns, time spent on reservation, participation in traditional ceremonies, and devotion to learning about and being concerned with traditional culture. This study also contributes to existing research by examining the association between cultural orientation and multiple measures of alcohol misuse including heavy drinking, extended drinking (i.e., going on benders), poly drug use, and alcohol abuse and dependence. Moreover, this study incorporates measures of illicit drug use to assess whether the role of cultural orientation varies with respect to alcohol versus illicit drug use outcomes.

Methods

Data for this study were collected as part of a special initiative under the State Systems Development Program, Center for Substance Abuse Treatment (CSAT), Substance Abuse and Mental Health Services Administration to improve the data quality and resource allocation decisions for the provision of state substance abuse treatment services.

Sampling

The study population included all adult (aged 18 years or older) American Indians residing on reservations in South Dakota as well as in Rapid City. The sampling frame was stratified by the nine reservations in the state plus Rapid City. A simple random sample of 500 housing units identified through the Department of Housing and Urban Development (HUD) or relevant tribal agencies was selected from within each of the ten strata. A total of 3,481 eligible housing units were identified for the study. Of the eligible housing units, completed interviews were obtained from 2,588 adults, resulting in an overall response rate of 74.3%. Reasons for ineligibility included vacant housing, not a housing unit, non-Indian household, subject was physically or mentally unable to participate, and language barriers. Because we wanted to focus on issues specific to on-reservation American Indians, we excluded the Rapid City sub-sample ($n=139$). The final sample size was 2,449.

Instruments

Data were collected using a questionnaire designed by the National Technical Center for Substance Abuse Needs Assessment at Harvard University as required by CSAT. Respondents were asked about their socio-demographic characteristics, health, insurance coverage, alcohol and illicit drug use, and substance abuse treatment need and history.

Cultural Orientation

To assess cultural orientation, eight questions were asked regarding language fluency (reading and writing), ethnic pride, time spent on the reservation, ethnicity of friends, participation in traditional activities, and time spent thinking and learning about American Indian culture. These items were modified from an original instrument comprised of 20 items intended to measure acculturation level among Hispanics (Cuellar, Harris, & Jasso, 1980). This instrument has not been tested for measure equivalence for use with American Indian populations. However, items in this measure represent the typical components of cultural orientation relevant for American Indians (or other ethnicities), including behavioral participation, affiliative patterns, and self-identification as an American Indian (Trimble, 1991). Six of the eight items were based on a five-point Likert scale [e.g., "At home, I speak: 1) only my Native language; 2) my Native language more of the time than English; 3) Both my Native language and English about the same amount of the time; 4) English more of the time than my Native language; and 5) only English"]. The additional two items were based on a four-point likert-type scale. Taking the mean score across all eight items for each respondent created an overall scale measuring cultural orientation. The overall mean was trichotomized so that mean scores within the range of 1.0 to 2.3 (20.1% of sample) were considered "more Indian oriented," mean scale scores between 2.5 and 3.3 (64.8% of sample) were considered "bicultural," and mean scale scores between 3.4 and 5.0 (15.1% of sample) were classified as "less Indian oriented." The internal consistency of this cultural orientation scale as measured by Cronbach's alpha coefficient was .68.

Alcohol and Illicit Drug Use

Several measures were used to assess alcohol consumption in the past year including any alcohol use, heavy alcohol use, and extended alcohol use. Heavy alcohol use was defined as consumption of five or more drinks (four or more drinks for women) in a 24-hour period at least once a week in the past year. Different consumption levels for defining heavy drinking were employed for men and women to account for potential differences in body mass, for women's higher susceptibility to the physiological consequences of alcohol (Deal & Gavalier, 1994) and women's greater likelihood to underestimate the quantity of alcohol they consume (Sobell, Cunningham, & Sobell, 1996). Extended alcohol use was defined as drinking for two or more days without sobering up.

Respondents were asked about their past year use of illicit drugs. Any illicit drug use was defined as any non-medical and nonreligious use of marijuana or hashish, hallucinogens, cocaine in any form (including crack), heroin or other opiates, inhalants, or stimulants at least once in the past 12 months. Non-medical use was defined as use without a doctor's prescription, use in greater amounts than what a doctor prescribed, or use for some other non-medical reason, such as to get high. Nonreligious use refers to use outside a religious ceremony.

Substance Abuse and Dependence

Individuals were screened into the diagnostic portion of the interview if they reported alcohol or illicit drug use within the past year. Diagnoses of substance abuse or dependence were made using a modified version of the Substance Abuse Module of the Diagnostic Interview Schedule (DIS-SAM) (Robins, Cottler, & Babor, 1990) using criteria from the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM III-R) (American Psychiatric Association, 1987).¹ This instrument has shown adequate reliability and validity in minority populations and has been successfully used with American Indians (Manson et al., 1992). To be considered *dependent* on a given substance, persons needed to have had a minimum of three out of nine symptoms of dependence at any point in their lifetime. Some of these symptoms need to have persisted for at least one month or to have occurred over a longer period of time. The DSM III-R (1987) category of psychoactive substance abuse was applied to those who did not meet the definition of dependence but had at least one of the following symptoms: (a) continued use despite persistent or recurrent social, occupational, psychological, or physical problems caused or exacerbated by substance use; or (b) recurrent use in physically hazardous situations. In the analyses, diagnoses of substance abuse and dependence were combined.

Data Collection

After conducting a pilot test, Computer Assisted Personal Interviewing (CAPI) was implemented from November 1996 through August 1997. Data collection was coordinated by the Aberdeen Area Tribal Chairman's Health Board (AATCHB), an umbrella organization designed to bring together the Indian nations in the Aberdeen Area to address matters of American Indian health. Interviewers underwent four days of intensive training. All interviewers and supervisors were American Indians from the participating reservations.

To increase awareness and support for the main study, tribal coordinators implemented a media campaign to advertise the study on radio stations, in flyers, and in newspapers. In addition, interviewers mailed a lead letter to households about a week before they anticipated making their

first contact. Interviewers then made a personal visit to the household where they spoke to an adult and introduced the study. If the adult agreed to complete the screening interview, the interviewer constructed a roster of the first names (or some other unique identifier) of adults aged 18 years or older in the household using a laptop computer. The CAPI program on the laptop was used to randomly select one adult in the household for an interview.

If the selected household member was present, the interviewer proceeded with the survey. If the selected adult was not available, the interviewer arranged a time to return when the selected person would likely be at home. Prior to attempting an interview, interviewers described the nature of the information to be requested and procedures to be followed, informed household members about the voluntary nature of the survey and their rights as respondents, explained confidentiality procedures and protections, and described how the data would be used to benefit the tribe.

Respondents were given a financial incentive for completing an interview. The amount of the incentive was usually \$10, but varied in some cases depending on preferences of tribal leaders. Some tribes expected respondents to do the interview without incentives and to use the money for other purposes to help the reservations. Other tribal leaders chose to pay respondents for their time to conduct the interview.

Analysis

Data were weighted to reflect the probability of an individual's inclusion in the sample, and weights were adjusted to compensate for different response rates and coverage within gender and age groups.

Univariate and bivariate analyses were conducted on sample characteristics and the association between cultural orientation and the prevalence of substance use and abuse. Multivariate logistic regression analyses were performed to examine the relationship between cultural orientation and substance misuse outcomes, controlling for the socio-demographic characteristics of age, gender, education, and employment. All statistical analyses were performed using Survey Data Analysis (SUDAAN). The SUDAAN software fully accounts for the complex features of the sample design including stratification and unequal weights (Shah, Barnwell, & Bieler, 1997).

Results

Univariate and Bivariate Results

Sample Characteristics

Table 1 summarizes key characteristics of the study sample. The majority (60%) of the survey respondents (un-weighted) were female, and the age groups most represented by the sample were 25 to 44 year olds (47%) and 45 to 64 year olds (30%). Over 70% of the respondents reported at least a high school education, and 44% of the respondents were working full-time at the time of the interview. Using the cultural orientation measure described earlier, two-thirds of the respondents were classified as bicultural, 20% as more American Indian oriented and 15% as less American Indian oriented.

Demographic Differences in Cultural Orientation

Chi-square measures of association were calculated to assess variations in cultural orientation among different socio-demographic groups. Table 2 presents cultural orientation by gender, age, education, and employment. The distribution across the cultural orientation categories was found to be similar for males and females. Cultural orientation also did not differ significantly by educational attainment. In contrast, statistically significant differences in cultural orientation were observed for age and employment status. Older American Indians were more likely to be more American Indian oriented and less likely to be bicultural, whereas younger respondents were more likely to be classified as bicultural. Those who were employed part-time or fell within the "other" employment category (e.g., disabled, retired, homemaker) were more likely to be American Indian oriented.

Past Year Substance Use by Cultural Orientation

Chi-square measures of association were calculated to assess differences in substance use behaviors by cultural orientation. Table 3 presents these results. Rates of past year substance use were consistently highest among bicultural and less American Indian oriented respondents, and this pattern was statistically significant across all alcohol, illicit drug, and poly-drug use measures. In addition, past year rates of alcohol use disorders (either alone or in combination with drug abuse/dependence) were highest among bicultural and less American Indian oriented respondents.

Logistic Regression Results

Table 4 presents the odds ratios and 95% confidence intervals resulting from the multivariate logistic regression analyses. These analyses were conducted to further assess the nature of the association between

cultural orientation and three measures of problematic substance use while controlling for selected demographic characteristics. To limit the scope of the paper, we focused the multivariate regressions solely on measures of heavy drinking, alcohol abuse and/or dependence, and drug abuse and/or dependence, which are the most commonly used classifications of substance misuse.

Table 1
Sample Characteristics

Socio-Demographic Characteristic	Number of Respondents	Unweighted Percentage	Weighted Percentage
Gender			
Male	977	39.9	48.3
Female	1,472	60.1	51.7
Age (in years)			
18-24	297	11.4	16.3
25-44	1,161	47.4	51.7
45-64	727	29.7	23.7
65+	282	11.5	8.3
Education			
Less than high school	621	25.4	23.7
High school education	896	36.6	36.0
Some college	507	20.7	21.9
College graduate or higher	424	17.3	18.4
Employment Status			
Full-time	1,058	43.6	43.3
Part-time	226	9.3	9.3
Unemployed	340	14.0	14.6
Other ^a	805	33.1	32.9
Cultural Orientation			
More American Indian oriented	492	20.1	23.1
Bicultural	1,588	64.8	64.0
Less American Indian oriented	369	15.1	12.9

^a Other includes retired, disabled, homemaker, student, or "other."

Table 2
Cultural Orientation by Selected Demographic Characteristics

Characteristic	More American Indian Oriented (%)	Bicultural (%)	Less American Indian Oriented (%)	χ^2	<i>p</i> -value
Gender				0.02	NS
Male	23.0	64.2	12.8		
Female	23.2	63.9	13.0		
Age (in years)				67.5	<i>p</i> < .001
18-24	11.5	73.0	15.6		
25-44	19.3	66.7	14.0		
45-64	59.3	30.0	10.7		
65+	50.1	42.9	7.0		
Education				9.6	NS
Less than high school	23.2	63.7	13.1		
High school education	20.9	64.0	15.1		
Some college	20.7	67.9	11.4		
College grad or higher	29.9	60.1	10.1		
Employment Status				45.8	<i>p</i> < .001
Full-time	19.3	67.4	13.3		
Part-time	22.5	70.9	6.6		
Unemployed	13.1	71.5	15.3		
Other ^a	32.0	54.7	13.3		

^aOther includes retired, disabled, homemaker, student, or "other."

Significant "predictors" of heavy drinking in the multivariate regression analyses were age, gender, educational attainment, employment, and cultural orientation. Heavy drinkers were more likely to be young, male, unemployed, and have less than a high school education. Individuals aged 18 to 24 years and 25 to 44 years were 9.0 and 7.1 times (respectively) more likely to be heavy drinkers than adults aged 65 years and older. Males were 1.6 times more likely to be heavy drinkers compared to females, and individuals with a high school diploma or less were almost two times as likely to be heavy drinkers than those with more than a high school education. The unemployed or "other" employment group, were 3.4 and 2.1 times (respectively) as likely to drink heavily as those with full-time employment. After controlling for all of these demographic variables, cultural orientation was significantly associated with heavy drinking: less American Indian oriented

individuals were more than 4 times and bicultural individuals almost 3 times as likely to be heavy drinkers as compared to more American Indian oriented adults.

Results from the alcohol abuse and dependence model were similar to those of the heavy drinking model. Young to middle-age adults were approximately 9 times more likely to have an alcohol use disorder than adults aged 65 years and older. Males were almost twice as likely to have an alcohol use disorder than females, and unemployed persons were 5.2 times more likely to have problems with alcohol abuse or dependence than those who were employed full-time. Bicultural adults were two times more likely

Table 3
Past Year Alcohol and Illicit Drug Use, Abuse, and Dependence, by Cultural Orientation

Type of Substance Use, Abuse, and Dependence	More American Indian Oriented (%)	Bicultural (%)	Less American Indian Oriented (%)	Overall (%)	χ^2	p-value
Alcohol Use						
Any alcohol use	20.4	51.1	58.6	45.0	102.9	$p < .001$
Heavy alcohol use ^a	11.2	28.8	39.9	26.2	58.9	$p < .001$
Extended drinking	10.9	23.6	22.5	20.5	23.9	$p < .001$
Illicit Drug Use						
Any illicit drug use ^b	12.2	26.9	27.9	23.6	29.8	$p < .001$
Any illicit drug use excluding marijuana	3.9	10.7	13.5	9.5	15.8	$p < .001$
Marijuana use	11.3	24.7	25.2	21.7	26.5	$p < .001$
Polydrug Use						
Heavy alcohol use and use of 1 or more illicit drugs	19.2	42.7	50.3	38.2	65.3	$p < .001$
Use of 2 or more illicit drugs	3.8	9.0	10.9	8.0	10.3	$p < .001$
Substance Abuse and Dependence						
Alcohol	11.9	25.5	21.1	21.8	24.9	$p < .001$
Illicit drug	5.7	11.6	10.6	10.1	7.5	$p < .05$
Alcohol and/or Illicit drugs	15.5	30.6	26.3	26.6	24.8	$p < .001$

^a Heavy drinking = drinking five or more drinks (four or more drinks for women) in a 24-hour period at least once a week or on 4 or more days in the past month.

^b Illicit drug use = nonmedical/nonceremonial use of marijuana, hallucinogens, inhalants, cocaine/crack, opiates, or stimulants.

than more American Indian oriented individuals to have an alcohol use problem, although there was no significant difference between more and less American Indian oriented adults. Educational attainment was not a significant correlate of alcohol problems once the other socio-demographic variables were controlled for.

Table 4
Adjusted Odds Ratios (OR) and 95% Confidence Intervals (CI): Correlates of Past Year Substance Use

Independent Variables	Heavy Drinking OR (CI)	Alcohol Abuse and/or Dependence OR (CI)	Illicit Drug Abuse and/or Dependence OR (CI)
Age (in years)			
18-24	9.02*(4.46-18.22)	9.63*(4.36-21.25)	15.22*(6.16-37.63)
25-44	7.08*(3.77-13.31)	9.06*(4.41-18.60)	7.12*(2.99-16.94)
45-64	2.89*(1.54-5.42)	3.96*(2.12-9.13)	_____
65+ (reference group) ^a	_____	_____	_____
Gender			
Male	1.62*(1.20-2.19)	1.89*(1.37-2.61)	2.06*(1.25-3.39)
Female (reference group)	_____	_____	_____
Education			
Less than high school	1.89*(1.23-2.89)	1.46(0.93-2.28)	0.89(0.46-1.73)
High school degree	1.76*(1.22-2.54)	1.40(0.96-2.05)	1.07(0.60-1.92)
More than high school degree (reference group)	_____	_____	_____
Employment Status			
Full-time (reference group)	_____	_____	_____
Part-time	0.84(0.48-1.49)	2.03*(1.16-3.54)	0.57(0.21-1.56)
Unemployed	3.35*(2.18-5.17)	5.20*(3.29-8.23)	2.42*(1.30-4.52)
Other ^b	2.08*(1.40-3.08)	3.08*(1.98-4.80)	2.51*(1.34-4.69)
Cultural Orientation			
More American Indian oriented (reference group)	_____	_____	_____
Bicultural	2.88*(1.85-4.47)	2.30*(1.48-3.59)	1.57(0.80-3.11)
Less American Indian oriented	4.38*(2.56-7.49)	1.59(0.89-2.84)	1.24(0.51-2.99)

^aFor the illicit drug abuse/dependence model, adults aged 45 to 64 years were used as the reference group, because there were no adults aged 65 years and older who had a drug abuse problem.

^bother includes retired, disabled, homemaker, student, or "other."

* $p < .05$

The pattern of results differed when illicit drug abuse/dependence was the outcome variable in the logistic regression model. In this analysis, only age, gender, and employment status were significantly associated with drug abuse. Young adults (aged 18 to 24 years) were 15.2 times more likely to have a drug use problem than adults aged 45 to 64, and males were approximately two times more likely to have a drug use problem than females. The unemployed or those in the "other" employment category were approximately 2.5 times more likely to have a drug abuse problem than those who were employed full-time. Educational attainment and cultural orientation were not significantly associated with illicit drug abuse or dependence in the logistic regression model. Additional regression models were run (not shown) to determine whether age or gender moderated the relationship between cultural orientation and substance misuse. Interaction terms were added to the models described above; however, no significant effects were found.

Conclusion

Our findings indicate that cultural orientation does have relevance for American Indian substance use behavior. Low orientation to the American Indian culture and biculturalism were associated with higher levels of multiple types of substance misuse including heavy and extended drinking, illicit drug use, poly-drug use, and alcohol abuse and dependence. Even after controlling for age, gender, education, and employment, cultural orientation was found to be a significant correlate of past year heavy drinking and alcohol abuse and dependence. Bicultural individuals were almost three times as likely to drink heavily and 2.3 times as likely to have an alcohol use disorder as compared to individuals with a high American Indian (or traditional) cultural orientation. Moreover, American Indians with a low orientation toward traditional culture were more than 4.4 times as likely to be heavy drinkers compared to more American Indian oriented adults (although low American Indian orientation was not significantly associated with an increased risk for alcohol abuse or dependence).

Interestingly, the relationship between cultural orientation and substance use differed for alcohol versus illicit drug use. When demographic variables were controlled for, cultural orientation was no longer significantly associated with drug abuse and dependence. The lack of findings between cultural orientation and drug abuse could be due to the lower prevalence of drug abuse and dependence in these communities (11% compared to 21% for alcohol abuse or dependence). Or, there may be special significance to the role of alcohol given its deeply embedded historical and social roots. Anthropological and ethnographic research on American Indian populations suggests that drinking behavior is more reflective of context than individual motive or dysfunction (O'Neill & Mitchell, 1996; Spicer, 1997; Topper, 1974). Drinking on reservations is predominantly social and plays an important role

in bringing individuals together. It can be a way to express positive feelings towards others and engender companionship. Drinking also occurs in critical social contexts where important values such as kinship, hospitality, and reciprocity are carried out. While it can be an important social lubricant, its ubiquitousness is also recognized by American Indians as a symbol of cultural degradation and loss (Spicer, 2001). Thus, alcohol use is a double-edged sword fueling both socially reinforced and socially destructive behaviors. As succinctly articulated by Spicer (2001), "There is a profound contradiction between the social connectedness found in the drinking group and the social fragmentation that often accompanies drunkenness..." (p. 311-312).

Given alcohol's prominence in American Indian communities, cognitions and values that help individuals to distinguish between controlled versus destructive drinking may be critical for modulating use. As such, cultural traditions may provide individuals with role demands and rewards beyond the immediate social reinforcements of alcohol use which help individuals to monitor their behavior. Expectations for taking on traditionally defined responsibilities may orient behavior around the cycles and values of Native culture, helping one to sidestep the vicious cycle of alcohol misuse. Participation in ceremonial or sacred activities may provide an important alternative to recreational drinking, and may elicit healing and hope among those affected by alcohol-related problems. Moreover, feelings of ethnic pride may provide American Indians with sources of strength to avoid and overcome substance misuse (LaFromboise & Rowe, 1983; May & Moran, 1995).

Our finding that biculturalism was associated with alcohol misuse conflicts with theory and research that attest to the importance of strong affiliation and competence in both the majority and minority culture (Birman, 1998). Biculturalism has been suggested as the most adaptive form of acculturation, because it allows individuals to draw upon multiple sources of strengths and knowledge to succeed in multiple contexts (Szapocznik & Kurtines, 1980). Our results suggest that the association between biculturalism and health behaviors may differ for adult American Indians living on reservations.

Much of the research on biculturalism has been conducted with populations that have migrated to the United States and that reside within and are integrated into the dominant culture (although marginally in some cases). Biculturalism may be adaptive for individuals living in more integrated communities, but perhaps biculturalism is less effective for those residing in more ethnically homogeneous communities, particularly those relatively isolated from mainstream culture (e.g., reservations). Moreover, for American Indians living on reservations, identification with two cultures may lead to increased acculturative stress that results when individuals attempt to incorporate multiple perspectives and incongruities. Attempting to achieve competence and success in both the American Indian and Anglo world may lead to dissonance if what is valued and rewarded in one culture is inconsistent

with that of another culture. For instance, American Indian values of tranquility, responsibility, and cooperation may come into conflict with the Anglo culture's emphasis on material prosperity and autonomy (LaFromboise, 1988). Living in both worlds may be isolating for American Indians who are not sure quite where they fit in, and interfacing with the dominant culture may increase their exposure to racial prejudice and discrimination.

In addition, much of the literature attesting to the positive influence of biculturalism has been conducted with adolescents. There may be developmental shifts such that during adolescence when identity development is the crucial task, exploration and competence in both the majority and minority culture may be most adaptive. Alternatively, when identity is more solidified, biculturalism may be less salient and adaptive for addressing adult role demands, particularly in the context of reservation life.

Our finding on the negative influence of biculturalism also may relate to the way in which cultural orientation was measured in this study. Although, our measure moves beyond simplistic proxies often used to capture cultural orientation such as language or food preference to include social interactions, ethnic pride, and interest and participation in cultural activities, it does not capture the complex process of independent identification with both the traditional and mainstream culture (De La Rosa et al., 2000). Due to the nature of the items on our scale, it is unclear to what degree we truly captured biculturalism. Half of the items on the scale included response options that infer involvement in two worlds (e.g., reading and speaking English and the Native language, association with American Indian friends as well as friends of other ethnicities). The operationalization of culturalism for other items; however, reflected a moderate involvement or commitment to participation and reflection on American Indian issues (e.g., participating in traditional cultural activities sometimes).

In general, it is likely that the eight items contained in our measure of cultural orientation did not capture the full breadth and depth of this construct. More emphasis on the identification of specific cultural practices, values, and beliefs unique to American Indians that comprise enculturation would be useful (Moran, Fleming, Somervell, & Manson, 1999). The measure also could benefit from inclusion of items reflective of higher order acculturative shifts in behavioral patterns and worldviews (Marin, 1992). Additionally, more work is needed in developing measures that consider the multifaceted and multidirectional nature of cultural orientation for American Indians. For example, the response options for our cultural orientation items did not allow us to distinguish between those who are low on American Indian orientation versus those who are marginalized from both cultures. This distinction may have important implications, because prior research on acculturation suggests that those with low orientation to both the majority and minority culture have the lowest level of adjustment (Oetting & Beauvais, 1990-91). Finally, recall that the measure of internal consistency of our cultural orientation scale was marginal at .68, suggesting that the cultural orientation items were only

somewhat rather than highly correlated with each other. Clearly, more research is needed to determine the constructs most highly representative of what it means to be bicultural in American Indian communities as well as how to measure and operationalize these constructs in statistical analyses.

There are other limitations to our study. Due to confidentiality concerns among Tribal Nations, we did not explore potential variation across tribes. There is a great deal of cultural, geographic, and economic diversity among Tribal Nations. Substance use behaviors may be affected by a number of contextual or cultural characteristics including the historical context of alcohol introduction; tribal history of political and economic oppression; migration; tribal perspectives on substance use (e.g., ceremonial use, vision quests) as well as community attitudes, norms, and policies regarding alcohol (Beauvais, 1998; Weisner et al., 1984). A more in-depth ethnographic or qualitative study of tribes' historical experience and cultural context would be useful to link distinct characteristics and experiences to substance misuse. Our data were collected from American Indians within one state, and although they represent multiple tribes, the results from this study cannot be generalized to other American Indians. Moreover, our analyses were limited to on-reservation American Indians only. The significance of cultural orientation, particularly for American Indians more intermingled into heterogeneous society is an important topic for further study. Additionally, although 74% of contacted individuals agreed to participate, it is important to acknowledge the potential non-response bias.

In this investigation, we explored cultural orientation solely in relation to substance use behaviors. Because data on substance use and cultural orientation were collected during the same time period, we are not able to speak to the causal relationship between them. It is plausible, for example, that those who misuse substances stop participating in and valuing traditions and ceremonies. Additionally, although multiple indicators of substance misuse were used, more prominence was placed on clinically diagnosable disorders. Using diagnostic criteria are important for standardization across research studies; however, consideration needs to be given to whether these criteria are equivalent in American Indian populations. Research does suggest that the Diagnostic and Statistical Manual for Mental Disorders has relevance and can be used effectively in American Indian populations (Manson, Walker, & Kivlahan, 1987). However, alternative definitions of problematic drinking including consequences of drinking behaviors that violate cultural values or culturally patterned expectations should be considered (O'Neil & Mitchell, 1996). Moreover, the inclusion of other psychological and health outcomes are needed in future studies. Specifically, research that investigates the way in which cultural orientation may foster resiliency is critical.

Despite these limitations, this study helps to advance our understanding of the link between cultural orientation and health behaviors and highlights the importance of traditional culture in protecting American Indians from substance use disorders. Deepening involvement in traditional

rituals and practices and returning to more traditional beliefs may provide American Indians with important resources for coping with the stress of reservation life. Incorporation of traditional healing methods (e.g., talking circles, sweat lodges) may enhance the effectiveness of substance abuse treatment services and an emphasis on cultural preservation and positive ethnic identity development may be important for substance abuse prevention programs. Because of the strong theoretical rationale for biculturalism and prior empirical findings on its potential benefits, we do not want to dismiss the importance of biculturalism for adult American Indians. More research is needed to clarify the contexts and role demands for which biculturalism is adaptive versus ineffective. Additional research is needed to further conceptualize cultural orientation among American Indians, delineate the specific aspects of cultural orientation that are most protective, understand how these aspects may differ on and off reservation, and determine how to promote these protective factors in substance abuse prevention and treatment programs.

Mindy Herman-Stahl, Ph.D.

Center for Interdisciplinary Substance Abuse Research

3040 Cornwallis Drive

P.O. Box 12194

Research Triangle Park, NC 27709-2194

Email: mindy@rti.org

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Footnote

¹At the time these data were collected, computerized diagnostic algorithms were only available for DSM III-R. Comparisons of the overall prevalence of substance use disorders between DSM III-R and DSM IV are very similar, although the proportion of individuals with a substance abuse diagnosis is generally higher under DSM IV criteria (Chong & Herman-Stahl, 2002; Grant, 1993).