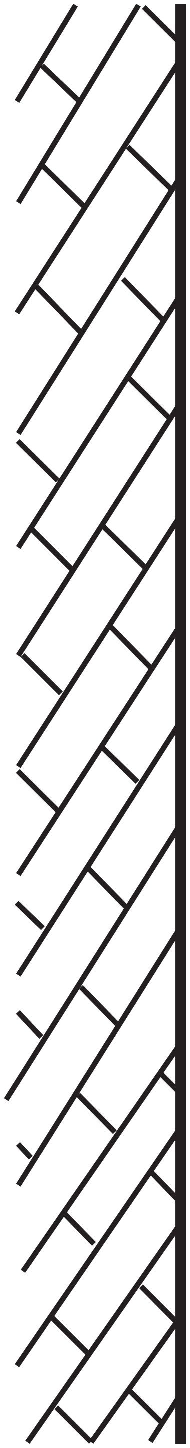

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TRIADD: THE RISK FOR ALCOHOL ABUSE, DEPRESSION, AND DIABETES MULTIMORBIDITY IN THE AMERICAN INDIAN AND ALASKA NATIVE POPULATION

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Abstract: This study examined the risk for alcoholism, diabetes, and depression (triADD) in American Indian/Alaska Native (AI/AN) populations in the U.S. Using the Behavioral Risk Factor Surveillance System, a series of descriptive statistics and regression models were used to examine the interrelationships among these disorders in AI/AN populations. Despite a small sample size, results indicate that AI/ANs are at elevated risk for the individual and combined presence of triADD (OR=12.5) when compared to the White population. These findings indicate the need for further investigation and prevention focused on effective, culturally appropriate interventions with these populations.

American Indian/Alaska Native (AI/AN) populations are afflicted disproportionately with a number of chronic illnesses (Indian Health Service [IHS], 2001). Specifically, the rates of Type 2 Diabetes, alcohol abuse, and suicide have consistently been higher in these populations for many years (IHS). To date the majority of research has focused on these three disorders alone or in dyads; little attention has been given to the co-occurrence of all three simultaneously in AI/AN populations. The Behavioral Risk Factor Surveillance System (BRFSS) provides annual data on estimates of risk factors and health-related behavior in state populations across the nation. This article reports an analysis of the prevalence and correlates of diabetes and associated risk factors for depression and alcohol abuse in AI/AN adults sampled in the fifty states as part of the 2003 BRFSS survey.

Background

Alcohol abuse, Type 2 diabetes, and depression share a number of common attributes in AI/AN populations. They are expressed at disproportionately high rates, they are increasing in prevalence, and they are considered chronic illnesses, necessitating significant levels of self-management. Data on alcohol use and abuse in AI/AN communities are often misleading. These populations have the lowest overall rates of individuals who consume alcohol but concomitantly have the highest rates of "heavy drinkers" (defined as binge drinking 5 times a month or more) among those aged 26 and older (Substance Abuse and Mental Health Services Administration, 2002). The age-adjusted death rates due to alcohol dependence in AI/ANs have been reported as more than 7 times higher than that of the U.S. All-Races rate. In AI/AN adults aged 25-44, alcohol is associated with the two leading causes of mortality: accidents and chronic liver disease/cirrhosis. (IHS, 2001)

Prevalence rates of Type 2 diabetes in AI/AN populations vary among tribal groups, but consistently rank higher than the rate for non-Hispanic Whites in any given year. It has been estimated that the overall prevalence across tribes is 4 to 8 times higher in AI/ANs than in the general population (Lee et al., 1995). The American Diabetes Association (ADA) reports that, on average, AI/ANs are 2.2 times more likely to have diabetes than the non-Hispanic White population (ADA, n.d.a). Supporting this finding, the Centers for Disease Control reported 15.3% prevalence in AI/ANs compared to 7.3% in the U.S. All-Races population in 2002 (Acton, Burrows, Geiss, & Thompson, 2003). In the southwestern U.S. the Pima Indians have the highest documented prevalence rate in the world, with 50% of the population over the age of 35 diagnosed with diabetes (Knowler, Pettitt, Saad, & Bennett, 1990).

Depression among AI/AN populations has been understudied; however, initial research suggests that rates of some mental illness and depressive symptoms are higher in these populations (Manson, 2001). This scarcity of research has made characterizing the illness from an epidemiological perspective challenging, at best, and much more difficult than characterizing more heavily studied diseases such as diabetes and alcohol abuse. Nonetheless, research has found a high co-occurrence of depressive disorder with suicidal ideation. For example, Roberts and Yeager (2004) found that 72% of an adult psychiatric sample with depressive disorder presented with current suicidal ideation. Due to the startlingly high rates of suicide in these populations, this manifestation of mental distress and other depressive symptoms is often used as a proxy for depression and mental illness. Manson reported 32% of AI elders utilizing an urban IHS facility experienced depressive symptoms, a rate considerably higher than those seen in older White populations. Another study described 38% of AI adults interviewed as having problems with depression (Wilson, Civic, & Glass, 1995). In separate mental health needs assessments of urban and semi-urban Indian populations conducted in Colorado (King, 1999), Montana (Barron, Oge, & Markovich, 1999), and Arizona (Chester, Mahalish, & Davis, 1999; Evaneshko, 1999), high rates of depressive symptoms were described in all of the study populations.

Depression and Diabetes

To date there have been few, if any, studies that have explored the relationship between diabetes and depression in AI/AN communities, other than to document that these two issues are of concern in these populations. In the general population, individuals with diabetes are twice as likely to have a diagnosis of depression as individuals who do not have diabetes (Anderson, 2001). In a meta-analysis that examined 27 studies of the association between diabetes and depression, it was found that an increase in depressive symptoms was associated with an increase in the severity and/or number of diabetes complications (de Groot, Anderson, Freedland, Clouse, & Lustman, 2001). However, the temporal relationship between depression and diabetes is unclear (Iosifescu et al., 2003). Previous studies have found that depression may occur in response to the psychosocial pressure that ensues after a diabetes diagnosis (Egede & Zheng, 2003) or as a result of biochemical changes caused by diabetes or its treatment (Lustman, Anderson, Freedland, de Groot, & Carney, 2000). Others argue that depression not only tends to precede a Type 2 diabetes diagnosis, but it may actually increase the risk for developing Type 2 diabetes, thus suggesting that there is an inverse temporal relationship between the two conditions (Talbot & Nouwen, 2000; Eaton, Armenian, Gallo, Pratt, & Ford, 1996). A correlation has been found between glycemic control and depression (Anderson; Lustman et al.), although the temporal relation is unclear as well. Does better glycemic control reduce depression or vice versa? The association between diabetes and depression is complicated by other factors that are linked to both of these conditions, such as obesity and cardiovascular disease (Nichols & Brown, 2003). A recent study conducted among another minority group (Mexican Americans) suggests that diabetes and depression have a much larger combined effect than they do individually (Black, Markides, & Ray, 2003). More research is necessary to elucidate the comorbidity of these disorders with AI/AN populations.

Diabetes and Alcohol Abuse

Information on the comorbidity of alcohol abuse and diabetes in AI/ANs is also scarce. Saremi, Hansen, and Tulloch-Reid (2004) examined the relationship between Type 2 diabetes, alcohol consumption, and hypertension in an AI population only to determine that there was no association between alcohol consumption and prevalence or incidence of diabetes, although they did find a relationship between alcohol consumption and hypertension. However, other population-based studies have consistently found that high alcohol intake increases one's risk of developing Type 2 diabetes (Carlsson et al., 2000; Holbrook, Barrett-Connor, & Wingard, 1990; Howard, Arnsten, & Gourevitch, 2004; Kao, Puddey, Boland, Watson, & Brancati, 2001), while moderate alcohol intake has not been shown to increase risk (Kao et al.), and in fact may have some protective value (Anderson, 2001; Kao et al., Howard et al.). Differences in risk were noted in men and women (Saremi et al.), with much of the prior research focusing on males (Carlsson et al., Conigrave et al., 2001; Perreira & Sloan, 2002; Wei, Gibbons, Mitchell, Kampert, & Blair, 2000). In their meta-analysis of the effect of alcohol consumption on diabetes, Howard et al. found that individuals who consume 3 or more alcoholic drinks each day have a 43% greater risk of diabetes. Little information has been published on the effects that alcohol has on the behaviors of individuals living with diabetes, and while studies have been conducted that suggest that moderate alcohol consumption is protective against other illnesses associated with diabetes, it is likely that heavy alcohol consumption increases the risk of developing comorbid illnesses (Howard et al.). For individuals living with diabetes, high alcohol consumption can be detrimental because it inhibits glucose metabolism (Holbrook et al.; Franz et al., 2002), and obesity may be a mediating factor by which alcohol abuse influences the development of diabetes (Howard et al., Carlsson et al.).

Depression and Alcohol Abuse

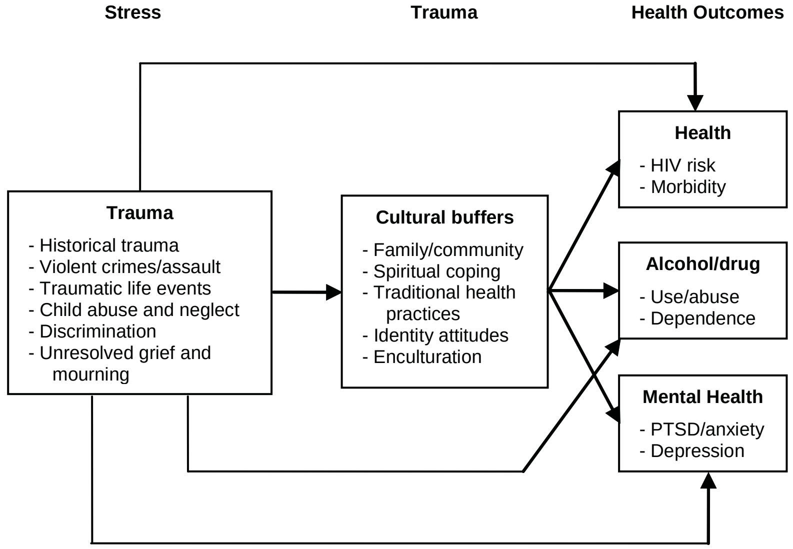
Depressive syndrome has been found to be significantly more common among alcoholics than among non-alcoholics (Merikangas & Gelernter, 1990; Nurnberger, Foroud, Flury, Meyer, & Wiegand, 2002).

Eighty percent of alcoholics report depressive symptoms, while 30-40% of individuals with diagnosed alcohol dependence are likely to experience a major depressive episode in their lifetimes (Hitzemann, 2000; Kessler et al., 1996; Regier et al., 1990). While little has been published in recent years regarding the comorbidity of alcohol abuse and depression among AI/ANs, it was observed as early as 1983 that excessive alcohol consumption increases the risk of psychiatric disorders in AI populations (Westermeyer & Peake, 1983). Approximately 95% of binge drinkers in some AI communities are alcoholics, thus increasing risk of psychiatric disorders (Robin, Long, Rasmussen, Albaugh, & Goldman, 1998). Causal determinants have not been established as to whether misuse of alcohol can cause depression or, conversely, depression causes alcohol abuse. While some argue that alcohol can be used as a form of self-medication for individuals with depression (Nurnberger et al.), it has alternately been argued that depression or depressive symptomology may develop as a result of alcohol abuse (Raimo & Schuckit, 1998). Regardless of temporal association, alcoholics with comorbid depression are infinitely more complicated to treat than individuals who have either depression or alcohol abuse alone (Merikangas & Gelernter).

Causal factors related to the multimorbidity of depression, diabetes, and alcoholism in AI/AN populations exist within a unique cultural and sociohistorical context. Walters, Simoni, and Evans-Campbell (2002) propose an Indigenist stress-coping model which identifies not only the environmental stressors that contribute to adverse health outcomes for AI/AN populations, but also the coping mechanisms that can prevent these outcomes (see Figure). In their model, stress manifests itself in the form of trauma (e.g., colonization, violent crimes, and traumatic life events). This stress can lead to adverse health and/or mental health outcomes for AI populations. However, Walters et al. suggest that cultural moderators, such as the family/community, spirituality, traditional health practices, and enculturation, can buffer the impact of traumatic stressors. Proposed as a decolonizing conceptual framework for the etiology of adverse health conditions, their stress-coping model highlights how the sociohistorical context of AI/AN populations contributes to their health status.

The majority of articles that focused on the dyads of depression and diabetes, diabetes and alcohol abuse, and depression and alcohol abuse discuss risk rather than prevalence. Studies are scarce on the impact that these comorbid conditions have on the health of individuals and communities. Although depression, diabetes, and alcohol abuse have been well documented among AI/ANs, there is a dearth of information on the interplay of all three illnesses. Anecdotal evidence shared among health care practitioners working in Indian country (e.g., one of the authors has many years' experience with tribal 638 health care organizations, and with development of IHS diabetes education standards) – coupled with the existing health research on the comorbidity of these disorders – suggests that AI/ANs are at elevated risk for the simultaneous multimorbidity of these syndromes. However, at this time, no empirical investigations have been published on the inter-relationship of these illnesses as an epidemiological phenomenon in these populations. The occurrence of alcohol abuse, diabetes, and depression in this study is referred to as a multimorbid condition called "triADD." Using the Behavioral Risk Factor Surveillance System (BRFSS), this pilot study examines the individual and combined relationships between alcohol abuse, diabetes, and depression in AI/AN and other ethnic populations. This analysis has implications for prevention and treatment of these disorders with AI/AN populations.

Figure
Indigenist Stress-coping Model



Walters, Simoni, & Evans-Campbell, 2002

Method

In 1984 the Centers for Disease Control and Prevention (CDC) launched the BRFSS, a random-digit dialed telephone survey aimed at measuring health risks in the non-institutionalized American population over eighteen years of age. The BRFSS questionnaire is designed by a working group of state coordinators and CDC staff. Standard questions are changed periodically to reflect current research related to known risks of morbidity and mortality. Currently, the questionnaire has three sections: 1) the core component, which is always used in administering the BRFSS and not modifiable in format, 2) optional modules, and 3) state-added questions. The core component is a standard set of questions asked by all states. It includes queries about current behaviors that affect health (e.g., tobacco use, women's health) and questions on demographic characteristics. Optional CDC modules are sets of questions on specific topics (e.g., smokeless tobacco) that states elect to use on their questionnaires. Although the modules are optional, CDC standards require that, if they are used, they must be used without modification.

Variables included in this initial study were derived from the core component questions from a single survey year, 2003. Variables measuring risk factors for triADD include: (1) If the respondent was ever told he or she had diabetes, not including during pregnancy and irrespective of Type 1 or Type 2 (respondents who answered yes are coded 1, respondents who answered no or did not know are coded 0); (2) the risk for heavy drinking, defined in the BRFSS as having, on average, having greater than 2 drinks per day for men and 1 drink per day for women during the past month (men and women at risk are coded 1, others are coded 0); and (3) if the number of days in the previous month in which the respondent felt his or her mental health was poor exceeded 5 (respondents with 5 or more of these days are coded 1, others are coded 0.) Five poor mental health days in the month were used in this analysis as the threshold for "poor" mental health or as a marker for being at risk for depression. This number is fewer than the common number of days (days = 14) often used by clinicians and clinical researchers as a marker for clinical depression (American Psychiatric Association, 2000), and greater than the mean of 3.0 (95% CI = 2.9-3.1) reported by BRFSS respondents between 1995 and 2000 (Kobau, Safran, Zack, Moriarty, & Chapman, 2004). Although these are self-reported measures and do not reflect clinical diagnoses, they are useful measures for identifying respondents with known risk factors. We believe a lower threshold of 5 poor days rather than 14 is justified because our broader aim is to examine individuals who may be at risk for multiple conditions. Thus, while 5 poor mental health days may not be a critical threshold on its own, 5 of these days paired with heavy drinking and diabetes is likely to be a significant burden.

Several variables were used to categorize respondents into subgroups. Race and ethnicity were categorized into White (70.37%), Black (9.59%), Asian (2.68%), Native Hawaiian and Pacific Islander (0.43%), AI/AN (1.06%), Hispanic (13.55%), and Multiracial/Other (2.33%). Following U.S. Census categories, the BRFSS data group Native Hawaiian and Pacific Islanders together. Pacific Islanders include other peoples of Polynesian ethnicity, such as peoples from Samoa and Guam. Additional subgroup indicators were age, marital status, education, and household income. Each of these indicators is measured categorically with dummy variables. For household income, a category for "missing or refused" is created because 13% of BRFSS respondents did not answer this question (this is not unusual, as income is often one of the most sensitive questions asked in surveys). In the descriptive statistics, no adjustments were made to standardize to the 2000 U.S. age distribution. Age groups, however, are included as controls in the multivariate analyses.

Because the BRFSS data involve a complex multistage survey design, the SURVEYMEANS, SURVEYFREQ, and SURVEYLOGISTIC procedures in SAS 9.1 were used to conduct weighted analyses that account for multiple strata and primary sampling units. Procedures that use only sample weights but ignore survey information about strata and sampling units will have correct point estimates, but the standard errors will be incorrect. The survey procedures we used will properly estimate the confidence intervals for means and logistic regression parameter estimates. The 2003 BRFSS interviewed 264,684 respondents. Some respondents (11,695 or 4.4%) were dropped from the analysis due to missing data, primarily from the questions on self-reported mental health (4,622 or 1.7%), drinking (2,473 or .9%), and age (2,054 or .8%). Prevalence and odds ratios for the effects of the predictors on having diabetes, heavy drinking, and poor mental health days were conducted using data from 252,989 respondents. For reference, descriptive statistics are presented in Table 1 and Table 2. Table 1 shows the means for the demographic factors used in the analysis, and Table 2 presents crosstabulations of selected demographic factors by race/ethnicity.

Table 1
Descriptive Demographic Statistics

	% (95% CI)
Race/Ethnicity (N = 262,381)	
White	70.1 (69.8, 70.5)
Black	9.7 (9.5, 9.9)
Asian	2.7 (2.5, 2.8)
Native Hawaiian/Pacific Islander	0.4 (0.4, 0.5)
American Indian	1.1 (1.0, 1.1)
Hispanic	13.7 (13.3, 14)
Multiracial/Other	2.4 (2.3, 2.5)
Age (N = 262,630)	
18 – 24	13.1 (12.8, 13.4)
25 – 34	18 (17.7, 18.3)
35 – 44	20.5 (20.2 – 20.8)
45 – 54	18.4 (18.1, 18.7)
55 – 65	13.1 (12.9, 13.4)
65 – 74	8.8 (8.6, 9)
75+	81. (7.9, 8.3)
Household Income (N = 264,684)	
$0 – $14,999	10.1 (9.8, 10.3)
$15,000 – $24,999	15.6 (15.3, 15.9)
$25,000 – $34,999	12.1 (11.9, 12.3)
$35,000 – $49,999	14.9 (14.6, 15.1)
$50,000 and more	34.3 (34, 34.7)
Missing or Refused	13.0 (12.8, 13.3)
Education (N = 264,039)	
Less than High School	12.3 (12, 12.6)
High School	30.4 (30.1, 30.8)
Some College	26.8 (26.4, 27.1)
College Degree	30.5 (30.2, 30.8)
Marital Status (N = 263,836)	
Married	58.8 (58.4, 59.2)
Divorced or Separated	11.6 (11.4, 11.8)
Widowed	6.9 (6.8, 7.1)
Single	18.7 (18.4, 19.1)
Cohabiting	3.9 (3.8, 4.1)

Table 2
Crosstabulations of Racial/Ethnic Groups
and Demographic Background Factors

	Education				
	Less than High School	High School	Some College	College Degree	Total
White	7.8	30.4	28.0	33.8	100%
Black	15.7	36.3	27.5	20.6	100%
Asian	3.0	16.1	19.3	61.6	100%
Native Hawaiian/ Pacific Islander	9.2	30.0	30.5	30.2	100%
American Indian	16.0	34.8	30.7	18.5	100%
Hispanic	33.6	29.5	20.8	16.1	100%
Multiracial/Other	13.0	29.6	29.5	27.9	100%
Crosstab N = 261,812					

	Marital Status					
	Married	Divorced/ Separated	Widowed	Single	Cohabiting	Total
White	62.4	11.0	7.5	15.8	3.3	100%
Black	39.4	17.5	7.5	32.0	3.5	100%
Asian	63.1	4.4	1.9	28.6	2.0	100%
Native Hawaiian/ Pacific Islander	55.0	10.2	1.8	30.8	2.2	100%
American Indian	51.3	16.6	7.2	17.7	7.2	100%
Hispanic	55.5	11.3	4.3	21.3	7.7	100%
Multiracial/Other	49.9	14.7	5.8	24.7	5.0	100%
Crosstab N = 261,694						

	Household Income						
	$0- $14,999	$15,000- $24,999	$25,000- $34,999	$35,000- $49,999	$50,000 and more	Missing or Refused	Total
White	7.0	13.2	11.6	16.0	39.8	12.5	100%
Black	16.2	21.9	14.7	13.6	20.6	13.0	100%
Asian	8.7	10.1	10.3	11.8	44.6	14.4	100%
Native Hawaiian/ Pacific Islander	11.0	14.9	10.5	17.7	36.0	9.9	100%
American Indian	13.5	22.1	13.3	16.4	22.5	12.1	100%
Hispanic	21.1	24.4	13.3	11.0	16.4	13.8	100%
Multiracial/Other	12.7	15.7	13.0	13.9	30.5	14.3	100%
Crosstab N = 262,381							

Results

Results indicate that risk factors vary across racial and ethnic groups (Table 3). Blacks (11.5%) and AI/ANs (12.5%) were the groups with the highest estimated prevalence of diabetes. The groups at highest risk for heavy drinking were Native Hawaiians/Pacific Islanders (8.0%) and AI/ANs (6.7%), both considered "indigenous" populations. The groups with the highest number of self-reported poor mental health days in the previous month were Multiracial/Other (4.6 days) and AIs (5.3 days). The differences between the top two groups in each of these risk categories are not statistically significant; e.g., diabetes levels for Blacks are not statistically different from levels for AI/ANs. Nevertheless, most notable about these descriptive results is that AI/ANs are the subgroup most at risk for the components of triADD. Although Native Hawaiians/Pacific Islanders had higher prevalence of risk for heavy drinking, they reported a lower prevalence of both diabetes and poor mental health days than did the AI/AN respondents. The higher responses reported by AI/ANs, however, may be associated with other demographic factors such as educational, marital, or income status. Thus, we conducted multivariate logistic regression analyses that control for these additional factors.

Table 4 is a model of the odds of having the components of triADD (ever having been diagnosed with diabetes, risk for heavy drinking, and five or more poor mental health days in the previous month) with race/ethnicity, age, education, marital status, and income as predictors. One unexpected finding is that being at risk for heavy drinking is negatively associated with the odds of diabetes (OR = .40; 95% CI = .31, .52). Each self-reported poor mental health day was positively associated with the odds of diabetes (OR = 1.02; 95% CI = 1.02, 1.02). One finding of note in Table 4 is that even after controlling for age, education, marital status, and income, significant race and ethnic differences in the odds of self-reported diabetes diagnoses remain. Compared to Whites, AI/ANs have the highest odds of diabetes (OR = 2.02; 95% CI = 1.50, 2.70), followed by Blacks (OR = 1.90; 95% CI = 1.73, 2.08).

Table 4 also models the odds of being at risk for heavy drinking, with diabetes, poor mental health days, and the other subgroup indicators as predictors. As with the negative association between diabetes and heavy drinking described earlier, the negative relationship between diabetes and heavy drinking persists (OR = .39; 95% CI = .30, .50) when using heavy drinking as the reference rather than diabetes. Each poor mental health day was also positively associated with the odds of being at risk for heavy drinking (OR = 1.02; 95% CI = 1.02, 1.02).

The race and ethnic subgroup indicators suggest that, compared to Whites, Blacks, Asians, Hispanics, and Multiracial/Other individuals had significantly lower odds of being at risk for heavy drinking. The odds for Native Hawaiians/Pacific Islanders and AI/ANs were not significantly different than the odds for Whites.

Table 3
Prevalence of Ever Having Been Diagnosed with Diabetes, Risk for Heavy Drinking[a], and Mean Number of Poor Mental Health Days

	Diabetes % (95% CI)	**Heavy Drinking** % (95% CI)	**Poor Mental Health Days** Mean (95% CI)
Race/Ethnicity (N = 262,381)			
White	6.9 (6.8, 7.1)	6.2 (6.0, 6.4)	3.3 (3.2, 3.3)
Black	11.5 (10.8, 12.3)	3.6 (3.1, 4.1)	4.0 (3.8, 4.2)
Asian	5.4 (3.7, 7.1)	1.7 (1.0, 2.3)	2.5 (2.2, 2.9)
Native Hawaiian/Pacific Islander	5.2 (2.1, 8.4)	8.0 (3.8, 12.1)	3.2 (2.2, 4.2)
American Indian	12.5 (9.5, 15.6)	6.7 (4.7, 8.7)	5.3 (4.5, 6.0)
Hispanic	7.5 (6.8, 8.2)	4.6 (4.0, 5.3)	3.6 (3.4, 3.9)
Multiracial/Other	8.3 (7.0, 9.6)	5.7 (4.6, 6.7)	4.6 (4.2, 5.0)
Age (N = 262,630)			
18 – 24	0.9 (0.6, 1.2)	10.5 (9.7, 11.3)	4.2 (4.0, 4.4)
25 – 34	1.9 (1.6, 2.2)	5.7 (5.3, 6.2)	3.7 (3.6, 3.9)
35 – 44	4.2 (3.9, 4.5)	5.4 (5.1, 5.7)	3.6 (3.5, 3.7)
45 – 54	8.0 (7.6, 8.5)	5.4 (5.0, 5.8)	3.7 (3.6, 3.8)
55 – 64	14.6 (13.9, 15.3)	4.7 (4.3, 5.1)	3.1 (3.0, 3.2)
65 – 74	17.4 (16.6, 18.2)	3.6 (3.3, 4.0)	2.2 (2.1, 2.4)
75+	15.8 (15.0, 16.6)	2.4 (1.9, 2.8)	2.1 (1.9, 2.2)
Education (N = 264,039)			
Less than High School	12.6 (11.9, 13.3)	4.7 (4.1, 5.2)	4.9 (4.6, 5.1)
High School	8.4 (8.0, 8.7)	6.2 (5.9, 6.5)	3.7 (3.6, 3.8)
Some College	6.9 (6.6, 7.2)	6.3 (5.9, 6.6)	3.6 (3.5, 3.7)
College Degree	5.2 (4.9, 5.5)	4.8 (4.6, 5.1)	2.4 (2.3, 2.5)
Marital Status (N = 263,836)			
Married	7.7 (7.4, 8.0)	4.2 (4.0, 4.4)	2.8 (2.7, 2.8)
Divorced or Separated	9.5 (8.9, 10.1)	6.7 (6.2, 7.1)	5.3 (5.1, 5.5)
Widowed	16.3 (15.5, 17.2)	3.0 (2.5, 3.5)	3.2 (3.0, 3.5)
Single	3.5 (3.2, 3.9)	9.4 (8.8, 9.9)	4.1 (4.0, 4.3)
Cohabiting	2.7 (2.0, 3.4)	10.1 (8.9, 11.4)	4.5 (4.2, 4.8)
Household Income			
$0 – $14,999	13.7 (12.9, 14.5)	4.9 (4.3, 5.5)	6.1 (5.9, 6.4)
$15,000 – $24,999	10.1 (9.5, 10.6)	5.8 (5.3, 6.3)	4.3 (4.1, 4.4)
$25,000 – $34,999	7.9 (7.4, 8.5)	5.6 (5.2, 6.1)	3.4 (3.3, 3.6)
$35,000 – $49,999	6.5 (6.0, 6.9)	6.4 (5.9, 6.9)	3.1 (3.0, 3.3)
$50,000 and more	4.6 (4.3, 4.8)	5.9 (5.6, 6.1)	2.4 (2.4, 2.5)
Missing or Refused	8.4 (7.8, 8.9)	4.4 (3.9, 4.8)	3.2 (3.1, 3.4)

[a] Risk for heavy drinking is defined by CDC staff as more than 2 drinks per day for men, and more than 1 drink per day for women.

Table 4
Odds Ratios and 95% Confidence Intervals from Multivariate Logistic Regression models of Ever Diagnosed with Diabetes, Risk for Heavy Drinking, and Five or more Poor Mental Health Days

	Ever Diagnosed with Diabetes	Risk for Heavy Drinking	Five or more Poor Mental Health Days
At risk for heavy drinking	0.40(0.31,0.52)		1.45(1.34,1.58)
Number poor mental health days	1.02(1.02,1.02)	1.02(1.02,1.02)	
Ever diagnosed with diabetes		0.39(0.30,0.50)	1.43(1.33,1.53)
Race/Ethnicity			
White	(reference)	(reference)	(reference)
Black	1.90(1.73,2.08)	0.48(0.41,0.55)	0.87(0.81,0.93)
Asian	1.35(0.94,1.95)	0.25(0.17,0.37)	0.86(0.71,1.04)
Native Hawaiian/Pacific Islander	1.26(0.66,2.39)	1.10(0.61,1.98)	1.07(0.67,1.70)
American Indian	2.02(1.50,2.70)	0.96(0.69,1.34)	1.22(1.02,1.47)
Hispanic	1.28(1.13,1.44)	0.66(0.56,0.77)	0.73(0.67,0.80)
Multiracial/Other	1.33(1.11,1.60)	0.79(0.65,0.97)	1.16(1.04,1.31)
Age			
18 – 24	(reference)	(reference)	(reference)
25 – 34	2.56(1.71,3.83)	0.69(0.61,0.78)	0.96(0.88,1.04)
35 – 44	6.16(4.18,9.06)	0.71(0.62,0.80)	0.89(0.82,0.96)
45 – 54		0.72(0.63,0.82)	0.83(0.76,0.90)
55 – 64		0.69(0.60,0.80)	0.60(0.55,0.65)
65 – 74		0.59(0.51,0.70)	0.34(0.31,0.38)
75+		0.39(0.30,0.49)	0.28(0.25,0.31)
Education			
Less than High School	1.47(1.32,1.63)	1.19(1.02,1.39)	1.56(1.44,1.68)
High School	1.24(1.14,1.36)	1.34(1.22,1.47)	1.28(1.21,1.35)
Some College	1.23(1.13,1.34)	1.23(1.12,1.34)	1.29(1.22,1.36)
College Degree	(reference)	(reference)	(reference)
Marital Status			
Married	(reference)	(reference)	(reference)
Divorced or Separated	0.91(0.83,0.99)	1.68(1.53,1.85)	1.64(1.55,1.73)
Widowed	0.91(0.83,0.99)	1.08(0.91,1.29)	1.43(1.31,1.56)
Single	1.00(0.89,1.12)	2.09(1.90,2.31)	1.23(1.16,1.31)
Cohabiting	0.73(0.55,0.96)	2.27(1.94,2.65)	1.35(1.21,1.50)
Income			
\$0 – \$14,999	2.28(2.02,2.57)	0.68(0.58,0.79)	2.24(2.06,2.43)
\$15,000 – \$24,999	1.76(1.59,1.95)	0.85(0.75,0.95)	1.62(1.51,1.74)
\$25,000 – \$34,999	1.47(1.32,1.63)	0.85(0.76,0.95)	1.29(1.20,1.39)
\$35,000 – \$49,999	1.32(1.20,1.46)	0.99(0.89,1.10)	1.18(1.11,1.26)
\$50,000 and more	(reference)	(reference)	(reference)
Missing or Refused	1.32(1.18,1.46)	0.67(0.58,0.76)	1.16(1.07,1.25)
N	252,989	252,989	252,989

The odds of having 5 or more self-reported poor mental health days, used as a proxy for risk of depression, is also modeled in Table 4. Both diabetes (OR = 1.43; 95% CI = 1.33, 1.53) and heavy drinking (OR = 1.45; 95% CI = 1.34, 1.58) increased the odds of having 5 or more poor mental health days. Compared to Whites, Blacks and Hispanics had significantly lower odds of having 5 or more poor mental health days. Asians, Multiracial/Other, and Native Hawaiians/Pacific Islanders were no different from Whites. American Indians/Alaska Natives, however, had significantly higher odds of 5 or more poor mental health days, compared to Whites (OR = 1.22; 95% CI = 1.02, 1.47).

We next examined which subgroups had the highest odds of triADD, which was defined as having all three risk factors: diabetes, heavy drinking, and five or more reported poor mental health days. The incidence of triADD in the sample was found to be exceptionally small: 91 cases. The Asian and Native Hawaiian/Pacific Islander cases were removed from this analysis due to the low occurrences of triADD in these groups (n=1, n=0, respectively). Thus the following analysis should be interpreted with caution and considered exploratory. The comparisons made in the triADD model included 90 individuals exhibiting all three predictors. Although relatively small in comparison to the entire dataset, statistics were adjusted for the sampling scheme and the confidence intervals were computed accordingly to accurately reflect significant effects. Results indicated that AI/ANs had the highest risk of triADD compared to Whites (OR = 10.95; 95% CI = 2.98, 40.32). The second highest subgroup was Multiracial/Other (OR = 4.85; 95% CI = 1.08, 21.90).

Discussion

This study examined the risk for triADD, or the risk for co-occurring diabetes, alcohol abuse, and depression, in AI/AN populations in the U.S. Using response items from the BRFSS as an approximation of risk for the presence of these three serious health conditions, we examined their separate and combined effects for AI/ANs throughout the U.S. Aside from having the second highest prevalence of heavy drinking after the Native Hawaiian population, the separate and combined presence of each of these conditions is highest in AI/AN populations, even after controlling for marital status, income, education, and age group. Although the overall number of triADD cases was low, those experiencing this multimorbid condition most frequently were AI/ANs. Although this inquiry substantiates the need for further study into the actual prevalence of triADD and possible causal relationships, it is important to recognize the study limitations. BRFSS sampling is limited to those who have landline telephones. This excludes those who do not have telephones or who use only cellular phones, both of which are common scenarios on many reservations in the U.S. The 2003 BRFSS includes post-stratification weights to attempt to adjust for noncoverage of households without telephones, which may reduce (although not totally eliminate) bias. Not having a telephone is likely to be positively correlated with disadvantaged health outcomes. Thus, if the estimates contain noncoverage bias due to homes not having telephones, this bias is likely to cause our estimates of diabetes, heavy drinking, and poor mental health days to be lower than the actual population prevalence. Additionally, data related to race/ethnicity and the variables related to triADD are self-reported. Due to issues of social desirability, the number of alcoholic drinks consumed per day and the number of poor mental health days may be underreported. Like phone noncoverage bias, the bias introduced by social desirability probably exerts a downward pressure on estimates, since it is likely to make people less forthcoming about admitting risky behaviors and sensitive health information. Therefore, the differences we report may very well be conservative estimates of the prevalence of these poor health outcomes.

Prevalence of diabetes and the number of poor days may also be underreported, as the ADA has estimated that nearly one-third of diabetic cases are undiagnosed and therefore unknown to the individuals who have the disease (ADA, n.d.b), and individuals experiencing a high number of poor days may be underrepresented due to severe impairment and inability to participate in the survey.

Additionally, research suggests that survey nonresponse bias may be correlated with health status (Rowland & Forthofer, 1993). Related to this finding, research suggests that the direction of bias in recall of health events tends toward underreporting. Patten (2003) investigated the role of recall bias in lifetime prevalence reports of major depression. He suggested that the most likely direction of the bias is to exert downward pressure on the estimates of lifetime prevalence, since people might not recall prior depressive events. Okura, Urban, Mahoney, Jacobsen, and Rodeheffer (2004) compared questionnaire reports to medical record data and found that questionnaires tended to underestimate the prevalence of diabetes. These findings suggest that recall bias may be downwardly biasing the components of triADD, indicating that the prevalence of triADD could be higher than observed in the BRFSS data.

The results indicating a negative association between heavy drinking and diabetes may be attributed to a number of factors, including health precautions taken by those with diabetes (as alcohol consumption is discouraged), or possibly to the fact that some individuals are unaware of their diabetic status. Further, it is important to note that the number of drinks per day defined by the CDC as "heavy drinking" is not a clinical threshold for alcohol abuse or dependence. Additionally, the variables selected from the BRFSS may not be accurate indicators of the three conditions investigated, as they are not intended to be diagnostic items. However, they do suggest an elevated risk for the conditions investigated in this study, and are consistent with empirical accounts of these disorders in AI/AN populations (many of which are referenced throughout this article).

Implications for Health Promotion

Examining triADD can create a better understanding of health needs within AI/AN populations and may provide insight into more appropriate primary and secondary prevention and treatment measures when these illnesses are presented concurrently. Further, these findings indicate the need for prevention interventions focused on health promotion that are specifically tailored toward these populations. This method might incorporate culturally specific interventions similar to those from other Indigenous populations, such as Native Hawaiians (Ka‘opua, 2004; Ka‘opua & Mueller, 2004). Specific examples of these types of interventions include those which incorporate spirituality, relational wellness, perceptions of self in relation to significant others, and interpretations and translations of culturally specific beliefs and practices into prevention interventions (Ka‘opua). Many of these recommendations are consistent with the enhancement of cultural moderators proposed by Walters et al. (2002), and may serve to buffer the impact of historical trauma and discrimination on AI/AN populations. American Indian/Alaska Native-specific interventions based on cultural moderators are similar to those developed for Hawaiian populations, and may include the promotion of familial relational bonds and community support, and the use of spiritual and traditional healers. In the clinical setting, accurately recognizing triADD in AI/AN populations has significant implications for improved health outcomes, as each component of triADD is a chronic illness and requires significant self-management behaviors. Adapting approaches that have been developed and supported through the grant-funded *Special Diabetes Program for Indians* (IHS, 2000) and expanding them to include mental illness and substance abuse may prove to be an effective method for identifying individuals affected by these multimorbid conditions and treating them within a culturally specific context. More specifically, this federally-funded grant program allowed tribal communities to identify their diabetes-related priorities and develop interventions reflecting their specific tribal traditions, customs, and beliefs surrounding illness, health, and wellness. Approaches have included talking circles, use of traditional herbs or medicines, storytelling, incorporation of traditional healers, and other indigenous methods aimed at primary, secondary, and tertiary prevention (IHS).

With the high prevalence of the triADD components in AI/AN populations, the possible impact of this phenomenon as a multimorbid condition may have severe societal consequences stemming from complex care needs and high levels of disability within community members. Accurate diagnosis of multiple conditions can improve the health of populations through appropriate management (van den Akker, Buntinx, Metsemakers, Roos, & Knottnerus, 1998). With appropriate medical care and acquisition of self-management skills, individuals may be more likely to avoid the stress of physical, social, and financial disability that has been associated with multimorbidity (Rice, & LaPlanta, 1988; Verbrugge, Lepkowski, & Imanaka, 1989).

Conclusion

Our analysis suggests that further epidemiological study into the prevalence of triADD in AI/ANs is warranted. Although examining trends is an important step, this pilot study, which focuses on one point in time, represents our first examination of the topic. The goal of the pilot study is to examine this issue at a single cross-section before studying the more complex issue of changes and trends over time. Numerous questions remain as to the etiology of the described phenomenon. Do regional/tribal differences exist in regard to epidemiology? Does one or two of these disorders affect the severity of the other? Does triADD place one at higher risk for other adverse health outcomes compared to individual or dyadic manifestations of these disorders? If so, what is the treatment protocol and how is it influenced by cultural differences? Until these answers can be explored, screening of these conditions in the clinical setting for AI/AN populations with a high prevalence of diabetes, alcohol abuse, and/or depression may improve the health of communities through early detection and appropriate intervention.

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References

Acton, K. J., Burrows, N. R., Geiss, L. S., & Thompson, T. (2003, August). Diabetes prevalence among American Indians and Alaska Natives and the overall population--United States, 1994-2002. *MMWR Weekly, 52*(30):702-704.

American Diabetes Association. (n.d.a). *Total prevalence of Diabetes and Pre-Diabetes*. Retrieved February 20, 2007 from http://www.diabetes.org/diabetes-statistics/prevalence.jsp

American Diabetes Association (n.d.b). *All About Diabetes*. Retrieved February 20, 2007 from http://www.diabetes.org/about-diabetes.jsp

American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., Text Revision). Washington, D.C.: American Psychiatric Publishing.

Anderson, R. J. (2001). The prevalence of comorbid depression in adults with diabetes: A meta-analysis. *Diabetes Care, 24*(6), 1069-1078.

Barron, L., Oge, L. L., & Markovich, J. (1999). North American Indian Alliance mental health needs assessment report. *American Indian and Alaska Native Mental Health Research: Journal of the National Center*, *8*(3), 13-24.

Black, S. A., Markides, K. S., & Ray, L. A. (2003). Depression predicts increased incidence of adverse health outcomes in older Mexican Americans with Type 2 diabetes. *Diabetes Care, 26*(10), 2822-2828.

Carlsson, S., Hammar, N., Efendic, S., Persson, P. G., Östenson, C. G., & Grill, V. (2000). Alcohol consumption, Type 2 diabetes mellitus, and impaired glucose tolerance in middle-aged Swedish men. *Diabetic Medicine, 17*, 776-781.

Chester, B., Mahalish, P., & Davis, D. (1999). Mental health needs assessment of off-reservation American Indian people in northern Arizona. *American Indian and Alaska Native Mental Health Research: Journal of the National Center*, *8*(3), 25-40.

Conigrave, K. M., Hu, B. F., Camargo, C. A., Stampfer, M. J., Willett, W. C., & Rimm, E. B. (2001). A prospective study of drinking patterns in relation to risk of Type 2 diabetes among men. *Diabetes, 50*(10), 2390-2395.

de Groot, M., Anderson, R., Freedland, K. E., Clouse, R. E., & Lustman, P. J. (2001). Association of depression and diabetes complications: A meta-analysis. *Psychosomatic Medicine 63*, 619-630.

Eaton, W. W., Armenian, H., Gallo, J., Pratt, L., & Ford, D. E. (1996). Depression and risk for onset of type II diabetes: A prospective population-based study. *Diabetes Care, 19*, 1097-1020.

Egede, L. E., & Zheng, D. (2003). Independent factors associated with major depressive disorder in a national sample of individuals with diabetes. *Diabetes Care, 26*(1),104-111.

Evaneshko, V. (1999). Mental health needs assessment of Tucson's urban Native American population. *American Indian and Alaska Native Mental Health Research: Journal of the National Center*, *8*(3), 41-60.

Franz, M. J., Bantle, J. P., Beebe, C. A., Brunzell, J. D., Chiasson, J. L., Garg, A., et al. (2002). Evidence-based nutrition principles and recommendations for the treatment and prevention of diabetes and related complications. *Diabetes Care, 25*(1), 148-198.

Hitzemann, R. (2000). Animal models of psychiatric disorders and their relevance to alcoholism. *Alcohol Research & Health, 24*(3), 149-158.

Holbrook, T. L., Barrett-Connor, E., & Wingard, D. L. (1990). A prospective population-based study of alcohol use and non-insulin-dependent diabetes mellitus. *American Journal of Epidemiology, 132*(5):902-909.

Howard, A. A., Arnsten, J. H., & Gourevitch, M. N. (2004). Effect of alcohol consumption on diabetes mellitus: A systematic review. *Annals of Internal Medicine, 140*(3), 211-219.

Indian Health Service. (2000). *IHS. National Diabetes Program Report to Congress: Special Diabetes Program for Indians.* Rockville, MD: U.S. Department of Health and Human Services.

Indian Health Service. (2001) *Trends in Indian Health 1998-1999.* Rockville, MD: U.S. Department of Health and Human Services.

Iosifescu, D. V., Nierenberg, A. A., Alpert, J. E., Smith, M., Bitran, S., Dording, C., et al. (2003). The impact of medical comorbidity on acute treatment in major depressive disorder. *American Journal of Psychiatry, 160*(12), 2122-2127.

Kao, W. H. L., Puddey, I. B., Boland, L. L., Watson, R. L., & Brancati, F. L. (2001). Alcohol consumption and the risk of Type 2 diabetes mellitus: Atherosclerosis risk in communities study. *American Journal of Epidemiology, 154*(8), 748-57.

Ka'opua, L. S. I. (2004, February). *Promoting a legacy of Native Hawaiian health through culturally based solutions*. Lecture presented in the Southwest Interdisciplinary Research Center Colloquia Series, Tempe, AZ.

Ka'opua, L. S. I., & Mueller, C. W. (2004). Treatment adherence among Native Hawaiians living with HIV. *Social Work, 49*(1), 55-63.

Kessler, R. C., Nelson, C. B., McGonagle, K. A., Eclund, M. J., Frank, R. G., & Leof, P. J. (1996). The epidemiology of co-occurring addictive and mental disorders. American Journal of Orthopsychiatry, 66, 17-31.

King, J. (1999). Denver American Indian mental health needs survey. *American Indian and Alaska Native Mental Health Research: Journal of the National Center*, *8*(3), 1-12.

Knowler, W. C., Pettitt, D. J., Saad, M. F., & Bennett, P. H. (1990). Diabetes mellitus in the Pima Indians: Incidence, risk factors and pathogenesis. *Diabetes/Metabolism Reviews, 6*(1), 1-27.

Kobau, R.., Safran, M. A., Zack, M. M., Moriarty, D. G., & Chapman, D. (2004). Sad, blue, or depressed days, health behaviors and health-related quality of life, Behavioral Risk Factor Surveillance System, 1995–2000. *Health and Quality of Life Outcomes, 2*, 40.

Lee, E. T., Howard, B. V., Savage, P. J., Cowan, L. D., Fabsitz, R.R., Oopik, A. J., et al. (1995). Diabetes and impaired glucose tolerance in three American Indian populations aged 45-74 years. The Strong Heart study. *Diabetes Care*, 18, 599-610.

Lustman, P. J., Anderson, R. J., Freedland, K. E., de Groot, M., & Carney, R. M. (2000). Depression and poor glycemic control: A meta-analytic review of the literature. *Diabetes Care, 23*, 434-442.

Manson, S. P. (2001). Behavioral health services for American Indians: Need, use, and barriers to effective care. In M. Dixon & Y. Roubideaux (Eds.), *Promises to keep: Public health policy for American Indians and Alaska Natives in the 21st century* (pp. 167-192). Washington, D.C.: American Public Health Association.

Merikangas, K. R., & Gelernter, C.S. (1990). Co-morbidity for alcoholism and depression. *Psychiatric Clinics of North America, 13*(4), 613-632.

Nichols, G. A., & Brown, J. B. (2003) Unadjusted and adjusted prevalence of diagnosed depression in Type 2 diabetes. *Diabetes Care, 26*(3), 744-749.

Nurnberger, J. I., Foroud, T., Flury, L., Meyer, E. T., & Wiegand, R. (2002). Is there a genetic relationship between alcoholism and depression? *Alcohol Research & Health, 26*(3), 233-240.

Okura, Y., Urban, L. H., Mahoney, D. W., Jacobsen, S. J., & Rodeheffer, R. J. (2004). Agreement between self-report questionnaires and medical record data was substantial for diabetes, hypertension, myocardial infarction and stroke but not for heart failure. *Journal of Clinical Epidemiology, 57*(10), 1096-1103.

Patten, S. B. (2003). Recall bias and major depression lifetime prevalence. *Journal of Social Psychiatry and Psychiatric Epidemiology, 38*(6), 290-296.

Perreira, K. M., & Sloan, F. A. (2002). Excess alcohol consumption and health outcomes: a 6-year follow-up of men over age 50 from the health and retirement study. *Addiction, 97*, 301-310.

Raimo, E. B., & Schuckit, M. A. (1998). Alcohol dependence and mood disorders. *Addictive Behaviors, 23*(6), 933-946.

Regier, D. A., Farmer, M. E., Rae, D. S., Locke, B. Z., Keith, S. J., Judd, L. L., et al. (1990). Comorbidity of mental disorders with alcohol and other drug abuse: Results from the Epidemiologic Catchment Area (ECA) study. *JAMA, 264*, 2511-2518.

Rice, D. P., & LaPlanta, M. P. (1988). Chronic Illness, disability, and increasing longevity. In S. Sullivan, & M. Ein-Lewin (Eds.), *The economics and ethics of long-term care and disability* (pp. 9-55), Washington, DC: American Enterprise Institute for Public Policy Research.

Roberts, A. R., & Yeager, K. (2004). Mental illness, substance dependence, and suicidality: Secondary data analysis. In A. R Roberts & K. Yeager (Eds.), *Evidence based practice manual: Research and outcome measures in health and human services* (pp. 70-75). New York: Oxford.

Robin, R. W., Long, J. C., Rasmussen, J. K., Albaugh, B., & Goldman, D. (1998). Relationship of binge drinking to alcohol dependence, other psychiatric disorders, and behavioral problems in an American Indian tribe. *Alcoholism: Clinical and Experimental Research, 22*(2), 518-523.

Rowland, M. L., & Forthofer, R. N. (1993). Adjusting for nonresponse bias in a health examination survey. *Public Health Reports, 108*(3), 380-386.

Saremi, A., Hanson, R. L., & Tulloch-Reid, M. (2004). Alcohol consumption predicts hypertension but not diabetes. *Journal of Studies on Alcohol, 65*(2), 184-190.

Substance Abuse and Mental Health Services Administration. (2002). American Indians/Alaska Natives and Substance Abuse: Rockville, MD: U.S. Department of Health and Human Services.

Talbot, F., & Nouwen, A. (2000). A review of the relationship between depression and diabetes in adults. *Diabetes Care, 23*(10), 1556-1562.

van den Akker, M., Buntinx, F., Metsemakers, J. F., Roos, S. & Knottnerus, J. A. (1998). Multimorbidity in general practice: Prevalence, incidence, and determinants of co-occurring chronic and recurrent diseases. *Journal of Clinical Epidemiology, 51*(5), 367-75.

Verbrugge, L. M., Lepkowski, J. M., & Imanaka, Y. (1989). Comorbidity and its impact on disability. *The Milbank Quarterly, 67*(3-4), 450-484.

Walters, K. L., Simoni, J. M., & Evans-Campbell, T. (2002). Substance use among American Indians and Alaska Natives: Incorporating culture in an “Indigenist” stress coping paradigm. *Public Health Reports, 117*(suppl 1), S104-S117.

Westermeyer, J., & Peake, E. (1983). A ten-year follow-up of alcoholic American Indians in Minnesota. *American Journal of Psychiatry, 140*, 189-194.

Wei, M., Gibbons, L. W., Mitchell, T. L., Kampert, J. B., & Blair, S. N. (2000). Alcohol intake and incidence of Type 2 diabetes in men. *Diabetes Care, 23*(1), 18-22.

Wilson, C., Civic, D., & Glass, D. (1995). Prevalence and correlates of depressive syndromes among adults visiting an Indian Health Service primary care clinic. *American Indian and Alaska Native Mental Health Research: Journal of the National Center*, *6*(2), 1-12.

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DISSEMINATING RESEARCH ON COMMUNITY HEALTH AND WELL-BEING: A COLLABORATION BETWEEN ALASKA NATIVE VILLAGES AND THE ACADEME

Augusto Legaspi, Ph.D. and Eliza Orr, B.A.

Abstract: Collaboration between Alaska Native communities and the academe is very important. This project focused on disseminating research findings to communities in a manner that is culturally appropriate and useful in planning the communities' next steps. The project relied on a collaborative process, described in terms of the activities that transpired, the approaches taken, the challenges, the lessons learned, and some examples of the final disseminated material.

Community collaboration improves the quality of research and makes it more relevant to the community. However, past research efforts with Native people have rarely been collaborative in terms of design, conduct, and interpretation (Mohatt et al., 2004). When collaboration does exist, there often is little participation beyond data collection, and results are viewed in non-Native theoretical frameworks (Baldwin, 1999). For collaborative research endeavors, little guidance is offered about collaboration in data dissemination, specifically in creating the presentations to communities and the issues and challenges likely to be encountered in the process.

The Rationale and Aim of the Paper

There are two limitations about collaboration and dissemination. First, in spite of the importance of collaboration among researchers, communities, and community-based organizations, few have detailed the process of developing and maintaining these collaborative relationships (Harper et al., 2004). A second limitation is that most dissemination efforts utilize a "linear conception" based on "getting the word out" (Farkas, Jette, Tennstedt, Haley, & Quinn, 2003). However, there is little evidence showing that people will use good ideas once they have access to information (Farkas et al., 2003).

This paper addresses these two limitations. We document the process involved in a collaborative dissemination by describing the iterative process of preparing and disseminating results. We realize that this dissemination is not the final step, but rather one of the intermediary steps in this long-running collaboration among the Alaska Native (AN) villages, the regional health corporation, and the Center for Alaska Native Health Research (CANHR). We describe these processes in the context of collaborative research highlighting the cultural specificity of disseminating preliminary data, the challenges, and lessons learned.

Rationale for Collaboration

There are many reasons why research collaboration is important. For one, interventions and assessment become more culture-specific if done within the tribal participatory research model (Fisher & Ball, 2003). In collaboration, there is complete immersion of local residents in every stage of the research (Beamish & Bryer, 1999) resulting in a diminished cultural distance between the partners (Trickett & Espino, 2004) and an active demystification of research as community members see themselves as a source of knowledge (Mardiros, 2001). In addition, there is greater clarity in roles and expectations of all partners, and both process and product are given importance (Shiu-Thornton, 2003). As all these qualities are enhanced, there is improvement in the overall quality and validity of the research (Trickett & Espino, 2004). Finally, the outsider (usually the researcher) begins to perceive the phenomenon as an insider and use a framework more consistent with that of the insider (Santiago & Enriquez, 1982).

Beyond collaborative research in general, there are reasons behind collaborative dissemination. It is part of providing an adequate description of the research, which leads to a high degree of cooperation and further collaboration (Beauvais, 1999). Collaborative dissemination is consistent with the need to adapt preventive intervention approaches to American Indian (AI) (and Alaska Native) cultures, which is one recurrent theme that Baldwin (1999) identified in the work with American Indians. Collaborative dissemination is also consistent with a goal of the Alaska Native Science Commission in providing a feedback mechanism of research results (Alaska Native Science Commission, 2001).

There are several perspectives on collaborative research, such as participatory action research, empowerment research, community-based participatory research, and tribal participatory research. Trickett and Espino (2004) believe these perspectives reflect an interchangeable nature as described in the literature. We describe collaboration without distinguishing the approaches.

The Center for Alaska Native Health Research

CANHR was established through a five-year grant awarded by the National Institutes of Health, National Center for Research Resources to the University of Alaska Fairbanks. CANHR's purpose is to investigate weight, nutrition, and health in Alaska Natives, specifically those living in the Yup'ik- and Cup'ik-speaking region. CANHR approaches this thematic focus from genetic, dietary, and cultural-behavioral perspectives through a partnership with the Yukon-Kuskokwim Health Corporation (YKHC). The YKHC is a non-profit organization that provides programs for primary care, prevention, and health promotion serving 58 western Alaska villages. CANHR includes faculty and staff from the University of Alaska Fairbanks and the University of Alaska Anchorage, field research assistants from the villages and based in the villages, and cultural consultants. Some members of CANHR are from the villages of the region.

CANHR reflects the crucial elements of participatory action research, such as collaboration, incorporation of local knowledge, a multidisciplinary focus, eclecticism, case orientation, use of emergent process, and the linking of science with social action (Greenwood, Whyte, & Harkavy, 1993). Our process tries to avoid creating a dominant role for the professional expert in the decision-making process and increases the likelihood of the non-professional's ownership in the decisions and learning (Whyte, 1989).

A Short History of the Dissemination Process

In early 2004, CANHR presented preliminary results to a community using PowerPoint, as requested by the tribal council. Results were presented in English by the principal investigators (PIs) with sequential translation into Yup'ik by one research assistant. This presentation was patterned after the academic data presentation with PowerPoint slides using bar graphs, pie charts, descriptive statistics, national comparisons, and text. The feedback from the tribal council was that the presentation of data was too Western and the sequential translation of the data from English to Yup'ik made it difficult to convey the idea. They challenged CANHR to share information in a more culturally appropriate manner in order to make the information understandable.

A data dissemination team was thus formed to work on a culturally meaningful presentation. For the team, a culturally meaningful presentation meant (a) identifying Yup'ik concepts and terms that conveyed the idea, (b) presenting the information in the Yup'ik language using local symbols and images, and (c) focusing on results that local residents could use for subsequent action. The data dissemination team used this opportunity to train the Yup'ik team members in presenting biomedical and social science data, and for the non-Yup'ik team members to continue learning about Yup'ik culture and conceptions of health and wellness. This team was composed of the head of the center, cultural consultants (four of whom were the same people who presented to the villages), three PIs, statisticians, a field coordinator, a graphic artist, and a coordinator of the dissemination team. The team members were located in Alaska villages, Fairbanks, Anchorage, and California. The cultural consultants were community members from our research assistant pool; tribal council members; and members of the staff who were Yup'ik and Cup'ik who lived in the villages, Fairbanks, or Anchorage. Most had worked with CANHR for five years. Cultural consultants became part of the group in different ways. Some were from our research assistant pool and were asked if they would fulfill this additional role. Some were recruited for the specific role of helping form the presentations and actually present to the villages. We asked tribal council members if we could approach them for their comments and ideas throughout the research, which included soliciting their feedback for these presentations.

The results we presented to the villages were the initial outcomes of three projects: (a) physical health factors – risk and protection, (b) diet and physical activity, and (c) lifestyle and the cultural understanding of health. This information will assist the village residents to create their own specific interventions, while studying this dissemination process will inform the ongoing CANHR collaboration research.

The objectives of disseminating the preliminary results were to provide information on the participants' health and to provide the village residents a basis for action they saw fit. As the preliminary presentations in the last villages were winding down, one of the villages in which the team had earlier disseminated results had started planning community activities that would bring greater awareness of the need to be more physically active. We believe the collaborative approach in developing and disseminating the results contributed to the development of this community plan. In said village, the meeting in which the initial results were disseminated included feedback from community members on how to make presentations to subsequent villages more understandable. This meeting also became the initial forum in which community members started sharing ideas on what actions their community could take. The CANHR researchers most directly involved in the data collection built on this evident interest by arranging follow-up consultations and planning with the community members.

The Collaborative Process

The Presentation Process as Planned

The plan was to create a presentation template we could use for all villages. The team decided to follow a step-by-step procedure. First, the PIs would put together the information they wanted to present and turn in PowerPoint slides to the coordinator. The coordinator would work with a subgroup composed of the cultural consultants, graphic designer, and field coordinator. This subgroup would work on drafting the presentation, then share it with the whole team for comments on the content and format of the slides. Finally, we would practice the presentations in the local language. Once we were comfortable with the outcome, we would use this template for all the village presentations while incorporating village-specific results.

The Actual Presentation Development Process

The actual process greatly deviated from the plan. It became clear that the planned process was still too sequential. Although the team tried to follow the procedure outlined above, we had to allow for a more iterative process of drafting, practice, feedback, reflection, re-doing the presentations, and so on. It also became clear that the process did not just involve translating the results. Rather, it was allowing the emergence of a local framework of thinking about biomedical and cultural conceptions of health, and about determining important information and the manner by which to convey the information.

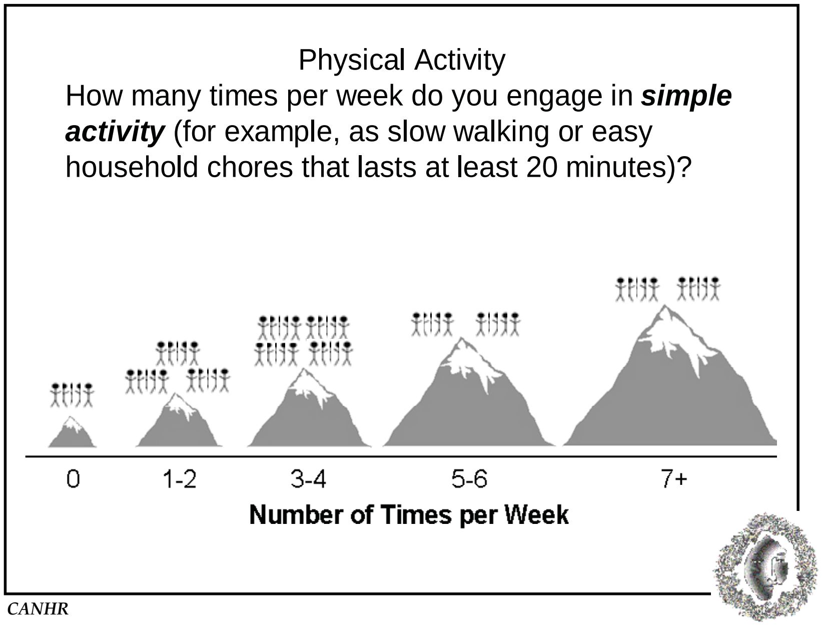
Because presenting biomedical and social scientific information in the Yup'ik culture was still new, we needed more input and a greater amount of time to learn from this iterative process. The team solicited comments, questions, and suggestions in trial presentations within the group. When possible, some team members practiced parts of the presentations during their fieldwork and got valuable feedback from community members. Because of the distance between the cultural consultants, not all of them could be present whenever the group met in person. However, teleconferencing allowed them to join most discussions. During one particularly helpful practice session, all four presenters were able to be together in one place to discuss and brainstorm ideas. Each one fed on the ideas and feedback of others, and they informed each other of possible local concepts to use. We also used the first village presentation to refine the message and style. Throughout the process, we had to consider and manage all input that came from different members at different times. Revising what we thought was the final template became the routine until, after six months, we had a workable template. This process continues because we have only presented the preliminary data to the villages and to the YKHC.

Some Examples of Culturally Relevant Content and Style

A huge challenge the team faced was converting biomedical and socio-cultural data into information using very basic statistics, images, and minimal text. For example, we removed statistical means and percentages because they are not commonly understood among community members. We therefore used frequencies. However, the presentation to the regional health corporation included more statistics because the board members were familiar with such information. We had to tailor the presentation to the needs of the audience.

We needed to present numbers through familiar images, and we provide a few examples here without using real data. The group decided to use several local images to represent numbers in order to broaden familiarity. These were the images that the cultural consultants agreed would most facilitate understanding of the results. For example, instead of bars in a chart, we used snow-capped mountains to indicate amount of physical activity (see Figure 1). In this case, however, the height of the mountain did not indicate the number of participants but rather the number of times a respondent engaged in simple activities for a week (i.e., amount of physical activity exerted). The number of stick figures represented the actual number of respondents for each level of activity.

Figure 1
Sample Slide Showing Physical Activity



Physical Activity

How many times per week do you engage in ***simple activity*** (for example, as slow walking or easy household chores that lasts at least 20 minutes)?

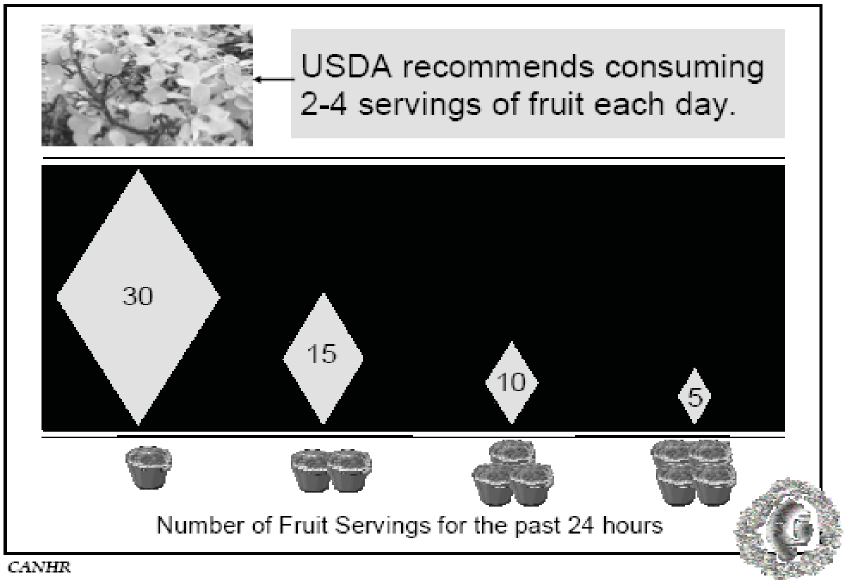
CANHR

In other slides, we used diamond shapes – a pattern found in parkas – to replace the bars in a graph (see Figure 2). The size of the diamond indicated the number of participants who gave that particular response. Figure 2 shows the number of participants who indicated that they ate the equivalent of one to four servings of fruit per day. We likewise changed the presentation of a pie chart. Although the villagers are familiar with pies, we constructed pie charts as the face of a hand drum, as seen in Figure 3. In addition to using local images, we also incorporated feedback with regard to labels. For example, Figure 3 uses *healthy* as opposed to *normal*, which we had originally used. The cultural consultants pointed out that using normal would imply that those beyond this range are abnormal and would thus be stigmatizing.

The use of PowerPoint greatly facilitated the presentations. The presenters were able to present to both English- and Yup'ik-speaking community members at the same time. This was done by having the slides mostly in English (with the key concepts in Yup'ik) while the presenters spoke in Yup'ik. This was based on several considerations. First, elders know more Yup'ik than English while younger people tend to know both. Second, not everyone can read Yup'ik, but they can translate English into Yup'ik quickly. Third, the presenters felt it would take

Figure 2

Sample Slide Showing Consumption of Fruits



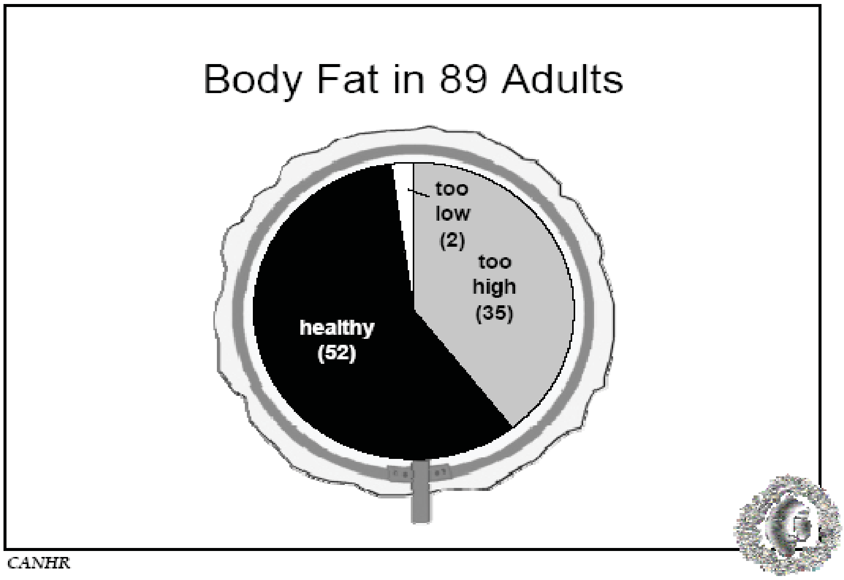
USDA recommends consuming 2-4 servings of fruit each day.

Number of Fruit Servings for the past 24 hours

CANHR

Figure 3

Sample Slide Showing Body Fat Levels



Body Fat in 89 Adults

CANHR

longer to read the slides if they were in Yup'ik. Fourth, some of the English concepts and words had no direct Yup'ik equivalent and, therefore, the presenter had to explain and provide examples to convey the idea. Using PowerPoint allowed the presenters to show the key ideas on the screen while the audience focused on the presenters. With PowerPoint, we were able to include animations of a heart attack and the processing of cholesterol. These animations made explaining the physiological processes much easier. Including photos of the villages and images familiar within the Yup'ik region also added to the appeal and familiarity of the content.

There was no assessment specifically to test the level of understanding of the presentations. However, the team conducted a survey assessing the broader process of data collection, result dissemination, and perceived changes in the community. One question asked about the community's satisfaction with the research team's explanation of the results to the community. All five communities in which CANHR had presented by then had above-average satisfaction. In addition, the informal conversations that occurred after the presentations revealed that the audience liked the manner in which frequency results were presented. They appreciated that CANHR took the time to present the results in a way that made them easier to understand, especially using pictures rather than numerous tables and much text.

Helpful Approaches in Collaborative Dissemination

The objective of the collaborative dissemination was to provide culturally relevant and useful information, while protecting the interests of the villages and the regional health corporation. Six approaches that emerged along the process helped in attaining this objective. The first was increasing the local community's participation in all phases of the process. The first attempt to directly disseminate the information straight from the PIs' output, with a nominal local role, was a misstep. It became clear that we needed early and continuous involvement of the cultural consultants.

A second approach was the team's willingness to answer questions about the methodology, content, and use of the findings. Such questions did not end when the villages and the health corporation gave their approval for the research to proceed. In fact, in the dissemination team meetings, questions arose from inside and outside the team about the intent and reasons for our research strategy, research questions, and translation of ideas. Everyone saw this questioning as part of the uncertainties involved in collaboration between the villages and the university. The team took these questions as opportunities to reiterate the objectives of CANHR and its commitment to collaboration.

A third approach was the research team's openness to the local residents' criticisms, and at times suspicions, regarding the intentions of another set of outsiders doing research in the community. This openness was very important, as allaying suspicion about research and outside researchers is one challenge in research with AI/AN communities (Baldwin, 1999). Given some of the negative consequences of past research done in AI/AN communities (Manson, 1989), the researchers had the onus of proving their sincerity. We believe that the degree to which we shared information and decisions, and acknowledged criticisms, helped allay the fears of the communities and the regional health corporation.

Fourth, the amicable discussions and open exchange of ideas between the members of the team permitted the inclusion and winnowing of different ideas. This openness allowed us to focus the information we presented, identify the key concepts and terms that captured what we wanted to convey, and adapt the presentations to the villages. There was a two-way learning relationship where everyone was ready to learn and to guide (Suarez-Balcazar et al., 2004).

The importance of allowing debate cannot be overemphasized even if it means longer meetings and more revisions in the face of approaching deadlines. One example revolved around presenting comparative data. Although the team decided that there would be no between-village comparisons when presenting to a village, we had more discussion on presenting comparative national data. The preliminary draft of the village presentation contained several comparative national data items. However, the cultural consultants insisted that national data be removed because villagers wanted to focus on their village and specific actions that they could take. On the other hand, others felt that village data would make more sense within the national context. After much discussion and several drafts, the team agreed on a version that included just one national comparison using a short note that the number of overweight/obese individuals reflected a trend that is similar to the national data. This one example took several revisions of the presentation. A decision by one or two members would have made the process expedient but not necessarily helpful.

A fifth approach was encouraging the iterative and feedback-driven nature of the dissemination process. The constant feedback and reworking on the template allowed us to create a presentation based on community needs (Suarez-Balcazar, et al., 2004) and thus of greater value to the community (Beauvais, 1999). This is consistent with the theme in Indigenous psychology that the culture be the source, not the target, of information (Enriquez, 1982). This process is also consistent with participatory action research, which involves an iterative process of action and reflection among community members and the research team (Fisher & Ball, 2003) from which meaning is derived. One meaning that was derived in this case came in the form of intervention projects to promote health and well-being.

The sixth approach, which dovetailed with the other approaches, was the intent and readiness by the non-AN members of the group to learn more about the Yup'ik culture. Our process went beyond linguistic interpretations, translation, and inclusion of local residents. Instead there was – and there still is – a continuous and dynamic process of interaction and learning (Shiu-Thornton, 2003) among the members of the research group, and between the group and the communities. A few principles of cultural competence identified by Shiu-Thornton (2003) were evident in the process, such as diversity and understanding the dynamics of differences. There was a continuous attempt to be aware of and be attentive to the cultural differences that arose. This effort was evident in the openness in responding to questions, criticisms, and suspicions from local residents and members of the team. Another principle was integrating lessons we learned into an ongoing development of skills. We discussed mistakes and oversights and planned on how to avoid errors (such as the initial data presentation that led to the creation of this dissemination team) in the future.

We learned through these approaches as they emerged. Other researchers have used them successfully when working with AI/AN communities and we recommend that others can also benefit from considering these ideas in their work. The following list summarizes the elements and approaches that helped the dissemination team create the desired presentations:

- Having cultural consultants from the villages, including a few who are members of the team;
- Participation of the cultural consultants and the community in all phases of the process;
- Openness of the research team to answer questions and address criticism from the communities;
- Encouraging an iterative process of presentation development among members of the team and cultural consultants;

- Giving each team member an equal voice while recognizing the special skills, knowledge, and expertise of each; and advocating open sharing and discussion of ideas; and
- Readiness to learn about the Yup'ik culture.

The dissemination process and approaches we followed closely mirrors the dissemination framework components identified by Carpenter, Nieva, Albaghal, and Sorra (n.d.). First, we clearly identified the findings we wanted to disseminate. This part of the process took the most time and energy of the dissemination team. Second, we considered the end-users who would apply the findings in practice, and their needs. With the community members in mind as the end-user, we presented the information in everyday language and visuals, with the least amount of technical information, as much as possible. Third, we identified and worked with the partners involved in the whole research enterprise and not just in the dissemination phase. We worked with the YKHC, the village elders, the Tribal Council, cultural consultants, and villagers who wanted to be involved in the research and consequent action. Fourth, we communicated often with the partners most involved with the dissemination process. In this case, these partners were mainly the community members and cultural consultants for the village presentations. Fifth, we incorporated a brief question about the dissemination presentations into an evaluation of the whole research process conducted by other members of CANHR. (A limitation of this evaluation is that it was done months after the initial presentation. As the dissemination of other results will occur in the near future, a more directed and timely evaluation of such presentations will need to be developed.) Finally, a dissemination plan was outlined but not specifically written down. The plan evolved as we created drafts and practiced the presentations. Early in the process, there were many suggestions as to every possible and desired use of the information we wanted to present, which was confusing for everyone. Finally, the team recognized the need to present basic information that the village residents could use to inform action. We learned that we need to be more intentional with our planning in future dissemination endeavors. In addition, having a lead person and small group responsible for ensuring that tasks were planned and performed greatly assisted the team in its efforts.

Challenges and Implications of the Collaborative Process

Challenges Encountered and the Learning Involved

We encountered five major challenges related to outcome and process:

- Presenting biomedical and sociocultural data in an easily understood manner and from which action can be derived by the community,
- Respecting and considering divergent viewpoints about how to present the results in a meaningful and useful way,
- Resolving initial confusion about the roles of the dissemination team and the researchers,
- Coordinating a large and dispersed team, and
- Finding comparative state and national data.

The major outcome-related challenge was to present results that were meaningful and useful to the community. The group was very fortunate to have the mindset that the presentations were for the villages and not for the researchers. We believe this focus helped create a healthy detachment on the part of the investigators over the final output, and let the cultural consultants take the lead in developing content and style.

In terms of process, one challenge was to ensure that each viewpoint was respected and considered. We had to learn the patience involved in understanding individual and cultural nuances embedded in the comments. For example, the second author commented that academic researchers present too much dissected detail. The rest of the team had to learn that the villagers do not usually analyze nor worry about that much detail, and change the presentations accordingly. On the other hand, encouraging multiple voices and perspectives often made it difficult to determine when the template was final. Major and minor changes were continually suggested within and outside meetings and practice runs. Continuous updates about the status of the presentations (e.g., placing the most recent version on the shared drive) helped keep everyone aware of the changes and thus minimized surprises.

Another challenge in the collaboration process was the initial confusion over roles and duties within the team. Some initially feared that changing the slides of the PIs would undermine the PIs' work. Through discussion via e-mail and during meetings, it became clear that all team members were trying to clarify their roles, and that this process of clarification was acceptable and necessary. The PIs identified the key results and message they wanted to present. However, they were very open to suggestions about changes in content and style. Although the cultural consultants' original role had been to figure out the best way to present the information, they also provided input about what information should and should not be included. This expanded role allowed the group members to function as peers with equality of expertise.

A fourth challenge concerned logistics and coordination of a large team. Given the roadless system of the region and the expense of flying, frequent gathering of feedback from the villages was not possible. Some staff who went to the villages for other reasons tried out parts of the presentation before we finalized the template. The first village presentation partly became a feedback session. We then used the feedback to revise the template for the succeeding villages.

A fifth challenge was finding state and national data or standards for comparisons. Even if there was an agreement to minimize comparisons, the majority felt a need for a comparison regarding vegetable and fruit intake, given that fresh fruits and vegetables are not always available in the villages. The diet and nutrition specialists in the group felt that the recommended servings in the Alaska food pyramid were still not very useful for the Alaska Native population. Therefore, even if the group wanted to present a comparison in this case, the lack of a useful standard meant that the group had to contend with a short note in the presentation indicating the USDA recommended servings for fruits and vegetables. Finding useful standards remains a challenge for the team.

Lessons Learned and Implications for Doing Community-based Participatory Research

We learned a few lessons from the dissemination of the initial results that we intend to use in our continuing collaboration. Considering the emergent process that involved significant new learning for the team, we are quite wary in assuming that the process we went through and the presentations that arose can be used with other populations. However, we believe there is value in sharing the challenges we encountered and the lessons learned.

One lesson is that preparing information for dissemination needs much more time than what we normally would allot for preparing PowerPoint presentations. Although time is rarely adequate in any research, we learned we need to provide more time and opportunity for dialogue between the cultural consultants, and between the cultural consultants and the communities. Given the physical distance between the team members, personal meetings occurred infrequently, although teleconferencing was a great substitute. Looming deadlines exacerbated this situation with presenters feeling the pressure to make quick decisions. Most of the input came from two of the four presenters who were most available for meetings. Giving presenters more time for discussion could have allowed them to more adequately think through the most important information to present and how to convey the ideas in their own language. It was obvious that in the few meetings where more than two of the cultural consultants were present, the dynamics changed and there were more opinions shared and suggestions considered.

Another lesson learned was not to think of the cultural consultants as the spokespersons for the villages, and thus a quick source of answers to questions about the Yup'ik region or the villages. The cultural consultants made this clear to the team. Although the cultural consultants are from the region, they are not all equally familiar with all the participating villages. There is much diversity among the communities and particularly between the villages and the urban settings or small rural hub cities in which most of the group members lived. The consultants did not assume they knew all the intricacies of each village.

We learned that this collaborative dissemination process is one way to allay suspicion about research and outside researchers, which is a challenge when doing research in AI/AN communities (Baldwin, 1999). The cultural consultants felt that presenting the information in the manner we did was very useful in helping the villagers and the village council understand the activities of CANHR. They also felt that the process respects and hears the concerns of the village residents. Having a Yup'ik presenter allowed the villagers to more readily ask questions and request clarification. One presenter felt that some villagers are shy to ask a non-Yup'ik, fearing they might incorrectly state their question, but they can easily make themselves understood with a Yup'ik presenter. In addition, having the cultural consultants present to the villages resulted in them becoming one of the research team's bridges to the communities.

We also learned that changes can happen to the cultural consultants through this process. One of them, who had lived in an urban area for many years, reconnected with her community after a long absence from the village, relearned the subtleties of her language, and learned to be comfortable presenting scientific results to her home community.

Another important lesson the team learned was the need for the cultural consultants' involvement earlier in the dissemination process. As it was, the slides were first created by the PIs, who decided what information to present. The cultural consultants came afterward to work on this presentation. Their initial role centered on winnowing the information to a manageable amount and creating a culturally appropriate and meaningful presentation. This was one of the role confusions that occurred early in the process. Cultural consultants should be actively involved in the planning stage of data analysis in order to provide direction in determining the information useful for the community. They eventually did have input on the content. However, it would have saved the team much time if that role had been incorporated earlier, during the planning for data analysis.

What happens when it does not go well? Even with the best intentions for sharing ownership of the process, slips can occur. When we had an opportunity to present our experience (and other projects within CANHR) at a conference, we moved quickly to create the presentation. We had indicated co-authorship of the presentation by the group. However, as the date approached, we realized that not one of the Alaska Native members of the group was going. We realized that no one had asked them and none of them had voiced an interest in going, or at least voiced it strongly enough for the rest of the team to realize. This was clearly a lapse in sensitivity among the non-Yup'ik team members. As leader of the dissemination project, the first author had not been more cognizant of ensuring participation from those who wanted to participate. One of the cultural consultants pointed out that this was another example of the divide between the academic researchers and the other members of the team. She felt the academic researchers get more of the acknowledgement and make decisions automatically without referring to the larger collaborative group, especially those outside the academe. We learned the importance of vigilance in involving the entire group in decision making and being aware of the differential power between university researchers and that of community members. Privilege and status are powerful factors that rapidly erode a community-based participatory research process. The group talked about this violation of trust, made apologies, and set a process in place with regard to roles in publishing and presenting. It was a testimony to the evolution of collaboration in the group that this type of violation could be repaired by the group itself.

We continue with the process of collecting further data and disseminating results to the communities. We continue to identify Yup'ik conceptions of health and well-being that will eventually help us understand and share the information as culturally accurate as we can. The learning from this dissemination process will inform subsequent dissemination of other results. In addition, feedback will be continuously collected with regard to the different phases of the research to add to our continuous learning about working collaboratively with AN villages.

Summary

We shared our experience in making a collaborative data dissemination process work. The creation of a small group to focus on dissemination occurred after community members provided feedback on the initial presentation of results – the information was not easily understood, nor did it inform the village residents of any action they could take. The dissemination process will continue, as CANHR only presented preliminary results to the villages. We faced many difficulties inherent in doing research from a community-based participatory research perspective while crossing disciplines, languages, and cultures. We further realized that dissemination itself is a complex interaction and cultural process needing careful attention. Our team learned many lessons and must keep them in mind for the continued success of this collaboration and our dissemination of results. We hope what we have learned can inform other collaborative dissemination endeavors.

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References

Alaska Native Science Commission (2001). *Goals and Concerns*. Retrieved May 23, 2005, from http://www.nativescience.org/html/goals_and_concerns.html

Baldwin, J. A. (1999). Conducting drug abuse prevention research in partnership with Native American communities: Meeting challenges through collaborative approaches. *Drugs & Society, 14,* 77-92.

Beamish, W., & Bryer, F. (1999). Programme quality in Australian early special education: An example of participatory action research [Electronic version]. *Child: Care, Health and Development, 25*(6), 457.

Beauvais, F. (1999). Obtaining consent and other ethical issues in the conduct of research in American Indian communities. *Drugs & Society, 14,* 167-184.

Carpenter, D., Nieva, V., Albaghal, T., & Sorra, J. (n.d.). Development of a planning tool to guide research dissemination. Retrieved November 15, 2006, from http://www.ahrq.gov/downloads/pub/advances/vol4/Carpenter.pdf

Enriquez, V. G. (1982). Towards cross-cultural knowledge through cross-indigenous methods and perspectives. In R. Pe-Pua (Ed.), *Sikolohiyang Pilipino: Teorya, metodo, at gamit* (pp 120-130). Quezon City, Philippines: Philippine Psychology Research and Training House.

Farkas M., Jette, A. M., Tennstedt, S., Haley, S. M., & Quinn, V. (2003). Knowledge dissemination and utilization in gerontology: An organizing framework. *The Gerontologist, 43*(Special Issue I), 47-56.

Fisher, P. A., & Ball, T. J. (2003). Tribal participatory research: Mechanisms of a collaborative model. *American Journal of Community Psychology, 32*(3/4), 207-216.

Greenwood, D. J., Whyte, W. F., & Harkavy, I. (1993). Participatory action research as a process and as a goal. *Human Relations, 46*(2), 175-193.

Harper, G. W., Bangi, A. K., Contreras, R., Pedraza, A., Tolliver, M., & Vess, L. (2004). Diverse phases of collaboration: Working together to improve community-based HIV interventions for adolescents. *American Journal of Community Psychology, 33*(3/4), 193-204.

Manson, S. M. (1989). Editorial: The Barrow alcohol study. *American Indian and Alaska Native Mental Health Research, 2*(3), 5-6.

Mardiros, M. (2001). Reconnecting communities through community-based action research. *International Journal of Mental Health, 30*(2), 58-78.

Mohatt, G.V., Hazel, K.L., Allen, J., Stachelrodt, M., Hensel, C., & Fath, R. (2004). Unheard Alaska: Culturally anchored participatory action research on sobriety with Alaska Natives. *American Journal of Community Psychology, 33*(3/4), 263-273.

Santiago, C., & Enriquez, V. G. (1982). Tungo sa makaPilipinong pananaliksik [Towards a Filipino-focused research]. In R. Pe-Pua (Ed.), *Sikolohiyang Pilipino: Teorya, metodo, at gamit* (pp 155-160). Quezon City, Philippines: Philippine Psychology Research and Training House.

Shiu-Thornton, S. (2003). Addressing cultural competency in research: Integrating a community-based participatory research approach. *Alcoholism: Clinical and Experimental Research, 27*(8), 1361-1364.

Suarez-Balcazar, Y., Davis, M. I., Ferrari, J., Nyden, P., Olson, B., Alvarez, J., et al. (2004). University-community partnerships: A framework and an exemplar. In L. A. Jason, C. B. Keys, Y. Suarez-Balcazar, R. R. Taylor, & M. I. Davis (Eds.), *Participatory community research: Theories and methods in action* (pp. 105-120). Washington, DC: American Psychological Association.

Trickett, E. J., & Espino, S. L. R. (2004). Collaboration and social inquiry: Multiple meanings of a construct and its role in creating useful and valid knowledge [Electronic version]. *American Journal of Community Psychology, 34*(1/2), 1-69.

Whyte, W. F. (1989). Advancing scientific knowledge through participatory action research [Electronic version]. *Sociological Forum, 4*(3), 367-385.

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LINKING 'WHITE OPPRESSION' AND HIV/AIDS IN AMERICAN INDIAN ETIOLOGY: CONSPIRACY BELIEFS AMONG AI MSMs AND THEIR PEERS

Brian Joseph Gilley, Ph.D. and Marguerite Keesee, Ph.D.

Abstract: This article presents the results of a pilot study on the use of conspiracy beliefs by American Indian (AI) men who have sex with men and their peers to explain the origins of HIV/AIDS. We found that one-third (N = 15) of the individuals surveyed believed that HIV/AIDS was intentionally created by "Whites, White Christians, or the Federal government" and purposely spread among minority populations. Conspiracy beliefs, we argue, should be looked at as a potential form of power recognition where AIs draw on their experiences of oppression to explain the presence of HIV/AIDS within their communities, at the same time that they draw on public health knowledge to explain how humans get HIV/AIDS. We advocate further research to better ascertain the effect that conspiracy beliefs have on HIV prevention and the treatment of individuals living with HIV/AIDS.

The circulation of conspiracy etiologies for HIV/AIDS among U.S. minorities and their potential effects have been documented in recent studies primarily focusing on African Americans (Ross, Essien, & Torres, 2006; Bogart & Thorburn, 2005; Bird & Bogart, 2005). For example, research with African American conspiracy beliefs shows that men who had stronger conspiracy beliefs had a more negative attitude toward condom use (Bogart and Thorburn 2005, p. 216). There is anecdotal speculation regarding conspiracy beliefs among American Indians (Vernon, 2000, 2001; Vernon & Burber, 2001; Weaver, 1999), but the possible ways in which conspiracy beliefs influence community-specific understanding of overwhelming social and health problems have yet to be addressed. An analysis that prioritizes the conspiracy belief as a form of insight into community-specific explanations and understandings of HIV/AIDS among AIs will be helpful in this regard.

To begin the discussion of the role of conspiracy beliefs in AI HIV/AIDS etiology, we draw on recent anthropological work that examines the disease from the perspective of the people deemed at the most risk (Farmer 1992, 1999, Romero-Daza 1994, Schoepf 1998, Setel 1999). Our goal is to move the discussion of AI conspiracy beliefs from anecdotal sidelines in research articles to the forefront of the AI HIV/AIDS discussion. We argue that conspiracy beliefs reflect a particular understanding about HIV/AIDS among AIs and should be one of the focal points for emerging research in the AI HIV/AIDS problem. Recent anthropological research theorizes that individual risk assessment resides at the nexus of cultural ideas about disease causation and political-economic factors (Baer et al., 1997; Farmer, 1992, 1999; Feldman, 1994; Parker, 2001; Romero-Daza, 1994). This position argues that individuals assess their risk for HIV/AIDS from a subordinate socioeconomic-political position and that notions of risk are filtered through socioeconomic inequality or "structural violence." Thinking about conspiracy beliefs in this way allows us to reflect on AI understandings of HIV/AIDS as more than superstitions that impede effective intervention. Instead we treat conspiracy beliefs as insights having the potential to lead prevention specialists to creative interventions more reflective of community understandings.

The goal of the research was to assess the long-term research potential for examining the ways individuals conflate their cognizance of power relationships into conceptions of HIV origin and susceptibility. We propose that there is a potential link between being AI and perceived disease etiology for HIV infection and that this link parallels AI notions of historical structural inequality and contemporary disparities in socioeconomic status and U.S. government domination. We further advocate for more in-depth studies on the role of conspiracy beliefs in the AI AIDS problem.

Methods

The data presented in this article were collected through open-ended ethnographic interviews and self-administered demographic questionnaires. The author (BG) and three field assistants conducted one-on-one interviews with AI men who have sex with men (MSMs) and their peers. Two field assistants self-identify as AI and are HIV/AIDS prevention and counseling specialists.

Participants were recruited according to snowball sampling through social networks (Kaplan, Korf, & Sterk, 1987; Griffiths, Gossop, Powis, & Strang, 1993). The two AI HIV/AIDS professionals working as field ethnographers recruited participants from HIV/AIDS support groups, a Two-Spirit retreat, and referrals to friends and family by participants. The nature of the study was explained to all participants, and written informed consent was received from all participants. A department store gift card of U.S.$25 was given to all 51 participants. The research protocol was approved by the Institutional Review Boards at the University of Oklahoma and the University of Vermont. Fifty-one individuals were recruited, but five chose to withdraw from the study. Data relating to withdrawn participants (demographic surveys and interview recordings and transcripts) were destroyed.

Demographic information gathered through the questionnaire included residence, marital status, income, and education level. General topics investigated through the semi-structured face-to-face interviews included participants' personal experience with HIV/AIDS and its impact on their lives, knowledge of PLWHAs' personal experiences, and opinions about how AI communities should respond to the AIDS crisis. The only specific questions asked of all respondents were: "Where did AIDS come from?" and "What is your HIV/AIDS status?" Persons living with HIV/AIDS (PLWHAs) were referred to one of the counseling specialist field assistants and to HIV/AIDS services in their area.

Characteristics measured in the demographic questionnaire include biological sex, age, self-identified race, primary ethnicity, region of birth, marital status, level of education, current employment, and annual income. Study participants were asked to identify their biological sex by marking either male = 1 or female = 0. Age was calculated by subtracting the respondent's reported year of birth from 2005, and was further collapsed into two categories: 1 = 29 to 44 years of age, 2 = 45 and older. An open-ended question was used to identify study participants' place of birth, with the information provided collapsed into five categories: 1 = Western States (WA, OR, CA, NV, ID, MT, WY, UT, AZ, CO, AK, and NM), 2 = Midwestern States (ND, SD, NE, KS, MN, IA, MO, WI, IL, IN, OH, and MI), 3 = Northeastern States (PA, NY, ME, VT, NH, MA, RI, CT, NJ, Puerto Rico, and the U.S. Virgin Islands), 4 = Southern States (DE, MD, DC, WV, VA, NC, KY, TN, SC, GA, FL, AL, MS, AR, LA, OK, and TX) and 5 = Outside of the U.S. and its territories. This breakdown is consistent with the regional breakdowns used by the U.S. Department of Labor, Bureau of Labor Statistics. Due to the small sample size, these regions were further collapsed into a four-category variable for Southern States, Western States, Midwestern/Northeastern States, and Outside the U.S. Self-identified subject race was obtained by asking respondents to choose all racial categories listed that applied to them, including White, Black, American Indian/Alaska Native (AI/AN), Native Hawaiian, Hispanic, and Asian/Pacific Islander. Based on response patterns, race was further collapsed into a three-category variable: White/Multiracial, AI/AN and/or First Nations, and all others. Marital status was measured by asking respondents to identify if they were currently single, married, or in a domestic partnership, and was dichotomized as single and all other responses. Current urban or rural residence was obtained by asking respondents to indicate if they currently reside in a rural area, small town, small city, urban area, or major city. These categories were further collapsed into a dichotomous variable of urban (urban area, major city, or small city) and all others (rural area or small town). Throughout the course of the face-to-face interview, most of the subjects voluntarily identified their HIV status. This information was coded into a three-category variable with HIV negative status, HIV positive status, and unknown HIV status.

Measures of socioeconomic status included subjects' level of education and current employment. These data were measured by asking respondents to provide the month and year of the last time they worked, list their primary occupation (either currently or when last employed), and select one of six categories that reflect the highest level of education they had achieved (1 = no diplomas, 2 = high school diploma, 3 = trade or vocational-technical certification, 4 = associates degree, 5 = bachelors degree, and 6 = graduate degree). Education was dichotomized as the completion of a high school diploma or greater and all others. Using the subject's primary occupation, a socioeconomic index (SEI) score was developed based on the standardized occupational prestige scale in the 1989 General Social survey (Davis, Smith, & Marsden, 2003). These scores were then coded as high SEI scores, medium SEI scores, and low SEI scores.

Cultural identification indicators included participants' self-identification of primary ethnicity and use of a tribal language at home or in social situations. We suggest that individuals who identify their ethnicity as being primarily AI, AN, and/or First Nations or who speak a tribal language are more closely linked to their AI heritage than individuals who do not. Therefore, participants were asked to list their primary ethnicity, with responses coded to AI/AN or First Nations = 1 and all other responses = 0. Language was coded as tribal or not.

Due to the small sample size, Fisher exact tests were more accurate than estimates provided by the more traditional chi square analysis. The results are presented in terms of prevalence proportion ratios (PPR) with 95% exact confidence intervals (CI) for binomial distributions. Given the tendency for the traditional prevalence odds ratio (POR) to over estimate the relative risk under certain conditions, our preference was to use the PPR which produces a more conservative and consistent estimate (Davies, Crombie, & Tavakoli, 1998; Taeger, 1998; Thompson, Meyers, & Kriebel, 1998; Barros & Hirakata, 2003; Sibanda, 2003). The equal proportion of responses across the categories of the dependent variable precluded our ability to conduct multinomial logistic regression in this study. Given the nature of the variables used in this study, problems associated with multicollinearity were possible. However, this was not an issue as only two significant associations between the dependent and predictor variables were found. These variables were not significantly correlated with one another.

Interview transcripts were evaluated for patterns in response to the HIV/AIDS origin question, and indication of HIV status. Responses to the question regarding the origins of HIV/AIDS were categorized into three broad categories which included perceptions that HIV/AIDS was created by the U.S. government, White people, or Christians; beliefs consistent with current public health theories; and having no idea or giving no response. Bivariate analyses were conducted to determine the associations between demographic, socioeconomic and cultural identity factors, and perceptions about the origin of HIV. Fisher exact tests and adjusted standardized residuals (ASR) were examined to identify statistically significant differences using SPSS (Base 14) and StataSE (version 8) statistical software (SPSS Inc, 2005 StataCorp LP, 2004). The results are presented in terms of prevalence proportion ratios (PPR) with 95% exact confidence intervals (CI) for binomial distributions. Some participants revealed their HIV status during the interview, while others provided no indication of status.

Demographic Survey and AIDS Questions Results and Correlations

The majority of the study participants were male (79.5%), were of AI/AN or First Nations (55.6%) descent, identified primarily as being of AI/AN or First Nations ethnicity (79.5%), were single (66.7%), were born in the Southern region of the U.S. (68.2%) and resided in urban areas (73.3%) (see Table 1). Although all study participants had obtained a minimum of a high school or trade school diploma, less than one-third were currently employed, with nearly 32% receiving a score of 29 or lower on the SEI and 42.8% reporting no employment within the last year (see Table 2).

Table 1
Demographic Characteristics of AI/AN and First Nations PLWHA Study Participants and their Peers

Characteristics	n	%
Gender of Birth	**44**	
Male	35	79.5
Female	9	20.5
Age as of 2005	**45**	
29 – 44 years	22	48.9
45 or older	23	51.1
Race	**45**	
AI/AN/First Nations	25	55.6
White	2	4.4
Multiracial	18	40.0
Primary Ethnicity	**44**	
AI/AN/First Nations only	35	79.5
Other	9	20.5
Region of Birth	**44**	
Southern States	30	68.2
Western States	7	15.9
Midwest/NE States	6	13.7
Outside of U.S.	1	2.3
Marital Status	**45**	
Single	30	66.7
Married/Domestic Partner	15	33.3
Tribal Language Spoken	**45**	
Yes	9	20.0
Place of Residence	**45**	
Urban	33	73.3
Rural	12	26.7

Table 2
Socioeconomic Characteristics of AI/AN and First Nations PLWHA Study Participants and their Peers

Characteristics	n	%
Education	**43**	
High School/GED	9	20.9
Trade School/Vocational-Technical Education	9	20.9
Associates Degree	11	25.6
Bachelors Degree	9	20.9
Graduate Degree	5	11.6
Employment	**40**	
Currently Employed	12	30.0
Unemployed	28	70.0
Employed CY 2005	(16)	(57.2)
Not employed CY 2005	(12)	(42.8)
Socioeconomic Index	**38**	
Low (Index score $\leq$ 29)	12	31.6
Mid-range (Index score 30-58)	12	31.6
High (Index score $\geq$ 59)	14	36.8

Approximately one-third (32.6%) of the study participants' beliefs regarding the origins of HIV/AIDS were in line with leading public health theories (e.g., viral transmission through a monkey and/or flight attendant, and originating outside the U.S. or in Africa) (see Table 2). An additional 32.6% of study participants stated that the U.S. government, White people, or Christians had created the disease; the final third (32.6%) indicated that they had no idea how the disease came into existence or provided no answer to the question (see Table 3).

Table 3
Perceived Origins of HIV/AIDS by AI/AN and First Nations PLWHA Study Participants and their Peers (n = 46)

Perceived Origins of HIV/AIDS	n	%
Leading public health theories (Africa, monkey bite, sex with monkey, given to flight attendant, outside of U.S.)	15	32.6
Government, White people and/or Christians created it	15	32.6
Something eaten	1	2.2
No idea/No answer	15	32.6

Associations between demographic, socioeconomic and cultural identity indicators, and perceptions regarding the origins of HIV/AIDS are displayed in Table 4. Significant associations between measures of AI/AN cultural identity (i.e., use of tribal languages or primary ethnicity) and perceptions regarding the origins of HIV/AIDS were not found. Further, the belief that HIV/AIDS originated from the actions of the U.S. government, White people, or Christians did not appear to be strongly associated with any of the explanatory variables included in this study. Surprisingly, a larger proportion of participants who reported their race as being Multiracial or White (42.1%; PPR = .7686; 95% CI, 0.414 - 1.425) stated that HIV/AIDS originated from the actions of the U.S. government, White people, or Christians than did racially exclusive AI/AN and First Nations participants (28.0%). However, this relationship changed when we considered cultural identity as opposed to race. Approximately 38% of participants who identified AI/AN or First Nations as their primary ethnicity (38.2%; PPR = 1.170; 95% CI, 0.868 – 1.577) indicated that HIV/AIDS was created by the U.S. government, White people, or Christians compared, to 22.2% of participants who identified their primary ethnicity as being Multiracial or White. The qualitative data seem to support the idea that primary ethnicity is a better indicator than race of the participants' overall cultural orientation. Accordingly, we feel that the correlation between primary ethnicity and conspiracy beliefs is a strong indicator of AI attitudes.

Race was strongly associated with the adoption of beliefs compatible with leading public health theories on the origins of HIV/AIDS (see Table 4). Participants who identified racially as AI/AN or First Nations exclusively (48.0%) were almost twice as likely as participants who identified racially as Multiracial or White (15.8%) to hold beliefs regarding the origins of HIV/AIDS that were compatible with leading public theories (*p*=.026, .020; PPR = 1.866, 95% CI, 1.135-3.068). In addition, female participants (66.7%) were more likely to espouse views compatible with leading public health theories than males (26.5%; *p*=.049, .038; PPR = .675; 95% CI, 0.437 - 1.042). The association between participants' HIV status and the adoption of public health theories regarding the origins of HIV reached statistical significance at the *p*=.05 level for two-tailed tests and approached significance at the *p*=.025 level for one-tailed tests. More specifically, participants who reported their status as HIV positive (9.1.%) were less likely to hold beliefs compatible with leading public health theories than those who reported their status as HIV negative or did not report their status (41.2%, *p*=.0498, .0700; PPR 1.400, 95% CI, 1.050-1.865). Additionally, a smaller proportion of

HIV-negative participants and subjects who did not report their status (29.4%) indicated that they had no idea about the origins of HIV or did not respond to the question than HIV-positive participants (45.5%). None of the measures of socioeconomic status or cultural identity were found to be significantly associated with any specific belief regarding the origins of HIV. However, it should be noted that a higher proportion of individuals who identified ethnically as primarily Multiracial or White (55.6%) either indicated they had no idea about the origins of HIV or failed to respond to the question than did participants who identified ethnically as being primarily AI/AN or First Nations (23.5%).

Table 4
Prevalence Proportion Ratios (PPR) with 95% Confidence Intervals (CI) of Association Between Perceived Origins of HIV/AIDS, Demographic Characteristics, Socioeconomic Status, and Cultural Identification

	Government, White People, or Christians Created	Leading Public Health Theories	No Idea About Origins of HIV/AIDS or No Response
Indicators	**n (%)**	**n (%)**	**n (%)**
Race			
AI/AN/First Nations only	7 (28.0)	12 (48.0)	5 (20.0)
Multiracial	8 (42.1)	3 (15.8)	8 (42.1)
PPR (CI)	.7686 (.414–1.425)	1.866* (1.135–.068)	
Biological Sex at Birth			
Male	13 (38.2)	9 (26.5)	11 (32.4)
Female	2 (22.2)	6 (66.7)	1 (11.1)
PPR (CI)	1.170 (.867–1.577)	.675* (.437–1.042)	
HIV Status			
HIV Negative/No Response	10 (29.4)	14 (41.2)	10 (29.4)
HIV Positive	5 (45.5)	1 (9.1)	5 (45.5)
PPR (CI)	.833 (.558–1.243)	1.400 (1.050–1.865)	
Socioeconomic Status			
Low SEI	2 (16.7)	3 (25.0)	7 (58.3)
Other	9 (36.0)	11 (44.0)	4 (16.0)
PPR (CI)	.454 (.119–1.740)	.524 (.171–1.608)	
Cultural Identification			
Tribal Language Spoken			
Yes	2 (25.0)	4 (50.0)	1 (12.5)
No	13 (36.1)	11 (30.6)	12 (33.3)
PPR (CI)	.7466 (.164–3.397)	2.488 (.639–9.689)	
Primary Ethnic Identity			
AI/AN/First Nations	13 (38.2)	12 (35.3)	8 (23.5)
Multiracial /White	2 (22.2)	2 (22.2)	5 (55.6)
PPR (CI)	1.170 (.868–1.577)	1.143 (.844–1.546)	

*Indicates statistical significance at $P \leq 0.05$ level for two-tailed tests

Interview Data

The data collected during face-to-face interviews provided insights into the possible ways AIDS origins are constructed among Native peoples. The authors recognize that the interview data will not reflect the beliefs of all tribal groups. However, we believe the data provide a significant starting point for investigating general supratribal attitudes as well as more specific tribal community beliefs. Of the 46 individuals who completed an interview, 15 stated some form of conspiracy belief that implicated dominant society ('Whites', 'White Christians', or 'the government') in the origins of AIDS, while another 15 drew on accepted public health theories, and another 15 did not respond with a theory specifying the origin of the virus or did not answer the question at all. One participant replied to the question by stating that someone "ate something they shouldn't have." Regardless of tribal affiliation, conspiracy beliefs contained several key elements, which were a belief that the U.S. government had created the AIDS virus; that its spread was intentional, i.e., AIDS was created as a way to "get rid of" certain populations; and that its intentional creation and spread was an extension of the values of dominant "White" society. One 35-year-old Muscogee man made the following comment:

> Respondent (R): I was always afraid. See, I was very uneducated, like everybody else at first when the government first invented AIDS and HIV and started spreadin' it out throughout the world.
> Interviewer (I): Mm-hm. So you feel like it came from the government.
> R: It did. It's just another, ploy to get rid of people. Thin out the population.

A 45-year-old Cherokee resounded the above statements:

> I: Where do you think HIV came from?
> R: You know, I don't have a clue. The one thing that comes to mind, and I feel like I'm probably misspeaking here but what I think I've heard that maybe some of the unethical and horrible things that our government did to some minorities, there was

> even a name for it and I can't think of it, that possibly somethin' stemmed from some of their … it's not genetic testing but something like that, where they were putting different viruses in people.
> I: Sure, sure.
> R: But I know that it's something possibly that has evolved out of misuse of scientific research.

Two respondents felt that it was created by the government, but also was targeted toward gays and unintentionally infected heterosexuals. A 55-year-old non-tribally identified man stated:

> R: But frankly, knowing humankind, I think it was the military, and was some kind of germ warfare that got out of control.
> I: Okay. That is—
> R: Or-or against gay people and they didn't realize that it was gonna cross over to hets [heterosexuals], too. You know, and that's-that's the most com—I guess, not comical, nothing is comical about it, but.

And a 34-year-old man from a Southeastern tribe echoed the above suspicions:

> R: I'm just sure it came from a test tube. Testin' in Africa; brought it to the gay community because they thought they had a little prejudice there with it, it wouldn't get outside the gay community. But that's when they found out so many people are bisexual. And I think somehow some way, it was the right-wing Christians. People who call themselves Christians.
> I: Wanting to eliminate the gay population?
> R: Uh-huh. Years ago, I think it was in the '70s or something the homosexuals in San Francisco were going to all move to a county in northern California where they could take over; the population was so low that blah blah blah. But one time I was reading a article about it, and they had this right-wing guy say, he said, 'we've got the money and the technology to stop them.' And at that time I thought, technology? That's a weird way to put that. But somehow, some way, I believe that. And I'm not the only one.

Responses that drew on what we have termed "accepted public health theories" reflected ideas about an African origin for AIDS and theories about the cross-species transfer of HIV to the human population through encounters with primate blood. Some responses (such as those in the following excerpt, from a 27-year-old Creek) were in line with popular scientific explanations such as Edward Hooper's *The River* (1999):

> I: Where do you think HIV came from?
> R: You know, I've thought about that. I've heard the monkey bite thing—
> I: Uh-huh.
> R: From Africa, and a disease that they have has mutated and transferred over to human beings through a bite, and then it's mutated from there and become what it is today.
>
> I: So how do you believe that it came over to the United States?
> R: The airline person. That is a very prominent story in my mind.
> I: Okay.
> R: He was a very promiscuous individual, that hit the bathhouses and brothels from Africa to—
> I: So he had multiple partners and everything.
> R: Yeah. And that's how he spread it.

Other responses took on a more speculative tone while still engaging accepted public health theories. A 54-year-old Creek man explained:

> I: Where do you think HIV came from?
> R: I have no idea.
> I: Yeah, yeah. A lot of people have their diff'rent theories on that, you know; Different theories and stuff.
> R: I mean, you believe what you see, 'cause like I told you, that movie—
> I: Mm-hm.
> R: Africa, and then over here, just gradually spread it. You know, that's how the movie shows it.
> I: Yeah, yeah.
> R: And you believe what you see, but we really don't know.

> A 60-year-old non-tribally identified man gave a more ambivalent answer:
>
> I: Where do you think HIV and AIDS came from?
> R: I can only quote what I have heard, first it was like—came from Africa and monkeys, but I don't think—I'm not sure whether that is really it. It could be uh, like, chicken, I mean, not chicken pox but polio. Who knows where that came from? Uh, but, I'm really sure I guess I really felt like that wasn't really that important to me but now that it's becoming present; the importance of it became, uh, real, and I had to just re-act accordingly to prevent from, uh, getting it and try to prevent other people from getting it.
> R: In other words, I probably-I really don't know where it's from.

Respondents who stated that they "did not know" were reluctant to speculate, or related its origins to their own personal experience, such as this 53-year-old man (who did not specify his tribe):

> I: Let me ask you this; Where do you think HIV came from?
> R: Still don't have a clue. I just know that in the '70s, my friend was a nurse practitioner, and she told my partner and I at the time that we needed to start being careful.
> I: Yeah.
> R: 'Cause there was something coming.

Many individuals who said that they had "no idea" stated that they did not know and did not elaborate further on the topic. Others did not speculate on the origin of AIDS and instead elaborated on its appearance in the gay community; for example, "First it was called the gay plague, and/or the gay disease, later which came to be known as HIV and AIDS." In addition, there were individuals who simply did not respond to the question about the origin of AIDS; according to field ethnographers, many non-responsive individuals shrugged or threw up their hands in an "I don't know" gesture. Individuals who did not respond with a theory about the origins of AIDS were coded as providing "no answer." One of the respondents, who cited "something eaten," stated the following:

> I: Where do you think HIV came from?
> R: HIV come from? I don't know.
> I: Okay.

> R: In my personal opinion, I think it's something that shouldn't really happen but it happened. I guess it's like they say in the Bible, it's a sign of the times.
> I: Mm-hm.
> R: But didn't come from a gay community. It came from people eating something that they're not supposed to be eating.

While participant responses provided many interesting avenues in which to direct research, we felt that conspiracy beliefs have the strongest potential as indicators of AI attitudes about the AIDS virus. When we consider that the U.S. government and government-funded agencies are the primary health providers for AIs—and taking into account the historical relationship between AIs and non-Indians—we feel that conspiracy theories may have the greatest impact on AI decisions about their health as it relates to HIV/AIDS. All participants at least mentioned that the government or their tribes were not doing enough to decrease new infections and were providing inadequate treatment for PLWHAs. A 38-year-old Creek woman noted: "The comment that I get from the tribes is, we have so many other health issues, diabetes, alcoholism, all of that stuff, and it seems like HIV's just kinda like, at bottom of the totem pole. So, you know, if one of the council members, one of the tribal members that's there, they got AIDS, I guarantee you, they will promote it." Even though only one-third of all participants cited a conspiracy belief, all participants implicated the U.S. government's and their tribal governments' complacency in the spread of HIV among Native peoples and the poor care given to AI PLWHAs.

Discussion

We recognize that the small sample size limits our ability to broadly generalize about AIs and individual tribal communities. The data from this study do, however, agree with the assertion in previous research that some AIs view Whites as inextricably linked to HIV/AIDS origins (Vernon, 2001; Vernon & Bubar, 2001; Weaver, 1999). While the results from quantitative analysis did not produce statistically significant differences, the fact remains that 32.6 % of participants (N=15) referenced a Euro-American institutional and racial origin for HIV/AIDS. The number of participants citing a "White" etiology was equal to the number of participants citing accepted public health theories for the origin of AIDS (32.6%; N=15). This finding demonstrates that conspiracy beliefs are not a marginal form of disease etiology. Unfortunately we do not yet have a data set that would allow us to generalize about the number of AIs who hold conspiracy beliefs versus those who do not. Regardless, we feel that our data indicate the need for further exploration of this relationship.

Our goal was to investigate the potential for a linkage between AI HIV/AIDS etiology and notions of structural inequality and contemporary disparities in socioeconomic status. We feel the results demonstrate that significant number of AIs apply a culturally specific power cognizance in understanding why Native peoples are at high risk for HIV/AIDS. In the interview dialogue most participants showed a complete understanding of how HIV/AIDS is contracted and had a command of standard AIDS knowledge. We feel it would be a mistake to attribute the high number of individuals citing a White institutional and racial origin to lack of education, considering that 20.9 % of participants had at least a bachelors degree. Rather, we are proposing that conspiracy beliefs, such as "White people created it" can coexist with standard AIDS knowledge. AIs are using both forms of rationalization to explain two different aspects of HIV/AIDS susceptibility. AIDS knowledge explains biomedical aspects of *how* AIs, as humans, get HIV/AIDS: from viruses. But conspiracy beliefs explain *why* AIs get HIV/AIDS: from a structural positioning in relation to Whites. During interviews, participants felt that the Federal government was doing little to support their health and economic needs. With statements such as, "This is the new smallpox" or "It's just more of the same," participants recognized their adversarial relationship with the Federal government policies, and also invoked the history of unequal power relations with Euro-Americans and the ramifications of those interactions on Native health and society. Therefore, AIs recognize their susceptibility to HIV/AIDS as human beings in biomedical terms, but also invoke an astute social observation on the ways structural issues make their population more susceptible. In order to generalize across AI populations we feel that these preliminary indicators should be confirmed with tests from more representative populations. We hope that results from this investigation will spark the development of new ideas and inform future research in this area, as well as provide a starting point for insight into the relationship between ethnic identification, culture, and the acceptance and ultimate adoption of mainstream public health information and preventive practices.

Our data are insufficient to confidently generalize about the effects of conspiracy beliefs on prevention issues such as the use of condoms or PLWHAs' reluctance to seek treatment. Extensive research with other minority groups, however, has found that conspiracy beliefs may act to discourage the use of condoms and other protective measures

(Ross et al., 2006). Recently Simoni, Walters, Balsam, and Meyers (2006) found that Two-Spirit-identified AI MSMs in New York City had very low condom use rates and were at greater risk for HIV infection. However, they also found that the AI MSMs' heterosexual counterparts had similar rates of condom use. Likewise, in order to understand the role of conspiracy beliefs in the AI AIDS problem, we advocate further research on the following: the link between conspiracy beliefs and protective measures, the association between conspiracy beliefs and effective interventions, and the effects conspiracy beliefs have on the treatment of AI PLWHAs in their communities. Any future research and recommendations should engage the topic beyond "cultural blame" and attempt to fully understand conspiracy beliefs as an aspect of the AI experience.

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References

Baer, H. A., Singer, M., Susser, I. (1997). AIDS: A disease of the world system. In H. A. Baer, M. Singer, & I. Susser (Eds.), *Medical anthropology and the world system: A critical perspective*. Westport, CT: Bergin and Garvey.

Barros, A., & Hirakata, V. N. (2003). Alternatives for logistic regression in cross-sectional studies: An empirical comparison of models that directly estimate the prevalence ratio. *BMC Medical Research Methodology, 3,* 21-33.

Bird, S. T., & Bogart, L. M. (2005). Conspiracy beliefs about HIV/AIDS and birth control among African Americans: Implications for the prevention of HIV, other STIs and unintended pregnancy *Journal of Social Issues 61*(1), 109-126.

Bogart, L. M., & Thorburn, S. (2005). Are HIV/AIDS conspiracy beliefs a barrier to HIV prevention among African Americans? *Journal of Acquired Immune Deficiency Syndromes, 38*(2), 213-218.

Davies, H. T. O., Crombie, I. K., & Tavakoli, M. (1998) When can odds ratios mislead? *BMJ, 316*, 989-991.

Davis, J. A., Smith, T. W., &. Marsden, P. V. (2003). *General Social Surveys, 1972–2002* (Cumulative File) (2nd ICPSR version) [Computer file]. Stoors, CT: Roper Center for Public Opinion Research, University of Connecticut/Ann Arbor, MI: Inter-university Consortium for Political and Social Research.

Farmer, P. (1992). *AIDS and accusation: Haiti and the geography of blame.* Berkley: University of California Press.

Farmer, P. (1999). Pathologies of power: Rethinking health and human rights. *American Journal of Public Health, 89*(10), 1486-1496.

Feldman, D. (Ed.). (1994). *Global AIDS policy*. Westport, CT: Bergin and Garvey.

Griffiths, P., Gossop, M., Powis, B., & Strang, J. (1993). Reaching hidden populations of drug users by privileged access interviewers: methodological and practical issues. *Addiction, 88*, 1617-1626.

Hooper, E. (1999). *The river: A journey to the source of HIV and AIDS*. New York: Little, Brown and Company.

Kaplan, C.D., Korf, D., & Sterk, C. (1987). Temporal and social contexts of heroin-using populations: An illustration of the snowball sampling technique. *Journal of Mental and Nervous Disorders, 175*(9), 366-574.

Parker, R. (2001). Sexuality, culture, and power in HIV/AIDS research. *Annual Reviews of Anthropology, 30*, 163-179.

Romero-Daza, N. (1994). Multiple sexual partners, migrant labor and the makings of an epidemic: Knowledge and beliefs about AIDS among women in highland Lesotho. *Human Organization, 5*, 192-211.

Ross, M. W., Essien, E. J., & Torres, I. (2006). Conspiracy beliefs about the origin of HIV/AIDS in four racial/ethnic groups. *Journal of Acquired Immune Deficiency Syndromes, 41*(3), 342-344.

Schoepf, Brooke G. (1988) Women, AIDS and economic crises in Central Africa. *Canadian Journal of African Studies, 22*(3), 625-644.

Setel, Philip W. (1999) *A Plague of Paradoxes: AIDS, Culture, and Demography in Northern Tanzania*, Chicago: University of Chicago Press.

Sibanda, T. (2003, May 1). The trouble with odds ratios (A Rapid Response to Davies, H. T. O., Crombie, I. K., & Tavakoli, M. [1998]. When can odds ratios mislead? *BMJ, 316,* 989-991.) *eBMJ*. Retrieved March 9, 2007 from http://www.bmj.com/cgi/eletters/316/7136/989

Simoni, J. Walters, K., Balsam, K., & Meyers, S. (2006). Victimization, substance use and HIV risk behaviors among gay/bisexual/Two-Spirit and heterosexual American Indian men in New York City. *American Journal of Public Health*, *96*(12), 2240-2245.

SPSS Inc. (2005). SPSS Base 14 for Windows: User's guide. Chicago: SPSS Inc.

StataCorp LP. (2004). Stata Statistical Software: Release 8. College Station, TX: StataCorp LP.

Taeger, D., Sun, Y., & Straif, K. (1998, August 10). On the use, misuse and interpretation of odds ratios (A Rapid Response to Davies, H. T. O., Crombie, I. K., & Tavakoli, M. [1998]. When can odds ratios mislead? *BMJ, 316,* 989-991.) *eBMJ*. Retrieved March 9, 2007 from http://www.bmj.com/cgi/eletters/316/7136/989

Thompson, M. L., Meyers, J. E., & Kriebel, D. (1998). Prevalence odds ratio and prevalence ratio in the analysis of cross sectional data: What is to be done? *Occupational and Environmental Medicine, 55*, 272-277.

Vernon, Irene (2000). Facts and myths of AIDS and American Indian women *American Indian Culture and Research Journal, 24*(3), 93-110.

Vernon, I. (2001). *Killing us quietly: American Indians and HIV/AIDS*. Lincoln, NE: University of Nebraska Press.

Vernon, I., & Bubar, R. (2001). Child sexual abuse and HIV/AIDS in Indian Country. *Wicazo Sa Review, Spring*, 47-63.

Weaver, H. N. (1999). Through indigenous eyes: American Indians and the HIV epidemic. *Health and Social Work 24*(1), 27-34.

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EXPLORING MATERNAL SOCIAL PERCEPTIONS AND CHILD AGGRESSION AMONG URBAN AMERICAN INDIANS

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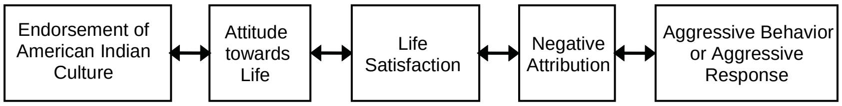
Abstract: Currently, the majority of American Indian families live in urban areas. A number of statistics demonstrate that urban American Indian families deal with a variety of stressors such as poverty and isolation. However, very little is known about how these families perceive their lives. This report provides an exploratory study examining the status of 20 urban American Indian mother/child dyads. Mothers were asked about the role of American Indian culture in their lives, their views of life in general, and their attributions for their child's mild misbehavior. Two measures of child aggression were collected as well. The links between maternal perceptions and child aggression were complex, indicating the need for more studies of urban American Indian families.

Social cognitive models of parenting emphasize the importance of perceptions about parenting on the development of children's externalizing problems such as aggression (Bugental & Johnston, 2000; Sigel, McGillicuddy-DeLisi, & Goodnow, 1992). The impact that culture has on social cognition is being increasingly recognized (Bugental & Happaney, 2002; Sigel et al., 1992), as is the role of acculturation on cultural and parental cognitions (Cote & Bornstein, 2003; Harwood, Schoelmerich, Ventura-Cook, Schulze, & Wilson, 1996; Leyendecker, Harwood, Lamb, & Schoelmerich, 2002). American Indian (AI) families have largely been absent from this literature. Currently, the majority (66%) of AI families live in urban areas (the total population of AIs is 4.3 million according to the U.S. Census Bureau, 2003). Very little is known about how these families perceive their lives, and even less is known about how these perceptions might influence the development of aggressive behavior in their children. We present a first attempt to fill this gap in the literature by examining potential links between mothers' perceptions of the importance of AI culture in their lives, their attitude towards life, life satisfaction, negative attributions for their child's behavior, and the child's aggressive behavior and aggressive responses, as illustrated in Figure 1. We caution that our small sample size and lack of experimental manipulations preclude making any causal inferences; thus, the conceptual model is for illustrative purposes only.

Figure 1
Conceptual Model of Links between Maternal Perceptions and Children's Aggressive Behavior and Aggressive Response



American Indian Families

The current report represents an exploratory study of 20 urban AI mothers who had at least one child between the ages of 6 and 9 years. We begin by presenting some of the statistics on urban AIs, along with a brief summary of AI history which helps to put the current study in context. The statistics that characterize urban AI families are alarming. Urban AIs have higher rates of poverty, lower levels of formal education, and higher rates of unemployment than African Americans, Hispanic Americans, and European Americans in the U.S. (Urban Indian Health Institute, 2004).[1] In addition, the number of AI mothers under the age of 18 was 80% higher than the percentage of all non-AI mothers under the age of 18 across the country (Urban Indian Health Institute, 2004). The incidence of single mothers was found to be 73% higher for urban AIs as well (Urban Indian Health Institute, 2004). Off-reservation AI children are involved in 5.7 child abuse and neglect cases per 1,000 children per year, in comparison to a rate of 4.2 per 1,000 per year for the total U.S. population (Earle, 2000). Despite these statistics, AIs continue to move from reservations and rural areas into metropolitan areas in the U.S.: 50% of all AIs lived in metropolitan areas in 1990, and 66% of all AIs lived in metropolitan areas in 2000 (U.S. Census Bureau, 2002).

Most descriptions of AI parenting have been primarily qualitative, focusing on AI beliefs rather than numbers. For example, Cross (1998) stated that AI parenting attitudes result from a "relational worldview" in which all relationships are interdependent (p. 143). In order to understand AI parenting beliefs, all relationships that parents have must be considered. These relationships include spiritual, contextual, psychological, and physical components. In another personal reflection, Stauss (1995) related that AI families comprise not only what is considered the nuclear family in American culture but also various extended family members that may not always be related by blood, such as cousins and close family friends. Furthermore, it is from within these extended family systems that AI culture is primarily maintained and understood (Stauss, 1995).

Some investigators have attributed the strength or weakness of cultural transmission to the importance of AI culture in the mother's life (Kawamoto & Cheshire, 1999; Ward, Hinckley, & Sawyer, 1995). These researchers commented on the many difficulties that AI families have encountered in maintaining their cultural beliefs while parenting their children. Forced assimilation by the U.S. government from the early 1800s until the passage of the Indian Child Welfare Act in 1978 led to many children being raised in boarding schools, by foster families, and in urban settings away from their families (Harjo, 1999; Kawamoto & Cheshire, 1999; Sixkiller-Clark, 1997). These separations left many AI children without parental role models and stripped them of their cultural knowledge. Thus, it is currently unknown to what extent urban AI families affiliate with or acknowledge their culture. Although little is known about how parental perceptions of culture and life in general might relate to child aggression in urban AI families, research on other ethnic groups suggests that parental perceptions are important influences on the development of aggressive behavior in children. We examine this literature next.

Maternal Social Perceptions and Child Aggression

Studies of parenting from a social cognitive perspective have found that parental perceptions are related to parental behavior and child behavior (e.g., Daggett, O'Brien, Zanolli, & Peyton, 2000; Iverson & Segal, 1992; McGillicuddy-DeLisi, 1992). An important area of research in parenting has been guided by attribution theory. Attribution is the process through which an individual infers the perceived cause of a behavior or event (Weary, Stanley & Harvey, 1989). Parents form attributions for their children's behavior as a part of understanding why their children behave as they do. A mother shows a positive attribution bias when she believes that her child's misbehavior is caused by factors that are unintentional, not in the child's control, and not stable or global (Dix, 1991). For example, a mother who attributed her child's misbehavior at school to the fact that the teacher was not well organized that day would be viewed as having a positive attribution bias. A negative attribution bias is evident when a mother views her child's misbehavior as intentional, internal, controllable, stable, and global (Dix, 1991). An example of this would be a mother who attributes her child's noncompliance to a deliberate attempt to annoy her.

Attributional biases have been found to influence the behavior of mothers towards their children (Bugental & Johnston, 2000; Daggett et al, 2000; Dix, 1993; Iverson & Segal, 1992; Nix et al., 1999). Specifically, negative or hostile attributions for a child's behavior are associated with harsh discipline practices (Joiner & Wagner, 1996; Nix et al., 1999). Negative attributions have been found to be more common in parents who are stressed due to increased difficulty in managing the task of child rearing; these parents attribute their difficulties in part to characteristics of the child (Dix, 1991).

Parental attributions have been found to have an impact on children's behavior as well. Bugental and Johnston (2000) found that the causal beliefs of caregivers affected their expressive behavior, which in turn influenced the child's behavior. Dix (1993) found a strong interdependence between parental attributions for a child's behavior and the child's own attributions for the behavior of others. And, Nix et al. (1999) reported that mothers' hostile attribution tendencies were related to children's development of externalizing behavior problems at school. Thus, in the current study we focus on externalizing problem behaviors. Specifically, we examined whether mothers' social perceptions and negative attributions for their child's mild misbehaviors were associated with aggressive behavior or aggressive responses in children.

Current Study

Given the paucity of empirical studies on urban AI mothers' social perceptions and child aggression, the focus of this study is exploratory in nature. Our primary goals were to explore the perceptions of urban AI mothers in order to address the following questions: First, do urban AI mothers endorse AI culture as important in their lives? Second, how do they characterize their lives, how do they view their children's behavior, and do their children behave aggressively? Third, are there any links between family demographics, maternal endorsement of AI culture, maternal perceptions of life and child behavior, and child aggression? Our final goal was to examine if maternal social perceptions explained aggressive behavior or aggressive responses in their children.

Method

Participants. Twenty mother/child dyads (one child per family in the target age range of 6 to 9 years) participated in this study. The mothers represented 13 AI tribes or nations and all lived in a midsized, Midwestern town. The participants were recruited by placing fliers at a university and a tribal college, and by soliciting mothers of children who participated in an AI dance troupe to participate. Additionally, an advertisement was placed in a student newspaper, referrals from past participants were solicited, and two mothers were recruited while attending an elementary school function. Forty percent of the participating children were boys.

Procedure

When mothers agreed to participate, they selected a setting for the interview (their home, the researcher's office, or a location convenient for them). Informed consent was obtained from the mother and then she was interviewed by the researcher and asked to fill out questionnaires about the behavior of her 6- to 9-year-old child (if the mother had more than one child in the target age range, she was asked to respond to the questionnaires with only one child in mind). Each mother received a $20 gift certificate to Target as a token of appreciation for her participation, and the children were given a small gift.

Measures

Demographic and child factors. General information about the family was collected by questionnaire. Demographic data on participating families are shown in Table 1. An income-to-needs ratio was calculated for each family by dividing family income by the poverty index for that family size. An income-to-needs ratio of 1.0 indicates that the family is at poverty level, with the poverty threshold for a family of four equivalent to an annual income of $16,700 (U.S. Department of Health and Human Services, 1999)[2]. The participating families were generally low income, with 50% living at or below the poverty level. All of the married mothers (40%) reported that their partners were also of AI heritage. Most of the mothers reported having completed some college (75%), with 50% of the mothers enrolled in school at the time of assessment. Mothers who were enrolled in school at the time of assessment had an average income-to-needs ratio of .99 (*SD* = .50) and mothers who were not enrolled in school had an average income-to-needs ratio of 1.43 (*SD* = .60). For mothers enrolled in school without a husband (35%), the average income-to-needs ratio was even lower (*M* = .80, *SD* = .42). Of the mothers enrolled in school, two were not employed, five had part-time jobs, and three were working full-time. In comparison, the median family income of the county where these mothers resided was $53,991 and 42.7% of the residents had a bachelor's degrees or higher (24.4% of all U.S. citizens have a bachelor's degrees or higher) (U.S. Census Bureau, 2000). Six percent of all families in this county live in poverty (U.S. Census Bureau, 2000). The mothers ranged in age from 23 to 45 years old, and the mothers enrolled in school ranged in age from 26 to 45 years old.

Table 1
Demographic Information
for Mothers (N = 20)

Mean Mother Age	32.85
(SD)	(6.14)
Range	23 – 45
Work Status	
Not working	35%
Part-time	30%
Full-time	35%
Student Status	
Enrolled in school	50%
Not enrolled in school	50%
Education	
High school graduate	10%
Attended some college	75%
College graduate	5%
Post-graduate work	5%
Graduate degree	5%
Marital Status	
Married living together	40%
Separated or divorced	35%
Not married, living with partner	15%
Single, never married	10%
Mean Income to Needs Ratio	1.21
(SD)	(.57)
Range	.39 – 2.33
Median	1.03

Perception of American Indian culture. A 10-item questionnaire was designed by the first author and administered to the mothers in order to assess the degree to which the mothers endorsed AI cultural practices and values in their lives and in their parenting. The items were based on qualitative studies by Cross (1998) and Stauss (1995) that presented models of AI parenting as "relational," in that extended family members are included and traditional spiritual values embraced. Mothers were asked to rate their agreement with statements such as, "Extended family is important in my life." The items were scored using a 6-point scale that ranged from *disagree strongly* to *agree strongly*. Cronbach's alpha for this scale was .85. The mean of the scores on the ten items was used to form a composite variable entitled Endorsement of American Indian Culture (EAIC). The means, standard deviations, and percentage of mothers strongly agreeing for each item are presented in Table 2.

Table 2
Descriptive Statistics and Percent Strongly Agree by Item for the American Indian Questionnaire

	Question	Mean (*SD*)	% Strongly Agree
1.	My American Indian heritage is important to me.	5.60 (.68)	70%
2.	It is important to preserve my American Indian Heritage by speaking our language at home and in my community.	4.75 (1.07)	30%
3.	Maintaining knowledge of traditional arts and crafts is important to me.	4.75 (1.29)	35%
4.	Listening to American Indian music is something I enjoy.	5.00 (1.10)	45%
5.	I am proud of my American Indian heritage.	5.75 (.55)	80%
6.	Extended family is important in my life.	5.40 (.94)	65%
7.	I teach my children to be proud of their American Indian heritage.	5.55 (.69)	65%
8.	It is important for my children to know traditional arts and crafts.	4.80 (.95)	30%
9.	Extended family members are important in the lives of my children.	5.20 (.89)	45%
10.	I use traditional American Indian beliefs in parenting my children.	4.40 (1.47)	35%

Note: Items are scored from 1 to 6 with 1 representing *strongly disagree* and 6 representing *strongly agree*.

Perceptions of life. Mothers' *Attitude Towards Life* was measured using a 10-item measure from Campbell, Converse, and Rodgers (1976) to assess attitudes about life and their relationships with other people. Items asked about respondents' life plans, happiness, and views of other people's motivations: for example, "Do you think that most people: (a) would try to take advantage of you if they got the chance or (b) would they try to be fair?" Items were scored 1 for a positive sentence completion and 0 for a negative sentence completion. The mean of the ten items was used as a measure of the mother's overall attitude towards life, with a score of 1 representing positive sentence completions for all ten items. Cronbach's alpha for this measure was .66, which is somewhat low given the recommended standard of .70 (Henson, 2001); however, the number of items in a scale affects the calculation of alpha, with fewer items frequently resulting in an underestimation of the coefficient alpha (Cortina, 1993). Given that this scale only asked the mothers to respond to 10 statements, it could be that the coefficient alpha was underestimated and could have reached an adequate level of internal consistency if the questionnaire had included more items. Given the exploratory purpose of this study, the internal consistency was deemed adequate.

Maternal perception of *Life Satisfaction* was measured using a modified version of a questionnaire developed by Andrews and Withey (1976), which contained 18 items about satisfaction with various aspects of the respondent's life, including her role as a mother and the conditions of her life in general. For example, mothers were asked how they felt about "The way they spent their spare time, when not working." Mothers responded using a 7 point Likert-type scale with 1 representing *terrible* and 7 representing *delighted*. Scores were averaged across all items with higher scores representing greater life satisfaction. Cronbach's alpha for this scale was .87.

Maternal perception of their child's behavior. Mothers' attributions for their child's misbehavior were measured with the Attributional Style Measure for Parents (ASMP; O'Brien & Peyton, 2002). This questionnaire measures eight dimensions of attribution for six instances of mild misbehavior from the child. For example, the researcher asked the mother to think of a time when her child "Didn't pay attention when you talked to him or her." Once the mother had this situation in mind, she was asked to describe it to the researcher and then to rate the cause of the child's behavior on a 6-point scale that ranged from *disagree strongly* to *agree strongly* on the dimensions of purposefulness ("My child doesn't pay attention to me on purpose rather than unintentionally"), motivation ("My child doesn't pay attention to me because he or she is motivated by selfish rather than unselfish concerns"), blame ("My child deserved to be disciplined for not paying attention to me"), negative intent ("My child doesn't pay attention to me mainly just to annoy me"), globality ("The reason my child doesn't pay attention to me when I talk is something that comes up often in my family"), stability ("The reason my child does not pay attention to me is not likely to change"), locus ("My child's behavior is due to something about him or her; for example the mood he or she was in, or his or her personality"), and control ("My child is able to control whether or not he or she pays attention to me"). The mean of all 8 dimensions across the 6 situations was used as a measure of *Negative*

Attribution, with higher scores indicating more negative attributions. Cronbach's alpha for the negative attribution subscale was .95.

Child Aggression. Two measures were used to index aggression: the mothers' reports on their child's aggressive behaviors and the child's responses to hypothetical peer situations involving conflict were scored for aggressive responses. Mothers completed the Child Behavior Checklist (CBCL, Achenbach, 1991) to assess social problem behavior. The CBCL lists 113 problem behavior items, each scored on a 3-point scale where 0 = *not true*, 1 = *somewhat or sometimes true*, and 2 = *very true or often true*. For the purposes of this study, the Aggressive Behavior subscale score, which consists of behaviors such as arguing and fighting, was used as a measure of the child's *Aggressive Behavior*. This subscale has been shown to have good psychometric properties, including adequate levels of internal consistency, test-retest reliability, and interparent agreement (Achenbach). We followed Achenbach's recommendation that raw scores, rather than *T*-scores, be used for research purposes. Cronbach's alpha computed on the current data indicated acceptable internal consistency for the Aggressive Behavior subscale ($\alpha = .73$).

The children were administered the Attribution Bias Interview (Dodge, Pettit, McClasky, & Brown, 1986), a narrative-based activity in which four child-peer social situations involving potential conflict were presented to the children by the researcher who used small dolls and props to demonstrate the situation (rather than the stick-figure drawings utilized in the original measure). This was done to engage the children in the task and to allow the children to demonstrate non-verbal actions such as pushing the peer doll or hitting it. All of the situations involved provocation by the peer (i.e., a peer bumped into the child causing his/her books to go flying across the floor). For each situation, the children were asked how they would respond to the peer. The children were administered this activity in an area where their mothers would not be able to hear their responses. The measure was audiotaped for later coding.

The audiotapes were coded by an undergraduate research assistant who was unfamiliar with the families and the purpose of the study, using a modified version of the codes developed by Dodge et al. (1986). Children's responses regarding what they would do in response to the peer's behavior were coded for the level of aggression, with 0 representing *don't know* or *no response* and scores from 1 to 5 escalating from *doing nothing* to *retaliating aggressively*. The scores were summed and divided by the total number of situations to obtain an average *Aggressive Response* score for the children. Scores could range from 0 to 5. Cronbach's alpha indicated acceptable internal consistency for the aggressive responses variable ($\alpha = .71$). In addition, a second coder independently scored 25% of the tapes, with exact inter-observer agreement for the children's aggressive responses at 83%.

To our knowledge, none of these measures have been used in urban AI communities in prior studies. Consequently, the mothers were encouraged to ask questions about the items on the measures, and all questions were answered before the mothers rated the items. In addition, mothers were told that they could refuse to answer any items that they felt were not culturally relevant or might be misinterpreted given their cultural beliefs. None of the mothers refused to rate any of the items once questions were answered.

Results

Do urban American Indian mothers endorse American Indian culture as important in their lives?

The items on the questionnaire provide interesting insights into maternal views of the importance of AI culture in this set of mothers' lives (see Table 2 for a listing of descriptive statistics and the percent of mothers who strongly agreed for each item). There was some variability in the percentage of mothers who strongly agreed with some of the statements. For example, only 30% of the mothers strongly agreed that preserving their AI language was important. In contrast, 80% of the mothers agreed strongly that they were proud of their AI heritage. On average, the mothers mostly agreed that they endorsed AI culture in their lives, with one mother disagreeing somewhat with some of the statements and three mothers strongly agreeing with all of the statements. Table 3 provides the descriptive statistics for the Endorsement of American Indian Culture composite variable.

How do they characterize their lives, how do they view their children's behavior, and do their children behave aggressively?

Table 3 presents descriptive statistics for the measures of maternal perceptions of life and child behavior, and the measures of child aggression. Overall it appeared that the mothers were "OK" with their lives; on average they positively completed 6 out of the ten statements assessing their attitude towards life, and they rated their life satisfaction as somewhat good. On average, the mothers had somewhat positive views of their children's misbehaviors with the average score representing that they disagreed somewhat with the statements of negative attribution.

Regarding the measures of child social aggression, none of the children scored in the clinical range on the measure of Aggressive Behavior. The highest score recorded, 14, indicated that one child expressed 14 of the 20 possible aggressive behaviors *somewhat* or *sometimes*. On the Attribution Bias Interview the responses to the question, "What would you do if this happened to you?" reflected an average response of 2.05, which would be equivalent to a tendency to ask in non-threatening manner why the peer did it. However, some children did respond aggressively, with one child indicating that she/he would have used physical or verbal retaliation for 3 out of the 4 peer provocation situations.

Table 3
Descriptive Statistics for Measures of Maternal Perceptions of Life and Child Behavior, and Measures of Child Aggression

	Mean (*SD*)	Minimum	Maximum
Maternal Perception Variables			
Endorsement of American Indian Culture (EAIC)	5.13 (.74)	3.60	6.00
Attitude towards Life	.61 (.23)	.10	1.00
Life Satisfaction	4.93 (.72)	3.83	6.29
Negative Attribution	3.26 (.14)	2.02	4.44
Children's Aggression Variables			
Aggressive Behavior	4.90 (3.91)	0.00	14.00
Aggressive Response	2.05 (.75)	.75	4.00
Aggressive Response	1.75 (.48)	.88	2.50

Are there any links between family demographics, maternal endorsement of American Indian culture, maternal perceptions of life and child behavior, and child aggression?

Intercorrelations were used to examine the associations between the demographic variables, maternal perception variables, and children's aggression as reported in Table 4. Prior to running the correlational analyses, the researchers examined the variables for normality and univariate outliers using the guidelines recommended by Tabachnick and Fidell (2007). None of the measures of skewness and kurtosis were significantly different from 0 and there were no univariate outliers.

Only one of the demographic factors was statistically correlated with the measures of maternal perceptions of life. Married mothers reported higher life satisfaction than mothers who were not married. Regarding intercorrelations within the maternal perception variables, one interesting association was found. Mothers who more highly endorsed the value of AI culture in their lives tended to have more positive attitudes towards life than mothers with lower levels of endorsement. Three significant correlations were found between the demographic, maternal perception, and child aggression variables. Older mothers had children who reported fewer aggressive responses to peer provocation in comparison to the more aggressive responses of children with younger mothers. Mothers who reported more negative attributions for children's misbehavior also reported higher numbers of aggressive behaviors, but had children who reported less aggressive responses to peer provocation.

Table 4
Correlations between Demographic Variables, Maternal Perception Variables, and Measures of Children's Aggression (N = 20)

	1.	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**	**10.**	**11.**
Demographics											
1. Child Age	---										
2. Child Gender	-.00	---									
3. Mother Age	-.05	-.06	---								
4. Marital Status	-.07	-.17	-.08	---							
5. Income-to-Needs	.16	-.34	-.16	.21	---						
Maternal Perceptions											
6. EAIC	-.03	-.27	.19	.17	-.17	---					
7. Attitude towards Life	-.15	.06	.17	.06	-.17	.66**	---				
8. Life Satisfaction	.13	.10	.15	.47*	.20	.21	.28	---			
9. Negative Attribution	.44	-.08	-.05	.03	.25	-.08	-.11	.39	---		
Children's Aggression											
10. Aggressive Behavior	.35	-.16	-.21	-.03	.10	-.02	-.13	-.13	.55*	---	
11. Aggressive Response	-.12	.23	-.47*	.36	-.21	-.01	-.05	-.18	-.52*	-.25	---

Note: For child gender 0 = Male, 1 = Female; for marital status 0 = Not married, 1 = Married; EAIC = Endorsement of American Indian Culture; * $p < .05$, ** $p < .01$.

Given the large number of correlations examined despite our small sample size, it could be that the few significant correlations we found might not be replicated in another sample. However, examination of the effect sizes reveals that the significant relationships found all had moderate effect sizes indicating substantial relationships between the variables, with *r* ranging from .47 to .66. (According to Guilford [1956], an *r* value of .40 to .70 represents a medium or moderate effect size or a substantial relationship.) Consequently, it is unlikely that the significant relationships reported were due to error. Moreover, given the small sample size, it is more likely that some substantial relationships were overlooked as the effect sizes simply were not large enough, given the N of 20, to reach statistical significance. Indeed, there were two moderately sized correlations of .39 and .44 that did not reach statistical significance. First, mothers of older children viewed their children's behaviors more negatively than mothers of younger children. And second, mothers who rated their satisfaction with life more highly viewed their children's misbehaviors more negatively than mothers who provided lower ratings of their satisfaction with life.

Do maternal social perceptions explain the presence of aggressive behaviors in their children?

Multiple linear regression analyses were conducted on the children's aggressive behavior and children's aggressive response variables. Prior to running these analyses, the data were screened for multivariate outliers using recommendations provided by Tabachnick and Fidell (2007). No multivariate outliers were found, and no violations of normality or linearity were discovered. The results are presented in Table 5. Two separate models were analyzed with Endorsement of American Indian Culture, Attitude towards Life, Life Satisfaction, and Negative Attribution entered as one block. The findings confirm the significant correlations found between Negative Attribution and Aggressive Behavior, and Negative Attribution and Aggressive Responses (see Table 4). However, only the overall model for Aggressive Behavior was statistically significant. Forty-seven percent of the variance in responses on the aggressive behavior subscale was explained by the maternal perception variables, with Negative Attribution accounting for 43% of the variance in maternal ratings of aggressive behavior.

Although the overall model predicting children's aggressive responses was not statistically significant, the beta value for Negative Attribution was statistically significant. Negative Attribution accounted for 26% of the variance in children's Aggressive Response scores. Specifically, children whose mothers made more negative attributions for their behavior reported fewer aggressive responses to hypothetical situations involving peer provocation than did children whose mothers made fewer negative attributions for their behavior. This information, taken together with the significant zero-order correlation between Negative Attribution and Aggressive Response, makes it is unlikely that this relationship was spurious.

Table 5
Regressions on Aggressive Behavior and Aggressive Response by EAIC, Attitude towards Life, Life Satisfaction, and Negative Attribution (N = 20)

	Aggressive Behavior		Aggressive Response	
	ß	sr^2	ß	sr^2
EAIC	.15	.01	.03	.00
Attitude towards Life	-.02	.00	-.16	.01
Life Satisfaction	-.45	.15	.08	.00
Negative Attribution	.74**	.43	-.57*	.26
Model R^2	.47		.29	
F (4,15)	3.29*		1.55	

Note: EAIC = Endorsement of American Indian Culture; sr^2 = unique variance in dependent variable contributed by the independent variable; * $p < .05$, ** $p < .01$.

Discussion

Despite the exploratory nature of this study in examining a small group of urban AI mothers and their children, the results provide interesting insights into their lives. Although the current study is limited in its generalizability and no statements of causality can be inferred from any of the relationships found, our findings provide some topics for discussion. Results from the analyses of demographic factors and the mothers' perceptions of their lives provide an area for commentary on the status of AI women in urban communities. The results from the correlational analyses provide a picture of the links between demographic factors and maternal perceptions and demonstrate that maintaining a sense of culture in an urban setting is related to a more positive attitude towards life. Finally, the results of the regression analyses both confirm and confound prior research findings, thereby providing an area ripe for future inquiry.

Exploring Urban American Indian Mother's Status and Perceptions of Life

The incomes of the families we interviewed replicate the statistics reported earlier, in that half of the families were living in poverty. However, the relatively high education level of the mothers in this sample does not conform to the literature that has attributed the poverty level of AIs to low levels of education as well as a lack of job skills (Hoff-Ginsberg, & Tardif, 1995). Although 50% of the mothers were enrolled in school at the time of our assessment, finding that the majority of these mothers were raising their children in poverty in order to attend school (perhaps to get out of poverty) is important. Given that the typical tribal college student is 30 years old and a mother (Shirley, 2004), this result points to the importance of providing AI women with more financial support so that they can attend school without worrying about how to feed and clothe their children. In addition, the fact that the mothers who were not enrolled in school at the time of our assessment were living just above the poverty line is consistent with other reports on the status of AI women. In particular, Sinzdak reported in 2004 that AI women have lower social and economic status than White women throughout the U.S. Thus, the economic status of the mothers in our study appears to confirm Wilkin's (1993) observation that "domination and exploitation still characterize the socioeconomic status of urban and non-reservation Indians" (p. 406).

The association between higher levels of maternal endorsement of AI cultural activities and beliefs with a more positive attitude towards life demonstrates the importance of cultural congruence in an urban setting. The link between a strong sense of cultural identity in the mother's life and a more optimistic attitude towards life is consistent with prior studies on enculturation (i.e., the process by which individuals learn about and identify with their culture) (Constantine & Sue, 2006; LaFromboise, Hoyt, Oliver, & Whitbeck, 2006; Zimmerman, Ramirez, Washienko, Walter, & Dyer, 1998). For example, Zimmerman and colleagues found that AI youth who strongly identified with their culture were more likely to maintain high self-esteem in urban settings. Thus, it could be that the maintenance of a strong sense of cultural identity within their urban setting resulted in a more positive outlook on life for these mothers.

Exploring the links between Maternal Perceptions and Child Aggression

Discovering that maternal negative attributions predicted their children's aggressive behaviors and aggressive responses both confirms and confounds previous findings of studies conducted in primarily middle-class communities. The finding that mothers who made more negative attributions for their child's misbehavior also rated their child as demonstrating more aggressive problem behaviors could be dismissed as a result of the mother being the respondent on both measures. However, this finding is consistent with results from other studies. For example, Nix and colleagues (1999) reported that mothers' hostile attribution tendencies were linked to teachers' reports of children's externalizing problem behaviors (including aggressive behavior at school). They also reported that a large proportion of this association was mediated by mothers' harsh discipline practices. Naturally, maternal perceptions can only influence child aggression through the mediators of parental behavior. In this study, we did not examine parenting practices or observe interactions between the mothers and their children; thus, we cannot determine the ways in which the mothers communicated their perceptions to their children. Given the correlational nature of this study, we also cannot rule out the likelihood that the children's aggressive behaviors contributed to the mothers' negative attributions. Despite these limitations, it is important for AI mothers to be aware that making more negative attributions for their child's behavior was statistically related to a higher number of reported aggressive problem behaviors.

The association between mothers' negative attributions for child behavior and the child's report of aggressive responses to provocation by a peer is a perplexing result of this study. Prior research has demonstrated that mothers who made more negative attributions for their children's behavior also had children who utilized more aggressive responses in situations involving peer conflict (Dodge, Bates, & Pettit, 1990). Despite the association between maternal negative attributions and increased aggressive problem behaviors found in this study, when it came to the children's reports of their own aggressive behavior, children whose mothers made more negative attributions for their misbehavior actually reported that they were more likely to do nothing or simply ask for an explanation rather than retaliate. Of course, this finding might be due to the fact that hypothetical stories were used instead of real-life observations of the child with a peer. However, this type of hypothetical scenario is widely used in research with children, particularly in the social information-processing literature, and the procedure has been shown to generate results that were similar to children's naturally occurring behavioral responses in comparable real-life contexts (e.g., Dodge, Laird, Lochman, & Zelli, 2002; Dodge, Pettit, McClasky, & Brown, 1986).

Another potential explanation for this finding might be differences in context (home vs. school). It could be that urban AI children are less likely to respond aggressively to conflict with a peer because they attribute blame to themselves rather than to the peer. Thus, although they might act out aggressively at home with family members, they are not responding in an aggressive manner with peers. Research by Duran and Duran (1995) offers some support for this hypothesis. Duran and Duran speculated that constant oppression has led many AIs to "internalize the oppressor," thereby casting the blame for their problems onto themselves (p.29). It might also be that urban AI children view their environments as dangerous. That is, they might think that any aggressive responses they make away from the protection of their parents will be met with retaliation. Given that rates of violent victimization are significantly higher for AIs than for any other race – and 70% of these violent crimes are committed by a member of a different race – (U.S. Department of Justice, 1999), such a viewpoint makes sense. Unfortunately, this study does not have the capacity to address the possible reasons for this result meaningfully. Consequently, the possibility of investigating this finding in future research is anticipated.

Conclusion

We examined a small subset of urban AI mothers and their children in an urban setting with the goal of gaining insight into the status of urban AI families. As Jacqueline Johnson (National Congress of American Indians Executive Director) stated in 2004, "It is critically important to support and fund new research with AI women. In order to adequately address the problems facing Indian women we need reliable statistics to describe the quality of AI women's lives and experiences" (as cited in Sinzdak, 2004, December 15, pp. 5). Although our findings come from examining the social perceptions of a small sample of urban AI women, the results are an important first step towards meeting Ms. Johnson's call for more research on AI women.

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References

Achenbach, T. M. (1991). *Manual for the Child Behavior Checklist/4-18 and 1991 Profile.* Burlington: University of Vermont.

Andrews, F. M., & Withey, S. B. (1976). *Social indicators of well-being: Americans' perceptions of life quality*. New York: Plenum.

Bugental, D.B., & Happaney, K. (2002). Parental attributions. In M. Bornstein (Ed.), *Handbook of parenting, Vol. 3: Being and becoming a parent* (2nd ed, pp. 509-535). Mahwah, NJ: Erlbaum.

Bugental, D. B., & Johnston, C. (2000). Parental and child cognitions in the context of the family. *Annual Review of Psychology, 51*, 315-344.

Campbell, A., Converse, P. E., & Rogers, W. L. (1976). *The quality of American life: Perceptions, evaluations, and satisfactions.* New York: Russell Sage Foundation.

Constantine, M. G., & Sue, D. W. (2006). Factors contributing to optimal human functioning in people of color in the United States. *Counseling Psychologist, 34*, 228-244.

Cote, L. R., & Bornstein, M. H. (2003). Cultural and parenting cognitions in acculturating cultures: 1. Cultural comparisons and developmental continuity and stability. *Journal of Cross-Cultural Psychology, 34*, 323-349.

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology, 78*, 98-104.

Cross, T. L. (1998). Understanding family resilience from a relational worldview. In H. McCubbin, E. Thompson, A. Thompson, & J. Frommer (Eds.), *Resiliency in American Indian and immigrant families* (pp. 143-158). Thousand Oaks, CA: Sage Publications.

Daggett, J. A., O'Brien, M., Zanolli, K., & Peyton, V. (2000). Parents' attitudes about children: Associations with parental life histories and child-rearing quality. *Journal of Family Psychology, 14,* 187-199.

Dix, T. (1991). The affective organization of parenting: Adaptive and maladaptive processes. *Psychological Bulletin, 110,* 3-25.

Dix, T. (1993). Attributing dispositions to children: An interactional analysis of attribution in socialization. *Personality and Social Psychology Bulletin, 19,* 633-543.

Dodge, K. A., Bates, J. E., & Pettit, G. S. (1990). Mechanisms in the cycle of violence. *Science, 250,* 1678-1686.

Dodge, K.A., Laird, R., Lochman, J.E., & Zelli, A. (2002). Multidimensional latent-construct analysis of children's social information-processing patterns: Correlations with aggressive behavior problems. *Psychological Assessment, 14*, 60-73.

Dodge, K. A., Pettit, G. A., McClaskey, C. L., & Brown, M. M. (1986). Social competence in children. *Monographs of the Society for Research in Child Development, 51,* (2, Serial No. 213).

Duran, E., & Duran, B. (1995). *American Indian postcolonial psychology*. Albany, NY: State University of New York Press.

Earle, K. A. (2000). *Child abuse and neglect: An examination of American Indian data*. Retrieved September 14, 2006, from http://www.nicwa.org/resources/catalog/research/2000/02.Child_Abuse.pdf

Guilford, J. P. (1956). *Fundamental statistics in psychology and education* (3rd ed.). New York: McGraw-Hill.

Harjo, S. (1999). The American Indian experience. In H. P. McAdoo (Ed.), *Family ethnicity: Strength in diversity* (pp. 63-71). Thousand Oaks, CA: Sage Publications.

Harwood, R. L., Schoelmerich, A., Ventura-Cook, E., Schulze, P. A., & Wilson, S. P. (1996). Culture and class influences on Anglo and Puerto Rican mothers' beliefs regarding long-term socialization goals and child behavior. *Child Development, 67*, 2446-2461.

Henson, R.K. (2001). Understanding internal consistency reliability estimates: A conceptual primer on coefficient alpha. *Measurement and Evaluation in Counseling and Development, 34*, 177-189.

Hoff-Ginsburg, E., & Tardiff, T. (1995). Socioeconomic status and parenting. In M. Bornstein (Ed.), *Handbook of Parenting: Vol. 2. Biology and ecology of parenting* (pp. 161-188). Hillsdale, NJ: Erlbaum.

Iverson, T. J., & Segal, M. (1992). Social behavior of maltreated children: Exploring links to parent behavior and beliefs. In I.E. Sigel, A.V. McGillicuddy-DeLisi, & J. J. Goodnow (Eds.), *Parental belief systems: The psychological consequences for children* (2nd edition, pp. 267-289). Hillsdale, NJ: Erlbaum.

Joiner, T. E., Jr., & Wagner, K. D. (1996). Parental, child-centered attributions and outcome: A meta-analytic review with conceptual and methodological implications. *Journal of Abnormal Child Psychology, 24*, 37-52.

Kawamoto, W. T. & Cheshire, T. C. (1999). Contemporary issues in the urban American Indian family. In H. P. McAdoo (Ed.), *Family ethnicity: Strength in diversity* (pp. 101-104). Thousand Oaks, CA: Sage Publications.

LaFromboise, T. D., Hoyt, D. R., Oliver, L., & Whitbeck, L. B. (2006). Family, community, and school influences on resilience among American Indian adolescents in the upper Midwest. *Journal of Community Psychology, 34*, 193-209.

Leyendecker, B., Harwood, R. L., Lamb, M. E., & Scholmerich, A. (2002). Mothers' socialization goals and evaluations of desirable and undesirable everyday situations in two diverse cultural groups. *International Journal of Behavioral Development, 26*, 248-258.

McGillicuddy-DeLisi, A. V. (1992). Parental beliefs and children's personal-social development. In I. E. Sigel, A. V. McGillicuddy-DeLisi, & J. J. Goodnow (Eds.), *Parental belief systems: The psychological consequences for children* (2^{nd} ed. , pp. 143-172). Hillsdale: NJ: Earlbaum.

Nix, R. L., Pinderhughes, E. E., Dodge, K. A., Bates, J. E., Pettit, G. E., & McFadyen-Ketchum, S. A. (1999). The relations between mothers' hostile attribution tendencies and children's externalizing behavior problems: The mediating role of mothers' harsh discipline practices. *Child Development, 70,* 896-909.

O'Brien, M., & Peyton, V. (2002, April). *Attributional Style Measure for Parents*. Paper presented at the biennial meeting of the Conference on Human Development, Charlotte, NC.

Sigel, I. E., McGillicuddy-DeLisi, A. V., & Goodnow, J. J. (Eds.). (1992). *Parental belief systems: The psychological consequences for children* (2^{nd} edition). Hillsdale, NJ: Erlbaum.

Shirley, V. J. (2004). On the Right Path. *Black Issues in Higher Education, June 17th* (20th Anniversary Edition), 88-91.

Sinzdak, J. (2004, December 15). Indian women in dire straits, report states. *Native American Times*, pp. 5.

Sixkiller-Clark, A. (1997). The American Indian child: Victims of the culture of poverty or cultural discontinuity. In R. Taylor & M. Wang (Eds.), *Social and emotional adjustment and family relations in ethnic minority families* (pp. 63-82). Mahwah; NJ: Erlbaum.

Stauss, J. (1995). Reframing and refocusing American Indian family strengths. In C. Jacobson (Ed.), *American families: Issues in race and ethnicity* (pp. 105-118). New York: Garland Publishing.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*. (5th ed.). Boston: Pearson.

U.S. Census Bureau (2000). *Fact sheet*. Retrieved March 21, 2007, from http://factfinder.census.gov/servlet/SAFFFacts?_event=&geo_id=05000US20045&_geoContext=01000US%7C04000US20%7C05000US20045&_street=&_county=douglas+county&_cityTown=douglas+county&_state=04000US20&_zip=&_lang=en&_sse=on&ActiveGeoDiv=&_useEV=&pctxt=fph&pgsl=050

U.S. Census Bureau. (2002). *The American Indian and Alaska Native population: 2000*. Retrieved July 10, 2004, from http://www.census.gov/prod/2002pubs/c2kbr01-15.pdf

U.S. Census Bureau. (2003). *American Indian and Alaska Native heritage month: November 2003*. Retrieved July 10, 2004, from http://www.census.gov/Press-Release/www/releases/archives/facts_for_features/001492.html

U.S. Department of Health and Human Services (1999). *The 1999 HHS poverty guidelines*. Retrieved March 1, 2007 from http://aspe.hhs.gov/poverty/99poverty.htm

U.S. Department of Justice. (1999). *American Indians and crime*. Retrieved March 17, 2000, from http://www.ojp.usdoj.gov/bjs/pubalp2.htm#aic.

Urban Indian Health Institute. (2004). *The health status of urban American Indian and Alaska Natives: An analysis of select vital records and census data sources*. Retrieved September 14, 2006, from http://www.uihi.net/Public%20Documents1/UIHI%20Publications/2004HealthStatusReport.pdf

Ward, C., Hinckley, G., & Sawyer, K. (1995). The intersection of ethnic and gender identities: Northern Cheyenne women's roles in cultural recovery. In C. Jacobson (Ed.), *American families: Issues in race and ethnicity* (pp. 201-228). New York: Garland Publishing.

Weary, G., Stanley, M. A., & Harvey, J. H. (Eds.), (1989). *Attribution*. New York: Springer-Verlag.

Wilkins, D. (1993). Modernization, colonialism, dependency: How appropriate are these models for providing an explanation of American Indian underdevelopment. *Ethnic and Racial Studies, 16*, 391-419.

Zimmerman, M. A., Ramirez, J., Washienko, K. M., Walter, B., & Dyer, S. (1998). Enculturation hypothesis: Exploring direct and protective effects among American Indian youth. In H. McCubbin, E. Thompson, & J. Frommer (Eds.), *Resiliency in American Indian and immigrant families* (pp. 199-220). Thousand Oaks, CA: Sage.

Footnotes

[1] The statistics from the Urban Indian Health Institute were derived from information from 82 counties in the United States reported by the United States Census and the National Center for Health Statistics in 1990 and 2000.

[2] The data for this study were collected in 1999 and 2000.

Authors' Notes

The data in this manuscript were collected in accordance with the ethical standards of APA and with the approval of the Human Subjects Committee Review Board of the University of Kansas.

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