ALCOHOL ABUSE IN URBAN INDIAN ADOLESCENTS AND WOMEN: A LONGITUDINAL STUDY FOR ASSESSMENT AND RISK EVALUATION

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Abstract: Empirical studies of American Indian health and mental health have focused primarily on reservation samples or small cross-sectional school-based or treatment samples. Few studies have addressed these issues among urban American Indian populations. This paper introduces an ongoing ten-year prospective longitudinal study of alcohol abuse, drug abuse, and mental health status in a community sample of urban American Indian adolescents and women. The study uses structured interviews and diagnostic assessments to identify risk factors for, and measure prevalence of, alcohol abuse, drug abuse, and psychopathology in 523 Indian youth and 276 Indian women. Study aims, rationale, research design, methods, sample characteristics, assessment instruments, and substance use prevalence are described, and methodological issues related to conducting longitudinal research are discussed.

There is great diversity among American Indian[1] people in tribal membership, cultural identity, preservation of traditions, and living circumstances. The United States currently recognizes 317 "Indian entities" in the 48 contiguous states, and 226 "Native entities" in Alaska (Bureau of Indian Affairs, 1993). Numerous other tribes, bands, and Native villages are not formally recognized by the government. Awareness of, and sensitivity to, the cultural diversity of Indian tribes is critical to developing effective responses to health care needs in Indian communities. This is particularly true in the case of substance use and related health outcomes, since there are important tribal differences in substance use attitudes and behavior (Weibel-Orlando, 1985; May, 1992; Mail & Johnson, 1993). Empirical studies of Indian health and mental health to date have focused primarily on reservation samples or small cross-sectional school-based or treatment

samples. Although 56% of Indians nationally live in urban areas of 2,500 or more people (U.S. Department of Commerce, 1992a), few researchers have addressed these issues among urban Indian populations. This paper introduces an ongoing ten-year prospective longitudinal study of alcohol abuse, drug abuse, and mental health status in a community sample of urban American Indian adolescents and women.

While recognizing tribal variation in substance use practices and consequences, it is nonetheless clear that alcohol and substance abuse are serious health problems for many Indian communities. The age-adjusted mortality rate due to alcohol dependence syndrome, alcoholic psychosis, and alcoholic cirrhosis among Indians served by the Indian Health Service (IHS) is 5.3 times the rate for the U.S. general population, and does not include deaths from accidents, suicide, or homicide, which are often alcohol-related (Indian Health Service, 1993). The alcoholism mortality rate for young Indians between 25 and 34 years of age is 10.2 times greater than the comparable rate for this age group in the general population. National surveys of adolescents consistently find that American Indians have higher rates of alcohol use than any other ethnic group (Bachman, Wallace, O'Malley, Johnston, Kurth, & Neighbors, 1991; Beauvais, 1992a).

Discussing alcohol research on racial and ethnic minorities, the NIAAA Seventh Report to Congress noted, "Further research is needed, both to characterize the problems that may be specific to each group and to provide a basis for culturally appropriate means of addressing these problems" (National Institute on Alcohol Abuse and Alcoholism, 1990, p. 32). Similarly, the Institute of Medicine (1990) recently concluded that "Basic issues concerning the prevalence of problem drinking and patterns of treatment for alcohol problems among Indians remain unresolved" (p. 366). To address these and other important issues related to the health and mental health of urban Indians, this study uses structured interviews and diagnostic assessments to identify risk factors for, and measure prevalence of, alcohol abuse, drug abuse, and psychopathology in 523 urban Indian youth and 274 urban Indian women. The intent of this paper is to introduce the project. Study aims, rationale, research design, methods, sample characteristics, and assessment instruments are described in detail to provide a foundation from which subsequent data based papers can be evaluated. Substance use at baseline and 48-month follow-up is reported for two study cohorts. Finally, several issues inherent in this type of research are discussed.

Background

American Indian Research

American Indian Research (AIR) has studied alcohol, drug, and mental health issues among urban American Indians and Alaska Natives

in the Pacific Northwest since 1977. AIR is part of the Department of Psychiatry and Behavioral Sciences at the University of Washington School of Medicine, with offices at the Seattle Veterans Affairs Medical Center. Located in King County, Seattle is the largest urban center in Washington State. Sixty-two percent of the state's 81,483 Indian residents live in urban areas, and 21% live in King County (U.S. Department of Commerce, 1992b), making Seattle an ideal location for studying urban Indian health. The research group has benefited from its unique interface with the American Indian community, the Seattle Indian Health Board, the Indian Health Service, the University of Washington, and the Seattle Veterans Affairs Medical Center.

In the early 1980s, AIR received two grants from the National Institute on Alcohol Abuse and Alcoholism (NIAAA) to study adult Indians, alcohol abuse, and alcoholism treatment outcome (Walker, Benjamin, Kivlahan, & Walker, 1985). These studies documented the severity and chronicity of alcohol problems in four treatment samples of urban Indian adults, and the failure of existing tertiary treatment strategies to produce lasting sobriety (Kivlahan, Walker, Donovan, & Mischke, 1985). Through this work we established active and ongoing ties with the American Indian community. Findings from these studies suggested that primary and secondary intervention efforts targeting earlier stages in the development of alcohol dependence were needed. However, there were no published empirical studies to guide early intervention efforts.

Our current research with Indian youth and their families derived from the findings and methods developed earlier with adults. It is a ten-year, prospective longitudinal study of alcohol abuse, drug abuse, and mental health status of two generations of urban American Indians. Phase I, the *Urban American Indian Adolescent Alcohol and Drug Abuse* study, was funded in 1987 for five years by NIAAA. In 1993, NIAAA renewed funding for an additional five years to complete Phase II, *Alcohol Abuse in Urban Indian Adolescents and Women*. The broad aim of the research is to study the epidemiology of alcohol abuse, drug abuse, and psychopathology in a sample of urban American Indian adolescents and women. Specifically, using structured interviews and diagnostic assessments, we will: (a) describe the prevalence and incidence of alcohol abuse in urban Indian adolescents and women; (b) describe the comorbidity of alcohol abuse with drug abuse and other psychopathologies in Indian adolescents and women; (c) assess the contribution of adolescent alcohol abuse to suicide, school dropout, and unsafe sexual behavior; (d) describe the natural history of alcohol-related problems in American Indian women; (e) develop and test an additive risk factor model predicting adolescent alcohol abuse; (f) develop a reliable and efficient screening battery to identify American Indian youth at elevated risk for substance abuse; and (g) assess conduct disorder, mother's emotional status, cultural identification and participation, and gender as potential mediators or

moderators of the relationship between alcohol abuse and family history factors. Our ultimate goal is to aid development of efficacious and culturally sensitive prevention and intervention programs for Indian adolescents and women.

During Phase I we collected baseline (T1) measures of potential predictors of substance abuse from 444 Indian youth and their primary caretakers before the onset of regular substance use by the youth. Annual assessments documented changes in these measures over three years (T2, T3, & T4). During Phase II we are administering diagnostic interviews to all youth and primary caretakers, including 276 Indian women. High rates of follow-up completion over the first five years of the study demonstrate the potential for successful longitudinal research with Indian samples.

In this paper we describe the study aims, rationale, design, methods, sample characteristics, and instrumentation. Future articles will focus on: prevalence and change over time of substance use; risk factors for substance use and abuse, risk factors for other psychiatric disorders; family history of alcohol dependence, drug dependence, and psychopathology; strategies for successful longitudinal follow-up in multi-cultural samples; reliability and validity of assessment instruments, including predictive validity; and strategies for early intervention with American Indian youth at high-risk for alcohol and substance abuse and related problems.

American Indian Adolescent Alcohol Use

In the National Institute on Drug Abuse (NIDA) annual survey of high school seniors, Bachman et al. (1991) concluded that since 1976 "Native Americans had the highest rates for cigarettes, alcohol, and most illicit drugs." Combining annual data from 1985–1989, 48.1% of Indian males and 33.7% of Indian females reported having five or more drinks in a row in the two weeks prior to survey completion. Caucasian males reported the same rate of heavy drinking as Indian males, and Caucasian females nearly the same rate as Indian females. However, the authors noted that given the high rate of academic dropout among Indians, data on the total age cohort might reveal an even more significant problem. Unlike school surveys, our study follows a community sample of adolescent subjects through the age when they would be high school seniors, regardless of school participation. In addition to being the first longitudinal investigation to follow urban Indian adolescents through the years of greatest risk for onset of substance abuse, our study includes questions paralleling those of the annual survey of high school seniors to permit an empirical test of discrepancies between what Bachman et al. (1991) refer to as "the two worlds of drug use data" (i.e., community and school-based).

Two recent school-based cross-sectional studies documented comparatively high rates of alcohol use among Indian adolescents. Beauvais, Oetting, Wolf, and Edwards (1989) reported higher lifetime

prevalence rates for reservation and rural Indian high school seniors, relative to high school seniors nationally, on six of seven categories of drug use. Particularly striking were Indian self-reports of having "gotten drunk" (38.7%) and used marijuana (36.5%) during the month prior to assessment. A Washington state school-based survey of alcohol use found that at eighth grade, 28% of Indian students statewide reported drinking at least monthly and/or occasionally drinking five or more drinks in a row, compared to 15% of Caucasians (Office of the Superintendent of Public Instruction, 1991).

Adverse Consequences of Alcohol Use: Suicide, School Dropout, and Unsafe Sex

Indian youth aged 15–24 served by the IHS have suicide rates 2.9 times the national rate (IHS, 1993). One study of Indian high school students reported that 23% of a boarding school sample had attempted suicide (Manson, Beals, Dick, & Duclos, 1989). Other reports suggest an association between drinking and attempted suicide. For instance, a school-based study of Navajo adolescents found weekly use of hard liquor related to increased risk for suicide attempt (Grossman, Milligan, & Deyo, 1991). We ask questions about suicidal thoughts and attempts, and assess the severity of attempt, concurrent intoxication, and exposure to attempted and completed suicide in family and friends.

Alcohol use adversely affects the school performance of all adolescents, and Indian adolescents in Seattle are over-represented in school-based negative outcomes (Seattle Public Schools, 1991). During 1990–91, 35% of Indian high school students were categorized as dropouts, versus 20% for Blacks and 15% for the district as a whole. Academic attainment, grade point average, and achievement test scores are lower for Indians than for any other ethnic group. Poor attendance rates and high rates of discipline complete a picture of concern for Indian adolescents. In subsequent papers we will report differences in alcohol abuse parameters between dropouts and those attending school.

Another high-risk behavior related to adolescent alcohol use is unprotected sexual activity. Among all ethnic groups, American Indians had the largest proportional increase in diagnosed AIDS cases in 1989 (Hooper & Conway, 1989). Elliott and Morse (1987) observed that precocious sexual activity often occurs as part of a pattern of deviant behavior that includes substance abuse. Among youth ages 11–17, sexual activity was reported by 10% of boys and 3% of girls who were not using drugs, compared to 71% of boys and 52% of girls who were using multiple illicit substances. Beauvais (1992b) speculated that AIDS is likely to become a growing problem among Indians. We document high risk sexual behavior and its relationship to substance use in our adolescent sample.

Psychosocial Risk Factors for Adolescent Alcohol Abuse

Investigation of factors related to onset of alcohol abuse in Indian adolescents will help focus prevention and early intervention efforts. The acquisition, maintenance and change of alcohol-related problems in the present study are conceptualized within a biopsychosocial perspective (Donovan, 1988). During Phase I we assessed a number of conceptual domains relevant to an explication of the etiology of Indian adolescent substance abuse, and adopted a risk factor approach to prediction of adolescent substance abuse. Risk factors are discrete categories of individual, situational, and environmental factors hypothesized to increase the likelihood of alcohol abuse. While the temporal ordering and direction of the relationship between risk factors and alcohol abuse is often unclear from cross-sectional studies, risk factors, when present, increase the probability of subsequent or contemporaneous alcohol abuse. The goals of prevention are served by the findings of risk factor evaluations, as prevention activities can be targeted to factors known to be associated with alcohol abuse. Risk factor models focusing on Indian adolescents are rarely reported (Moncher, Holden, & Trimble, 1990).

Proponents of risk factor approaches to the study of adolescent substance abuse (Bry, McKeon, & Pandina, 1982; Hawkins, Lishner, Catalano, & Howard, 1985; Newcomb, Maddahian, & Bentler, 1986) emphasize the need for comprehensive assessment of risk factor domains. However, it is also necessary to determine which factors to include in the assessment and model testing process. The risk factor dimensions we chose to evaluate are those found to be predictive of adolescent substance abuse in at least three previous empirical investigations. Risk factors meeting this criterion are: *family history of alcoholism* (e.g., Hesselbrock, Bauer, Hesselbrock, & Gillen, 1991); *childhood conduct disorders* (e.g., Zucker & Gomberg, 1986); *adolescent psychopathology* (e.g., Lerner & Vicary, 1984); *current psychological distress among caretakers* (e.g., Labouvie, Pandina, White, & Johnson, 1986); *sensation seeking orientation* (e.g., Pedersen, 1991); *religiosity* (e.g., Bloch, Crockett, & Vicary, 1991); *peer deviance and perceived/actual peer drug use* (e.g., Walter, Vaughan, & Lohall, 1991); *low self-esteem* (e.g., Kaplan, Martin, Johnson, & Robbins, 1986); *precocious sexual activity* (e.g., Elliott & Morse, 1987); *poor school performance/dropping out* (e.g., Hawkins et al., 1985); *dysfunctional family interaction patterns and environment* (e.g., Brook, Cohen, Whiteman, & Gordon, 1992); *neuropsychological functioning* (e.g., Tarter, Jacob, & Bremer, 1989); *positive alcohol-related expectancies* (e.g., Brown, Christiansen, & Goldman, 1987); *early use of alcohol and drugs* (e.g., Kandel & Davies, 1992); and *poverty* (e.g., Brunswick, 1988). *Cultural identification* (e.g., Moncher et al., 1990), and *participation in cultural activities*, are included as potential risk factors in order to assess the role of minority cultural involvement in Indian adolescent alcohol abuse. Other variables of

to test these effects. They noted the importance of prospective follow-up assessments to test for between-group differences in drinking outcomes. Continued follow-up of our high risk adolescent sample will provide an opportunity to apply these analyses. Moderator variables may help target interventions to modifiable factors. Moderator variables that buffer the risk associated with positive family history of substance abuse and/or psychological problems are of particular interest. Two proposed, but not yet adequately tested, moderator variables are maternal emotional status (Jacob & Leonard, 1986) and ritualized family interactions (Wolin, Bennett, Noonan, & Teitelbaum, 1980). To explore the moderating effects of these variables in our sample, we collect data using the Brief Symptom Inventory (Derogatis & Melisaratos, 1983), and questions on family rituals.

Research reported to date has not tested the mediating or moderating role of culture. Walker and Kivlahan (1984) reviewed the problems of defining the terms culture, acculturation, ethnicity, and "Indianness." We view culture as a life context factor (Cronkite & Moos, 1980) that might explain variance in alcohol use beyond that explained by other predictors. Based on our work (Walker & Kivlahan, 1984) and that of Oetting and Beauvais (1990–91), data on cultural content (language use, ceremonial adherence, traditional medicine, and involvement in traditional activities) are being gathered along with assessment of cultural identification. Greater Indian cultural identification and participation may reduce the likelihood of alcohol abuse. Recognizing the tribal heterogeneity of our urban sample, we will evaluate data by tribe and cultural/language group.

Epidemiology of Alcohol Use and Abuse Among American Indian Women

The research literature on alcohol use and abuse among Indian women is scant. The few empirical studies reported over the last twenty-five years describe small, generally reservation-based clinical samples. Mortality studies suggest that Indian women may be particularly vulnerable to the adverse effects of alcohol. They account for nearly half of all Indian deaths from cirrhosis, yet they tend to drink less than Indian men (Institute of Medicine, 1990). Among certain tribal groups, although not all, the prevalence of fetal alcohol syndrome and fetal alcohol effects is much higher than in the general population (May & Hymbaugh, 1989). One of the few studies to examine drinking in American Indian women found that approximately 40% of a sample of 82 women treated in a primary care medical setting, for non-substance-related and non-psychiatric conditions, reported a history of problem drinking (Walker, Walker, & Mariano, 1987). Over half these women had received treatment for alcohol dependence during their lifetime. Two studies report comorbid psychiatric and substance use disorders among Indian women. Shore, Manson, Bloom, Keepers, and Neligh (1987) observed that 35% of their sample of 54 Indian women patients with a primary diagnosis of major depression had a secondary diagnosis of

Table 1
Number of Subjects, Mean Age, and Assessment Schedule for Phase I and Phase II Studies[1]

	Phase I				Phase II				
	T1	**T2**	**T3**	**T4**	**T5**	**T6**	**T7**	**T8**	**T9**
Sample[2]	1988–89	1989–90	1990–91	1991–92	1992–93	1993–94	1994–95	1995–96	1996–97
Cohort 1 (N)	(224)	(221)	(217)	(218)	(211)	(211)	**(205)**	**(199)**	**(193)**
Mean Age	11.7	12.7	13.7	14.7	15.7	16.7	**17.7**	**18.7**	**19.7**
Cohort 2 (N)	(66)	(65)	(66)	(66)	(66)	(64)	**(62)**	**(60)**	**(58)**
Mean Age	11.7	12.7	13.7	14.7	15.8	16.7	**17.7**	**18.7**	**19.7**
Cohort 3 (N)					(78)	(74)	**(72)**	**(70)**	**(68)**
Mean Age					16.5	17.4	**18.4**	**19.4**	**20.4**
Cohort 4 (N)		(76)			(65)			**(59)**	
Mean Age		15.5			18.6			**21.6**	
Cohort 5 (N)			(79)			(72)			**(66)**
Mean Age			12.0			15.1			**18.1**
Cohort 6 (N)					(236)	(266)	**(258)**	**(250)**	**(243)**
Mean Age					42.6	43.2	**44.2**	**45.2**	**46.2**

[1]Numbers in **boldface** are estimates for remaining years of data collection, based on 3% annual attrition.

[2]Cohort 1 subjects were recruited from two school districts while they were in the fifth and sixth grade. Cohort 2 subjects were recruited from the membership of a local Indian Health Board, and were also in the fifth and sixth grade. Cohort 3 subjects were recruited from the same two school districts as Cohort 1, while both cohorts were in the ninth and tenth grades. Cohort 4 and Cohort 5 subjects were recruited from the same two school districts as Cohort 1, while they were in the ninth and sixth grades, respectively. Cohort 6 subjects are adult Indian women who are the primary caretakers for the youth subjects.

alcoholism, while 24% were diagnosed with generalized anxiety, 24% with phobias, and 15% with drug use. We found considerable psychiatric comorbidity among Indian women with a history of alcohol dependence; 61% scored in the clinical range on a measure of current psychiatric distress, compared to 29% of Indian women with no history of alcohol dependence (Walker, Lambert, Walker, & Kivlahan, 1993). Thus, preliminary indications suggest that substance abuse and psychopathology represent important problems for American Indian women.

While Phase I focused primarily on adolescent alcohol use, several factors led to an increased emphasis on Indian women's alcohol use in Phase II. First, there is a high lifetime prevalence of alcoholism in this special population that is not well studied (Institute of Medicine, 1990). Second, there may be adverse or protective influences of maternal drinking behavior and other psychopathology on adolescent development (Jacob & Leonard, 1986; Moos & Billings, 1982). Third, we have established a successful research relationship with a sample of 276 Indian women, 246 of whom are biological mothers of the adolescent subjects. Finally, in the context of our demonstrated ability to follow two generations in a longitudinal design, we have the opportunity to add to the sparse literature addressing the natural history of women's drinking.

Methods

Experimental Design and Assessment Schedule

Six independent cohorts constitute the study population (see Table 1). Cohort 1 is comprised of 224 American Indian youth recruited from the fifth and sixth grades of two urban school districts during the 1988–89 academic year (T1). This cohort is assessed annually and will complete a total of nine interviews during Phase I and Phase II of this project. Cohort 2 consists of 66 subjects recruited from the membership of the local Indian Health Board while they were enrolled in the fifth and sixth grades during the 1988–89 academic year. Cohort 1 and Cohort 2 have similar mean ages, and follow the same assessment schedule. Cohort 3 is comprised of 78 youth recruited during the 1992–93 academic year (T5) from the ninth and tenth grades of the same two school districts as Cohort 1. Thus Cohort 3 belongs to the same age and grade cohorts as Cohorts 1 and 2. Cohort 3 will complete a total of five annual interviews during Phase II. If demographic and behavioral comparisons show adequate homogeneity, they will be added to Cohort 1 to minimize statistical power issues that could arise due to attrition in a long-term project.

Two cross-sectional cohorts were recruited during Phase 1 of the study to test for period, cohort, and treatment effects. Cohort 4 is comprised of 76 ninth graders recruited during the 1989–90 academic year (T2) and Cohort 5 is comprised of 78 sixth graders recruited during the

1990–91 academic year (T3). Each cross-sectional cohort is scheduled to complete two additional interviews during Phase II (Cohort 4 at T5 and T8; Cohort 5 at T6 and T9).

Cohort 6 is comprised of 276 American Indian women. These women, mostly biological mothers of the five youth cohorts, were interviewed as the youths' primary caretakers during Phase I. In Phase II we recruited them as subjects in their own right. They will complete five, six, or nine interviews depending on when they were first interviewed as a caretaker.

Table 1 shows the sample size, mean age at each annual assessment, and interview schedule for each cohort. Numbers shown in **boldface** are estimates based on a three percent annual attrition rate for years not yet completed.

Sample Selection Criteria

Youth eligible for participation in Cohorts 1, 3, 4, and 5 met four criteria. First, they were enrolled in grades five, six, nine, or ten in one of two school districts. The two districts have the highest Indian enrollments in the Seattle metropolitan area. Second, a parent or guardian identified the subject as American Indian or Alaska Native on HEW Form 506, *Indian Student Certification*, when the youth enrolled in school. Third, they did not have major cognitive dysfunction. Finally, they were no more than two years older than the mean age for their grade. Youth eligible for participation in Cohort 2 met five criteria; they were in the fifth or sixth grade; received services at the Indian Health Board between August 1985 and July 1988; were identified as American Indian by clinic records; did not have major cognitive dysfunction; and were no more than two years older than the mean age for their grade. The following paragraphs describe the recruitment of Cohort 1. The same procedures were followed for all cohorts.

Recruitment of Cohort 1

In 1988–89 the two school districts identified 409 fifth and sixth grade Indian students and their adult caretakers. We attempted to recruit all 409 students. Sixty-seven students were deemed ineligible for the following reasons: (a) they moved out of the school district before we could contact them [n=56]; (b) they were incapacitated by fetal alcohol syndrome, severe cognitive deficit, or deafness [n=3]; (c) the parent denied the youth was Indian [n=7]; and (d) participation in our pilot study six months earlier [n=1]. Elimination of these individuals resulted in a final Cohort 1 eligible population of 342 fifth and sixth grade American Indian and Alaska Native students.

Personalized introductory letters inviting participation in the study were mailed to the parent or caretaker of all 342 eligible students. The letter explained that the University and their school district had reviewed and approved the research, and that their school district had given us their names and addresses. It also described the types of questions they would answer, how their confidentiality would be protected, and the payment they would receive for participation. One week after mailing the initial contact letter, a staff member telephoned the parent to answer questions and schedule an interview appointment.

Project staff documented all efforts to contact potential subjects. Recruitment efforts persisted until potential subjects were confirmed to have moved out of the catchment area or they actively refused to participate. Subjects who did not keep interview appointments were contacted and rescheduled. Between November, 1988 and August, 1989 we recruited and interviewed 224 (65%) Cohort 1 youth and caretaker dyads. Of those interviewed, 89 (26%) refused and we were unable to contact 29 (9%) despite repeated efforts. To minimize age differences, sixth grade subjects were interviewed in the fall and fifth grade subjects in the spring. This procedure resulted in a Cohort 1 mean age of 11.7 years (σ = .61) at baseline (T1) assessment.

Attrition

Cohort 1. Twelve-month follow-up (T2) attrition was minimal; 221 (99%) youth and 223 (99%) adults completed their second interview. High rates of participation were sustained at subsequent interviews: 217 (97%) youth and 216 (96%) adults completed their 24-month interview (T3); 218 (97%) youth and 213 (95%) adults completed their 36-month interview (T4); and 211 (94%) youth and 207 (92%) adults completed their 48-month interview (T5). In some cases a youth was living with a different parent or guardian at follow-up interview. Consequently, nine new adults were interviewed at T2, seven at T3, five at T4, and twelve at T5. On average, 85% of all follow-up interviews were conducted within five weeks of the anniversary of the first interview.

Cohort 2. Except for one youth who missed the T2 interview, the 66 subjects in this group achieved 100% follow-up completion through T5.

Cohort 4. Despite three years of no contact that separated their first and second interviews, 86% of these 76 subjects completed the follow-up at T5. Six subjects (8%) refused to continue, and five (6%) could not be relocated.

Characteristics of the Five Youth Cohorts

Subjects from the two school districts in Cohort 1 were similar with respect to age, gender, grade, caretaker's gender, household size,

per capita income, parents' occupational status, and whether they received services from the Indian Health Board. These subjects were combined for all analyses. Subjects recruited from the Indian Health Board differed from the school district samples only on measures of income. A larger proportion (48.5% vs. 29.0%, chi-square = 8.7, df = 1, $p < .01$) of the Indian Health Board subjects lived in households with income levels below federal poverty guidelines than subjects from Cohort 1. Table 2 describes characteristics of the five youth cohorts at the baseline interview.

Table 2
Characteristics of Five American Indian Youth Cohorts

	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Cohort 5
N	224	66	78	76	79
Year of Baseline Assessment	1988 –89	1988 –89	1992 –93	1989 –90	1990 –91
Assessment Interval	1 year	1 year	1 year	3 years	3 years
Mean Age at Baseline	11.67	11.69	16.49	15.51	12.04
Gender (%)					
Male	49.6	45.5	46.2	48.7	53.2
Female	50.4	54.5	53.8	51.3	46.8
Indian Blood Quantum (%)					
1/2–4/4	31.4	22.7	26.0	35.5	35.4
1/4–1/2	27.8	36.4	20.8	25.0	27.8
< 1/4	36.3	34.8	37.7	32.9	22.8
Unknown[1]	4.5	6.1	15.5	6.6	14.0
Indian Lineage (%)					
Biological Mother is Indian	73.2	80.3	76.9	69.7	79.7
Biological Father is Indian	71.4	57.6	67.9	69.7	62.0
Both Parents are Indian	45.1	37.9	44.9	39.5	41.8
Tribal Enrollment[2] (%)					
Youth	33.6	31.8	36.4	35.5	44.3
Indian Mothers	57.9	71.7	55.9	66.0	58.7
Indian Fathers	53.8	57.9	40.0	45.3	55.1
Identification with Indian ethnicity[3] (%)					
All or nearly all Indian	27.0	19.7	31.2	35.4	20.8
Mostly Indian	31.8	40.9	29.9	23.1	33.3
A little Indian	37.0	31.8	32.5	35.4	38.9
Not at all Indian	4.3	7.6	6.5	6.2	6.9

Table 2 (Continued)
Characteristics of Five American Indian Youth Cohorts

	Cohort 1	Cohort 2	Cohort 3	Cohort 4	Cohort 5
Family Structure (%)					
Both Biological Parents	32.6	34.8	25.6	27.6	32.9
Mother & Step-Father	13.4	18.2	6.4	19.7	6.3
Father & Step-Mother	1.8	1.5	0.0	3.9	1.3
Mother Only	33.9	34.8	50.0	34.2	39.2
Father Only	5.8	4.5	5.1	6.6	6.3
Median Household Income	$20,000	$13,000	$18,000	$28,000	$23,000
(Range)	(3,600–72,000)	(9,000–61,000)	(5,300–66,000)	(1,800–80,000)	(6,000–100,000)
Per Capita Income Below Poverty Line (%)	29.0	48.5	32.1	17.6	22.8
Income Subsidized By: (%)					
Tribal Per Capita Payments	10.7	3.1	6.4	5.3	17.7
Alaska Native Claims Settlements	9.8	21.5	9.0	11.8	8.9
Welfare/Food Stamps	30.8	36.9	41.0	18.4	24.1
Relationship of Primary Caretaker to Youth (%)					
Biological Mother	76.3	84.8	80.8	72.4	77.2
Biological Father	9.4	9.1	9.0	13.2	11.4
Other Biological Relative	8.8	1.5	6.4	3.9	5.2
Non-biological Relative	5.4	4.5	3.9	10.5	6.4

[1]Subjects who were adopted or placed in foster care homes may not know the specific details about their genealogy.

[2]Tribal enrollment is a census variable. Requirements vary across tribal governments and frequently require birth or residence within the tribe's geographic boundaries. Many of these urban residents may not meet geographic criteria for enrollment.

[3]Measured at T5 for Cohorts 1–4 and T6 for Cohort 6.

The combined youth samples are characterized by a rich tribal heterogeneity, representing over 50 tribes from nine culture areas. The five tribes with highest representation are Tlingit (11.4%), Cherokee (10.2%), Blackfeet (7.3%), Ojibwa (6.8%) and Sioux (6.5%). Approximately one-third of the youth are enrolled members of their tribe. The youth's Indian blood quantum was calculated from the primary caretaker's report of the youth's parents' and grandparents' blood quantum. When blood quantum was unknown for any parent or grandparent, the youth's minimum blood quantum was calculated from known data. Approximately 30% of the youth had a minimum blood quantum between 4/4 and 1/2,

27% between 1/2 and 1/4, and 34% less than 1/4. Nine percent of the caretakers did not know the youth's genealogy. Two-thirds or more of each cohort were born in an urban area, and over 80% had lived most of their lives in Seattle. Fewer than 15% had ever lived on a reservation or in a predominantly Indian community. At T5, the majority of youth described their ethnic identity as either "mostly" Indian (31%) or "all or nearly all" Indian (28%), and the remainder described themselves as "a little" Indian (35%) or "not at all" Indian (6%). Though 45% did not identify at all as Caucasian, 22% described themselves as "a little" Caucasian, 24% as "mostly" Caucasian, and 10% as "all or nearly all" Caucasian.

The majority of Indian parents are affiliated with tribes from areas other than the Pacific Northwest Coast; 14 (4%) belong to one of the 13 small Puget Sound tribes. Consistent with other major urban areas, this tribal heterogeneity suggests a complex history of migration to the Northwest from across the country. Approximately half of the Indian parents had lived on a reservation or in a predominantly Indian community. One-fourth of the Indian mothers and fathers were born in Seattle, and 33% of the mothers and 21% of the fathers were brought to the area by their parents. Sixty-three percent of the Indian mothers and 55% of the Indian fathers were enrolled in their tribe.

Characteristics of the Indian Women Cohort

A total of 276 Indian women have participated as the youths' primary caretakers over the course of this study. These women are predominantly the biological mothers of the youth, although some are aunts, grandmothers, or unrelated Indian caretakers. This cohort includes 149 biological mothers paired with daughters, and 127 biological mothers paired with sons. Table 3 presents characteristics of the Indian women cohort.

Instrumentation

Assessment Procedures

Several global features of the assessment and data collection activities embodied in this research deserve brief mention. Because recent research (Glantz & Pickens, 1992) has amply demonstrated the multifactorial nature of alcohol and drug dependence liability, we evaluate youth and parents at multiple assessment points across a diversity of risk factor domains. Our goal is to follow youth and their families for a total of 15 years, to obtain data on three generations of American Indians. The instruments we employ demonstrate acceptable psychometric properties when applied to the general population, though many have not previously been analyzed with American Indian samples. In addition, instruments utilized in this research were evaluated for reading level and age appropriateness for

Table 3
Characteristics of 276 American Indian Women

Mean Age	42.3
Mean Years of Education	12.6
Indian Blood Quantum (%)	
1/2–4/4	54.8
1/4–1/2	24.7
< 1/4	13.6
Unknown	6.8
Tribal Enrollment (%)	62.2
Tribal Affiliation	
Local Tribes (%)	5.0
Number of Tribes Represented	49
Identification with Indian ethnicity (%)	
All or nearly all Indian	49.6
Mostly Indian	27.1
A little Indian	17.8
Not at all Indian	5.5
Median Household Income	21,600
(Range)	(2,600–200,000)
Per Capita Income Below Poverty Line (%)	32.2
Income Subsidized By: (%)	
Tribal Per Capita Payments	11.4
Alaska Native Claims Settlements	14.8
Welfare/Food Stamps	37.1
Relationship of Caretaker to Youth (%)	
Biological Mother	89.2
Biological Female Relative	9.1
Non-biological Indian Female	1.8

the target cohort (i.e., fifth graders were not given instruments with higher reading levels; youth were not asked about sexual behavior prior to age 15 or ninth grade.) At the conclusion of the baseline interviews, all adult and youth scaled instruments were evaluated for internal consistency reliability using Cronbach's alpha (Nunnally, 1978). Reliability coefficients of those scales selected for continued inclusion ranged from .70 to .96. Attention to more detailed psychometric issues (i.e., continuity and predictive validity) will be presented elsewhere (e.g., Walker, P.S., 1993). Adolescents and caretakers are assessed simultaneously in separate rooms during interviews averaging two and one-half hours. Two-thirds of test administrators

in T1–T5 were American Indian, and 65% of all T1–T5 interviews were conducted by American Indian interviewers. All assessments are intended to be face-to-face. However, each year several subjects move away and it is necessary to conduct their interviews by telephone. Telephone interviews of adolescent subjects generally yield findings similar to structured interviews in substance abuse and mental health studies (Reich & Earls, 1990).

Assessment Instruments

We selected instruments that measure variables in three broad classes; substance use and abuse, adverse consequences of use, and risk factors for adolescent substance use. Table 4 lists the measurement domains, respondents, instruments, and measures obtained. Each instrument is described below.

Assessment of Substance Use and Adverse Consequences

Substance Use and Abuse

Patterns of adolescent alcohol and drug use are assessed with our own *Adolescent Alcohol and Drug Use Questionnaire* (AQ). Items assessed include quantity and frequency of alcohol and other substance use; age of onset and recency of use; reasons for drinking; perceptions of sibling and parental alcohol and drug use; frequency of alcohol-related problems; access to alcoholic beverages; and perceptions of family and friends' attitudes about, and actual, drinking behavior. Intentions to drink over the next year and over the life span are assessed, as are the adolescent's assessment of the risks attendant to drinking. Analogous measures are administered for marijuana, tobacco, and other drug use. Caretakers also respond to a number of items assessing the youth's alcohol and drug use.

The *Rutgers Alcohol Problem Index* (RAPI) is a 23-item scale that provides an assessment of adolescent problem drinking and the frequency of adverse alcohol-related outcomes during the three years prior to the interview (White & Labouvie, 1989). We modified the time frame to assess frequency of alcohol-related problems over the previous year.

The diagnoses of alcohol and other substance abuse/dependence are based on the Adolescent Version of the *Children's Semi-Structured Assessment for the Genetics of Alcoholism* (C-SSAGA-A). This interview protocol, appropriate for individuals between 13 and 17 years of age, is based on the Diagnostic Interview for Children and Adolescents and allows the determination of DSM-III-R diagnoses (Child Assessment Committee of COGA, 1992). The instrument is currently used in the NIAAA-funded multisite Collaborative Study on the Genetics of Alcoholism

Table 4
Assessment Battery: Measurement Domain, Respondent, Instrument, and Measures

Measurement Domain	Respondent/Instrument	Measures
Substance Use and Abuse		
Alcohol and Drug Use Patterns	(A) Alcohol & Drug Use Questionnaire (AIR)	≥ 5 drinks past 2 weeks
	(P) Adult Biographical Questionnaire (AIR)	Corroboration of adol. report
Alcohol Related Problems	(A) Rutger's Alcohol Problems Inv. (White)	Total Score
Alcohol and Drug Abuse Diagnoses	(A) C-SSAGA-A (COGA)	DSM-III-R diagnosis
Adverse Consequences of Use		
Suicidality	(A) C-SSAGA-A	Any Suicide attempt
Academic Dropout	(S) School Records/Parent & Youth Report	
High Risk Sexual Behavior	(A) Adolescent Biographical Quest. (AIR)	Unsafe sexual practices
Adolescent Risk Factors		
Family History-Alcohol/ Drug Dependence	(P) FHAM (Janca)	1° & 2° relative; DSM-III-R criteria
Parent Alcohol/Drug Dependence	(P) Adult Biographical Questionnaire (AIR)	DSM-III-R criteria
Conduct Disorder	(A) C-SSAGA-A	Conduct disorder
Externalizing behavior	(P) Child Behavior Checklist (Achenbach)	Externalizing T-score
	(A) Youth Self Report (Achenbach)	Externalizing T-score
	(S) Teacher Report Form (Achenbach)	Externalizing T-score
Adolescent Psychopathology	(A) C-SSAGA-A	DSM-III-R diagnosis
Internalizing behavior	(P) Child Behavior Checklist	Internalizing T-score
	Total behavior problems	Total Behaviors T-score
	(A) Youth Self Report	Internalizing T-score
Caretaker Psychological Distress	(P) Brief Symptom Inventory (Derogatis)	General Severity Index
	(P) SSAGA (COGA)	DSM-III-R criteria
Sensation Seeking	(A) Sensation Seeking Scale (Zuckerman)	Total scale score

Table 4 (Continued)
Assessment Battery: Measurement Domain, Respondent, Instrument, and Measures

Measurement Domain	Respondent/Instrument	Measures
Religiosity	(P) Adult Biographical Questionnaire (AIR)	Religious participation
Peer Influences	(A) Alcohol & Drug Use Questionnaire (AIR)	Peer use and problem behavior
Self-Esteem	(A) Self Perception Profile (Harter)	Global Self Worth
Sexual Activity	(A) Alcohol and Drug Use Questionnaire	Precocious sexual activity
Academic Involvement & Performance	(S) School Records	Grades, CAT, attend, discip.
	(A) Self Perception Profile (Harter)	Academic Competence Scale
Family Interaction & Environment	(P) Family Relationship Index (Moos)	Total index score
	(A) Family Relationship Index	Total index score
Neuropsychological Functioning	(A) Digit Symbol (Coding B) Test	Level of performance
	(A) Trail Making Test (A & B)	Level of performance
Alcohol Related Expectancies	(A) Alcohol Expectancy Questionnaire (AIR)	Total score
Onset of Alcohol and Drug Use	(A) Alcohol and Drug Use Questionnaire	Age of first regular use
Poverty	(P) Adult Biographical Questionnaire	Per capita income; poverty level
Cultural Identity	(A) Ethnic Self Identity (Oetting/ Beauvais)	Scale score
	(P) Ethnic Self Identity	Scale score
	(P) Traditional Indian Activities (AIR)	Scale score
	(A) Traditional Indian Activities (AIR)	Scale score
Assessment of Women's Behavior		
Alcohol & Drug Abuse/ Dependence DX	(P) SSAGA	DSM-III-R diagnosis
Alcohol Related Problems	(P) AUDIT (World Health Organization)	Total score
Psychiatric Distress	(P) Brief Symptom Inventory	General Severity Index
	(P) SSAGA	DSM-III-R diagnosis

Respondent Key: (P) Parent; (A) Adolescent; (S) School Records

(Bucholz, Cadoret, Cloninger, Dinwiddie, Hesselbrock, Nurnberger, Reich, Schmidt, & Schuckit, 1994).

Suicidality

Suicidality is assessed by a subcomponent of the Major Affective Disorders section of the C-SSAGA-A. Questions assess whether the adolescent feels so bad that he/she wished they were dead, preoccupation with death and dying, plans to kill oneself, and actual suicide attempts.

Academic Dropout

School records, self-report, and caretaker-report are used to determine whether the adolescent has dropped out of school.

High-Risk Sexual Behavior

Adolescents' involvement in high-risk sexual activities are assessed using eleven items developed by the Centers for Disease Control and Prevention to measure adolescent sexual behavior (Morris, Warren, & Aral, 1993). The self-administered *Youth Sexual Behavior Questionnaire* items include awareness of AIDS/HIV, age at first sexual intercourse, number of sexual partners, whether the most recent sexual encounter involved alcohol or drugs, and whether a condom was used.

Assessment of Adolescent Risk Factors

Family History of Alcoholism

The *Family History Assessment Module* (FHAM; Janca, Bucholz, & Janca, 1991) is used to assess family history of substance abuse and psychopathology. This structured interview utilizes standard diagnostic criteria to produce DSM-III-R diagnoses of alcoholism, drug abuse/dependence, depression, mania, schizophrenia, and antisocial personality. The caretaker is interviewed regarding the adolescent's first and second degree biological relatives.

Childhood Conduct Disorders

The Cross-Informant Externalizing Behavior Scales of the *Child Behavior Checklist* (completed by adult caretakers) (CBCL: Achenbach, 1991a), the *Youth Self-Report* (YSR, Achenbach, 1991b), and the *Teachers Report Form* (TRF; Achenbach, 1991c) provide a continuous measure of the youth's overt behavior from three sources. The Externalization scale includes measures of delinquent and aggressive behavior. Behavioral disorders in adolescents are assessed using C-SSAGA-A modules that provide formal diagnoses for Oppositional Disorder, Conduct Disorder, and Attention Deficit/Hyperactivity Disorder.

Adolescent Psychopathology

The psychiatric status of adolescents is assessed both continuously and categorically. The Cross-Informant Internalizing Behavior Scales of the CBCL, the YSR, and the TRF provide measures of social withdrawal, somatic complaints, and anxiety/depression. The C-SSAGA-A is used to diagnose attention deficit/hyperactivity disorder, oppositional disorder, conduct disorder, major affective disorder, anxiety disorder, and suicidal ideation.

Caretaker Psychological Distress

The *Brief Symptom Inventory* (BSI), a 53-item version of the Symptom Checklist–90 (Derogatis, 1977) provides a measure of acute psychological distress. Recent evidence suggests that the instrument is best viewed as measuring the degree, rather then the precise nature, of psychopathology (Boulet & Boss, 1991). The *Semi-Structured Assessment for the Genetics of Alcoholism* (SSAGA Bucholz et al., 1994) provides a diagnostic assessment of the adult caretaker. This semi-structured interview is designed to assess current and lifetime physical, psychological, and social manifestations of alcoholism and related disorders. In addition to alcohol and drug use disorders, diagnoses of primary interest include depression, dysthymia, panic disorder, and antisocial personality. The SSAGA allows an assessment of the comorbidity of alcohol dependence and other psychiatric disorders.

Sensation Seeking Orientation

Form V of the *Sensation Seeking Scale* (Zuckerman, 1979) is used to assess sensation seeking orientation in the youth. This 40-item scale was used with individuals 12 years old (Pandina, Johnson, & Labouvie, 1992), and found predictive of alcohol and drug use in adolescents (Bates, Labouvie, & White, 1986).

Religiosity

Religious affiliations of adolescents and their family members, and attendance at religious activities, is assessed with four items from the *Adult Biographical Questionnaire*.

Peer Influences

The *Adolescent Alcohol and Drug Use Questionnaire* (AQ) includes an assessment of peer and parental influences on substance use. Peer attitudes toward, and frequency of, alcohol, marijuana, tobacco, and other drug use is assessed. Peer influences, amount of time spent with friends, parental approval of friends, and friends' antisocial conduct are also assessed.

Low Self-Esteem

The 45-item *Self-Perception Profile for Adolescents* (SPA)(Harter, 1988) provides an assessment of adolescents' perceptions of global and situation-specific self-worth.

Precocious Sexual Activity

Two items from the *Youth Sexual Behavior Questionnaire* ask if the youth has ever had sexual intercourse and, if relevant, age at first intercourse.

Academic Involvement and Performance

We follow youth, regardless of their school attendance, for the duration of the study. Where available, grade point average, school attendance, disciplinary action, and standardized scores on school-administered tests are recorded from school archives.

A construct related to academic performance, attention deficit/hyperactivity disorder, is assessed by the adolescent's caretaker on the Attention Problems scale of the *Child Behavior Checklist* (Achenbach, 1991a). Adolescents and teachers complete parallel forms of the attention problems scale on the *Youth Self-Report* (Achenbach, 1991b) and the *Teacher's Report Form* (Achenbach, 1991c), companion scales to the CBCL. Grade failures are reported annually by both parents and youth.

Dysfunctional Family Interaction Patterns and Environment

The nature of, and changes in, family structure and household configuration are evaluated annually. Specific items assess size of household; nature of each household member's relationship to the adolescent; changes, if any, in the youth's primary caretaker; residential changes; number of new full, half, and step/adopted brothers and sisters; legal proceedings involving the adolescent (e.g., adoption, foster care); divorce, remarriage, and death of family members.

Family relationships are evaluated with the *Moos-Family Relationship Index* (Moos & Moos, 1986), a 27-item measure completed independently by the adolescent and caretaker. The scale assesses family cohesion, expressiveness, and conflict. Additional information concerning family functioning is derived from C-SSAGA-A modules that assess the nature and extent of parental time spent with the adolescent, discipline, adults as role models, and family rules.

Neuropsychological Function

Brief screening for neuropsychological function includes the *Trail-Making Test* (Lezak, 1983) and the *Digit Symbol Test* (Wechsler, 1974). Both tests assess visual scanning, psychomotor efficiency, perceptual speed, cognitive flexibility, and ability to shift perceptual set.

Alcohol-Related Expectancies

Adolescent alcohol-related expectancies are assessed using a 14-item scale embedded in the AQ. Ten items, drawn from several adolescent alcohol expectancy questionnaires (e.g., Brown et al., 1987), reflect positive expectancies (e.g., drinking makes people worry less), and four items reflect negative expectancies (e.g., drinking makes it harder to get along with friends).

Early Use of Alcohol and Drugs

Age of onset of alcohol and other drug use and regular use is recorded for each substance as part of both the C-SSAGA-A and the AQ.

Poverty

The ABQ assesses demographic variables related to family income and poverty status. These include: use of Indian-specific and other social services; parental employment, educational and occupational attainment; per capita income; source of income for the last year; any support from welfare; and number of months worked out of the previous twenty-four months.

Cultural Identification and Participation

Two scales provide an assessment of cultural identification and the extent to which subjects participate in cultural activities. The first scale, developed by Oetting & Beauvais (1990–91), consists of seven items that ask which of five ethnic groups (Black, Spanish or Mexican-American, American Indian/Alaska Native, Caucasian or White-American, and Asian) best describes the adolescent's self-reported cultural identity. We modified this questionnaire to include Pacific Islander for our population and geographic area. The second scale, developed by our research group, asks the individual to indicate which of 16 traditional Indian customs and activities they have engaged in over a specified time frame.

Mediator/Moderator Variables

Analyses will be conducted to determine the influence of a number of variables on the relationship between family history and adolescent drinking behavior.

Family History Variables

Three family history variables will be examined. The first is the presence of a positive history of alcohol abuse/dependence among the adolescents' first degree relatives. The second is a family history of psychopathology other than substance abuse. Each of these will be derived from the FHAM. The third variable is whether one or both of the adolescents' biological parents are Indian.

Mediating/Moderating Variables

Three variables will be examined. The first is the presence of a C-SSAGA-A diagnosis of conduct disorder in the adolescent. The second variable is level of caretaker psychological distress defined in terms of either the global BSI distress index or the presence of SSAGA-based DSM-III-R diagnoses. The third variable reflects the influence of the adolescents' cultural identity derived from the *Youth Biographical Questionnaire.*

Assessment of Indian Women's Drinking

In addition to providing information about the behavior of the adolescents for whom they are caretakers, Indian women in this study are assessed across a range of sociodemographic and psychiatric domains.

Drinking-Related Measures

Lifetime and current alcohol and drug use disorders are based on the SSAGA. The SSAGA also assesses alcohol-related variables such as frequency of heavy drinking days and self-reported intoxication, presence of alcohol-related problems, and presence of alcohol dependence symptoms.

The utility of a brief screening measure, the *Alcohol Use Disorders Identification Test* (AUDIT; Claussen & Aasland, 1993) will be evaluated. The 10-item AUDIT measures three components of alcohol use: (a) pattern of alcohol consumption, (b) alcohol-related problems, and (c) alcohol dependence. Information from the SSAGA and AUDIT will help define the natural course of the women's drinking across the study period. Annual assessments allow a determination of the onset, persistence, and/or remission of problem drinking.

Comorbid Conditions

Level of acute psychological distress for the women is assessed annually using the BSI. The diagnosis of other psychiatric conditions is based on the SSAGA. The primary areas of interest from the SSAGA include alcohol dependence, drug dependence, depression (including suicidality), dysthymia, panic, and antisocial personality disorder. The temporal order of onset of psychiatric disorders, including alcohol and drug disorders, is assessed using the SSAGA.

Results

The following is a brief introduction to the depth and breadth of substance use data collected during the first five years of study. Data are reported annually for the 290 youth comprising Cohort 1 (N=224) and Cohort 2 (N=66). Cohort 1 was recruited from two school districts, and Cohort 2 was recruited from the membership of a community Indian

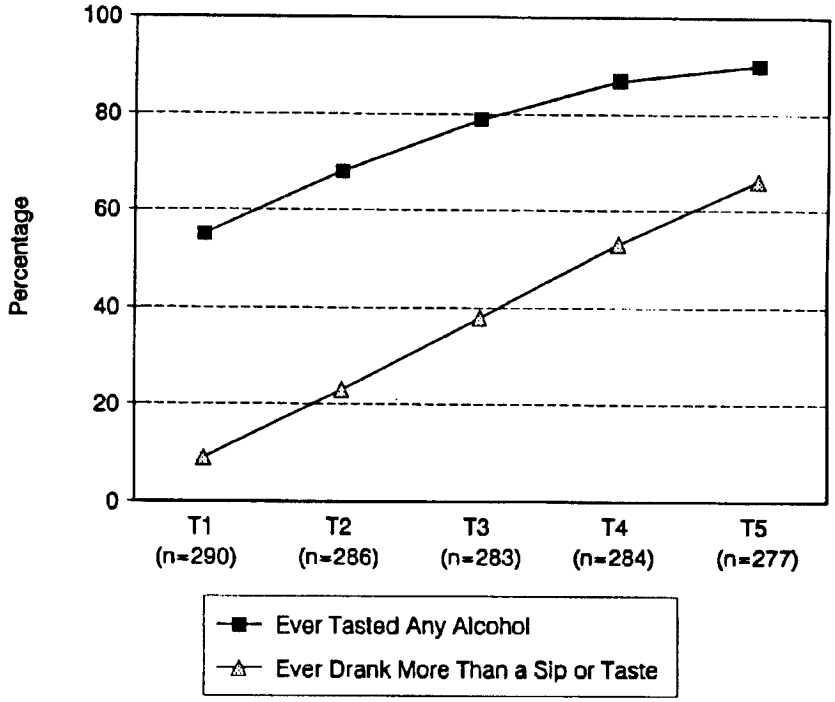

Figure 1
Definitions of Drinking: "Any" vs. "More Than a Sip or a Taste."

Health Board. Both cohorts were enrolled in the fifth or sixth grade at the baseline interview (T1). In addition, these youths' families are examined for the presence of a history of alcohol dependence, drug dependence, or mental health treatment.

Definitions of Drinking

Estimated rates of adolescent drinking vary greatly according to one's definition of drinking. The extent of this variation in our sample can be seen in Figure 1, which presents the percentage of youth (N=290) reporting that they had "ever tasted alcohol" and the proportion indicating that they had consumed "more than just a sip or taste" in their lifetime, across the T1–T5 assessments. While 54% had tasted alcohol by the sixth grade, only 9% had ever consumed more than a sip or taste, and less than 7% had done so in the year preceding their T1 interview. The difference between these two measures of drinking diminishes each year, and if drinking continues in a linear relation with age these measures will come close to converging by the time these youth are in the twelfth grade.

Labeling youth who have only tasted alcohol as "drinkers" makes provocative headlines, but exaggerates the true prevalence of drinking. We define as "drinkers" only those youth who have had more than a sip or taste of alcohol during any specified interval.

Substance Use at Baseline Interview

Table 5 compares lifetime substance use prevalence rates of the two cohorts at the baseline and 48-month follow-up interviews. Differences between Cohort 1 and Cohort 2 in substance use prevalence were tested using contingency table analyses. While cell sizes were too small in some cases to allow meaningful *chi-square* comparisons, there were no statistically significant differences between the two cohorts on any of the substances assessed at T1 and T5.

Our attempt to recruit a sample of youth who had not initiated substance use was largely successful. AT T1, 9% had consumed more than a sip or taste of alcohol at least once; 3.4% reported they had been drunk (i.e., "drank enough so that it was hard to walk, talk, remember or decide what to do"); 21% has used tobacco, either cigarettes (16.2%) or smokeless tobacco (9.3%); 5.5% had used marijuana; and 2.1% had inhaled something to get high. A detailed examination of the 26 youth who reported drinking alcohol reveals that five drank only one time in their life, six drank alcohol twice, eight drank 3–5 times, and seven reported more that five drinking experiences. Five youth reported drinking any alcohol in the 30 days preceding their T1 interview, and two youth reported becoming drunk during that period. While 49 youth reported lifetime tobacco use, only 11 had smoked cigarettes in the 30 days preceding their T1 interview; five reported chewing tobacco during that period. Of the 16 youth who had ever tried marijuana at T1, 13 had tried it in the previous year, and five had tried it in the previous 30 days. Except for these few youth who reported alcohol, tobacco, and marijuana use, baseline information was collected on this sample prior to their initiation into substance use behavior.

At T1 we asked youth specifically about alcohol, tobacco, and marijuana use, but not about any other drug use. We chose not to present a "shopping list" of drugs to these children until they were older, and did not introduce a full list of drugs until the T4 interview (mean age = 14.7 years). Instead, we operated on the premise that those who had used a drug would be able to tell us, at least in broad categories, what they had used. At T1 we asked if the youth had ever taken any other drugs, and if they had ever used any other means to get high. Only eight subjects responded positively to these questions, and six of them indicated they had used inhalants (e.g., sniffing glue, gasoline, nail polish, spray paint, or helium) to get high. One youth had taken speed once "by accident when tricked by some cousins," one youth smoked chewing tobacco once and got "dizzy," and one youth who reported drinking alcohol over 100 times also reported using hairspray, helium, glue, cocaine, and LSD to get high.

Table 5
Lifetime Prevalence of Substance Use at Baseline and 48-Month Follow-up in Two Urban American Indian Youth Cohorts

	T1 (Baseline)			T5 (48-Month follow up)		
	Cohort 1 (School District)	Cohort 2 (Health Board)	Combined Cohorts	Cohort 1 (School District)	Cohort 2 (Health Board)	Combined Cohorts
N	224	66	290	211	66	277
Mean age	11.67	11.69	11.67	15.74	15.76	15.75
Alcohol						
Never tasted	46.0	45.5	45.9	10.4	10.6	10.5
Tasted only	44.6	47.0	45.2	20.9	33.3	23.8
Drank more than a sip	9.4	7.6	9.0	68.7	56.1	65.7
Drank to intoxication	4.0	1.5	3.4	42.2	39.4	41.5
Tobacco						
Cigarettes	16.1	16.7	16.2	57.8	53.0	56.7
Smokeless	10.7	4.5	9.3	24.2	15.2	22.0
Either	21.9	18.2	21.0	61.1	53.0	59.2
Marijuana	5.8	4.5	5.5	46.9	45.5	46.6
Inhalants	2.7	0.0	2.1	6.7	4.5	6.2
Other Drugs						
Amphetamines				5.2	10.6	6.5
Cocaine				6.7	3.0	5.8
Codeine or Morphine				3.8	3.0	3.6
Crack Cocaine				2.9	0.0	2.2
Hallucinogens				14.8	10.6	13.8
Heroin				1.9	0.0	1.4
Methadone				0.5	0.0	0.4
PCP, Angel Dust				1.4	1.5	1.4
Quaaludes, Seconal				1.4	0.0	1.1
Steroids				0.5	0.0	0.4
Valium, Librium, Xanax				1.4	1.5	1.4

Substance Use at 48-Month Follow-Up

At T5, subjects were in the ninth and tenth grades, and reported higher lifetime rates of drinking (65.7%), intoxication (41.5%), tobacco use (59.2%), and marijuana use (46.6%). Few youth had tried hallucinogens (13.8%), amphetamines (6.5%), inhalants (6.2%), and cocaine (5.8%), and none reported using peyote.

Changes in Substance Use Over Time

Figures 2–5 chart the lifetime, annual, and 30-day prevalence of alcohol use, intoxication, tobacco use, and marijuana use from T1 through

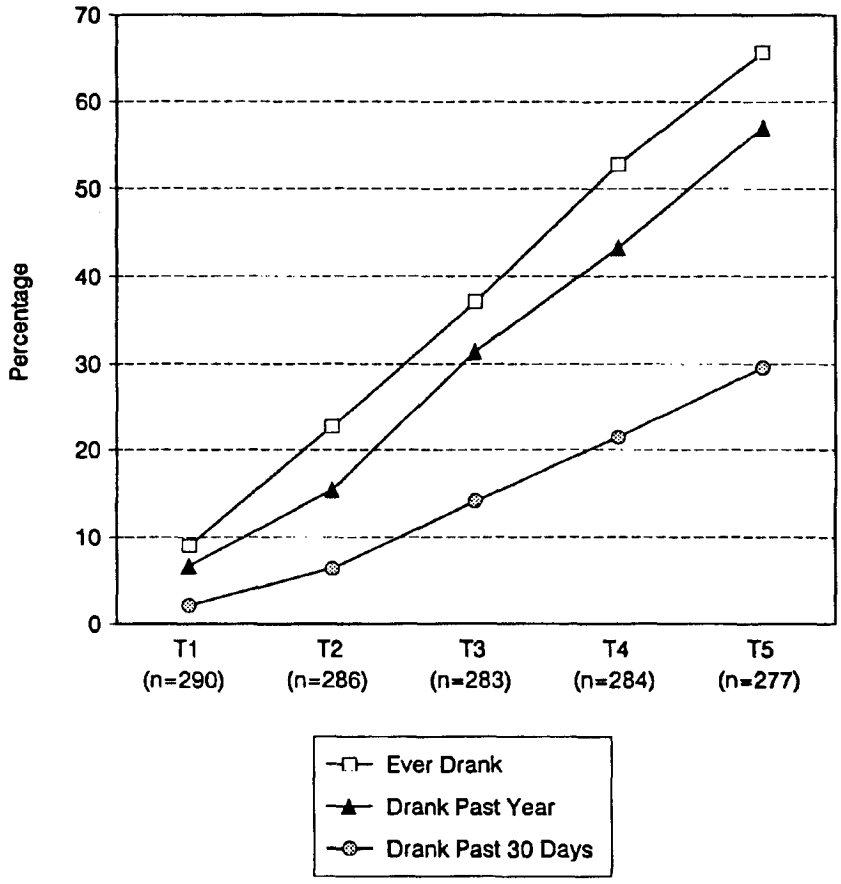

Figure 2
Lifetime, Annual and 30 Day Prevalence of
Drinking Among Urban Indian Youth.

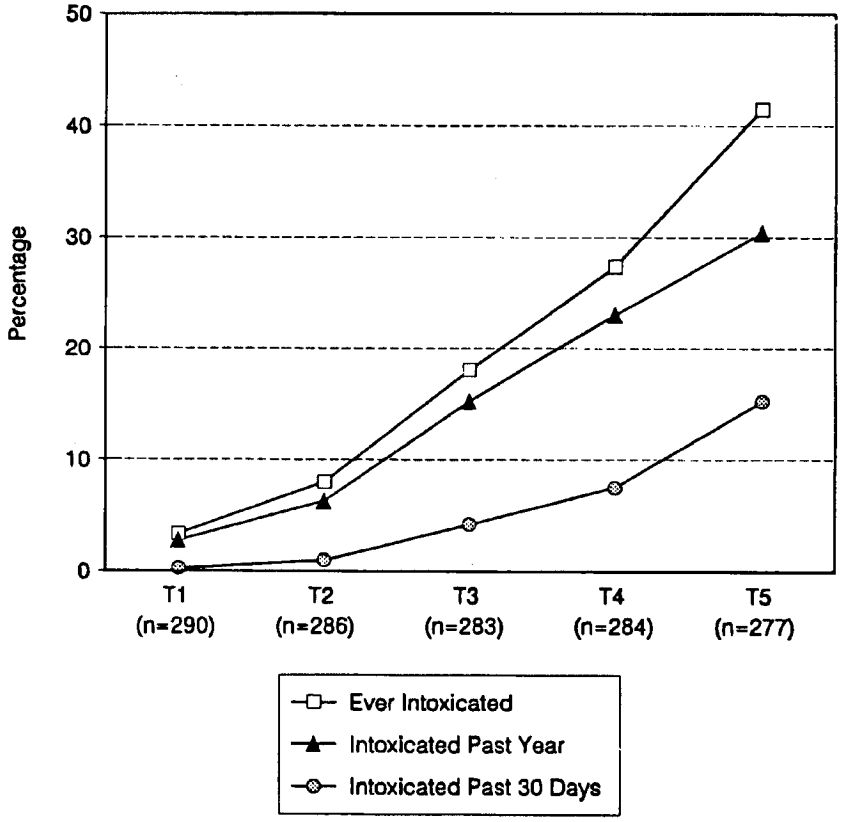

Figure 3
Lifetime, Annual and 30 Day Prevalence of Intoxication
Among Urban Indian Youth.

T5. These charts depict steadily increasing rates of substance use over the first five years of the study. During the 30 days preceding the T5 interview, 30% of the youth reported drinking, 15% had been drunk, 37% had used tobacco, and 18% had used marijuana. Additional analyses will examine patterns of substance use onset and change over time, gender differences in substance use initiation and maintenance, and comparisons between our adolescent sample and other Indian and non-Indian samples.

Parental History of Substance Abuse and Mental Health Treatment

In 1988, 37.9% of adults age 18 and over in the United States reported they had at least one biological family member (degree of relationship not defined) who they classified as a problem drinker or alcoholic

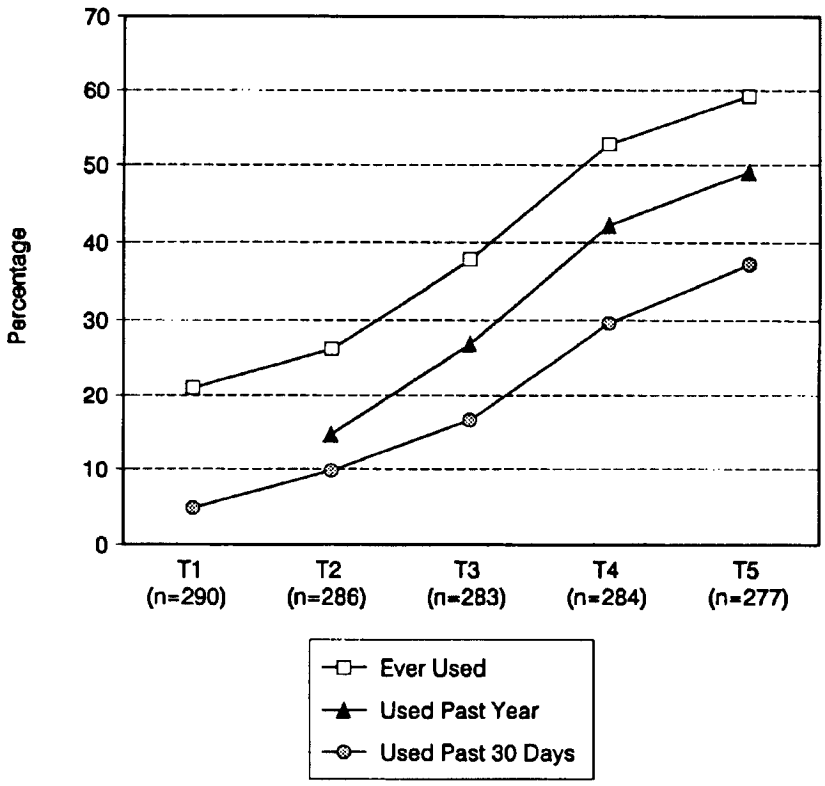

Figure 4
Lifetime, Annual and 30 Day Prevalence of Tobacco Use
Among Urban Indian Youth.

(National Center for Health Statistics, 1991). In the same year, 70% of our American Indian adolescent sample had at least one parent or grandparent meeting our criteria for lifetime alcohol dependence (three or more DSM-III-R symptoms in their lifetime). Table 6 shows the percentage of these youths' biological parents with a lifetime history of alcohol or drug dependence symptoms, and the percentage who had ever been treated for alcohol abuse, drug abuse, depression, or anxiety. Forty-nine percent of the youth had at least one parent with lifetime alcohol dependence symptoms, and 27% had a parent with lifetime drug dependence symptoms. Thirty percent had at least one parent who had received some form of treatment for alcohol abuse, 12% for drug abuse, 26% for depression, and 15% for anxiety. As these youth mature, the association between adolescent substance use, and parental substance abuse, depression, and anxiety, will be evaluated.

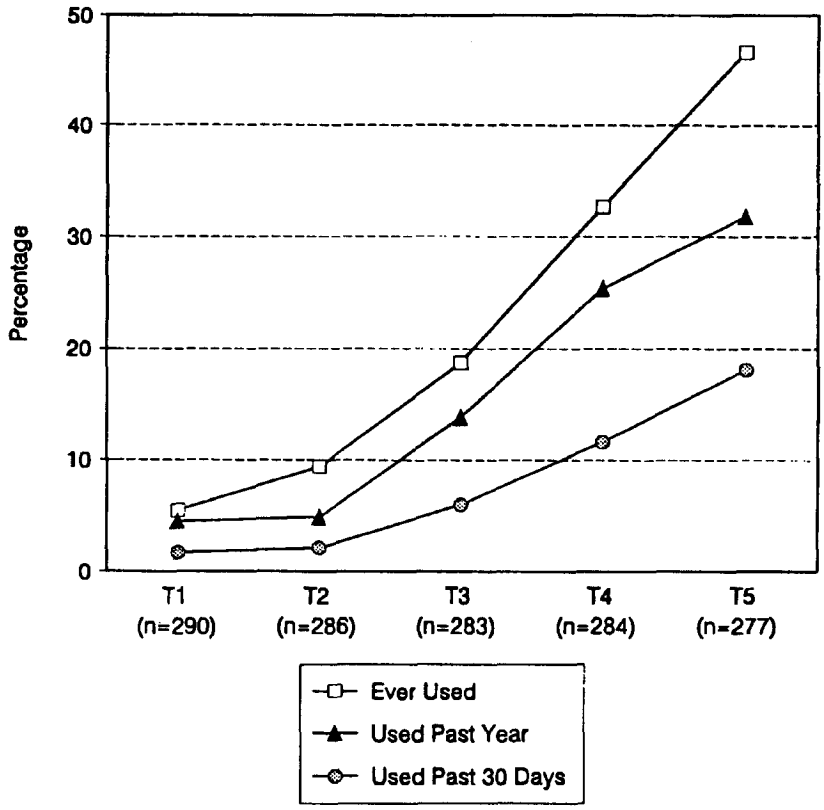

Figure 5
Lifetime, Annual and 30 Day Prevalence of Marijuana Use
Among Urban Indian Youth.

Discussion

Researchers face unique challenges when designing and implementing longitudinal research. Issues related to sample selection, Indian ethnicity, recruitment, informed consent, confidentiality, definitions of alcohol use, and follow-up strategies are discussed below. Alternative approaches to the resolution of these concerns may be equally valid depending on the specific research aims, geographic location, community goals and alliances, and available resources.

Table 6
Parental History of Lifetime Alcohol Dependence, Drug Dependence, and Mental Health Treatment, for 290 Urban American Indian Youth (percent)

Symptom	Father	Mother	Either
At least 3 DSM-III-R symptoms for			
Alcohol dependence	36.6	25.5	48.6
Drug dependence	19.7	12.8	26.6
Alcohol or drug dependence	45.5	30.7	57.6
Inpatient or outpatient treatment for			
Alcohol abuse	20.4	15.2	30.0
Drug abuse	7.3	5.2	11.7
Alcohol or drug abuse	22.4	16.9	33.4
Depression	5.9	23.1	25.5
Anxiety	4.8	12.1	15.2
Any inpatient mental health treatment	16.6	15.5	27.9
Any mental health treatment	30.0	46.6	58.6

Sample Selection

A major challenge confronting research with Indian populations is the identification of a sample of sufficient size and heterogeneity to provide the statistical power necessary to detect true subgroup differences in outcomes and to generalize findings beyond the sample. The 1990 Census (U.S. Department of Commerce, 1992a) identified fewer than two million American Indians, less than 1% of the total population of over 248 million Americans. There are over 500 federally recognized tribes and bands (Bureau of Indian Affairs, 1993) distributed throughout the fifty states, and while over half live in urban areas of 2,500 or more, the remainder live in rural reservation and off-reservation communities. Consequently, even large epidemiological surveys usually fail to obtain sufficient numbers of American Indian respondents to warrant reporting findings for them as a group. Although some tribes, such as the Navajo, are large enough to provide the necessary statistical power, their homogeneity limits generalizing findings beyond their own members.

Meeting the sample selection challenge entails a number of compromises. For example, to address ethnic differences in substance use among high school seniors, the National Senior Survey (Bachman et al., 1991) aggregated annual data collected over five years (1985–1989) and thus obtained a sample of 537 American Indian males and 531 American Indian females. The results indicated that male and female Indian seniors reported the highest rates of alcohol, tobacco, and most illicit drug use of

all ethnic groups studies. The findings of this influential study with a large sample of American Indians may be generalizable only to self-identified Indians reaching twelfth grade and attending school on the day of the survey. It may obscure regional, period, and tribal differences in substance use by Indian youth.

Our decision to study an urban Indian sample stems partly from our location in a metropolitan area with over 21% of the State's total Indian population of 81,483 (U.S. Department of Commerce, 1992b). It is in close proximity to 13 reservations, and historically a destination site under the Indian Relocation Act of 1954. Additionally, while there is little empirical data on substance use and abuse among Indian people in general, most studies have focused on reservation and rural samples, or small samples of clinic populations. Very little has been published describing urban Indians and their substance using behaviors. Thus, our decision was driven by the need for more information pertinent to urban Indians, and the ready availability of the sample.

Indian Ethnicity

Perhaps our greatest challenges in sample selection were establishing criteria for eligibility to participate in the study, and identifying a population of Indian youth large enough to produce sufficient recruits to meet statistical requirements. It was important that the criteria define a target group of American Indians in a manner that could be replicated. Few researchers describe the criteria they use to establish the ethnicity of their subjects. This lack of specificity contributes to the societal tendency to lump all Indian peoples together, and thus to minimize group differences and over-generalize results. The question, "Who is Indian?" is emotionally and politically charged. How this question is answered can have a major impact on the research process. This is no less true of research with reservation samples than with urban samples. While the question of ethnicity may appear moot with research conducted among members of a specific tribe, students in an Indian-only school, or patients in an IHS facility, eligibility for tribal enrollment or IHS services may exclude many Indian people. Using blood quantum or tribal enrollment exclusively may limit the sample size and exclude an unknown number of potential subjects. This may be even more true in an urban setting than a reservation setting. Many of our youth might not be able to prove blood quantum for Certificates of Degree of Indian Blood (CDIB), and only one-third are enrolled members of their tribe. In addition, urban Indians may have access to a greater variety of educational, social service, and health care options, and some may not utilize Indian specific resources even when they are available.

Relying solely on self-report of ethnicity, a common procedure in survey research, may also misrepresent the Indian population from which a sample is drawn. Not all people of Indian ancestry self-identify as

Indian, and some people with no Indian ancestry may say that they are Indian. This lesson was reinforced when we attempted to identify our Indian sample from school district student enrollment lists. In the two school districts we selected, parents are asked the ethnicity of their child when they enroll for school. All parents who indicate that their child is American Indian or Alaska Native are also asked to complete the Indian *Student Eligibility Certification* form, which requests additional information about family tribal background, membership status, and the address of the tribal headquarters. This form provides the documentation the school district needs to receive funds under the *Indian Education Act of 1988.* In 1988, a representative of one school district, responsible for verifying information on this form, estimated that each year 200 parents identify a child as Indian when the child has no Indian ancestry. One explanation was related to the school district's policy of busing children to schools outside of their neighborhoods in order to achieve racial integration across all schools. As there are relatively few Indian children in most neighborhoods, they are more likely to be assigned to a nearby school, which is often preferred by the parent and child. Alternately, in neighborhoods with a high proportion of ethnic minority families, Indian parents may identify their children as Caucasian for the same reason. There are other reasons why Indian parents may chose to identify their children as non-Indian. They may feel it protects their children from racial prejudice or stereotyping, or that it protects the family from being identified as potential subjects in yet another research study of American Indians.

Thus, while it may be possible for the school districts to verify the ancestry of self-identified Indian students, this process will not identify all Indian students in the district. It misses those who do not chose to be identified as Indian, and it misses youth who have dropped out of school or do not go to school for some other reason.

Recruitment Issues

We recruited subjects from school districts and from a local Indian health board. Both sources reviewed and approved the research plan and human subjects research assurances, and assisted us by providing enrollment lists. Recruiting from the school districts had several methodological advantages over the health board. First, since we were specifically looking for fifth- and sixth-grade Indian students, the school districts provided us with lists that included only that group. The health board could not identify members by grade level, and used date-of-birth and tribal background to identify Indian youth 9–12 years old in July, 1988. Secondly, the school district lists were current, while the health board list was drawn from all members who had received services in the previous three years. This list included many youth who were not in the fifth or sixth grade, lived outside the metropolitan catchment area, or who moved from

the area since their last clinic appointment. The population from which the health board sample was drawn was therefore much harder to define than the school district population, and recruitment from the health board was more costly in terms of time and effort required to trace people who had moved. Upon completion of the recruitment phase, we were unable to locate only 8% of those on the school district list, but could not locate 38% of the health board list, despite considerable effort. If we assume that all those who we could not locate from each list had indeed moved out of the area, response rates were comparable at 72% for the school districts and 73% for the health board. If this assumption is not made, the response rates were 65% and 45%, respectively. For us, the school districts provided a larger, more narrowly defined population that was less costly to recruit compared to the health board. In addition, subjects recruited from the health board list attended schools in many other school districts, increasing the effort required to obtain teacher and school district data for these subjects.

Informed Consent and Confidentiality

Unless specifically exempted, all federally funded research involving human subjects requires certain assurances for the protection of those subjects from harm as a result of their participation in the research. Proposals must provide detailed descriptions of the population to be studied, recruitment process, potential risks and benefits, the nature of the information that will be provided to prospective participants about the purpose of the research, and how consent will be obtained. There may be physical, psychological, social, legal, or other types of risk to the subject. When risk is more than minimal, informed, signed consent is required.

In the past, proposals for federally funded research that could not link individual participants to their responses were exempt from these federal regulations on informed consent. There is currently an effort in Congress to tighten regulations governing federally funded research with minors. The Family Privacy Protection Act of 1995 (H.R. 1271) passed the House of Representatives and was forwarded to the Senate on April 5, 1995. If passed by the Senate, it will require prior written consent from a parent or guardian before a minor can be asked questions related to the following: parental political affiliations or beliefs; mental or psychological problems; sexual behavior or attitudes; illegal, antisocial, or self-incriminating behavior; appraisals of other individuals with whom the minor has a familial relationship; relationships that are legally recognized as privileged; and religious affiliations or beliefs. Although states may have existing statutes requiring parental permission to ask minors certain types of questions, the proposed federal legislation covers a much broader range of issues. If passed, this law could substantially increase the costs and reduce the validity of certain types of research, particularly national

school-based surveys of adolescent substance use, sexual activity, gang involvement, and other risky behaviors.

Our policy has been to inform participants completely about the purpose of the research and the types of questions we ask each year, and to obtain signed consent from both the youth and parent or guardian before they join the project. Each year we obtain signed permission from both to request school records and to send questionnaires to teachers. In this way the participants become partners in the project, and share the long-term goals of the research. Any deviation from complete honesty, when discovered, would quickly spread through the Indian community, and jeopardize completion of the project. We believe our adherence to this policy, and the efforts we took to explain the research and answer participants' questions at the beginning and annually, have been important factors contributing to our consistently high rates of annual follow-up completion.

Risks to participants in this project are minimal. Some questions may cause embarrassment or emotional distress if they remind the participant of unpleasant events in their past. Following each assessment, participants are given a chance to share their opinions or concerns, and to ask questions about the interview. We also encourage them to call us, collect if necessary, if they have questions or concerns about the research that arise after an interview. While our research project does not include a clinical component, all participants are given a current list of local and toll free numbers for a variety of social, health, and mental health resources.

Another potential risk is a breach of participants' privacy, and we go to great lengths to insure that the information they give us remains confidential. Because of the highly personal nature of some of the questions we ask, it is imperative that participants trust our ability to maintain their confidentiality. Each year before beginning an interview, we review with them the steps we take to do so. First, all staff sign an oath of confidentiality as a condition of employment. Second, the research project and staff are covered by a Certificate of Confidentiality from the Public Health Service, which protects research subject data from subpoena by any Federal, State, local, civil, criminal, administrative, legislative, or other entity. Third, participants' names do not appear on any of the questionnaires they complete, or in the computerized data files. Instead, each participant is assigned a four-digit identification number, and the key that associates names with identification numbers is locked in a file cabinet in a different room from where the locked data files are stored. Finally, we remind both youth and adult that we will not share anything they tell us with the other. Without their utmost confidence in the anonymity of their answers and our ability to protect their privacy, it is unlikely that they would continue to participate year after year.

Defining Alcohol Use

An important decision for substance use survey designers is how to measure "use." Some researchers consider any drinking at all, even a sip or taste, as the criterion for alcohol use. Thus, no distinction is made between the infant who is given sips of beer by parents, a young child who is given a taste of beverage alcohol by a parent to satisfy an expressed curiosity, a child who sneaks a sip of a parent's drink when the parent isn't looking, and a youth who obtains alcohol outside the home and consumes it without parental knowledge or consent. Each example represents a different level of volition and intent by the child, and conveys a different meaning in terms of alcohol use.

One can argue that there is a fundamental difference between individuals who have never tasted alcohol, and those who have, regardless of how little they have consumed. If an important difference exists between these two groups, we have not seen it documented in the literature. However, our decision to identify three groups — those who have never tasted alcohol, those who have had only a sip or taste, and those who have had more than a sip or taste — will allow us to address this issue empirically. While we defined "drinkers" at T1 as those who had consumed more than a sip or taste of alcohol during a specified time frame, we might just as reasonably have called those youth "initiates," and restricted the term "drinker" for youth who had crossed some threshold of drinking, such as ten drinks over their lifetime, or five drinks in the past year. For example, some epidemiological studies define adult drinkers as those who have had more than 100 drinks in their lifetime. However, applying the same definitions of drinking to adults and youth, or even males and females, may mask true differences between groups and produce misleading conclusions. A good example is the current tendency for researchers to define recent heavy drinking as five or more drinks in a row in the previous two weeks, regardless of age or gender. We argue that consuming five drinks in a row carries very different meaning and consequences for a 14-year-old, 85-pound female and a 30-year-old, 185-pound male. Age, gender, weight, and health all influence the effects of alcohol on an individual, yet researchers often ignore these differences. The researcher has to decide what criteria make sense for the population under study and consider the time and resources available. We chose to ask questions about quantity, frequency, and variability using both categorical and continuous measures, to allow the widest flexibility in comparing our results to other studies.

Maintaining Follow-Up — Strategies for Success

A critical determinant of successful completion of a longitudinal study is the ability to maintain contact with subjects and obtain complete data at each assessment. The procedures we employ were developed in

an earlier study with clinic samples of adult Indian alcoholics, and are continually refined to meet changing conditions within our community sample. The effectiveness of these procedures is demonstrated by the annual follow-up rate of 94% or greater. While a thorough delineation of our follow-up strategies is beyond the scope of this discussion, several observations may be worthwhile here.

In our experience, relocating participants every year is reasonably straightforward, even for highly mobile families, unless they are actively "in hiding." When we obtained participants' informed consent at the beginning of the study, we asked their permission to contact tribal, health, and social service agencies for assistance in locating them in future years. In addition, each year we ask participants for names, addresses, and telephone numbers of relatives and friends who would know how to locate them if they moved. In our experience, participants will cooperate in these requests if they are confident in our assurances of total confidentiality. We also provide postage paid change-of-address cards, and reimburse participants $2.00 for keeping us informed if they move or change telephone numbers. A final strategy we employ is to mail an annual newsletter with "Address Correction Requested" stamped on the envelope. If the participant has moved and left a forwarding address, the Post Office returns the envelope with the new address on it. These are simple and effective strategies, but require constant attention throughout the year.

Minimizing attrition is far more complex than simply relocating participants. What motivates people to continue participating in a study that repeatedly requires them to share their time and personal aspects of their lives with relative strangers? Certainly, paying research subjects for their time and travel expenses is an effective incentive. We pay subjects approximately $10.00 per hour, and reimburse travel an average of $5.00 per interview. We provide "hospitality" in the form of snacks, coffee, and fruit juice, and give nominal gifts to the youth each year, such as school supplies or baseball caps. Our annual newsletter provides another opportunity to thank participants for their support. These are all tangible means of showing our appreciation and respect for their contribution to the research, but we do not believe they are sufficient in themselves. Indeed, when we ask subjects why they continue to participate, they tell us it is because we are kind, caring, respectful, accommodating, non-judgmental, consistent, persistent, patient, and trustworthy. Some say they appreciate seeing familiar faces each year, and that it shows we are committed to them and to the Indian community. How we treat them, what we stand for, and their belief that they are contributing to the Indian community may be more important to their continued involvement than the financial reward.

Providing these intangible incentives to participate requires a dedicated, highly trained staff who are committed to the goals of the research and to the health of the Indian community. Building and maintaining such a

staff requires a substantial investment of time and financial resources. While we occasionally employ hourly interviewers and clerical staff, we chose from the beginning to hire permanent staff who share the vision of the research and are committed to staying with the project for long periods of time. Such individuals are not easy to locate, and once hired and trained require their own incentives to maintain interest and enthusiasm.

Methods employed to maintain high levels of follow-up may affect results in unpredictable ways. Each year we spend one-to-three hours in face-to-face contact with a parent and youth, asking detailed questions about behavior and events in their lives during the preceding year. We get to know participants well, and they share much that is personal and private with us. Some participants may find this process therapeutic. Perhaps they have no one else in their lives who listens to them without judging them. To what extent does the relationship that develops between research subject and research program affect the subject's actual and reported behavior? How does participation affect the relationship between the youth and parent? When does an annual research interview become a brief intervention? How can the researcher control and measure intervention effects?

In addition to questions regarding the effects of research methods on results, there are important legal and ethical issues concerning the relationship between the researcher and the participant in a longitudinal study. Under what conditions might it be ethically appropriate for the researcher to break confidentiality with the subject? If, under the cloak of confidentiality, the participant discloses physical or sexual abuse, the commission of a crime, or strong suicidal or homicidal ideation, what is the researcher's responsibility? Over the course of the study, does the researcher accrue responsibilities or obligations toward the participant beyond those stated in the consent form? Under what circumstances, if any, should the researcher intervene in the life of a participant?

Over the life of this project, we have dealt with these issues on a number of levels. We have consulted the executive in charge of the federal office that issues Certificates of Confidentiality, the State Attorney General, and the University Human Subjects Committee chair and executive officer. The legal and ethical lines between service and research are not crystal clear with regard to reporting laws. Our research project does not provide clinical or educational services but many of our staff belong to professions that are held individually accountable for reporting. However, one message was clear: if we ask, explicitly, about abuse or suicidal ideation and plans, we must be prepared to report or respond. Thus, some questions that were of interest, but not essential to the primary aims of the project, were excluded from our batteries. For example, we do not ask youth whether or not they have ever been abused physically, sexually, or verbally by someone who was drinking. Those whose primary research questions deal with violence might not be able to make the decision we

did without jeopardizing the aims of their project. For us, it was the reverse. We could not ask certain questions and meet mandatory reporting requirements without breaking confidentiality and jeopardizing the life of our project. We chose not to ask.

However, the question of suicidal behavior is germane to the aims of our project. We ask both the youth and parent about suicidal ideation, plans, and attempts, and we developed protocols to deal with affirmative responses. The protocols cover those who report thoughts of harming themselves, those who have made attempts, and those who may be in need of immediate care. Part of the protocol includes steps to get youth or adult participants in need of emergent care into the domain of clinical service. Because we are housed in a medical facility with mental health and psychiatric personnel as backup for emergencies, it was easier for us to develop protocols that maintain subject confidentiality than might be feasible for other projects. Careful design of questionnaires and procedures can minimize, but not eliminate, the need to address these legal and ethical issues.

Summary

The breadth and depth of data collected in this study are unique in their ability to describe a large *community sample* of *urban* American Indian and Alaska Native families. The prospective, longitudinal design allows assessment of biopsychosocial determinants of substance use and other psychiatric disorders in Indian youth and Indian women. By collecting baseline measures prior to drinking initiation, and following youth through the age of highest risk for onset of substance abuse, the study can evaluate the relative importance of a variety of risk factors.

While many researchers extol the virtues of longitudinal studies, few are able to commit the time and resources necessary to accomplish such an effort. We have been fortunate to conduct this research during a time of relatively stable funding and high interest in American Indian health and longitudinal research methods. Our success in following Indian families reflects individual, family, and community support for the research, as well as the commitment and hard work of a talented and dedicated staff. Our experience in following Indian families and in maintaining their continued participation in the project may be helpful to other researchers. We hope this report generates increased discussion and interest in longitudinal investigations of American Indian populations.

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Note

1. Throughout this paper the terms American Indian and Indian are used interchangeably. This is in keeping with a 1978 resolution by the National Congress of American Indians, and indicates those peoples indigenous to North America, including Alaska Natives, Eskimos, and Aleuts. When specific tribal groups are the focus of the content, they are named.