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**MENTAL HEALTH, HEALTH, AND SUBSTANCE ABUSE SERVICE
NEEDS FOR THE NATIVE AMERICAN REHABILITATION
ASSOCIATION NORTHWEST (NARA NW) IN THE PORTLAND,
OREGON METROPOLITAN AREA**

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Abstract: Consistent with results of previous needs assessments for urban American Indian and Alaska Native populations, a needs assessment in the Portland, Oregon metropolitan area for the Native American Rehabilitation Association Northwest revealed high levels of co-occurring conditions for American Indian and Alaska Native clients, often combining chronic health problems, substance abuse histories, and mental health diagnoses. Focus group results suggest the need for crisis care as well as specific needs of children and families, veterans, elders, and adults.

Introduction

Like other urban health programs, the Native American Rehabilitation Association Northwest (NARA NW) in Portland, Oregon provides comprehensive services (health, mental health, substance abuse, and cultural and spiritual support) to the American Indian/Alaska Native (AI/AN) population of the metropolitan Portland area. Clients also come to NARA NW from throughout the Pacific Northwest for residential substance abuse treatment. During the summer of 2003, NARA NW's services were redefined and redeveloped (e.g., the health

clinic was relocated to a new, larger location; outpatient substance abuse treatment was upgraded; and programs for children and youth were added). At this time, agency staff also decided to conduct a needs assessment to ascertain the service needs, especially mental health needs, of AI/ANs. (Throughout this report, it is important to keep in mind that the goals were to determine the unmet needs of the AI/AN population in the Portland metropolitan area and to learn who in the AI/AN community, especially among those already receiving services from NARA NW, needed additional services. This is a needs assessment, not an epidemiological report or an assessment of the relative strengths or assets of the community.)

The AI/AN population in the Portland metropolitan area (which includes Multnomah County, Washington County, and Clackamas County in Oregon along with Clark County in Washington) is very diverse. Approximately 15,000 people in the 2000 U.S. census self-identified as AI or AN. When people who identified with more than one race are included, the number increases to almost 32,200 (31,979; see Table 1). To understand these census figures, two background issues need to be explained—definitions related to AI/AN people and the relocation of AI/ANs to urban areas.

Table 1
Portland Metropolitan Area American Indian/Alaskan Native Population

County	One Race	AI/AN White	AI/AN Black	AI/AN White Black	AI/AN Other	AI/AN Asian	AI/AN White Other	AI/AN Hawaiian/PI	AI/AN Multi	Total
Multnomah	6,785	5,320	793	651	294	179	167	44	264	14,497
Washington	2,913	2,376	118	188	193	81	87	26	88	6,070
Clackamas	2,416	2,338	59	111	80	46	40	19	77	5,186
Clark, WA	2,910	2,771	119	154	94	48	42	18	70	6,226
Total	15,024	12,805	1,089	1,104	661	354	336	107	499	31,979

Source: Social Science Data Analysis Network (n.d.)

While *American Indian* is a census category identifying people by race and including Alaska Native peoples (Ogunwole, 2002), *American Indian and Alaska Native* also refers to a citizenship status identifying peoples who have a definite legal status as members of sovereign nations (Goodluck & Willeto, 2000). The U.S. government has entered into a series of treaties with surviving AI tribes or nations, which retain all powers of self-government not taken over by the Federal government (Nichols, 1998). While the U.S. Federal government offers no single definition of who is AI or AN, the Indian Health Service (IHS) definition of who qualifies for services probably best applies here: “A person of Indian descent

designated by a tribe as being Indian, residing in the Continental U.S.; and Indians, Aleuts, and Eskimos in Alaska” (Indian Health Service, 1994 p. 11 2.6.3a[c]). Therefore, a NARA NW client may be a citizen or enrolled member of an AI tribe who has a primary racial identification as Black or African American, or may be a Pacific Islander who has AI heritage.

Most AI people live in urban areas (Nebelkopf & King, 2003). Beginning in the 1950s and continuing into the 1960s, the Bureau of Indian Affairs (BIA) created relocation programs designed to decrease pressure on reservation resources by helping young adult AIs to resettle in urban areas (Waddell & Watson, 1984). Many of the employment opportunities provided by these programs were temporary, and AIs who moved to urban areas were often left with short-term and insufficient support (Nichols, 1998; Waddell & Watson, 1984). Having a generation of AI/ANs relocated to urban areas without sufficient support has contributed to the cultural alienation, alcoholism, unemployment, and housing problems seen today (Nebelkopf & King, 2003).

The Portland metropolitan area has the advantage of being a traditional gathering and trading location for AI/ANs. In addition to NARA NW, the Portland metropolitan area benefits from other organizations dedicated to serving AI/ANs’ needs, including the Native American Youth Association, as well as urban offices for the Confederated Tribes of Siletz Indians and the Confederated Tribes of Grand Ronde. Portland is home to area offices of the IHS and the BIA. The National Indian Child Welfare Association—which provides public policy, research, and advocacy information and training on AI child welfare to a national audience including tribal governments, state child welfare agencies, and other organizations—is headquartered in Portland. The Northwest Portland Area Indian Health Board, also headquartered in Portland, represents the 43 Federally recognized tribes of Washington, Oregon, and Idaho on health-related matters and provides health-related technical assistance to Northwest tribes. Cultural organizations that often take on social service needs and provide volunteers to serve the community include the Northwest Indian Veterans Association, the Portland State University student organization United Indian Students in Higher Education, the local chapter of The American Indian Science and Engineering Society, and the Bow and Arrow culture club.

Together, these urban AI/AN organizations and agencies strive to provide a circle of support for community members. In many ways, NARA NW plays a central role in providing basic needs to community members and in assisting other agencies and community groups. One community member described NARA NW as the hub for the Portland urban AI/AN

community. This is because NARA NW is a leader in developing county, state, and Federal contracts. NARA NW has also been the first employer of many agency health and social service leaders, providing training and development that allowed them to go on to leadership positions in other Native and non-Native agencies. NARA NW also supports other agencies (e.g., by providing health care and social services for those agencies' staff members). Nevertheless, many other hubs exist in the community. For example, the Native American Youth Association may be more central to youth and families needing recreational and educational support, and the Northwest Indian Veterans Association may be more central for AI/AN veterans.

When reviewing the methods and results of this needs assessment, it is important to keep in mind the central nature of NARA NW in the community, while understanding that other urban AI/AN agencies have their own clienteles, services, and roles in the community. One challenge was to try to assess community members' needs, accounting for assistance from other agencies and cultural groups while focusing on the specific needs of current NARA NW clients. It can be difficult to gain an understanding of the needs of AI/AN populations due to their diverse nature, unique challenges, and concerns about research (Weaver, 1997). Prior needs assessments of urban AI/AN communities helped to guide this needs assessment and provided a context for the results.

Needs Assessments for Urban AI/AN Communities

Needs assessments describing urban community mental health issues for AI/ANs include reports from Seattle (King County, Washington), Tucson, Denver, Phoenix, Flagstaff (Northern Arizona), and the San Francisco Bay Area. These six sites were selected because they offered published information at the time of the research, were located in the West, and included mental health issues in the community research. Appendix 1 summarizes the results of these prior needs assessments.

Because the goal of the current research was to find unmet needs in the Portland, Oregon urban area, in order to direct social, health and mental health services to meet those needs, literature review focused on studies that examined needs of AI/AN urban communities and highlighted information about problems in these urban areas. Readers should assume that these communities all have strengths that support thriving and healthy members as well.

In the Seattle area, Public Health—Seattle and King County and the Seattle Indian Health Board (2001) used locally available health data, statewide surveys, and findings from the 1999 Seattle Public Schools

Teen Health Survey. The urban AI/AN population of the Seattle and King County area was reported to be 33,000 (including people self-identifying in the 2000 census as AI or AN, both one race and mixed heritage). The King County urban AI/AN population is also ethnically diverse, with AI/AN people from 238 Federally recognized tribes. While AI/ANs in King County had decreasing mortality rates, improved maternal and prenatal care, and reductions in sexually transmitted diseases, the report emphasized continuing serious disparities in health indicators, as well as increased risk for lung cancer, unintentional injury, diabetes, and substance abuse. Up to 41% of the AI/ANs in King County had incomes below 200% of the Federal poverty level and 23% of adults reported having no health insurance (Public Health, 2001). Suicide and depression rates for the AI/AN population were similar to overall rates for Seattle urban area. AI/AN youth reported increased risk for substance abuse. American Indian and Alaska Native middle and high school students reported many more problems than other youth in the Seattle area, and fewer AI/AN high school students felt their futures would be good.

The mental health needs assessment of Tucson's urban Native population (Evaneshko, 1999) used home and office interviews of 174 people in a purposeful sample of representatives from the major tribal groups (Yaqui, Tohono O'odham, Navajo, Apache, Cherokee, and other) of the Tucson area. Almost one-third of the respondents in this survey (29.3%) had less than 12 years of education, and more than half (54.6%) had total yearly incomes less than \$10,000. A majority of the respondents (60%) said they would travel to their reservation or tribal area for health care services instead of using services in the Tucson area. The services these respondents wanted to receive from their community provider, the Traditional Indian Alliance, were expanded and improved health care, social services, health education, and transportation. They felt the AI community in Tucson should work on solving alcohol and drug problems, as well as on increasing employment. For adolescents, the Tucson community was concerned about gangs and delinquency, pregnancy, school dropouts, and suicide (Evaneshko, 1999).

King (1999) conducted a survey of Denver AIs' mental health needs. King developed three mental health questionnaires for AI adults, AI adolescents, and service providers. The Denver survey used a convenience sample of 374 adults and focused on past and present personal problems, problems experienced by household members, and perceptions of problems existing in the community. The estimated AI/AN population for Denver in this report (prior to the 2000 census) was 20,000. Most of the Denver participants were tribally enrolled,

with 47% from South Dakota and 11% from Oklahoma. While over half had at least a high school education, 26.6% did not finish high school. The majority of the Denver respondents were unemployed (58%), with 20% reporting part-time jobs and 18%, full-time employment. Almost 70% reported incomes less than \$10,000. The most common problems occurring weekly or more often were financial difficulties (65%), family problems (35%), and feeling overwhelmed (29%; King, 1999).

In the Denver needs assessment, 61.2% of those surveyed self-reported a history of alcohol or drug problems. Depression had been experienced at least once by 50% of those surveyed; almost 20% reported experiencing suicidal thoughts or making a suicide attempt. Other reported psychological problems included marital problems and anxiety. Experiences of personal trauma included spousal abuse (37.2%), child abuse or neglect (12%), and rape or sexual abuse (10%). Most respondents reported turning to church or traditional healing methods to resolve psychological problems (King, 1999).

Clifford-Stoltenberg and Earle (2002) examined the mental health needs of two communities: the Oglala Sioux Tribe and Als receiving care from the Phoenix Indian Medical Center. The goal was to survey both rural tribes (Oglala Sioux) and urban communities (Phoenix). Researchers conducted team site visits with informational sessions including opportunities for community responses and questions, and a cultural competence presentation. They also conducted interviews with executive directors, school officials, and people involved with services. The Phoenix site review is most relevant to the NARA NW needs assessment.

At the time of the report, the Phoenix Indian Medical Center (PIMC) served about 14,000 patients per year, with psychiatric providers seeing about 130 patients per month (Clifford-Stoltenberg & Earle, 2002). PIMC provides 24-hour on-call crisis services, as well as a Guiding Star substance abuse program for pregnant women and women with children under age 12. Clients in the Guiding Star program can participate in traditional healing practices. Suicide was a major issue for PIMC, as Arizona ranked sixth in the nation for suicide at the time of the report. Preventive health care was an issue in this urban setting, as patients with preventive needs had to wait behind those with urgent needs. Often patients reported traveling to rural reservation clinics where the wait time was shorter. Additionally, the director of PIMC wanted to improve comprehensive services (i.e., psychosocial, medical, and developmental services provided in one place) because clients could not find needed services in one site (Clifford-Stoltenberg & Earle 2002).

A mental health needs assessment of off-reservation AIs in Northern Arizona sponsored by the Native Americans for Community Action (NACA) covered both Flagstaff and other Northern Arizona communities, including Page and Grand Canyon Village (Chester, Mahalish, & Davies, 1999). The estimated total off-reservation AI population in this area at the time of the report was almost 7,200 people. This needs assessment included interviews with 235 people—some selected from the NACA clinic population and some recruited from NACA's non-clinical programs. The interviews were targeted to include children, adolescents, and adults. The Northern Arizona needs assessment also included a medical record review of 10% (144) of the adult intake files selected at random from the Family Health Center (Chester, Mahalish, & Davies, 1999).

For the Flagstaff area, estimates indicated that 55% of AI adults were unemployed and 35% were underemployed (Chester, Mahalish, & Davies, 1999). Three-quarters of the adults (75%) were estimated to have not completed high school or achieved a GED. None of the non-AI/AN community agencies in the area provided culturally specific or bilingual services, and none employed AI clinicians. For adults, mental health issues included family deaths (39%), anxiety (37%), and depression (16%), with suicidal thoughts as a problem for 9%. Over one-quarter of the adults (27%) reported that suicide attempts or completed suicides occurred in their families. For youths, problems included nightmares (58%), truancy (42%), and alcohol or drug abuse (27%). The medical record review indicated that 14% of patients reported problems with alcohol abuse either for themselves or their spouses (Chester, Mahalish, & Davies, 1999).

For the San Francisco Bay Area, Nebelkopf and King (2003) drew on previous research reports and key informant interviews to describe the development of a holistic system of care for the Native American Health Center and other urban AI/AN programs nearby. The AI/AN population in the San Francisco Bay Area is diverse, with nearly 80,000 people from over 100 American Indian and Alaska Native nations (including those identifying with one or more races in the census). Previously documented health concerns for AIs in the San Francisco Bay Area include homelessness, drug and alcohol diagnoses, domestic violence, and sexual assault. San Francisco has been reported to have the highest percentage of AIs with AIDS of all metropolitan areas (Satter, 1999 as cited in Nebelkopf & King, 2003). Problems related to HIV/AIDS are made worse by mental health issues, breakdown of traditional family life, and substance abuse. According to the needs assessment, American

Indian and Alaska Native youth in the San Francisco Bay Area were at high risk for alcoholism, substance abuse, mental illness, HIV/AIDS, and juvenile delinquency (Nebelkopf & King, 2003). Using a strategic plan and 16 grants over a four-year period, the Native American Health Center was able to make considerable progress towards a holistic community-based system of care for AI/ANs in the San Francisco Bay Area (Nebelkopf & King, 2003).

Methods

Prior urban AI/AN mental health needs assessments provided direction for this needs assessment. Given the available resources and the guidance of the NARA NW mental health advisory committee, the researchers decided to base the needs assessment for NARA NW on focus groups and a review of medical records of NARA NW clients. At the beginning of this project, researchers were cautioned by NARA NW administration to avoid the words *research* and *mental health* because of the adverse impression the local AI/AN community had about both subjects. While the researchers were unable to follow this caution, they did invest time and resources to discuss with community members the meaning of mental health and to reassure community members that this effort was undertaken to provide NARA NW with information that would help the agency to develop services. The use of a mental health advisory group was a vital part of the process. The advisory group varied in membership between five and twelve people and included community leaders and elders, NARA NW clients, and NARA NW staff members. The advisory committee evaluated the chart review format, and advised on focus group topics and questions.

Focus Groups

In the summer of 2003, focus groups were conducted on five topics: children and families, adults, veterans, elders, and historical trauma. One focus group was conducted for each topic. These topics were selected in consultation with a community-based mental health advisory panel and reflected current issues of concern in the AI/AN community.

The advisory group recommended the children and families focus group because of their concerns about the availability of services to children; also, they wanted children to be regarded as members of extended family or clan systems. They recommended an adult group

to balance the focus on children and families. Based on testimony from veterans during community ceremonies, the advisory group was concerned about the effect of the Iraq war on veterans, and they recommended the veterans focus group. The advisory group had experienced the recent loss of several key elders and wanted to see if other elders in the community were reacting to that loss, so they recommended the elders focus group.

The historical trauma focus group reflected a concern the advisory group saw in the community about lasting scars left by policies of annihilation and assimilation that AI/AN peoples have had to endure and survive. The process of colonization (Duran & Duran, 1995) was to destroy and demean the traditional ways of indigenous people. This also meant destruction of methods of economic survival and of family systems, as well as overt and covert genocide (Tafoya & Del Vecchio, 1996). Between 1500 and 1900, the death rate for indigenous peoples in North American was considerably higher than the birth rate. American Indians died by the millions from disease, wars of extermination, and reservation and boarding school conditions comparable to those in concentration camps. Historical trauma for AI/ANs is similar to trauma for other historically oppressed groups with important common features: “difficulty in mourning a mass grave, the dynamics of collective grief, and the importance of community memorialization” (Brave Heart & DeBruyn, 1998, p. 61). While the advisory committee recognized that this history is painful to recall, they also believed that this history becomes more painful when it seems to be forgotten, trivialized, or denied.

Recruitment

To recruit members for focus groups on these topics, the researchers advertised widely in the AI/AN community using flyers and word of mouth. For the focus groups, the researchers recruited people 18 years or age or older who were associated with the AI/AN community in Multnomah County. For each focus group, a maximum of 18 participants were recruited; for most groups, about 12 community members were actually present. The Native American Youth Association helped to recruit members for the children and families group, and also hosted the focus group. The Northwest Indian Veterans Association helped to recruit members for the focus group on veterans. The focus group on children and families had more people attend than were recruited (slightly more than 18 participants). Each focus group participant signed a consent form approved by the IHS Institutional Review Board and agreed to keep confidential what was shared in the focus group, although the

researchers stressed that they could not guarantee that focus group members would keep other group members' statements confidential. To protect confidentiality no identifying information about focus group members was recorded.

Methodology

The focus group methodology followed the recommendations of Strickland (1999), with modifications for the urban AI/AN environment (e.g., shorter sessions and more attention to the time invested by participants). While tribal community members in Strickland's studies were willing to invest four hours in a focus group meeting, most urban community members would find that too demanding. Still, the sessions lasted two hours with some participants arriving 30 minutes early and some staying 30 minutes after the group ended.

Focus groups were conducted in AI/AN agency facilities: NARA NW and the Native American Youth Association. These sites were large enough to accommodate the groups, and had facilities to prepare and serve food. The groups were moderated by a researcher with an AI heritage, with AI/AN research assistants distributing consent forms and collecting the data. Focus groups were conducted around a table. Sessions were not audio taped. A recorder took observational notes on a flip chart that all participants could see. At the end of the session, participants were invited to review the flip chart notes and make corrections or additions. Sessions took an average of two hours, including time to get acquainted, time for an opening including a blessing, time for participants to obtain food and drink, and time for a "give-away" at the end of the session. The more traditional people and elders in these focus groups (as in Strickland's [1999] tribal community groups) often did not talk until the end of the meeting, if at all, and some came to more than one meeting to make their contribution. Although participants needed review and clarification of the nature of the focus group and the goals of the study, and expressed concerns about research in general, once they were assured that the research was intended to aid NARA NW and AI/AN people they were quite willing to engage in a dialogue. The fact that the groups were not audio taped may also have helped to increase participation.

Incentives

Similar to focus groups with any population, participants here were provided with \$20 gift certificates to a local multipurpose store. While participants came from a variety of AI/AN cultures, they had a

general expectation that food would be provided and that there would be gift giving. Participants were provided with light food, juice, and soft drinks. At the end of each focus group, participants (starting with the elders) could choose a gift from a table; gifts included NARA NWT-shirts, cups, flashlights, and other small items.

Chart Review

This report is based on reviews of 106 charts from the NARA NW health clinic. Thirty-three of the charts were chosen from a random selection process between August and October 2003. The random sample was based on a client database query that included all adults 18 years of age and older with any type of mental health diagnosis. This query indicated that there were 633 adult female clients and 456 adult male clients (1,089 total) who made a clinic visit to NARA NW between November 1, 2001 and July 15, 2003. (November 1, 2001 represented the best date for current data as data were entered into the client database; thus, it was selected as the sample start date.) Researchers attempted to oversample adult clients with a listed mental health diagnosis. Out of the 1,089 clients listed, a random sample of 250 clients (approximately 25%) and a group of 100 clients without mental health diagnoses were drawn. The random sample also attempted to include more women than men, because more women had mental health diagnoses.

Researchers planned to contact clients in the random sample by telephone, to ask them to come into the clinic and sign an IHS Institutional Review Board-approved consent form allowing their chart to be used in the review. However, they found that they could not reach the vast majority. Clients who had moved, had disconnected numbers, or otherwise could not be reached by telephone composed approximately 84% of the random sample. Approximately 2% were contacted and refused to consent for the chart review, and approximately 14% were contacted and agreed to give consent.

This finding suggests that NARA NW has a high percentage of homeless clients, and that the client population is consistently in flux. In this case *homeless* does not mean that clients were living on the street; rather, they did not have a regular or consistent place to stay. They moved from relative to relative and friend to friend and from the urban area to reservations and back. While NARA NW serves 1,000 or more people per year, specific clients seem to vary considerably from month to month and year to year.

The chart review process clearly demonstrated that the vast majority of participating clients were those coming to the NARA NW clinic for health concerns. In actuality, therefore, the random sample process was not going to yield a different result than a convenience sample. Given this reality, the research shifted to a convenience sample, with researchers asking clients coming into the clinic to voluntarily give their consent to have their chart reviewed. All clients who agreed to review the consent form received a \$10 gift certificate.

The final sample for the chart review is a convenience sample that combines (1) people who were selected in the random sample and who were then located when they came into the clinic (rather than by telephone) and (2) a convenience sample of volunteers drawn from people who came into the clinic for health care. Thus, the chart review sample and the chart review results cannot be considered representative of NARA NW clientele in general or of the AI/AN community in the Portland metropolitan area.

Because the initial random sample attempt oversampled for women, clients who gave consent for the initial random sample differed from clients in the convenience sample by gender. More women were in the random sample group (78%) than in the convenience sample (56%, $\chi^2 = 4.5$, $df = 1$, $p = .03$), and they reported more gynecological problems (24% random, 10% convenience, $\chi^2 = 4.0$, $df = 1$, $p = .04$). The only other statistically significant difference between the initial random sample group and the subsequent convenience sample was treatment for pain. More of the random sample clients (30%) than convenience sample clients (12%) were in treatment for pain ($\chi^2 = 5.0$, $df = 1$, $p = .02$).

Demographics

The majority of the clients in the chart review were between 31 and 60 years of age (see Table 2). Most were women (61.3%, $n = 65$), with 28 men (35.8%), and 3% where gender could not be determined from the chart review. Most of the clients were linked to Pacific Northwest (37.7%) or Midwest Plains tribes (34.9%; see Table 3).

Table 2
Age Ranges for Clients
in Chart Review

Age	Frequency	%
18 – 30	22	20.7
31 – 40	25	23.6
41 – 50	27	25.5
51 – 60	23	21.7
61 – 80	9	8.5

Table 3
Tribal Affiliations for Clients
in Chart Review

Region	Frequency	%
Alaska/Alaskan Native	11	10.4
Pacific Northwest	40	37.7
Midwest Plains	37	34.9
Southwest	10	9.4
Northeast or Southeast	5	4.7

Results

Focus Groups

Five themes emerged as common responses across focus groups. First, AI/ANs coming to Portland, especially from reservation areas, look to NARA NW for care because they are familiar with and seek out IHS service providers. Second, although the AI/AN community is diverse, representing many tribes and traditions, AI/ANs are attracted to NARA NW because of the Native culture that is familiar, and because of the cultural awareness of the NARA NW providers. One respondent, with the agreement of others in the focus group, described NARA NW as “the hub of the Native community” because it provides cultural and community supports and connections as well as treatment.

Third, American Indians and Alaska Natives in the focus groups reported being treated better at NARA NW than at non-AI/AN agencies in the Portland metropolitan area, because at NARA NW they do not have to deal with assumptions and prejudice. Fourth, respondents praised NARA NW for providing personal care, providing a safe and comfortable environment, giving clients individual attention, and treating clients like people able to understand how to care for themselves. Focus group respondents also reported that other agencies sent them to NARA NW or “back to your people” for care. In part, this is because NARA NW provides coverage (including providing medications) for AI/ANs who have no other insurance or funding available.

Finally, focus group participants indicated that they wanted NARA NW to add a psychiatric after-hours response system to provide direct interventions or care for AI/ANs experiencing mental health crises (or health crises that may be misinterpreted as substance abuse or

mental health issues). Focus group participants expressed concern that emergency response systems do not understand AI/AN cultures. They were concerned that mainstream providers' crisis responses were made less supportive by assumptions that interfere with care (e.g., holding stereotypes about urban AI/ANs, assuming that any urban AI/AN crisis would be related to alcoholism).

Unique Issues for Each Focus Group

In addition to the common themes that emerged across focus groups, each topic had themes unique to that conversation.

Children and Families

Focus group participants appreciated that NARA NW accepted grandparents, aunts, and uncles as guardians for children. This meant extended family members were able to bring children into care, whereas their status as guardians was challenged by other agencies that only considered birth parents as guardians for children. Focus group participants believed that NARA NW could improve services to children and families by adding counseling to address the needs of extended families. Also, this focus group called attention to the need for parenting skill supports and early childhood prevention programs.

Adults

The focus group on the needs of adults called attention to chronic illness and the number of NARA NW clients who needed combined medical and mental health support to deal with such illness. Members of this focus group also identified the need for NARA NW to have connections and referral arrangements with agencies that are open to alternative lifestyles (e.g., gay and lesbian support and HIV programs). This focus group was concerned about the number of urban AI/ANs who ended up in jail or in the justice system because of a lack of other resources or services. The focus group urged NARA NW to connect with jails and the justice system to provide support to adult AI/ANs.

Elders

The focus group on elders (mostly comprised of elders) noted the loss of several important elders in the community during the summer of 2003, and asked for grief and loss groups. This focus group also stressed the importance of services to help elders cope with anxiety related to aging and losing health and physical capabilities.

Historical Trauma

Participants in the historical trauma focus group reported needing assistance to address abuse they experienced in Indian boarding schools. They reported that other providers did not understand and might even discount those experiences: "They tell us that the people who ran the schools meant well." Focus group participants believed NARA NW staff could assist people to realize when they are experiencing historical trauma, and could provide traditional healing ceremonies for historical trauma. Participants also wanted NARA NW to be able to send people home to their reservations or homelands for ceremonies.

Veterans

Participants in the focus group on veterans (who were mostly veterans) reported a need for assistance to cope with post-traumatic stress disorder, especially from Vietnam. They discussed how veterans from different wars need different types of assistance. For example, Middle East veterans might need medical and emotional support to cope with the effects of chemical or biological weapons. NARA NW could best assist veterans by coordinating services between the Veterans Administration and other agencies.

Results from Chart Reviews

Results from the focus groups are supplemented by results from the review of NARA NW charts. While the chart review results cannot be considered representative of NARA NW clientele or the entire AI/AN community in the Portland metropolitan area, they do illustrate client needs.

Co-occurring Disorders

The number and severity of co-occurring disorders documented in these NARA NW charts is important. Nearly 37% (n = 39) of the clients had co-occurring mental health diagnoses, histories of substance abuse, and one or more serious health problems. Only 12% of the clients (n = 12) were "well patients" with no serious diagnoses. Few clients were diagnosed only with distinct mental health or substance abuse disorders. About 13% (n = 14) had mental health and serious health problems, and approximately 25% (n = 27) only had documented health problems.

Substance Abuse

Close to half of the charts (45.3%, n = 48) included histories of substance abuse; 24.5% (n = 27) indicated no substance abuse. In 29.2% of the charts there was no clear indication whether substance abuse was or was not a treatment issue.

Mental Health

Diagnoses of mental health problems indicated in these charts included depression and dysthymia, anxiety disorders such as panic attacks, adjustment disorders, pervasive developmental disabilities, bipolar disorder, and schizophrenia.

Just over half of the charts indicated no prescriptions for psychiatric medications (52.8%, n = 56). One psychiatric medication was prescribed in 27.4% of the charts (n = 29), two in 13.2% of the charts (n = 14) and three to four in 6.6% of the charts (n = 7). Global assessment of function (GAF) scores were recorded for 34.9% of the charts (n = 36) with scores ranging from 40 to 70, with serious symptoms indicated by low scores and mild symptoms indicated by high scores (see Table 4).

Table 4
Global Assessment of Functioning (GAF)
Scores for Clients in Chart Review

GAF Score Range	Frequency	%
40-50 (Serious Symptoms)	6	5.6
51-60 (Moderate Symptoms)	16	15.1
61-70 (Some Mild Symptoms)	15	14.1

Health Problems

The health problems recorded from the charts were cardiac problems, diabetes, hepatitis, gastrointestinal disorders, hypertension, pain management, respiratory problems, back problems, and other diagnoses (see Table 5). For clients with health problems, about 5% had five or more health diagnoses. In 28.3% of charts, (n = 30), clients had three or four major health diagnoses. In 20.8% of charts (n = 22) there were two diagnoses; in 27.4% of charts (n = 29), one diagnosis; and in 18.9% (n = 20), no diagnoses. The most commonly noted health problems were hepatitis, diabetes, and back problems. Hepatitis (either A, B, or C) was diagnosed in 20.8% of the charts reviewed (n = 22). Diabetes was also diagnosed in 20.8% of the charts reviewed (n = 22). Back problems were noted in 22.6% of the charts (n = 24).

Table 5
Health Problems for Clients
in Chart Review

Disorder	Frequency	%
Gynecological	15	14.2
Hepatitis	22	20.8
Back	24	22.6
Cardiac	Few	Few
Diabetes	22	20.8
Gastrointestinal	15	14.2
Hypertension	13	12.3
Pain	19	17.9
Respiratory	14	13.2
Other	69	65.1

Discussion

Limitations

This study is a needs assessment primarily for use by NARA NW and Multnomah County to plan for improvements in mental health care for AI/ANs in the Portland metropolitan area. This is not a prevalence study, and should not be interpreted as providing an indication of the incidence or prevalence of mental health or health conditions for NARA NW or the Portland metropolitan area. While the researchers and the mental health advisory committee believe the focus group participants represent the local AI/AN community, there is no confirmation that the small numbers of people in the focus groups actually do so. Also, focus group participants were asked to limit their comments on NARA NW services and development to services within the Portland metropolitan area.

The chart review results are mostly limited to clients coming into the NARA NW health clinic and willing to consent to chart review during the time of the study. The researchers were not able to provide a random sample of the NARA NW clientele. Participants in the chart review were likely to be those with greater need; those in most pain; and those with more than one health, mental health, or substance abuse condition. Beals et al. (2005) reported that AIs from a Southwest reservation and a Northern Plains reservation were more likely to seek help if they had co-occurring conditions.

Clinical and Policy Implications

The results of this needs assessment are consistent with other needs assessments for urban AI/AN populations. NARA NW and other AI/AN service providers in the Portland metropolitan area are challenged to

provide basic services to a population with serious needs for housing and basic support; health care; mental health care; substance abuse treatment; and cultural connections, healing ceremonies, and affirmations. Writing about Denver AI community, King (1999) reported dire needs for all levels of mental health care—family, marital, adult, adolescent and child, school-related, court-related, and social services-related. In a report on children’s mental health, Cross, Earle, Echo-Hawk Solie, and Manness (2000) noted that all participating sites identified post-traumatic stress resulting from historical oppression and multigenerational trauma as a major contributor to current mental health problems.

Understanding the depth of the need of AI/AN peoples; the diversity of cultures, languages, and traditions; the unique legal status of AI/ANs as citizens of sovereign nations; and the impact of historical trauma is a challenge for urban AI mental health agencies. This task is even more daunting for mainstream mental health providers. Participants across focus groups—children, adults, veterans, and elders—emphasized the need for NARA NW to provide mental health services so they could receive care that was culturally appropriate and that took into account their legal rights, obligations, and history. A consistent theme was the need for psychiatric crisis services for substance abuse and mental health emergencies.

From the focus groups and the chart reviews, the need for a holistic system of care became clear. As researchers attempted to contact recent NARA NW clients to participate in the chart process, the extent of homelessness became evident. While issues of homelessness or social service needs were not usually included in client charts at the time of the review, these areas need to be included in future client assessments. Indeed, given the concern of focus group members about the impact of chronic health conditions on mental health—and the high percentage of chart reviews where clients had documented chronic health, mental health, and substance abuse issues—each client should receive a comprehensive assessment for all conditions regardless of the problem that brings them to NARA NW.

On a policy level, the unmet service needs of AI/ANs in the Portland metropolitan area (and in other urban AI/AN communities where mental health needs assessments have been conducted) reflect a lack of available services and supports across Indian country. Tribes have not been eligible for Federal mental health block grants (U.S. Department of Health and Human Services, 2001). Therefore, they must use Federal funds from various sources to piece together what services they can for families (Cross, 1997). The IHS is one Federal funding source for tribes and

urban AI/AN programs, but it is limited; for example, only 1.3% of the 1988 IHS budget went to direct tribal mental health services (Cross, 1997). In terms of real dollars, IHS funds have been declining. Federal reductions in IHS funding, along with reductions in Medicaid and Medicare reimbursements, have reduced local ability to provide services (U.S. Department of Health and Human Services, 2001). Fewer mental health personnel are available to serve AI/ANs than other populations: One estimate is 101 mental health providers per 100,000 people for AI/ANs compared to 173 per 100,000 for Whites (Manderscheid, & Henderson, 1998 as cited in U.S. Department of Health and Human Services, 2001). The result is immediate and urgent need for AI/ANs with severe mental health, health, and substance abuse needs, and a considerable unmet need for prevention and treatment for people who have not been able to receive appropriate services for generations.

NARA NW Service Enhancements

Following the needs assessment, NARA NW worked to enhance services. Core services in 2003 were the Indian Health Clinic, the Residential Treatment Center for family substance abuse treatment, and outpatient substance abuse treatment. Additional services added after 2003 include Star Shield Family Wellness (a culture-based program designed to give support to parents and extended family members serving as caregivers for children), a grief and loss group for elders, and an urgent response system and community support program for community members experiencing mental health crises. Like the Native American Health Center in the San Francisco Bay Area (Nebelkopf & King, 2003), NARA NW is following a strategic plan to provide a holistic system of care.

Conclusion

This is the beginning of an ongoing effort to define the needs of the local AI/AN community and to find the means to meet the needs of the people. While many of the results from this needs assessment were either discouraging or challenging, one encouraging result was an understanding of the community's investment in providing care for the most vulnerable, and the desire to strengthen the AI/AN community to provide opportunities for individual, family, community, cultural, and spiritual health.

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References

- 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*, 8(3), 13-24.
- Beals, J., Manson, S., Whitesell, N. R., Spice, P., Novins, D. K., Mitchell, C. M., et al. (2005). Prevalence of DSM-IV disorders and attendant help-seeking in 2 American Indian reservation populations. *Archives of General Psychiatry*, 62, 99-108.
- Brave Heart, M. Y. H., & DeBruyn, L. M. (1998). The American Indian holocaust: Healing historical unresolved grief. *American Indian and Alaska Native Mental Health Research*, 8(2), 56-78.
- Chester, B., Mahalish, P., & Davis, J. (1999). Mental health needs assessment of off-reservation American Indian people in Northern Arizona. *American Indian and Alaska Native Mental Health Research*, 8(3), 25-40.
- Clifford-Stoltenberg, C., & Earle, K. (2002, December). *Exploring the mental health needs of American Indian children and their families: Site visits to two tribal communities*. Portland, OR: National Indian Child Welfare Association.
- Cross, T. (1997, April). *Lost between the cracks: Severely emotionally disturbed Indian children*. Paper presented at "Protecting our children," The fifteenth annual National American Indian Conference on Child Abuse and Neglect, Reno, NV.
- Cross, T., Earle, K., Echo-Hawk Solie, H., & Manness, K. (2000). Cultural strengths and challenges in implementing a system of care model in American Indian communities. *Systems of care: Promising practices in children's mental health, 2000 series, Volume I*. Washington, DC: Center for Effective Collaboration and Practices, American Institutes for Research.

- Duran, E., & Duran, B. (1995). *Native American postcolonial psychology*, Albany, NY: State University of New York Press.
- Evaneshko, V. (1999). Mental health needs assessment of Tucson's urban Native American Population. *American Indian and Alaska Native Mental Health Research*, 8(3), 41-61.
- Goodluck, C., & Willeto, A. (2000, December). *Native American Kids 2000: Indian child well-being indicators*. Seattle: Casey Family Programs.
- Indian Health Service (1994). *Indian Health Manual*. Washington DC: Author.
- King, J. (1999). Denver American Indian mental health needs survey. *American Indian and Alaska Native Mental Health Research*, 8(3), 1-12.
- Nebelkopf, E., & King, J. (2003). A holistic system of care for Native Americans in an urban environment. *Journal of Psychoactive Drugs*, 35(1), 43-52.
- Nichols, R. L. (1998). *Indians in the United States and Canada*, Lincoln, NE: University of Nebraska Press.
- Ogunwole, S. (2002). *The American Indian and Alaska Native population 2000: Census 2000 brief*. Washington, DC: U.S. Census Bureau.
- Public Health—Seattle and King County, & Seattle Indian Health Board (2001). *The health status of American Indians and Alaskan Natives living in King County*. Retrieved January 10, 2007 from <http://www.metrokc.gov/HEALTH/reports/aianreport.pdf>
- Social Science Data Analysis Network (n.d.). Census Scope Multnomah County Census 2000 analyzed by the Social Science Data Analysis Network (SSDAN). Multiracial Profile www.CensusScope.org. Social Science Data Analysis Network, University of Michigan. www.ssdan.net. Retrieved February 4, 2004 from http://www.censuscope.org/us/s41/c51/chart_multi.html
- Strickland, J. S. (1999). Conducting focus-groups cross-culturally: Experiences with Pacific Northwest Indian people. *Public Health Nursing*, 16(3), 190-197.
- Tafoya, N., & Del Vecchio, A. (1996). Back to the future: An examination of the Native American Holocaust experience. In M. McGoldrick, J. Giordano, & J. K. Pearce, (Eds.) *Ethnicity & family therapy* (2nd ed., pp. 45-54). New York: Guilford.

- U. S. Congress, Office of Technology Assessment (1990, January). *Indian Adolescent mental health*. (OTA Publication No. OTA-H-446). Washington, DC: U.S. Government Printing Office.
- U.S. Department of Health and Human Services (2001). *Mental health: Culture, race, and ethnicity—A supplement to Mental Health: A report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services.
- Waddell, J. O., & Watson, O. M. (1984). *The American Indian in urban society*. Lanham, MD: University Press of America.
- Weaver, H. N. (1997). The challenges of research in Native American communities: Incorporating principles of cultural competence. *Journal of Social Service Research*, 23(2) (1997): 1-15.

Appendix A
Summary of Previous Needs Assessment for Western Urban AI/AN Populations

Location	Demographics	Social/Mental Health Needs	Health Needs
Seattle Public Health Seattle & King County & the Seattle Indian Health Board (2001) Data Collected 1999	33,000 Urban AI/AN from 238 Federally recognized tribes Up to 41% had incomes below 200% of the Federal poverty level and 23% of adults reported no health insurance	Suicide and depression similar to overall rates for urban area. Increased risk for substance abuse. Middle and high school students report many problems-fewer high school students felt future would be good	Decreasing mortality rates, improved maternal and prenatal care, reductions in sexually transmitted diseases. Continuing serious disparities in health indicators including increased risk for lung cancer, unintentional injury, diabetes, and illnesses related to substance abuse. Smoking and being overweight were risk factors for adults and children
Tucson Evaneshko, (1999) Data Collected 1992	174 people representative of major tribal groups (Yaqui, Tohono O'Odham, Navajo, Apache, Cherokee, and other) 29.3% less than 12 years of education, 54.6% total yearly incomes less than \$10,000	Concerns about suicide, alcohol & drug problems, gangs & delinquency	Respondents wanted expanded and improved health care, social services, health education, and transportation. Worried about teen pregnancy

Appendix A, continued

Location	Demographics	Social/Mental Health Needs	Health Needs
Denver (King, 1999) Data Collected 1992	Convenience sample 374 adults-47% from South Dakota and 11% from Oklahoma, Over ½ High School Education, 70% incomes less than \$10,000 Denver AI/AN population 20,000	65% financial dif- ficulties, 35% family problems, 29% feeling overwhelmed, 61% history of drug or alcohol problems, 50% depression, 20% suicidal thoughts	
Phoenix Clifford-Stoltenberg & Earle (2002) Data Collected 2002	Phoenix Indian Medi- cal Center (PIMC) approx14,000 patients per year 130 per month psychiatric	Substance abuse for pregnant women & women with children, suicide	Preventative health care, combining psychosocial, medical and developmental services
Flagstaff & North- ern Arizona Chester, Mahalish, & Davies, (1999) Data Collected 1992	Flagstaff & Northern AZ including Page & Grand Canyon Village, population 7,200 people-235 convenience sample, & 144 clinic files	55% adults unem- ployed, 35% under- employed, 75% not completed high school, Adult Mental Health: family deaths (39%), anxiety (37%), de- pression (16%) with suicidal thoughts as problems for 9%. Youth Mental Health: 58%, nightmares, 42%, truancy 27% alcohol/drug	None of the non- Indian community agencies provided culturally specific services or bilingual services, and none employed American Indian clinicians Medical record review indicated 14% of the patients reported problems with alcohol abuse either for themselves or their spouses
San Francisco Bay Area Nebelkopf & King (2003) Key Informants 2001	80,000 people, from over 100 tribes	Homelessness, drug & alcohol diagnoses, domestic violence and sexual assault, Youth at high risk for alcoholism, substance abuse, mental illness, and delinquency	HIV/AIDS

PREDICTORS OF RELAPSE FOR AMERICAN INDIAN WOMEN AFTER SUBSTANCE ABUSE TREATMENT

Jenny Chong, Ph.D. and Darlene Lopez, M.S.

Abstract: The objective of this study was to describe the predictors of substance use relapse of American Indian (AI) women up to one year following substance abuse treatment. Relapse is defined as any use of alcohol or drugs in the past 30 days at the follow-up points. Data were collected from AI women in a 45-day residential substance abuse treatment program. Predictors include distal (in time) proximal (recent), and intrapersonal factors. Results indicated that intrapersonal factors showed the strongest relationship with relapse, followed by proximal and distal factors. Negative messages about using alcohol or drugs from the client's father while growing up may have had an impact on whether the client used alcohol at 6 months. Conflicts with other people and being in the company of alcohol or drug users were highly predictive of relapse. While craving was highly predictive of substance use at follow up, self-efficacy was highly predictive of no substance use. Knowledge about predictors of relapse among this population should be used as a guide toward individual treatment planning.

American Indians (AIs) have high rates of alcohol-related problems (Indian Health Service, n.d.). In a prevalence study conducted in the mid-1990s with three tribal nations in the Southwest, almost 30% of adult tribal members had a current diagnosable alcohol and/or drug problem (Herman-Stahl & Chong, 2002). Only one-third of these individuals had sought help in the past year, with women equally as likely as men to do so. Between 74 and 94% of these tribally-based individuals who had received help in the past year reported substance use in the

30 days prior to the interview (Chong, Herman-Stahl, & Dye, 1998, unpublished data). Half of AIs who used alcohol in the 30 days before admission into non-tribal treatment facilities in California reported using alcohol 9 months later (Evans, Spear, Huang, & Hser, 2006). There is an urgent need to investigate and address relapse issues in this population. In this study, relapse is operationally identified as any use of alcohol or drugs in the past 30 days following substance abuse treatment.

Factors associated with relapse in AI women include low self-esteem, negative feelings, and negative social factors (e.g., Berkowitz, Peterson, Smith, Taylor, & Brindis, 1998; Chong & Herman-Stahl, 2003). The lives of AI substance-abusing women are rife with stressful circumstances, including domestic violence, child abuse trauma, negative family relationships, and social isolation (Brindis et al., 1995; Gutierrez, Russo, & Urbanski, 1994). Thus, when they return home following a residential treatment stay, their immediate environment may not be supportive of their recovery. Those returning to tribal lands may be surrounded by individuals still struggling with substance abuse problems (e.g., partners), or by dysfunctional relationships. These are factors that are strongly related to relapse.

Characteristics that decrease the chances of relapse include positive family relationships and fewer associations with negative peer networks (Broome, Simpson, & Joe, 2002; Ellis, Bernichon, Yu, Roberts, & Herrell, 2004); support specifically related to abstinence (Beattie & Longabaugh, 1999; Bond, Kaskutas, & Weisner, 2003); self-efficacy or confidence in one's own ability to resist using substances (e.g., Walton, Blow, Bingham, & Chermack, 2003; Moos & Moos, 2003); and being able to tolerate stress (Daughters, Lejuez, & Kahler, 2005). AIs with high self-esteem and low negative emotion can maintain abstinence for a relatively long period following an intervention (Hassin, 1998). Within the substance abuse treatment environment, family and friends participating in the treatment milieu (Chong & Lopez, 2005a), and the absence of negative peer influence (Chong & Lopez, 2005b) significantly improved the psychosocial status (e.g., higher self-esteem, lower depression) of AI women at discharge. These findings highlight the potential impact of relationships on AI women's treatment outcomes and raise questions about the environmental factors that contribute to relapse in this population.

In research over the last two decades, studies of relapse have ranged from focusing on a single precipitating factor such as craving (e.g., Breese et al., 2005) to multiple antecedents of relapse, including emotional states (e.g., Hodgins, el-Guebaly, & Armstrong, 1995), proximal

factors such as family and social environment (e.g., Broome et al., 2002), intrapersonal factors such as coping skills and self-efficacy (e.g., Moser, & Annis, 1996), and distal factors such as family history (e.g., Broome et al.). Few quantitative studies of this kind had been carried out to gain an understanding of relapse issues among AI women.

The purpose of the present study was to assess factors associated with relapse in a group of AI women at 6 and 12 months after completion of a 45-day residential treatment at the Guiding Star Residential Program for Women at Native American Connections (NAC), an urban alcohol and drug treatment facility in Phoenix, Arizona. In particular, we were interested in determining the proximal, distal, and intrapersonal factors that are related to alcohol and drug use at the follow-up points. A broader consideration of relapse is important, and this point was emphasized in a 2006 special issue on relapse in the journal *Clinical Psychology Review*, where one of the main conclusions was that the interaction of distant and proximal antecedents of relapse is important such that any one antecedent has to be considered in the context of others (Maisto & Connors, 2006; see also Witkiewitz & Marlatt, 2004).

Native American Connections has a number of tribal, Federal (e.g., Indian Health Service, pre-trial, probation) and state (e.g., regional behavioral authorities. Arizona Medicaid) contracts to serve both AIs and non-AIs. A continuum of services is available for male and female adults with substance abuse problems, from residential and outpatient treatment programs to transitional and low-income housing. Intervention programs are culturally based, with a philosophy that reflects AI values of family, community, and spirituality. Cultural practices available to all NAC clients include sweat lodge ceremonies, drumming, and traditional healing. The treatment milieu is respectful, providing clients with an environment that engenders respect, cooperation, and kindness.

Methods

AI adult female clients entering residential treatment services at NAC were recruited within three days of entry to participate in a research follow-up study as part of a Treatment Capacity Expansion grant funded by the Center for Substance Abuse Treatment (CSAT). The recruitment period was between February 2002 and May 2004. Out of the 381 women approached, 346 were interviewed for baseline measures. Individuals who refused (9%) included those who did not want to be involved in follow-up interviews or had no interest in participating in a study.

Data collection points were at intake, and at 6 and 12 months post-intake. The follow-up window was 2 months before, and 1 month following the due date. Out of the 346 women interviewed at baseline, 186 (53.8%) were followed up at 6 months, and 167 (48.3%) were interviewed at 12 months post-intake. About two-thirds of the women (66%) interviewed at the 6-month follow up were interviewed at the 12-month follow up. Attempts to reach the participants at each follow-up point were made until the last date of the follow-up window. A number were in jail or prison (22 women at the 6-month follow up and 13 women at the 12-month follow up), and three women were deceased. Intakes were conducted in person, whereas follow-up interviews were done both in person and by telephone since some of the women remained in the Phoenix area while others returned to their reservations, or were in prison or jail.

Questionnaires used for this study include the Addiction Severity Index Native American Version (ASI-NAV; Carise, Wicks, McLellan, & Olton, 1998), a modified Alcohol Abstinence Self-Efficacy Scale (AASE; DiClemente, Carbonari, Montgomery, & Hughes, 1994), and items from the Intake Questionnaire of the Texas Christian University's (TCU) Criminal Justice Program (TCU-IBR; Institute of Behavioral Research, 2005). The AASE was modified to include drugs.

The ASI-NAV was adapted from the Addiction Severity Index to accommodate AI cultural practices (Carise et al., 1998). The composite scores are derived in the same manner as those for the Addiction Severity Index. The ASI has good reliability and validity among different populations (Grissom & Bragg, 1991; Kosten, Rounsaville, & Kleber, 1983). The composite scores indicate the problem severity of six domains (medical, employment/support, substance use, legal, family/social, and psychiatric) and range between 0 and 1, with 1 denoting the most severe problem. The AASE measures self-efficacy and contains two sets of 20 items representing cues related to drinking or drug use. The respondent is asked to respond how "tempted" she is to use alcohol or drugs or how "confident" she is that she will not use alcohol or drugs in each situation on a 5-point scale (1 = *not at all* to 5 = *extremely*). Scores are summed separately for temptation and self-efficacy. The scale has been shown to have high internal consistency ($r = 0.95$), and relationships with other instruments indicate construct validity of the subscales (DiClemente et al., 1994). The TCU-IBR Intake Questionnaire has been used by the Drug Abuse Treatment for AIDS-Risk Reduction (DATAR) Project since the late 1980s (Simpson, 1992). The Intake Questionnaire has been used and adapted in various forms in all IBR programs for males and

females of all ethnicities. Several questions from this instrument were used – specifically, the client’s response when asked to rate whether her mother or father figure “warned you about drug or alcohol problems” (0 = *never* to 4 = *almost always*).

For the purposes of this paper, relapse is operationalized as whether the individual used alcohol and/or drugs in the 30 days prior to the interview at the 6- or 12-month follow up. To determine the factors associated with relapse, we used measures that had been suggested by the literature to be related positively or negatively to relapse as predictors. These measures were categorized into three groups: distal, proximal, and intrapersonal.

Distal measures pertain to the individual’s lifetime experience as well as experiences that were further removed from the follow-up periods, such as measures recorded at intake. The latter measures are used as indicators of the client’s characteristics. For example, having family or social conflicts in the 30 days before intake may suggest that a client does not have good family relationships, does not have social skills, or does not have social support. Proximal measures are those that had occurred within the past 30 days of the interview, but that do not pertain to intrapersonal factors. These include events that may or may not be under the client’s control, such as experiencing positive events, having conflicts with others, or attending aftercare sessions. Intrapersonal factors include mood and other attributes such as confidence in not using alcohol or drugs (self-efficacy) or craving. These measures are analyzed separately to determine broadly the predictors of substance use in this group of AI women. All the items used for the analyses are included in Appendix A.

Logistic regression models were developed for both follow-up time points separately for alcohol relapse and for drug relapse. The outcome variables, alcohol relapse and drug relapse (i.e., use in the last 30 days), are dichotomized with 0 representing no use and 1 representing use. Dichotomous outcomes have been shown to be as predictable as continuous variables (Miller, Westerberg, Harris, & Tonigan, 1996). Positive coefficients indicate a positive relationship with using alcohol or drugs within the last 30 days. Further, odds ratios higher than 1 indicate that individuals who used within the last 30 days were more likely to have that trait or circumstance. Marginal analyses (crosstabulations and correlations between potential predictors and the dependent variables) were conducted and all variables that were significant at the 0.20 level were considered for inclusion as possible predictors. Final predictors were determined using the backward stepwise likelihood ratio approach

($p \leq 0.05$ for inclusion; $p \geq 0.1$ for exclusion). Significant predictors are those showing $p \leq 0.05$. Measures used are presented in Appendix A. All analyses were conducted using SPSS for Windows 12.0.

Results

Study Population

Of the 346 women who participated in the study, over 99% were enrolled tribal members and 227 (65.6%) were from local Arizona tribes. Most (90%) had lived on a reservation at some point in their lives (including during the current study). The mean age of the women was 31.8 (7.6 sd); half were between the ages of 25 and 34. The majority of the women (55.1%) had less than a high school education, with 23.3% completing high school, and 21.6% completing at least some college. Most had never married (59.8%); only 16.8% were currently married. Most of the participants had used both alcohol and drugs. No significant differences in baseline characteristics were found between those interviewed at baseline and at each of the follow-up time periods (see Table 1).

Only a small number of the variables from the study were found to contribute to the best fit logistic models of alcohol and drug use at follow up. One variable in particular suggested by the literature but not included in the final models is marital status. Almost all of the women who were married or had a partner at the time of the interview did not report using drugs at the follow-up periods (100% at 6-month follow up; 96% at 12-month follow up). As a result, this variable was not included in the final models.

Table 1
Characteristics of Study Population who Provided Responses
at Baseline, and at the 6- and 12-month Follow Ups

	Baseline (n = 346)	6-month Follow Up (n = 186)	12-month Follow Up (n = 167)
Ever used alcohol	93.4%	93.0%	93.5%
Ever used drugs	78.9%	78.0%	69.6%
Ever binged %	71.6%	72.0%	71.3%
Previous Alcohol treatment, mean (SD)	1.4 (2.0)	1.4 (2.1)	1.45 (2.1)
Age, yr, mean (SD)	31.8 (7.6)	32.1 (7.5)	31.8 (7.5)
Years of drinking alcohol to intoxication, mean (SD)	6.5 (6.1)	6.8 (6.5)	6.4 (6.0)
Years of using drugs (without alcohol), mean (SD)	3.2 (5.3)	3.2 (5.1)	2.7 (4.7)
Years using more than one drug (may include alcohol), mean (SD)	3.6 (5.4)	3.3 (5.2)	3.1 (5.0)
Number of days of Alcohol use in past 30 days, mean (SD)	8.6 (9.3)	8.0 (9.4)	8.0 (9.1)
Number of days of Drug use in the past 30 days, mean (SD)	3.5 (7.9)	4.0 (8.3)	3.1 (7.6)

6-Month Predictors of Relapse

A total of six models were constructed to assess predictors of relapse at the 6-month follow-up period. Table 2 shows the variables included in the best-fit logistic model (using the maximum likelihood method) for each variable type (distal, proximal, and interpersonal) for alcohol use, and Table 3 shows the models for drug use. All models were statistically significant at the 0.05 level, although some individual variables have significance values larger than 0.05 (as a result of the exclusion criterion $p \geq 0.1$). B is the coefficient for each variable in the model used for predicting the independent variable. Time periods in parentheses indicate whether the factor pertains to lifetime, at intake, or at the 6-month follow up.

Table 2
Regression Models to Predict Alcohol Use
at the 6-month Follow Up

Month 6 Alcohol Use	B	Sig.	Odds Ratio	95.0% CI for Odds Ratio	
DISTAL (lifetime or at intake) Adj. R ² = 0.319				Lower	Upper
Use drugs with family (lifetime)	-0.55	0.01	0.58	0.37	0.89
Number of drug treatment episodes (lifetime)	-0.46	0.02	0.63	0.44	0.92
Father warned about alcohol and drugs when growing up	-0.38	0.02	0.68	0.49	0.94
During the past 30 days before you came to (treatment center) have you had problems with craving other drugs? (baseline level)	0.61	0.00	1.84	1.36	2.50
Number of alcohol treatment episodes (lifetime)	0.64	0.00	1.90	1.31	2.77
Constant	-1.60	0.00	0.20		
PROXIMAL (past 30 days at month 6) Adj. R ² = 0.322					
Rating of physical health (month 6)	-0.35	0.04	0.71	0.50	0.99
Number of days in the past 30 have conflicts with family	-0.06	0.06	0.94	0.89	1.00
Number of days in the past 30 have conflicts with other people	0.06	0.08	1.07	0.99	1.14
During the past 30 days, have you had problems with being around others who use alcohol or other drugs?	0.86	0.00	2.36	1.66	3.36
Constant	-1.45	0.01	0.23		
INTRAPERSONAL (past 30 days at month 6) Adj. R ² = 0.522					
During the past 30 days have you had problems with being stressed?	0.37	0.10	1.46	0.93	2.23
During the past 30 days, have you had problems with craving alcohol?	0.47	0.02	2.14	1.07	2.40
Abstinence self-efficacy score	-1.32	0.00	0.27	0.16	.044
Constant	3.39	0.11	29.63		

Table 3
Regression Models to Predict Drug Use at the 6-month Follow Up

Month 6 Drug Use	B	Sig.	Odds Ratio	95.0% CI for Odds Ratio	
				Lower	Upper
DISTAL (lifetime or at intake) Adj. R ² = 0.176					
Number of days in past 30 have conflicts with other people (intake)	0.05	0.04	1.05	1.00	1.10
Number of years using more than 1 drug a day (not including alcohol) (lifetime)	0.15	0.00	1.16	1.07	1.26
Constant	-2.63	0.00	0.07		
PROXIMAL (past 30 days at month 6) Adj. R ² = 0.407					
Positive events happened to you in the past 30 days	-0.34	0.10	0.71	0.48	1.06
Number of days in the past 30 have conflicts with other people	0.12	0.00	1.13	1.04	1.22
During the past 30 days, have you had problems with being around others who use alcohol or other drugs?	1.07	0.00	2.91	1.90	4.46
Constant	-3.12	0.00	0.04		
INTRAPERSONAL (past 30 days at month 6) Adj. R ² = 0.503					
Felt calm and peaceful in the past month	-0.34	0.06	0.71	0.50	1.02
During the past 30 days have you had problems with craving drugs?	.98	0.00	2.67	1.75	4.08
Abstinence self-efficacy score	-0.63	0.05	0.53	0.34	0.83
Constant	0.95	0.38	2.57		

Predictors for alcohol use at the 6-month follow up included prior alcohol treatment experience, being around others who use alcohol or drugs, craving alcohol, and craving drugs at intake. Variables that are less likely to be related to alcohol use at the 6-month follow up (i.e. negative coefficients with odds ratios less than 1), include being a drug user (with family; drug treatment), having a father who had warned the client about alcohol and drug problems when she was growing up, having a positive rating in perceived physical health, and having a higher abstinence self-efficacy score.

In contrast, drug use in the past 30 days at the 6-month follow up was predicted by conflicts with other people at intake and within the proximal timeframe, the number of years that the client had used more than one drug regularly (not including alcohol), being around others using alcohol or drugs, and craving drugs. In contrast, those with high abstinence self-efficacy scores were less likely to report drug use. The model fit for the distal variables is much lower than that for the

proximal and intrapersonal models, as seen by the adjusted R-squared which indicates the proportion of variance that can be predicted by the predictors, adjusted for the number of predictors used.

12-Month Predictors of Relapse

As with the models at 6 months, a total of 6 models were constructed to determine the predictors of relapse at the 12-month follow-up period. Tables 4 and 5 show the variables included in the best-fit logistic model for alcohol use and drug use at 12 months, respectively.

Table 4
Regression Models to Predict Alcohol Use
at the 12-month Follow Up

Month 12 Alcohol Use	B	Sig.	Odds Ratio	95.0% CI for Odds Ratio	
				Lower	Upper
DISTAL (lifetime or at intake) Adj. R ² = 0.093					
Age at Intake	-0.05	0.06	0.95	0.90	1.00
Family conflicts – days in the past 30 (intake)	0.04	0.04	1.04	1.00	1.08
Constant	0.77	0.39	2.15		
PROXIMAL (past 30 days at month 12) Adj. R ² = 0.545					
Positive events happened in the past 30 days	-0.54	0.01	0.58	0.38	0.90
How many days have you been to self-help groups for alcohol or drugs in the past 30 days?	-0.20	0.02	0.82	0.70	0.96
Negative events happened in the past 30 days	0.63	0.00	1.88	1.26	2.79
Problems with being around others who use alcohol or other drugs?	0.85	0.00	2.34	1.51	3.63
Constant	-1.23	0.05	0.29		
INTRAPERSONAL (past 30 days at month 12) Adj. R ² = 0.656					
During the past 30 days, have you had problems with being bored?	0.39	0.08	1.47	0.95	2.28
During the past 30 days, have you had problems with craving alcohol?	0.75	0.01	2.11	1.24	3.60
Abstinence self-efficacy score	-1.14	0.00	0.32	0.20	0.50
Constant	2.20	0.05	9.06		

Table 5
Regression Models to Predict Drug Use
at the 12-month Follow Up

Month 12 Drug Use	B	Sig.	Odds Ratio	95.0% CI for Odds Ratio	
				Lower	Upper
DISTAL (lifetime or at intake) Adj. R ² = 0.447					
Number of alcohol treatment episodes (lifetime)	-0.66	0.04	0.52	0.28	0.98
Use drugs with family (lifetime)	-0.56	0.07	0.57	0.31	1.04
Age at Intake	-0.14	0.00	0.87	0.79	0.96
Family conflicts – days in the past 30 (intake)	0.08	0.01	1.08	1.02	1.14
Number of years using more than one drug a day (not including alcohol) (lifetime)	0.22	0.00	1.24	1.10	1.40
Constant	2.29	0.13	9.91		
PROXIMAL (past 30 days at month 12) Adj. R ² = 0.322					
Number of days in the past 30 have conflicts with other people	0.09	0.01	1.10	1.02	1.18
Are you in an environment that is supportive of your recovery?	0.80	0.10	2.22	0.85	5.79
Problems with being around others who use alcohol or other drugs?	0.88	0.00	2.42	1.51	3.89
Constant	-4.01	0.00	0.02		
INTRAPERSONAL (past 30 days at month 12)					
During the past 30 days, have you had problems with craving drugs?	1.65	0.00	5.20	2.79	9.68
Abstinence self-efficacy score	-0.72	0.00	0.49	0.33	0.72
Constant	-0.58	0.43	0.56		

Predictors of alcohol use at the 12-month follow up include having poor family relations at intake, experiencing negative life events, being around others who use alcohol or drugs, and craving alcohol. Being older, having current positive events, attending more self-help groups in the past month, and having a high abstinence self-efficacy score were associated with a lower likelihood of alcohol use at 12 months. The model for distal variables has a very poor fit, in contrast to the fit for the other two models.

Having conflicts with family at intake, poly-drug use, being around others who use alcohol or drugs, and craving drugs were significant predictors of whether the client used drugs at the 12-month follow up. Having alcohol as a major problem as indicated by prior alcohol

treatment experience, being older, and having a high self-efficacy for abstinence score were associated with a lower likelihood of drug use at the 12-month follow up.

Discussion

The purpose of this study was to determine predictors of relapse for AI women up to 12 months following entry into residential treatment. In the short term (6 months), being with other people who use alcohol or drugs (proximal factors) and craving alcohol or drugs (intrapersonal factors) were significantly associated with relapse. In the longer term (12 months), common factors for alcohol and drug use were reported family conflicts at intake (distal), being around alcohol or drug users (proximal), and craving alcohol or drugs (intrapersonal). There was no common distal factor for alcohol and drug use at the 6-month follow-up point.

Factors that were associated with a reduced probability of alcohol use at 6 months included using drugs with family members, having drug treatment experience, having a father who had warned about alcohol and drugs, rating one's physical health well, and having a high self-efficacy score. In the longer term, no alcohol use was associated with being older, experiencing positive events in the past month, and attending self-help groups.

There were no significant predictors for the lack of drug use at 6 months. At the 12-month follow up, the only factor significantly associated with a reduced risk of using drugs was being older.

Distal factors

Relapse prevention plans concentrate on addressing factors that are close in time to the relapse event (proximal factors) and that serve as triggers that precipitate substance use. Two of the more popular models of relapse are aimed at improving overall coping skills to help individuals resist relapse (Marlatt & George, 1984; Gorski, 1989). However, from our results it is clear that distal factors do have a significant predictive value regarding relapse, and this information should be used in the development of the female AI client's treatment plan. For drug users, negative social relationships present at intake should be addressed during treatment because problematic circumstances leading to high-risk relapse situations (e.g., negative social interactions) tend to repeat (Stout, Longabaugh, & Rubin, 1996). This is supported by our results showing that drug relapse at both the 6- and 12-month follow ups was significantly predicted by conflicts at intake.

Alcohol and drug users in our sample appear to be distinct from each other. If they used drugs with their families, craved drugs at intake, or had been poly-drug users for a long period, they were either more likely to have relapsed to using drugs or less likely to have used alcohol by the 6-month follow up. Similarly, if they had a serious alcohol problem (as indicated by the number of alcohol treatment episodes), they were either more likely to relapse to drinking in a relatively short period after treatment (within 6 months), or less likely to use drugs at the 12-month follow up. Other research (with males) has shown that depressed cocaine-dependent individuals used alcohol frequently both before and after treatment (McKay et al., 2002).

An interesting result regarding a distal influence is the lower risk of using alcohol at the 6-month follow up if the client's father had warned her about alcohol and drug use when she was growing up. Much evidence has accumulated showing that positive parental influence during adolescence, including using verbal reasoning, decreases the chances of substance use (e.g., Coombs, Paulson, & Richardson, 1991; Kaplow, Curran, Dodge, & the Conduct Problems Prevention Research Group, 2002), whereas negative familial influences can increase problem behaviors such as lack of behavioral self-regulation (Dawes, Clark, Moss, Kirisci, & Tarter, 1999) and can increase the tendency to substance use (e.g., Bailey, Hill, Oesterle, & Hawkins, 2006; Kaplow et al., 2002; Hodgins, el-Guebaly, & Armstrong, 1995; Mohr et al., 2001). Similarly, more bonding and support from parents during childhood is associated with lower substance use as an adult for both males and females (Galaif, Stein, Newcomb, & Bernstein, 2001). However, the impact of positive parenting during adolescence on adults who have engaged in negative behavior has not been well studied. Our results suggest that positive parenting, or at least targeted anti-substance abuse messages, may eventually have a positive effect, even if they don't always work immediately. Further work is needed to determine if early positive parental influence can be capitalized upon to improve treatment outcomes.

In sum, the predictive value of distal factors can be quite substantial. The factors that were reported here – the tendency of clients to be prone to conflict, the severity of clients' substance abuse problems, and the potential of familial influence to affect clients' treatment outcomes – should be used to create treatment plans that are individualized to each client's needs.

Proximal factors

If clients were in a negative social environment in which they were in contact with individuals who used alcohol or other drugs, they were about two and a half times more likely to relapse to alcohol or drug use at 6 or 12 months, with drug users at greater risk. The difficulty that women face in establishing a non-using network has been reported elsewhere (Falkin & Strauss, 2003; Sun, 2007; Walitzer & Dearing, 2006). This is partly due to the fact that their social networks often comprise individuals who enable their drug use while providing support (Falkin and Strauss, 2003). In one study, over two-thirds of women clients reported taking their first post-treatment drink with others (Rubin, Stout, & Longabaugh, 1996). As also reported by others, conflicts with other people at intake and at the time of follow up were predictive of drug use at follow-up periods (e.g., Ellis et al., 2004; Vannicelli, Gingerich, & Ryback, 1983). Although the impact of social relationships appears clear in this study, having a supportive environment for recovery did not predict treatment outcome significantly. Interestingly, conflicts with family at intake were significant predictors of the use of alcohol or drugs at 12 months – that is, as distal rather than proximal predictors.

Other proximal factors that had significant predictive values pertained to a decreased risk of using alcohol or drugs. In terms of alcohol use at the 6-month follow up, a higher rating of physical health showed an odds ratio of 0.7 for using alcohol. At 12 months, clients were less likely to use alcohol if positive events (such as regaining custody of children, starting school or a new job, having a new relationship, etc.) had occurred in the past 30 days, whereas they were more likely to use alcohol if negative events (e.g., death or loss, miscarriage, being homeless, engaging in prostitution, etc.) occurred. A decreased risk of alcohol use at 12 months was also related to the number of days that the individual attended self-help groups. We have found that almost all of the women who were married or had a partner did not use drugs. This suggests that having a partner may be predictive of a positive treatment outcome and, according to Walter et al. (2006), is more useful and relevant as a predictor than the coping styles that clients employ. No other proximal antecedents were found that significantly predicted a decrease in drug use, either at 6 or 12 months.

In summary, being in contact with negative peers or having conflicts with others increases the likelihood of using alcohol or drugs more than two-fold. Individuals were less likely to use alcohol if they

were engaged in positive behaviors such as starting school or attending aftercare, and if they were healthy physically. However, information is lacking regarding predictors for decreased drug use.

Intrapersonal factors

Self-efficacy (Connors, Longabaugh & Miller, 1996) and being able to tolerate distress (Daughters, Lejuez, & Kahler, 2005) have been shown to decrease the risk for relapse. In our study, self-efficacy was significantly related to alcohol or drug use but not to self-rating of mental health (as an indicator of distress) or self-esteem. Among our group of AI women, confidence in their ability to not use alcohol or drugs was significantly and strongly predictive of no use in the past 30 days. This finding is inconsistent with that reported by Taylor (2000) who found that substance use self-efficacy among AI adults was associated with higher alcohol use. He attributed this finding as showing misperceived feelings of control over use. Our population in this study appear to be cognizant of their abilities as reflected by the congruence in their actions (to use or not to use). Among those who reported craving alcohol or drugs, their ability to withstand those cravings appears to be limited. At the 12-month follow up, those who reported craving drugs had a five-fold increase in risk for using drugs in the previous 30 days. For each of the models, craving alcohol or drugs predicted relapse, whereas having the confidence to withstand high-risk situations predicted abstinence, at least in the 30 days prior to the follow up. The strength of craving decreases monotonically and is extinguished during the first 6 months unless a relapse occurred during that period (Zywiak et al., 2006). The high odds of drug use at the 12-month follow up among those who craved drugs suggest that, for the group of women in this study, those who reported craving were most likely using in the previous 6 months.

In summary, the main predictors of intrapersonal factors were craving and self-efficacy: Craving leads to an increased risk for using alcohol or other drugs whereas self-efficacy is associated with a decreased risk. These two variables have been commonly cited as having high predictive value for the probability of relapse (e.g., Bottlender & Soyka, 2004; Miller et al., 1996; Scott, Foss, & Dennis, 2005; Walton et al., 2003;). However, other commonly cited constructs such as negative emotions (Zywiak, Connors, Maisto, & Westerberg, 1996; Moos & Moos, 2003; Miller & Harris, 2000), including stress (Breese et al., 2005; Sinha, 2001) and self-esteem (Hassin, 1998; Sun, 2007), did not contribute significantly to the final models, although most were significantly correlated with

craving drugs or alcohol. Self-efficacy is related to coping strategies, and compared to avoidance, actively addressing the problem is better (Forys, McKellar, & Moos, 2007; Moser & Annis, 1996) – in particular, through the joint use of cognitive and behavioral strategies (Gossop, Stewart, Browne, & Marsden, 2002; Zywiak et al., 1996). This issue was not investigated in our study, but future research should be conducted to determine the strategies that had been successfully used by this population.

Limitations

While most of the findings here support previous findings, some of the results need to be further explored. The large number of variables that were tested for their predictive values may have led to overfitting (Hosmer & Lemeshow, 2000). Our sample size was appropriate for some analyses although, clearly, a larger sample size is needed to increase power to a more acceptable level. Also, as with all interview data, there is the possibility that self-reporting can lead to minimization of the recall of negative events and/or recall bias. Additionally, because the interviews were conducted 6 months apart, there could be a number of different periods within those timeframes in which individuals cycled from using to not using alcohol or other drugs; this information would not be captured.

Conclusion

Comparing the three types of predictors, we found that the best predictors are the intrapersonal factors, followed by the proximal and then the distal factors. Based on their research in this area, Miller et al. (1996) have concluded that it is more sensible in preventing relapse to address current events in the client's life in preventing relapse than to attend to events from a more distant past (in their case, up to 10 months prior to follow up). However, our study suggests an added benefit to being aware of distal factors that are even more distant in time: These factors provide some knowledge of clients' predispositions regarding whether they would or would not relapse to substance use. Further research should be conducted to assess how such predispositions interact with the proximal and intrapersonal factors. In addition, the rather poor fit of the models for distal factors for the 6-month drug use and the 12-month alcohol use should be further studied.

The results of the present study point to a number of consistent factors that will be useful to consider for AI women's treatment plans. Women's confidence levels regarding their ability to resist temptation need to be boosted to ensure high self-efficacy following treatment. This training should include improving coping skills through cognitive and behavioral strategies. Second, women need to be given skills to improve their social relationships. The ability to elicit and receive support is a major factor of recovery (Gordon & Zrull, 1991). Having positive family relationships or fewer associations with negative peer networks decreases the risk of relapse for women (Broome, Simpson, & Joe, 2002; Ellis et al., 2004) and is related to healthy coping behaviors (Forys et al., 2007). The fact that women in this study who were married or had a partner did not use drugs suggests that they may have received abstinence support from their partners. Support can be elicited from families, or from other supportive individuals if families are dysfunctional. Anecdotally, we find that the treatment program can jump-start the mending of relationships between clients and their families (or close supportive individuals) by providing a safe and structured environment within which interactions can occur, even if each party has not seen the other for a long time.

Results from this study show the influence of intrapersonal, proximal, and distal factors on relapse within one year of treatment for AI women. While distal factors cannot be changed, treatment can address those events so that their impact can be minimized. Results highlight the similarities of relapse predictors among this population with those reported for non-AI women. By looking at the risks for relapse associated with the predictors, characteristics that can be built up (e.g., positive events such as going to school) or mitigated (such as conflicts) can be integrated into the treatment plan. Family relationships, for example, are an important factor among this population. Treatment programs must consider providing the opportunity for clients to improve family relationships, or teach them skills to develop relationships that provide support.

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References

- Bailey, J.A., Hill, K.G., Oesterle, S., & Hawkins, J.D. (2006). Linking substance use and problem behavior across three generations. *Journal of Abnormal Child Psychiatry, 34*, 273-292.
- Beattie, M.C., & Longabaugh, R. (1999). General and alcohol-specific social support following treatment. *Addictive Behaviors, 24*, 593-606.
- Berkowitz, G., Peterson, S., Smith, E.M., Taylor, T., & Brindis, C. (1998). Community and treatment program challenges for chemically dependent American Indian and Alaska Native women. *Contemporary Drug Problems, 25*, 347-371.
- Bond, J., Kaskutas, L.A., & Weisner, C. (2003). The persistent influence of social networks and alcoholics anonymous on abstinence. *Journal of Studies on Alcohol, 64*, 579-588.
- Bottlender, M., & Soyka, M. (2004). Impact of craving on alcohol relapse during, and 12 months following, outpatient treatment. *Alcohol & Alcoholism, 39*, 357-361.
- Breese, G.R., Chu, K., Dayas, C.V., Funk, D., Knapp, D.J., Koob, G.F., Lê, D.A., O'Dell, L.E., Overstreet, D.H., Roberts, A.J., Sinha, R., Valdez, G.R., & Weiss, F. (2005). Stress enhancement of craving during sobriety: A risk for relapse. *Alcoholism: Clinical and Experimental Research, 29*, 185-195.
- Brindis, C., Berkowitz, G., Peterson, S., Broadnax, J., Clayson, Z., Gandhi, S., et al., (1995). Evaluating the effectiveness of alcohol and substance abuse services for American Indian/Alaska Native women: Phase II Final report. Report to Indian Health Service, DHHS; Institute for Health Policy Studies. San Francisco: University of California, Contract No. 282-92-0048.
- Broome, K.M., Simpson, D.D., & Joe, G.W. (2002). The role of social support following short-term inpatient treatment. *The American Journal on Addictions, 11*, 57-65.
- Carise, D., Wicks, K., McLellan, A.T., & Olton, P. (1998). *Addiction Severity Index 5th Edition – North Dakota State Adaptation for use with Native Americans*. Philadelphia: Treatment Research Institute at University of Pennsylvania.

- Chong, J., & Herman-Stahl, M. (2003). Substance abuse treatment outcomes among American Indians in the Telephone Aftercare Project. *Journal of Psychoactive Drugs Special Issue: Morning Star Rising: Healing in Native American Communities*, 35, 71-77.
- Chong, J., Herman-Stahl, M., & Dye, C. (1998). [Tribal Nations Study as part of the Arizona Substance Abuse Treatment Needs Assessment Study funded by the Center for Substance Abuse Treatment, Substance Abuse Mental Health Services Administration by contract #270-94-0026.] Unpublished data.
- Chong, J. & Lopez, D.C.W. (2005a). Social networks, support, and psychosocial functioning among American Indian women in treatment. *American Indian and Alaska Native Mental Health Research: The Journal of the National Center*, 12, 62-85.
- Chong, J. & Lopez, D.C.W. (2005b, December). *Impact of family and friends on substance abuse treatment outcomes among female Native Americans*. Poster presented at the American Public Health Association 133rd Annual Meeting and Exposition, Philadelphia, PA.
- Connors, G.J., Longabaugh, R., & Miller, W.R. (1996). Looking forward and back to relapse: Implications for research and practice, *Addiction*, 91(Supplement), S191-S196.
- Coombs, R.H., Paulson, M.J., & Richardson, M.A. (1991). Peer vs. parental influence in substance use among Hispanic and Anglo children and adolescents. *Journal of Youth and Adolescence*, 20, 73-88.
- Daughters, S.B., Lejuez, C.W., & Kahler, C.W. (2005). Psychological distress tolerance and duration of most recent abstinence attempt among residential treatment-seeking substance abusers. *Psychology of Addictive Behaviors*, 19, 208-211.
- Dawes, M., Clark, D., Moss, H., Kirisci, L., & Tarter, R. (1999). Family and peer correlates of behavioral self-regulation in boys at risk for substance abuse. *American Journal of Drug and Alcohol Abuse*, 25, 219-237.
- DiClemente, C.C., Carbonari, J.P., Montgomery R.P.G., & Hughes, S.O. (1994). The alcohol abstinence self-efficacy scale. *Journal of Studies on Alcohol*, 55, 141-148.
- Ellis, B., Bernichon, T., Yu, P., Roberts, T., & Herrell, J.M. (2004). Effect of social support on substance abuse relapse in a residential treatment setting for women. *Evaluation and Program Planning*, 27, 213-221.

- Evans, E., Spear, S.E., Huang, Y, & Hser, Y. (2006). Outcomes of drug and alcohol treatment programs among American Indians in California. *American Journal of Public Health, 96*, 889-896.
- Falkin, G.P., & Strauss, S.M. (2003). Social supporters and drug use enablers. A dilemma for women in recovery. *Addictive Behaviors, 28*, 141-155.
- Forys, K., McKellar, J., & Moos, R. (2007). Participation in specific treatment components predicts alcohol-specific and general coping skills. *Addictive Behaviors, 32*, 1669-1680.
- Galaif, E.R, Stein, J.A., Newcomb, M.D., & Bernstein, D.P. (2001). Gender differences in the prediction of problem alcohol use in adulthood: Exploring the influence of family factors and childhood maltreatment. *Journal of Studies on Alcohol, 62*, 486-493.
- Gordon, A.J. & Zrull, M.(1991). Social networks and recovery: One year after inpatient treatment. *Journal of Substance Abuse Treatment, 8*, 143-152.
- Gorski, T.T. (1989) Relapse - Issues and Answers: Column 3: How To Develop A Relapse Prevention Plan. Originally published in *Alcoholism & Addiction Magazine*. Retrieved September 25, 2007 from http://www.tgorski.com/gorski_articles/developing_a_relapse_prevention_plan.htm
- Gossop, M., Stewart, D., Browne, N., & Marsden, J. (2002). Factors associated with abstinence, lapse or relapse to heroin use after residential treatment: Protective effect of coping responses. *Addiction, 97*, 1259-1267.
- Grissom, G.R. and Bragg, A. (1991). Addiction Severity Index: Experience in the field. *International Journal of the Addictions, 26*, 55-64.
- Gutierrez, S.E., Russo, N.F., and Urbanski, L. (1994). Sociocultural and psychological factors in American Indian drug use: Implications for treatment. *The International Journal of the Addictions, 29*, 1961-1986.
- Hassin, J. (1998). After substance abuse treatment, then what? The NARTC/Oregon Tribal and vocational rehabilitation project. *NARTC Newsletter* (University of Arizona Health Sciences Center – Native American Research and Training Center).

- Herman-Stahl, M., & Chong, J. (2002). Substance abuse prevalence and treatment utilization among American Indians residing on-reservation. *American Indian and Alaska Native Mental Health Research: The Journal of the National Center*, 10, 1-23.
- Hodgins, D.C., el-Guebaly, N., & Armstrong, S. (1995). Prospective and retrospective reports of mood states before relapse to substance use. *Journal of Consulting and Clinical Psychology*, 63, 400-407.
- Hosmer, D.W., & Lemeshow, S. (2000). *Applied Logistic Regression* (2nd ed.). New York: John Wiley and Sons.
- Indian Health Service (n.d.). *Regional Differences in Indian Health 1998-99*. Rockville, MD: U.S. Department of Health and Human Services.
- Institute of Behavioral Research (2005). *List of Correctional: Residential Treatment Forms*. Retrieved December 18, 2007 from <http://www.ibr.tcu.edu/pubs/datacoll/cjforms.html#CorrRTForms>
- Kaplow, J.B., Curran P.J., Dodge, K.A., & the Conduct Problems Prevention Research Group (2002). Child, parent, and peer predictors of early-onset substance use: A multisite longitudinal study – statistical data included. *Journal of Abnormal Child Psychology*, 30, 199-217.
- Kosten, T. R., Rounsaville, B. J., & Kleber, H. D. (1983). Concurrent validity of the Addiction Severity Index. *The Journal of Nervous and Mental Disease*, 171, 606-610.
- McKay, J.R., Pettinati, H.M., Morrison, R., Feeley, M., Mulvaney, F.D., & Gallop, R. (2002). Relation of depression diagnoses to 2-year outcomes in cocaine-dependent patients in a randomized continuing care study. *Psychology of Addictive Behaviors*, 16, 225-235.
- Maisto, S.A., & Connors, G.J. (2006). Relapse in the addictive behaviors: Integration and future directions. *Clinical Psychology Review*, 26, 229-231.
- Marlatt, G.A. & George, W.H. (1984). Relapse prevention: Introduction and overview of the model. *British Journal of Addiction*, 79, 261-273.
- Miller, W.R. & Harris, R.J. (2000). A simple scale of Gorski's warning signs for relapse. *Journal of Studies on Alcohol*, 61(5), 759- 765.
- Miller, W.R., Westerberg, V.S., Harris, R.J., & Tonigan, J. S. (1996). What predicts relapse? Prospective testing of antecedent models. *Addiction*, 91(Supplement), S155-S171.

- Mohr, C.D., Armeli, S., Tennen, H., Carber, M.A., Affleck, G., & Hromi, A. (2001). Daily Interpersonal Experiences, Context, and Alcohol Consumption: Crying in Your Beer and Toasting Good Times. *Journal of Personality and Social Psychology, 80*(3), 489-500.
- Moos, R.H., & Moos, B.S. (2003). Risk factors for nonremission among initially untreated individuals with alcohol use disorders. *Journal of Studies on Alcohol, 64*, 555 – 562.
- Moser, A.E., & Annis, H.M. (1996). The role of coping in relapse crisis outcome: A prospective study of treated alcoholics. *Addiction, 91*(8), 1101-1113.
- Rubin, A., Stout, R.L., & Longabaugh, R. (1996) Gender differences in relapse situations. *Addiction, 91*(Supplement), S111-S120.
- Scott, C.K., Foss, M.A., & Dennis, M.L. (2005). Pathways in the relapse – treatment – recovery cycle over 3 years. *Journal of Substance Abuse Treatment, 28*, S63-S72.
- Simpson, D.D. (1992, March) . *TCU Forms Manual. Drug Abuse Treatment for AIDS-Risk Reduction (DATAR)*. Fort Worth, TX: Texas Christian University, Institute of Behavioral Research.
- Sinha, R. (2001). How does stress increase risk of drug abuse and relapse? *Psychopharmacology, 158*, 343-359.
- Stout, R.L., Longabaugh, R., & Rubin, A. (1996). Predictive validity of Marlatt's relapse taxonomy versus a more general relapse code. *Addiction, 91*(Supplement), S99-S110.
- Sun, A.P. (2007). Relapse among substance-abusing women: Components and processes. *Substance Use & Misuse, 42*, 1-21.
- Taylor, M.J. (2000). The influence of self-efficacy on alcohol use among American Indians. *Cultural Diversity and Ethnic Minority Psychology, 6*, 152-167.
- Vannicelli, M., Gingerich, S., & Ryback, R. (1983). Family problems related to the treatment and outcome of alcoholic patients. *British Journal of Addiction, 78*, 193-204.
- Walitzer, K.S. & Dearing, R.L. (2006). Gender differences in alcohol and substance use relapse. *Clinical Psychology Review, 26*, 128-148.

- Walter, M., Gerhard, U., Duersteler-MacFarland, K.M., Weijers, H., Boening, J., & Wiesbeck, G.A. (2006). Social factors but not stress-coping styles predict relapse in detoxified alcoholics. *Neuropsychobiology*, *54*, 100-106.
- Walton, M.A., Blow, F.C., Bingham, C.R., & Chermack, S.T. (2003). Individual and social/environmental predictors of alcohol and drug use 2 years following substance abuse treatment. *Addictive Behaviors*, *28*, 627-642.
- Witkiewitz, K., & Marlatt, G.M. (2004). Relapse Prevention for alcohol and drug problems, *American Psychologist*, *59*, 224-235.
- Zywiak, W.H., Connors, G.J., Maisto, S.A., & Westerberg, V.S. (1996). Relapse research and the reasons for drinking questionnaire: A factor analysis of Marlatt's relapse taxonomy. *Addiction*, *91*(Supplement), S121-S130.
- Zywiak, W.H, Stout, R.L., Trefry, W.B., Glasser, I, Connors, G.J, Maisto, S.A., & Westerberg, V.S (2006). Alcohol relapse repetition, gender, and predictive validity. *Journal of Substance Abuse Treatment*, *30*, 349-353.

Appendix A Measures

The items used to obtain distal measures were as follows:

Age	Age at intake
Binge	Have you ever gone on binges where you kept drinking for a couple of days without sobering up? [0 - No, 1 - Yes]
Alcohol treatment	How many times in your life have you been treated for alcohol abuse?
Drug Treatment	How many times in your life have you been treated for drug abuse?
Alcohol and/or drug years	How many years have you used more than one drug a day (including alcohol)?
More than 1 drug years	How many years have you used more than one drug a day (NOT including alcohol)?
Drinking family	What was it usually like when you spend time together with your family? How often did you get drunk together? [0 - Never, 1 - Rarely, 2 - Sometimes, 3 - Often, 4 - Almost Always]
Drugging family	How often did you use other drugs together?
Mother warned	Tell me what your mother figure was like while you were growing up: warned you about alcohol or drug problems.
Father warned	Tell me what your father figure was like while you were growing up: warned you about alcohol or drug problems.
Alcohol days	How many days in the past 30 did you use alcohol?

Appendix A, continued

Physical health	Overall, in the past 30 days before you came to Native American Connections, has your physical health been 4 - Excellent, 3 - Very good, 2 - Good, 1 - Fair or 0 - Poor?
Mental health	Overall, in the past 30 days before you came to Native American Connections, has your mental health been 4 - Excellent, 3 - Very good, 2 - Good, 1 - Fair or 0 - Poor?
Others using	During the past 30 days before you came to Native American Connections, have you had problems with being around others who use alcohol or drugs? [0 No, 1 Yes]
Craving alcohol	During the past 30 days before you came to Native American Connections, have you had problems with craving alcohol? [0 - No, 1 - Yes]
Craving drug	During the past 30 days before you came to Native American Connections, have you had problems with craving drugs? [0 - No, 1 - Yes]
Family conflicts	How many days in the past 30 days have you had serious conflicts with your family?
Social conflicts	How many days in the past 30 days have you had serious conflicts with other people (excluding family)?

The items used to obtain proximal measures are listed below. For the 6-month follow up, the time frame was the 30 days prior to the 6-month interview; for the 12-month follow up, it was the 30 days prior to the 12-month interview.

Supportive environment	Are you in an environment that is supportive of your recovery? [0 - No, 1 - Yes]
Community services	Are you in an environment that offers community services to help you in your recovery? [0 - No, 1 - Yes]
Family conflicts	How many days in the past 30 days have you had serious conflicts with your family?
Social conflicts	How many days in the past 30 days have you had serious conflicts with other people (excluding family)?
Physical health	Overall, in the past 30 days, has your physical health been 4 - Excellent, 3 - Very good, 2 - Good, 1 - Fair or 0 - Poor?
Others using	During the past 30 days, have you had problems with being around others who use alcohol or drugs? [0 - No, 1 - Yes]
Single	Single, never married
Employed	Are you currently employed? [Employed full time or part time]
Positive events	Has any of the following events happened to you during the past 30 days: regained custody of child/children; entered school/training; started a new job; started a new relationship with a partner; found a new place to live; made new friends; spending more quality time with children; got married. [0 - No, 1 - Yes]
Negative events	Has any of the following events happened to you during the past 30 days: death of a close friend/relative; loss of old friends; miscarriage/abortion; couldn't take care of your kids; purposely started a fight with someone; neglected yourself; got arrested for a crime; had sex for money; homeless for a period of time; got beaten, hurt, or taken advantage of. [0 - No, 1 - Yes]
Self-help	How many days have you been to self-help groups for alcohol or drugs in the past 30 days?

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INVESTIGATION OF FACTORS CONTRIBUTING TO DIABETES RISK IN AMERICAN INDIAN/ALASKA NATIVE YOUTH

Kayleen Islam-Zwart, Ph.D. and Alvina Cawston, B.A.

Abstract: This study investigated the relationship between family history, sedentary behaviors, and childhood risk for type 2 diabetes. Participants were 480 students attending schools on or near an American Indian reservation. Data were collected through survey and BMI measurement. Children who frequently watched television or played video games did not significantly differ in BMI compared to peers. However, children with a parental history of diabetes had significantly higher BMIs than children without.

Type 2 diabetes is approaching epidemic rates of prevalence (Centers for Disease Control [CDC], 2002), especially among American Indians/Alaska Natives (AI/ANs). Furthermore, type 2 diabetes is afflicting AI/ANs at a continually younger age of onset. Several studies have been done to investigate the cause of diabetes (Hegele, Cao, Harris, Hanley, & Zinman, 1999; Martin, Warram, Krolewski, Bergman, Soeldner, & Kahn, 1992; Owen, Stride, Ellard, & Hattersley, 2003), but few have explored the reasons for the decreasing age of onset specific to the AI/AN population.

The increasing prevalence of type 2 diabetes among younger individuals has been attributed to lifestyle changes in diet and physical activity (Weir & Lipscombe, 2004). Modernization has resulted in a decrease in exercise and an increase in caloric and fat intake, which causes obesity – a risk factor for diabetes (Rosenbloom et al., 2000). Obesity is of particular concern given that AI/AN children have shown levels of obesity consistently higher than those of national averages and other ethnic groups (Baranowski et al., 2006; Caballero et al., 2003). Other risk factors for diabetes include family history: body mass index (BMI) greater than 25; a sedentary lifestyle; hypertension; dyslipidemia;

a history of gestational diabetes; polycystic ovary syndrome (Rao, Disraeli, & McGregor, 2004); belonging to a minority population such as AI/AN, African American, Hispanic American, or Asian/Pacific Islander (Rosenbloom et al.); and abdominal obesity (Weir & Lipscombe).

AI/AN youth show a number of poor health risk indicators (Harris, Gordon-Larsen, Chantala, & Udry, 2006) and type 2 diabetes specifically has had a dramatic impact on the AI/AN population. According to the CDC (2002), 14.9% of AI/ANs aged 20 years and older receiving care from the Indian Health Service (IHS) had diabetes, although the rate is likely even higher because of undetected cases. American Indians/Alaska Natives are 2.3 times more likely to develop diabetes than non-Hispanic Whites, and rates are increasing among the youth population. From 1988 to 1996, the prevalence of diabetes among youth aged 15-19 years increased 54% (Acton et al., 2002). Although not specific to AI/AN youth, a recent study found that the average time to insulin treatment did not differ by age, suggesting these individuals will have more years of life during which they can experience complications (Hillier & Pedula, 2003).

Although the etiology for the increase in diabetes and obesity among AI/ANs is unknown, studies have indicated possible explanations. Neel (1962) proposed the thrifty genotype phenomenon in AI/AN, which is hypothesized as an ability to release insulin quickly, so as to store energy in times of food abundance and utilize food energy storages efficiently during periods of famine (Neel, 1962; Neel, 1982; Neel, Weder, & Julius, 1998). Thus, because Western modernization has resulted in food abundance, food is continually stored in the body without being utilized for energy. Possibly related to this theory, AI/AN children are more likely to be overweight than any other ethnic group and to have increased central body fat (Goran et al., 1995). Blackett et al. (1996) also reported that obesity is associated with elevated lipid levels beginning at an early age in AI/AN children. Popkin (1994) asserted there is a nutrition transition pattern found in both low-income countries and AI/AN communities in the U.S. This nutrition transition is characterized by the adoption of a Western-type diet that is high in fat and low in fiber and linked with a sedentary lifestyle, which results in an increased prevalence of obesity and degenerative diseases (Popkin; Drewnowski & Popkin, 1997). Further studies have suggested that reductions in the economic cost of carbohydrates may contribute to higher incidences of AI/AN obesity (Richards & Patterson, 2006).

Research indicates that 50-90% of youth with type 2 diabetes have a BMI greater than 27 or $\geq 85\%$ for age (Rosenbloom et al., 2000). Several studies in the general population have indicated a correlation between low levels of physical activity and obesity (Steinbeck, 2001; Kimm et al., 2002). Other findings indicate an interaction between television viewing and increased consumption of high-energy foods (Campbell et al., 2002), increased obesity (Crespo et al., 2001), and decreased energy expenditure (McMurray et al., 2000). Collectively, these studies support the notion that children who exhibit low levels of physical activity are at greater risk for type 2 diabetes. Similarly, Rosenbloom et al. (2000) assert that minority children have a genetic predisposition to insulin resistance and that the presence of environmental modulators could increase their risk. The purpose of the current study was to investigate this assertion among AI/AN youth. Specifically, it was predicted that AI/AN children who watched television or played video games for at least 2 hours per day, and/or who had a parent with type 2 diabetes, would have a higher BMI percentile rank than their peers.

Method

Participants

Participants were children in the third through twelfth grades attending schools located on or near an AI reservation in north central Washington state. (The decision to begin with third-grade students was based on the American Diabetes Association [2000] guidelines that suggest screening of children every two years beginning at 10 years of age.) Six school areas were screened over a one-year period. There were a total of 1404 students in the six schools, 796 of whom were known AI according to the Colville IHS unit. Specific data regarding ethnicity were not collected. For reasons of equity and to avoid stigmatization, non-Indian students were also offered the screening opportunity and their data were not excluded from analysis. Students who were diabetic, pregnant, acutely ill, or who had a chronic illness were excluded from analysis. Two comparisons were made in this study: 1) children who watched television or played video games for 2 or more hours per day ($n = 287$; 165 females and 122 males) and children who watched television or played video games for less than 2 hours per day ($n = 193$; 117 females and 76 males), and 2) children who had one or both parents

with diabetes ($n = 78$; 55 females and 23 males) and children with no parental diagnosis of diabetes ($n = 402$; 227 females and 175 males). The socioeconomic status of the reservation and surrounding areas was low to mid-range, with a median household income level of \$29,830 in 1999, based on information from the U.S. Census Bureau regarding the tribe (2000). Average age was 12.08 years ($SD = 2.71$, range = 8-18). See Table 1 for additional demographic information.

Table 1
Demographics by Group (N = 480)

	No Parent with Diabetes/ ≥2 Hours of TV/Video	No Parent with Diabetes/ <2 Hours of TV/Video	Parent with Diabetes/ ≥2 Hours of TV/Video	Parent with Diabetes/ <2 Hours of TV/Video
	n = 235 (male = 107, female = 128)	n = 167 (male = 68, female = 99)	n = 52 (male = 15, female = 37)	n = 26 (male = 8, female = 18)
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Age	12.04 (2.74)	11.83 (2.70)	11.98 (2.70)	12.73 (2.53)
Height	60.65 (5.31)	60.39 (5.36)	60.52 (5.54)	61.80 (4.67)
Weight	125.28 (47.89)	119.38 (43.31)	135.17 (49.32)	157.00 (54.94)
BMI Percentile Rank	75.86 (26.08)	73.82 (25.13)	81.80 (25.35)	87.30 (18.34)

Apparatus

Parents completed a consent form that inquired briefly about medical and family history. Data pertaining to the children's number of hours spent watching television and playing video games and the presence of a parent with diabetes were also collected from the parental consent form. Specifically, there were questions on the consent that asked for a Yes or No response pertaining to the child (Have a mother or father with diabetes; Watch television or play video games at least 2 hours every day). The diabetes screen, performed by licensed nurses, measured each child's height in inches and weight in pounds to calculate the BMI using the standard formula and then converted the results into percentiles by age and gender, as specified on the SECA growth chart (CDC, 2001).

Procedure

This study used archival data collected by the IHS Diabetes Program as part of an ongoing project investigating diabetes in youth and adolescents served by the Colville IHS unit (Marrero, Oliver, Kim, Robertson, & Lee, 2004). Participants for the screenings were recruited through a letter sent to parents one month prior to the screening. As part of the letter, parents were invited to attend a dinner and presentation at their child's school; the presentation included information about diabetes progression and the goal of primary prevention. Parents were given the opportunity to sign a consent form at the meeting or to send it to school with the child. One week and then one day prior to the screening, reminder letters were sent to parents. On the day of the screening, all children who had returned informed consents permitting participation were invited to the screening. Once there, an IHS employee read each child an assent form and obtained his/her signature. All children received packet containing a t-shirt, pencil, pedometer, and coloring book as compensation for their participation. Results of the screening were not given to the students that day, but were mailed to the parents. Students who did not participate in the screening were escorted to the cafeteria and provided an alternative activity according to each school's preferences. No information was collected from students electing not to participate. Study procedures were conducted in accordance with American Psychological Association ethical guidelines and were approved by the Portland Area IHS Institutional Review Board and the university's Institutional Review Board.

Results

A 2 (2 hours or more per day spent watching television or playing video games vs. less than 2 hours) x 2 (parent with diabetes vs. no parent with diabetes) analysis of variance (ANOVA) was conducted to determine whether children who watched television or played video games for 2 hours per day or more and/or had a parent with diabetes would have higher BMI percentiles than children who did not. Findings indicated no significant difference in the BMI percentiles of children who watched 2 or more hours of television when compared to their peers, $F(1, 479) = 0.28, p = .60$. However, children with a parental history of diabetes did differ significantly in BMI percentile rank when compared to children who did not have a parent with diabetes, $F(1, 479) = 8.65, p = .00, \eta^2 = .018$. Specifically, children with one or both parents with diabetes

showed significantly higher BMI percentile rank ($M = 83.63, SD = 23.28$) than those without a parental history ($M = 75.01, SD = 25.68$). There was no significant interaction, $F(1, 479) = 1.30, p = .26$.

Discussion

This study examined the relationship between parental diabetes status, sedentary behaviors, and childhood risk for type 2 diabetes. Rosenbloom et al. (2000) suggested that minority children have a genetic predisposition for insulin resistance. Thus, in the presence of environmental modulators, their risk for type 2 diabetes is increased, potentially resulting in earlier disease expression. In accordance with this assertion, it was predicted that children who watched television or played video games for 2 or more hours per day and/or had a parent with diabetes would have a higher BMI percentile rank than their peers. As anticipated, children with one or two parents who had diabetes had a significantly higher BMI percentile rank than those children without a parental history. In contrast to the expected finding, children who watched television or played video games for 2 or more hours did not have a higher BMI percentile rank than children who did not. Therefore, these results falter in support of Rosenbloom et al.'s contention that environmental modulators increase children's risk for type 2 diabetes.

Differential findings related to television watching may have resulted from the measurement used in the current study. Specifically, previous conceptions of environmental modulators may differ from the measurement used in the current study (amount of television viewing and video game playing). Alternatively, it may be that 2 hours is not an appropriate cutoff. In a longitudinal study in which television viewing hours were measured with specificity, television viewing was associated with obesity, poor cardio-respiratory fitness, increased cholesterol, and cigarette smoking in early adulthood (Hancox, Milne, & Poulton, 2004), which are all risk factors for diabetes. Future studies using a continuous measure of time spent watching television and playing video games would perhaps provide more definitive results. Another potential limitation for this study may be that additional activities were unknown. Thus, it is possible that hours of television watching or video game playing alone is not a good predictor of overall activity level. For example, a cross-sectional study indicated that the only risk factor for higher BMI in adolescents was an inadequate vigorous physical activity level (Patrick et al., 2004). Additionally, dietary information was not solicited in this study. Therefore, future studies might incorporate

sedentary lifestyle factors, dietary and environmental modulators, and physical movement to determine risk and health behaviors. Utilizing multiple measures would provide a more accurate account of activity level and other impacting factors.

In regards to parental diabetes status, there were also limitations. Specifically, the parental consent only inquired about having a parent with diabetes and did not ask for specifics regarding which parent, or whether both parents had diabetes. It is also possible that parents suffered from undiagnosed diabetes at the time of the screening and, thus, the classification was not accurate. Further studies should incorporate more specific questions about parental diabetes status and collect body weight, shape, and height information from parents as well as children. As more information becomes available about the most accurate indicators of risk, alternative measurements might be considered (Freedman et al., 2007). It is also necessary to look at shared environmental factors such as parents' and children's shared dietary habits. It is possible that such factors contributed to the obesity and/or diabetes risk for children in this study.

Finally, parents were asked to report regarding their children's risk factors. Although it is likely that they would be knowledgeable about their own or a partner's diabetes status, the accuracy of their reporting of children's television watching and video game playing may be questionable. In the future, it would likely be more beneficial to question children, in addition to parents, to verify the accuracy of information. As study results do indicate some association between increased BMI in AI/AN youth and parental history of diabetes, further study in this area is warranted.

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References

- Acton, K. J., Burrows, N. R., Moore, K., Querec, L., Geiss, L. S., & Engelgau, M. M. (2002). Trends in diabetes prevalence among American Indian and Alaska Native children, adolescents, and young adults. *American Journal of Public Health, 92*, 1485-1491.
- American Diabetes Association. (2000). Type 2 diabetes in children and adolescents. *Diabetes Care, 23*, 381-389.
- Baranowski, T., Cooper, D.M., Harrell, J., Hirst, K., Kaufman, F.R., Goran, M., et al. (2006). Presence of diabetes risk factors in a large U.S. eighth-grade cohort. *Diabetes Care, 29*, 212-217.
- Blackett, P.R., Taylor, T., Russell, D., Lu, M., Fesmire, J., & Lee, E.T. (1996). Lipoprotein changes in relation to body mass index in Native American adolescents. *Pediatric Research, 40*, 77-81.
- Caballero, B., Himes, J.H., Lohman, T., Davis, S.M., Stevens, J., Evans, M., et al. (2003). Body composition and overweight prevalence in 1704 schoolchildren from 7 American Indian communities. *American Journal of Clinical Nutrition, 78*, 308-312.
- Campbell, K., Crawford, D., Jackson, M., Worsley, A., Gibbons, K., & Birch, L. (2002). Family food environments of 5-6-year-old-children: Does socioeconomic status make a difference? *Asia Pacific Journal of Clinical Nutrition, 11*, S553-S561.
- Centers for Disease Control. (2002). *National diabetes fact sheet*. Retrieved June 22, 2004, from <http://www.cdc.gov/diabetes/pubs/factsheet.htm>.
- Centers for Disease Control. (2001). *National Center for Health Statistics Growth Charts*. Retrieved October 23, 2007, from <http://www.cdc.gov/nchs/about/major/nhanes/growthcharts/background.htm>.
- Crespo, C., Smit, E., Troiano, R., Bartlett, S., Macera, C., & Andersen, R. (2001). Television watching, energy intake, and obesity in US children: Results from the Third National Health and Nutrition Examination Survey, 1988-1994. *Archives of Pediatrics & Adolescent Medicine, 155*, 360-365.
- Drewnowski, A., & Popkin, B. (1997). The nutrition transition: new trends in the global diet. *Nutrition Reviews, 55*, 31-43.

- Freedman, D.S., Kahn, H.S., Mei, Z., Grummer-Strawn, L.M., Dietz, W.H., Srinivasan, S.R., et al. (2007). Relation of body mass index and waist-to-height ratio to cardiovascular disease risk factors in children and adolescents: The Bogalusa Heart Study. *The American Journal of Clinical Nutrition*, *86*, 33-40.
- Goran, M., Kaskoun, M., Johnson, R., Martinez, C., Kelly, B., & Hood, Y. (1995). Energy expenditure and body fat distribution in Mohawk children. *Pediatrics*, *95*, 89-95.
- Hancox, R., Milne, B., & Poulton, R. (2004). Association between child and adolescent television viewing and adult health: A longitudinal birth cohort study. *Lancet*, *364*, 257-263.
- Harris, K.M., Gordon-Larsen, P., Chantala, K., & Udry, J.R. (2006). Longitudinal trends in race/ethnic disparities in leading health indicators from adolescence to young adulthood. *Archives of Pediatrics & Adolescent Medicine*, *160*, 74-81.
- Hillier, T., & Pedula, K. (2003). Complications in young adults with early-onset type 2 diabetes: Losing the relative protection of youth. *Diabetes Care*, *26*, 2999-3005.
- Kimm, S., Glynn, N., Kriska, A., Barton, B., Kronsberg, S, Daniels, S., et al. (2002). Decline in physical activity in black girls and white girls during adolescence. *New England Journal of Medicine*, *347*, 709-715.
- Marrero, A., Oliver, J., Kim, T., Robertson, D., & Lee, D. (2004). [Pre-diabetes and diabetes on the Colville reservation: A school based youth screening program]. Unpublished raw data.
- McMurray, R., Harrell, J., Deng, S., Bradley, C., Cox, L., & Bangdiwala, S. (2000). The influence of physical activity, socioeconomic status, and ethnicity on the weight status of adolescents. *Obesity Research*, *8*, 130-139.
- Neel, J.V. (1962). Diabetes mellitus: A "thrifty genotype" rendered detrimental by "progress." *American Journal of Human Genetics*, *14*, 353-362.
- Neel, J.V. (1982). The thrifty genotype revisited. In *The genetics of diabetes mellitus* (Ed.), (pp. 49-60). New York: Academic.

- Neel, J.V., Weder, A., & Julius, S. (1998). Type II diabetes, essential hypertension, and obesity as "syndromes of impaired genetic homeostasis": The "thrifty genotype" hypothesis enters the 21st century. *Perspectives in Biology and Medicine*, 42, 44-74.
- Owen, K., Stride, A., Ellard, S., & Hattersley, A. (2003). Etiological investigation of diabetes in young adults presenting with apparent type 2 diabetes. *Diabetes Care*, 26, 2088-2094.
- Patrick, K., Norman, G., Calfas, K., Sallis, J., Zabinski, M. S., Rupp, J., et al. (2004). Diet, physical activity, and sedentary behaviors as risk factors for overweight in adolescence. *Archives of Pediatrics & Adolescent Medicine*, 158, 385-390.
- Popkin, B. (1994). The nutrition transition in low-income countries: An emerging crisis. *Nutrition Reviews*, 52, 285-298.
- Rao, S., Disraeli, P., & McGregor, T. (2004). Impaired glucose tolerance and impaired fasting glucose. *American Family Physician*, 69, 1961-1968.
- Richards, T.J., & Patterson, P.M. (2006). Native American obesity: An economic model of the "thrifty gene" theory. *American Journal of Agricultural Economics*, 88, 542-560.
- Rosenbloom, A., Arslanian, S., Brink, S., Conschafter, K., Jones, K., Klingensmith, G., et al. (2000). Type 2 diabetes in children and adolescents. *Pediatrics*, 105, 671-680.
- Steinbeck, K. (2001). The importance of physical activity in the prevention of overweight and obesity in childhood: A review and an opinion. *Obesity Reviews*, 2, 117-130.
- Weir E., & Lipscombe, L. (2004). Metabolic syndrome: Waist not want not. *Canadian Medical Association Journal*, 170, 1390-1391.

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THE GAMBLING BEHAVIOR OF AMERICAN INDIAN AND NON-INDIAN PARTICIPANTS: EFFECTS OF THE ACTIONS AND ETHNICITY OF A CONFEDERATE

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Abstract: The present experiment investigated whether the gambling of American Indian (AI) and non-AI participants would be sensitive to the actions and/or ethnicity of another gambler (i.e., a confederate) when playing a slot-machine simulation. Eight male AIs and eight male non-AIs participated in five gambling sessions. In one, the participant gambled alone. In the other four, the participant played in the presence of a confederate of the same or different ethnicity who gambled the entire session or quit after playing five times. The gambling of the AI and non-AI participants did not differ, nor was either group sensitive to whether the confederate was AI or non-AI. Gambling behavior was altered by the confederate's actions, with participants gambling less when the confederate left the session than when alone or when the confederate stayed and gambled. These results suggest that the differences in gambling problems between AIs and non-AIs reported in the overall literature may not be a function of ethnicity per se. They also suggest that the actions of other gamblers may inhibit gambling, which may have treatment implications.

The gambling industry is not new, but it is certainly growing. Within the United States, the number of states that have at least one form of gambling has risen from 2 to 48 in the past 27 years (MacLin, Dixon, & Hayes, 1999). Furthermore, online gambling is becoming even more popular than conventional gambling with the growth of the Internet, its accessibility, and the increased popularity of gambling in general (Young, 2004). Petry (2005) has estimated that over 90% of Americans will gamble in their lifetime.

Fortunately, although many people engage in gambling, the majority of them do not experience adverse consequences from their behavior. Yet a small percentage of individuals will display gambling problems. For example, it is estimated that anywhere from 1% to 3% of the American population suffers from pathological gambling (PG; Loba, Stewart, Klein, & Blackburn, 2001; and see Petry, 2005 for a review). Some have suggested that the growth of the gambling industry has also led to an increased number of individuals with gambling-related problems (Wardman, el-Guebaly, & Hodgins, 2001). Although the vast majority of people do not develop gambling problems, it is not because they do not gamble. The fact that gambling is so widespread makes it an important area of study. It is an alluring activity, and studying the factors that influence it will inform us about a behavior that nearly everyone engages in at one time or another, and can lead to treatments for those with gambling problems.

Researchers have certainly not ignored the study of gambling; however, few have used direct manipulation to study it. A recent search of citations and abstracts for "gambling" using *PsycINFO* (conducted on June 26th, 2007) yielded a total of 3,077 articles. When "gambling" was paired with the keyword term "experiment," a mere 155 articles were identified, suggesting that only 5% of the gambling literature involves experimentation. This low percentage is discouraging because experimentation represents the most straightforward and powerful way to determine cause-and-effect relationships. Determining the causal factors underlying gambling-related problems would seem important for developing successful treatments for PG.

To this end, our laboratory has conducted several experiments on gambling behavior. For instance, Weatherly, McDougall, and Gillis (2006) demonstrated that situational factors present within the gambling session can influence gambling behavior. In their Experiment 1, non-pathological gamblers played a slot-machine simulation, with participants assigned to one of three groups. One group was told that they were gambling with credits that were worth money. The second group was shown cash (\$10) by the researcher and told that the money could be used to purchase credits to play the simulation. Participants in the final group physically held the \$10 in cash and, if they wanted to gamble on the simulation, were required to give it back to the researcher. Participants in this last group were the least likely to play the simulation and, even when they did, they played fewer trials and bet less money than participants in the other groups.

It seems likely that other situational factors, beyond the salience of money, may influence gambling. For instance, most gambling behavior takes place in a social setting and it would seem reasonable to suspect that social factors likely influence gambling. Indeed, social psychology has demonstrated that social factors can profoundly influence behavior (e.g., conformity; Asch, 1955). It is therefore possible that social factors such as conformity also influence gambling.

Conformity can be defined as an act or change of one's behavior to match or model a majority group's responses (Cialdini & Goldstein, 2004). For example, Asch (1955) conducted a classic study on conformity. Participants, in groups of eight, discriminated the length of a line or size of a ball. Unbeknownst to the participant, seven of the so-called participants were confederates who provided incorrect responses. Results showed that the responses from true participants were often influenced by those of the confederates.

Research does exist that indicates that gambling behavior can be influenced by others. However, it is quite dated and, consistent with the above analysis of the literature, there are not a large number of published studies on the topic. Bauer and Turner (1974) had 48 male and 48 female college students bet on the outcome of a toss of dice. Participants tracked points in an effort to win a \$20 prize. Half of the participants were randomly chosen to play individually and the other half were divided into groups of four and told to place their bet as a group. Results showed that groups of participants placed higher bets and played more trials than did individuals. Although one could question whether this procedure legitimately generalizes to actual gambling behavior, the results are suggestive.

Blascovich, Gunsberg, and Howe (1975) studied group influence on risk taking, using the amount bet when participants played blackjack as the dependent measure. Thirty-two state trial judges, betting with their own money, played blackjack on two separate occasions, once alone with a dealer and once in a group of three players. Unknown to the actual participant, the other two players in the groups condition were confederates. Blascovich et al. reported a moderate increase in the amount participants bet when playing in a group versus when playing alone. This study is unique in that participants were gambling with their own money. However, participants always played alone before playing in a group. Thus, it is possible that the increase in the amount bet was the outcome of an order effect rather than social influence.

Although it is reasonable that situational factors contribute to gambling behavior, dispositional factors likely do as well. For instance, Petry (2005) lists six risk factors for PG. Those factors are age, ethnic minority status, socio-economic status, marital status, gender, and drug use. Specifically, young individuals, ethnic minorities, the less affluent, single or divorced individuals, males, and drug users are more likely to suffer from PG than their counterparts¹.

Of particular interest for the present study is the risk factor of ethnic minority status. Specifically, research suggests that American Indian (AI) and Indigenous populations consistently show higher rates of PG compared to non-Indigenous groups (e.g., Wardman et al., 2001; and see Petry, 2005, for a review). For instance, Wardman et al. reported that Indigenous populations have rates of problematic gambling that are two to five times higher than those of non-Indigenous populations.

The reason why AIs suffer from PG at greater rates than the majority population is not known. It is possible that the heightened rate represents a difference between or across populations (e.g., a genetic difference). Then again, AI populations differ from the majority population on many variables such as psychopathology, substance abuse, and socio-economic status (McDonald & Chaney, 2003; Petry, 2005; Zitzow, 1996). Therefore, it is possible that the differences in the rates of PG are related to these other variables and are not linked directly with AIs.

Some authors have suggested the degree to which AIs identify with their tribal culture impacts their mental health and adaptive behavior (McDonald & Chaney, 2003; McDonald & Gonzalez, 2006). Oetting and Beauvais (1990) proposed the Orthogonal Theory of Biculturalism, which suggests that ethnic minority members who identify highly among both their own culture of origin and the Majority culture (i.e., "Bicultural") function more adaptively and exhibit lower levels of psychopathology than those identifying lower in both ("Marginal"). Those identifying more highly with their culture of origin but lower with the Majority are considered "Traditional," while those identifying highly with the Majority but lower with their culture of origin are considered "Assimilated." This suggestion was compelling enough to indicate that cultural issues should be considered in this study to some extent.

The Orthogonal Theory of Biculturalism is of present interest because it suggests that more traditional AIs are culturally sensitive, perhaps more so than members of the majority population. Given that research has suggested that conformity can differ across cultures and ethnicities (e.g., see Bond & Smith, 1996), one could hypothesize that AIs

may be more sensitive to social influences when gambling than non-AIs. In other words, AIs may be more sensitive to cultural issues than non-AIs due to the fact that they are continually confronted with two different cultural perspectives; thus, they may be more aware of, and influenced by, social factors than non-AIs.

In the present experiment, AI and non-AI males were recruited to play a slot-machine simulation. Only males were recruited because they tend to gamble at heightened rates compared to females (see Petry, 2005) and using only one sex of participant allowed us to keep the present design at a manageable level in terms of the number of sessions required. The participants played the simulation either alone or in a room with a male confederate who played the simulation on another computer. In half of the conditions in which the confederate was present, the confederate was an AI. In the other half, the confederate was Caucasian. Furthermore, in half of the conditions in which the confederate was present, the confederate played the simulation only a brief time before quitting and leaving the room. In the other sessions, the confederate played the simulation for the complete length of the session.

Given previous research, we made the following predictions. First, participants would gamble the most when the confederate was present and gambled the entire session. Second, AI participants would gamble more than non-AI participants. Third, participants' gambling behavior would differ as a function of the ethnicity of the confederate. That is, the social influence of the confederate would be greatest when the participant and confederate were of the same ethnicity. The social influence would be decreased when the confederates differed in ethnicity.

Method

Participants, Materials, and Apparatus

Eight AI males (mean age = 26 years) and eight non-AI males (mean age = 23 years) participated. Again, males were recruited because they display a greater propensity to gamble than females, and the inclusion of females would have tripled the size of the present study.

Participants were recruited through the University of North Dakota's psychology department participant pool and the local community. In order to participate, each individual had to be 21 years of

age or older and score less than a 5 on the South Oaks Gambling Screen (SOGS; Lesieur & Blume, 1987). The SOGS is a 20-item scale that assesses an individual's gambling history and is the most widely used assessment tool for gambling problems (Petry, 2005). A score of 5 or greater on the SOGS suggests the possible presence of PG.

One AI and two non-AIs scored 5 or more on the SOGS. These individuals were told they did not meet the inclusion criteria for the study, given extra course credit (when applicable), and dismissed. These participants were replaced.

Those who were invited to participate were compensated with extra course credit (when applicable) and money, the amount of which was determined by the outcome of their gambling during the sessions. Participants played a customized version of a slot-machine simulation by MacLin et al. (1999). This version of the software was similar to the original with the exception that each individual outcome could be programmed *a priori*, allowing the researchers to ensure that each participant experienced the same series of outcomes when playing the simulation. The software was loaded on two separate computers, one an IBM-compatible desktop computer and the other an IBM-compatible laptop computer. The gambling sessions were conducted in a windowless room that measured approximately 3 m by 3 m. The room contained two tables, with a computer located on each, and three chairs.

Procedure

Before the present study was implemented, the procedure received the approval of the Institutional Review Board of the University of North Dakota. The experiment proper involved five gambling sessions. At the beginning of the first session, the researcher checked the participant's identification to ensure he was at least 21 years of age. The participant went through the process of providing informed consent. Afterwards, the participant completed the SOGS followed by the demographic questionnaire. While the participant completed the demographic questionnaire, the researcher scored the SOGS. In the event that the participant's initial session was one in which a confederate was present, the participant was informed that the confederate had completed these questionnaires in a previous session. If the participant was eligible to continue (i.e., SOGS < 5), the researcher read the following:

"You will now be given the opportunity to play a computer-simulated slot machine. This simulation has been designed to function as a slot machine that you would find in an actual casino. Five symbols will appear on the slot machine while you are playing: pot of gold, kings, bars, sevens, and blank spaces. The winning combinations of these symbols, as well as payoffs for those combinations, are presented on the computer monitor. To win, a winning combination must appear on the middle row. You will be staked with 100 credits per session. Each credit is worth \$0.05. Thus, you are staked with \$5 per session. You may bet 1 credit or 5 max credits per play and your goal should be to end the session with as many credits as you can. You may quit (i.e., end the session) at any time. The session will end when A) you quit playing, B) 15 minutes have elapsed, or C) you reach zero credits. You will be paid in cash at the end of the final session for the number of credits you have accumulated over the course of the experiment. Do you have any questions?"

Questions were answered by repeating the above instructions. After the researcher read the instructions and answered any questions, the participant played the simulation until one of the three criteria was met. At the end of the fifth session, the researcher read a debriefing statement to the participant, paid the participant for the total credits he had accumulated across the five sessions, and then dismissed the participant.

The five separate sessions differed as to the presence of a confederate, the ethnicity of the confederate, and the behavior of the confederate. Each participant experienced one gambling session in which he was the only gambler (control condition), two sessions in which an AI confederate was present and two sessions in which a non-AI confederate was present. In one of the sessions in which the AI or non-AI confederate was present, the confederate quit playing early in the session. Specifically, the confederate played the simulation five times and then informed the researcher that he was quitting. At this point, the researcher informed the confederate that he would be contacted to schedule another session and the confederate left the room. In the other confederate-present sessions, the confederate played the simulation for the entire 15 minutes. When a confederate was present, interaction between the participant and confederate was minimal. Confederates were instructed to refrain from initiating interactions with the participants, but to respond "normally" should the participant initiate an interaction.

The order of sessions was varied across participants. Sessions were conducted once per day (i.e., multiple sessions were not conducted on the same calendar day). Each participant encountered the same AI and non-AI confederates, although whether those confederates were part of a “stay” or “leave” session varied across participants. The same researcher was present during each session.

Finally, five sequences of outcomes were employed, each programmed to pay back at 85% (i.e., at the end of the sequence, had the participant bet one credit on each trial, the participant would have 85 of the 100 original credits remaining). The sessions in which participants experienced each of the five sequences of outcomes varied across participants.

Dependent Measures: The main dependent measures were the number of times the participants played the slot-machine simulation during the session (trials) and the total amount of credits they risked across the session (money bet). Number of trials served as a measure of duration or persistence, whereas money bet served as a measure of risk taking. Because participants could bet 1 or 5 credits per trial, these measures were not perfectly correlated. For example, by betting differently, it was possible for a participant who played only 10 trials to risk more money than one that played 40 trials.

Results

Two series of analyses were conducted. The first was a comparison of participants’ gambling during the sessions in which a confederate was present. The second was a comparison of behaviors across conditions in which confederates were or were not present.

Confederate Present

The number of trials played in sessions in which a confederate was present was analyzed by conducting a three-way (Participant Ethnicity X Confederate Action X Confederate Ethnicity) mixed-model analysis of variance (ANOVA) on the data from individual participants. Participant ethnicity was the grouping factor. Confederate action and confederate ethnicity were both repeated measures. The main effect of participant ethnicity was not significant, $F(1, 14) = .733, p = .406, \eta^2 = .050$, indicating that the AI and non-AI participants did not differ in the number of trials they played. The main effect of confederate action was significant, $F(1, 14) = 7.57, p = .016, \eta^2 = .351$, indicating that participants

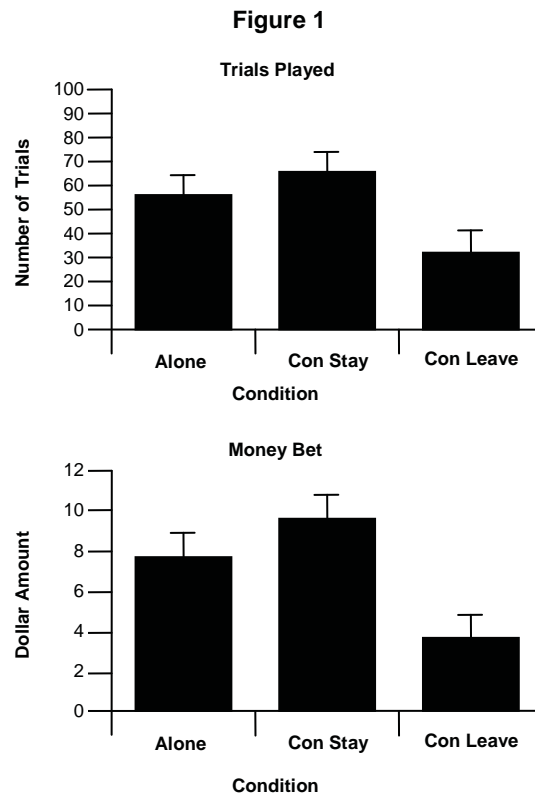
played fewer trials when the confederate left the session early than when the confederate played throughout the session. The main effect of confederate ethnicity was not significant, $F(1, 14) = .695, p = .419, \eta^2 = .047$, indicating that the ethnicity of the confederate did not influence the number of trials played. None of the possible interactions were significant. For this analysis, and all that follow, results were considered significant at $p < .05$.

The total amount of money bet across the session was analyzed by conducting a three-way (Participant Ethnicity X Confederate Action X Confederate Ethnicity) mixed-model ANOVA on the amount of money gambled by individual participants. Participant ethnicity was again the grouping factor, with confederate action and confederate ethnicity being repeated measures. The main effect of participant ethnicity was not significant, $F(1, 14) = .002, p = .962, \eta^2 = .000$, indicating that the AI and non-AI participants did not differ in the amount of money they bet. Again, however, the main effect of confederate action was significant, $F(1, 14) = 19.77, p = .001, \eta^2 = .585$, indicating that participants risked less money when the confederate left the session early than when the confederate played throughout the session. The main effect of confederate ethnicity was not significant, $F(1, 14) = .303, p = .590, \eta^2 = .021$, indicating that participants risked similar amounts of money regardless of whether the confederate was an AI or a non-AI. None of the possible interactions were significant.

Cross-condition Comparisons

Because both of the above analyses only found a significant effect of the actions of the confederate, data were collapsed across the factors of participant ethnicity and confederate ethnicity. To determine whether the significant effects of confederate action was to increase gambling when the confederate stayed throughout the entire session or to decrease gambling when the confederate left the session early, two one-way ANOVAs were conducted. The ANOVA on the number of trials played resulted in a significant difference, $F(2, 30) = 4.98, p = .014, \eta^2 = .249$. In order to ascertain the source of the difference, a follow-up paired samples t test was conducted on each possible pair of conditions. Results showed that the number of trials played in the conditions in which the confederate left was significantly less than in either the alone condition, $t(15) = 2.40, p = .030$, or the conditions in which the confederate stayed, $t(15) = 2.82, p = .013$. The number of trials played in the alone and confederate stayed conditions did not differ significantly.

The second one-way was conducted on the total amount of money bet in the alone, confederate stays, and confederate leaves conditions. A significant main effect was observed, $F(2, 30) = 6.80, p = .004, \eta^2 = .312$. Follow-up paired samples t tests showed that the amount of money bet in the confederate leaves conditions was significantly less than in either the alone, $t(15) = 2.52, p = .024$, or the confederate stays conditions, $t(15) = 4.49, p < .001$. The amount of money bet in the alone and confederate stays conditions did not differ significantly. The effects of confederate action are presented in Figure 1.



Discussion

The results did not support our hypotheses. We predicted that the presence of a confederate who gambled the entire session would increase the gambling of the participants. The actions of the confederate did significantly influence participants' gambling, but the effect of the confederate's action was observed when the confederate left, not stayed in, the session. We predicted that AI participants would gamble more than non-AI participants. They did not. Finally, we predicted that the effect of the confederate would vary as a function of the confederate's ethnicity. No evidence was found to support this prediction.

Finding that having a confederate present and gambling throughout the session does not increase gambling behavior speaks to the allure of gambling. That is, the research literature on conformity (e.g., Asch, 1955), as well as social facilitation (see Guerin, 1993), would lead one to predict that participants' gambling should have increased. However, participants gambled similarly when there was no confederate present and when there was a confederate who was present throughout the session.

The decrease in gambling produced by the confederate leaving the session adds to the list of results from our laboratory that demonstrate that gambling can be inhibited, but not easily facilitated. For example, Weatherly et al. (2006) demonstrated that having participants handle the money they had been staked led to a decrease in gambling behavior. Weatherly and Brandt (2004) showed, across two experiments, that increasing the value of the credits participants were gambling produced significant decreases in participants' gambling. Weatherly, Sauter, and King (2004) found that participants who experienced an immediate big win when playing the slot-machine simulation quit playing significantly earlier than participants who experienced several early small wins or who never won at all.

Finding that experimental manipulations often decrease, not increase, gambling suggests that when gambling behavior occurs, it does so at near-ceiling levels. On the one hand, this possibility is potentially bad news because it would suggest that people are prone to gamble, which would promote PG. On the other hand, finding that manipulations can decrease gambling is potentially good news because it would suggest that it should be possible to decrease problem gambling (i.e., successfully treat PG). Of course, the present findings require replication before strong conclusions can be forwarded. However, the results do seem to indicate that gambling behavior can be influenced

by the actions of others. Thus, mental health care providers might be wise to consider who the client gambles with when dealing with the client's behavior problem.

It should also be noted that the present results do not rule out the idea that a confederate's presence or behavior will never promote gambling behavior. In the present experiment, there was little or no competition or interaction between the participant and the confederate. Had the procedure incorporated a competition component, it seems reasonable to predict that more gambling would have been observed in the confederate stays condition relative to the condition in which participants gambled alone. Indeed, previous research has suggested that gambling can be facilitated by the presence and/or actions of others (Bauer & Turner, 1973; Blascovich et al., 1975).

Given the heightened rates of PG among AIs relative to the population at large (Volberg & Abbott; 1997; Wardman et al. 2001; Zitzow; 1996), the failure to find differences in gambling behavior of the AI and non-AI participants may be viewed as surprising. In fact, one could potentially claim that our results represent a Type II error in that a difference did exist, but we employed too few participants for the effect to reach statistical significance. This argument cannot be completely ruled out; however, it seems unlikely. The largest effect size for participant ethnicity was small ($\eta^2 = .05$), indicating that this predictor was not substantial. With this effect size, over 400 participants would have been required before a significant effect of participant ethnicity was observed. Thus, although an effect of ethnicity may have eventually emerged; there are clearly more potent factors (e.g., the action of a confederate) that can influence gambling behavior.

It may also be possible be that AI and non-AI groups did not substantially differ by ethnicity. That is, the AI participants were drawn from the university population (and the surrounding community). Thus, these individuals may have been acculturated similarly to the non-AI participants, accounting for the small effect sizes and lack of significant differences in behavior. Had we drawn our AI participants from a reservation population, significant differences may have emerged. Furthermore, the effect of specific cultural orientation (i.e., Biculturalism) on AIs' gambling behaviors is also an area that bears further investigation, as suggested previously. Unfortunately, the sample size requirements in this study's design precluded such an inquiry. This limitation cannot be countered and warrants future research.

One could argue that the results were affected by excluding those individuals with SOGS scores over 5 (i.e., normalized the groups across ethnicities). However, as noted above, only three individuals were excluded because they did not meet our inclusion criteria. Furthermore, gambling experience (as measured by the SOGS) is separate, and theoretically independent, from ethnicity. We would argue that normalizing the groups by SOGS score provided the strongest possible test of ethnic differences.

On another level, results may have been influenced had women been included in the initial design. Indeed, replication with female samples may be warranted before any final conclusions are reached. This possible limitation of the study cannot be countered. However, in this study males were of interest because they are known to exhibit higher levels of gambling-related problems than females. In addition, the inclusion of females at the time would have inhibited the feasibility of the research design because sample size and independent conditions would have tripled.

We would also argue that the failure to find significant effects of participants' ethnicity is not a socially negative outcome. Although the literature indicates that AIs suffer from PG at greater rates than the majority population, the source of that difference has not been clearly identified. It is possible that the difference is purely one of ethnicity (i.e., genetics). However, it is also possible that the differences in PG are produced indirectly by other factors, such as the presence of other disorders, environmental factors, employment, education opportunities, lack of social opportunities, or poverty (e.g., Wardman et al., 2001). The present results favor the latter possibility over the former.

Given the failure to find a significant effect of participants' ethnicity, it is perhaps less than surprising that the confederates' ethnicity also failed to produce significant differences in participants' gambling. As is always the case with null results, there are numerous possibilities for why an effect was not found. In this instance, it is possible that the participants' limited interaction with the confederates limited the impact of the confederates' ethnicity. Then again, if our AI and non-AI participants did not truly differ much from one another, then it would seem reasonable that they would have similar reactions to the ethnicity of the confederates. Alternatively, our pan-Indian approach may have worked against our hypothesis. That is, we did not control for tribal affiliation of the AI confederates relative to that of the AI participants. It is possible that an effect would have been observed had we matched for tribal affiliation.

In conclusion, the present study provides some novel and potentially welcome results. The actions of another gambler (i.e., the confederate) can influence a person's gambling behavior, and does so by potentially inhibiting it. Although ethnic differences are prevalent in the gambling literature, our results found little evidence to support the idea that ethnicity is a major factor controlling gambling behavior. This outcome has increased importance given that our procedure, unlike the vast majority of research published on gambling, employed an experimental design. The present study does not represent the definitive work on how conformity or ethnicity influences gambling. However, it does highlight the fact that much additional research is needed in this particular area.

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References

- Asch, S. E. (1955). Opinions and social pressure. *Scientific American*, 193(5), 31-35.
- Bauer, R. H. & Turner, J. H. (1974). Betting behavior in sexually homogeneous and heterogeneous groups. *Psychological Reports*, 34(1), 252-258.
- Blascovich, J., Gunsberg, G. P., Howe, R. C. (1975). Blackjack and the risky shift: II. Monetary stakes. *Journal of Experimental Social Psychology*, 11(3), 224-232.
- Bond, M. H., & Smith, P. B. (1996). Culture and conformity: A meta-analysis of studies using Asch's (1952b, 1956) line judgment task. *Psychological Bulletin*, 119, 111-137.
- Cialdini, R. B. & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology*, 55, 591-621.
- Guerin, B. (1993). *Social Facilitation*. New York, NY: Cambridge University Press.

- Lesieur, H. R. & Blume, S. B. (1987). The South Oaks Gambling Screen (SOGS): A new instrument for the identification of pathological gamblers. *American Journal of Psychiatry*, *144*, 1184-1188.
- Loba, P., Stewart, S. H., Klein, R. M., & Blackburn, J. R. (2001). Manipulations of the features of standard video lottery terminal (VLT) games: Effects in pathological and non-pathological gamblers. *Journal of Gambling Studies*, *17*(4), 297-320.
- MacLin, O. H., Dixon, M. R. & Hayes, L. A. (1999). A computerized slot machine simulation to investigate the variables involved in gambling behavior. *Behavior Research Methods, Instruments & Computers*, *31*(4), 731-734.
- McDonald, J.D. & Chaney, J. (2003). Resistance to multiculturalism: The "Indian problem." In J. Mio & G. Iwamasa (Eds.), *Culturally diverse mental health: The challenges of research and resistance*. New York: Brunner-Routledge.
- McDonald, J. D. & Gonzalez J. (2006). Cognitive-behavioral therapy with American Indians. In P. A. Hays & G. Y. Iwamasa, *Culturally Responsive Cognitive Behavioral Therapy: Assessment, Practice, and Supervision* (pp. 23-45). Washington, DC: American Psychological Association.
- Oetting, E. R., & Beauvais, F. (1990). Orthogonal cultural identification theory: The cultural identification of minority adolescents. *The International Journal of the Addictions*, *25*(5A & 6A), 655-685.
- Petry, N. M. (2005). *Pathological gambling: Etiology, comorbidity, and treatment*. Washington, DC: American Psychological Association.
- Proquest Information and Learning Company, 2006. *PsycINFO with full text and with psycARTICLES*. EBSCOhost, Retrieved June 26th, 2007.
- Volberg, R. A. & Abbott, M. W. (1997). Gambling and problem gambling among indigenous peoples. *Substance Use & Misuse*, *32*(11), 1525-1538.
- Wardman, D., el-Gueblay, N., & Hodgins, D. (2001). Problem and pathological gambling in North American Aboriginal populations: A review in the empirical literature. *Journal of Gambling Studies*, *17*(2), 81-100.
- Weatherly, J. N., & Brandt, A. E. (2004). Participants' sensitivity to percentage payback and credit value when playing a slot-machine simulation. *Behavior and Social Issues*, *13*, 33-50.

- Weatherly, J., McDougall, C., & Gillis, A. (2006). A bird in hand: Discouraging gambling on slot machine simulation. *Journal of Psychology: Interdisciplinary and Applied*, 140(4), 347-361.
- Weatherly, J. N., Sauter, J. M., & King, B.M. (2004). The "big win" and resistance to extinction when gambling. *The Journal of Psychology*, 138, 495-504.
- Young, K. S. (2004). Internet addiction: A new clinical phenomenon and its consequences. *American Behavioral Scientist*, 48(4), 402-415
- Zitzow, D. (1996). A comparative study of problematic gambling behaviors between American Indian and non-Indian adults in a northern plains reservation. *American Indian & Alaska Native Mental Health Research*, 7(2), 27-41.

Footnote

- ¹ These variables or factors have been associated with PG, but that does not necessarily place them in a causal role. In fact, as noted by Petry (2005), the exact relationship between these factors and PG is not known. They may directly impact gambling, gambling may impact them, or some other factor(s) may be related to these risk factors and gambling. Additional research will determine which of the above is correct.

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