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Use of Mental Health Services by American Indian and Alaska Native Elders <i>David D. Barney, M.S.W.</i>	1
Cultural Factors Associated with Health-Risk Behavior Among the Cheyenne River Sioux <i>Paul K. J. Han, M.D., James Hagel, M.S.W., Thomas K. Welty, M.D., Randy Ross, Gary Lenardson, Ph.D., and Arliss Keckler</i>	15
Developmental Disabilities Prevention and the Distribution of Risk Among American Indians <i>Pauline Mendola, M.S., Germaine Buck, Ph.D., and Edward R. Starr, M.A.</i>	30
Differences Between American Indian and Non-Indian Children Referred for Psychological Services <i>Logan Wright, Ph.D., Steve Mercer, Stacey Mullin, Karen Thurston, and Aaron J. Hamed</i>	45
New Frontiers in Clinical Training: The UND Indians into Psychology Doctoral Education (InPsyDE) Program <i>Doug McDonald, Ph.D.</i>	52

USE OF MENTAL HEALTH SERVICES BY AMERICAN INDIAN AND ALASKA NATIVE ELDERS

DAVID D. BARNEY, M.S.W.

Abstract: American Indian and Alaska Native elders are an important at-risk population in need of mental health services, yet little is known about the factors that influence Indian/Native elders to actually seek mental health services. This study uses the Anderson and Newman conceptual framework to identify need as well as enabling and predisposing factors for mental health service use in a national sample of reservation and urban American Indian and Alaska Native elders. Results indicate that self-perceived need is the strongest predictor of mental health service use for elders living on reservations. However, for Indian/Native elders in urban areas, degree of mental impairment is most likely to predict use of mental health services. For both groups of elders, enabling variables, such as total income, level of education and access to medical insurance, were the least important in influencing whether or not an elder elected to use mental health services.

It has been generally accepted that the elderly have a higher incidence of mental health problems than other age groups (Weyerer, 1983). Some have estimated that 18% to 25% of all elders need mental health services (Persky, Taylor, & Simson, 1989). Yet, the need for mental health services may be greater when risk factors such as minority status are combined with aged status. This may be true for American Indian and Alaska Native elders living in urban centers and on reservations or historically Indian areas, but little empirical research is available which documents the needs and use patterns of mental health services by this special population. The purpose of this study is to identify use patterns by examining factors that best predict mental health service use among urban and reservation American Indian and Alaska Native elders.

Minimal social resources along with poor physical health, limited economic resources, and activities of daily living (ADL) impairment could diminish the mental health well-being of Indian/Native elders, therein, influencing an elder's desire to obtain mental health services. For example, according to the National Indian Council on Aging (1981), the impact of impaired physical health is represented by higher rates of depression among Indian/Native elders when compared to non-Indian elders. In a study by Barón, Manson, Ackerson and Brønneman (1989), it was found that estimates of depression were higher for Indian/Native elders as opposed to elderly whites in studies of the aged with chronic illness. These findings are supported in yet another study where more than 32% of the elders visiting a northwest U.S. Indian Health Service (IHS) clinic were suffering from clinically significant levels of depressive symptoms, more than twice the rate reported for elderly whites with similar types of physical illness (Manson, 1990).

Background

It is known that elders can benefit from mental health treatment (Burckhardt, 1987; Coons & Spencer, 1983; Wisocki, 1983). Yet, previous studies have shown that the elderly are very reluctant to use mental health services (Goldstrom, Burns, & Kessler, 1987; German, Shapiro, & Skinner, 1985; Smyer & Pruchuo, 1984). A study by Lasoki and Thelen (1987) determined that the elderly were less likely to choose outpatient services as appropriate for psychological problems and were also less likely to have had previous exposure to mental health treatment. In another study, it was found that mentally impaired elders were more likely than unimpaired elders to use social and medical services, but there were no observations about this group's specific use of mental health services (Smyer & Pruchuo, 1984).

According to Colen (1983), studies have illustrated that service utilization patterns among the minority aged are neither consistent with those of whites, nor in many cases are the rates of service use commensurate with their own levels of need. Clearly, American Indians and Alaska Natives have unique mental health needs (Manson, Walker, & Kivlahan, 1987). It is known, for example, that less acculturation of American Indians and Alaska Natives means that less mental health problems are apparent, or that less problems are seen in health care facilities (Markides, 1986). Thus, issues related to cultural identification are important considerations in treatment. Additionally, Lockart (1981) believes that use of counseling services may be limited by an historic distrust that American Indians and Alaska Natives possess toward a profession that they may view as culturally foreign.

In terms of American Indian and Alaska Native elders, it is known that older American Indians and Alaska Natives use less mental health

services than other segments of American Indian and Alaska Native populations (Edwards & Egbert-Edwards, 1990). However, unfortunately, there is very little empirical evidence on how to improve use rates based upon knowledge about the emotional and psychological well-being of older American Indian and Alaska Natives. Much of what exists is discriminative in nature and tends to be based upon information of questionable reliability (Markides, 1986). Even less is known about the specific utilization patterns of mental health services by American Indian and Alaska Native elders. Further analysis is necessary.

Conceptual Framework

This study is built upon assumptions represented by the Anderson and Newman (1973) conceptual framework, wherein, three groups of variables explain different service utilization patterns. Specifically, this study looks at (1) need factors, (2) enabling factors, and (3) predisposing factors that may influence service use. *Need factors* comprise both an objective measure of mental impairment and a subjective measure of "perceived need." This perceived need is an individual's own self-perception or individual judgment about their need for services. An "evaluated need" is the objective measure representing a clinical professional perspective of need. *Enabling factors* include possession of both individual attributes and personal resources that would facilitate use or non-use of needed available services. These include attributes such as knowledge of service availability (i.e., level of education), access to insurance, and financial resources. *Predisposing factors* are individual characteristics that influence an objective measure of need or an individual's perception of need. These characteristics may include gender, age, social or environmentally induced psychological stress, and level of social or community support.

Previous studies have shown the Anderson and Newman model to be useful in predicting factors related to health care utilization by the elderly, but this model has not been used with respect to American Indian and Alaska Native elders. For example, some studies have looked only at use patterns of health care by the elderly (Evashwick, Rowe, Diehr, & Branch, 1984; Wolinsky, Coe, Miller, Prendergast, Creel, & Chavez, 1983). Starrett, Decker, Araujo, and Walters (1989) compared health use patterns with social service use among Cuban elderly, and more generally, Starrett, Mindel, and Wright (1983) applied this model to social service use by Hispanic elderly. Finally, Coulton and Frost (1982) employed the Anderson and Newman model to discover patterns for health, social services, and mental health service use in a non-Indian urban elderly population.

Method

National Profile of American Indian and Alaska Native Elders

A national study, conducted by the National Indian Council on Aging (NICOA) in 1981, documented the condition of life for American Indian and Alaska Native elders on reservations and in urban areas. This study examined the economic and social resources, physical and mental health, capacity for ADL, housing conditions, transportation needs, and utilization patterns of social services. Data were collected over a two-year period on a total of 361 variables. A cluster-type probability sample of 712 older American Indians and Alaska Natives was selected from 26 of over 270 federally recognized tribes in the continental United States, four Alaska Native villages, and six major urban areas.

In the NICOA study, Indian/Native elders were administered the Older American Resources and Services (OARS) survey questionnaire. The OARS instrument, originally developed in 1972 by the Duke University Center for the Study of Aging and Human Development (Pfeiffer, 1975), contains two major parts, a multi-dimensional functional assessment and a social services utilization section (cf. Fillenbaum, 1988). For the NICOA study, the actual OARS instrument was modified, first by adapting the questions for Indian culture, and second by adding a section of questions about transportation and housing. Fillenbaum and Smyer (1981) determined interrater reliability to be 92% for the community survey part of OARS and 74% interrater reliability (consisting of complete agreement) for the functional assessment part of OARS. These authors also found the functional assessment of OARS to have high construct, consensual, and criterion validity as well.

Many studies of the elderly have utilized the OARS survey to measure quality of life variables. Some examples include Foxall and Ekberg's (1989) study of the relationship between chronic illness and loneliness. Another study by Milligan, Powell, and Furchtgott (1988) looked at the variables and dimensions of OARS that would best predict the status of the medically disabled elderly. Hughes, Conrad, Manheim, and Edelman (1988) were able to measure the impact of long-term residential care on elders from OARS measurement of functional status and unmet needs. O'Malley, O'Malley, Everitt, and Sarson (1984) used a modified OARS instrument to categorize abused and neglected elders into one of three groupings.

Various other studies have been conducted with the OARS instrument on American Indian and Alaska Native groups, in addition to the NICOA study previously mentioned. Johnson, Cook, Foxall, Kelleher, Kentopp, and Mannlein (1986) studied life satisfaction among elders residing on two midwestern reservations. Joos and Ewart (1988) conducted a study with the OARS of Klamath Indian elders. The latter study

analyzed the health status of these elders 30 years after loss of their tribe's federal recognition. Another study by John (1988) utilized an OARS survey completed previously by the Pueblo of Laguna. According to John, this tribe selected the OARS instrument because it has been used in many large scale studies, including the NICOA study, and the results could be used to compare the status of Laguna Pueblo elders with other American Indian tribes.

Unfortunately, there are limitations in the NICOA data base that need to be identified. A reanalysis of the NICOA data base by John (1991) revealed a number of discrepancies. For example, there were missing cases from the survey and missing data from the supplemental housing and transportation questions. Additionally, some variables such as occupation and number of people who live on the household's income were too questionable to be considered in John's analysis. Another limitation concerns the small sample size of urban elders, thereby, diminishing possibility for generalizing results (U.S. Select Committee, 1982). In this study, the smaller sample size of urban elders, as opposed to reservation elders, makes comparisons between the two groups problematic.

Another limitation of the data set concerns the OARS "interviewer rating" variables. These variables, including the variable "interviewer rating of mental health status" used in this study, call for the subjective ratings of the interviewer about the elder. The problem with the urban sample was that elders were often not selected at random, but instead were selected by the local peer interviewer. These interviewers held preconceived beliefs about the mental health status of an elder perhaps based upon prior knowledge of the elder and his or her use of local social and mental health services. This bias probably also holds true for the reservation sample, as reservations, many times, tend to be isolated communities where relationships between persons are tightly interwoven. Indeed, the fundamental definition of a tribe means a collection of related persons. Thus, it is likely that reservation peer interviewers have much prior knowledge of the elder's history and use of local social and medical services. Overall, given the limitations of the NICOA data base, caution must be exercised when interpreting the findings of this and other studies that use the NICOA data. However, despite these limitations, this data base remains important as no comparable data set exists.

Sample, Variables and Measures

There are six questions in the OARS survey that assess mental health functioning. These questions center on three areas of mental health status, including assessment of life satisfaction, a scale from the Minnesota Multiphasic Personality Inventory (MMPI), and self-assessed mental health information. It is likely that some cultural bias exists in the OARS instrument as survey questions were not developed with American

Indian and Alaska Native populations in mind. For example, John (1991) has found a question asking elders to respond to the statement that "someone is planning evil against them" to have an entirely different, culturally meaning for American Indians. John (1991) states that American Indians in rural/reservation environments often believe that some individuals can practice evil against them through the use of indigenous "bad medicine." He states that belief in this practice extends from the practice of native healers and native healing.

Questions in the OARS survey include the MMPI scale that is an additive score developed from an elder's responses to 15 items. A score of 5 or more indicates impaired psychiatric functioning (Fillenbaum, 1988). According to an analysis of the NICOA data by John (1991), 41% of the sample reservation and urban elders evidence impaired psychiatric functioning. Another area of questions asks elders to self-report their own level of mental health impairment. For example, elders are asked to rate the change in their mental health status as compared to five years ago. Another question asks elders to rate their overall mental or emotional health at the present time. A third type of questions asks elders to identify mental health related concerns such as degree of loneliness, perceived isolation, and level of satisfaction with their present life.

Cases selected in this analysis include Indian/Native elders living in either urban centers or on reservations. In this study, the sample size for urban elders is 66, while the sample size for reservation elders is 252. All of the elders are at least 55 years of age with a mean age of 66 years for urban elders, and a mean age of 67 years for reservation elders. The male to female ratio is 32:68% for urban elders, and 41:59% for reservation elders. Thirty-two percent of the urban sample have completed high school, while 35% of the reservation sample have completed high school.

The data and variable selection for this paper derives from the original OARS data collected by NICOA in 1981. Use of the Anderson and Newman model, prior research and select knowledge allows classification of a total of 13 variables within three blocks to test a predictive model of mental health service use. The statistical analysis consists of multiple regression with the dependent variable, use of mental health services, regressed on the three clusters of variables entered chunkwise. Cases with missing data are deleted listwise from the analysis.

The measure of the dependent variable is a negative or positive response to the question: Have you used mental health services within the last six months? Mental health services in this study are defined as the number of outpatient "sessions" that an elder has had with a doctor, psychiatrist, or counselor for personal or family problems, nervous problems, or emotional problems. For measuring the *need* factor, two concepts are involved. As a subjective measure, the elder is asked about his/her own self-perception as to if s/he believes s/he needs mental health services. The other concepts use two variables to get at an objective

measure of mental impairment. One variable measures satisfaction with quality of life, while the other variable contrasts with an overall mental impairment rating, on a six point scale, of the elder by the OARS survey interviewer. For the block of the *enabling* factor, three concepts are measured within three variables. Income breaks down into 13 levels. Education is categorized into eight levels of achievement from zero to four years through post-graduate college studies, and health and medical insurance coverage is measured by a categorical yes or no response. Finally, the *predisposing* factor is measured by a total of seven variables. Gender and age are important variables in this category. All elders in this analysis are 55 years of age or older. Gender is especially meaningful as Coulton and Frost (1982), in a study of non-Indian elders, found that women were more likely than men to perceive a need for, and utilize, mental health services. Age also is likely to be an important variable since it is known that number of visits to a Indian Health Service clinic by diagnostic category was generally highest in the 45 to 55 age group, and lowest in the 65 and older age group (Rhoades, Marshall, Attneave, Bjork, & Beiser, 1980). Unfortunately, little is known about the effects of age on mental health status of American Indian and Alaska Native elders. Therefore, more longitudinal data on the effects of aging on mental health is needed (Markides, 1986). Psychic distress is measured by a unique combination of three variables — an objective MMPI score, and two subjective self-ratings consisting of an overall four point scale about present mental or emotional health, and another self-rating about self-perception of mental or emotional health as better, about the same, or worse than five years ago.

Results and Discussion

Two multiple regression analyses, one for urban elders and another for reservation elders, reveal a definite pattern for predicting mental health service use. Total R^2 for the urban Indian/Native elders is .48, and the total R^2 for the reservation elders is .12. Both regressions are statistically significant at the .01 level.

Table 1 presents the incremental R^2 contributions for each of the three factors, the standardized coefficients for each variable individually in the equation, the alpha probability level, with the overall R^2 . The need factor explains the most variance and in each equation is statistically significant at the .01 level. The predisposing factor explains a smaller amount of variance, and is significant at the .05 level. Finally, the enabling factor explains a very small amount of variance, and fails in both regressions to be statistically significant.

The MMPI variable is not significant for either the urban or reservation populations. Since the MMPI has been shown to be a highly valid and reliable indicator of mental health status in non-Indian populations, the lack of significance finding is worthy of examination in future studies. It

Table 1
Regression of Mental Health Service Utilization on Need,
Enabling, and Predisposing Factors

BlockNumber	Independent Variables	Urban		Reservation	
		Beta	<i>p</i>	Beta	<i>p</i>
1. Need					
	Self perceived service need	.01	.99	.20	.00
	Mental impairment: interviewer rating	.60	.00	-.10	.24
	Mental impairment: satisfaction	.24	.09	.06	.41
	R ² Change	.23**		.05**	
2. Enabling					
	Total income	.11	.33	.07	.30
	Education	.20	.08	-.01	.90
	Health & medical insurance	.07	.55	.10	.15
	R ² Change	.05		.02	
3. Predisposing					
	Gender	-.10	.38	.04	.49
	Age	-.12	.32	-.10	.16
	Psychic distress: MMPI score	-.08	.57	.04	.60
	Psychic distress: self rating	-.36	.01	-.10	.16
	Psychic distress: trends	-.11	.38	-.13	.05
	Social isolation: lonely	.04	.80	.14	.05
	Social isolation: social resources	-.17	.16	.11	.19
	R ² Change	.14*		.06*	
	Total R ²	.48**		.12**	

* *p* < .05 ***p* < .01

may be that the MMPI scale used in this OARS instrument lacks cultural relevance for American Indian and Alaska Native elders (Pollack & Shore, 1980). Another variable, level of education completed (while not in a statistically significant cluster), was marginally significant in predicting mental health service use for urban Indian/Native elders. Perhaps urban elders, with better education, are influenced by urban social norms where it is more socially permissible to receive mental health services. On many reservation communities, mental health services may still carry a greater amount of stigma, thus, leading elders to avoid needed therapeutic services.

Of the total number of elders in the NICOA study, 7.1% actually used mental health services within the previous six months. This consumption of mental health services suggests that mental health services are important to American Indian and Alaska Native elders. While the percentage of elders who use mental health services may seem low overall, it is about the same as non-Indian elderly populations. Given that the aged, in general, are not inclined to use mental health services, but that Indian/Native elders use mental health services at a rate equal to other populations, it is apparent that American Indian and Alaska Native elders constitute a meaningful client-base.

The Anderson and Newman model provides a useful tool to analyze the mental health service use patterns for both urban and reservation American Indian and Alaska Native elders. When examining the role of the variables entered, need is most predictive of an elder's use of mental health services. For reservation elders, self-perceived need is the strongest predictor, whereas, degree of mental impairment for urban elders is most likely to predict actual use of mental health services within the previous six months. This contrast between the two groups may suggest that urban elders are more likely to receive mental health services based upon the recommendations of professional service providers, whereas, reservation elders are more isolated, less influenced by a professional service provider, and thus have more freedom to render service use decisions based upon their own personal preferences. Another possible explanation, among many others, might be because of greater availability of mental health services in urban areas as compared to reservations.

It also should be noted that reservation elders have an important advantage over urban elders when deciding that they may need mental health services. Generally, reservation elders have the opportunity to choose not only conventional clinical treatment, but sometimes, they may have the opportunity to select traditional, spiritual healing. American Indian and Alaska Native elders living in urban areas usually lack this alternative. Traditional healing, as an option, may assist reservation elders in having more control over their own self-perceived need for "treatment," thus, explaining why this variable was so strong in predicting mental health service use for reservation elders, and so weak in predicting service use for urban elders.

For both urban and reservation American Indian and Alaska Native elders, enabling variables were the least important in influencing whether or not they elected to use mental health services. This finding is expected for two reasons. First, elders constitute a low-income, aged population for whom services are often available regardless of ability to pay. Second, due to the federal-tribal trust relationship, the federal government has treaty obligations to provide complete medical services (interpreted to include mental health services as presently provided through IHS) at no cost to American Indians and Alaska Natives. Additionally, many elders

have veterans benefits and a continuum of services and benefits from the Bureau of Indian Affairs. Thus, elders should have the ability to access mental health services regardless of enabling factors. Findings in this study indicate that income levels and/or possession of health/medical insurance do not adequately predict mental health service use.

This study also illustrates that mental health services may be more discretionary, like social services, than medical or health care services. Specifically, predisposing variables tend to play a more important predictive role than they would for more "mandatory" types of medical care that emphasize need factors. In terms of these predisposing variables, it is noteworthy that the pattern of service use in this study differs from the mental health use pattern of non-Indian elders described by Coulton and Frost (1982). Specifically, these authors found a much smaller contribution for predisposing variables among non-Indians than for the elders in the NICOA study. The reasons for this difference are not clear. Thus, this issue remains as a topic for future research. However, it is important to note that there is a difference between Indian elders and non-Indian elders in the mental health service use pattern. Therefore, mental health service providers may want to provide services and design programs that are culturally specific and relevant to the unique needs of American Indian and Alaska Native elders.

In terms of differences between urban and reservation elders, the latter rate themselves as more isolated than the former. This difference can influence mental health service use. Isolated and lonely elders on reservations may be in greater need of mental health services to deal with decline of the extended family or adjustment to being alone and independent. However, this reality does not directly or adequately address the issue of actual mental health service use patterns. It suggests that the mechanisms influencing help-seeking should be examined. Tribal social service programs for elders, usually offered through a community or senior citizen's center, and by community health representatives employed by tribes under IHS contracts, may be able to encourage elders to seek mental health services. Therefore, these individuals should be targeted for specific training to identify of unserved or underserved (isolated) elders, and coordinate referral services to appropriate agencies or clinics.

On the other hand, since urban Indian/Native elders are not as isolated, they may receive information through a wider variety of channels, such as outreach efforts by a local community mental health center, neighbors, or through increased accessibility to medical services and other social/recreational programs. Urban elders may have another advantage in terms of greater accessibility to public transportation, thereby, enhancing access to community-based services. Social service and medical referral systems in metropolitan centers should be aware that Indian/Native elders, because of their accessibility to information from the mass media and public transportation, constitute a viable service

population. The sophistication of urban elders is underscored in Weibel-Orlando and Kramer's (1989) study in which elders in Los Angeles listed "classes in coping with the problems of aging" as one of the services that they desired. Other factors associated with urban life styles, such as relative anonymity or advertisements for stress-related disability payments also reduce the stigma association with seeking mental health services. Overall, these urban elders may be more able to effectively gain access to specialized mental health services than their reservation counterparts.

Further analysis of the strengths and weaknesses inherent in factors defined by the Anderson and Newman model may be valuable for future development of outreach and program planning efforts by mental health service providers. In this study, the model shows that American Indian and Alaska Native elders are a unique population to be served in the context of how urban and reservation elders gain access to the mental health service system. For these two groups of American Indian and Alaska Native elders, future studies may wish to build upon these findings to determine situational barriers to the use of mental health services within the context of need, enabling, and predisposing factors.

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CULTURAL FACTORS ASSOCIATED WITH HEALTH-RISK BEHAVIOR AMONG THE CHEYENNE RIVER SIOUX

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***Abstract:** A field study was conducted to identify cultural factors — values, beliefs, and related characteristics — associated with health-risk behavior among adult members of the Cheyenne River Sioux Tribe. The Cultural Values Survey (CVS), an instrument for measuring cultural values and related characteristics, was developed and pilot tested in the study population. This instrument, along with the Health Risk Appraisal (HRA) (an instrument developed by the Centers for Disease Control to quantify major health-related behaviors), was administered to a random sample of 429 adults in the study community. Significant differences between females and males for both cultural characteristics and health-risk behaviors were found. Females had significantly higher HRA-calculated Health Index values than males, reflecting overall healthier behaviors. Females who scored higher on cultural factors consistent with more traditional Lakota Indian lifestyles (e.g., degree of Indian blood, Lakota language spoken in the home, traditional Lakota beliefs) had higher HRA Health Index values than females scoring lower in these characteristics. Males who scored higher in factors related to self-determination (e.g., hard work, personal control, industriousness, individual action) had higher Health Index values than those who scored lower in these areas. Further testing of the CVS instrument, as well as further research from both epidemiologic and social science perspectives is essential to elucidate the nature of the relationship between cultural factors and health-related behavior.*

Epidemiologic research has identified the importance of behavior in the etiology of many diseases and in the achievement of health. Much of the seminal work in this regard has focused upon behavioral determinants of cardiovascular disease (e.g., Framingham Study, Alameda County Study), although the role of behavior in the etiology of various

infectious diseases, chronic non-infectious diseases, psychiatric illnesses, and substance abuse disorders also has been explored (Dunn & Janes, 1986). With this greater awareness of the behavioral dimension of health and disease has come a growing recognition of the various social and cultural factors that underlie health-related behavior within a complex causal web (Trostle, 1986).

Values, understood by the social sciences as culturally-determined, irreducible concepts of worth (Williams, 1970, 1979; Geertz, 1973) represent perhaps the most fundamental of such cultural factors governing human behavior and ultimately health. Ample sociological and psychological research has explored the relationship between values and various types of behavior (Rokeach, 1979). More recently, the influence of cultural values upon specifically health-related behaviors has begun to receive attention. Conroy (1979) and Kristiansen (1985a) examined the relationship between cigarette smoking behavior and an individual's adherence to fundamental values as measured by the Rokeach Values Survey. Using similar methods, Schwartz and Inbar-Saban (1988) demonstrated a relationship between successful weight-loss behavior and values, and investigated the possibility of altering health-related behavior by deliberately effecting changes in these values. Using the Rokeach Values Survey, Kristiansen (1985b) further attempted to demonstrate a relationship between cultural values and overall preventive health behavior.

The contribution of cultural values to health-related behavior and ultimately to health and disease is a subject that clearly has profound implications for preventive medicine, but has yet to be fully elucidated. The purpose of our study was to explore this relationship by examining cultural values and related characteristics associated with health-related behavior among members of the Cheyenne River Sioux Tribe in South Dakota. This is a community beset by major health problems — unintentional injuries, violence, cardiovascular disease, alcoholism, diabetes — that have traditionally been felt to have significant behavioral etiologies (Rhoades & Welty, 1987). These behaviors, in turn, may result from the loss of traditional cultural values, or may reflect value conflicts implicit in this community's existence as an isolated, politically and economically repressed ethnic minority population in the United States.

We developed a questionnaire instrument, the Cultural Values Survey (CVS), that could allow quantitative assessment of cultural characteristics. We sought to measure values as well as related characteristics such as degree of acculturation, language, and religion. This study was the pilot stage in the development of a valid and reliable instrument to extract such data in epidemiologic studies.

In turn, we sought to correlate the values and other cultural characteristics measured by our instrument with some quantitative measure of health-related behavior. For this behavioral measure we chose the so-called "Health Index," a numerical value estimating an individual's overall

health risk, as derived from the "Health Risk Appraisal" (HRA), an instrument developed by the CDC (Centers for Disease Control) to measure several health-related behaviors and other parameters. Our study was exploratory in nature; using these instruments, we attempted to demonstrate that health-related behaviors are related to values and other cultural characteristics. In this paper we report our preliminary experience and findings.

Methods

Instrument Development

The main study instrument, the Cultural Values Survey (CVS), was developed to measure cultural values, beliefs, and related characteristics. The first portion of the instrument consisted of questions assessing demographic data including sex, age, and degree of Indian blood. Additional questions were developed to capture data on religion and religiosity, language, and self-perceived traditional Lakota lifestyle.

Major value themes were identified from the theories of Williams (1970, 1979) and other social scientists (Rokeach, 1979). Additional important value orientations were identified through discussions with members of the Cheyenne River Sioux Tribe and its Community College, and with social scientists familiar with American Indian culture in general and Plains Indian culture in particular. The following general value orientations were identified: Personal Locus of Control; System Modifiability; Personal Responsibility; Trust; Occupational Primacy and Industriousness; Wealth; Family; Altruism; Education. Each of the identified values and cultural characteristics were operationalized by several questionnaire items comprising the final instrument. Some questions were modified from existing psychometric instruments and surveys published in the social science literature (Backman, Kahn, Davidson, & Johnson, 1967; Gurin, P., Gurin, G., Lao, & Beattie, 1969; Kahl, 1965). A draft of the instrument was pretested with several members of the Indian community for clarity, language usage, and possible cultural bias.

The final instrument consisted of 130 questions, 95 of which utilized a 5-point Likert scale to code the degree of the respondent's agreement with or adherence to the value, belief, or cultural factor in question. Each item yielded a score of 1 to 5 for individual statistical analyses, and items were also grouped together under their intended operational categories to yield additive subscores for further statistical analysis. A copy of the Cultural Values Survey is available by request from the authors. After completion of data collection, confirmatory factor analysis (Varimax rotation) was conducted to examine the internal validity of individual items and their grouping into operational categories.

Health Risk Appraisal Instrument

"Healthier People," a version of the Health Risk Appraisal (HRA) instrument, is a questionnaire developed by the Centers for Disease Control and the HRA Research Group of the Emory University Carter Center (Amler, Moriarty, & Hutchins, 1988). The HRA instrument is designed to measure various known health-risk behaviors — e.g., seat belt use, exercise, diet, tobacco use, alcohol use. Certain measurements of objective health status are also assessed by the HRA — e.g., blood pressure (measured with a mercury sphygmomanometer in the right arm of the participant in a seated position), body mass (kg/m^2), serum cholesterol as measured by a Reflotron analyzer. From these data the HRA provides a calculated "Health Index" value reflecting the relative health risk of the individual.

A computed appraised age for each respondent is generated from age- and sex-specific mortality data using aggregated epidemiologic algorithms that relate behavioral risk factors to death rates. The Health Index is derived from the difference between the individual's actual age and the appraised age calculated from the HRA, negative Health Index values therefore indicating poor health and greater health risk, and positive values indicating good health and less health risk. The validity, reliability, and statistical basis for the development of this and similar instruments is discussed elsewhere (Amler et al., 1988; Beery, 1986; Gazmararian, Foxman, Yen, Morgenstern, & Edington, 1991).

Study Design

The study was conducted over a seven month period, between September 1987 and March 1988, on the Cheyenne River Sioux Reservation in central South Dakota. Permission to conduct the study was granted by the Cheyenne River Sioux Tribal Council. Individuals aged 18 and older were randomly selected from tribal enrollment lists. Participation of these selected individuals was solicited by letter, telephone call, or home visits by an interviewer. If home visits were attempted, additional family members aged 18 and older who were members of the Cheyenne River Tribe also were recruited into the study. Each participant received a ten dollar gratuity to defray costs related to their participation.

Through this process, a total of 889 tribal members were identified as potential participants in the study. Of these subjects, 83 had moved off of the reservation, and 17 were deceased or unable to participate due to mental or physical impairment. Four hundred twenty-nine of the 778 eligible participants who resided on the reservation and were able to participate completed the survey, yielding a participation rate of 55.1%. Two hundred eighty-six eligible participants failed three appointments to

complete the survey, or were otherwise unable to be contacted, while 74 refused to participate altogether.

Three tribal members assisted in data collection, and after receiving training in interviewing techniques, administered the instruments to all participants. An on-site study coordinator also was available for assistance in administering the questionnaires.

Statistical Analysis

Correlational analysis (Pearson Product Moment) was used to examine the relationship between scores on the questionnaire items of the Cultural Values Survey, which were treated as independent variables, and the dependent variable of Health Index, a numerical score calculated from the HRA instrument. Regression analysis was used to examine the ability of the independent variables to explain Health Index scores. Stepwise regression procedures were used to select the most important independent variables. Each of these analyses were conducted separately for men and women, because the men and women were found to be significantly different on both the independent and dependent measures. *P* values less than or equal to 0.05 were considered significant. T-tests were used to compare differences in mean values, and chi square tests were used to compare cell values of dichotomous variables.

Results

No serious problems were encountered in the administration of the instruments to participants. The reliability coefficient (Cronbach Alpha) for the Cultural Values Survey was .90. Confirmatory factor analysis (Varimax rotation) of the responses in the CVS showed that individual items of the CVS did not "load" in accordance with their intended operational groupings. Therefore, in subsequent statistical analyses the individual questionnaire items — rather than subtotal scores of the operational question groups originally created to measure a particular unique value (e.g., "Wealth," "Altruism," "Industriousness," etc.) — were used as the independent variables.

Males and females were found to differ significantly in terms of several physiologic and behavioral parameters measured by the Health Risk Appraisal instrument (Table 1).

Because of these differences, Health Index values calculated by the HRA differed significantly between men and women. Men had an average index value of +0.80, while women had an average index value of +1.81, significantly higher than both the theoretical mean of zero (0) and the mean value for men ($p < .05$), indicating that the women in our study population were healthier than the men. This finding is corroborated

Table 1
A comparison of prevalence and mean values for physiologic and behavioral parameters of male and female study subjects

Parameter	Males (n = 207)	Females (n = 222)	p value
Age	36 (13.6)	38 (12.9)	NS
Weight (lbs.)	194.3 (41.2)	168.6 (32.3)	NS
Body Mass Index	28.0 (5.4)	28.4 (5.3)	NS
HDL Chol (mg/dl)	45.1(0.7)	55.0 (0.7)	NS
Health Index	0.8 (3.5)	1.8 (3.0)	<.01*
Diabetes (%)	5.7	13.5	<.01†
Systolic BP (mm Hg)	131.1 (14.6)	123.2 (16.6)	<.01*
Diastolic BP (mm Hg)	83.7 (11.2)	77.9 (10.0)	<.01*
Hypertension (%)	39.1	21.8	<.01†
Total Cholesterol (mg/dl)	201.8 (11.2)	193.6 (10.0)	<.05*
Drive or ride when driver had too much to drink (%)	42.9	21.0	<.01*
Drink beer (%)	52.9	28.4	<.01*
Drink wine (%)	7.1	1.8	<.01*
Drink liquor (%)	28.6	7.0	<.01*
Violence (% reporting 2 or more incidents in the past year)	23.4	12.3	<.01*
Physical Activity (%) reporting 3 or more times per week)	66.5	43.6	<.01*

Note. Standard Deviation listed in parenthesis: * — Student's T test; †— Chi square test; NS — Not significant.

by mortality data collected in the Aberdeen Area of the Indian Health Service (Figure 1).

Table 1 illustrates that the principal reasons for the lower health index scores in men included a higher prevalence of hypertension, hypercholesterolemia, violence, and alcohol use. Perhaps offsetting these factors were a higher prevalence of diabetes mellitus and a lesser amount of weekly physical activity in females. There was no significant difference in the mean ages of the males and females.

For the combined population of males and females, no groupings of variables or individual variables were found to be significantly correlated with Health Index. When the population was broken down by sex, however, several cultural values and factors were found to be significantly correlated with Health Index, and these factors differed for males and females (Table 2).

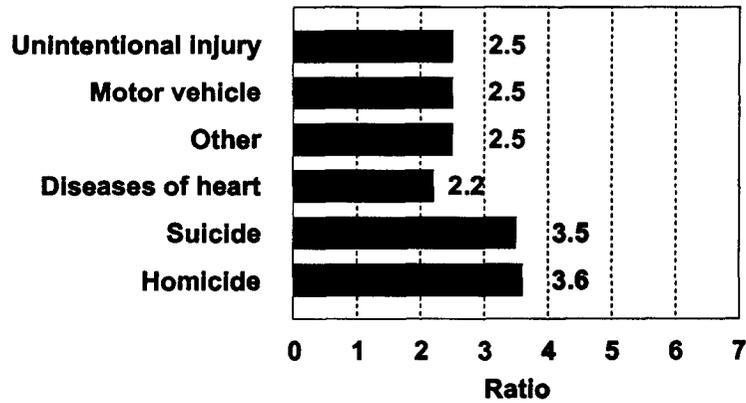


Figure 1
Ratio of males to females for selected causes of death
Aberdeen area 1986–1988

Table 2
Simple linear regression analysis:
individual Cultural Values Survey items vs. Health Index

Independent Variables (CVS Items)	n	r	p
I. FEMALES			
Cultural isolationism	222	.24	.00
Degree of Indian blood	219	.23	.00
Lakota language spoken	222	.20	.00
Combination of Lakota and English spoken	222	.20	.00
Happiness in life	222	.19	.01
Personal control over health	220	.18	.00
Degree of Lakota spoken	222	.16	.02
Lakota lifestyle	221	.16	.02
Altruism	222	.16	.02
Self-esteem	222	.15	.02
Satisfaction with life	221	.15	.02
Traditional parents	221	.15	.02
Personal control	222	.15	.02

Table 2 (Continued)
Simple linear regression analysis:
individual Cultural Values Survey items vs. Health Index

Independent Variables (CVS Items)	n	r	p
II. MALES			
Hard work/industriousness	206	.18	.00
Personal control	205	.16	.02
Individual action	207	.16	.02
Personal control	207	.15	.03
Friendliness to non-Indians	205	.15	.04
Hard work/industriousness	206	.15	.04

By simple linear regression analysis, five of the six questionnaire items most strongly correlated with Health Index values for males related to beliefs in industriousness and personal control. Two items dealt with valuation of hard work and industriousness ($r = .18$ and $.15$); two other items measured positive valuation of personal control ($r = .16$ and $.15$). The remaining item assessed belief in individual action ($r = .16$). The final highly correlated item assessed a positive valuation of friendliness towards non-Indians ($r = .15$).

Healthier females scored higher on questions measuring traditional Lakota lifestyle and culture, and beliefs in altruism and personal control. The CVS items designed to measure traditional Indian culture which proved most strongly correlated with Health Index include: belief in the good of cultural isolationism ($r = .24$), greater degree of Indian blood ($r = .23$), Lakota language fluency (3 separate items — $r = .20, .20, .16$), and adherence to Lakota lifestyle ($r = .16$). Items measuring altruism ($r = .16$) and personal control (2 items, $r = .18, .15$) also were found to be significantly correlated with Health Index. The remainder of significant items included questions assessing mental health, indicating greater self-esteem ($r = .15$) and satisfaction with life (2 items — $r = .18, .15$).

Stepwise multiple linear regression analysis was performed to identify the grouping of factors accounting for the greatest amount of variance in Health Index values (Table 3). Again, differences were found between females and males. Overall, the R^2 s of 0.17 for males and 0.17 for females were statistically significant, although low in predictive ability. Similar results as in the simple regression analysis were obtained, but for females, in addition to factors mentioned above, devaluation of wealth and occupation were predictive of healthy behaviors. Similarly for males, additional items found to be predictive of healthy behaviors included attitudes of acceptance of the system, and of friendliness towards non-Indians. The

Table 3
Stepwise multiple linear regression analysis:
Cultural Values Survey items vs. Health Index

Independent variable (CVS items)	<i>r</i>	<i>r</i> ² change	<i>r</i> ²	<i>p</i> of change
I. FEMALES				
Satisfaction with life	.15	.05	.05	.00
Cultural isolationism	.24	.03	.08	.02
Devaluation of wealth	.13	.02	.10	.04
Devaluation of occupation	.09	.02	.12	.04
Lakota language	.20	.03	.15	.01
Personal control	.15	.02	.18	.04
II. MALES				
Hard work/Industriousness	.18	.05	.05	.00
Acceptance of current system	.16	.05	.09	.01
Friendliness to non-Indians	.15	.04	.13	.01
Self-reliance	.12	.02	.19	.03
Personal control over system	.04	.02	.17	.05

groups of these identified items accounted for over 17% of the variance of Health Index values for both male and female populations ($p < .05$).

Discussion

Through this study, an instrument to measure cultural values and related characteristics in an American Indian reservation population was developed and administered conjunctive with the Health Risk Appraisal (HRA) so that determinants of healthy behavior could be assessed. This is the first study in which the HRA-derived Health Index was examined in terms of cultural factors. There are many intriguing findings, although several factors limit the validity of our data. The relatively low participation rate in this study was an expected problem; a majority of the tribal members does not have telephones, and many participants live as far as 50 miles away from the tribal headquarters and could not easily follow up with interviews. Thus, there was a low overt refusal rate considering these factors, although the representativeness of our population can nonetheless be questioned.

Pilot testing of the Cultural Values Survey identified several problems with the instrument. Factor analysis demonstrated significant

shortcomings in the internal validity of the instrument's operational "value" constructs. This suggests an inescapable element of arbitrariness in the labels we use to define cultural values and beliefs; this may reflect the fact that these labels are products of Euro-American society, and consequently, may have different meanings in Lakota culture (W. Powers, personal communication, April 2, 1993). The lack of internal construct validity also reflects a difficulty in assessing values through written questionnaires in general; even the most carefully designed questions are subject to divergent interpretations, by participants as well as interviewers, in a cross-cultural study such as ours.

In future revisions of the instrument, those items determined by factor analysis to be statistically "nonloading" will certainly require revision or deletion. Test-retest reliability as well as the validity of the CVS and the HRA also require formal testing in this particular study population. This represents the greatest limitation in the interpretation of our data. Future work is essential to revise the CVS and to conduct rigorous trials of validity and reliability for both the CVS and Health Index as measured by the HRA.

Despite the concerns above, however, several important findings that support the value of our instruments emerged from this work. Our study added to existing data that Lakota men are significantly less healthy than Lakota women in this reservation community. They suffer more from hypertension and hyperlipidemia — which may result from less healthy dietary behaviors — as well as more frequent alcohol abuse and violence. Moreover, this study demonstrated that differences in cultural values correspond with the differences in health status and health-risk behavior between men and women. This supports the hypothesis that values are intimately — perhaps causally — linked with health-related behavior and health status.

The particular value and belief trends emerging from our data prove consistent with what is known about Lakota and Anglo cultural values from an anthropologic perspective, further lending a strong measure of face validity to our data. Regarding data for females (Table 4), the constellation of altruism, devaluation of wealth and occupation, cultural isolationism, and personal control, describes value ideals that many observers consider integral to Lakota culture, and to the traditional Lakota female gender role in particular (Powers, 1986). The coincidental identification of these values along with certain markers of greater degree of Indian culture and heritage (degree of Indian blood; Lakota language fluency and lifestyle; traditional practices) supports the significance of the findings.

The same considerations apply to the value profile of the healthy male (Table 4). However, in contrast to women, the healthier Lakota men were found to fit a value profile more closely resembling the Anglo male role, which is typically felt to embody values of industriousness and self-determination (Williams, 1970, 1979). Healthier men, who scored higher

Table 4
Summary of cultural factors significantly correlated with Health Index values by simple and multiple linear regression analyses

Values and Beliefs	Cultural Factors
I. FEMALES	
Altruism	Degree of Indian blood
Devaluation of wealth	Lakota language
Devaluation of occupation	Lakota lifestyle
Cultural isolationism	Traditional parents
Personal control over health	
Personal control over system	
II. MALES	
Hard work/Industriousness	(none)
Personal control	
Friendliness towards non-Indians	
Individual effort	

on these presumably Anglo value questionnaire items, did not score higher on markers of Indian heritage and culture. A similar convergence towards Anglo values as measured by the Rokeach Values Survey was observed by Flores (1986) in a study of alcoholic Indians on the Gila River Reservation (Arizona). This small study comparing predominantly male Pima and Papago Indian alcoholics with nonalcoholics and non-Indian "Anglos" demonstrated greater similarities to Anglo values for nonalcoholic as opposed to alcoholic Indians.

This points to an interesting contrast between women and men. The healthiest women appear to be those who are the most traditional, or least acculturated to Anglo society, whereas the healthiest men appear to be those who are the least traditional and the most acculturated to Anglo society. Exactly why the degree of acculturation appears to be related in opposite ways to health for women and men — if this is a valid conclusion — is not clear. The notion of "stress" as a condition of unmet needs encompassing many dimensions — physical, psychological, social, and cultural — is an integrating concept that may be useful in the interpretation of our study findings (Janes, 1986). If we assume that the condition of "stress" is inversely related to health, then our findings can be interpreted to demonstrate that acculturation produces less stress for Lakota men than for Lakota women, or that there is more pressure towards Anglo acculturation for Lakota men than for Lakota women. This interpretation is

supported by the observations of Powers (1986), who postulated several reasons why, in the process of acculturation in Anglo society, Lakota gender roles have allowed Lakota women to retain perhaps more elements of traditional Lakota culture than Lakota men.

A more extensive analysis of our data in these theoretical contexts is beyond the scope of this study. Significant to the validity of our findings, however, is the fact that other studies have demonstrated relationships between acculturation and various aspects of health and health-risk behavior, and that the concept of stress has been similarly used to provide plausible interpretations of these relationships. The relationship between acculturation and hypertension has been explored in different ethnic populations by Janes (1986) and Dressler et al. (1987). May (1982) found a lower incidence of alcohol abuse in Indian tribes that were tightly integrated and that experienced relatively low levels of acculturational stress. Stress was a unifying concept for Dressler's (1985) study of the relationship between psychosomatic symptoms and modernization.

Of course, many other possible explanations of the data exist; the "healthy" values identified in this study may in fact have little to do with acculturation or Lakota traditionality. Accepting or rejecting such alternative hypotheses is highly problematic, as there is no single best measure of Lakota traditionality. Indeed it is debatable whether any culture — Lakota or any other — can be defined in a sufficiently comprehensive and culturally unbiased way through empirical studies like ours. Since this study was not designed to examine the relationship between values and acculturation *per se*, different higher-order interpretations of the data are equally plausible.

Moreover, our study by no means examined the entire spectrum of cultural values in Lakota society, nor were many other important social factors (e.g., education, economic status) assessed. Many other unmeasured "intervening and mediating variables" (Rabkin & Struening, 1976) undoubtedly exist. There also is nothing to suggest an *a priori* healthiness of any value or other cultural factor. For these reasons, while certain cultural factors and values may be correlated with healthy behaviors in our study population, one cannot conclude that these factors comprise the only cultural avenue towards health. Other combinations of factors may be equally adaptive in different circumstances or populations. Thus one cannot readily generalize our specific findings to other ethnic populations, in which unique historical circumstances may render different cultural factors important to the achievement of health.

These considerations call for caution against overinterpreting the data; however, they do not diminish the significance of our study's principal finding — that certain values and cultural factors are indeed related to health-risk behavior. More work is needed to better understand the nature of this relationship, but our preliminary findings have important implications for preventive medicine and public health policy. The findings suggest that

perhaps those values and cultural characteristics identified as healthy by our study should be promoted in this population, provided that the social and ethical contexts of these characteristics are better understood and respected. Our findings also provide data to potentially identify individuals at high risk for unhealthy behaviors and morbidity. As a risk-stratifying tool, the Cultural Values Survey could allow such individuals to be targeted for health intervention programs.

Conroy (1979) asserted that the "current health crisis can be formulated to represent, at its very core, a crisis in values." The aim of our study was to explore the relationship between health-risk behavior and cultural values. Instruments like the CVS can generate quantitative data that lend themselves to epidemiologic analysis. It is clear, however, that validating and making sense of these data requires thoughtful qualitative analysis, and a careful consideration of the theoretical difficulties in understanding human culture. Further research is needed to pursue this subject.

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DEVELOPMENTAL DISABILITIES PREVENTION AND THE DISTRIBUTION OF RISK AMONG AMERICAN INDIANS

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Abstract: Selected risk factors for developmental disabilities demonstrate an apparent differential pattern of risk for American Indians as compared to the U.S. general population. Indian children appear to experience comparable or even lower rates of certain congenital anomalies which are associated with developmental disabilities and are difficult to prevent. Conversely, Indians are reported to experience higher rates of conditions which can be effectively targeted for prevention, including those related to prenatal exposure to alcohol, cigarette smoking, and maternal diabetes, as well as disabling sequelae of accidents and otitis media. Primary prevention is critical because of the long-term chronic nature of developmental disabilities and strategies focused on risk factors of particular relevance to Indian communities can achieve the greatest potential benefit.

There is a paucity of data regarding developmental disabilities (DD) among American Indians, and the distribution of DD risk factors in American Indian populations has not been described in any comprehensive manner. This review examines the available published data regarding critical aspects of DD risk and Indian health to describe a particular pattern of risk for American Indians which, in turn, has fundamental implications for preventive services planning. The cause of specific disabilities are often unknown, or, in the case of genetic disorders such as Down's Syndrome, not readily amenable to prevention. Certain medical and lifestyle factors, however, are amenable to intervention through community programs which reduce risk factors prior to conception and early access to prenatal services. Primary prevention is critically important since individuals with DD often require life-long care or support services.

Scientific literature on DD is diverse and often relates to specific diagnostic conditions. In order to allow for consideration of risk across a broad spectrum of disability, DD is used here to refer to functional

impairments caused by chronic conditions including epilepsy, cerebral palsy, autism, mental retardation, and other neurological conditions. This definition is reflective of the eligibility criteria for receiving DD services.

Determination of DD Risk Factors

Developmental disabilities have relatively low base rates, are associated with many different disorders, and are often of unknown or complex etiologies. Determination of risk factors can be a difficult task. Describing risk factors associated with DD among American Indians is complicated by the limitations of available data. The literature on DD risk factors is complex with outcome measures varying extensively, placing severe constraints on interpretation. Since this investigation focuses on a broad spectrum of disability, a wide range of research is considered, including studies assessing the relationship of selected risk factors with mental retardation, learning disabilities or other conditions associated with DD. While these measurement differences preclude direct comparisons across studies, it is possible to investigate the nature of risk for disability in general rather than for a specific outcome. This approach allows for discrimination of risk factors which are common to multiple categories of disability.

Since comprehensive DD morbidity information for either Indian people or the general U.S. population is not available, this investigation supplements morbidity data with relevant mortality data. Cause-specific mortality rates are generally poor indicators of morbidity because factors other than morbidity affect mortality except when a disease is uniformly lethal (Mausner & Kramer, 1985). However, in the absence of other data and with appropriate consideration of alternative explanations, mortality rates can be useful in estimating morbidity.

Determining risk based on the Indian health literature is further complicated in that many studies fail to report the tribal affiliations of subjects, and intertribal differences can impact on risk-related behavior. Indian Health Service (IHS) statistics provide the most comprehensive data available, but since their major service areas are in the West, Southwest, and on reservation sites, IHS data are necessarily biased towards these areas. Consequently, discussion is limited here to certain genetic disorders and congenital anomalies, alcohol, cigarette smoking, diabetes, accidents and otitis media as they relate to DD risk among American Indians, and is not intended to be exhaustive. These particular factors are selected because of their relationship to conditions associated with DD and their prevalence in the Indian population. While exploring risk factor distribution with implications for prevention, it is important to keep in mind that any comparison population (e.g., U.S. whites, the general population,

etc.) is not a "gold standard" and includes substantial amounts of preventable disability and mortality.

Genetic Disorders and Congenital Anomalies

Chromosomal abnormalities are a significant cause of mental retardation and are implicated in the development of some motor impairments (Holmes, 1985). Although the published data detailed below is considerably limited, Indian children seem to experience comparable or lower rates of the more common genetic disorders and congenital anomalies associated with DD than do children in the population at large.

The Birth Defects Monitoring Program of the Centers for Disease Control reported rates for common congenital malformations based on birth record abstracts from over 1,200 participating hospitals (Chavez, Cordero, & Becerra, 1988). While these are the most comprehensive birth defects data available, they are not representative of all U.S. births comprising 19.7% of white, 16.4% of black, 17.5% of Hispanic, 9.3% of Indian, and 8.3% of Asian births. Although not significantly different, Down's Syndrome was found to be less prevalent among Indians (6.7 per 10,000 births) than among U.S. whites (8.5 per 10,000 births), as was spina bifida without anencephaly (4.1 per 10,000 for Indians compared to 5.1 per 10,000 for whites). Down's Syndrome rates are particularly important, since it is found in 20–30% of severely retarded (IQ < 50), and 2–3% of moderately retarded (IQ 50–69) individuals (Hook, 1984).

An earlier study (Niswander, Barrow, & Bingle, 1975), using Indian Health Service hospital newborn medical records (primarily reservation births), found even lower rates of most central nervous system malformations among Indians than the Birth Defects Monitoring Program. These data show comparatively lower rates per 10,000 Indian births for anencephaly (1.6 vs. 3.6), hydrocephalus without spina bifida (3.7 vs. 10.8), and microcephalus (1.1 vs. 2.6), but a higher rate of spina bifida without anencephaly (5.5 vs. 4.1).

Indian Health Service (1987) mortality data indicate that congenital anomalies are responsible for fewer infant deaths among Indians (1.8 per 1,000 births) than among all U.S. races (2.4 per 1,000 births). While caution is advised when interpreting infant mortality data in reference to disabilities in surviving infants, the data suggests that Indian infants experience fewer lethal congenital anomalies than the general population, and there is no available evidence suggesting that they experience more disabling congenital anomalies.

Prenatal Exposure to Alcohol

Maternal alcohol use increases the risk of DD by increasing the likelihood of low birth weight, prematurity, and intrauterine growth retardation

(Abel, 1982; *Alcohol Health and Research World*, 1983; Rossett & Weiner, 1984). Prenatal exposure to alcohol also is directly implicated in central nervous system deficiencies (e.g., microcephaly and mental retardation), Fetal Alcohol Syndrome (FAS) and other alcohol-related birth defects (Abel, 1982). While the etiology of most mental retardation remains unknown, FAS is considered the single leading known cause of mental retardation, presently surpassing Down's Syndrome and spina bifida (Abel & Sokol, 1986; Warren & Bast, 1988).

Alcoholism, alcohol abuse and related problems constitute the number one health concern for American Indians (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 1978). The incidence of alcohol use appears to be increasing among Indian women (Lamarine, 1988) and alcoholic cirrhosis of the liver accounts for the death of one in every four, a rate 37 times that of white women (NIAAA, 1978). In terms of drinking patterns, Indians are likely to be either heavy drinkers or abstainers (Lemert, 1982). Although overall rates of consumption are high, many Indian communities have lower rates of alcohol use than the general population and substantial intertribal variation exists (Sievers, 1968; Cohen, 1982).

There is little data on drinking among Indian women during pregnancy. One study of 405 pregnant Sioux women reported that over 30% used alcohol during pregnancy as compared to less than 2% of an unmatched control sample of 342 pregnant white women (Peterson, Leonardson, Wingert, Stanage, Gergen, & Gilmore, 1984). The authors suggest that the figure for Sioux women should be considered a tentative and conservative estimate, citing historical problems with collecting accurate information on drinking behavior among patients seen in Indian Health Service clinics.

Adverse outcomes associated with alcohol use during pregnancy are fairly well documented, with FAS at the extreme end of a spectrum of alcohol-related birth defects. It has been estimated that for every one case of FAS, another four cases of substantial birth defects attributable to alcohol consumption during pregnancy exist (Russell, 1980). The *Sixth Special Report to Congress on Alcohol and Health* (U.S. Department of Health and Human Services [USDHHS], 1987), cites the most common prevalence of FAS to be between 1 and 3 cases per 1,000 live births. The *Seventh Special Report to Congress on Alcohol and Health* (USDHHS, 1990) notes further that most identified cases of FAS in the U.S. were in sites where mothers were black or American Indian and of low socioeconomic status (2.6 per 1,000 vs. 0.6 per 1,000).

Data from the Fetal Alcohol Syndrome Project of the Indian Health Service (May & Hymbaugh, 1982) show considerable intertribal variation in FAS rates. The incidence of FAS per 1,000 births ranged from 1.4 for Navajo infants, 2.0 for Pueblo infants and 9.8 for selected Plains tribes infants (May, Hymbaugh, Aase, & Samet, 1983). While the rates for

Navajo and Pueblo groups are comparable to their estimated prevalence in the general population, the Plains group is much higher. A higher prevalence of FAS per 1,000 children aged 0–4 compared with children 5–14 (3.7 vs. 0.5 for Navajo, 4.7 vs. 1.1 for Pueblo, and 11.7 vs. 10.2 for Plains children) appears to indicate that the diagnosis of FAS is becoming more common in all groups studied. The Birth Defects Monitoring Program found FAS present among Indian infants at 33 times the rate of U.S. whites (Chavez et al., 1988). The possibility that more frequent differential diagnosis of FAS among Indians, due to medical personnel sensitivity to Indian drinking, cannot be ruled out; it is not likely to account for differences of this magnitude.

Prenatal Exposure to Cigarette Smoke

Cigarette smoking during pregnancy is implicated in increased risk for DD through its association with increased rates of prematurity and low birth weight. There is also limited evidence that children of smokers have significantly more perinatal conditions known to cause long-term neurological handicaps, including hypothermia and premature separation of the placenta (Rantakallio & Koiranen, 1987).

Two large prospective studies have been conducted which followed children up to age 6 ½ and 7 and detected differences between the children of smokers and nonsmokers. The first, the Collaborative Perinatal Study (Neaye & Peters, 1984) found significant differences in outcomes at age 7 between 578 full-term sibling pairs in which the mother smoked during one pregnancy but not the other, and between outcomes for children of smokers versus nonsmokers. Cognitive and behavioral deficits present in children of smokers are associated with lower birth weight and higher levels of neonatal hemoglobin, the latter of which is suggested to be caused by nicotine reduction of placental blood flow and an increase in fetal carbon monoxide. These results are particularly interesting because the analysis controlled for the effects of acute smoking-related disorders such as placenta previa, abruptio placentae and premature rupture of fetal membranes. The second study found fewer significant differences at age 6 ½, concluding that children whose mothers smoked have less satisfactory neurological and intellectual maturation than their counterparts whose mothers did not smoke, including differences in school placement and IQ scores (Dunn, Karaa, McBurney, Ingram, & Hunter, 1977).

A smaller prospective study, adjusting for several confounding variables, found maternal smoking to be related to a decrease in motor skills and to lower levels of verbal comprehension among 13-month-old children (Gusella & Fried, 1984). Differences among various age groups are important since the effects of passive smoke in the home are difficult to control for and may have an important impact on subsequent child

development (Rona, Chinn, & Du Ve Flory, 1985). Children exposed to cigarette smoke both pre- and postnatally are expected to show more of these developmental deficits.

No common source for representative data on cigarette smoking prevalence among Indians and the general population is currently available. Reports generally show a high prevalence of cigarette smoking among Indians with estimates ranging from 13% to 70%, with an average of 42% of Indians identified as smokers, compared to less than 30% of the general population (*Morbidity and Mortality Weekly Report*, 1987). Historical data based on a relatively small number of Indian women indicates significant intertribal variation in cigarette smoking among Indian women over 30 years old, ranging from 10.8% to 67.3%, compared to 33% of women in the general population (Sievers, 1968). A study of cardiovascular risk factors in the urban Minneapolis Indian community (primarily Chippewa) found that 67% of women interviewed smoked, with 45% of current smokers averaging 20 or more cigarettes per day (Gillum, Gillum, & Smith, 1984). Peterson and associates (1984) found 42% of Sioux women reported smoking during pregnancy, compared to less than 20% of a white control group.

Prenatal Exposure to Maternal Diabetes

Maternal diabetes during pregnancy is associated with morbidity related to both prematurity and postterm status, which can place a child at increased risk for DD. Children of diabetic mothers are more likely to have congenital anomalies, respiratory distress syndrome, and be either small or large for gestational age, depending on their maturity status (Gabbe, Lowensohn, Wu, & Guerra, 1978). A Danish study compared 853 infants born to diabetic mothers with 1,212 control infants and found higher rates of congenital malformations among newborns of diabetics, particularly for more serious anomalies (Pederson, Tygstrup, & Pederson, 1964). Compared to the control group, infants born to diabetic mothers had more fatal malformations (2.1% vs. 0.3%), more nonfatal major malformations (3.1% vs. 1.2%) and more multiple malformations (1.6% vs. 0.2%), but similar rates of minor malformations (1.2% vs. 1.0%). Although fetal survival has improved dramatically in the past 30 years, the incidence of major congenital anomalies remains at least twice as high for the offspring of diabetic mothers as compared to nondiabetic mothers (Pyke, 1987). Even when maternal diabetes is mild and noninsulin dependent, Pyke (1987) found 17% of infants over the 95th percentile for birth weight.

Substantial intertribal differences in diabetes prevalence estimates exist which may be a function of genetic or environmental factors (West, 1974). However, careful monitoring of glucose levels during pregnancy is often indicated for Indian women, since diabetes is considered epidemic among many tribes (Leonard, Leonard, & Wilson, 1986; West,

1974). Positive family history of diabetes is also related to development of gestational diabetes. Although the risks are not as well defined, a study of gestational diabetes among Pima Indians found a significant linear relationship between third-trimester glucose tolerance and fetal complications including perinatal mortality and macrosomia (Pettitt, Knowler, Baird, & Bennett, 1980). Diabetes prevalence in Pima Indians has received considerable attention since an estimated 50% of the population over age 35 is diabetic. In a study of 1,253 pregnant Pima women, 3.8% were diabetic in comparison to 0.28% of a general population sample of pregnant women (Bennett, Rushford, Miller, & LeCompte, 1976). The sample was divided into normal, prediabetic, and diabetic groups on the basis of glucose tolerance. Outcomes were more severe with increasing glucose intolerance. For the normal, prediabetic and diabetic groups, respectively: perinatal mortality was 1.2%, 3.1% and 25.5%; macrosomia was 7%, 9%, and 43%; and congenital anomalies were present in 3.8%, 3.8% and 19%.

Gestational diabetes is also reported (Massion, C., O'Connor, P. J., Gorab, R., Crabtree, B. F., Nakamura, R. M., & Coulehan, J. L., 1987) to be much higher among Navajo women than other U.S. populations (6.1% vs. 1–3%). While diabetes was not directly assessed in the study of pregnancy risk factors by Peterson and associates (1984), significantly more infants weighing greater than 4,000 grams were born to Sioux women (15% of births) than to white women (11% of births).

Accidents

Morbidity resulting from childhood accidents, particularly head trauma and asphyxia, represent other areas of preventable DD risk. Significant disability in cognitive and motor skills can be caused by brain damage due to head injuries or to accidents which result in oxygen deprivation (e.g., near drowning, strangulation, smoke inhalation, etc.).

In a study of accidents among Navajo Indians (Brown, Gurunanjappa, Hawk, & Bitsuie, 1970), records were obtained for all accident cases treated at medical facilities serving the reservation during 1966–1967. It was assumed that all cases requiring immediate attention would be seen in these facilities because of the prohibitive distance from other service providers. The incidence of accidents requiring medical attention was 4.4 per 100 children aged 0–4, and 4.6 per 100 children aged 5–14. Over 10% of all accidents were head injuries. These data do not include trauma secondary to assault, intentional self-inflicted injury, homicide, suicide, or attempted suicide. The mortality rate due to accidents was also considerably higher at that time for Navajos than for the U.S. population among children aged 0–4 (122.0 vs. 42.9 per 100,000) and among children aged 5–14 (58.1 vs. 19.8 per 100,000).

Indians have had consistently high rates of accidental death (Indian Health Service [IHS], 1987; Schmitt, Hole, & Barclay, 1966).

Childhood accidents continue to appear more frequent among American Indians, with accident-related mortality much higher among children aged 1–14 (23.8 per 100,000 vs. 15.4 per 100,000) than the U.S. general population (IHS, 1987). Nearly half of these fatalities occurred in motor vehicle accidents, which also are a leading cause of head injury in children (IHS, 1987). Age-adjusted mortality caused by fire is nearly three times the rate among Indians compared to the U.S. general population (5.6 vs. 2.0 per 100,000) (*Morbidity and Mortality Weekly Report*, 1987). Despite problems in generalizing morbidity from mortality, differences of this magnitude seem to indicate an increased likelihood of morbidity from head injury and smoke inhalation.

Otitis Media

Otitis media, middle ear infection, is associated with less severe disabilities (e.g., hearing deficits, reading disorders, language delays) and poorly defined long-term outcomes (Zinkus, Gottlieb, & Schapiro, 1978), but it is included in this discussion because of the particularly high prevalence of the disease and associated disabilities among American Indians (U.S. Congress, Office of Technology Assessment, 1990). Chronic middle ear problems, particularly those occurring before age 3, may play an etiologic role in the development of some learning disabilities associated with pervasive auditory processing deficits, delayed language skills, depressed verbal intelligence scores, and significant difficulty in reading (Zinkus & Gottlieb, 1980). Higher rates of recurrent otitis media and hearing disorders have been found among learning disabled children than among controls (Bennett, Ruuska, & Sherman, 1980; Freeman & Parkins, 1979).

A ten-year follow-up of a cohort of 489 Alaskan Eskimo children found that 76% of the children had experienced otitis media, 78% of whom had their first attack before age 2 (Kaplan, Fleshman, Bender, Baum, & Clark, 1973). Children with a history of otitis media displayed associated morbidity including ear drum perforations and scars (41%), hearing loss (16%), and normal hearing with a measurable air-bone gap (25%). Early onset of otitis and hearing loss were associated with significant decrements in verbal ability, and delays in reading, math and language. Children with a history of early onset of otitis with hearing in the normal range at the time of assessment still showed verbal delays.

McShane (1982) describes the prevalence and consequences of otitis media among Indian children, concluding that rates seem to be higher than can be accounted for by low socioeconomic status. Apache and Navajo children seem to be particularly susceptible, possibly due to eustachian tube anomalies. An ear disease screening effort among 15,890 school children on the Navajo reservation found 4.0% with perforated eardrums (Nelson & Berry, 1984). While prevalence rates tend to

decline after age 6, otitis is recurrent in virtually all children who experience their initial episode before age 1, who are then considered "otitis prone." Goodwin, Shaw, and Feldman (1980) found the highest risk of recurrence among Arizona Indian children who had their first attack before age 1 and who had a second attack within 4 months of the first.

Implications for Prevention

Risk factors associated with DD that are amenable to preventive intervention appear to occur more frequently in American Indian populations. American Indian populations could derive particularly strong benefit from DD prevention efforts since an overall greater percentage of disabilities are potentially preventable. The 1986 Amendments to the Education for All the Handicapped Act (Public Law 99-457) require that all eligible children be identified and receive services by age 3, and that outreach activities be directed towards children "at risk" beginning at the prenatal period. Although there is little agreement among professionals as to how this may be accomplished (DeGraw et al., 1988; Lewis & Brooks-Gunn, 1982), interventions directed toward limiting prenatal exposure to alcohol and cigarette smoke, controlling maternal diabetes, and toward reducing accidents and otitis media are clearly indicated.

Preventive efforts have the greatest potential for success when they are Indian community-based, particularly given the extensive intertribal and intercommunity variations in risk factor prevalence. This includes ensuring that community leaders and service providers are given relevant information about the targets for preventive efforts and solicited as stakeholding partners in the development of intervention strategies. Prevention programs also should be consistent with the principle of Indian self-determination, in recognition of the rights of Indian nations and communities to determine their own destinies. Interventions should be tailored to individual community needs. Specific strategies and techniques should be assessed for cultural appropriateness as well, utilizing qualified individuals from the targeted community as full partners in the program development effort.

Research on alcoholism treatment indicates that alcoholism is a heterogeneous disorder, and matching treatment modality to the type of alcoholism should lead to greater success (USDHHS, 1987, 1990). A lot can be learned from the experience of programs like the Fetal Alcohol Syndrome Project (May & Hymbaugh, 1982). That project began to yield data on specific patterns of alcohol consumption among women that can prove useful to developing treatment programs specifically for Indian women aimed at reducing rates of drinking during pregnancy and ensuring the health of the next generation. Birth defects related to fetal alcohol exposure can be eliminated entirely if women do not drink during pregnancy.

Smoking cessation programs abound, but none have been developed specifically for use in Indian contexts. There are other community-based models, such as the "Time to Quit" program described by Smillie, Coffin, Porter, & Ryan (1988), based on a belief that people have a right and a duty to participate in planning and implementing their health care. Programs like this can provide useful groundwork in the development of Indian models.

Good diabetic control in the periconceptional period could lower the risk for congenital malformations and careful monitoring throughout pregnancy can help prevent macrosomia (Pyke, 1987). This is significant since Indian women may be less likely to seek early prenatal care than white women. Sullivan and Beeman (1983) found only half of Arizona Indians received prenatal care in the first trimester compared with 86% of a white control group, and at the beginning of the sixth month of pregnancy, almost 20% of the Indians still had not sought care. Accident prevention activities should target the use of car safety seats for children under 5 and seat belts for all passengers over 5, given the high rate of mortality from motor vehicle accidents for Indian children (May, 1988). Alcohol use by adults also is an important factor contributing to accidental death and disability (IHS, 1987; Schmitt et al., 1966). Home safety assessments may be helpful to target fire hazards, conditions that could lead to falls, or accidental poisonings.

Otitis media in Indian children has been associated with method of infant feeding. Breastfed infants appear less likely to contract otitis media than bottlefed infants (Sheafer, 1971). It has been suggested that this may be due variously to protective immunological factors in breast milk, provocative factors in cows' milk, or the reflux of milk into the inner ear resulting from improper bottle feeding technique (McShane, 1982; Scheafer, 1971). In Manitoba Indian communities, breastfeeding has been shown to protect against infection even after it has been discontinued (Ellestad-Sayed, Coodin, Dilling, & Haworth, 1979). Breastfeeding should be encouraged for all Indian children.

In addition to the notion that a substantial proportion of DD among American Indians is preventable, demographic features of the population also indicate that prevention activities should have a particularly strong impact. American Indians are a relatively young population with a high birth rate. According to the 1980 U.S. Census, 45% of American Indian and Alaska Natives are under age 20, with a median age of 22.9; as compared to 32% under age 20 in the general U.S. population, with a median age of 30.3 (U.S. Bureau of the Census, 1984). Data from May (1988) show striking differences in the calculated crude birth rate for American Indian and Alaska Natives compared to the U.S. (27.9 vs. 15.8 births per 1,000 population); and in the general fertility rate (births per 1,000 women aged 15–44), 112.2 for Indians versus 67.4 for the U.S. general population.

Conclusions

Despite limitations in our current understanding due to the nature of the published data, a fairly consistent pattern nonetheless emerges, demonstrating a distribution of DD risk among Indians that is different from the general U.S. population. Specifically, Indian children appear to experience a smaller proportion of genetic and congenital anomalies associated with DD and more of the risks associated with prenatal exposure to alcohol, cigarette smoking, diabetes, accidents and otitis media. While it is difficult to prevent the genetic disorders associated with the most severe disabilities, the larger burden (numerical and economic) results from less severe degrees of disability and mental retardation (Avery, 1985). Preventive efforts focused on relevant risk factors could achieve substantial benefits in reducing overall DD risk and improving the general physical health of Indians in this generation and for those to come.

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DIFFERENCES BETWEEN AMERICAN INDIAN AND NON-INDIAN CHILDREN REFERRED FOR PSYCHOLOGICAL SERVICES

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Abstract: The physical and social characteristics of 60 American Indian children referred for psychological services were compared to those of 60 matched, non-Indian controls. Data were obtained from detailed records available in a multidisciplinary, medical school-related child study clinic. Indian children exhibited more health and social risk factors, but were superior to non-Indians on a variety of motor variables. Interpretations are offered concerning better psychological services for American Indian children based on better understanding of their possible exposure to physical health and social risks which may be related to psychological development.

Previous authors (e.g., McShane & Plas, 1984; Dauphinais & King, 1992) report that, as a group, American Indian children who are referred to psychologists may differ from their non-Indian counterparts on a variety of physical (e.g., history of otitis media) and social (e.g., parental alcohol abuse) variables.

The present investigation was an inductive search for physical and social variables which differentiate American Indian children who are referred to clinical psychologists from non-Indian controls. It was hoped that the resulting information would add further clarity to questions such as: (a) possible etiologic factors related to psychological problems in Indian children, and (b) unique developmental or adaptive strengths of American Indian youth.

Method

A list of physical and social variables on which American Indian children referred for psychological services might differ from their non-Indian counterparts was generated. The authors examined approximately 100 files of clients seen at a multidisciplinary, medical school-connected,

state-wide referral center for child development/guidance problems, which is located in the southwest region of the U.S. This produced a list of 134 specific variables involving 121 physical and 13 social characteristics, for which detailed and quantifiable information was available for all Center clients. Most of the variables entailed highly specific and usually dichotomous questions such as presence or absence of otitis media, parental alcohol abuse, etc.

Next, the files of 60 preadolescent aged (mean = 6 yrs 11 months, range 4–11 years) American Indian children and 60 non-Indian matched controls were examined, and subjects scored on the 134 study variables listed in Appendix A. Indian children were classified as "Indian" by virtue of their being referred from the Indian Health Service. None lived on a reservation, and multiple tribes were represented. Control subjects were of the same gender and within one month in age of their matched control partner. Other variables such as socioeconomic status, IQ, etc. were not employed in the matching process.

Results

Chi square was used to determine on which of the 134 study variables the two groups differed. Twenty-two of the 134 variables yielded significant differences at less than the .05 level. Only seven would be expected to achieve significance by chance alone. These results can be seen in Table 1.

Table 1
Statistically Significant Study Variables

Item	$p =$
Indians more likely to have had otitis media.	.000
Indians more likely to admit taking illicit drugs during pregnancy.	.003
Indians more likely to have had chicken pox.	.003
Indians more likely to have had alcoholic mothers.	.004
Indians report taking more prescription medications during pregnancy.	.007
Indians more likely to report drinking alcohol during pregnancy.	.008
Indians more likely to live in rural areas.	.009
Controls more likely to have been delivered by forceps.	.009
Controls more likely to have difficulty riding a bike.	.009
Indians more likely to have had three day measles.	.012
Indians more likely to have had a "lazy eye."	.018
Indians more likely to have had mumps.	.021
Indians more likely to have walked earlier.	.029

Table 1 (Continued)
Statistically Significant Study Variables

Item	<i>p</i> =
Indians more likely to have alcoholic fathers.	.031
Indians more likely to respond to sounds.	.032
Indians more likely to have had varicella.	.038
Indians' mothers more likely to have taken cough medicine during pregnancy.	.038
Indians more likely to report a history of speech/articulation problems.	.041
Indians more likely to report vision problems.	.041
Indians more likely to have had a heart murmur.	.041
Indians more likely to have had jaundice.	.041
Indian mothers report having spent less time in labor.	.046

Discussion

The results shown in Table 1 provide a conceptually coherent profile of the American Indian child clients in this study as contrasted with their non-Indian counterparts. These differences include a broad range of physical and social differences.

Concerning physical differences, Indian children displayed a higher incidence of: otitis media, ordinary chicken pox, varicella, mumps, three-day measles, jaundice, and heart murmurs; as well as more speech problems, episodes of "lazy eye" and more visual acuity problems. Their mothers reported (more than control mothers) that, during pregnancy, they were more involved with; (a) alcohol consumption, (b) use of illicit drugs, (c) abuse of prescription drugs, and (d) use of over-the-counter drugs (e.g., cough medicine). The mothers of Indian children reported a higher frequency of precipitous delivery, and their children were less likely than controls to have been delivered by forceps.

Motorically, the American Indian referrals were reported to have learned to walk earlier, to have had less difficulty with riding a bicycle, and were less likely to have been referred for problems involving fine or gross motor skills. Socially, the American Indian children in this study were more likely to have had an alcoholic father and more likely to have had an alcoholic mother. They were also more likely to have resided in a rural area.

Conclusions

American Indian children referred to the psychological services center cooperating in this study appear to differ significantly from their non-Indian client counterparts on a number of dimensions. Indian children seem more likely to suffer from a variety of physical and social handicaps which in all likelihood could affect their intellectual, emotional, behavioral,

and learning status. The greater incidence of potential risk factors such as otitis media, communicable diseases, jaundice, heart problems, and vision disorders, as well as the higher prevalence of prenatal alcohol and other substance abuse by mothers, may play an important etiologic role for many of their psychological difficulties. While these findings are consistent with those of other reports, they add additional empirical support for the existing belief that American Indian children are, as a group, at greater physical and social risk for a variety of developmental disorders. Our data also implicate/identify additional risk factors not cited prominently in the existing Indian mental health literature, e.g., higher incidence of several communicable diseases, heart-related problems, and the existence of superiority in certain motor-related areas.

Generalization of the above findings, however, should be guarded. None of our American Indian subjects resided on a reservation. Also, no controls for either socioeconomic status or IQ were employed. Thus, these latter variables could constitute common third variables which could explain a portion of the relationship between Indian vs. non-Indian children and certain developmental risk factors.

Future research could add clarity to these findings by determining if our results are reliable across tribal and/or reservation vs. nonreservation resident lines. Also, future research may determine if these findings are consistent for subjects of varying age and/or gender.

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Appendix Study Variables

Physical Data

1. Age
2. Gender
3. Birth order
4. Weight gained by mother during pregnancy
5. Mother's use of cigarettes during subject's pregnancy
6. Mother's use of alcohol during subject's pregnancy
7. Mother's use of drugs during subject's pregnancy
8. Birth weight of this child
9. Method of feeding this baby
10. Age subject sat independently
11. Age subject crawled
12. Age subject walked independently
13. Difficulties riding a bike
14. Difficulties throwing a ball
15. Coordination difficulties
16. Subject's enjoyment of playground equipment
17. Child's ability to use tools
18. Child's ability to dress self
19. Child's ability to fasten clothing
20. Child's ability to tie shoes
21. Child's handedness
22. Child's attention span
23. Child's response to sounds
24. Number of days child has spend in the hospital
25. Nutritional status of the subject
26. Mother's swelling during pregnancy with the subject
27. Maternal blood pressure problems during pregnancy with this subject
28. Maternal kidney problems during pregnancy with this child
29. Presence of infections during pregnancy with this subject
30. Mother's exposure to diseases during pregnancy with this subject
31. Presence of bleeding or spotting during pregnancy with this child
32. Maternal injury during pregnancy with this subject
33. Length of pregnancy with this subject
34. Number of days of gestation
35. Were antibiotics taken by mother during this pregnancy
36. Were vitamins taken by mother during this pregnancy
37. Was Valium taken by mother during this pregnancy
38. Was cold medication taken by mother during this pregnancy
39. Was hemorrhoid medicine taken by mother during this pregnancy
40. Was Tylenol taken by mother during this pregnancy
41. Was cough medicine taken by mother during this pregnancy
42. Was Vistral taken by mother during this pregnancy
43. Were morning sickness pills taken by mother during this pregnancy
44. Was iron taken by mother during this pregnancy
45. Was Rocephin taken by mother during this pregnancy
46. Was Tridate taken by mother during this pregnancy
47. Was Telepaque taken by mother during this pregnancy
48. Was Telequise taken by mother during this pregnancy

49. Was Halcion taken by mother during this pregnancy
50. Was Companzioe taken by mother during this pregnancy
51. Was Materna taken by mother during this pregnancy
52. Was Appressvine taken by mother during this pregnancy
53. Was Penicillin taken by mother during this pregnancy
54. Was Percogesic taken by mother during this pregnancy
55. Was Piopan taken by mother during this pregnancy
56. Were steroids taken by mother during this pregnancy
57. Were antacids taken by mother during this pregnancy
58. Was Lasix taken by mother during this pregnancy
59. Was Ginen Contex taken by mother during this pregnancy
60. Was Apesoline taken by mother during this pregnancy
61. Was Phenobarbital taken by mother during this pregnancy
62. Was Demoral taken by mother during this pregnancy
63. Was Morphine taken by mother during this pregnancy
64. Were aspirins taken by mother during this pregnancy
65. Was Benedryl taken by mother during this pregnancy
66. Was there abuse of illicit drugs by the mother during this pregnancy
67. Was there a problem of blood incompatibility with this child
68. Was there a problem of excessive drooling with this subject
69. Was there a problem of clumsiness with this subject
70. Was there a problem of delay in gross motor skills with this subject
71. Was there a problem of delay in fine motor skills with this subject
72. Was there a problem of "lazy eye" involving this subject
73. Has this child had speech/articulation problems
74. Was Ritalin taken by child
75. Was Rymgen taken by child
76. Was calcium taken by child
77. Were desensitization injections for allergies given to child
78. Was Methylphenidate taken by child
79. Was Deanol taken by child
80. Was Chromium taken by child
81. Was Ylert taken by child
82. Was Phenobarbital taken by child
83. Was Tezopen taken by child
84. Was Tofronil taken by child
85. Was Protoprin taken by child
86. Was Cylert taken by child
87. Were Gamma globulin injections given to child
88. Was Tegretol taken by child
89. Was Synthroid taken by child
90. Was Mellaril taken by child
91. Was Depakene taken by child
92. Was Kitalin 15 taken by child
93. Was Dimetapp taken by child
94. Was Actifed taken by child
95. Was Valium taken by child
96. Was Theophillin taken by child
97. Was labor induced
98. Length of labor in hours
99. Were shots or hypos given during labor
100. Was subject delivered head first
101. Were forceps used to deliver the subject
102. Was oxygen given to subject after delivery

103. Coloring of this child when born
104. Has subject had colic
105. Problems with sucking, swallowing, or oral feedings
106. Problems with speech or hearing
107. Has subject had 3-day measles
108. Has subject had mumps
109. Has subject had ordinary chicken pox
110. Has subject had varicella
111. Has subject had allergies
112. Has subject had serious injuries
113. Has subject had convulsions
114. Has subject had surgery
115. Has subject had ear infections
116. Has subject had DPT immunization
117. Has subject had measles immunization
118. Has subject had smallpox immunization
119. Has subject had German measles immunization
120. Has subject had mumps immunization
121. Has subject had other immunizations not listed above

Social Data

122. Marriage status of child's biological parents
123. Number of people living in child's current household
124. Number of extended family members who live with child
125. Population of town where child lives
126. Economic status of the child's family
127. Was subject's mother alcoholic
128. Was subject's father alcoholic
129. Was any other family member (besides mentioned above) alcoholic
130. Member(s) in subject's family who have been abused as a child
131. Member(s) in subject's family who have committed suicide
132. Number of years of school completed by subject
133. Number of years of school completed by subject's mother
134. Number of years of school completed by subject's father

NEW FRONTIERS IN CLINICAL TRAINING: THE UND INDIANS INTO PSYCHOLOGY DOCTORAL EDUCATION (INPSYDE) PROGRAM

DOUG MCDONALD, Ph.D.

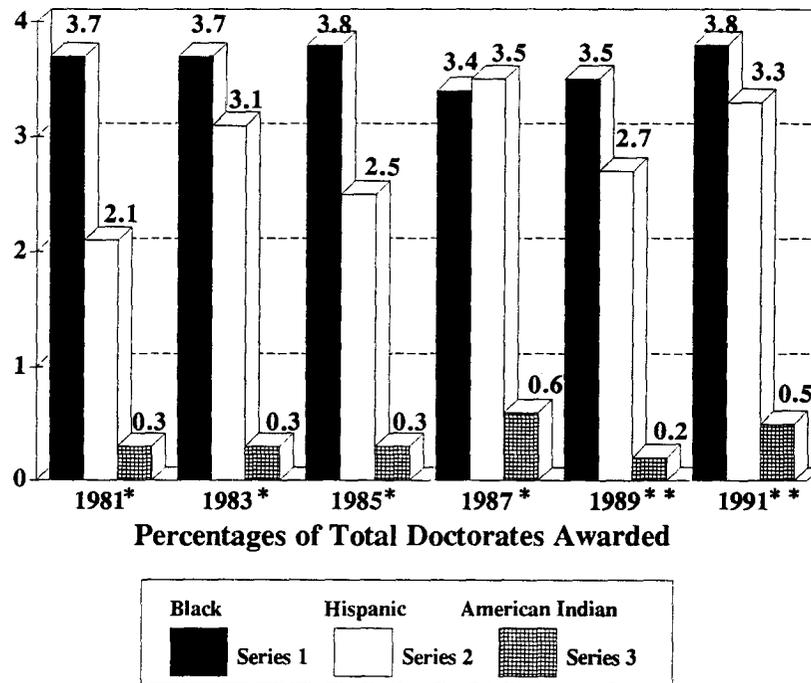
History and Needs

The complexity and girth of mental health needs in American Indian and Alaska Native communities seem to grow and mutate faster than do efforts and resources to address them. Academicians and practitioners alike find themselves confronted with contemporary issues such as AIDS and acculturation stress that either did not exist or were of relatively less significance a generation ago. As these new and advancing issues push back the frontiers of what is known in American Indian and Alaska Native mental health, so must the efforts in prevention, research, and training also evolve.

A growing Indian mental health knowledge base concerning assessment and treatment (Dana, 1993; Manson, Walker, & Kivlahan, 1987; McDonald, Morton, & Stewart, 1993; McDonald & Jackson, 1993), prevention (Trimble, 1982) and research and general issues (LaFramboise, 1988; LaFramboise & Plake, 1984) has expanded the known territory greatly in recent years. The territory concerned with academic training, however, remains relatively trackless.

In spite of several pioneering efforts on the part of some university graduate psychology training programs in recent years, there still exists a dearth of Indian psychologists. LaFramboise (1988) suggests the ratio of majority culture psychologists to majority culture members is approximately 1:2213, while American Indian psychologists to American Indians is approximately four times lower (1:8333). Relatively fewer doctoral degrees have been awarded to American Indians and Alaska Natives than any other minority group (Kohout & Pion, 1990). American Indians comprise roughly two percent of this country's population, but represent only a fraction of one percent of doctorates awarded in psychology in the past decade (see Figure 1).

The factors contributing to the alarmingly low representation of Indian college students at the graduate level are only beginning to be understood. Findings from several studies suggest attitudes and perceptions related to self-confidence, cultural compatibility/incompatibility with college life, family issues and finances (Jeannotte, 1980; McDonald, 1993), as well as anxiety (McDonald, Jackson, & McDonald, 1991) are



Data Sources: *Kohout & Pion, 1990

**Natl. Ctr. for Educ. Stats (DOE), 1993

Figure 1
 Minority Psychology Doctoral Degrees Awarded 1981–1991.

significant predictors and correlates to Indian college student success or failure. Other findings suggest the availability of effective mentors and advisors enhances Indian college students' efforts (LaCounte, 1987).

The University of North Dakota (UND) Indians Into Psychology Doctoral Education (InPsyDE) Program

The UND Department of Psychology's Clinical Training Program has taken dramatic strides in their efforts to recruit and train American Indian students. The most significant of these developments has been the establishment of the Indians into Psychology Doctoral Education (InPsyDE) program. The InPsyDE program is one of several contained within the congressionally approved Quentin C. Burdick American Indian Initiative, which includes the Indians Into Medicine (INMED) and Recruitment of American Indians Into Nursing (RAIN) programs at UND. Funding for the Initiative's components are annually appropriated by congress.

InPsyDE has several key goals. First, it seeks to identify and recruit promising American Indian students into the field of Psychology by establishing a pipeline from grade school to the graduate level. Achievement of this "pipeline" concept requires spending a great deal of time and effort in Indian communities stimulating interest in psychology among elementary, secondary, and tribal college students. While a degree of any kind is certainly an honorable achievement, the InPsyDE program focuses on mentoring students through the achievement of a Ph.D.

The second major emphasis of the program is to provide culturally appropriate training to all UND students, Indian and nonIndian, graduate and undergraduate. While recognizing that purely culturally appropriate training can not be attained on a predominantly nonIndian campus in a predominantly nonIndian community, InPsyDE staff are committed to developing innovative approaches that attempt to bridge the cultural gap as much as possible.

To this end, the program employs three American Indian psychologists to support these efforts. Dr. Doug McDonald, a member of the Oglala Lakota tribe at Pine Ridge, SD, is co-director of the InPsyDE program and is currently finishing the establishment of the first UND Indian and Rural Psychology traineeship, located in Lame Deer, Montana on the Northern Cheyenne reservation. Dr. McDonald will return to campus full time starting summer, 1994. Dr. Rebecca Crawford, of Blackfeet and Dakota descent, has been associated with the Psychology department since her graduation from Utah State University several years ago. Dr. Crawford's professional expertise includes American Indian family dynamics. She has also conducted and published research on the effects of depression and suicide in Indian communities. Dr. Dan Foster, Oklahoma Cherokee, has also recently joined the UND faculty. Dr. Foster has spent a number of years researching and developing pioneering programs to provide culturally sensitive clinical services to incarcerated American Indian inmates.

Dr. Jeff Holm, Director of Clinical Training at UND is a founder and co-director of the InPsyDE program. Dr. Holm has been with the department for seven years and has established a reputation as a scientist and scholar who is deeply committed to developing culturally and regionally appropriate training. Dr. Holm is originally from the Detroit area and received his Ph.D. from Ohio University. All in all, the InPsyDE program and its staff are dedicated to developing a program that: (1) provides an environment that is as culturally sensitive as possible for psychology students at UND; and, (2) provides outreach to area reservations and their districts. This philosophy was established to reflect traditional American Indian cultural values, and also to address needs established in the professional literature.

The InPsyDE program accepted its first class of students for fall, 1993. These students are Jessica Gourneau and Stephanie Allard, both

from the Turtle Mountain reservation. Any questions regarding the UND InPsyDE program may be directed to either Dr. Jeff Holm, Department of Psychology, UND (701-777-3451), or Dr. Doug McDonald, DKMC (406-477-6215), Box 98, Lame Deer, MT 59043.

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