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Spirituality and attempted suicide among American Indians

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Abstract

American Indians exhibit suicide-related behaviors at rates much higher than the general population. This study examines the relation of spirituality to the lifetime prevalence of attempted suicide in a probability sample of American Indians. Data were derived from a cross-sectional sample of 1456 American Indian tribal members (age range 15–57 yr) who were living on or near their Northern Plains reservations between 1997 and 1999. Data were collected by personal interviews. Commitment to Christianity was assessed using a measure of beliefs. Commitment to tribal cultural spirituality (or forms of spirituality deriving from traditions that predate European contact) was assessed using separate measures for beliefs and spiritual orientations. Results indicated that neither commitment to Christianity nor to cultural spirituality, as measured by beliefs, was significantly associated with suicide attempts (p_{trend} for Christianity = 0.22 and p_{trend} for cultural spirituality = 0.85). Conversely, commitment to cultural spirituality, as measured by an index of spiritual orientations, was significantly associated with a reduction in attempted suicide ($p_{\text{trend}} = 0.01$). Those with a high level of cultural spiritual orientation had a reduced prevalence of suicide compared with those with low level of cultural spiritual orientation. (OR = 0.5, 95% CI = 0.3, 0.9). This result persisted after simultaneous adjustment for age, gender, education, heavy alcohol use, substance abuse and psychological distress. These results are consistent with anecdotal reports suggesting the effectiveness of American Indian suicide-prevention programs emphasizing orientations related to cultural spirituality.

Keywords: USA; Religion; Spirituality; Suicide; American Indians; Measurement

Introduction

Rates of attempted suicide are extremely high among American Indians, ranging from 15% to 31% in some tribes or tribal subpopulations (Dinges & Duong-Tran, 1994; Grossman, Milligan, & Deyo, 1991; Howard-Pitney, LaFromboise, Basil, September, & Johnson, 1992; LaFromboise & Howard-Pitney, 1995a; Manson, Beals, Dick, & Duclos, 1989). Such attempts suggest considerable psychological suffering. They are, moreover, a strong predictor of a completed suicide—a behavior 72% more common among American Indians than among the general population (Indian Health Service, 2000). A number of studies have investigated risk and protective factors for attempted and completed

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suicides among American Indians (Dizmang, Watson, May, & Bopp, 1974; Earls, Escobar, & Manson, 1990; LaFromboise & Howard-Pitney, 1994, 1995a, b; Manson et al., 1989). The factors include sociodemographic characteristics such as age, sex, and educational achievement, along with mental health conditions such as depression, stress, and substance abuse. Little or no attention, however, has been given to the relation between individual spiritual commitment and suicidal behaviors in this population. This is somewhat surprising, given sociology's long-standing interest in relations between religion and health (Fetzer Institute/National Institute on Aging Working Group, 1999; Koenig, McCullough, & Larson, 2001) and more specifically in the relations between religion and suicide in various populations (Bainbridge, 1989; Breault, 1986; Durkheim, 1897, 1915; Ineichen, 1998; Pescosolido & Georgianna, 1989; Stack, 1983a, b).

The relationship between spirituality and suicidal behavior among American Indians reflects a larger, unresolved debate about the relation between religion and subjective well-being. Many studies of the general population have found that robust religious commitments are associated with greater happiness, greater life satisfaction, and a superior ability to cope with trauma (review in Ellison, 1991). At the same time, other scholars observe that religious commitments may be a source of distress (as, for instance, when they prescribe behaviors at odds with the values of the dominant culture) (Levin & Vanderpool, 1987).

The small number of publications that deal with the relationship between spirituality and well-being among American Indians share a recognition of its complexity. On the one hand, some researchers have suggested that cultural spiritual commitments contribute to American Indian "resiliency" (Long & Nelson, 1999; see further Hill, Solomon, Tiger, & Fortenberry, 1993). Intervention and prevention programs aimed at suicide (and other social ills) among American Indians increasingly assume a positive association between cultural spirituality/culture and health, and their administrators report anecdotal evidence to support the assumption (Brave Heart & DeBruyn, 1998; Middlebrook, LeMaster, Beals, Novins, & Manson, 2001).

By contrast, another group of studies expand upon Stonequist's (1935) seminal "marginal man" thesis, suggesting that an Indian individual who attempts or encounters pressure to live out tribal values in contemporary society can experience strains and conflicts (Berlin, 1986; Curlee, 1969; Hochkirchen & Jilek, 1985). Some scholars even suggest that specific American Indian spiritual beliefs and customs may contribute to high rates of suicide (Berlin, 1987; Everett, 1975). For example, LaFromboise and Bigfoot (1988) point out that the view of death as a natural part of life rather than an event to be feared and avoided (a view shared by a number of tribes) may encourage suicide.

As this review illustrates, the investigation of the relation between religion and suicidal behavior in American Indian populations is tied to a larger theoretical debate evident in studies of the general population. It also has practical implications for the design of suicide intervention programs directed at American Indians. In this study we assess the relation between spirituality and suicidal behavior in a reservation-based sample of American Indians, and we go beyond any existing studies by comparing different types and measures of spiritual commitment. We hypothesize, first, that tribal members with stronger commitments to cultural spirituality measured either as salience of cultural spiritual beliefs or as levels of cultural spiritual orientations, will show a lower prevalence of self-reported attempted suicide. Second, we hypothesize that high levels of commitment to Christian beliefs will also be associated with a decreased prevalence of lifetime, self-reported suicide attempts. Such a result would follow findings from the general population suggesting that a variety of mental health benefits, including protection from suicidal behavior, accompany strong spiritual commitment (e.g., Conrad, 1991; Donahue & Benson, 1995; Ellison, 1991; Idler & Kasl, 1992; Koenig, George, & Peterson, 1998; Nelson & Farberow, 1980; Pressman, Lyons, Larson, & Strain, 1990; Zuckerman, Kasl, & Ostfeld, 1984).

Data and methods

Sample

This study uses data from the American Indian Service Utilization, Psychiatric Epidemiology, Risk and Protective Factors Project (AI-SUPERPFP). AI-SUPERPFP is a population-based, cross-sectional survey of American Indian tribal members. ("Tribal member" is defined as an individual whose name appears on the membership roll maintained by the tribe, which is described below.) The full sample included 1640 individuals, but because analysis was restricted to those who had complete data for all variables, the analytic sample for the current study was 1456.

Personal interviews were conducted by the staff of the National Center for American Indian and Alaska Native Mental Health Research, University of Colorado Health Sciences Center, between 1997 and 1999. Stratified random sampling procedures were used (Cochran, 1977) with the strata being defined by age (4 categories), gender (2 categories), and field office (2 categories). The overall response rate was 76.8%. The population of inference is enrolled members of a Northern Plains tribe who were 15–54 yr of age at the

time the sample frame was developed (1997) and who lived on or within 20 miles of their reservations. The AI-SUPERPFP methods are described in greater detail on our website (http://www.uchsc.edu/ai/ncaianmhr/presentresearch/superprj.htm).

Tribal approvals were obtained prior to the project's beginning and included an agreement precluding tribal identification. However, the tribe from which the sample was drawn is historically an agricultural tribe that, with the European introduction of the horse, became nomadic hunters and gatherers who followed the bison over a large geographic area. The sweat lodge, the sacred pipe, and the sun dance are significant parts of traditional spiritual practice, as they are for a number of tribes in the same region. Although the tribe is patrilineal, female spirit beings associated with the coming of the pipe and the buffalo to tribal ancestors are ceremonially honored.

In addition to the continuing influence of traditional, tribal forms of worship, various Christian spiritual expressions find many adherents within the target population. At least some tribal members encountered Christian teachings in the mid-seventeenth century, and by the mid-nineteenth century, various Christian denominations had established missions and reported converts. Tribal members today affiliate with the major Protestant denominations (especially Episcopalianism), a number of the smaller Protestant sects, Catholicism, and (rarely) the Mormon and Jehovah's Witnesses faiths. Many tribal members also belong to the Native American Church or "peyote way", a religious expression that became established in the tribe during the first two decades of the twentieth century; adherents to this faith often combine elements of traditional spirituality with elements and themes borrowed from Christianity. Readers may find more detailed information on the spiritual practices of American Indians, including the tribe from which the AI-SUPERPFP sample was drawn, along with further historical, cultural, and social information, by consulting Spencer et al. (1977) and Champagne (1994).

Variables

The dependent variable for this analysis was self-reported, attempted suicide. The independent variables of interest were commitment to Christian spirituality and commitment to cultural spirituality, as measured in the two different ways described below. The analysis also controlled for several potentially effect-modifying variables, including sociodemographic factors, alcohol abuse, drug abuse, and current emotional distress.

Instrument and measures

Instrument: The diagnostic questions asked in the AI-SUPERPFP were modeled after the Composite International Diagnostic Interview (CIDI) used in the National Comorbidity Survey of psychiatric disorders in the United States conducted by Kessler and associates (Kessler et al., 1994; Robins et al., 1988; Wittchen, 1994). The CIDI is a fully structured interview that can be administered by lay interviewers to derive criteria-based psychiatric diagnoses. The diagnoses generated are for both lifetime and the past 12 months. Specific diagnoses assessed in AI-SUPERPFP include alcohol abuse and dependence, drug abuse and dependence, major depressive disorder, dysthymia, generalized anxiety disorder, panic disorder, post-traumatic stress disorder, and antisocial personality disorder. Separately from the core CIDI instrument, additional questions of particular relevance for the American Indian population were incorporated into the interview. The average length of the interview was between 3 and 4 h.

Suicide attempts: Lifetime prevalence of suicide attempts was measured with a single question: "Have you ever attempted suicide?"

Commitment to spiritual beliefs: The commitment to beliefs provides a measure of the cognitive aspect of faith (Idler, 1999). Each respondent was asked "How important are Christian beliefs to you?" and "How important are [tribal spiritual] beliefs to you?" Response categories were not at all, somewhat important, or very important.

Cultural spiritual orientations: A scale of cultural spiritual orientations was developed in consultation with tribal members. Items that tap perceptions, experiences, knowledge, and actions that tribal members frequently associate with cultural spirituality were developed through focus groups, and an inventory of such items was included in the survey instrument. Eight of these items were identified in a factor analysis to represent cultural spiritual orientations. In their attention to pervasive and enduring ways of encountering and interpreting self, world, and experiences, the items also resemble certain measures currently in use among the general population (review in Underwood, 1999). They have been adapted, however, to reflect American Indian cultural views of the connectedness of humans to all other physical and transcendental entities. The eight items were: (1) There is balance and order in the universe, (2) I am in harmony with all living things, (3) I feel connected with other people in life, (4) I follow the Red Road [i.e., the spiritual path prescribed by tribal tradition], (5) When I need to return to balance, I know what to do, (6) I feel like I am living the right way, (7) I give to others and receive from them in return, and (8) I am a person of integrity. Each respondent answered yes or no to the items. The scale is the mean score of the items (which is equivalent to the proportion of items endorsed). The scale was divided into tertiles (high, moderate, low) to reflect natural groupings in the distribution of the data.

Sociodemographic factors: Previous research indicates that both sociodemographic and psychological factors are associated with suicide-related behaviors among American Indians and thus may confound the association of spirituality and suicidal behavior (Dinges & Duong-Tran, 1994; Grossman et al., 1991; Howard-Pitney et al., 1992; Lester, 1997; Manson et al., 1989). Gender was recorded by the interviewer, and respondents were asked to report their age at the time of interview. For education, the sample was divided into two groups based on whether or not they had completed twelve or more years of formal education, the educational characteristic that most commonly distinguished tribal members.

Alcohol consumption and abuse: Abuse of alcohol was assessed by two questions. Respondents reported, first, frequency of drinking and, second, drinking that results in serious intoxication (Sher & Wood, 1997). The first question asked, "In any one year period of your entire life, did you have at least 12 drinks of any kind of alcoholic beverage?" A chart provided respondents with help in defining what constituted "a drink" (one whole can of beer, one shot of whiskey, etc.). Respondents who answered "no" to this question were classified as abstainers. Respondents who answered "yes" to this question were then asked a second question: "During the past year, how often did you get drunk? That is, you drank enough so that you were sick, staggering, lost control, or passed out?" The measure of alcohol abuse classifies the sample as lifetime abstainers, regular drinkers who do not report getting drunk during the past year, and drinkers who report drinking to intoxication during the past year.

Drug abuse: Respondents were also queried about their abuse, over the past year, of specific legal and illegal substances. Four questions asked if respondents had used sedatives, analgesics, stimulants, and tranquilizers "either without a doctor's prescription, or in greater amounts, or more often than prescribed, or for a reason other than a doctor said you should use them". Another six questions asked if they had used inhalants and various illegal drugs (marijuana, cocaine, LSD and other hallucinogens, and heroin) and if they had taken peyote "on your own, other than for religious purposes". Answers to the individual drug questions were combined into a single, dichotomous measure that indicated whether or not respondents had abused one or more of the substances in the past year.

Current emotional distress: Current emotional distress was measured by a subset of questions drawn from the Kessler High Distress Scale (Kessler et al., 1994). These six questions asked respondents how often in the past 30 days they had experienced feelings of intense sadness, nervousness, restlessness, hopelessness, worthlessness, or the sense that "everything was an effort". Many of these questions, or variants thereof, appear on standard instruments for the assessment of depression such as the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977). Response choices ranged on a four-point scale from "not at all" to "all the time". The mean score was taken as the overall measure of current psychological distress.

Statistical analysis

First, descriptive statistics for the sociodemographics of the sample were estimated separately for males and females. Next, the prevalence of lifetime suicide attempts was estimated for the levels of each of the three measures of spirituality in males and females.

Logistic regression models were then used to test whether stronger commitment to spirituality was associated with a lower prevalence of suicide attempts. For each spirituality measure a series of progressively more complex logistic regression models was fit to the data. The first, unadjusted model included only attempted suicide and the measure of spirituality. The second model examined the association between spiritual commitment and suicide attempts after adjusting for a set of sociodemographic factors (age, sex, and education). The third model examined the spirituality-suicidal behavior association after simultaneously adjusting for sociodemographic and psychological factors (alcohol abuse, drug abuse, and emotional distress). The final, full model examined the association after adjusting for the effects of sociodemographic and psychological factors, and for all measures of spirituality simultaneously.

Odds ratios and 95% confidence intervals were estimated for each spirituality measure in all models. Single degree of freedom Wald tests of trend were performed in the logistic regression model that used the ordered spirituality measures to examine if there was evidence of a linear gradient between level of spiritual commitment and attempted suicide.

All analyses were conducted using SUDAAN v. 7.5.6. These analyses accounted for the complex sampling design in the estimation process (Kish, 1965; Shah, Barnwell, & Bieler, 1997).

Results

Table 1 provides descriptive information about the analytic sample. Individuals were approximately evenly divided among males and females, who ranged in age from 15 to 57 yr at the time of interview (mean age 34 yr). They were frequently poor, single parents. Only about one-third reported that they were working full time, but the majority had 12 or more years of education. Approximately 11% of the females and 6%

Table 1
Sample characteristics by gender[a]

Characteristic	Males ($N = 694$) (49.0%)	Females ($N = 762$) (51.1%)
Age at interview (mean)	33.9	33.5
Marital status[b]		
Currently married (%)	27.6	28.1
Never married (%)	52.7	43.4
Children		
Have any children (%)	65.5	80.7
Number of children (mean)	2.1	2.7
Employment		
Full-time (%)	32.9	36.7
Education		
$\geqslant$12 years (%)	57.1	59.0
Self-reported suicide attempt		
Any lifetime attempt (%)	6.4	10.8

[a] All means and percents represent weighted values.
[b] Omitting divorced, separated or widowed males (19.7%) and females (28.5%).

Table 2
Prevalence of lifetime suicide attempts by measures of spiritual commitment for males and females

Measure of spiritual commitment	Prevalence of suicide attempts in level					
	Males			Females		
	% in level	%	95% CI	% in level	%	95% CI
Importance of Cultural Beliefs						
Not at All	9.0	3.0	0.0, 7.2	10.5	19.6	10.9, 28.3
Somewhat	38.4	4.9	2.2, 7.5	39.3	10.0	6.4, 13.6
Very	52.6	8.1	5.1, 11.2	50.3	9.6	6.5, 12.7
Cultural spiritual orientations						
Low	27.8	3.7	0.1, 7.4	26.3	16.3	10.9, 21.7
Moderate	37.8	8.4	4.7, 12.2	38.6	12.5	8.7, 16.3
High	34.4	3.7	1.2, 6.2	35.2	4.9	2.1, 7.7
Importance of Christian beliefs						
Not at all	25.1	8.8	4.1, 13.4	22.3	12.7	7.4, 17.9
Somewhat	52.3	4.4	2.0, 6.7	48.8	8.4	5.4, 11.5
Very	22.6	8.6	4.2, 13.0	28.9	13.4	8.9, 18.0

of the males had reported attempting suicide at some time in their lives.

Table 2 presents the percent of the sample in each category of the spirituality measures and the prevalence of suicide attempts at each level of spiritual commitment for males and females. The highest prevalence of suicide attempts (12.1%) is among those who report that cultural spiritual beliefs are not important to them. Overall, the lowest prevalence of suicide attempts (4.3%) is found among those who report a high level of commitment to cultural spiritual orientations.

Table 3 presents the association of the three measures of spiritual commitment with suicide attempts. Analyses not shown but available upon request assessed whether the pattern of the spirituality-suicidal behavior association differed according to sex. None of the interaction terms were significant and our results are presented for the combined sample of males and females. In the

Table 3
Lifetime suicide attempts by measures of spiritual commitment (odds ratios and 95% confidence intervals)[a]

Measure of spiritual commitment	Model 1[b]		Model 2[c]		Model 3[d]		Model 4[e]	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Importance of cultural spiritual beliefs								
Not at all	1.0		1.0		1.0		1.0	
Somewhat	0.6	0.3, 1.1	0.6	0.3, 1.1	0.6	0.3, 1.0	0.6	0.3, 1.1
Very	0.7	0.4, 1.2	0.8	0.4, 1.3	0.8	0.4, 1.4	0.8	0.5, 1.4
	$p_{trend} = 0.6720$		$p_{trend} = 0.8933$		$p_{trend} = 0.7226$		$p_{trend} = 0.8545$	
Cultural spiritual orientations								
Low	1.0		1.0		1.0		1.0	
Moderate	0.9	0.6, 1.4	0.9	0.6, 1.4	1.1	0.7, 1.7	1.0	0.7, 1.6
High	0.3	0.2, 0.6	0.4	0.2, 0.6	0.5	0.3, 0.9	0.5	0.3, 0.9
	$p_{trend} = 0.0001$		$p_{trend} = 0.0001$		$p_{trend} = 0.0141$		$p_{trend} = 0.0110$	
Importance of Christian beliefs								
Not at all	1.0		1.0		1.0		1.0	
Somewhat	0.6	0.4, 0.9	0.6	0.4, 1.0	0.6	0.4, 1.1	0.7	0.4, 1.1
Very	1.1	0.7, 1.8	1.2	0.7, 2.0	1.3	0.8, 2.2	1.4	0.8, 2.4
	$p_{trend} = 0.6936$		$p_{trend} = 0.4744$		$p_{trend} = 0.4130$		$p_{trend=}0.2194$	

[a] OR = odds ratio, CI = confidence interval.
[b] Unadjusted model.
[c] Model adjusted for age, sex, and education.
[d] Model adjusted for age, sex, education, psychological distress, substance abuse, and alcohol abuse.
[e] Model adjusted for age, sex, education, psychological distress, substance abuse, and alcohol abuse, and spirituality measures.

unadjusted analysis neither the importance of traditional ($p_{trend} = 0.6720$) or Christian ($p_{trend} = 0.6936$) beliefs showed any significant association with self-reported, attempted suicide. However, the scale of cultural spiritual orientations demonstrated a significant trend ($p = 0.001$). The unadjusted odds ratio comparing moderate to low orientations was 0.9 (95% CI 0.6, 1.4) and for comparing high to low orientations, 0.3 (95% CI 0.2, 0.6). Examining the odds ratios for the association of cultural spiritual beliefs and Christian beliefs with suicide attempts after adjustment for sociodemographic factors (Model 2) and psychological factors (Model 3) provides little evidence for confounding, with the odds ratios remaining relatively stable. For the spiritual orientations measure there is some indication of confounding after adjustment for demographic and psychological factors (Model 3), with the odds ratios becoming less extreme. In the fully adjusted analysis (Model 4) the measures of cultural spiritual beliefs and Christian beliefs are not significant, while the cultural spiritual orientations measure continues to be strongly associated with suicide attempts. After accounting for the effects of sociodemographics, substance abuse, emotional distress, cultural spiritual beliefs and Christian beliefs, those individuals who had a high score on the cultural spiritual orientations scale were half as likely to report a life-time history of attempting suicide (95% CI 0.3,0.9) compared to those with a low score.

Discussion

The present study examines the association of different types of spirituality on the lifetime prevalence of self-reported, attempted suicide in an American Indian population. We found no association between beliefs, whether they be cultural spiritual or Christian beliefs and suicide attempts. Although we had hypothesized that a high level of commitment to Christianity would be associated with reduced prevalence of attempted suicide, our findings do not support this conclusion. Nor did our measure of cultural spiritual beliefs show any relation to attempted suicide.

We did observe a strong and persistent protective association between cultural spiritual orientations and suicide attempts. The reduction in lifetime suicide attempts at the high level of cultural spiritual orientations is intriguing and suggests the importance of incorporating indicators of cultural spirituality in studies of the health and well-being of American Indians.

These findings are consistent with sociological models that begin with Durkheim and continue to be developed in our own time (e.g., Durkheim, 1897; Idler 1987; Wuthnow, Christiano, & Kuzlowski, 1980). These models suggest that spiritual commitment may contribute to emotional well-being because it provides a source of meaning—a framework that renders the world more orderly and comprehensible (e.g., Bellah, 1970;

Geertz, 1973; Greeley, 1972). The unique significance of the measure of cultural spiritual orientations for the population studied suggests that cultural spirituality may provide a particularly accessible and powerful source of the meanings and symbols that give order to life and ward off the perception of anomie. Especially in light of Joane Nagel's (1996) work on "ethnic renewal" (the spiritual and cultural renascence born of the Red Power movement of the 1960s and 1970s), this explanation seems plausible. It is supported, as well, by Long and Nelson's (1999) argument that religious commitment may contribute to American Indian "resiliency".

These findings also inform the discussion about the measurement of different types of spiritual or religious commitment, especially in indigenous populations. A number of studies conducted in the general population focus on cognitive measures of belief (review in Idler, 1999). Our results suggest, following Levin and Vanderpool (1987), that cognitive measures of belief may not adequately capture commitment to some forms of spirituality embraced by American Indian peoples, and that an alternative measure of spiritual orientations might be more valuable.

This study has certain limitations. First, most of the study variables were based upon self-report and therefore, suffer from potential recall bias. Those that suggest socially disvalued behaviors might also be expected to suffer from under-reporting. This concern is particularly acute in reference to our main outcome variable of self-reported, attempted suicide. At present, no studies have examined the under-reporting of suicidal behaviors among different racial groups, or in different tribes (Lester, 1997). Nevertheless, given the well-documented degree to which officially reported data under-report suicide behaviors among Native peoples, there is no clearly superior alternative to the use of self-report (Cooper, Corrado, Karlberg, & Adams, 1992; Marshall & Soule, 1988; Sugarman, Soderberg, Gordon, & Rivara, 1993).

Second, the type and form of the measures used to assess several of the confounding factors was less than ideal. For instance, we used current measures of heavy alcohol use, substance abuse and psychological distress. The current measures reflect conditions that might change over time, and may not have existed at the moment when the suicide attempt occurred. However, the current measures of substance abuse and psychological distress failed to alter our conclusions about spiritual expression and lifetime suicide attempts. If anything, our attempt to account for these confounding factors might have over-adjusted and could render our analysis more conservative.

Third, since the AI-SUPERPFP study collected cross-sectional data, it does not allow inferences to be made about the temporal relationship between variables. We cannot conclude that strong commitments to cultural spirituality actively influenced suicide attempts because we cannot know whether respondents' spiritual commitments preceded or followed their potentially self-destructive act.

Finally, because the sample was drawn exclusively from individuals who live on or near reservations, the results do not allow generalization to the large population of urban Indians. Indeed, the results from this study of a single tribal population should be generalized to other tribes with considerable caution, since suicide rates and patterns vary dramatically by tribe (Lester, 1997; Van Winkle & May, 1986).

Our study has several implications for suicide prevention programs directed at American Indians. First, our results support close attention to the many tribal health programs that have begun to encourage cultural spiritual orientations. These programs are becoming increasingly common but few (if any) have been systematically and empirically evaluated (Manson et al., 1989; Middlebrook et al., 2001). Our results suggest that the effort may be worthwhile.

In conclusion, our study suggests that American Indians with strong levels of cultural spiritual orientations have relatively lower rates of self-reported, attempted suicide. It also highlights the need to develop culturally relevant spirituality measures in American Indian populations that go beyond the indicators used for Judeo-Christian faiths. The Cultural Spiritual Orientations Scale represents a first step in that direction.

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References

Bainbridge, W. S. (1989). The religious ecology of deviance. *American Sociological Review*, *54*, 288–295.

Bellah, R. N. (1970). *Beyond belief*. New York: Harper and Row.

Berlin, I. N. (1986). Psychopathology and its antecedents among American Indian adolescents. In B. L. Lahey, & I. N. Kazdin (Eds.), *Advances in clinical child care psychology*, Vol. 9 (pp. 125–152). New York: Plenum press.

Berlin, I. N. (1987). Suicide among American Indian adolescents: An overview. *Suicide and Life-Threatening Behavior*, *17*(3), 218–232.

Brave Heart, M. Y., & DeBruyn, L. M. (1998). The American Indian holocaust: Healing historical unresolved grief. *American Indian & Alaska Native Mental Health Research*, *8*(2), 56–78.

Breault, K. D. (1986). Suicide in America: A test of Durkheim's theory of religious and family integration, 1933-1980. *American Journal of Sociology*, *92*, 628–656.

Champagne, D. (1994). *Native America: Portrait of the peoples*. Detroit: Visible Ink Press.

Cochran, W. G. (1977). *Sampling techniques* (3rd ed). New York: Wiley.

Conrad, N. (1991). Where do they turn? Social support systems of suicidal high school adolescents. *Journal of Psychosocial Nursing and Mental Health Services*, *29*(3), 14–20.

Cooper, M., Corrado, R., Karlberg, A. M., & Adams, L. P. (1992). Aboriginal suicide in British Columbia. *Canada's Mental Health*, *40*(3), 19–23.

Curlee, W.V. (1969). Suicide and self-destructive behavior on the Cheyenne River reservation. In *Suicide among American Indians: Two Workshops*. National Institute of Mental Health, Indian Health Service. Public Health Service publication No. 1903. Washington, DC: US Government Printing Office.

Dinges, N. G., & Duong-Tran, Q. (1994). Suicide ideation and suicide attempt among American Indian and Alaska Native boarding school adolescents. *American Indian and Alaska Native Mental Health Research*, *4*, 167–188.

Dizmang, L., Watson, J., May, P., & Bopp, J. (1974). Adolescent suicide at an Indian reservation. *American Journal of Orthopsychiatry*, *44*, 43–49.

Donahue, M. J., & Benson, P. L. (1995). Religion and the well-being of adolescents. *Journal of Social Issues*, *51*, 145–160.

Durkheim, E. (1897). *Suicide*. New York: Free Press.

Durkheim, E. (1915). *Elementary forms of the religious life*. London: G. Allen and Unwin.

Earls, F., Escobar, J. I., & Manson, S. M. (1990). Suicide in minority groups: Epidemiologic and cultural perspectives. In S. J. Blumenthal, & D. J. Kupfer (Eds.), *Suicide over the life cycle: Risk factors, assessment, and treatment of suicidal patients* (pp. 571–598). Washington, DC: American Psychiatric Press, Inc.

Ellison, C. G. (1991). Religious involvement and subjective well-being. *Journal of Health and Social Behavior*, *32*(1), 80–99.

Everett, M. W. (1975). American Indian "social pathology". In T. R. Williams (Ed.), *Psychological anthropology* (pp. 249–285). The Hague: Mouton.

Fetzer Institute/National Institute on Aging Working Group. *Multidimensional measurement of Religiousness/spirituality for use in health research* (pp. 31–33). Kalamazoo: John E. Fetzer Institute.

Geertz, C. (1973). *The interpretation of cultures*. New York: Harper and Row.

Greeley, A. M. (1972). *The denominational society*. Chicago: Scott, Foreman.

Grossman, D. B., Milligan, B. C., & Deyo, R. A. (1991). Risk factors for suicide attempts among Navajo adolescents. *American Journal of Public Health*, *81*, 870–874.

Hill, R. F., Solomon, G. W., Tiger, J. K., & Fortenberry, J. D. (1993). Complexities of ethnicity among Oklahoma Native Americans: Health behaviors of rural adolescents. In H. F. Stein, & R. F. Hill (Eds.), *The culture of Oklahoma* (pp. 84–100). Norman, OK: University of Oklahoma.

Hochkirchen, B., & Jilek, W. (1985). Psychosocial dimensions of suicide and parasuicide in Amerindians of the Pacific Northwest. *Journal of Operational Psychiatry*, *16*, 24–28.

Howard-Pitney, B., LaFromboise, T. D., Basil, M., September, B., & Johnson, M. (1992). Psychological and social indicators of suicidal ideation and suicide attempts in Zuni adolescents. *Journal of Consulting and Clinical Psychology*, *60*, 473–476.

Idler, E. (1999). Beliefs. In The Fetzer Institute/National Institute on Aging Working Group. *Multidimensional measurement of Religiousness/spirituality for use in health research* (pp. 31–33). Kalamazoo: John E. Fetzer Institute.

Idler, E. L. (1987). Religious involvement and the health of the elderly: Some hypotheses and an initial test. *Social Forces*, *66*(1), 226–1238.

Idler, E. L., & Kasl, S. (1992). Religion, disability, depression, and the timing of death. *American Journal of Sociology*, *97*, 1052–1079.

Indian Health Service. (2000). *Regional differences in Indian health 1998-1999*. Rockville, MD: Department of Health and Human Services, Public Health Services.

Ineichen, B. (1998). The influence of religion on the suicide rate: Islam and Hinduism compared. *Mental Health, Religion and Culture*, *1*, 31–36.

Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S., Wittchen, H. U., & Kendler, K. S. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States. Results from the National Comorbidity Survey. *Archives of General Psychiatry*, *51*(1), 8–19.

Kish, L. (1965). *Survey sampling*. New York: Wiley.

Koenig, H. G., George, L. K., & Peterson, B. L. (1998). Religiosity and remission of depression in medically ill older patients. *American Journal of Psychiatry*, *155*, 536–542.

Koenig, H. G., McCullough, M. E., & Larson, D. E. (2001). *Handbook of religion and health*. Oxford: Oxford University Press.

LaFromboise, T. D., & Bigfoot, D. S. (1988). Cultural and cognitive considerations in the prevention of American Indian adolescent suicide. *Journal of Adolescence*, *11*, 139–153.

LaFromboise, T. D., & Howard-Pitney, B. (1994). The Zuni life skills development curriculum: A collaborative approach to curricular development. *American Indian and Alaska Native Mental Health Research*, *4*, 98–121.

LaFromboise, T. D., & Howard-Pitney, B. (1995a). Suicidal behavior in American Indian female adolescents. In S. S. Canetto, & D. Lester (Eds.), *Women and suicidal behavior* (pp. 157–173). New York: Springer.

LaFromboise, T. D., & Howard-Pitney, B. (1995b). The Zuni life skills development curriculum: Description and evaluation of a suicide prevention program. *Journal of Counseling Psychology*, *42*, 479–486.

Lester, D. (1997). *Suicide in American Indians*. New York: Nova Science Publishers.

Levin, J. S., & Vanderpool, H. Y. (1987). Is frequent religious attendance really conducive to better health?: Toward an epidemiology of religion. *Social Science & Medicine*, *24*(7), 589–600.

Long, C. R., & Nelson, K. (1999). Honoring diversity: The reliability, validity, and utility of a scale to measure native American resiliency. *Journal of Human Behavior in the Social Environment*, *2*(1/2), 91–107.

Manson, S. M., Beals, J. M., Dick, R. W., & Duclos, C. (1989). Risk factors for suicide among Indian adolescents at a boarding school. *Public Health Reports*, *104*, 609–614.

Marshall, D. L., & Soule, S. (1988). Accidental deaths and suicides in Southwest Alaska. *Alaska Medicine*, *30*(2), 45–52.

Middlebrook, D., LeMaster, P., Beals, J., Novins, D., & Manson, S. (2001). Suicide prevention in American Indian and Alaska Native communities: A critical review of programs. *Suicide and Life-Threatening Behavior*, *31*(supplement), 132–139.

Nagel, J. (1996). *American Indian ethnic renewal: Red power and the resurgence of identity and culture*. New York: Oxford University press.

Nelson, F., & Farberow, N. (1980). Indirect self-destructive behavior in the elderly nursing home patient. *Journal of Gerontology*, *35*(6), 949–957.

Pescosolido, B. A., & Georgianna, S. (1989). Durkheim, suicide, and religion: Toward a network theory of suicide. *American Sociological Review*, *54*(1), 33–48.

Pressman, P., Lyons, J. S., Larson, D. B., & Strain, J. J. (1990). Religious belief, depression, and ambulation status in elderly women with broken hips. *American Journal of Psychiatry*, *147*, 758–760.

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*, 385–401.

Robins, L. N., Wing, J., Wittchen, H. U., Helzer, J. E., Babor, T. F., Burke, J., Farmer, . A., Jablenski, A., Pickens, R., & Regier, D. A., et al. (1988). The composite diagnostic interview: An epidemiologic instrument suitable for use in conjunction with different diagnostic systems and in different cultures. *Archives of General Psychiatry*, *45*, 1069–1077.

Shah, B. V., Barnwell, B. G., & Bieler, G. S. (1997). *SUDAAN user's manual, release 7.5*. Research Triangle Park, NC: Research Triangle Institute.

Sher, K. J., & Wood, P. K. (1997). Methodological issues in conducting prospective research on alcohol-related behavior: A report from the field. In K. J. Bryant, M. Windle, & S. G. West (Eds.), *The science of prevention: Methodological advances from alcohol and substance abuse research* (pp. 3–41). Washington, DC: American Psychological Association.

Spencer, R. F., Jennings, J. D., Dibble, C. E., Johnson, E., Arden, R. K., Stern, T., Stewart, K. M., Stewart, O. C., & &Wallis, W. J. (1977). *The native Americans* (2nd ed). New York: Harper & Row.

Stack, S. (1983a). A comparative analysis of suicide and religiosity. *The Journal of Social Psychology*, *119*, 285–286.

Stack, S. (1983b). The effect of the decline in institutionalized religion on suicide. *Journal for the Scientific Study of Religion*, *22*(3), 239–252.

Stonequist, E. V. (1935). The problem of the marginal man. *American Journal of Sociology*, *7*, 1–12.

Sugarman, J. R., Soderberg, R., Gordon, J. E., & Rivara, F. P. (1993). Racial misclassification of American Indians. *American Journal of Public Health*, *83*, 681–684.

Underwood, L.G. (1999). Daily spiritual experiences. In The Fetzer Institute/National Institute on Aging Working Group. *Multidimensional measurement of religiousness/spirituality for use in health research* (pp. 11–17). Kalamazoo: John E. Fetzer Institute.

Van Winkle, N. W., & May, P. A. (1986). Native American suicide in New Mexico, 1957–1979: A comparative study. *Human Organization*, *45*, 296–309.

Wittchen, H. (1994). Reliability and validity studies of the WHO-composite diagnostic interview (CIDI): A critical review. *Journal of Psychiatric Research*, *28*(1), 57–84.

Wuthnow, R., Christiano, K., & Kuzlowski, J. (1980). Religion and bereavement: A conceptual framework. *Journal for the Scientific Study of Religion*, *19*(4), 408–422.

Zuckerman, D. M., Kasl, S. V., & Ostfeld, A. (1984). Psychosocial predictors of mortality among the elderly poor. *American Journal of Epidemiology*, *119*, 410–423.