Perceived Discrimination, Traditional Practices, and Depressive Symptoms among American Indians in the Upper Midwest

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American Indian adults are thought to experience significant depressive symptoms at rates several times higher than adults in the general population, yet we know very little about factors associated with depressive symptoms among this understudied group. Many researchers have argued that depressive symptoms are associated with conflicts between American Indian traditional cultural values, practices, and beliefs and those of the majority culture. This report, based on a sample of 287 American Indian adults from the upper Midwest, takes into account two measures of cultural effects: perceived discrimination, as one indicator of culture conflict, and traditional practices, as a measure of cultural identification. The results indicate that discrimination is strongly associated with depressive symptoms among American Indian adults and that engaging in traditional practices is negatively related to depressive symptoms. Moreover, interaction effects between perceived discrimination and traditional practices indicate that engaging in traditional practices buffers the negative effects of discrimination among those who regularly participate in them.

Although depressive symptoms are among the most prevalent psychological problems reported by American Indian adults (Manson, Shore, and Bloom 1985; May 1988; Rey, Chaudhuri, and Irvine 1970; Shore et al. 1973), we know relatively little about the specific mechanisms that contribute to them. One of the reasons for this is that the diversity of Native American cultures and economies makes it problematic to treat American Indians as a single population. There are approximately 510 federally recognized Native American entities (Bureau of Indian Affairs 1991) and more than 365 state-recognized groups (Manson and Trimble 1982) in the United States. Among these are at least 200 traditional languages (Fleming 1992). These separate cultures and language groups vary significantly from one another in values, spiritual beliefs, kinship patterns, economies, and levels of acculturation. In some instances, within-group

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differences may be greater than differences between a particular American Indian culture and the majority population. This heterogeneity leads to problems of evaluation, measurement, and comparison across American Indian cultural groups (Allen 1998; Manson, Shore, and Bloom 1985). It also requires caution when discussing symptom prevalence. Prevalence data from a single American Indian nation or culture cannot be generalized to the population as a whole.

To account for this diversity of cultures, short of a national epidemiological study that would collect data from all American Indian nations, the research process must build on common measures where possible and accumulate knowledge nation by nation. This study employs measures that have been previously used with American Indian adults and adolescents to report on factors associated with depressive symptoms among 287 American Indian adults from three reservations in the upper Midwest that share a common cultural tradition. American Indian researchers have argued that conflicting norms and values between Native cultures and European cultures have negative effects on the emotional well-being of American Indians. This research examines the unique contributions of risk factors for depressive symptoms associated with culture conflict (i.e., discrimination) and potential protective cultural factors (traditional practices) when other known factors associated with adult depressive symptoms are taken into account.

THEORY AND EVIDENCE

Depression and Depressive Symptoms among American Indian Adults

There has been very little systematic research pertaining to depression and depressive symptoms among American Indian adults. Some of the better and most cited work on prevalence is more than twenty-five years old (e.g., Roy, Chaudhuri, and Irvine 1970; Sampath 1974; Shore et al. 1973), although important epidemiological work is currently under way by Spero Manson and colleagues at the University of Colorado. Manson and colleagues (Manson, Shore, and Bloom 1985) summary of epidemiological studies estimates that depression within particular American Indian communities may be “four to six times higher than that observed in the U.S. population at large” (p. 332). Symptom prevalence is probably even higher. Studies that report clinical treatment data (Spencer and Thomas 1992; Sue 1977; Rhoades et al. 1980) indicate that depression and depressive symptoms are among the most frequently assigned diagnostic categories in the caseloads at tribal mental health clinics and inpatient facilities.

Work on the etiology of depressive symptoms among American Indian adults is at an early stage of development compared to that regarding other minority cultures in the United States. A focus on cultural origins of depressive symptoms and other psychopathology has emerged over the past two decades. This work includes anthropological investigations of indigenous expressions of depressed affect (e.g., O’Neill, 1996; Manson, Shore and Bloom 1985) and thoughtful essays on cultural factors that may contribute to adult depression such as historical grief (Morrisette 1994; Yellow Horse Brave Heart 1999; Yellow Horse Brave Heart and DeBruyn 1997), “dependency depression” (Townesley and Goldstein 1977), “anomic depression” (Jilek 1981), “acute or chronic reaction to genocide and colonialism” (Durant and Duran 1995).

Many of these studies suggest that depressive symptoms in part derive from conflict between American Indian cultural values, beliefs, and practices and those of the majority culture (Morrisette 1994; Yellow Horse Brave Heart 1999; Yellow Horse Brave Heart and DeBruyn 1997; Townesley and Goldstein 1977; Jilek 1981). Most American Indian cultures emphasize values of affiliation, sharing, putting the group before the individual, non-competitive interactions, respect, and reluctance to speak out (Brant 1990; Hornett 1990). Where European American values promote individual success and achievement, most American Indian cultural values emphasize the well-being of the group before the individual.

This culture conflict perspective has been pervasive in many areas of American Indian research. For example, efforts at intervention are viewed as a continuation of this “culture clash” due to differing values and goals of European American clinicians and their American Indian clients (LaFromboise, Trimble, and Mohatt 1990; Trimble 1981). Academic performance of children and adolescents (Deyhle 1992; Sanders 1987; Swisher...
relationship between everyday discrimination and psychological distress.

Aside from culture conflict and discrimination, there are numerous other factors that may contribute to depressive symptoms among American Indian people. Many American Indian children and adults are exposed to multiple life stresses, yet very little empirical work has been done concerning the effects of these stressors on emotional well-being (McShane 1988). Depending on the nation or particular communities within nations, some American Indian adults grow up in families where they were exposed to alcoholic adults, poverty, and non-optimal parenting (Fischler 1985; May 1982; Piazza et al. 1989; U.S. Congress, Office of Technology Assessment 1990; White and Cornely 1981). They are also at risk for more immediate stressors associated with reservation life in some communities. Often, there is chronic financial distress associated with low employment or underemployment in the rural areas surrounding reservations (Hodgkinson 1990). Because of economic deprivation, alcohol abuse, and poor health delivery systems, life on some reservations is filled with multiple daily problems, consecutive personal losses from high mortality rates, and health problems for individuals and their relatives (Rhoades et al. 1987; May 1982; Shore and Manson 1983; U.S. Department of Health & Human Services 1999).

Factors Typically Associated with Adult Depressive Symptoms

In contrast to the paucity of research concerning American Indian adults, there is an immense European American literature on adult depressive symptoms. Many of the generally accepted precursors of depressive symptoms have yet to be empirically investigated with American Indian populations. For example, adult depressive symptoms are related to having experienced childhood or adolescent depressive symptoms (Harrington et al. 1990). Negative childhood experiences have been linked to adult depressed affect for several decades (Abrahan and Whitlock 1969; Kessler and Magee 1993; Kessler et al. 1996). Depressed affect is strongly associated with histories of childhood sexual abuse, physical abuse, and neglect (see Downey et al. 1994 for a recent review). It is also related to non-opti-
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ormal parenting due to (1) parental stress (Conger et al. 1992; 1993; Coyne and Downey 1991; Oakley-Brown et al. 1995) or parental psychopathology that results in family discord, (2) inconsistent discipline, (3) emotional distance, (4) ineffective limit setting, and criticism (Beardslee et al. 1983; Billings and Moos 1983; Downey and Coyne 1990). Children raised in families where alcoholism and depressive symptoms are present are more likely to experience depressive symptoms and alcohol problems as adults (Merikangus et al. 1985). Childhood behavioral problems associated with attention deficit and hyper activity disorders and conduct disorders also are predictive of later life depression (Biederman et al. 1987, 1991).

Histories of early depressed affect negative early life experiences increases vulnerability to contemporary negative life events. There is extensive evidence that difficult circumstances such as financial distress (Conger and Elder 1994) and negative life events contribute to depressive symptoms in adults (Kendler, Karkowski, and Prescott 1999; Kessler 1997).

Cultural Protective Factors

Although factors related to culture (e.g., discrimination, culture conflict) may result in psychological distress, it is possible that aspects of traditional American Indian culture could serve as protective factors. There is accumulating evidence that cultural identification mediates or moderates psychological distress. For example, being strongly grounded in one's culture may buffer against the stress of being considered an outsider by the majority culture. Cultural identification and cultural practices have been shown to contribute to prosocial behaviors such as academic success among American Indian adolescents (Whitbeck et al. 2001; Zimmerman et al. 1994). Williams and colleagues (Williams, Spencer, and Jackson 1999) found that a strong racial identity buffered the effects of discrimination on chronic health problems among African Americans. Although the protective factors of cultural identification have yet to be empirically established among American Indian adults, they are widely viewed as such in American Indian communities. Traditional healers often work closely with medical practitioners at tribal clinics (Kim and Kwok 1998; Marabella et al. 1998).

Modeling Depressive Symptoms among American Indian Adults

We developed a series of hypotheses to investigate the relative contribution of culturally based risk and protective factors when considered in conjunction with generally accepted correlates of adult depressive symptoms. Our first four hypotheses established a baseline by investigating the effects of demographic variables on adult depressive symptoms. It was predicted that depressive symptoms would be more prevalent among females than males (see Rosenfield 1999 for a recent review), and that depressive symptoms would increase with age (Cuayto et al. 1998). Based on findings regarding the effects of economic deprivation on the emotional well being of adults, we hypothesized negative associations between depressive symptoms and education and household per capita income (Conger and Elder 1994; Kessler 1983; Yu and Williams 1999 for a recent review).

We then considered family histories of the adults. We hypothesized a positive relationship between parents’ alcohol use and adult depressive symptoms (Merikangus et al. 1985) and a negative relationship between a history of parental warmth and supportiveness and depressive symptoms. A history of parental rejections was predicted to increase the likelihood of adult depressive symptoms (Billings and Moos 1983; Downey and Coyne 1990; Oakley-Browne et al. 1995).

In addition to family history we considered two other developmental factors: (1) negative life events experienced in childhood and (2) early conduct problems. We hypothesized that both of these variables are positively related to adult depressive symptoms (Kessler and Magee 1993; Kessler et al. 1996).

After considering developmental factors that may influence the likelihood of depressive symptoms, we considered two contemporary stress factors known to be associated with adult depressive symptoms. Based on research findings with non-Indians, we hypothesized positive associations between depressive symptoms and current financial strain (Conger and Elder, 1994) and current negative life events (Kessler 1997; Thoits 1983).
Once the effects of these known stressors were taken into consideration, we predicted that perceived discrimination would have significant effects over and above situational stressors such as negative life events and financial strain (Dion and Giordano 1990; Kessler, Mickelson, and Williams 1999; Locust 1988).

After considering effects of early family history, development history, and contemporary stressors, we hypothesized two potential protective factors: perceived social support and engaging in traditional practices. We predicted both to reduce the likelihood of depressive symptoms among adults. There is substantial evidence for the protective effects of perceived social support against psychological distress of all kinds (see Turner and Turner 1999 for recent review). Although the protective factors of traditionalism among American Indian adults has yet to be empirically established as a resilience factor among adults, it is widely viewed as such in American Indian communities. Traditional healers often work closely with medical practitioners at tribal clinics (Kim and Kweck 1998; Marbella et al. 1998).

Because alcohol use was prevalent and of much concern on the reservations participating in this research, we investigated the links between problem drinking and depressive symptoms. Because positive relationships have been reported by other researchers (Hirschfield et al. 1990; Kessler et al. 1996; O’Nell 1992/1993; Westermeyer 1984), we hypothesized that current problem drinking and depressive symptoms would be positively associated even when all other factors were taken into consideration.

**METHOD**

**Sample**

The data for the current paper were collected through interviews with 287 adults who participated in a baseline survey with their children. The adults and children were part of a larger prevention study, the Three Villages Project, conducted on three American Indian reservations located in the upper Midwest in 1998–1999. The original sample included 328 adults, 41 of whom were non-Native American spouses and relatives of the target children (13% of the sample). The non-Native Americans were not included in the current analysis.

The Three Villages Project is a research and prevention partnership between each of the reservations and the research team (University of Nebraska-Lincoln IRB #2001-07-333 FB). Part of our research agreements with the reservations was to keep the names of the reservations confidential. All three of the reservations were located in the upper Midwest, west of the Great Lakes region. All of the reservations belonged to the same nationally recognized ethnic group and, with very slight variations (e.g., small differences in dialects), shared the same traditional practices and spiritual beliefs. An advisory board of tribal members (or in a few cases, the relatives of tribal members) was set up on each of the reservations to provide advice and approval on each step of the research process. Prior to going into the field, the tribal governments on each reservation approved the questionnaires. The advisory boards also read any research report prior to dissemination to insure respectful writing.

To be eligible to participate, a household had to contain children who were enrolled tribal members and in 5th–8th grades. With the exception of one reservation where all eligible families were asked to participate, families were recruited randomly from tribal roles. All of the children’s families lived on or near their respective reservations. Specifically, tribal families living on or within 50 miles of one of the reservations were included in the sampling frame. The eligible families were recruited by on-site American Indian staff using a culturally-based recruitment protocol designed by the staff and tribal advisory boards. All interviews were conducted at home visits by one or two interviewers. All interviewers had tribal affiliation (in a few cases interviewers were community members who were relatives of tribal members) and were directly supervised by on-site staff. A total of 220 families (85% of all eligible families) agreed to participate in the study and completed the baseline survey, yielding a sample of 96 male and 191 female American Indian caretakers.

Over one-third (38%) of the families lived in single-parent households that are predominantly female-headed. One third of households contained children who had never lived with their biological fathers, a third had lived with their biological father at some point in their
lives, and the remaining third currently lived in a household with their biological fathers.

Many of the adults and their children live in low-income homes. Predictably, the distribution of income in this sample varies greatly according to family structure. As a whole, the median income level reported was $15,000 to $20,000. However, dual parent households were three times as likely to report incomes of $35,000 or more as compared to single parent households (24% vs. 7%). In contrast, half (52%) of single parent homes reported incomes less than $15,000, compared to only a quarter (24%) of two-parent homes. Financial assistance is also common, with 4 out of 10 households reporting receipt of some form of aid. Over half of single parent households and a third of two-parent families received food stamps or family assistance of some type (Aid to Families with Dependent Children—Temporary Assistance for Needy Families) in the past year.

Measures

A recent literature has evolved pertaining to the appropriateness of using European American assessment instruments with various American Indian cultures (Allen 1998). Most notably for this report are several studies focusing on the Center for Epidemiological Studies—Depression (CES-D) measure (Radloff 1977; 1989). These studies compare measurement characteristics of the CES-D (e.g., factor structure) when used with American Indians and European Americans. There is evidence based on replicated factor analyses that the factor structure of the CES-D is different for the two groups. Rather than the four-factor solution reported by Radloff (1977), a three-factor model which combined affect and somatic dimensions has been proposed (Baron et al. 1990; Beals et al. 1991; Somervell et al. 1993). With the exception of variance in factor structure, the CES-D has been found to have high internal reliability with American Indian adults and adolescents (Manson et al. 1990; Somervell et al. 1993; Curoty et al. 1998).

We used the Center for Epidemiological Studies Depression Scale (CES-D; Radloff 1977) to measure depressive symptoms. Scores ranged from 0 to 48 (out of a possible range of 0 to 60: M = 11.23: SD = 9.75), and the scale was internally consistent (Cronbach's alpha = .90). We conducted a confirmatory factor analysis on the CES-D indicator, and a four-factor solution emerged that was similar to the four dimensions suggested by Radloff (1977) and replicated in many general population studies. Model fit statistics for model comparisons (Table 1) indicate that the three- and four-factor solutions fit the data better than the single-structure. This replicates similar studies with American Indian populations by Baron et al. (1990), Somervell et al. (1993), and Beals et al. (1991).

Twenty-three percent of the sample scored at or above the cut point of 16 (descriptive statistics are shown in Table 2), the value recommended by Weissman et al. (1977) to indicate probable clinical depression. This rate is comparable to rates of 20 percent in a sample of Northwest Coast tribe members (Somervell et al. 1993) and 18 percent in a sample of Great Lakes American Indian elderly (Curoty et al. 1998). Although women were more likely to meet the cutoff than men (25% vs. 21%), the difference was not statistically significant at the bivariate level.

Control variables. Analyses controlled for gender, age, education, and household income per capita. Gender was a dummy variable (1 = female, 2 = male). Age ranged from 18 to 71 years, and education was an ordinal measure, ranging from 1 “Less than High School” to 5 “Advanced Degree.” The sample of adults was

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Note: GFI = Jaccard & Serber's goodness of fit index; NFI = Bentler’s normed fit index. Correlated unique variances (bored, fearful, tired, sleep, get going) and (good, happy).

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* p < .05, ** p < .01 (two-tailed test)
1 Natural logarithm transformed
perceived discrimination predominantly female (67%), and the average age was 39 years. Most adults reported completing high school or a General Education Development (GED) test or having some college, vocational, or technical training. Household income per capita was created through a two-step process. First, an ordinal measure of household income was recoded to the midpoints of 10 categories ranging from 1 “below $5,000” to 10 “$75,000 or more.” Second, the recoded income variable was divided by the total number of people living in the household to produce a per capita figure. On average, the American Indian families in our upper Midwest sample reported an income of $5,322 per family member.

Parenting influences. Respondents were asked retrospective questions about their parents’ behaviors. For instance, adults responded to two questions asking about parental alcohol problems: “As far as you know, when you were growing up, did your natural mother/father ever have any drinking or alcohol problems?” and “Did your natural mother/father ever get treatment for alcohol problems.” Parents’ alcohol problems is a three-category variable that indicates whether neither parent (0), one parent (1), or both parents (2) had alcohol problems. One-third (33%) of respondents reported one parent had alcohol-related problems, and almost half (46%) of the adults said both parents had alcohol problems.

Parental warmth and support was an eight-item, mean-scored scale measuring the degree to which respondents rated how often their mothers and fathers each displayed positive parenting skills (Conger and Elder 1994). Cronbach’s alpha was .83, and response categories ranged from 0 “never” to 4 “always.” Parental rejection (Elliott’s Parental Rejection Scale) was also an eight-item, mean-scored scale measuring the degree to which respondents agreed or disagreed that their mothers and fathers demonstrated negative parental behaviors. Cronbach’s alpha was .83, and response categories ranged from 1 “strongly disagree” to 4 “strongly agree.” (See the Appendix A for the specific parenting items used to create the two scales.)

Childhood events and behaviors. In addition to recollections of parenting, respondents were asked about events that happened during their childhood and conduct problems they may have had growing up. Negative childhood events was a six-item index (alpha = .67) of positive responses to questions asking about experiences of neglect, physical abuse, other family member’s mental health problems, family violence, parents’ marital problems, or a close relative’s suicide. Respondents reported experiencing almost two of these events (1.73), on average. Conduct problems was a thirteen-item index (alpha = .82) of positive responses to behaviors such as talking back to adults, running away, and using weapons based on items from the Diagnostic Statistics Manual IV (American Psychiatric Association 1994; see Appendix A for specific items). On average, adults reported almost six (3.93) of the thirteen behaviors.

Current stressors. Respondents were asked about several sources of stress in their lives. Financial strain was a mean-scored scale (alpha = .86) created by standardizing the responses to six items with slightly different response categories. These items elicited opinions about being able to afford things such as food, clothing, and medical care, as well as how difficult paying bills was for the respondent in the past year (Conger and Elder 1994). Negative life events was a twelve-item index (alpha = .62) of positive responses to events including involvement in life threatening accident and having a close friend or relative die in the past year. Respondents reported experiencing about two events (2.41) in the past year, on average. Perceived discrimination was measured with a ten-item, mean-scored scale. Response categories ranged from 1 “never” to 4 “always,” and Cronbach’s alpha was .89.

Social support. Measures of support for the following analyses include social support and involvement in traditional activities. Social support was a seven-item, mean scored scale measuring the amount of agreement to statements such as “there is no one I feel comfortable talking about problems with” and “there is no one I can depend on for aid if I really need it.” Response categories ranged from 1 “strongly agree” to 4 “strongly disagree,” and Cronbach’s alpha was .84.

Participation in traditional activities was a multidimensional indicator made up of three separate measures. The first dimension was participation in traditional powwow activities (e.g., attendance during the past year, dancing, singing, and drum group). Response categories were 0 “no” and 1 “yes.” The second involved knowledge and use of the tribal language. This measure was the sum of affirmative responses

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to four questions regarding fluency and understanding of the traditional language. The third measure consisted of an index of participation in twelve types of traditional activities derived from focus groups with elders, staff, and advisory board members. These activities included beading, spearfishing, hunting, and making powwow outfits. The final measure was calculated by taking the mean of the three standardized subscales. (See Appendix A for specific items included in our measure of traditional participation). The standardized alpha for the traditional activities measure was .74.

Alcohol use. Current drinking was measured by three items asking how often the respondent drank alcohol in the past month (responses ranged from 0 “never” to 7 “nearly everyday,” mean = 2.2 times), how many drinks she or he usually had at one time (range from 0 to 30 drinks; mean = 4.14 drinks), and how many days in the past month she or he had five or more drinks at one time (range from 0 to 26 days; mean = 1.68 days). We standardized responses and created a scale by taking the mean of the three items (alpha = .79; see Table 2 for mean and sd). As with many measures of substance use, the current drinking scale has a highly skewed distribution. Because of this, the scale was transformed by adding a constant (one) to eliminate zero scores and then taking the natural logarithm of the drinking scores. Subsequent analyses utilize this natural logarithmic scoring as the metric for this variable.

Analytic Strategy

The present study examined the relative impact of family background factors, childhood events and behaviors, current stressors, social support, and current drinking on depression in Native American adults. To assess multivariate relationships, hierarchical logistic regression analyses were conducted to assess the unique contribution of the indicators on depression. The results of these procedures are shown in Table 3.

The sample size for the multivariate models in Table 3 was reduced from 287 to 281 respondents. This decrease is due to listwise deletion of cases with missing data in the logistic regression models. Proceeding stepwise, the controls for gender, age, education, and household income per capita were entered first in model 1, then parenting measures were entered in model 2. The childhood events and behaviors were stepped into model 3 to determine if significant effects remain after controlling for parental measures. In model 4, we entered the current stressors of financial strain, negative events, and discrimination to assess their unique contributions to the probability of meeting the CES-D cutoff for depressive symptomology. From previous studies, these stressors should exhibit strong effects, but we wanted to determine if their influence might be reduced with the addition of measures of social support and traditional activities in model 5. Finally, we included current drinking as a predictor of depression in model 6. We also tested for interactions between measures of stress and support. The only statistically significant interaction effect is presented in model 7.

One difficulty with the current sample is that we have two respondents, a male and a female, for 62 percent of our households. This sampling design creates a potential bias in estimating standard errors for model parameters because of equal probabilities for case selection (Lee, Foerhofer, and Lorimer 1989). Specialized statistical software is available to compute variance estimates that are adjusted for the design effects resulting from complex sampling designs. Stata (StataCorp 2001) was used to generate logistic regression estimates that corrected standard error estimates (Eltinge and Sribney 1996).

RESULTS

Bivariate correlations for all of the variables in the regression models are presented in Table 2. The results of the stepwise logistic regression analyses are presented in Table 3 as unstandardized coefficients (b) and adjusted odds ratios (Exp(b)). The fit of each model is found in the lower part of the table. The model chi-square assesses overall fit of the model, and a significant chi-square indicates a better fit. Likewise, the improvement chi-square statistic indicates whether the variables entered into each step improved the fit of the model. Analogous to the F-change statistic in ordinary least squares regression models, this statistic assesses how much change in chi-square is attributable to the variables included in that step.

In model 1, the only significant predictor of depressive symptoms was household income.
### TABLE 3. CES-D Cutoff Logistic Regression Models (N = 281)

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**Note:** Table contains unstandardized regression coefficients and standard errors in parentheses.

* p < .10  † p < .05  ** p < .01 (two-tailed tests)

1 Income is divided by 1,000 so metric is thousands of dollars.
2 Natural Logarithm Transformed.
per capita (b = -12, p < .05). Each increase in our ordinal measure of per capita income decreased probability of exceeding the CES-D cutoff for depressive symptoms by 11 percent. Parenting variables were added to the equation for model 2. Of these, perceived parental rejection was statistically significant (b = .77, p < .05). With only the demographic and parenting variables in the equation, each unit increase of perceived parental rejection increased the likelihood of exceeding the cut-off for depressive symptoms more than twofold (Exp(b) = 2.16). The addition of the parenting variables significantly improved the fit of the model (p < .05).

Model 3 included two childhood indicators: recalled negative life events and conduct problems. Neither of the childhood experience indicators was statistically significant with the demographic and parenting variables in the model. This model resulted in the weakest incremental improvement of chi-square, a change that was not significantly better than model 2 (p < .10). However, the addition of current stressors in model 4 resulted in a substantial improvement of fit (p < .01) over models 2 and 3. For each unit increase in current financial strain, the likelihood of exceeding the CES-D cutoff increased almost two times (b = .56, p < .05; Exp(b) = 1.75), as did each unit increase of perceived discrimination (b = .67, p < .01; Exp(b) = 1.96). Current negative life events also were positively related to depressive symptoms (b = .28, p < .01; Exp(b) = 1.33).

With the exception of financial strain, the current stressor variables remained statistically significant in model 5 when the two protective factors were added to the equation: perceived social support and participation in traditional activities. Both of these variables had strong negative effects on the likelihood of exceeding the CES-D cutoff for depressive symptoms. Each unit increase in social support decreased the likelihood of depressive symptoms by almost 90 percent (b = -2.38, p < .01; Exp(b) = .11). Participation in traditional activities decreased the likelihood of depressive symptoms by almost one-third (b = -.45, p < .05; Exp(b) = .66) for each unit it increased. The change in chi-square indicated that model 5 was a significant improvement in fit over model 4 (p < .01).

Current alcohol use was added in model 6. This model was a significant improvement of fit over model 5 (p < .05). In this model, negative life events remained statistically significant (b = .31, p < .01; Exp(b) = 1.35), as did perceived discrimination (b = .69, p < .05). Perceived discrimination increased the probability of depressive symptoms more than twofold (Exp(b) = 2.08) for each unit it increased. The protective effects of perceived social support and traditional practices also remained in the full model. Each unit increase in perceived social support (b = -2.45, p < .01; Exp(b) = .10) decreased the likelihood of exceeding the CES-D cut off by 90%. For each unit of increase, the effect of traditional practices decreased depressive symptoms by 29 percent (b = -3.8, p < .10; Exp(b) = .72). As drinking increased, the odds of exceeding the CES-D cutoff for depressive symptoms increased (b = .52, p < .05; Exp(b) = 1.68).

Tests for multiplicative interactions among the variables indicated one statistically significant interaction between discrimination and traditionalism (b = -83, p = .053) (see model 7 in Table 3). To illustrate the interaction effect, we plotted the mean of each regression coefficient and the interaction term at different levels of traditional participation and perceived discrimination (Figure 1). For both traditional participation and perceived discrimination the data points on the graph represent the mean and one standard deviation on either side of the mean of each variable (Aiken and West 1991). For adults who reported levels of participation in traditional activities above the mean, discrimination had virtually no impact on depressive symptoms. For those adults who reported below average participation in traditional activities, high levels of discrimination increased the likelihood of exceeding a CES-D score of 16. The negative effects of discrimination were primarily for those adults who reported below average participation in traditional activities. Traditional activities buffered the effects of depression for those whose participation rate was above the mean.

In summary, fit significantly increased as variables were added to the equation. The final model indicated that the primary predictors of exceeding the CES-D cutoff among American Indian adults in the upper Midwest were experiencing current negative life events, greater perceptions of discrimination primarily among those who did not participate in traditional Indian activities, and current alcohol consumption. Both perceived social support and prac-
ticing traditional activities served as protective factors against depressive symptoms.

DISCUSSION AND CONCLUSIONS

For the most part, factors predicting CES-D cutoff scores of above 16 among American Indian adults in the upper Midwest were the same as those experienced in the majority population. Early childhood experiences of parental rejection (Billing & Moos 1983; Downy and Coyne 1990) set the stage for later, more proximate stressors of financial strain (Conger and Elder 1994) and negative life events (Kessler 1997). As many others have found, perceived social support was an important protective factor against depressive symptoms (see Turner and Turner 1999 for a review). However, three noteworthy factors unique to this population emerged from the analysis. First, perceived discrimination was a powerful indicator of depressive symptoms among the American Indian adults. Those who experienced discrimination were two times more likely to exceed the CES-D cut off for depressive symptoms for each unit of increase of the discrimination measure. Second, traditional practices served as a protective factor, reducing the likelihood of exceeding the CES-D cut off for depressive symptoms by 29 percent for each unit of increase. Those who engaged in traditional practices of going to powwows, speaking their traditional language, and engaging in traditional activities were less susceptible to depressive symptoms.

Third, we found an important interaction between perceived discrimination and traditional practices. The protective influence of tradition was greatest for those who reported above average levels of traditional activities. However, for those who reported below average levels of traditional practices, high perceived discrimination was associated with depressive symptoms (Figure 1). This suggests that those with weaker cultural ties are more susceptible to the negative effects of discrimination than those with strong ties to traditional culture.

The underlying mechanisms through which traditional activities reduced depressive symptoms and buffered the effects of discrimination among those who reported above average participation are unclear. The measure included several examples of affiliation (e.g., powwow attendance) that could account for the effects via increased positive associations with others from their culture, and hence increased perceived social support. However, the majority of the items in the traditional activities measure do not necessarily require affiliation (e.g., beading, spear-fishing, hunting). Many of
these activities often are done alone. In addition, the language fluency measure reflects knowledge of cultural tradition rather than affiliation. For these reasons, we believe the effects of traditional activities are not merely based on affiliation. Rather, the positive influences are primarily due to a sense of cultural strength, pride, and identity reflected in traditional competencies and cultural knowledge. Further work is required to replicate these findings of cultural protective factors and to determine exactly what mechanisms are at work.

The results also support others' findings of a close link between depressive symptoms and alcohol use among American Indian adults (O’Neill 1992/1993). Depressive symptoms increased more than one and one-half times with increases in drinking, indicating a significant association between alcohol use and depressed affect.

Although intriguing, these results must be interpreted with caution. First, they pertain to only one American Indian culture. Studies on depressive symptoms should be repeated nation by nation. Second, the cross-cultural application of measures developed with European Americans warrant cautious interpretation (Allen 1998). Third, the model omits some very important potential contributors to depressive symptoms among American Indian adults, most notably that of historical grief (Yellow Horse Brave Heart 1999; Yellow Horse Brave Heart and DeBruyn 1997). Future work should focus on developing measures that better assess dimensions of depressed affect unique to the American Indian population (see O’Neill 1996). Also, cross-sectional research is unable to answer important questions of symptom timing and origins. For example, we do not know if alcohol problems originate prior to depressive symptoms or in response to them.

If one accepts that perceived discrimination is one indicator of stress deriving from culture conflict, then the strong independent effects of perceived discrimination on depressive symptoms provide support for a cultural conflict perspective. Stress originating from conflicting cultural values has negative effects on adults' emotional well-being. Moreover, the protective effects of traditional culture suggest that high levels of cultural participation may buffer the effects of culture conflict. A strong sense of cultural competency, participation in one's tradition, and affiliation with others from one's culture reduces potential stress from "not fitting into" or being rejected by the majority culture. It is noteworthy that our findings indicate that the protective effects function only for those who reported above average levels of traditional cultural practices and not for those who report below average participation. This seems to reflect the importance of commitment to and identification with the traditional culture. As participation in cultural traditions diminishes, the effects of discrimination become more psychologically harmful.

Depressive symptoms are an important mental health problem for many American Indian communities (Manson, Shore, and Bloom 1985) and warrant serious and urgent attention. Our current findings add to our understanding of depressive symptoms among American Indian people but represent an early phase of the work that needs to be done. However, there may be important implications of this work. First, traditional cultural practices serve as protective factors for American Indian adults. Prevention and treatment programs should take this into account and work with traditional healers and elders in responding to American Indians who manifest depressed affect. Second, discrimination has insidious effects. It directly contributes to depressive symptoms as a stressor. Its effects are especially potent for those with below average levels of participation in traditional culture. There is the potential that discrimination-induced psychological distress could cause further withdrawal from cultural activities among those with already low involvement. Work with adults and children should focus on identifying discrimination as a stressor and on teaching coping mechanisms for dealing with it.
APPENDIX

Parental Warmth and Support
In the course of a day, how often did your mother/father know where you were?
1. Never
2. Sometimes
3. Often
4. Always

How often did your mother/father have a set time for you to be home or in bed on
weekend nights?
1. Never
2. Sometimes
3. Often
4. Always

How often did your mother/father ask you what you thought before making a decision about you?
1. Never
2. Sometimes
3. Often
4. Always

When you did something your mother/father liked, how often did s/he let you know s/he was
pleased?
1. Never
2. Sometimes
3. Often
4. Always

Parental Rejection
Thinking about you and your mother/father ...
1. Strongly Disagree
2. Disagree
3. Agree
4. Strongly Agree

S/he really trusted me. (reverse coded)
S/he found fault with me even when I didn’t deserve it.
S/he really cared for me. (reverse coded)
S/he often blamed me for her/his problems

Negative Childhood Events
While you were growing up...
1. No
2. Yes

Was anyone in your family violent toward another family member?

Did your parents or the people who raised you have serious mental problems?

Did a close relative commit suicide?

Conduct Disorder
When you were a child or adolescent...
1. No
2. Yes

Did you frequently lose your temper?

Did you often argue or talk back to adults?

Would you openly refuse to do what your parents, teachers, or boss told you or asked
you to do?

Were you angry a lot of the time?

Did you skip school a lot without permission?

Did you often stay out much later than your parents say you should?

Did you ever run away from home and stay away at least overnight?

Did you sometimes shoplift?

Did you sometimes break into a locked car, house, school, or store?

Did you sometimes get out of doing what you were supposed to do by lying or fooling people?

Did you sometimes deliberately damage somebody’s property?

Were you in quite a few physical fights when you were a child or a teenager?

Did you sometimes use a weapon—like a gun, knife, stick, or bottle—to threaten someone?

Financial Strain
My family has enough money to afford the kind of home we need.
1. Strongly Agree
2. Agree
3. Disagree
4. Strongly Disagree

We have enough money to afford the kind of clothing we need.
1. No difficulty at all
2. A little difficulty
3. Some difficulty
4. Quite a bit of difficulty
5. A great deal of difficulty

We have enough money to afford the kind of medical care we need.
1. More than enough money left
2. Some money left over
3. Just enough to make ends meet
4. Almost enough to make ends meet
5. Not enough to make ends meet

During the past 12 months, how much difficulty have you had paying your bills?

Generally at the end of the month did you end up with ...

(Continued on next page)
Negative Events in the Past Year
In the past 12 months...
Were you robbed or burglarized?
Did you have something lost or stolen?
Were you involved in a life-threatening accident?
Did you have any serious illness or injury?
Were you physically attacked or assaulted?
Did you witness someone being badly injured or killed?
Were you threatened with a weapon, held captive, or kidnapped?
Did any close friend or close relative die?
Did you have a family member with a serious illness or injury?
Did you have a close friend with serious marital or family problems?
Did you have a steady, romantic relationship break up?
Did you have a close friendship break up?

Discrimination.
How often...
Has someone said something derogatory or insulting to you because you are Native American?
Has a store owner, sales clerk, or person working at a place of business treated you in a discrepant way because you are Native American?
Have the police harassed you because you are Native American?
Has someone ignored or excluded you from some activity because you were Native American?

Social Support
There is no one I feel comfortable talking about problems with.
There are people who enjoy the same social activities I do. (reverse code)
I do not think other people respect my skills and abilities.
There is someone I can talk to about important decisions in my life. (reverse code)
There is no one I can depend on for aid if I really need it.
There is no one who shares my interests and concerns.
There are people I can depend on to help me if I really need it. (reverse code)

Traditional Activities Participation
Pow-wow Participation
Have you been to a pow-wow in the past year?
Have you danced at any of these pow-wows?
Have you participated in a drum group or sung at any of these pow-wows?
How many pow-wows have you been to in the past year?

Traditional Activities
Here you rated...:
Is done any hunting?
Gone fishing
Gone spear-fishing
Made pow-wow outfits
Gone to sugar bush
Picked berries
Gone hunting
Played [tribal] games
Made blankets
Peaked birch bark
Made Kuk-stick
Tanned hides

Language
Can you understand some [tribal language]?
Can you understand spoken [tribal language]?
Do you speak some [tribal language]?
Can you speak [tribal language] fluently?

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