Journal of Applied Gerontology

<http://jag.sagepub.com>

American Indian Elders and Depression: Short-and Long-Term Effects of Life Events

Elizabeth E. Chapleski, Richard Kaczynski, Sherry A. Gerbi and Peter A. Lichtenberg

Journal of Applied Gerontology 2004; 23; 40

DOI: 10.1177/0733464804263087

The online version of this article can be found at:
<http://jag.sagepub.com/cgi/content/abstract/23/1/40>

Published by:

SAGE Publications

<http://www.sagepublications.com>

On behalf of:

[Southern Gerontological Society](#)

Additional services and information for *Journal of Applied Gerontology* can be found at:

Email Alerts: <http://jag.sagepub.com/cgi/alerts>

Subscriptions: <http://jag.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

Citations (this article cites 31 articles hosted on the
SAGE Journals Online and HighWire Press platforms):
<http://jag.sagepub.com/cgi/content/abstract/23/1/40#BIBL>

American Indian Elders and Depression: Short- and Long-Term Effects of Life Events

Elizabeth E. Chapleski
Richard Kaczynski
Sherry A. Gerbi
Peter A. Lichtenberg
Wayne State University

This research examines stressful life events as predictors of psychological problems among a population of older American Indians of the Great Lakes region. It assumes that meaning attached to these events is not culture-free. The data used are from a longitudinal study of 309 American Indians age 55 and older who were interviewed at two time periods in three distinct strata: urban, rural (off-reservation), and reservation. Life events are measured by the presence and perceived severity of 19 discrete events. Hierarchical regression analysis is used to determine the influence of life events on depression after controlling for sociodemographic factors, functional ability, and comorbidity at both Time 1 and 18 to 24 months later at Time 2. Although Time 1 depression accounts for most of the variance at Time 2, comorbidity was also a significant predictor over time. Whereas life stress has a short-term effect on mental health, the burden of comorbidity increases over time.

Keywords: American Indian aging; acculturation; depression; life events

Depression is a major mental health problem among older persons. In the general population it is estimated that from 10% to 16% of older persons suffer severe depressive symptoms (Harman & Reynolds, 2000; Kraaij, Arensman, & Spinhoven, 2002). It is often ignored, mistreated, and can be a

AUTHORS' NOTE: This research was supported by grant RO1 AG 11152 from the National Institute on Aging. The authors wish to thank Donald Gelfand, Ph.D., Joanne Sobeck, Ph.D., Charles Fisher, B.A., and Kelli Pugh, M.A., for their assistance with the research. For further information, contact Elizabeth E. Chapleski, Associate Professor of Research, Institute of Gerontology, Wayne State University, 87 E. Ferry, Detroit, MI 48202; telephone: (313) 577-2297; e-mail: e.chapleski@wayne.edu

The Journal of Applied Gerontology, Vol. 23 No. 1, March 2004 40-57
DOI: 10.1177/0733464804263087

© 2004 The Southern Gerontological Society

cause of morbidity and even suicide. What are the precipitating factors that bring on depression in elders? Stressful life events has been the focus of much of the research exploring depression and its antecedents. Stress is a response to inevitable changes that occur throughout the life course. The broad base of research addressing life events and well-being gives credence to the theory that life changes often affect us negatively (George, 1990). Although the effects of stressful life events on both physiological and psychological well-being have been researched extensively, the findings have been inconsistent and frequently contradictory. Furthermore, the bulk of the research is with White populations and therefore not generalizable to minority populations. A recent meta-analysis of 25 studies of persons aged 65 or older shows a significant relationship between negative life events and depression among older adults (Kraaij et al., 2002). A review of these studies revealed that none were with American Indians. Thus, although American Indians have increased risk, compared to the general population, of major life changes due to chronic health conditions, poverty, and poor housing, there is virtually no empirical research concerning the effects of life events among American Indians, regardless of age.

Stress research began with Hans Selye (1956), who examined "species-specific" responses—differentiating between a stressor and stress. Holmes and Rahe (1967) extended this line of research to human species and social stressors. However, social stressors are not species-specific but instead are culturally specific (Moss, 1973). The theory is that the situations or events are those to which everyone is exposed, to a greater or lesser extent, during the life course, but it cannot be assumed that the psychological meaning, emotion, or social desirability attached to an event is culture-free or the same for everyone. Culture bounds the shared beliefs and understandings that give meaning to social experience (Luborsky & Sankar, 1991). Because research has shown that the subjective appraisal of events as stressful or negative is strongly related to their impact (George, 1990; Lazarus & DeLongis, 1983) and that subjective appraisal is influenced by culture, the lack of attention to cultural and ethnic differences is surprising. Furthermore, the effects of low socioeconomic status (SES) and high rates of chronic health conditions may have multiple effects on the event-outcome connection among ethnic and racial minorities.

Stressful life events have been said to account for both the excess of psychological symptoms in lower socioeconomic strata (Dohrenwend & Dohrenwend, 1969; Kessler, 1979; McLeod & Kessler, 1990) and negative changes in both physical health (Holmes & Rahe, 1967) and mental health (Avison & Turner, 1988; Blazer, 1980; Ensel & Lin, 1991). The most

consistent and strongest relationship has been found between life events and depressive symptoms (Avison & Turner, 1988; Blazer, 1980; Ensel & Lin, 1991; Krause & Borawski-Clark, 1994; Thoits, 1981).

Since the early attempts to quantify the stressfulness of life events, an infinite number of statistical models have been tested, with varying outcomes. Among the most consistent findings is the importance of order and that event occurrence must precede and be distinct from symptom outcomes to establish causality (Tennant, Bebbington, & Hurry, 1981). A second major criticism is the generalizability of life-event research using weights (to determine impact or stress) normed on middle-class White samples. More recent research and measurement techniques recognize individual differences and the importance of context. One such technique allows individuals to rate their own stress by asking questions related to timing and severity of each life event experienced (Avison & Turner, 1988).

Studies of racial differences in life stress and depression focus mainly on African American populations, and factors predicting depression were found to be similar to Whites (Husaini, 1997), although the magnitude of these factors may differ. For example, the joint effects of race and SES were found to increase distress (Kessler, 1979; McLeod & Kessler, 1990). Some researchers theorize that race (minority) itself is a source of stress, due to discrimination and marginalization (Landrine & Klonoff, 1996; Smith, 1985). Others say it is the differential exposure to undesirable events that explains the differential rates of psychological disorders (Kessler, 1997), and the response to those events may be more adaptive among minorities. We expect that although American Indians have not been the focus of any of this research, their differential vulnerability to events and their marginalized positions in society would affect the elders in this sample as well.

This research examines the effects of those life events self-rated as *very bad* on depressive symptomology, controlling for sociodemographic factors, chronic health burden, and functional disability, in a population of older American Indians of eastern Great Lakes origin. For each life event experienced, the respondent rated the stressfulness of the event. We examine first the mean values of very bad life events and mean values of depression (Center for Epidemiological Studies–Depression scale, CES-D) by selected sociodemographic characteristics. Next, we present hierarchical multiple regression results predicting depressive symptomology in both concurrent and longitudinal models. Causal inferences are expected to be strengthened by using both waves of data (18–24 months apart), as life stress research is most valid when measured across time.

American Indian Elders

A demographic transition is occurring among American Indians similar to that being experienced by other ethnic and racial minorities. The 2000 census reported more than 2.4 million Native Americans nationwide, an increase of 20% from the 1990 census (Lam, 2001). Although American Indian elders share conditions with other minority groups such as poor health, lower life expectancy, high poverty rates, and large extended families, they remain distinct and unique politically and culturally. They represent approximately 500 different tribes and nearly 200 languages. Michigan's Indian population ranks 10th in size among the 50 states.

The historic restriction of Indians to reservation areas or Indian territory is reflected in residential patterns. They are the most rural of all racial groups, yet more than half live in urban areas. Reservation dwellers account for less than half of the rural elders and the remainder live in rural off-reservation areas (Burhansstipanov, 1993). Most of the extant research does not differentiate between urban, rural off-reservation, and reservation residential environments. Recent exceptions found that in-home service use patterns among Great Lakes Indian elders varied significantly by area of residence, with reservation elders more likely to report knowledge and use of in-home services than their urban or rural off-reservation counterparts (Chapleski & Dwyer, 1995; Chapleski, Gelfand, & Pugh, 1997).

American Indian Mental Health

Before discussing the analysis and findings, we briefly discuss American Indian mental health research. There is a scarcity of information about the epidemiology of major mental disorders among American Indians in general (Neligh & Scully, 1990). Diagnosis is often difficult because of the cultural factors influencing its presentation and the lack of good diagnostic tools for Indian elderly (Neligh & Scully). Yet, understanding depression among American Indians is critical for estimating prevalence as well as identifying just what is universal and what is culturally variable (LeVine, 1984). Shore and Manson (1981) warn that it is a serious error to generalize from the Euro-American Westernized view of depression to Indian experiences and behavior. Although there have been many studies employing the CES-D in different groups (Liang, Van Tran, Krause, & Markides, 1989; McCallum, Mackinnon, Simons, & Simons, 1995), only a few studies have addressed

older American Indians (Baron, Manson, Ackerson, & Brenneman, 1989; Chapleski, Lamphere, Kaczynski, Lichtenberg, & Dwyer, 1997; Somervell, Beals, Kinzie, Boehnlein, Leung, & Manson, 1993a, 1993b).

The acculturation stress theory hypothesizes that those most exposed to acculturation demonstrate increased depressive symptoms and psychiatric disorders (Bloom, 1974; Kraus, 1972; Leighton, 1971; Young, 1994). Thus, whereas most American Indians are affected by policies and pressures to assimilate, those living in urban areas are exposed to more acculturation-related stress (Kramer, 1991; LaFromboise, 1988).

Hypotheses

Based on previous literature, it is expected that stressful life events will have a negative impact on the well-being of American Indian elders, but that this impact will be short term (defined as no more than 1 year; Kessler, 1997). The comparisons are, of necessity, retrospective in that information about stress exposure was gathered after onset of depression. However, because the stressful-life-events measure assesses occurrences in the previous 6 months, their causal precedence in the cross-sectional surveys can be argued. Thus, we would expect the 6-month (i.e., cross-sectional) effects of stressful life events to be more pronounced than their longitudinal effects.

We also expect that living in the urban area, when controlling for demographics and life events, will have a negative effect on the CES-D scores. Jackson and Chapleski (2000) describe the affect of historical events and acculturation efforts on the current cohort of Indian elders. For those who spent many years in cities, economic strains might have been eased for some, but emotional and social difficulties often resulted from the disruption of relocating and the pressures of the urban environment.

Method

Sample

The data used in this research are from the Long-Term Care and Social Support: American Indian Aged project, a longitudinal study funded by the National Institute on Aging. The purpose of the study was to examine differences in informal social networks, preferences for long-term care, and utilization of health and long-term care services between urban, rural off-reservation, and reservation-based Native Americans residing in Michigan.

The study defined elderly as 55 and older, for two reasons. First, although the Older Americans Act (OAA) identifies age 60 as the eligibility point for senior services, American Indians experience significantly lower life expectancy than the general population. To generalize to the oldest 10% of the Native population, we lowered the respondent age criterion to 55. Second, given their sovereign status, Native American tribes have the right to determine age limits for recipients of services under Title VI of the OAA. All Michigan-based tribes use age 55 as their criterion for elder services.

Although Michigan has a substantial number of Native Americans living on reservations, recent census data indicate that 58.8% of all elders over age 55 live in urban areas, and the majority of those live in the Detroit metropolitan area. In addition, 16.9% were estimated to be living in rural off-reservation communities and 24.3% in federally recognized tribal service areas. The sampling frame was stratified by area of residence, oversampling the rural and reservation elders to obtain large enough numbers for statistical comparisons. Due to the widely dispersed and highly rural nature of Michigan's Native population, a decision was made to use a two-stage sampling process; all seven reservations and six state historic tribes were represented in the first stage of stratification, and the selected segments are representative of their respective strata. The selected reservation stratum covered a three-county area of one of the seven federally recognized tribes in Michigan. The rural off-reservation stratum included four of six state historical tribal groups located in counties that meet Beale's (1981) definition of rural using the 17-category schema that designates residence at the county level. The urban respondents were drawn from the tricounty Detroit metropolitan area. Lists of members over the age of 55 were obtained from enrollment officials of the tribes, as well as four urban Indian agencies. Thus, the sampling frame consisted of more than 2,000 names obtained from tribal rolls and urban Indian lists. A multiplicity sampling technique was used to augment the urban list: Respondents were asked to identify two other persons who fit the age criteria. Interviews were conducted with 125 urban, 83 rural, and 101 reservation elders, for a total of 309 at Time 1 and 252 at Time 2. The overall response rate at baseline was 73%.

Three fourths of the urban respondents were from the Ojibwa, Odawa, and Potawatomi tribes, those represented in rural and reservation areas. The remaining fourth represented more than 20 different tribes. More than 97% of the reservation and rural sample were born in Michigan compared to 37.5% of the urban strata. However, more than 95% of those not born in Michigan were from other tribes with origins in the Great Lakes or Woodland areas. Thus, the sample represents a group of Native Americans with similar biological, cultural, and language roots, increasing confidence that

differences noted between areas of residence and other important socio-demographic factors are not due to biocultural differences (Young, 1994).

This study is seminal in developing a base of understanding about the needs and preferences of American Indian people aged 55 and older of the Great Lakes region.

Concept Measurements and Population Characteristics

Explanatory variables that predict depression are separated conceptually into three broad categories: sociodemographic, chronic health burden, and stressful life events. Sociodemographic variables include sex, education, age, and area of residence. Table 1 delineates characteristics of the sample and differences in mean scores of both very bad life events and CES-D. Data are weighted to adjust for stratification. Women constitute 64% of the sample. More than half of the respondents had less than a high school education.

For descriptive purposes, age is coded in three categorical groups. The overall age distribution of the respondents indicates a relatively "young" population, with the mean age of the respondents 68 ($SD = 8.56$) at the first wave of data collection.

Health characteristics include two indexes, one of self-reported health conditions and another of functional health.

Comorbidity. To evaluate the impact of chronic conditions on depression, responses to questions about the presence of 20 chronic conditions were coded using the Comorbidity Index (CMI). This index was originally developed on a sample of 559 medical patients, whose course was followed for 1 year (Charlson, Pompei, Ales, & MacKenzie, 1987). Total score on the index is calculated by coding each disease according to these weights and summing the weights for each patient. All conditions were assessed from responses to a question that probes whether the respondent had been told by a doctor or health professional within the past 12 months that they had a particular illness such as arthritis. High scores on the CMI reflect a high *number* of coexisting diseases.

Functional health. Functional health was assessed by an index of activities of daily living (ADL) and instrumental activities of daily living (IADL) (eat, dress, groom, walk, get into and out of bed, bathe, toilet, telephone, get to places out of walking distance, shop, prepare meals, do housework, take medicine, handle money). The separate items were coded into dummy

Table 1. Selected Sample Characteristics and Mean Scores on Negative Life Events and Center for Epidemiological Studies–Depression Scale (CES-D)

Variable	Time 1 (n = 293)			Time 2 (n = 243)		
	Sample %	Life Events	CES-D	Sample %	Life Events	CES-D
Age						
55-64 years	37.6	0.62	6.75	38.1	0.68	7.28
65-74 years	43.6	0.61	5.80	45.9	0.54	5.99
> 75 years	18.7	0.31	7.53	16.0	0.66	7.15
Education						
Less than high school	54.8	0.50	6.92	55.6	0.57	7.19
High school	23.4	0.52	6.43	23.1	0.78	6.66
More than high school	21.8	0.76	5.44	21.2	0.54	5.33
Sex						
Male	36.2	0.56	6.94	34.6	0.60	7.10
Female	63.8	0.56	5.64	65.4	0.64	5.86
Area of residence ^a						
Rural	16.8	0.35	4.50***	16.5	0.63	4.99**
Urban	59.0	0.63	7.32	59.9	0.66	6.81
Reservation	24.2	0.55	5.75	23.6	0.49	7.49
Money difficulties ^{b, c}						
No problem at all	61.2	0.49	5.39	72.7	0.47	5.90
Somewhat of a problem	31.4	0.57	7.87	20.1	0.82	8.00
Big problem	7.3	1.12***	9.45**	7.1	1.52***	10.77***

a. Depression (Time 1) $p < .01$.

b. Life events (Time 1) $p < .05$; depression (Time 1) $p < .01$.

c. Life events (Time 2) $p < .01$; depression (Time 2) $p < .01$.

** $p < .01$. *** $p < .001$.

variables coded 0 if the respondent reported being able to do the activity without any help and 1 if the respondent needed some help. The indexing technique for measuring difficulty with ADL and IADL in combination is used by the National Medical Expenditure Survey (NMES) and provides a broad definition of functional limitation (Short & Leon, 1988). Index scores range from 0 to 14, and the mean value is 1.12 limitations per elder. One or more ADL/IADL difficulties were reported by 35% of the respondents, with 12.1% reporting 4 or more.

Stressful life events. The effects of stressful events are measured with two predictors, financial difficulty in paying bills (a proxy for income) and an index of life events rated as having a very bad impact.

Financial difficulty/bills. “Problems paying bills” is a proxy for income (used because of the high number of missing values regarding income). The question was, “People frequently have problems paying their bills. Does this happen to you frequently, occasionally, or never?” Thirty-nine percent of the elders have occasional or frequent problems with paying their bills. This measure captures persistent financial stress and strain above and beyond the one “serious financial event” item experienced by 6% to 7% of the respondents.

Life events. Research indicates that the impact of stressful life events is contingent upon whether the event in question is perceived as bad (Husaini & Neff, 1980; Kessler, 1997; Tennant & Andrews, 1976; Turner & Avison, 1992). Kessler (1997) noted that the magnitude of the association between exposure to stressful life events and subsequent onset of depression was greater when events were measured in a contextual manner. The life-events measures include 19 objective, discrete events appropriate for older persons, including items from Blazer’s 1980 study plus an “other” category to catch less obvious and infrequent events. Respondents were asked if any of the 19 events had occurred within the past 6 months. Following the recommendation of Green (1986) for separate measurement of event occurrence and the individual’s evaluation of the event, if an event occurred, respondents were asked how bad that event was (scored 0 *not bad at all*, 1 *not too bad*, and 2 *very bad*). Context effects were gained by questions of how much change it made in their lives and what they did to cope. Given the paucity of research on life events/stress/illness (somatic or psychological) among American Indians, the subjectivity, we believe, was justified. Therefore, questions of perceived impact were included to allow for subjective appraisal and cultural differences in appraisal. Mean differences of both life event and CES-D scores by sociodemographic characteristics are shown in Table 1. Two demographic characteristics scored significantly different on the life events scores and the CES-D—area of residence and having money problems. Those living in rural (off-reservation) areas were least likely to score high on depression at both Time 1 and Time 2. Those with severe money problems scored highest on both life events and depression at both time periods.

Table 2 shows the percentage of elders who experienced specific types of very bad events. The most frequently experienced type of event was death of a spouse, family member, or friend, with 18.1% at Time 1 and 23.4% at Time 2. The second most frequent event was an injury or illness to the respondent, experienced by nearly 15% at both time periods. The third type was social network events, with 11% and 9.5%, respectively, at each time period.

Table 2. Percentage of Elders Reporting Types of Events as Very Bad

<i>Event</i>	<i>% Time 1 (N = 309)</i>	<i>% Time 2 (n = 252)</i>
Death of spouse/family member/friend (3 items)	18.1	23.4
Health/injury to respondent	14.6	15.1
Social network problems (6 items)	11.0	9.5
Business/financial (2 items)	6.1	7.1
Other (6 items)	6.5	6.0

reporting events such as divorce, separation, moving, or retiring. Very bad financial events were experienced by 6.5% and 6%, respectively.

Dependent measure—CES-D. A 12-item model found to be valid for American Indian elders (Chapleski, Lamphere, et al., 1997) is used as the dependent measure. The 12-item scale was previously found to have three positive attributes that favor its use over the original 20-item scale—parsimony, better overall goodness of fit to the data, and conceptual appropriateness. Cronbach's alpha was .85.

Analytic Design

Hierarchical multiple regression analyses were conducted to evaluate the short- versus long-term effects of stressful life events. This involved contrasting depression in the cross-sectional data (where stressful life events from the recent past—6 months—are reported) with depression in the longitudinal data (where stressful life events occurred about 18 to 24 months in the past).

In the longitudinal model, the first step of the regression analysis involved entering Time 1 (T1) CES-D as an autoregressive component; thus, this model will assess factors that predict a change in depression. There was no autoregressive component in the cross-sectional models.

The second stage of the analysis involved controlling for demographic factors that may affect elder depression. These demographics included age, education, and dummy codes for residential strata.

Next, health indicators of functioning and comorbidity were entered. There is a degree of overlap between physical impairment and stressful life events; indeed, one of the stressful life events assessed is whether an illness was experienced that was rated as very bad. By entering health factors first,

the analysis is able to remove the effect of chronic health conditions from stressful life events. Likewise, because chronic conditions tend to be associated with the somatic components of depression (especially in older populations), entering health into the analysis at this stage also removes the presence of nonpsychosomatic physical symptoms from the CES-D.

The final step of the analysis, then, involved entering the Stressful Life Events scale, as well as a separate item concerning money problems, which is a major problem among our participants.

This analysis provided two main advantages: First, the two cross-sectional analyses were replications of each other, distinguishing enduring effects (independent variables that were significant in both analyses) from Type I errors (variables that were significant in one but not the other analysis). Thus, a more stringent criterion could be used for model building. Second, these cross-sectional analyses allowed the testing of another implicit assumption—that the impact of stressful life events on mental well-being is of a short duration, causing an effect that is discernible in the short run (i.e., in the cross-sectional models) but that dissipates in the long run (i.e., in the longitudinal model). This implicit assumption was borne out in our preliminary analyses wherein stressful life events were significant cross sectionally but not longitudinally.

Results

The T1 cross-sectional model consisted of three sets of predictors: demographics, health, and life stress. The Time 2 (T2) cross-sectional model contained the same three sets of predictors as the T1 model.

The results of the cross-sectional T1 regression analyses are summarized in Table 3. The final solution accounted for 21% of the variance in T1 depression scores as measured by the CES-D. The main predictors were functional disability ($\beta = .24, p = .000$), life events rated very bad ($\beta = .20, p = .000$), financial difficulty ($\beta = .12, p = .04$), and having less education ($\beta = -.14, p = .01$).

The results of the cross-sectional T2 regression analyses are summarized in Table 4. The final solution accounted for 26% of the variation in T2 depression scores ($R^2 = .26, p < .0000$). The main predictors were functional disability ($\beta = .21, p = .001$), comorbidity ($\beta = .18, p = .01$), and very bad life events ($\beta = .24, p = .000$). Area of residence results differed from T1 in that CES-D

Table 3. Beta Weights and R^2 Change for Hierarchical Regressions of Time 1 (T1) Depression

<i>Variable</i>	β	R^2 Change
Step 1		
Age	-.01	
Education	-.14**	
Rural dwelling	-.04	
Urban dwelling	.10	.055**
Step 2		
T1 ADL/IADL index	.25***	
T1 comorbidity index	.03	.102***
Step 3		
T1 money problems	.12*	
T1 stressful life events	.20***	.052***
Total R^2	.21	
F	9.479	
F significant	.0000	

NOTE: ADL = activities of daily living; IADL = instrumental activities of daily living.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

was higher in the reservation strata than either the rural or urban, and the significant negative beta ($\beta = -.14$) for rural demonstrates that change. Also, at T2 neither education nor financial difficulty were significant, and comorbidity did add unique variance to the regression model.

The longitudinal regression results are shown in Table 5. The final analysis of longitudinal depression outcomes (CES-D at T2) involved four sets of predictors: at Step 1, the autoregressive component, CES-D at T1; Step 2, demographic factors; Step 3, T1 predictors (health and functional ability); and Step 4, T1 life events rated very bad and financial difficulty.

Although the zero-order correlation between T1 stressful life events and T2 CES-D was significant ($p < .01$), once the other factors are controlled, most of the variance was explained by the autoregressive component (T1 CES-D), which explained 22% of the variance in T2 depression outcomes ($\beta = .42, p = .0000$). Demographic characteristics did add 1.6% to the variance, but the betas and the R^2 change were not significant. However, comorbidity at T1 explained an additional 3% ($\beta = .15, p = .03$) for a total R^2 of .27 ($p < .0000$), whereas the addition of T1 life events added no additional variance.

Table 4. Beta Weights and R^2 Change for Hierarchical Regressions of Time 2 (T2) Depression

<i>Variable</i>	β	R^2 Change
Step 1		
Age	-.07	
Education	-.08	
Rural dwelling	-.14*	
Urban dwelling	-.09	.026
Step 2		
T2 ADL/IADL index	.21**	
T2 comorbidity index	.18**	.164***
Step 3		
T2 money problems	.08	
T2 stressful life events	.24***	.068***
Total R^2	.26	
F	10.112	
F significant	.0000	

NOTE: ADL = activities of daily living; IADL = instrumental activities of daily living.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5. Beta Weights and R^2 Change for Hierarchical Regressions of Longitudinal Depression

<i>Variable</i>	β	R^2 Change
Step 1		
T1 CES-D	.42***	.222***
Step 2		
Age	-.10	
Education	-.05	
Rural dwelling	-.10	
Urban dwelling	-.13	.016
Step 3		
T1 ADL/IADL index	.10	
T1 comorbidity index	.15*	.030**
Step 4		
T1 money problems	-.06	
T1 stressful life events	-.01	.003
Total R^2	.27	
F	9.352	
F significant	.0000	

NOTE: T1 = Time 1; CES-D = Center for Epidemiological Studies–Depression Scale;
 ADL = activities of daily living; IADL = instrumental activities of daily living.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

Discussion

Examination of the three models (two cross sectional and one longitudinal) reveals both interesting consistencies and inconsistencies. All three models agree that in general, physical health affects depression. The specifics, however, vary from model to model. For instance, the functional disability index reached significance in both cross-sectional analyses, but it did not predict long-term depression. Likewise, the comorbidity index was associated with T2 depression, both longitudinally and cross sectionally, but it did not achieve significance at T1. Functional disability, with an average beta of .19 across all three analyses, generally explained more variance than comorbidity, with an average beta of .09. The two cross-sectional models demonstrate significant variability, and only two predictors appear stable at both time periods, functional disability and stressful life events. The significance of comorbidity at the second time period may be a consequence of the increasing and cumulative burden of chronic conditions in a population with excessive rates of chronic conditions. The failure of functional ability to add independent significance to the variance may reflect the resiliency and adaptation to difficult life circumstances often attributed to groups subject to repeated stress. From the longitudinal perspective, the best predictor of depression among American Indian elders is their past affective condition. Change in depression above and beyond prior depression is best predicted by comorbidity. The picture changed from T1 to T2. At T1, the profile of the depressed elder was a person with health problems, high life stress due to both life events and financial problems, low education, and functional disability. At T2 the profile changes and functional health, comorbidity, stressful life events, and area of residence (rural are less depressed) are significantly predictive of depression. The effect of education is no longer seen and the effect of residence changes significantly. Further study is needed to sort out these inconsistencies, especially those related to area of residence.

In summary, the consistency of the short-term effects of stressful life events and having problems carrying out daily activities illuminates the tremendous burden that dependency places on the mental health of these older Native American Indians. Prior depression emerged as the strongest predictor of current depression, and comorbid conditions add to the risk of continuing depressive symptomology. These data also support the hypothesis and findings among non-Indian populations that life stress has a short-term effect on mental health, whereas the burden of poor physical health increases over time.

The hypothesis predicting greater depression in the urban area was not supported in a consistent manner. At T1 the urban area was significantly higher on CES-D scores but the coefficient did not reach significance in the multivariate analysis. However, the major finding concerning area of residence was the benefit of living in the rural area; residents were less likely to report depressive symptoms at both time periods, indicating, perhaps, a protective factor for these residents. The focus groups and field observations of these bands of rural elders clearly indicated a closer connection to their traditional beliefs, revealed in their greater fluency in the Anishnabem language and greater participation in traditional rituals. These tribes, at that time not federally recognized and more isolated from mainstream influences than either the federally recognized tribe or the urban residents, may have experienced less acculturation stress. The resurgence of traditional rituals and beliefs should be facilitated by programs and services that encourage and promote their continuation. The spiritual benefit derived may not only have the effect of reducing depression, it may serve as a buffer to the effects of negative life events and the burden of poor health. American Indians of this region are in a period of great transformation related to federal recognition, self-determination, and accompanying economic and social changes. The recent resurgence of traditional cultural beliefs and practices may act as coping mechanisms and affect the types of communities differentially. Furthermore, examination of ways of coping with these serious life events might explain some of these inconsistencies and is warranted in order to inform service providers of coping strategies that may prevent depressive episodes.

References

- Avison, W. R., & Turner, R. J. (1988). Stressful life events and depressive symptoms: Disaggregating the effects of acute stressors and chronic strains. *Journal of Health and Social Behavior*, 29, 253-264.
- Baron, A. E., Manson, S. M., Ackerson, L. M., & Brenneman, D. L. (1989). Depressive symptomatology in older American Indians with chronic disease: Some psychometric considerations. In C. Attkisson & J. Zich (Eds.), *Depression in primary care: Screening and detection*. New York: Routledge, Chapman & Hall.
- Beale, C. L. (1981). *Rural and small town population change: 1970-1980*. Washington, DC: Department of Agriculture, Economics and Statistics Service.
- Blazer, D. (1980). Life events, mental health functioning and the use of health care services by the elderly. *American Journal of Public Health*, 70(11), 1174-1179.
- Bloom, J. D. (1974). *Changing patterns of Eskimo homicide*. Paper presented at the Annual Meeting of the American Psychiatric Association, Detroit, MI.
- Burhansstipanov, L. (1993). *Documentation of the cancer research need of American Indians and Alaska Natives* (Monograph No.1). Bethesda, MD: National Cancer Institute.

- Chapleski, E. E., & Dwyer, J. W. (1995). The effects of on- and off-reservation residence on in-home service utilization among Great Lakes American Indians. *Journal of Rural Health, 11*(3), 204-216.
- Chapleski, E. E., Gelfand, D. E., & Pugh, K. E. (1997). Great Lakes American Indian elders and service utilization: Does residence matter? *Journal of Applied Gerontology, 16*, 333-354.
- Chapleski, E., Lamphere, J., Kaczynski, R., Lichtenberg, P., & Dwyer, J. (1997). Structure of a depression measure among American Indian elders: Confirmatory factor analysis of the CES-D scale. *Research on Aging, 19*(4), 462-485.
- Charlson, M. E., Pompei, P., Ales, K. L., & MacKenzie, C. R. (1987). A new method of classifying prognostic comorbidity in longitudinal studies: Development and validation. *Journal of Chronic Diseases, 40*, 373-383.
- Dohrenwend, B. P., & Dohrenwend, B. S. (1969). *Social status and psychological disorder: A causal inquiry*. New York: John Wiley.
- Ensel, W. M., & Lin, N. (1991). The life stress paradigm and psychological distress. *Journal of Health and Social Behavior, 32*, 321-341.
- George, L. K. (1990). Social structure, social processes, and social-psychological states. In R. H. Binstock & L. K. George (Eds.), *Handbook of aging and the social sciences* (3rd ed., pp. 186-204). San Diego, CA: Academic Press.
- Green, B. L. (1986). On the confounding of "hassles" stress and outcome. *American Psychologist, 41*, 714-715.
- Harman, J. S., & Reynolds, C. S., III. (2000). Removing the barriers to effective depression treatment in old age. *Journal of the American Geriatrics Society, 48*(8), 1012-1013.
- Holmes, T. H., & Rahe, R. H. (1967). The social readjustment rating scale. *Journal of Psychosomatic Research, 11*, 213-218.
- Husaini, B. A. (1997). Predictors of depression among the elderly: Racial differences over time. *American Journal of Orthopsychiatry, 67*(1), 48-58.
- Husaini, B., & Neff, J. (1980). Characteristics of life events and psychiatric impairment in rural communities. *Journal of Nervous and Mental Disease, 168*, 159-166.
- Jackson, D. D., & Chapleski, E. E. (2000). Not traditional, not assimilated: Elderly American Indians and the notion of cohort. *Journal of Cross Cultural Gerontology, 15*(3), 229-259.
- Kessler, R. C. (1979). Stress, social stress, and psychological distress. *Journal of Health and Social Behavior, 20*, 259-272.
- Kessler, R. C. (1997). The effects of stressful life events on depression. *Annual Review of Psychology, 48*, 191-214.
- Kraaij, V., Arensman, E., & Spinhoven, P. (2002). Negative life events and depression in elderly persons: A meta-analysis. *Journal of Gerontology, 57B*(1), P87-P94.
- Kramer, B. J. (1991). Urban American Indian aging. *Journal of Cross-Cultural Gerontology, 6*(2), 205-217.
- Kraus, R. F. (1972). Changing patterns of suicidal behavior in north Alaska Eskimo. *Transcultural Psychology Research Review, 9*(1), 69-71.
- Krause, N., & Borawski-Clark, E. (1994). Social class differences in social support among older adults. *The Gerontologist, 35*, 498-508.
- LaFromboise, T. D. (1988). American Indian mental health policy. *American Psychologist, 43*(5), 388-397.
- Lam, T. (2001, March 31). Most state Indians also claim other races, census shows their population doubled. *Detroit Free Press*, p. 3.
- Landrine, H., & Klonoff, E. A. (1996). The schedule of racist events: A measure of racial discrimination and a study of its negative physical and mental health consequences. *Journal of Black Psychology, 22*(2) 144-168.

- Lazarus, R. S., & DeLongis, A. (1983). Psychological stress and coping in aging. *American Psychologist*, 38, 245-254.
- Leighton, A. (1971). A cosmos and the Gallup city dump. In B. H. Kaplan (Ed.), *Psychiatric disorder and the urban environment* (pp. 4-12). New York: Behavioral Publications.
- LeVine, R. A. (1984). Properties of culture: An ethnographic view. In R. A. Shweder & R. A. LeVine (Eds.), *Culture theory essays on mind, self and emotion* (pp. 67-87). Cambridge, UK: Cambridge University Press.
- Liang, J., Van Tran, T., Krause, N., & Markides, K. S. (1989). Generational differences in the structure of the CES-D scale in Mexican Americans. *Journal of Gerontology: Social Science*, 44(3), S110-S120.
- Luborsky, M., & Sankar, A. (1991). Extending the critical gerontology perspective: Cultural dimensions. *The Gerontologist*, 33(4), 440-454.
- McCallum, J., Mackinnon, A., Simons, L., & Simons, J. (1995). Measurement properties of the Center For Epidemiological Studies Depression Scale: An Australian community study of aged persons. *Journal of Gerontology: Social Science*, 50B(3), S182-S189.
- McLeod, J. D., & Kessler, R. C. (1990). Socioeconomic status differences in vulnerability to undesirable life events. *Journal of Health and Social Behavior*, 31(2), 162-172.
- Moss, G. E. (1973). *Illness, immunity and social interaction: The dynamics of biosocial resonance*. New York: John Wiley.
- Neligh, G., & Scully, J. (1990). Differential diagnosis of major mental disorders among American Indian elderly. In M. S. Harper (Ed.), *Minority aging: Essential curricula content for selected health and allied health professions* (DHHS Publication No. HRS [P-DV-90-4]). Washington, DC: Government Printing Office.
- Selye, H. (1956). *The stress of life*. New York: McGraw-Hill.
- Shore, J. H., & Manson, S. M. (1981). Cross-cultural studies of depression among American Indians and Alaska Natives. *White Cloud Journal*, 2(2), 5-12.
- Short, P. F., & Leon, J. (1988, November). *National estimates of the use of formal home and community services by the functionally impaired elderly*. Paper presented at the meeting of the Gerontological Society of America, San Francisco, CA.
- Smith, E. M. J. (1985). Ethnic minorities: Life stress, social support, and mental health issues. *The Counseling Psychologist*, 13(4), 537-579.
- Somervell, P. D., Beals, J., Kinzie, J. D., Boehnlein, J., Leung, P., & Manson, S. M. (1993a). Criterion validity of the Center for Epidemiological Studies Depression Scale in a population sample from an American Indian village. *Psychiatry Research*, 47, 255-266.
- Somervell, P. D., Beals, J., Kinzie, J. D., Boehnlein, J., Leung, P., & Manson, S. M. (1993b). Use of the CES-D in an American Indian village. *Culture, Medicine and Psychiatry*, 16, 503-517.
- Tennant, C., & Andrews, G. (1976). A scale to measure the stress of life events. *Australian and New Zealand Journal of Psychiatry*, 10, 27-32.
- Tennant, C., Bebbington, P., & Hurry, J. (1981). The role of life events in depressive illness: Is there a substantial causal relation? *Psychological Medicine*, 11, 379-389.
- Thoits, P. A. (1981). Undesirable life events and psychological distress: A problem of operational confounding. *American Sociological Review*, 46, 97-109.
- Turner, R. J., & Avison, W. R. (1992). Innovations in the measurement of life stress: Crisis theory and the significance of event resolution. *Journal of Health and Social Behavior*, 33, 36-50.
- Young, T. K. (1994). *The health of Native Americans: Toward a biocultural epidemiology*. New York: Oxford University Press.

Article accepted December 10, 2002.

Elizabeth E. Chapleski is an associate professor of research at Wayne State University's Institute of Gerontology. She is also coordinator of the nonprofit sector studies in the Department of Interdisciplinary Studies in the College of Urban, Labor and Metropolitan Affairs at Wayne State University. Her research interests are American Indian elders and families, minority elders, and spirituality in aging. Recent publications include (with Deborah D. Jackson) "Not Traditional, Not Assimilated: Elderly American Indians and the Notion of Cohort" in the Journal of Cross Cultural Gerontology and (with J. Sobek and C. A. Fisher) "Long Term Care Preferences and Attitudes Among Great Lakes American Indian Families: Cultural Context Matters" in the Journal of Long Term Home Health Care.

Richard Kaczynski is an assistant professor at the Department of Community Medicine, Wayne State University, Detroit. His research interests focus on statistical analysis and methodology, and he is currently doing research in the areas including gerontology, diabetes education, substance abuse treatment, and criminal justice. He co-edited the June 2003 issue of Seminars in Orthodontics. Other recent publications include (with V. Pangrazio-Kulbersh, J. L. Berger, D. S. Chermak, E. S. Simon, and A. Haerian) "Treatment Effects of the Mandibular Anterior Repositioning Appliance on Patients With Class II Malocclusion" in the American Journal of Orthodontics and Dentofacial Orthopaedics and (with M. Andersen, J. Paliwoda, C. Harris, H. Reid, C. Weber, E. Schoener, C. Madeja, and C. Trent) "Integrating Medical and Substance Abuse Treatment for Addicts Living With HIV/AIDS: Evidence-Based Nursing Practice Model" in the American Journal of Drug and Alcohol Abuse.

Sherry A. Gerbi received her master's degree in psychology from Wayne State University and was in the Graduate Research Training Program at the Institute of Gerontology.

Peter A. Lichtenberg, Ph.D., is the director of the Institute of Gerontology and professor of psychology, psychiatry and behavioral neuroscience and physical medicine and rehabilitation at Wayne State University. Dr. Lichtenberg received his Ph.D. in clinical psychology at Purdue University. His particular areas of research include mental health in long-term care, geriatric depression, and the early detection and management of Alzheimer's disease. Recent publications include (with L. J. Ficker, S. E. MacNeill, and A. L. Bank) "Cognition and Perceived Social Support Among Live-Alone Urban Elders" in the Journal of Applied Gerontology and (with D. L. Murman and A. M. Mellow) Handbook of Dementia: Psychological, Neurological and Psychiatric Perspectives.