

# Does Growing Old Increase the Risk for Depression?

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***Objective:** Most research examining age as a risk factor for depression has been based on cross-sectional data. To investigate the effect of aging on rates of depression prospectively, the authors used two waves of data from a panel study of community residents 50 years old and older. **Method:** Data on symptoms of major depressive episodes were examined for the 1994 and 1995 cohorts of the Alameda County Study. The authors examined age, gender, marital status, education, financial strain, chronic medical conditions, functional impairment, cognitive problems, life events, neighborhood problems, social isolation, and social support. Depression was measured with 12 items covering DSM-IV diagnostic criteria for major depressive episodes. **Results:** Point prevalence of major depressive episodes was 8.7% in 1994 and 9.0% in 1995. Among the subjects 60 years old and older, there was a tendency toward higher prevalence in 1995. The highest prevalence rates in 1994 and in 1995 were among those 80 years old and older. Subjects who were depressed in 1994 were at greater risk for depression in 1995. When the effects of age and other psychosocial risk factors in 1994 were controlled, there were no significant age effects on depression in 1995. Multivariate analyses demonstrated that the initial age effects were due mainly to chronic health problems and functional impairment. Gender, chronic health conditions, problems with activities of daily living, cognitive problems, neighborhood problems, and social isolation in 1994 all were significant predictors of depression in 1995. **Conclusions:** Healthy, normally functioning older adults are at no greater risk for depression than younger adults. What seem to be age-related effects on depression are attributable to physical health problems and related disability.*

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Does growing old increase the risk of developing depression? The answer to this question remains unclear. Community-based epidemiologic studies have reported rates of clinical depression in samples of older adults in the range of 1%–16%. As in the case for most disorders, prevalence rates for depression vary considerably depending on the sample studied and methods used. For example, Gurling et al. (1) noted that studies using DSM-III-R diagnostic criteria generally yielded lower prevalence rates for major depressive disorder in the elderly. Studies that focused on symptoms of depression reported much higher prevalence rates than did studies using diagnostic procedures. Studies using the National Institute of Mental Health Diagnostic Interview Schedule (DIS) and DSM criteria have tended to generate prevalence rates for major depressive disorder

on the order of 1%–3% (2–4), whereas studies using instruments designed specifically for use with the elderly have reported prevalence rates of 11%–16% for elderly subjects who have substantial depressive symptoms but who do not meet diagnostic criteria for major depression (5–7).

There actually have been few studies of depression among the very elderly, even though this segment of the population is one of the fastest growing. The few studies that have been done report disparate prevalence rates for major depression, ranging from less than 3% to more than 12% (1, 8).

Snowdon (9) commented on this divergence of findings from epidemiologic investigations in 1990; he noted that the results of prevalence surveys of depression among the elderly can be grouped into low prevalence studies and high prevalence studies on the basis of measurement strategy. Studies that used the DIS and/or DSM criteria yielded much lower rates of depression than did those using other procedures. Snowdon argued that dementia, disability, physical illness, bereavement, loss of independence and security, and suicide all are much more common in old age; therefore, prevalence of depression should increase as well. However, others

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have pointed out that the elderly may experience many of the symptoms of depression but not at the threshold required to meet diagnostic criteria (10, 11).

Snowdon's points are well-taken, and few probably would disagree that increasing age and increasing health problems result in an increased risk for depression, but does aging per se, independent of declining health and functioning, increase the risk for depression? The answer to this question, we submit, is No. We base this conclusion on a small but growing number of studies reporting that what seem to be age-related effects on depression are the result of other risk factors, particularly physical health problems and related disability (12-15). In a particularly insightful paper, Lewinsohn et al. (16) reported that the correlates of depression were not part of the aging pattern. They defined the aging pattern primarily by negative changes in psychophysiological and neuropsychological functioning; these changes in turn were not associated with depression. Such findings suggest that healthy, normally functioning older adults are not at greater risk for depression than younger adults.

None of the studies cited here, however, were based on longitudinal or prospective data. As one of us (R.E.R.) has noted elsewhere (17), factors related to higher prevalence actually may be related more to duration effects than to etiologic effects. That is, the factors sustain the illness rather than cause it. The only solution to this dilemma is to assess the relative contributions of putative risk factors on incident cases contrasted with prevalent cases.

The mental and physical health of a community sample in Alameda County, California, has been studied for more than 28 years. In 1994, a fourth wave of data was collected on subjects 46-102 years of age. As part of this follow-up study, data on major depression defined according to DSM-III-R were obtained. In addition, extensive data on putative risk factors were collected, including data on cognitive impairment, social functioning, and physical functioning. In 1995, a follow-up survey was conducted. This permits reexamination of the effects of age on depression based on prospective data.

Using data from the 1994 and 1995 surveys, we estimated the prevalence of symptoms of DSM-IV major depression in the Alameda County Study cohort and examined associated risk factors, particularly the effects of age, in a group of subjects 50 years old and older. We examined age trends in major depression as well as the contribution of the following putative risk factors: gender, marital status, socioeconomic status, physical health and disability, life stress, and social support.

## METHOD

### Sample

The sample was drawn from the Alameda County Study, a longitudinal study of physical and mental health and mortality that has

followed 6,928 subjects selected in 1965 to represent the adult non-institutionalized population of Alameda County, California. Subjects were followed regardless of subsequent location or disability status. Survivors have been interviewed in 1974, 1983 (50% sample), and 1994; response rates have been 85%, 87%, and 93%, respectively. Detailed design and sampling procedures for this study have been reported elsewhere (18, 19).

The 1994 follow-up sample included 2,730 subjects aged 46-102 who responded to the survey. The 1994 sample is used as baseline because the full array of mental health measures was asked only in this wave. In 1995, all those who completed a questionnaire in 1994 were recontacted. Of these 1994 respondents, 2,661 able to participate were found, and 2,570 (97%) of these completed a brief version of the 1994 questionnaire that focused primarily on health and functional status, including mental health. The analyses reported here are based on a subsample of 2,219 respondents who were 50 years or older in 1994, had complete data on the measures of depression and the risk factor measures in 1994 and 1995, and were married, widowed, divorced, or separated (a very small number of subjects who had never married were excluded).

The mean age of the 2,219 subjects was 64.7 (range=50-95). There were 171 (7.7%) African Americans, 83 (3.7%) Asian Americans, 74 (3.3%) Hispanics, and 32 (1.4%) American Indians in the sample; 970 (43.7%) of the subjects were men.

### Measures

The measure of depression used is a set of 12 items that operationalize the diagnostic symptom criteria for a major depressive episode outlined in DSM-III-R and DSM-IV. The items or symptom queries were adapted from the Primary Care Evaluation of Mental Disorders (PRIME-MD) mood disorders section (20). The items are presented in appendix 1. The time frame for these symptoms was almost every day for the last 2 weeks. The measure can be used to estimate prevalence of major depressive episode or can be used as a scale. The internal consistency (standardized Cronbach's alpha) of the scale was 0.80 in this sample.

The risk factors (correlates) examined were age, gender, marital status, education, financial problems, chronic medical conditions, problems with normal daily activities, cognitive difficulties, life events, neighborhood problems, social isolation, and social support. These factors can be categorized as status attributes, psychosocial resources, and stressors (17, 21) and are widely considered to be important determinants of risk for depression.

We asked about the occurrence of 12 chronic medical conditions (heart trouble, high blood pressure, asthma, chronic bronchitis, arthritis, emphysema, diabetes, stroke, cancer, cataracts, osteoporosis, and circulatory problems) in the last 12 months. We also asked if the respondent had difficulty with usual activities of daily living: 1) walking across small room, 2) bathing, 3) brushing hair or washing face, 4) eating, 5) dressing, 6) moving from bed to a chair, and 7) using the toilet. Any difficulty on any item was classified as having a problem with activities of daily living.

Cognitive functioning was assessed by asking how often in the past 12 months (very often, often, sometimes, rarely, or never) the respondent had problems in five areas: 1) difficulty remembering things, 2) trouble finding the right word, 3) forgetting where you put something, 4) finding it hard to pay attention, and 5) drifting off in the middle of something. The items are summed into a scale and divided into no trouble (score of 0 or 1), some trouble (score of 2-4), and a lot of trouble (score of 5 or more).

We asked subjects whether 17 life events had occurred in the current or previous year (1993). The total number of recent events were summed. Six questions were asked about how much of a problem each of the following was in the neighborhood: 1) crime, 2) traffic, 3) noise, 4) trash and litter, 5) lighting at night, and 6) public transportation. Each item was rated as very serious, somewhat serious, minor, or no problem. The number of problems was counted and divided into categories of no problem (score of 0), some problems (score of 1), and serious problems (score of 2 or more).

Our measure of isolation included six items: 1) How many friends can you confide in? 2) How many relatives do you feel close to? 3) How

TABLE 1. Relation of Age in 1994 to Prevalence of Depression in 1994 and 1995 for 2,219 Community Residents Who Were 50 Years Old or Older in 1994<sup>a</sup>

Age in 1994 (years)	Prevalence in 1994		Prevalence in 1995	
	Point Estimate	95% Confidence Interval	Point Estimate	95% Confidence Interval
50-59 (N=829)	8.08	6.22-9.94	7.36	5.58-9.14
60-69 (N=653)	6.89	4.95-8.83	7.50	5.48-9.52
70-79 (N=540)	10.37	7.80-12.94	11.48	8.79-14.17
≥80 (N=197)	12.69	8.04-17.34	13.71	8.91-18.51
Overall	8.70	7.53-9.87	8.97	7.78-10.16

<sup>a</sup>Subjects who were never married were excluded from study.

many friends and relatives do you see at least once a month? 4) How many friends and relatives can you turn to for help? 5) How many friends and relatives can you talk to about personal measures? 6) How many friends and relatives do you have whom you can ask for advice or information? A response of three or fewer on each question was considered an isolated response. The number of isolated responses were summed and coded into low (score of 0), medium (score of 1 or 2), and high social isolation (score of 3 or more). Our measure of social support asked how often the following were available: 1) someone to take you to the doctor, 2) someone to prepare meals for you, 3) someone to help you with your daily chores if you are sick, and 4) someone to loan you money if you need it. Each question was scored from 0 (none of the time) to 4 (all of the time) and then summed into a total scale ( $\alpha=0.90$ ). The scale was divided into low, medium, and high support.

## RESULTS

As can be seen in table 1, there were no dramatic changes in prevalence of depression between 1994 and 1995. Among subjects 60 years old and older, there was a slight tendency toward increased prevalence in 1995. This apparent stability in terms of panel prevalence extends to changes in individual depression status. Over 86% of the panel was not depressed in either 1994 or 1995. By contrast, only 4% were depressed in both 1994 and 1995, and 5.4% of those who were not depressed in 1994 were depressed in 1995. On the other hand, 46% of those depressed in 1994 were still depressed in 1995. This pattern was replicated, with minor variations, across all four age groups.

Table 2 presents two sets of analyses examining the relation of 1994 risk factor status to 1995 depression status; one includes depression in 1994 as a risk factor for depression in 1995 and the other excludes the subjects who were depressed in 1994.

Concerning age, when the subjects who were depressed in 1994 were retained in the 1994-1995 panel, both those 70-79 years old and those 80 years old or older were at increased risk for depression in 1995. When the subjects who were depressed in 1994 were excluded, only subjects who were 80 years old or older were at elevated risk for depression (table 2).

The risk factor profiles in table 2 reveal a number of factors that significantly predicted 1995 depression, whether subjects who were depressed in 1994 were excluded or included: gender, less education, financial

problems, chronic medical conditions, problems with activities of daily living, cognitive problems, three or more recent life events, neighborhood problems, and social isolation. Lack of social support did not predict prevalence of new cases of depression, although the trend suggested increased risk. Marital status did not predict depression in either set of analyses.

Subjects who were depressed in 1994 clearly were at increased risk for depression in 1995. In fact, the strongest predictor of depression status in 1995 was depression status in 1994. No other risk factor was even close to the impact of previous depression (table 2).

Table 3 presents a series of six sequential models for the relation between age in 1994 and depression in 1995; these models adjust for the same risk factors examined in table 2. The reference group in all models was the 50-59-year-old group. For subjects 60-69 years old, there was no greater risk for depression, with or without adjustment for covariates. The same was true for those 70-79 years old. However, for those 80 years old or older, there was a significant risk for depression in the crude model, adjusted for gender and marital status, and adjusted for educational level and experiencing financial problems. Beginning with model IV, which added adjustments for chronic medical conditions, problems with activities of daily living, and cognitive problems, there was no significant effect of age on depression for those 80 years old or older. Further adjustment for life events and neighborhood problems (model V) or social isolation and social support (model VI) had essentially no effect. Gender, chronic medical conditions, problems with activities of daily living, cognitive problems, neighborhood problems, and social isolation in 1994 all were significant predictors of depression in 1995 in model VI (data not shown). The odds ratios suggest about a two-fold risk on average, with significance levels ranging from 0.03 to 0.0003.

## DISCUSSION

We found a trend for increased risk for depression with age in both 1994 and 1995. When the subjects who were depressed in 1994 were excluded in 1995, those older than 80 in 1995 were at substantially greater risk for depression. We also found that adjusting for the effects of all other risk factors eliminated all age effects. Examination of the sequential models showed that the initial age effect was almost completely attributable to the joint effects of chronic medical conditions and functional disability.

There have been few community-based, prospective epidemiologic studies of depression in older populations. Kennedy et al. (22) studied an older sample assessed at baseline and again 24 months later with the Center for Epidemiologic Studies Depression Scale. At follow-up, 74.1% had never been depressed, 11.2% were newly depressed, 7.7% were persistently depressed, and 7% were recovered. Social support, life events, and demographic

characteristics did not predict new cases, but increasing disability and declining health accounted for 70% of the variance in the discriminant analysis. Furthermore, a comparison of persistence and remission of depressive symptoms found that advanced age and worsening health were associated with persistent symptoms and that improved health was associated with remission (23).

Newmann et al. (24) followed a sample of women over a 5-year period and identified two different syndromes underlying symptom reporting. A depressive syndrome, more classic in form, showed decreasing levels with increasing age. A depletion syndrome, marked by feelings of enervation and anhedonia, increased with increasing age.

Table 3 reveals that the prevalence of DSM-IV major depressive episodes increased in linear fashion with age in each of the six models. The differences for the subjects 80 years old or older were significantly greater than those for subjects 50-59 years old in the first three models but not in the last three. Thus, we could not confirm the results of Newmann et al.

Women, subjects with financial problems, those with health and disability problems, those who were more socially isolated, and those living in problematic neighborhoods in 1994 were all at greater risk for depression in 1995. Marital status in 1994, educational level, and perceived social support did not predict depression status in 1995. Kennedy et al. (23)

found no effect on risk for new cases of depression for social support, income, and marital disruption. They also found no effect for life events, but the base rate was very low.

Thus, our findings and those of Kennedy et al. (23) have been reported by many others using cross-sectional data for both elderly and general community samples (15, 16, 25). In general, previous research has found women, the

TABLE 2. Relation of Psychosocial Risk Factors in 1994 to DSM-III-R Symptoms of Major Depression<sup>a</sup> in 1995 for Community Residents Who Were 50 Years Old or Older in 1994

Risk Factor in 1994	Depression in 1995 Among All Subjects (N=2,219)			Depression in 1995 Among All Subjects Except Those Who Were Depressed in 1994 (N=2,026)		
	Odds Ratio	95% Confidence Interval	p	Odds Ratio	95% Confidence Interval	p
Age (years)						
50-59	1.00			1.00		
60-69	1.02	0.69-1.51	0.92	1.07	0.65-1.78	0.79
70-79	1.63	1.13-2.37	0.01	1.42	0.85-2.34	0.18
≥80	2.00	1.23-3.24	0.05	2.35	1.28-2.60	0.006
Gender						
Male	1.00			1.00		
Female	1.63	1.20-2.72	0.002	1.71	1.14-2.57	0.01
Marital status						
Married	1.00			1.00		
Divorced, separated, or widowed	1.24	0.90-1.70	0.19	1.08	0.70-1.67	0.72
Education						
≥12 years	1.00			1.00		
<12 years	2.05	1.45-2.89	<0.0001	1.56	0.96-2.53	0.07
Financial problems						
None	1.00			1.00		
Any	2.53	1.83-3.51	<0.0001	1.83	1.15-2.92	0.01
Chronic medical conditions						
None	1.00			1.00		
1	2.05	1.35-3.11	0.0008	1.65	0.99-2.75	0.05
≥2	4.47	3.06-6.52	<0.0001	2.97	1.86-4.75	<0.0001
Activities of daily living						
No problems	1.00			1.00		
Problems	6.00	4.26-8.44	<0.0001	3.35	2.02-5.57	<0.0001
Cognitive problems						
Low	1.00			1.00		
Medium	1.77	1.13-2.76	0.01	1.62	0.95-2.77	0.08
High	5.65	3.60-8.87	<0.0001	3.87	2.19-6.83	<0.0001
Recent life events						
None	1.00			1.00		
1	1.08	0.74-1.57	0.68	1.10	0.67-1.79	0.71
2	0.86	0.55-1.35	0.51	0.82	0.44-1.50	0.51
≥3	1.81	1.22-2.67	0.003	1.78	1.06-2.97	0.03
Neighborhood quality						
No problems	1.00			1.00		
Some problems	1.61	1.10-2.33	0.01	1.63	1.00-2.65	0.05
Serious problems	3.24	2.28-4.59	<0.0001	2.85	1.78-4.56	<0.0001
Social isolation						
Low (score of 0)	1.00			1.00		
Medium (score of 1 or 2)	1.55	1.05-2.28	0.03	1.73	1.06-2.81	0.03
High (score of ≥3)	3.07	2.15-4.40	<0.0001	2.51	1.55-4.06	0.0002
Social support						
High (score of ≥16)	1.00			1.00		
Moderate (score of 10-15)	1.45	1.03-2.05	0.04	1.21	0.86-2.36	0.16
Low (score of 0-9)	1.98	1.36-2.88	0.0003	1.43	0.78-1.88	0.39
Depression						
Not depressed	1.00			1.00		
Depressed	14.91	10.59-20.99	<0.0001			

<sup>a</sup>Human Population Laboratory measure.

less educated, the unmarried, those with health and disability problems, those with financial problems, those with more negative life events, and those with less social support and greater isolation to be at greater risk for depression. Indeed, in an earlier analysis of the 1965 and 1974 Alameda County surveys, using a different measure of depression, we found patterns of association similar to those generally reported by others (21).

TABLE 3. Sequential Logistic Regression Models Showing Relation Between Age in 1994 and Depression in 1995, With Adjustment for 1994 Risk Factors, for 2,026 Community Residents Who Were 50 Years Old or Older in 1994<sup>a</sup>

Model	Age Group (years)								
	60-69			70-79			≥80		
	Odds Ratio	95% Confidence Interval	p	Odds Ratio	95% Confidence Interval	p	Odds Ratio	95% Confidence Interval	p
I: crude (unadjusted)	1.07	0.65-1.78	0.79	1.42	0.85-2.34	0.18	2.35	1.28-2.60	0.006
II: model I adjusted for gender and marital status	1.09	0.65-1.81	0.74	1.49	0.89-2.47	0.13	2.46	1.48-4.09	0.004
III: model II plus adjustments for education and financial difficulties	1.13	0.68-1.88	0.64	1.58	0.94-2.66	0.09	2.50	1.29-4.82	0.006
IV: model III plus adjustments for chronic medical conditions and activities of daily living and cognitive problems	0.93	0.54-1.57	0.77	1.03	0.61-1.76	0.91	1.30	0.63-2.62	0.48
V: model IV plus adjustments for life events and neighborhood quality	0.95	0.55-1.62	0.84	1.08	0.60-1.92	0.80	1.45	0.70-2.98	0.32
VI: model V plus adjustments for social isolation and social support	0.98	0.57-1.68	0.93	1.08	0.60-1.94	0.79	1.42	0.68-2.94	0.35

<sup>a</sup>Excludes subjects who were depressed in 1994.

Our current results support the observation that depression is a chronic disorder. Subjects who were depressed in 1994 were almost 15 times as likely to be depressed in 1995 as those who were not depressed in 1994 (table 2). No other effect size came close. The next largest odds ratio was for problems with activities of daily living (table 2). In an earlier analysis of change between 1965 and 1974 in this cohort (21), we found the same pattern using a different measure of depression.

The value of prospective, or longitudinal, data is evident in the comparison of the two sets of odds ratios presented in table 2. With only two exceptions (age and gender), the odds ratios were larger when the subjects who were depressed in 1994 were not excluded. For some items (chronic medical conditions, activities of daily living, and cognitive problems), the differences were substantial. This demonstrates that prevalence at any given point—the result of incidence plus duration—is in large part due to the ongoing relation of chronic health problems to depression. Kennedy et al. (23) reported that persistence of depression is largely accounted for by worsening health, whereas remission was associated with improved health.

Overall, 8.7% of our sample met DSM-IV symptom criteria in 1994 for a major depressive episode in the past 2 weeks, and 9% did so in 1995 (table 1). The prevalence was 12.7% in 1994 and 13.7% in 1995 for those 80 years old or older. Henderson et al. (26) reported that seven studies using DSM criteria for major depression among the elderly found rates ranging from a low of 0.7% to a high of 15.5%. The high rate was found in a study of subjects 80 years old or older by Kay et al. (5); none of the other six studies reported prevalence rates above 2%. Gurling et al. (1) reported that the prevalence of DSM-III-R major depression in an English sample of subjects 77 years old or older was 2.4%. Skoog et al. (8) reported that the prevalence of DSM-III-R major depression in a Swedish sample of 85-year-olds was 7.7%. Kivela et al. (27) reported rates of DSM-III major depression of 2.6% for men and 4.5%

for women in a Finnish sample of subjects who were 60 years old and older. Blazer and Williams (2) reported prevalence rates of 14.7% for depressive symptoms and 1.8% for DSM-III depressive disorder in a community sample 65 years old and older. Blazer et al. (10) screened 1,300 adults 60 years old or older and found, for the 27% reporting depressive symptoms, that 19% had mild dysphoria, 4% symptomatic depression, 2% dysthymia, 1.2% a mixed depressive and anxiety syndrome, and 0.8% major depression. Thus, our rates are similar to those reported by Kay et al. (5) but considerably higher than in most studies.

Our measure includes all of the symptoms of a major depressive episode as well as the duration criterion of almost every day for the past 2 weeks (DSM-III-R, p. 327). The data are self-report, however, and we were not able to ascertain whether the depression was the result of drugs or organic disease or whether the depression was due to bereavement. However, research on the efficacy of bereavement as an exclusionary criterion (28) suggests that the concept is of little help in clarifying the course and significance of depressive episodes subsequent to widowhood or in defining the boundaries of major depression. Since our data are based on self-report, we also were not able to exclude symptoms of depression due to a mixed episode or the presence of physiological effects due to drugs or a general medical condition, nor were we able to determine whether symptoms caused clinically significant distress or impairment (DSM-III-R and DSM-IV). Therefore, our prevalence rates are higher than would be the case if clinical diagnoses had been made on the basis of structured psychiatric interviews with appropriate probes for exclusions.

Newmann (29) has argued that symptom scales may overestimate depression among older individuals because they do not permit control for other, more delimited forms of distress that inflate their depression scores. Conversely, clinical diagnoses may underestimate depression among older individuals because inclu-

sionary and exclusionary diagnostic criteria assessing severity omit substantial proportions of older populations. Although we think the hypotheses about screening scales and age may be tenable, we would argue that the clinical diagnosis bias argument is almost certainly true and has been noted by others (Burvill [30], Kermis [31], and Snowdon [9], for example). Thus, use of more inclusive DSM symptom criteria should result in higher prevalence rates, and that is exactly what we found.

Research by Knäuper and Wittchen (32) suggests that when structured instruments such as the DIS are used, the finding of lower prevalence of clinical depression is in part a function of a heuristic strategy in which respondents attribute depressive experiences to physical illness to simplify complex answering processes when they have insufficient memory capacity to cope with them. This is particularly true of older subjects presented with conditional or branching probes that often stem from queries about symptoms of depression. Hasin and Link (33) also reported that older people are less likely to recognize and label symptoms of major depression as psychological or emotional problems than are younger people. Merikangas et al. (unpublished 1984 paper) reported that older individuals also are less likely to report episodes of major depression in their relatives. Thus, it seems that older people generally are less likely to endorse queries about depression.

As we have noted elsewhere (21), we do not have data on incidence per se in the Alameda County Study. In the analyses presented, we have information on symptoms of depression at two points in time, but we have no information on changes in depressive status during the intervening 12 months. Thus, we have no data on recovery and relapse during the interval between the two assessments, or on how many subjects at time 2 were cases of first incidence.

## CONCLUSIONS

Our data on DSM symptoms of major depression lead us to conclude that increasing age is not associated with increased depression among people 50 years of age and older. Our results also suggest that what seem to be age-related effects on depression are the result of other risk factors, particularly physical health problems and related disability. Our results corroborate those of other researchers who found that age per se is not a risk factor for depression, outside of the effect of other risk factors (12, 13, 15, 22). In a particularly insightful paper, Lewinsohn et al. (16) reported that the correlates of depression were not part of the aging pattern, which they defined primarily by negative changes in psychophysiological and neuropsychological functioning. These changes were not associated with depression. The implications seem clear: healthy, normally functioning older adults are at no greater risk for depression than are younger adults. This is a conclusion based on epidemiologic evidence. That is, age does not appear to be a direct cause of depression, out-

side of the contributions of other putative risk factors. This is not to argue that the point prevalence of depression does not increase with age. On the contrary, there is abundant evidence for increased depression as adults grow older (9, 25, 34), including an age trend in the data presented here.

Another conclusion suggested by our results is that the risk factor profiles for depression in this sample of adults 50 years old and older are comparable to those of younger adults (21) and even adolescents (35). One implication of this finding, from a public health perspective, is that factors increasing the risk for depression over the lifespan are rather stable in terms of the domains represented. As a result, generalized intervention strategies that target common risk factors across the lifespan may be possible. For example, if physical health, disability, and social isolation account for higher rates of depression among the elderly, then modification of these factors could lower the rates of depression among the elderly. Rowe and Kahn (36) have argued just this point, noting that such risk factors can be modified by diet, exercise, change in personal health habits, and improving the social support and financial resources of older adults. Intervention strategies that have as their primary goal maintaining health and preventing impairment and disability may prove to have powerful secondary benefits: reduction in the prevalence and impact of depression.

## APPENDIX 1. Symptoms in the Measure of DSM-III-R Major Depression of the Human Population Laboratory, California Department of Health Services

- Feeling sad, blue, or depressed
- Loss of interest or pleasure in most things
- Feeling tired out or low on energy most of the time
- Loss of appetite or weight loss
- Overeating or weight gain
- Trouble falling asleep or staying asleep
- Sleeping too much
- More trouble than usual concentrating on things
- Feeling down on yourself, no good, or worthless
- Being so fidgety or restless that you moved around a lot more than usual
- Moved or spoke so slowly that other people could have noticed
- Thought about death more than usual, either your own, someone else's, or death in general

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