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Institute on **A**ging

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Social Factors and Illness

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I hope to accomplish two things in this talk. First, I will present my view of the emerging theoretical model of the primary relationships among social factors and health. Second, I will provide examples from my own research that are intended to both document the empirical validity of the theoretical model and provide a broad overview of the powerful role that social factors play in the onset, course, and outcome of health. For the most part, I will concentrate on the relationships between social factors and health in late life. Some of the most interesting findings in this field, however, concern age differences in the relationships between social factors and health. I will highlight some of those patterns as well.

Social Factors Hypothesized to Affect Health

Slowly, but surely, consensus is emerging concerning the social factors causally related to health and illness—and the relationships among those factors. In my view, six classes of social factors have been most frequently and successfully examined in previous research. Figure 1 provides an overview of these classes of variables. Note that the classes are numbered, with each successive class representing an increasingly proximal cause of health or illness.

Stage 1 consists of basic demographic variables that are included in virtually all studies of the social precursors of illness. Age, race, and sex are the most commonly examined demographic variables. Less frequently, urban-rural residence is examined as a predictor of health. Demographic factors provide information about the social-structural contexts within which health is protected or put at risk. Although there is consensus about the importance of demographic variables, the causal mechanisms that underlie relationships between them and illness remain unclear. One possibility is that demographic variables are proxies for more proximate social mechanisms—and there is evidence supporting that hypothesis. But it also is likely that the effects of some demographic variables are exerted through biological and psychological mechanisms.

Social status comprises the second stage of the model. Strong relationships between social status and health are well established in modern societies, although the magnitudes of these relationships vary. The primary indicators of social status examined in research to date are education, income, and, to a lesser degree, occupational status. Few studies include measures of financial assets beyond annual income, despite the fact that assets are likely to be especially important for older adults. Again, documentation of an SES gradient in health does not inform us about the causal mechanisms that underlie this relationship.

Social integration is the third stage of the model. I define social integration as the degree to which individuals have formal attachments to social structure. Operationally, social integration is usually defined as a number of social roles or types of structural attachments—such as employee, church member, or club member. Late life may be a strategic context for studying the links between social integration and health because old age is characterized by modest, but demonstrable, losses of the roles upon which social integration rests.

Social stress is the fourth stage of this model of the social precursors of health and illness. The link between stress and health has been a central research focus in the social and clinical sciences for more than three decades. Stress is expected to increase the risk of illness when the demands it generates exceed the capacities of the individual. Current research focuses largely on the differential effects of various forms of stress (both generic forms such as acute vs. chronic and specific stressors such as widowhood and family conflict), the contingencies that determine the conditions under which stress leads to illness, and the mechanisms underlying relationships between stress and health.

Social support comprises the fifth stage of the model. The belief that social relationships can protect us against illness, enhance coping with stress and illness, and improve illness outcomes is a central tenet of social perspectives on health. Social support has proven to be a complex, multidimensional construct. Major dimensions—which also appear to have differential effects on health—include the structural (social network properties) and functional (types and levels of assistance provided by the social network). In addition, the distinction between relatively objective and more subjective parameters of social support has also proved to be important. It may be prudent to note that social support and social integration are related but distinct concepts. Social integration refers to formal ties to social structure. Social support rests on primary relationships in which some degree of intimacy and commitment occurs.

The final stage of the model consists of **coping responses and social-psychological resources**. Individuals respond differently to stress and to illness. People also bring different social-psychological resources to illness situations. Coping has been defined in numerous ways, although most conceptualizations distinguish between direct actions taken to alleviate a problem and more passive, cognitive strategies for “reappraising” the situation. Multiple social-psychological resources have been hypothesized to affect health, with self-esteem, a sense of control, and feelings of mastery or self-efficacy studied most frequently. Coping and social-psychological resources perform two primary functions in studies of social factors and illness. First, they provide a way of taking the proactive efforts of individuals into account—what Thoits (1994) recently termed “the individual as social-psychological activist.” Second, social-psychological resources are hypothesized to mediate the effects of social status, stress, and social support on health.

Before turning to some of the ways I have addressed this model in my own research, a brief discussion about the dependent variables in studies of social factors and health is needed. Health is multidimensional—and several dimensions are relevant to understanding the relationships among social factors, age, and health. One important distinction is between acute and chronic illness. Compared to chronic illnesses, acute conditions tend to have more sudden onset, are resolved more

quickly, and the odds of full or nearly full recovery are much higher. Although older adults suffer acute illnesses at rates similar to younger adults, chronic conditions increase dramatically with age (NCHS, 1992).

The mere presence of a chronic condition tells us little about its implications for quality of life, however. Persons with the same diagnoses (e.g., cancer and arthritis), for example, differ greatly in their ability to perform self-care tasks, enjoy social activities, and perform productive activities. Recognition of this has led to a second relevant distinction between diagnostic and functional health. Diagnostic measures refer to specific diseases; functional measures are based on the ability to perform basic activities of daily life. Measures of functional status are superior to diagnostic variables for examining the consequences of illness and for assessing the status of the population as a whole. Diagnostic measures are preferable when examining the natural history of a disease and for assessing the effects of treatment. It remains unclear which approach is superior when examining social factors as precursors of the onset of illness.

A final and obviously important distinction is that between physical and mental illness. This distinction rests on more than diagnostic issues. Social science research often implies that physical and mental illnesses may differ in the extent to which they are sensitive to, and affected by, social factors. Analogous issues emerge in the clinical sciences where mental illnesses are typically viewed as having a larger psychosocial component than physical morbidities.

Finally, to this point, I have said nothing about the complex methodological issues that haunt those of us who perform research on social factors and health. Because of time limitations, I will give this issue very short shrift. I will briefly note three issues that emerge in nearly every study of the role of social factors in health. First, as implied by the conceptual model, both the direct and indirect effects of social factors are important. Some of the effects of social factors are direct; in other cases, social factors operate indirectly, through other variables. Indirect effects are as important, I believe, as direct effects (see also Link & Phelan, 1995).

Second, social factors impact health not only in the form of main effects, but also interactively. Three interactive hypotheses have been especially prominent in research on social factors and health. (1) The stress-buffering hypothesis posits that social support affects health primarily under conditions of high stress. Its competing hypothesis is that social support has direct benefits for health, regardless of the level of stress. (2) The double-jeopardy hypothesis suggests that old age and membership in racial or ethnic minorities interact to widen health differences between older whites and non-whites. (3) The age-as-moderator hypothesis suggests that the meaning and/or salience of social factors vary across age groups. It is my belief that many age differences in the role that social factors play in health have been underestimated because of failure to test this hypothesis.

Third, and finally, time is an inherent component of the relationships between social factors and health. Illnesses and impairments develop over time and change over time. Social factors exert their effects over time—and it is likely that length of exposure to specific social conditions affects the strength of the relationships between social factors and health. Social factors also change over time—sometimes those changes affect health; sometimes those changes result from illness, with the causal direction the opposite of that posited in the conceptual model. Despite the

importance of time, cross-sectional studies, unfortunately, continue to dominate research on social factors and health.

Selected Research Findings

In the time remaining, I will provide brief summaries of two specific research studies that are intended to be illustrative of my own research and of the importance of examining the role of social factors in health and illness. For ease of presentation, both studies will focus on clinical depression. Beyond that, however, I have selected these studies to represent two very different foci: the first is a study of social factors and the onset of depression; the second examines the role of social factors in recovery from depression.

Study 1: Age, Social Factors, and the Onset of Major Depression

In this longitudinal study, (Figure 2) 10 factors that previous research—and the conceptual model above—suggest may be implicated in the onset of depression are examined. All 10 will be familiar to you, based on discussion of the conceptual model. As is often the case, however, the data set used for this analysis did not include indicators for all six classes of social factors.

The dependent variable in this study is a diagnostic measure of major depression, as defined by the American Psychiatric Association's DSM-III (1980). The Diagnostic Interview Schedule used in this study elicits all the elements needed for a DSM-III diagnosis of major depression: presence of symptoms, their severity, frequency and concurrence, age at onset, and time of most recent symptoms. Structured probes are used to determine whether each symptom was due to physical illness, the effects of alcohol or drugs, or was of psychogenic origin. Only the latter are used in establishing the diagnosis of major depression. To preserve the temporal differentiation of risk factors and disease outcome as firmly as possible, analysis is restricted to major depression with onset within six months of the time two interview.

Five demographic variables were examined: age, sex, race, urban-rural residence, and marital status. Age was retained in continuous form in the main effects model. In tests of interaction, age was divided into three categories: age 18-39, age 40-64, and age 65 and older. Sex, race, and place of residence were dummy variables, with women, African Americans, and urban residents coded 1. Marital status was coded as a set of dummy variables, representing married, widowed, never married, and divorced/separated. In these analyses, divorced/separated is the omitted category. All demographic variables were measured at time one. Additional analyses were performed to determine whether changes in marital status or place of residence between the two interviews were related to the onset of depression. The numbers of respondents reporting these changes were too small to permit stable estimates of these effects.

Education and income were included as measures of social status. Education was measured as years of schooling (range = 0-21). Income was measured using 16 categories ranging from \$1,999 and under to \$50,000 and over. Both education and income were based on reports at the baseline interview.

Two indicators of social stress were available. First, stressful life events were measured using a checklist of 20 events that include family events, work events,

and other types of changes. For each event reported, respondents were asked whether the event was positive or negative. The measure used in these analyses was the number of negative events experienced in the past year (observed range = 0-9; because of skewness, this variable was recoded as 0, 1, 2, 3, 4 or more). Because of this time frame, the life events measure is the only predictor based on time two interviews. Because of the strong established links between physical illness and depression, a measure of physical illness was included as a measure of chronic stress. The measure used represents the number of chronic illnesses reported by the respondent at the first interview (observed range = 0-7; because of skewness, this variable was recoded as 0, 1, 2, 3, 4, 5 or more). Physical illness was measured at time one.

The final independent variable was subjective social support. The data set included measures of four dimensions of social support: size of social network, amount of interaction with network, received instrumental and emotional assistance, and subjective perceptions of the quality of social support available. The time one measure of subjective social support was used in these analyses. Exploratory analyses indicated that other dimensions of social support were less powerful predictors of onset of depression than subjective support—a finding reported in other studies (e.g., Kessler & McLeod, 1985; Krause, 1987).

The data used in these analyses are from an epidemiologic study conducted at Duke University. The geographic area sampled consisted of five counties in north central North Carolina. The sample is about equally split between the one urban and four rural counties. Two stratified random samples of community residents were obtained at baseline: 3,015 persons age 18 and older and an oversample of 906 persons age 60 and older. Two interviews were performed one year apart. The sample size for these analyses is 2,956, which represents the number of respondents who did not qualify for a diagnosis of major depression at time one and who were present for both interviews. Post-stratification weights were used to adjust for attrition related to respondent age, sex, race, and urban/rural residence, adjust for probability of selection within households of different sizes, and down-weight the elderly oversample to their proportion in the population.

Statistical analyses were performed using logistic regression because the dependent variable is dichotomous and badly skewed. Antilogged coefficients are presented for ease of interpretation. The analyses were duplicated using Cox regression which can be superior to logistic regression when using longitudinal data. Findings did not differ for the two techniques, however. The incidence rates for major depression varied widely across age groups. Rates of major depression during the past six months were 2.14 percent, 2.09 percent, and .69 percent for the young, middle-aged, and older groups, respectively. Most of the independent variables were significantly associated with age also. Subjective social support was the only predictor not associated with age in bivariate analysis. The first logistic regression model estimates the main effects of the risk factors on the onset of major depression. Six of the ten independent variables (see Figure 3) were statistically significant predictors of depression. Age was negatively related to major depression. Women and urban residents were at greater risk of depression. Physical illness and stressful life events increased the odds of depression onset. Subjective social support operated as a protective factor, decreasing the odds of depression onset. Race, education, income, and marital status were not significantly associated with the incidence of depression.

With regard to interactive effects, the stress-buffering hypothesis was not supported in this sample. Tests of age interactions were informative, however. The next table shows the different effects of risk factors across age groups. Three demographic variables—sex, race, and urban-rural residence—were significant predictors of major depression only for respondents age 39 and younger. Two categories of marital status interact with age. Being married has a significant protective effect only for older respondents. Having never married increases the risk of depression only among middle-aged and older respondents. Education and physical illness increase the risk of depression only among young adults. Note, however, that stressful life events increase the odds of depression and subjective social support decreases the odds of depression for all three age groups. Income is not a significant predictor of depression onset, net of education, for any of the age groups. These results suggest that age plays a major role in moderating the effects of social factors on major depression. Several of the social factors viewed as most strongly related to depression are, in fact, significant predictors of illness onset only for young adults (see Figure 4).

Study 2: Age, Social Factors, and Recovery from Major Depression

Medical sociologists have devoted little attention to the topic of social factors and the outcome of illness. I believe that this is a consequential oversight and that social factors are strongly implicated in illness outcome. In this study, my colleagues and I examined the role of social factors in the outcome of major depression. An important component of the study was examination of the role of social factors with relevant clinical factors statistically controlled (see Figure 5).

The sample used in this study was drawn from psychiatric inpatients participating in the Duke University Center for the Study of Depression in Late Life, a multidisciplinary study designed to contrast depression in middle age (35-50 years) and in late life (age 60 and older). All patients were first screened for significant depressive symptoms. When a patient “passed” the screening criteria, a clinical psychologist performed a structured interview to elicit the information needed to establish a diagnosis of major depression. Only patients who qualified for a diagnosis of major depression were enrolled in the study. Follow-up interviews were conducted with study participants 6-32 months after the baseline interview. These analyses are based on the 150 study participants who had complete data at both interviews. In addition, all patients included in the analysis are white. There were only 12 African American patients in the study. Because of the small number, they were deleted from analysis.

The dependent variable is depression at the follow-up interview, as measured by the CES-D, a standardized self-report measure that is well-validated in both community and clinical samples (Radloff, 1977). For the multivariate analyses, the CES-D is analyzed in continuous form. For descriptive analyses, the CES-D was split into two categories—recovered and not recovered—based on its established clinical cut point.

Seven categories of independent variables were included in the analyses. Not all of the categories consist of social factors; several types of clinical variables also were included so that the effects of selected social factors could be examined with potential clinical confounders statistically controlled.

Three demographic variables were examined: age, sex, and marital status. Because of the sample design, age was coded as a dichotomous variable in which participants 35-50 were coded 0 and those age 60 and older were coded 1. Sex was also a dummy variable, with women coded 1. Marital status was coded as a set of dummy variables: married, widowed, divorced/separated, and never married. In these analyses, married was the omitted category.

The data base included three measures of psychiatric history: presence versus absence of family history of suicide, family history of mental disorder, and previous episode(s) of major depression.

Another category of predictors was clinical features of the index episode. Three features were examined as potential predictors of depressive status at time two: duration of the depressive episode prior to baseline interview, presence versus absence of major depression with melancholia, and baseline CES-D score. The two latter variables are indicators of disease severity. In addition, in the multivariate analyses, we controlled on baseline CES-D scores to highlight the effects of other predictors on changes in depressive symptoms.

The next category of predictors is psychiatric co-morbidity. To determine whether co-existing psychiatric conditions decreased the likelihood of recovery, we examined the presence versus absence of three other DSM-III disorders: dysthymia, alcohol abuse or dependence, and generalized anxiety disorder. The last two are at least somewhat self-evident. Dysthymia is a long-term personality syndrome of chronic mild depression—that is, depression that is clinically significant, but not sufficiently severe to qualify for a diagnosis of major depression. We also examined the impact of the presence versus absence of mild cognitive impairment on outcome of depression.

Life events is an independent variable of importance from a social science perspective. The same life events checklist was used in this study as was described for the study of the onset of major depression. For the purposes of this analysis, two measures of life events were examined: the number of positive events experienced in the year before the baseline interview and the number of negative events experienced in the year before the baseline interview. Judgments of positive versus negative impact were based on respondents' self-reports.

Measures of social support also were included as a category of variables potentially related to recovery from depression. The Duke Social Support Index (Landerman et al., 1989) was used in both this study and the study of onset of major depression. Recall that it generates measures of four social support dimensions: social network size, frequency of interaction with the support network, receipt of emotional and instrumental assistance, and subjective perceptions of support quality. Based on community norms, all four social support measures were dichotomized into “impaired support” and “unimpaired support.” Impaired support was coded 1.

The final predictor is time to follow-up. It is important to note that all the independent variables were measured at baseline, 6-32 months before the follow-up interview. Because of the wide variation in the intervals between the two interviews, time to follow-up was included as a control variable in analysis.

In initial analyses, contingency tables were used to examine the bivariate relationships between the independent variables and outcome. Subsequently, multiple

regression was used to examine the effects of the independent variables on outcome levels of depressive symptoms. Recall that baseline CES-D score is one of the independent variables. Thus, the regression analysis predicts changes in levels of depressive symptoms. Because of time limitations, results of only the multivariate analyses will be presented.

Overall, 48 percent of the sample had recovered from their index episodes of depression at the follow-up interview. Persons in the older group were a bit less likely to recover than their younger peers, but this relationship is not statistically significant.

The table (Figure 6) presents results from the residualized change analysis. This model examines only main effects of the independent variables. Results included in the table are restricted to predictors that were significant in the bivariate analysis, as well as age and sex. As shown in the table, there are five significant predictors of changes in depression in the multivariate analysis. As expected, CES-D score at baseline is a significant predictor of CES-D score at follow-up. Only one clinical variable was significantly associated with outcome: persons with co-morbid dysthymia were less likely to experience a decrease in symptoms than those without dysthymia. Three social variables were related to depression at time two, although two of them operated in the opposite direction of what might be expected. First, all types of unmarried respondents were more likely than the married to experience a decrease in symptoms. Second, those persons with smaller networks were more likely to experience a decrease in depression than those with larger networks. I will discuss these counter-intuitive findings below. Subjective social support was also related to changes in depressive symptoms. As expected, perceptions of adequate social support were related to decreases in symptoms. The model explains 31 percent of the variance in follow-up CES-D scores, which is highly significant. We also examined the extent to which social support exerted buffering rather than main effects on the outcome of depression (see Figure 7). Two significant interactions were observed; both included subjective social support. The effects of subjective support were conditional on both age and gender. Interpretation of the interaction terms is facilitated by examining mean CES-D follow-up scores for study participants cross-classified by age and subjective support and by sex and subjective support. The mean CES-D outcome score for middle-aged patients with impaired support is twice as high as that for middle-aged patients with unimpaired support, and as that for older patients regardless of subjective support impairment. In addition, subjective social support is more strongly related to CES-D symptom levels at follow-up for men than for women. Thus, although perceptions of inadequate social support generally predict higher levels of depression at follow-up, they are especially potent predictors of outcome for middle-aged patients and for men.

I will return briefly to the issue of why married respondents and those with larger support networks were less likely than their peers to experience decreases in depression. It is likely that selection effects account for this pattern. That is, the majority of marriages in a random community sample are of high quality and, hence, protective with regard to the onset of depression. That was the pattern observed in our study of the onset of major depression. In contrast, the marriages of depressed patients may be more likely to be of bad quality, resulting in risk rather than protection. We have some empirical support for this. Although the data

base does not include ratings of marital quality, married patients perceived their support networks to be less adequate than unmarried patients. It is also possible, of course, that marriage is a resource with regard to the onset of depression, but a liability for recovery from depression for reasons not yet understood. At any rate, I believe that this study documents the potential importance of social factors in the course and outcome of illness. Indeed, in this study, social factors were considerably more powerful than all the clinical variables that my medical colleagues believed to be of prognostic significance.

Priorities for Future Research

This has been a brief summary of two studies from my ongoing research. Hopefully they provide illustrations not only of my own work, but the state of the field with regard to investigation of the role of social factors in health and illness. In the brief time left, I will provide suggestions for three profitable areas for future research. Let me note that these are three of my personal priorities; many other issues also merit further examination.

Continued Emphasis on the Distinction between Illness Onset and Illness Course. One of the points that I've tried to stress is the critical distinction between illness onset and illness course. These two issues are hopelessly confounded in cross-sectional studies. Moreover, efficient investigation of the two illness processes probably requires very different sampling strategies—with community samples better suited to studies of illness onset and clinical samples superior for studies of illness course. I cannot overemphasize the fact that we know very little about how social factors work in relation to these two processes. For example, we don't know the extent to which social ties protect individuals against the onset of illness, as compared to the degree to which social ties allow us to live longer with our illnesses or recover more quickly and completely. The same logic can be applied to most of the other social factors that appear to be robustly related to morbidity and mortality, including socioeconomic status, acute and chronic stress, social integration, and social-psychological resources.

Increased Attention to Illness Trajectories. Another high priority for future research is taking heterogeneity in the processes of illness onset and course more seriously than in the past. The most promising techniques for this issue seem to rest on the notion of trajectories—a concept most closely identified with the work of Glen Elder and his collaborators, although applications to health have been more recent than in some areas. For example, I am currently examining trajectories of depression over a four-year interval in a clinical sample. Results to date indicate that the trajectory approach yields substantially richer and more fine-grained information than more familiar techniques. An added bonus is that clinicians find analyses of trajectories more meaningful than more traditional analysis strategies. I have never had a clinician tell me that he or she can recall a single patient who resembles the profile generated by regression analysis. When I recently showed some clinicians my initial depiction of trajectories of depression, however, they volunteered that they could think of former patients whose illness course resembled each trajectory.

Length of Exposure. Finally, and perhaps most importantly, social scientists need to pay attention to an issue that epidemiologists have viewed as critical for

decades: length of exposure. Although there now are a number of longitudinal studies of social factors and health, not one of them, including my own research, has come to grips with the issue of length of exposure to social risk factors. With the exception of ascribed statuses, none of the social factors believed to play a fundamental role in illness onset and/or course is stable over time. Levels of social stress vary over time. Social networks and the support they offer wax and wane over the life course and in response to events. Even socioeconomic status is not static, although education tends to remain stable after early adulthood. We remain clueless about how the duration of specific social conditions affects health. In order to understand the effects of length of exposure, life history data about social factors related to health are required. At this point, the state of the art in studies of social factors and illness is analogous to an epidemiologist knowing about current smoking patterns. Epidemiologists know that they must attain data about lifetime exposure to smoking, which they usually measure in pack years. Certainly they are not so naive as to assume that people who smoke cigarettes are at the same risk of disease, regardless of how long they smoked. Social scientists need to learn this lesson and move quickly—the more quickly the better—to develop measurement strategies that generate information about length of exposure to relevant social factors.

In summary, I find the relationships among social factors and health endlessly fascinating. More importantly, health and well-being—or life and death—are strategic areas for demonstrating the powerful effects and consequences of social structures and social processes. There is much to be done and I look forward to making contributions to the field in the foreseeable future.

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Figure 1. SOCIAL PRECURSORS OF ILLNESS

STAGE	NAME	ILLUSTRATIVE INDICATORS
I	Demographic Variables	Age, Sex, Race, Urban-Rural Residence
II	Social Status	Education, Income, Occupation
III	Social Integration	Number of Social Roles/Attachments
IV	Social Stress	Chronic Stressors, Acute Stressors
V	Social Support	Social Network, Emotional Support, Instrumental Support, Perceived Support
VI	Coping Responses and Social Psychological Resources	Active Coping, Cognitive Reappraisal, Self-Esteem, Locus of Control

Figure 2. STUDY 1: AGE, SOCIAL FACTORS, AND THE ONSET OF MAJOR DEPRESSION

DEPENDENT VARIABLE

Onset of Major Depression (Incidence)

INDEPENDENT VARIABLES

Demographic Variables

- Age
- Race (Black =1)
- Sex (Women = 1)
- Urban-Rural Residence (Urban =1)
- Marital Status

Social Status

- Education
- Income

Social Stress

- Life Events
- Chronic Physical Illness

Social Support

- Subjective Perception of Support Adequacy

Figure 3. LOGISTIC REGRESSION ANALYSIS OF ONSET OF MAJOR DEPRESSION

Independent Variable	Odds Ratio
Age	.96**
Gender (Women =1)	1.36**
Race (Black -1)	1.04
Place of Residence (Urban =1)	1.29*
Married	.98
Widowed	1.01
Never Married	1.03
Education	.98
Income	.99
Physical Illness	1.13*
Stressful Life Events	1.16**
Subjective Social Support	.93**

*p≤ .05 **p≤ .01

Figure 4. LOGISTIC REGRESSION ANALYSIS OF ONSET OF MAJOR DEPRESSION WITHIN AGE GROUPS

Independent Variable	18-39	40-64	65+
Gender (Women = 1)	1.41**	1.02	1.09
Race (Black = 1)	1.13*	1.01	.98
Place of Residence (Urban = 1)	1.34**	1.06	.92**
Widowed	a	1.00	1.01
Never Married	1.02	1.14*	1.16*
Education	.94**	.97	.97
Income	.99	.99	.98
Physical Illness	1.17**	1.06	1.04
Stressful Life Events	1.19**	1.21**	1.14*
Subjective Social Support	.92**	.94**	.94**

*p≤ .05 **p≤ .01

^aToo few widows in youngest age group to permit stable estimate.

Figure 5. STUDY 2: AGE, SOCIAL FACTORS, AND OUTCOME OF MAJOR DEPRESSION DEPENDENT VARIABLE

Depressive Symptoms at Time Two (CES-D)

INDEPENDENT VARIABLES

Demographic Variables

- Age
- Sex (Women =1)
- Marital Status

Psychiatric History

- Family History of Suicide
- Family History of Mental Illness
- Prior Episodes of Major Depression

Clinical Features of Index Episode

- Duration of Episode Prior to Interview
- Major Depression Melancholia
- Baseline Depressive Symptoms (CES-D)

Psychiatric Co-morbidity

- Dysthymia
- Alcohol Abuse and/or Dependence
- Generalized Anxiety Disorder
- Cognitive Impairment (mild)

Social Stress

- Positive Events
- Negative Events

Social Support

- Social Network size
- Frequency of Social Interaction
- Received Emotional and Instrumental Assistance
- Subjective Social Support

Time to Follow-Up

- Months between Time One and Time Two Interviews

Fig. 6. RESIDUALIZED CHANGE ANALYSIS

Independent Variable	b	B
Baseline CES-D Score	0.32	0.26*
Gender (Women = 1)	2.44	0.07
Age (60 and Older =1)	0.98	0.03
Widowed	-8.43	-0.14**
Divorced/Separated	-7.23	-0.14**
Never Married	-10.66	-0.13*
Dysthymia	5.98	0.18*
Negative Life Events	-0.04	-0.00
Social Network (1 = impaired)	-7.86	-0.24**
Subjective Social Support (1 = impaired)	8.88	0.20*
Intercept	6.12	
R2	0.31**	

*p< .05 **p< .01

Fig. 7. MEAN CES-D SCORES AT TIME TWO FOR AGE AND GENDER BY SUBJECTIVE SOCIAL SUPPORT

Subgroup	Mean CES-D at Follow-Up
Middle-Aged, Impaired Subjective Support	36.11
Middle-Aged, Unimpaired Subjective Support	16.69
Old, Impaired Subjective Support	16.40
Old, Unimpaired Subjective Support	17.03
Men, Impaired Subjective Support	39.30
Men, Unimpaired Subjective Support	13.02
Women, Impaired Subjective Support	26.08
Women, Unimpaired Subjective Support	19.54

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