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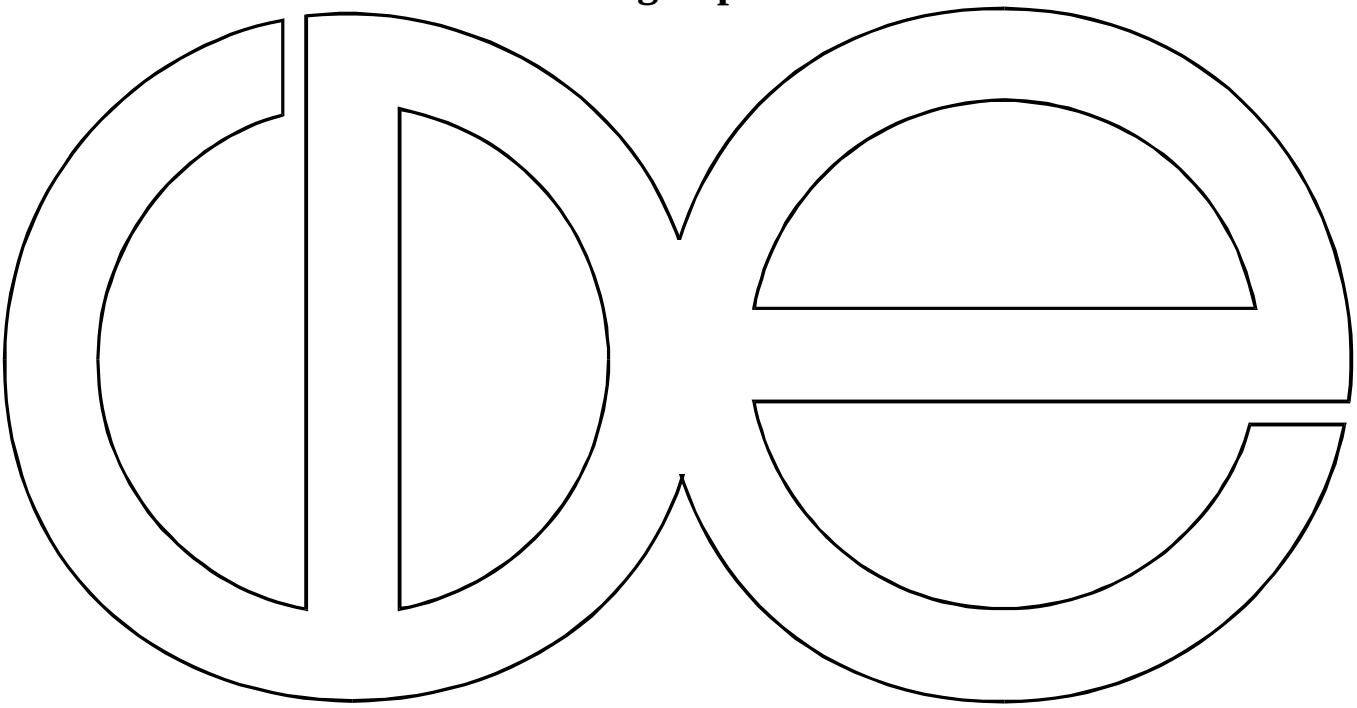

Socioeconomic Status and Depression in Life-Course Perspective

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Abstract

The overrepresentation of depression in the lower socioeconomic strata (SES) suggests that the structured arrangements of society organize, in part, psychologically-impairing experiences and processes. To date investigations into the mechanisms that link SES and depression have proceeded without aid of a life-course perspective, so that little is known about the ways in which the influence of socially-structured experiences and processes vary through the phases of life. In this study we draw on nationally representative data from the National Comorbidity Survey and the Work, Family, and Well-Being Study, to examine the changing influence of educational attainment and household income on depression throughout the entire adult life course. Findings indicate that the association between depression and these socioeconomic indicators strengthens significantly through the phases of adulthood. Further, the mechanisms that underlie this association are age-graded in their influence: while economic strains mediate the relationship between SES and depression to a similar degree through early, middle, and late adulthood, both physical health problems and coping resources exert a greater mediating influence at more advanced stages of the life course. These results underscore the necessity for a more complete integration of insights from the stress paradigm and the life course perspective.

The overrepresentation of depression in the lower socioeconomic strata is of sociological interest because it tells us much about social arrangements of society and their implications for individual well-being (Pearlin 1989). Investigations into the association between socioeconomic status (SES) and depression provide more support for the "causation" hypothesis, which states that adversities linked to SES foster depression, than the competing "selection" hypothesis, which states that people with depression fall into the lower social strata (Miech et al. 1998; Dohrenwend et al. 1992; Link, Lennon, and Dohrenwend 1993; Wheaton 1978). Accordingly, depression can point to specific mechanisms through which social structure influences well-being, an analytical strategy employed by hundreds of recent studies (reviewed in Thoits 1995). However, most investigations that focus on the relationship between SES and depression are based on the assumption that the overall association, the intervening mechanisms that account for it, and the relative influence of causation and selection are age-invariant across the many decades of adulthood (e.g. Thoits 1995; Pearlin 1989; Adler et al. 1994).

In this study we take a life-course approach to the study of SES and depression, an approach that calls into question the assumption of time-invariance and draws explicit attention to conditioning effects of age (Elder, George, and Shanahan 1996). A key proposition of life course theory is the life-stage principle, which states that the implications of social structure for well-being vary widely with age as a result of such life-course processes as the cumulation of life experiences and age-graded normative expectations about social relationships and one's place in society. This paper examines the potential importance of the life-stage principle for the study of SES and depression in two ways.

First, we test the hypothesis that the association between SES and depression increases

through adulthood. This is a developmental approach to the study of SES and mental health outcomes that highlights the influence of life stages. Initial evidence supporting this perspective comes from Rosenberg and Pearlin (1978), who document a smaller association between SES and self-esteem among children compared to adults. Yet their analysis took place at a time when developmental studies focused primarily on children and did not recognize life stages within adulthood (Elder 1997). Consistent with life course theory, we propose that development does not stop after adolescence and that age continues to condition the association between SES and mental health outcomes through early, middle, and late adulthood.

Second, we examine whether the intervening mechanisms that explain the association between SES and depression change over the life course. Recent investigations document changing mechanisms linking SES and health outcomes across historical time (Link and Phelan 1995), and we extend this line of research to examine the possibility of changing mechanisms over the life course. Importantly, by investigating the influence of mechanisms consistent with both causation and selection processes we are able to examine whether the relative influence of these processes varies over the life course, a possibility that to our knowledge has not yet been considered.

The Stress Paradigm and the Life Course: Converging Streams

To date, most research on the association between socioeconomic status and depression is rooted in the stress paradigm. Based on the causation hypothesis, the premise of the stress approach is that the overrepresentation of depression among individuals in the lower social strata stems from their greater exposure to socially-based stressors that foster depression (Langner and Michael 1963; Pearlin 1989). The stress paradigm has led researchers to seek out and identify

environmental stressors, a research topic that has generated hundreds of studies and successfully identified numerous intervening mechanisms (reviewed in Thoits 1995).

However, most studies in this line of investigation are based on the implicit concept of an "ageless adult" who experiences the same stressors and reacts to them in the same way from age 18 until the end of life. Major studies that examine the validity of the social causation hypothesis – a core assumption of the stress paradigm – have not yet formally considered the possibility that the overall effect of causation processes may vary in magnitude over the life course; instead, these studies only compare the plausibility of the causation interpretation in contrast to competing selection interpretations (Miech et al. 1998; Dohrenwend et al. 1992; Wheaton 1978). Likewise, recent reviews of the stress literature do not mention the possibility that stressors may vary in their prevalence and influence over the life course (Thoits 1995; Pearlin 1989). In short, the influence of life stage effects on the relationship between SES and depression remains to be examined.

A life course approach explicitly focuses on the aging process and thereby directs attention to the way in which the overall association between SES and depression – as well as the stress processes that account for it – may vary across life stages in adulthood. A major focus of life course theory centers on the "timing" of lives and the extent to which events, social roles, and their consequences are age-graded throughout the life course (Elder, George, and Shanahan 1996). When viewed from a life-course perspective, the current literature provides both theoretical reasons and empirical findings to suggest that the relationship between SES and depression changes with age, as we detail below.

The Overall Association Between SES and Depression over the Life Course

Current theoretical and empirical research suggests that the association between SES and depression steadily increases over the adult life course, for three reasons. First, the effects of social stressors on mental health are cumulative: major stressors such as physical abuse, parental death during childhood, death of a loved one, or a serious accident or injury have long-lasting, additive effects on depression (Turner and Lloyd 1995). As individuals age, cumulated exposure to social stressors will increase more rapidly at lower SES levels, to the extent that stressors are overrepresented in the lower social strata (Turner, Wheaton, and Lloyd 1995). This growing difference in cumulated exposure to stressors across SES will contribute to an increasing association between SES and depression over the life course.

Second, life-review processes among individuals in the lower social strata are more likely to induce feeling of failure and depression at later stages of the life course. To the extent that individuals come to know themselves by observation of their own overt behavior (Bem 1965; Bem 1967), they consider their socioeconomic standing as a more relevant indicator of self-achievement at later ages. For example, adults are more likely to consider their SES as a reflection of their own efforts than children (Rosenberg and Pearlin 1978), whose socioeconomic standing is primarily an ascribed characteristic that cannot yet be construed as a reflection of personal effort or talent. Similarly, we expect that people in middle and late adulthood are more likely to suffer feelings of depression as a result of low SES than people in early adulthood, who are not yet at risk of failing to achieve their occupational goals (Neugarten 1968; Carr 1997) and can still reasonably hope that their social position will improve later in life.

Third, SES is less psychologically central in early adulthood than in later life stages and

will consequently be less likely to affect mental health outcomes (Rosenberg and Pearlin 1978). Compared with adults, children's objective SES has little association with their subjective evaluation of their SES, suggesting that children are less aware of their location in the social hierarchy (Rosenberg and Pearlin 1978). Similarly, objective measures of socioeconomic standing are poorer predictors of subjective social status in early adulthood when compared to later life stages (Jackman and Jackman 1983). Thus, the individual's understanding of SES appears to become more realistic at more advanced stages of the life course, increasing its saliency for psychological functioning.

Previous empirical research provides initial support for an increasing association between SES and depression through adulthood. In general, studies based on an age range of adults in middle and late adulthood (age 35 more), or a combination of these adults with younger adults, report a moderate association between SES and depression (Kessler et al. 1994; Link, Lennon,and Dohrenwend 1993; Weissman and Myers 1978; but see also Weissman et al. 1991). In contrast, studies focusing on early adulthood (age 18 to 35) report a nonsignificant or weak association. A recent study by Miech et al. (1998), for example, reports no association between SES and depression for a birth cohort evaluated both at ages 15 and 21. Similarly, Dohrenwend et al.'s (1992) study of SES and mental disorder among people in early adulthood shows no association between SES and depression among a sample of North Africans.[1] Finally, Wheaton's (1978) study on SES and psychological distress (a concept that includes symptoms of depression and anxiety) reports standardized causation effects that are 50% smaller for a sample evaluated in

[1] The significance level of the association for the other half-sample of European ethnicity is not reported in the Dohrenwend et al. (1992) paper.

early adulthood (approximately age 32), when compared with an older sample of adults. However, this pattern of results can only be taken as suggestive, and in this study we formally examine the conditioning influences of adult life stages with analyses based on two recent, nationally-representative studies.

Mechanisms Linking SES and Depression over the Life Course

A changing association between SES and depression through adulthood implies that the mechanisms linking them change over time. A detailed analysis of these changing mechanisms is theoretically important because it underscores the need for a more dynamic conceptualization of the relationship between SES and health outcomes. Current studies in medical sociology and epidemiology commonly focus on only single mechanisms linking SES and health at single points in time, and demonstrable changes in these mechanisms point to the need for more theoretical development – and new analytic strategies – to more fully understand how SES influences health outcomes (Link and Phelan 1995). To date, recent investigations have begun to document changes in the intervening mechanisms between SES and health over historical time (Link and Phelan 1995), and we contribute to this literature by examining the hypothesis that the association between SES and depression represents different mechanisms across the life course.

Our examination of the links between SES and depression focuses on three major factors that have been identified by previous research on SES and health: coping resources (Pearlin 1989; Mirowsky and Ross 1990; Ross and Mirowsky 1989), physical health (Turner and Noh 1988; Aneshensel, Frerichs, and Huba 1984), and economic strain (Pearlin and Schooler 1978; Ross and Huber 1985; Avison and Turner 1988). A coping resource such as an internal sense of control may have a greater influence on health outcomes later in the life course, when it becomes

increasingly important for the self-maintenance of health and the navigation of the health-care system (Rodin 1986a; Rodin 1986b). Poor physical health may have the same level of association with depression in both early and late adulthood, yet explain much more variance in the late-adult models because of its higher prevalence later in the life course. In contrast, economic strains may mediate the influence of SES on depression through the entire adult life course. Young adulthood is often a time of family formation (Rindfuss 1991), which involves financial responsibilities for one's spouse and children. Older adulthood is often characterized by issues of retirement, new housing arrangements, and health care, all of which can represent significant financial burdens. Thus, economic strains may influence depression through the entire adult life course, albeit for different reasons during different phases.

The investigation of changes in the links between SES and depression over the life course has additional theoretical import because it provides an indirect test of the plausibility of causation and selection interpretations. As Link and Dohrenwend (1989) point out, those who explain SES differences in depression from a causation perspective propose different intervening mechanisms than those who explain them from a selection perspective. Specifically, economic strain and coping resources have been highlighted as mechanisms important to the social causation perspective (reviewed in Thoits 1995), while, in contrast, an intervening influence of physical health suggests the presence of both causation and selection effects (Smith and Kington 1997; Farmer and Ferraro 1997; Aneshensel, Frerichs, and Huba 1984). Thus, if physical health problems completely "explain" the SES/depression association at later stages of the life course, the assumption of exclusive social causation becomes less tenable for analyses focusing on depression in advanced life stages.

In sum, we examine the utility of a life course perspective for the study of SES and depression. On the one hand, if the association is indeed age-invariant, as most current studies implicitly assume, then the potential contribution of a life course approach will be sharply curtailed. On the other hand, a changing association across adulthood would highlight developmental issues such as the timing of stressors in a person's life course and age-contingent social expectations, issues for which the life-course approach is specifically tailored. The studies discussed above suggest that adulthood life stages condition both the overall association between SES and depression as well as the mechanisms that account for it, and we empirically test these expectations in the analyses that follow.

SAMPLE AND METHOD

– Table 1 About Here –

Data for this study come from two recent, nationally-representative samples that are currently serving as the basis for studies concerning the relationship between SES and depression. The first, "Work, Family, and Well-Being in the United States, 1990" (hereafter "WFWB"; Ross 1995), is a national probability telephone survey of U.S. households. Interviews were completed for 2,031 respondents between the ages of 18 and 90, representing a response rate of 82.3%. Listwise deletion of cases with missing data results in a sample of 1,883 adults. The demographic characteristics of the survey have been reported elsewhere and closely resemble those of the U.S. population (for further details see Mirowsky and Ross 1995). The means and standard errors of all variables used in this study appear in Panel A of Table 1.

The second sample, the National Comorbidity Survey (hereafter "NCS"; Kessler et al. 1994) is a stratified, multistage area probability sample of persons aged 15 to 54 years in the

noninstitutionalized civilian population in the 48 coterminous states. Data were collected from 8,098 respondents aged 15-54 between September 1990, and February 1992, for a response rate of 82.6% (Kessler et al. 1994). The analyses in this study do not include respondents less than age 18 at the time of the interview or those missing educational or household income information, resulting in a total of 7,628 respondents. The sample is weighted to match the national population distributions of age, sex, race/ethnicity, marital status, education, living arrangements, region, and urbanicity as defined by the 1989 U.S. National Health Interview Survey. Because the survey is drawn from a complex sample design, we run all analyses using "linearization"-based variance estimators (StataCorp 1997). The weighted means and standard errors of the variables from the NCS appear in Panel B of Table 1.

Measures

Depressive symptoms in the WFWB were assessed with a short form of the Center for Epidemiological Studies - Depression scale (Radloff 1977; Ross and Mirowsky 1984). Respondents were asked, "How many days during the past week have you (1) felt you just couldn't get going? (2) felt sad? (3) had trouble getting to sleep or staying asleep? (4) felt that everything was an effort? (5) felt lonely? (6) felt you couldn't shake the blues? (7) had trouble keeping your mind on what you were doing?" The modified index correlates .92 with the full CES-D and has an alpha reliability of .83. Because symptom counts are highly skewed with a mode of zero, the scale was transformed by taking the log of the sum plus one for regression analyses (Aneshensel, Rutter, and Lachenbruch 1991).

Depression episodes in the year before the survey interview were assessed in the NCS according to the criteria of the Diagnostic and Statistical Manual of Mental Disorders, Revised

Third Edition (American Psychiatric Association 1987). This is a dichotomous measure based on a modified version of the Composite International Diagnostic Interview (World Health Organization 1990), a structured diagnostic interview designed to be used by trained interviewers who are not clinicians.

Socioeconomic status was measured by respondent's education and household income. *Years of education* is the highest grade or year of school that the respondent completed. *Twelve or more years of education* is an indicator variable coded 1 if the respondent had 12 or more years of education and 0 otherwise. *Household income* is the self-reported income from all members of the household from all sources before taxes, topcoded at 150,000 and measured in thousands. Respondents with missing values for household income were assigned the group mean and flagged with a value of '1' on the indicator variable *missing household income*. In all regression analyses household income was logged to reduce heteroscedasticity (Gujarati 1988).[2]

Drawing on the WFWB study we tested three mechanisms linking socioeconomic status and depression. The first was the influence of poverty/economic strain. Objective economic strain was measured by household income. Subjective financial difficulty was assessed by *trouble paying bills*, a measure that is based on study members' summed responses to the three questions (1) "During the past 12 months, how often did it happen that you had trouble paying the bills?" (2) "During the past 12 months, how often did it happen that you did not have enough money to pay for medical care?" and (3) "During the past 12 months, how often did it happen that you did

[2] We used the functional form of the socioeconomic indicators that best predicted depression. The log of household income predicted both major episodes of depression and depressive symptoms significantly better than the untransformed variable. Regarding years of education, a continuous measure was the best predictor of depressive symptoms, but for major depressive episodes an indicator variable signifying 12 or more years was a significantly better predictor than the continuous measure (analyses not shown).

not have enough money to buy food, clothes, or other things your household needed?" Responses for each question on the scale range from (4) very often to (1) never and the alpha reliability for the index was .81.

Second, the influence of coping resources was assessed by two measures. The first was *internal sense of control*, which was measured by an eight item index. Given a five point scale that ranged from "strongly agree" to "strongly disagree," respondents were asked to rate the following statements: (1) I am responsible for my own success (2) I can do just about anything I really set my mind to (3) My misfortunes are the result of mistakes I have made (4) I am responsible for my failures (5) The really good things that happen to me are mostly luck (6) There's no sense planning a lot -- if something good is going to happen it will (7) Most of my problems are due to bad breaks, and (8) I have little control over the bad things that happen to me (Mirowsky and Ross 1991). Responses were averaged (after reverse-coding questions 5-8) and the alpha reliability for the index was .59. The agreement bias associated with old age and low education was controlled by balancing the number of statements claiming control with the number denying control (Mirowsky and Ross 1991). The second measure to assess coping resources was *social support*, which was the respondent's sum rating of the statements "I have someone I can turn to for support and understanding when things get rough" and "I have someone I can really talk to" (Ross and Mirowsky 1989). Each statement was rated on a five-point scale that ranged from "strongly agree" to "strongly disagree" and the alpha reliability for the index was .88.

Third, *physical health problems* were measured by respondents' summed reported degree of difficulty in (1) going up and down stairs, (2) kneeling or stooping, (3) lifting or carrying objects less than 10 pounds, like a bag of groceries, (4) using hands or fingers, (5) seeing, even

with glasses, (6) hearing, and (7) walking. Degree of difficulty for each question was measured as (1) no difficulty, (2) some difficulty, and (3) a great deal of difficulty and the alpha reliability for the index was .80.

We also control age, gender, current marital status, current labor force status, and the quality of the current relationship. *Marital discontent* was assessed by responses to the question "In the past 12 months, how often would you say that the thought of leaving your (husband/wife/partner) has crossed your mind?" with responses ranging from 1 (Never) to 5 (Often).

RESULTS

We begin our analysis with bivariate regressions of depression on educational attainment and household income in the life stages of early, middle, and late adulthood (ages 18-34, 35-54, and 55-90, respectively). These bivariate regression models provide preliminary evidence indicating whether adult life stages condition the association between SES and depression. Our selection of age cutoffs for these life stages reflects both theoretical and empirical considerations. Our selection of age 35 as the end of early adulthood follows the work of Rindfuss (1991), who finds that young adulthood is characterized by high levels of demographic change in such areas as marriage, fertility, and residential mobility, and that the prevalence of these events tapers off in the 30s. We designate age 54 as the end of middle adulthood because it marks the beginning of high levels of retirement (Quinn and Burkhauser 1994) and this cutoff is consistent with other major studies of socioeconomic status and depression (e.g. Turner, Wheaton, and Lloyd 1995; Kessler et al. 1994).

We then present more detailed models of socioeconomic status that test mediating

processes (i.e. coping resources, physical health problems, and economic strain), controlling demographic characteristics. We first present these multivariate models for all respondents aged 18 to 54; to examine the conditioning influences of the adult life stages we then present these models separately for the early, middle, and late adulthood subsamples.

Socioeconomic Status, Depressive Symptoms, and Depressive Episodes

– Table 2 About Here –

Bivariate regressions appear in Table 2 and indicate that the relationship between SES and depression varies across life stages in adulthood. Analyses of depressive symptoms (the first two rows of Table 2) showed that their association with social status indicators increased substantially between early adulthood (ages 18-34) and middle adulthood (ages 35-54): their relation with educational attainment increased more than threefold and their relation with household income more than doubled.

To determine if these increases were statistically significant we tested multiplicative interaction involving each social indicator and age. For example, to examine educational attainment we combined respondents aged 18 to 54 into one analysis pool and modeled depressive symptoms using the predictors of education, age, and their multiplicative product. The interaction term was significant (t=-2.72), indicating that the association between depressive symptoms and educational attainment strengthened significantly with increasing age. Parallel analyses for household income indicated that this interaction term also significantly increased from early to middle adulthood (t=-2.04). Following the same procedure we found a significant increase in the association between depressive symptoms and household income across ages 35-90 (t=-1.87, significant for a one-tailed test), but not for education. Thus, the association of

depressive symptoms with both educational attainment and household income significantly increased from early to middle adulthood, while the association between depressive symptoms and household income further increased from middle to late adulthood.

Analyses of clinical-level depressive episodes and socioeconomic indicators appear in rows 3 and 4 of Table 2 and likewise show an increasing association over the life course. Having twelve or more years of education significantly predicted depressive episodes in middle adulthood, but not in early adulthood. We tested whether this measure significantly interacted with age using the same procedure that we employed for depressive symptoms (discussed above); results indicated that the effect of high school completion is indeed moderated by age ($t=-2.08$) such that the effect of education increased through the phases of adulthood. Analyses of household income also showed an increasing association with depressive episodes from early to middle adulthood, an increase that was significant for a one-tailed test ($t=-1.83$). Thus, both depressive symptoms and clinical-level depressive episodes significantly increased in their association with socioeconomic status, as measured by educational attainment and household income, from early to middle adulthood.

Links Between Socioeconomic Status and Depression

To further examine the increasing association between socioeconomic and depression over the adult life course we focused on depressive symptoms, which provide greater statistical power than measures of clinical-level depressive episodes (Mirowsky and Ross 1989; Pearlin 1989). Symptoms scales do not lose information by compressing data on depression into a dichotomous scale and therefore provide greater sensitivity to detect the effects of social structure on psychological functioning.

– Table 3 About Here –

We began our examination of intervening mechanisms with a conventional analysis pool of respondents aged 18 to 54. These initial findings appear consistent with the existing body of sociological literature on social status and depression. As shown in Table 3, people with high social status – as measured by years of education – reported significantly fewer depressive symptoms than people with low social status ($b=-.038$, $p<.01$), a relationship that holds after controlling labor force status, gender, age, marital status, and marital discontent (Table 3, model 1). The mediating influences also acted as expected. The introduction of variables measuring economic strain, coping resources, and physical health problems substantially decreased the coefficients of the socioeconomic status variables (Table 3, models 2-4).

However, further examination indicated that these initial, conventional, models were not correctly specified because they pool respondents from different adult life stages. They rested on the assumption that the association between educational attainment and depressive symptoms does not significantly increase from early to middle adulthood, an assumption that is contradicted by the highly significant interaction between educational attainment and age (Table 3, model 5). This evidence for a substantive difference in the SES/depression association across life stages led us to run separate models focusing on early, middle, and late adulthood.

– Table 4 About Here –

The results for early adulthood appear in Table 4 and point to three main findings. First, and most importantly, neither of the socioeconomic status indicators significantly predicted depressive symptoms in any of the models during this life stage. This finding indicates that the small association between household income and depressive symptoms observed in Table 2 is not

found in more detailed models that include gender, martial status, age, and labor force status as control variables. Second, the intervening mechanisms of social support and sense of control were not related to depressive symptoms. This unexpected null finding contrasts with other research (see review in Turner and Roszell 1994), although most of these studies combine all adults age 18 and over into one analysis pool. Finally, economic strain and physical health problems were significantly related to depressive symptoms as expected: difficulty paying bills and poor health were strongly related to depressive symptoms in early adulthood.

– Table 5 About Here –

Detailed analyses of the relationship between SES and depressive symptoms in middle adulthood appear in Table 5. In this life stage we found strong support for the SES/depression association, as respondents with higher educational attainment reported lower levels of depressive symptoms in all models. In the baseline model (Table 5, model 1), we found that educational attainment played a role in depressive symptomatology independent of the effects of household income, labor force status, gender, age, martial status, and marital discontent.

Importantly, educational attainment as predictor of depressive symptoms dominated the effects of household income, which did not reach statistical significance in any of the models of Table 5. This is a key finding for the social stress framework because it provides evidence to support the "social causation" hypothesis. Because people do not lose their educational attainment in adulthood as a consequence of depression, and neither depressive symptoms nor depression episodes impair educational attainment (Miech et al. 1998), an influence of socioeconomic status on depression that operates through educational attainment suggests a one-way direction of causation from SES to depression.

In middle adulthood the mediating influences acted as expected. In separate models we included measures of economic strain, coping resources, and physical health problems to the baseline model and they each moderately reduced the association between educational attainment and depressive symptomatology (Table 5, models 2-4). In regard to the coping resources, an internal sense of control was significantly related to depressive symptoms ($b=-.346$, $p<.01$), while social support was not.

– Table 6 About Here –

Detailed analyses of the relationship between SES and depressive symptoms in late adulthood appear in Table 6. These results highlight the unique mechanisms that underlie the SES/depression association in late adulthood in three main ways. First, among the socioeconomic indicators, household income, and not educational attainment, was the strongest predictor of depressive symptoms net of the standard controls (Table 6, model 1). Second, in late adulthood physical health problems were the most influential of the mediating factors; indeed, the addition of this variable sharply increased the explained variance of the model (from .129 to .252). Once this measure was included in the baseline model (Table 6, model 4) the association between socioeconomic indicators and depressive symptoms became statistically insignificant. Third, social support played a significant role in the reduction of depressive symptoms (Table 6, model 3), an influence that was not observed in early or middle adulthood. Thus, in later adulthood, physical health problems and social support account for much of the relationship between household income and depressive symptoms.

Across all models the controls were consistent with the extant literature. Those who were out of the labor force reported more depressive symptoms, although this effect was most

pronounced in middle adulthood. Women reported more depressive symptoms than men, an effect that became stronger at more advanced life stages. In regard to age, our results were consistent with the U-shaped association with depression documented by Mirowsky and Ross (1992), reflecting a negative association in early adulthood and a positive one in late adulthood. Finally, married people had lower levels of depression than the unmarried, and marital discontent was strongly related to depressive symptoms.

DISCUSSION

We have proposed that a life-course perspective can lead to new insights and a better understanding of the relationship between socioeconomic status and depression. Most importantly, the perspective highlights ways in which the relationship between SES and depression changes over the life course, changes that are largely overlooked in current studies. The analyses of this study center on and support the two propositions that (a) the overall association between SES and depression significantly increases over the life course and (b) the association represents the consequences of different links at different life stages.

Before discussing these results in detail it is important to note the limitations of this study. First, the increasing association between SES and depression is theoretically open to a "cohort" interpretation because the analyses are based on cross-sectional research designs. By itself, such an interpretation would point to historical changes across cohorts – and not age-graded stressors and processes – to account for differences in the association between SES and depression across adult life stages. A competing cohort interpretation could take at least two forms. First, it could potentially explain the steady decrease in the association between SES and depression from late adulthood cohorts to early adulthood cohorts if the association between SES and depression had

steadily diminished over historical time. However, this explanation is not plausible in light of evidence that both socioeconomic inequality and its association with health outcomes has actually increased since the mid 1960s (Weinberg 1996; Karoly 1994; Feldman, Makuc, Kleinman, and Cornoni-Huntley 1989).

A second cohort interpretation would note that educational degrees are relatively rarer within older cohorts than within younger cohorts (National Center for Education Statistics 1995), and speculate that they consequently have different health consequences. However, an explanation based on changing educational levels across cohorts cannot account for the main findings of this study in light of the fact that the early and middle adulthood groups have the same educational standing (see Table 1). In sum, the lack of plausibility for cohort-based interpretations underscores the need for investigation into developmental factors that can account for the increasing association between SES and depression over the adult life course.

Another study limitation is that the analyses focus on only a subset of the major links between SES and depression and many other mediating factors remain to be examined within a developmental context. The great number of intervening mechanisms between SES and depression (see Turner, Wheaton and Lloyd 1995) preclude their thorough investigation in a single study. Instead, a detailed understanding of the relationship between SES and depression over the life course will require a series of investigations focusing on selected intervening social stressors and social processes. The results reported in this paper provide important guidance for this research agenda: most importantly, they suggest the need for different theoretical frameworks and analytical strategies to investigate intervening mechanisms at different stages of the life course.

Links Between SES and Depression in Early and Middle Adulthood

In early and middle adulthood, a synthesis of the stress paradigm and the life course perspective promises a better understanding of the links that account for the association between SES and depression. The focus of these two lines of research, which have developed along separate paths, intersect in the examination of life stage effects. While the social stress literature flags stressors linking social structure and health outcomes, the life course perspective highlights the importance of examining the potentially different influence of these stressors across the life course. The need to join these two lines of research is indicated by the increase in the overall SES/depression association from early to middle adulthood, which implies that major stressors have significantly changing influences across these two life stages.

For example, the analyses of this study show that an internal sense of control, which serves as both a major intervening factor in the relationship between SES and depression (Rodin 1986b; Turner and Roszell 1994; Rosenfield 1989), significantly increases in its association with depressive symptoms from early to middle adulthood. This increase contrasts with the prevailing conception of timeless intervening mechanisms between SES and depression and directs life-course research to coping resources as a strategic area for future study. Psychological studies by Rodin (1986a; 1986b) can serve as a good starting point for an explanation of the increase between an internal sense of control and general health outcomes over the life course, but this effect as it applies specifically to depression has yet to be examined.

Yet the changing influence of coping resources is only one potential area for life course research to investigate the increasing SES/depression association between early and middle adulthood, and the results of this study indicate that others remain to be uncovered. Taken

together, the influence of coping resources, economic strain, physical health, and demographic characteristics fall short of accounting for the increasing association between educational attainment and depressive symptoms between early and middle adulthood (see Table 3, model 5). Other factors are at work, and at least three possible lines of inquiry for future life-course research are possible. First, major stressors not investigated in this study may also have a changing influence between early and middle adulthood, such as parent-child relationships through the life course (Rossi and Rossi 1990) and quality of worklife (Link, Lennon, and Dohrenwend 1993; Mortimer and Lorence 1995). Second, some stressors, such as the life-review, may be distinct to later stages of the life course, suggesting the need for research on life-stage specific stressors to supplement the existing social stress literature on general stressors that are assumed to affect adults similarly across all life stages. Third, major social stressors (both those that are general and life-stage specific) may have effects on depression that cumulate over the life course. Investigation into the relative influence of these three different types of influences in early and middle adulthood can be accomplished in large part through a reanalysis of existing social stress studies that places a greater emphasis on the conditioning influence of age.

Links Between SES and Depression in Late Adulthood

In late adulthood the suitability of the stress framework for the study of mechanisms linking SES and depression is questionable. During this life stage two findings run contrary to the stress paradigm's core assumption of social causation. First, the effect of SES on depression in late adulthood operates through household income, and not educational attainment. This opens up the SES/depression relationship to a selection interpretation because adulthood depression may detrimentally affect household income in adulthood.

Second, the powerful mediating effect of physical health problems on the SES/depression association in late adulthood strongly suggests the presence of selection effects, which are not well handled within theoretical frameworks – such as the stress paradigm – that are based on the assumption of social causation. Physical health problems represent a critical mediator between SES and depression in late adulthood. Their inclusion into the baseline model halves the association between depressive symptoms and household income, reduces the association between depressive symptoms and educational attainment to near zero, and doubles the overall explained variance of the baseline model. Social stress analyses based on the social causation assumption can explain some of these powerful effects to the extent that adverse living conditions in the lower social strata foster both physical health problems and depression (see Thoits 1995). However, at the same time recent evidence indicates that selection processes also play an influential role in the overrepresentation of physical health problems among older adults with low income (Smith and Kington 1997) and that physical health problems lead to depression (Farmer and Ferraro 1997; Aneshensel, Frerichs, and Huba 1984). The combination of these findings signifies a bidirectional causation between SES and depression in late adulthood that is not readily handled by the stress paradigm in its current form, and suggests that more theoretical and analytical development is necessary for the study of SES and depression in late adulthood.

Longitudinal studies will be particularly strategic in the effort to examine the role of intervening factors between SES and depression in late adulthood (e.g., Turner and Noh 1988). Although difficult to carry out, such studies are particularly important for the accurate specification of the reciprocal causation between SES and late-adulthood depression because they avoid the use of retrospective depression measures, which are biased by the projection of current

depression into the past (Aneshensel, Estrada, Hansell, and Clark 1987). By disentangling the mutual effects of SES and depression, longitudinal research designs will thereby allow more detailed investigation into intervening influences such as physical health and social support, which significantly increases in its association with depressive symptoms from middle to late adulthood.

Conclusion

A primary sociological motivation for investigation of the association between SES and depression is to further our knowledge about both the social arrangements of society and their consequences for the individual. The life course perspective contributes to this endeavor with the insight that the social environment experienced by individuals – as well as individuals' reaction to it – differs in systematic ways across early, middle, and late adulthood. Greater attention to life-course specific stressors and processes, as well as analytical strategies that are sensitive to the conditioning influence of life stages, will lead to a fuller understanding of both social conditions and their impact on health outcomes.

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Table 1: Variable Means and Standard Errors

Variable	Total Sample (ages 18+) Mean (s.e.)	Early Adulthood (ages 18-34) Mean (s.e.)	Middle Adulthood (ages 35-54) Mean (s.e.)	Late Adulthood (ages 55-90) Mean (s.e.)
Study A: Work, Family and Well-Being in the United States, 1990 (n=1883)				
Total sample	1.00	0.38 (.011)	0.35 (.011)	0.27 (.010)
Depressive symptoms level in past week	7.84 (.215)	8.26 (.337)	7.28 (.353)	7.99 (.445)
Years of education	13.23 (.059)	13.44 (.077)	13.67 (.101)	12.36 (.134)
Household income	38.16 (.543)	37.27 (.819)	44.95 (1.01)	30.62 (.880)
Out of labor force	0.36 (.011)	0.24 (.016)	0.19 (.015)	0.75 (.019)
Missing household income	0.14 (.008)	0.11 (.012)	0.13 (.013)	0.20 (.018)
Female	0.62 (.011)	0.59 (.018)	0.63 (.019)	0.66 (.021)
Married	0.58 (.011)	0.49 (.019)	0.70 (.018)	0.55 (.022)
Separated	0.02 (.003)	0.02 (.005)	0.03 (.007)	0.01 (.005)
Divorced	0.10 (.007)	0.05 (.008)	0.15 (.014)	0.09 (.013)
Never married	0.19 (.009)	0.39 (.018)	0.07 (.010)	0.05 (.010)
Widowed	0.09 (.007)	0.00 (.000)	0.04 (.007)	0.29 (.020)
Marital discontent	1.47 (.022)	1.55 (.037)	1.55 (.040)	1.24 (.033)
Trouble paying bills	2.34 (.047)	2.67 (.080)	2.37 (.082)	1.84 (.074)
Internal sense of control	2.67 (.012)	2.74 (.018)	2.73 (.020)	2.50 (.021)
Social support	5.44 (.027)	5.64 (.044)	5.46 (.046)	5.12 (.047)
Physical health problems	8.17 (.048)	7.53 (.047)	7.90 (.066)	9.41 (.123)
Study B: National Comorbidity Study (n=7628)[a]				
Total sample	1.00	0.50 (.010)	0.50 (.010)	
Depressive episode in past year	0.10 (.007)	0.11 (.008)	0.09 (.009)	
Twelve or more years of education	0.84 (.009)	0.84 (.009)	0.84 (.012)	
Household income	41.81 (.997)	37.32 (.994)	46.35 (1.171)	

[a] Reported n is number of respondents that constitute the analysis pool. All analyses based on the National Comorbidity Study include adjustments for sample weights.

Table 2. Bivariate Regressions of Depression on Socioeconomic Indicators, by Age Groups

Social Status Variable	Total Sample (ages 18+)	Early Adulthood (ages 18-34)	Middle Adulthood (ages 35-54)	Late Adulthood (ages 55-90)
Study A: 1990 U.S. Health and Well-Being Study (n=1883)				
Years of Education	-0.059**	-0.025	-0.084**	-0.074**
Household Income	-0.265**	-0.148**	-0.305**	-0.322**
Study B: National Comorbidity Study (n=7628)				
Twelve or More Years of Education	-0.345*	-0.218	-0.487*	
Household Income	-0.192**	-0.125**	-0.277**	

* $p < .05$
** $p < .01$

Table 3. Depressive Symptoms Regressed on Social Status Indicators and Mediating Influences, Ages 18-54 (n=1376)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Socioeconomic Status					
Years of education	-0.038**	-0.025	-0.027	-0.019	0.137**
Household income	-0.077	0.017	-0.058	-0.046	0.051
Controls					
Out of labor force	0.224**	0.232**	0.219**	0.114	0.130
Missing income	-0.043	-0.020	-0.060	-0.026	-0.017
Female	0.183**	0.143*	0.181**	0.183**	0.138*
Age	-0.010**	-0.009*	-0.011**	-0.017**	0.035*
Married	(reference)	(reference)	(reference)	(reference)	(reference)
Separated	0.871**	0.738**	0.891**	0.748**	0.676**
Divorced	0.194	0.151	0.221*	0.197	0.192
Never married	0.234**	0.236**	0.234**	0.205*	0.203*
Widow	0.614**	0.612**	0.594*	0.624**	0.615**
Marital Discontent	0.198**	0.166**	0.195**	0.184**	0.163**
Economic Strain					
Trouble paying bills		0.108**			0.087**
Coping Resources					
Internal sense of control			-0.231**		-0.178**
Social support			0.014		0.021
Health					
Physical Health Problems				0.210**	0.185**
Interaction Term					
(Years of education)(Age)					-0.004**
Constant	1.973**	1.267**	1.187**	0.274	-2.618**
R^2	0.099	0.131	0.107	0.166	0.196

* $p \leq .05$
** $p \leq .01$

Table 4. Depressive Symptoms Regressed on Social Status Indicators and Mediating Influences, Ages 18-34 (n=719)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Socioeconomic Status					
Years of education	-0.000	0.018	0.008	0.016	0.038
Household income	-0.055	0.015	-0.047	-0.027	0.037
Controls					
Out of labor force	0.185	0.159	0.187	0.094	0.082
Missing income	-0.127	-0.129	-0.146	-0.127	-0.143
Female	0.132	0.101	0.138	0.154	0.125
Age	-0.011	-0.016	-0.012	-0.015	-0.019
Married	(reference)	(reference)	(reference)	(reference)	(reference)
Separated	0.768*	0.546	0.789*	0.658*	0.496
Divorced	0.399*	0.344	0.400*	0.360	0.323
Never married	0.254*	0.232*	0.253*	0.243*	0.232*
Widow[a]	--	--	--	--	--
Marital Discontent	0.189**	0.156**	0.184**	0.172**	0.143**
Economic Strain					
Trouble paying bills		0.110**			0.096**
Coping Resources					
Internal sense of control			-0.134		-0.142
Social support			0.004		0.028
Health					
Physical Health Problems				0.206**	0.182**
Constant	1.510**	0.993**	1.060	-0.227	-1.077
R^2	0.072	0.110	0.075	0.122	0.152

[a] No respondents reported widowhood status in early adulthood

* $p \leq .05$

** $p \leq .01$

Table 5. Depressive Symptoms Regressed on Social Status Indicators and Mediating Influences, Ages 35-54 (n=657)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Socioeconomic Status					
Years of education	-0.064**	-0.054**	-0.054**	-0.047**	-0.035
Household income	-0.078	0.064	-0.033	-0.042	0.082
Controls					
Out of labor force	0.298*	0.337**	0.276*	0.167	0.196
Missing income	0.045	0.097	0.046	0.082	0.114
Female	0.209*	0.159	0.191*	0.186*	0.141
Age	-0.017*	-0.011	-0.018*	-0.026**	-0.021**
Married	(reference)	(reference)	(reference)	(reference)	(reference)
Separated	0.947**	0.881**	0.979**	0.815**	0.806**
Divorced	0.127	0.105	0.189	0.144	0.166
Never married	0.185	0.160	0.177	0.134	0.118
Widow	0.612*	0.616*	0.598*	0.630**	0.622**
Marital Discontent	0.218**	0.184**	0.221**	0.205**	0.185**
Economic Strain					
Trouble paying bills		0.116**			0.081**
Coping Resources					
Internal sense of control			-0.346**		0.223*
Social Support			0.032		0.021
Health					
Physical Health Problems				0.212**	0.187**
Constant	2.536**	1.497**	1.335**	0.953	-0.362
R^2	0.126	0.157	0.145	0.210	0.234

* $p \leq .05$
** $p \leq .01$

Table 6. Depressive Symptoms Regressed on Social Status Indicators and Mediating Influences, Ages 55-90 (n=507)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Socioeconomic Status					
Years of education	-0.032	-0.021	-0.016	-0.001	0.017
Household income	-0.229**	-0.175*	-0.214**	-0.098	-0.063
Controls					
Out of labor force	0.089	0.070	0.084	-0.078	-0.083
Missing income	-0.004	-0.024	-0.038	-0.081	-0.117
Female	0.411**	0.384**	0.431**	0.390**	0.394**
Age	0.000	0.004	-0.001	-0.002	-0.001
Married	(reference)	(reference)	(reference)	(reference)	(reference)
Separated	0.048	-0.057	0.066	0.046	0.004
Divorced	0.086	0.023	0.091	-0.014	-0.038
Never married	-0.058	-0.093	-0.159	-0.136	-0.237
Widow	0.417**	0.380**	0.417**	0.328*	0.313*
Marital Discontent	0.157*	0.125	0.154*	0.146*	0.127
Economic Strain					
Trouble paying bills		0.116**			0.063*
Coping Resources					
Internal sense of control			-0.281*		0.243*
Social Support			-0.126*		-0.108*
Health					
Physical Health Problems				0.177**	0.166**
Constant	1.546*	0.884	1.339	-0.512	-0.937
R^2	0.129	0.149	0.153	0.252	0.276

* $p \leq .05$
** $p \leq .01$

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