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Effects of Unemployment on Health in a Community Survey: Main, Modifying, and Mediating Effects

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Results from a community survey in a sample of high-unemployment census tracts in southeastern Michigan showed significant elevations of depression, anxiety, somatization, and self-reported physical illness among the currently unemployed. These adverse effects were largely reversed by reemployment. Subsequent analyses documented modifying effects of social support, self-concept, and coping. We also found two mediating processes that account for the overall effects of current unemployment: (a) the intervening effects of financial strain, and (b) an influence of unemployment in creating heightened vulnerability to other stressful life events. The implications of these results for the design and implementation of preventive interventions are briefly discussed.

This paper reports the results of a survey administered in the fall of 1984 in a high unemployment area of southeastern Michigan. The sample was stratified into subsamples of the currently unemployed, previously unemployed, and stably employed. Comparisons among these subgroups were made to estimate the health-damaging effects of job loss and the possible health-promoting effects of reemployment.

Selection bias is the primary methodological problem in cross-sectional surveys of this sort that attempt to estimate the health impact of unemployment. This bias can occur because physical and mental health problems may them-

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selves bring about job loss. The literature on unemployment has attempted to take account of selection bias by means of panel studies (e.g., Cobb & Kasl, 1977; Grayson, 1985; Linn, Sandifer, & Stein, 1985; Parnes & King 1977; Pearlin, Liebermann, Menaghan, & Mullen, 1981) and aggregate time-series analyses (e.g., Brenner, 1976, 1983; Catalano & Dooley, 1977; Dooley, Catalano, Jackson, & Brownell, 1981). Neither of these designs was available to us when we planned our study. Our intention was to evaluate the impact of unemployment in southeastern Michigan several years after the 1980 recession had begun and to study processes of adjustment. To achieve these goals, we needed to assess the effects of job loss without the benefit of baseline health assessments prior to the beginning of the recession.

The first part of this paper describes our approach to the problem of selection bias. Unlike previous cross-sectional surveys, we made a special effort to obtain information that allowed assessment of the impact of selection bias on the relationship of unemployment to poor health in this population.

After estimating the aggregate effects of unemployment on several measures of ill health, we evaluated the importance of a number of resistance resources in attenuating these effects. Only a very small part of the literature on unemployment and health focuses on factors that help the individual cope with this experience. This type of work is essential to the development of preventive interventions, and the analyses presented here are of considerable relevance in this regard.

Some part of the individual variability in reactivity to job loss can probably be explained by variation in the stresses and strains that unemployment creates for different people. Therefore, after identifying the relevant modifiers of the unemployment-illness relationships, we went back to the aggregate effects of unemployment and introduced a series of potential mediators in an effort to interpret the pathways by which these effects come about.

All of these analyses were carried out in an effort to provide background information for an experimental intervention program designed to prevent mental health problems among the unemployed. In this paper, we review the results and discuss their implications for preventive intervention. Finally, we point to several innovative aspects of our research that have implications for more general work on adjustment to stressful life events.

Data and Methods

Research Design

The survey was based on respondents from a multistage probability sample of households in high-unemployment census tracts in southeastern Michigan. Three subsamples of respondents were interviewed: currently unemployed ($n =$

146), previously unemployed ($n = 162$), and stably employed ($n = 184$). Different sampling fractions were used for the three subsamples in an effort to obtain roughly equal numbers of respondents in each. In some data analyses the currently and previously unemployed were considered together; in these cases the data were weighted to reflect the different sampling fractions in the two subsamples. A detailed discussion of the sampling procedures appears in Kessler, House, and Turner (1987). Cooperation was high, with a 78% response rate among currently employed and 90% response rate among currently unemployed predesignated respondents. The completed interviews reflected the demographic composition of the largely blue-collar work force in this geographic area. The mean education of respondents was 12 years. They were 60% male, 20% black, 50% married, and averaged 35 years of age.

Special procedures were developed to deal with selection bias. Selection into unemployment was studied by obtaining information, from all respondents who lost a job, about the circumstances surrounding the event. This allowed us to classify each job loser as either not at fault or possibly at fault. We were able to assess the importance of selection bias by carrying out analyses among all job losers and separately among respondents who lost their jobs through no fault of their own.

Selection out of unemployment is also a possibility worth considering. We included this factor in a longitudinal portion of the study by recontacting respondents a year after the baseline interview and obtaining information about changes in employment status. This information allowed us to study whether baseline health predicted subsequent reemployment. These prediction results, in turn, were used to assess the effects of reemployment on our estimates of the health effects of unemployment.

The selection-bias analyses provided information that was then used to construct conservative models of unemployment effects. These models were subsequently used as the basis for more detailed analyses of mediating and modifying influences. Specific features of these more detailed analyses are discussed later in the paper.

Illness Outcomes

Three mental health indicators and one measure of perceived physical health were used as outcomes. The mental health indicators were the Anxiety, Depression, and Somatization subscales of the Symptom Checklist-90 (SCL-90—Derogatis, 1977). The reliabilities of these scales for our sample were .80 for Anxiety, .90 for Depression, and .85 for Somatization. The physical health measure was a four-item index of self-evaluated physical health modified from standard questions asked in surveys by the National Center for Health Statistics (e.g., NCHS, 1981). Individuals were asked for a general evaluation of their

health; whether they had any particular health problems; how much, during the preceding three months, their health restricted them from doing things they wanted to do; and whether, for the most part, they currently felt healthy enough to do the things they wanted. The reliability of this scale for our sample was .69. It should be recognized that this is a scale of self-perceived physical health. There was no independent information about the actual presence or absence of symptoms, and it is likely that emotional factors were assessed along with physical health problems.

Health-Damaging Effects of Unemployment

The first analyses used multiple regression to estimate the effects of unemployment on the illness outcomes. A regression equation of the following form was used:

$$\text{Outcome} = b_0 + b_1 \text{CU} + b_2 \text{PU} + \text{Controls} \quad (1)$$

where CU is a dummy variable coded one for the currently unemployed and zero otherwise, PU is a dummy variable coded one for the previously unemployed and zero otherwise, and the controls include a series of demographic variables known to affect health and likely to be associated with unemployment (age, sex, race, education, and marital status). We also estimated a separate series of equations of the form:

$$\text{Outcome} = b_0 + b_1 (\text{CU or PU}) + \text{Controls} \quad (2)$$

in which CU and PU were combined into a single dummy variable coded one for people who had experienced unemployment during the recession and zero for those who were stably employed. As indicated above, pooled analyses were computed on weighted data that took into consideration the different sampling fractions used to select respondents in the CU and PU groups.

This second equation yielded an estimate of unemployment effects comparable to the kinds of estimates ordinarily obtained in general population life-event studies. Stress, in this case, was defined as the experience of having had the event occur rather than as the current status of the respondent at the time of interview.

Table 1 presents the unstandardized regression coefficients for these two equations applied to each of the four ill-health outcomes. The outcomes themselves were standardized to a mean of zero and a variance of one, so that the coefficients represent standard deviation units, and high scores on the scales indicate more illness. The results in the first set of columns show that the effects of current unemployment were consistently significant in statistical terms. Although not significant, the coefficients for previous unemployment in the second

Table 1. Gross Effects of Unemployment^a

Outcome	Currently unemployed		Previously unemployed		Currently or previously unemployed	
	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>
Anxiety	.490**	.110	.115	.103	.289**	.092
Depression	.499**	.108	.123	.102	.273**	.091
Somatization	.294*	.115	.284*	.109	.288**	.097
Physical illness	.309*	.113	.131	.107	.203*	.095

^aSamples vary in size from 481 to 489. Listwise deletion of missing values was used to complete results.

*Indicates a significant univariate test at the .05 level, two-tailed test.

**Indicates a significant test adjusting for multiple comparison at the .05 level [equivalent to a univariate test at the .00625 (.05/8) level], two-tailed test. Eight outcomes were considered in the original analyses. See Kessler, House, and Turner, (1987) for more details.

set of columns were consistently positive. Together, these results suggest that unemployment had a substantial effect on ill health until reemployment and a small residual effect thereafter.

It is not legitimate to compare the effects of current and previous unemployment separately if poor health decreases chances of reemployment. In a situation of this sort, the effects of current unemployment would be overestimated and the effects of previous unemployment underestimated. For this reason, we place most confidence in the analyses that combine the two subsamples. These results, reported in the third set of columns, show that the experience of *having been* unemployed was consistently associated with poor health outcomes in this sample.

These analyses were then replicated with dichotomously defined versions of the outcome variables in an effort to assess the impact of unemployment on extreme levels of psychological distress and self-reported physical illness. Separate dichotomies were defined for the 80th, 90th, and 95th percentiles of each outcome. For each of these cut points, the prediction equation comparing the pooled currently and previously unemployed group with the stably employed was computed using a logistical regression model. The coefficients in these equations were transformed to yield estimates of relative risk—percent of ever unemployed people who reported extreme scores divided by the percent of stably employed people who reported extreme scores.

These estimates are presented in Table 2. For all four outcomes, people with unemployment experience had significantly higher risks of extreme ill health (defined as being in the top 20 percentiles) than the stably employed—roughly 1½ times as high. The relative risks were generally even greater at the higher cut points—often more than twice as high. However, the contrasts involving the top

Table 2. Estimates of Risk and Relative Risk of Extreme Outcome Scores Among People with Unemployment Experience and the Stably Employed^a

Outcome	Percent of respondents above 80th percentile of distress			Percent of respondents above 90th percentile of distress			Percent of respondents above 95th percentile of distress		
	Risk _u	Risk _{se}	Relative risk (u/se)	Risk _u	Risk _{se}	Relative risk (u/se)	Risk _u	Risk _{se}	Relative risk (u/se)
Anxiety	.244	.153	1.59*	.125	.054	2.32*	.107	.031	3.45*
Depression	.256	.165	1.55*	.118	.079	1.50	.060	.027	2.22
Somatization	.258	.154	1.68*	.157	.076	2.06*	.097	.038	2.54
Physical illness	.274	.178	1.54*	.145	.083	1.75*	.071	.044	1.63

^au indicates combined currently and previously unemployed groups. se indicates stably employed group.

*Indicates a significant univariate test at the .05 level, two-tailed test. None of the coefficients was significant in a test adjusting for multiple comparison at the .05 level (equivalent to a univariate test at the (.05/8) = .006 level).

5 percentile group were significant only in the case of anxiety, where the relative risk was so great that it was significant in spite of the extreme skew of the outcome variable—people with unemployment experience were almost $3\frac{1}{2}$ times as likely to report this level of anxiety as were the stably employed.

We have no way of rigorously defining the level of distress that is clinically significant. However, the cut points we used are in the same range as those considered clinically significant in validation studies of symptom screening scales (e.g., Derogatis, 1977; Manis, Brawer, Hunt, & Kercher, 1963; Radloff, 1977; Zung, 1965). We can say with confidence, then, that the experience of unemployment in this sample was associated with levels of distress severe enough to warrant professional intervention. The risk of these extreme levels was estimated from the logistic regression analyses to be at least 50% greater among those with unemployment experience than among the stably employed.

Prediction of Reemployment

Another way to study the influence of selection out of unemployment is to use panel data. We did this by recontacting baseline respondents one year after their initial interview and finding out about changes in employment status. During the year between interviews the economy in Michigan improved, and 42% of the respondents who were unemployed initially became reemployed. This allowed us to study the influence of baseline ill health on reemployment.

The analysis showed that baseline anxiety and depression both predicted reemployment, but in a way that runs counter to the selection bias argument described above. Unemployed people who at baseline experienced the highest levels of anxiety and depression had the *highest* probabilities of reemployment over the subsequent year.

One possible interpretation of this finding is that the experience of psychological distress motivates a more active job search. An alternative interpretation is that the relationship between psychological distress and reemployment is spurious. Those for whom constant employment is a necessity will experience higher levels of distress and, at the same time, will be more active in their job search.

Evidence consistent with this latter interpretation was uncovered in cross-sectional analyses of the relationship between length of unemployment and ill health. Surprisingly, the individuals who were unemployed the longest reported the lowest levels of ill health. More detailed analyses showed that this initially counterintuitive result reflects the fact that people in certain segments of the population had particularly low probabilities of obtaining a new job when they became unemployed. For example, over 80% of the single mothers in our sample who involuntarily lost their jobs sometime during the recession were still unemployed at the time we interviewed them. Married women whose husbands were employed also had a high probability of remaining unemployed after they lost

their jobs. This was especially true if they had young children at home. Married men had a much lower likelihood of remaining unemployed (only 27%).

That the people who were most distressed by job loss were also the people most likely to become reemployed has important implications for the cross-sectional assessment of unemployment effects. It suggests that the extent of available reemployment opportunities partly determines how severe the health effects of unemployment will be. The opportunities for reemployment in the fall of 1984 were considerably greater than they were at the height of the recession (between 1980 and 1983). It is likely, then, that the health-damaging effects of unemployment were considerably greater at the height of the recession than in 1984-1985.

Effects of Selection into Unemployment

Even these conservative results, however, were based on the assumption that there is no selection *into* unemployment on the basis of prior emotional or physical health. We evaluated this assumption by separately considering those respondents who might have played some part in bringing about their job loss and those who lost their jobs due to circumstances beyond their control.

Selection was assessed by using responses to a series of questions about the circumstances surrounding job loss. Since we had to rely on self-reports, we took the most conservative stance possible in coding job loss as outside the person's control. Rather than defining a job loss as externally caused if the respondent told us that it occurred as part of a plant closing or mass layoff, we also required that the respondent tell us that his/her own actions did not contribute to the job loss in any way. This coding scheme yielded a residual subsample of respondents who we could be fairly sure lost their jobs through no fault of their own. The analyses in Table 1 were then repeated for this subsample. The results were very similar to those in Table 1, indicating that selection into unemployment (due to prior poor emotional or physical health) played no important part in explaining the effects of job loss on these health outcomes. These results are discussed more fully in Kessler, House, and Turner (1987).

It should be noted that measures of drinking, drug use, suicidal ideation, and hospital bed days all were found to be significantly associated with unemployment in the total sample. No significant relations of these variables to unemployment were found, however, when we focused on people who lost their jobs through no fault of their own. This suggests that selection might have played a part in accounting for the high levels of these outcomes among the unemployed. However, this is not to suggest that causal effects of unemployment on these outcomes do not exist, for the coefficients remained positive even after adjusting for selection. It might be that, in a larger sample, significant effects of unemployment on these outcomes would be found.

Modifying Influences

As noted above, we were particularly interested in studying helpful resources that might provide clues about intervention targets. Our cross-sectional data were not ideal for studying specifications of this sort because we measured the resources in the same survey that we measured the outcomes. The possibility exists that the outcome affected either the resources or the reports about the resources. Nonetheless, our data allowed provisional analyses to be made of whether the impact of unemployment varied depending on the respondent's access to particular resources. We focused on three such resources: social support, self-concept, and coping.

Social support is the resource that has received most attention in the literature on unemployment. A number of investigators have documented that some aspect of support helps promote adjustment to job loss (Bolton & Oakley, 1986; Dooley et al., 1981; Gore, 1978; Kasl & Cobb, 1979; Pearlin et al., 1981). Based on this prior evidence, we included seven different measures of support in the baseline survey: integration into affiliative networks; perceived availability of crisis support from friends, relatives, and co-workers; access to an intimate and confiding relationship; marital status (an indirect measure of support availability); and support by spouse (asked only of married respondents).

Although less widely considered, there is also evidence that self-concept is consequential for adjustment to job loss (Pearlin et al., 1981; Shamir, 1986). We measured self-concept using two indices—one consisting of positive feelings of self-esteem and personal control, and the other of negative feelings of self-denigration and powerlessness. These scales were derived empirically from the Rosenberg Self-Esteem Scale (Rosenberg, 1965) and the Pearlin Mastery Scale (Pearlin & Schooler, 1978). The first dimension of self-concept consisted of all the positively worded questions in these two scales (its reliability was .57), while the second consisted of all negatively worded questions (its reliability was .76).

There is also considerable evidence that coping behavior influences adjustment to stress (see Kessler, Price, & Wortman, 1985, for a review). Yet research on job loss has not taken this as a central focus. Indeed, the work of Pearlin and his associates (1981) is the only major study to assess coping with job disruption rigorously, and this study concerned itself with a broad array of job disruption events (including such things as retirement and demotion) rather than with job loss per se. In an effort to explore this issue in our data, we considered two kinds of coping. The first set of measures consisted of responses to 15 questions about financial adjustments. These were divided into three separate rationally derived scales of how frequently each respondent (1) borrowed or spent on credit (five items), (2) took steps to cut back on expenses (six items), and (3) used public assistance programs (four items).

The second set of measures considered coping of a more cognitive nature.

Eight items from the Rosenbaum (1980) Self-Control Schedule were used to measure this kind of coping. Exploratory factor analyses led to the creation of two subscales from these items. One was a four-item measure of ability to avoid intrusive thoughts (reliability = .58). The other was a four-item measure of active problem solving (reliability = .57).

A multistep procedure was used to assess the importance of these modifying variables. First, regression equations with interaction terms were estimated for each of the modifiers and each outcome variable. These equations had the form

$$\begin{aligned} \text{Outcome} = & b_0 + b_1\text{CU} + b_2\text{PU} + b_3\text{R} + b_4\text{CU} \times \text{R} \\ & + b_5\text{PU} \times \text{R} + \text{Controls} \end{aligned} \quad (3)$$

where CU and PU were defined as in earlier equations, R is the resource, and CU \times R and PU \times R are interaction terms. The coefficients b_4 and b_5 were interpreted as modifying influences—the extent to which the influences of current and previous unemployment varied as a function of the resource. It is important to recognize that the validity of these estimates hinges on the untested assumption that the coping resources existed at the same levels prior to the time the respondents lost their jobs. The results based on this equation should be considered no more than suggestions because of this limitation.

This prediction equation was estimated 76 times—for each of 19 different modifiers and each of four outcomes. There were 19 modifiers instead of the 14 described above (7 measures of support, 2 of self-concept, and 5 of coping) because 5 of the social support measures (all those other than marital status and marital support) were evaluated separately among married respondents and unmarried respondents. We focus here on the coefficients involving current unemployment, rather than on those involving previous unemployment or the combined sample of currently/previously unemployed, because the health-damaging effects of job loss were most pronounced among the currently unemployed, and we determined earlier that these coefficients were not inflated due to selection in or out of unemployment.

It is likely that a few coefficients will be significant merely by chance in such a large series of replications. Therefore, it is important to evaluate the significance of the overall series rather than merely focus on separate coefficients. We did this by considering the significance of the b_4 coefficients across the entire set of 76 equations. Twenty-six of these coefficients were significant at the .05 level (34%), which is considerably more than we would expect by chance. Furthermore, many of the separate coefficients were significant even when we adjusted for multiple comparisons. Specifically, we found the following overall patterns: (1) six of the 20 b_4 coefficients involving the effects of support among unmarried people were significant at the .0025 (.05/20) level, (2) four of the eight b_4 coefficients involving the effects of self-concept were signifi-

cant at the .0062 (.05/8) level, and (3) two of the 20 b_4 coefficients involving the effects of coping were significant at the .0025 (.05/20) level. None of these three patterns can be attributed to chance. The only insignificant set of results involved the social support measures among married people. None of the b_4 coefficients involving these effects was significant in tests that adjusted for multiple comparisons, although being married itself buffered the impact of unemployment on anxiety and depression in the total sample.

The second step in the modifier analysis was to combine all of the significant predictors into summary equations. This was done by estimating an equation for each of the four outcomes that included the main effects for all resources as well as all significant modifier effects from the 76 earlier equations. Some of the resources were highly intercorrelated (especially the different social support scales), and this summary analysis helped us take this into consideration.

The third step was to trim these combined models to include only modifier effects that remained significant after controlling for the other modifiers. Summary results of these trimmed models are reported in Table 3. The coefficients presented are the interactions between current unemployment and the significant modifiers.

The data in this table show that social support (among the unmarried), self-concept, and coping all significantly modified the impact of current unemployment on ill health. Furthermore, all of these effects were in the expected direction—these resources *reduced* the damage that unemployment inflicts.

Two indicators of social support were important. Having a confidant damp-

Table 3. Modifying Effects of Personal and Social Resources on the Relationship Between Unemployment and Ill Health: Final Trimmed Models^a

Modifiers	Outcomes							
	Anxiety		Depression		Somatization		Physical illness	
	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>
Social support (among the unmarried)								
Confidant	—	—	—	—	-.588	.342	-.707	.344
Social integration	-.380	.108	-.221	.103	-.349	.121	-.263	.121
Self-concept								
Self-esteem	-.081	.032	-.094	.031	-.081	.034	-.057	.035
Low self-denigration	-.027	.015	-.035	.014	—	—	—	—
Coping								
Low intrusive thoughts	-.076	.033	—	—	—	—	—	—
Public assistance	—	—	—	—	—	—	-.183	.103

^aThe coefficients presented are all those that were significant at the .05 level, one-tailed test, in the combined models that assessed the effects of all resources simultaneously.

ened the impact of job loss on somatization and physical illness, while integration into affiliative social networks had a similar effect on all four outcomes. While not as large as the social support effects, both aspects of self-concept significantly modified the impact of unemployment. Positive self-concept had a protective effect against all of the illness outcomes. Absence of self-denigration protected against anxiety and depression. Both kinds of coping also modified the effects of unemployment, although these effects were much less consistent than those of support and self-concept. One of the financial coping scales, the use of public assistance, had a significant ameliorative effect with respect to physical illness, while the ability to avoid intrusive thoughts protected against anxiety.

Mediating Influences

The foregoing analysis of modifiers allowed us to examine why some people were more vulnerable than others to the distress created by job loss. A related issue involves the mechanisms through which job loss influences health. Unemployment is not the same experience for everyone exposed to it. We reasoned that an understanding of this variation might be facilitated by breaking down the analysis of unemployment into a consideration of the various stresses that it creates or exacerbates.

Although no systematic quantitative analysis has previously been undertaken to document the main stresses associated with job loss, the literature provides a number of hypotheses about what these might be. Our reading of this literature, combined with our experience working with unemployed people in this area, led us to focus on four types: financial strain, marital strain, strain associated with reduced social integration, and increases in the number of stressful life events. We measured financial and marital strain with multiple-item indices (internal consistency reliabilities of 0.78 and 0.85, respectively). The financial strain questions dealt with constraints on buying food, clothing, and medical care. The marital strain index was a combination of marital satisfaction items from Spanier's (1976) Dyadic Adjustment Scale and questions about confrontive aspects of marital arguments. Social integration was assessed using three questions regarding the frequency of informal contact with friends, neighbors, and relatives. Finally, two summary life-event measures were used; one consisted of events of a financial nature that we believed might have a special relevance for the unemployed, and the other consisted of more general life events such as problems with health or interpersonal relationships.

The main purpose of the analysis was to investigate whether these strains helped explain the effects of unemployment on ill health. We did this by decomposing the effects of unemployment through these mediators. Results of these computations showed that financial strain was the only significant mediator. It explained between 41% (for anxiety) and 100% (for somatization) of the effects

of current unemployment on the four health outcomes. The other mediators were of comparatively trivial importance. (See Kessler, Turner, & House, 1987, for a detailed discussion of these results.)

There is another way in which strains might be implicated in the effects of unemployment. Unemployed people might be more vulnerable than the employed to the health-damaging effects of strains. A serious life event, for example, may take on an added dimension of stressfulness if it occurs while the family's breadwinner is out of work. Coping capacities are stretched thin with prolonged unemployment, and it is reasonable to assume that the ability to manage other serious strains would be reduced.

We evaluated this possibility by estimating a series of regression equations that included all of the predictors in Eq. (1), plus the five strain measures, plus terms representing the interactions between each strain and current unemployment. With five strains and two measures of unemployment, ten interaction terms were created for each prediction equation. The data showed only one consistent pattern of differential response. The impact of undesirable life events was significantly more pronounced among currently unemployed people than among the employed. This means that the highest levels of ill health were associated with the joint occurrence of unemployment and some other undesirable life event.

There are at least two ways to interpret this specification. Either unemployment magnified the impact of other events on these health outcomes, or other events magnified the impact of unemployment. Some insight into these two different interpretations might be obtained by looking separately at situations in which unemployment occurred after the other event and those in which unemployment occurred first. We did not attempt to carry out such a specification empirically for two reasons. First, the sample size was small and thus the required analysis, which amounts to the estimation of a three-way interaction, could not be done sensitively without more cases. Second, and more fundamentally, there was little reason to believe any clear primacy could be found for a provoking effect in an analysis that evaluated the joint effects of two different life events.

Discussion

The analyses reported here represent our initial attempts to evaluate the effects of unemployment on worker health in a population that has been particularly hard hit by the recession of the early 1980s, and to trace out mediating and modifying influences on these effects.

Our results document that unemployment had health-damaging effects in this population severe enough to be considered clinically significant. This was true even though increased reemployment opportunities during the time of our

study probably reduced the effects compared to what they were at the height of the recession.

At a broad level, compared to previous research on the effects of job loss specifically and on other stresses more generally, our approach to the cross-sectional analysis of gross unemployment effects was innovative in that it used several strategies to assess the impact of selection bias. Bias of this type is pervasive in nonexperimental research on stress, and its effects can be far from trivial (see Kessler, 1987, for a more extended discussion). It is rare, however, for researchers to give it more than passing consideration.

After assessing the gross effects of unemployment, we next considered a series of resources that had been previously reported in the literature to attenuate the effects of unemployment on ill health. We found that all three types of resources were significant modifiers, although the effects of social support were strongest and the effects of both social support and self-concept were much more consistent than the effects of coping. A major limitation of this analysis is that it was based on cross-sectional data. The results would have been considerably more persuasive if we had been able to measure the resources prior to the time of job loss.

Subsequent analyses attempted to discover the ways in which unemployment creates ill health. These analyses were unique in that we attempted to specify mediating pathways. We know of no previous attempt to carry out a systematic decomposition of this sort, although the earlier work of Pearlin and his associates (1981) was an important step in this direction.

We found two clear mechanisms through which unemployment causes ill health. First, financial strain is of great importance. In its absence, the effects of current unemployment were only half what they were in its presence. Second, unemployment compounds the effects of unrelated life events. In the absence of some other stressful event and net of elevated financial strain, the currently unemployed people in this population were in no worse health than people who had been stably employed throughout the recession years.

It should be noted that our ability to account for the impact of current unemployment in terms of increased financial strain and vulnerability to life events does not necessarily mean that there were no other important factors involved. This is so for two reasons. First, our sample was not representative of unemployed and employed workers in general. Auto manufacturing is the predominant industry in the area we studied, and most of our respondents were blue-collar workers. Blue-collar workers (and low-prestige white-collar workers) are much more likely to say that they would quit their job, if they had no financial need to continue working, than are professional or managerial workers—a finding that has been replicated many times in national surveys of employed workers in the United States (Kahn, 1981). It is not unexpected, then, that financial strain was the most important component of the unemployment experience in this

particular population. In other samples, however, other factors may take precedence. Warr and Jackson (1985) have, in fact, found that the psychological health of the unemployed deteriorates more dramatically among individuals with high employment commitment.

The second reason that intervening mechanisms, other than those we found, may be important is the possible existence of counterbalancing forces. For example, some earlier qualitative research suggests that unemployment has positive effects on family relationships because of the increased time that the unemployed individual has to spend with his family (Thomas, McCabe, & Berry, 1980). If this were the case for our sample, and had we controlled for its effect, then we would have fallen short of explaining the entire effect of current unemployment. Thus, there would be room for other unemployment-related strains to be considered.

Conclusion

The importance of these findings for determining how to intervene in the lives of unemployed people is as yet unclear. We are currently involved in an experimental intervention program that tries to build a supportive social network among unemployed workers. Our survey results suggest that this will be most effective if it can help address concerns about financial strain. The intervention is also attempting to change perceptions of control and self-worth in an effort to increase resistance to stress.

Perhaps the most compelling intervention is suggested by the fact that few stable health differences could be found between the previously unemployed and the stably employed. This indicates that the bad effects of job loss can be largely reversed by reemployment. It is important to realize that this reversibility is by no means a consistent finding in research on stress and health. Many stressful events, like the death of a loved one, have effects on physical and emotional health that persist for many years after the event has occurred (Lehman, Wortman, & Williams, 1987). Job loss apparently affects health in a different fashion. When the stress goes away, so do most of the adverse health effects. This means that the focus of our research and intervention efforts at the individual level should be on the financial stresses of unemployment and the personal and social resources that facilitate effective job search and reemployment.

References

- Bolton, W., & Oatley, K. (1986). A longitudinal study of social support and depression in unemployed men. *Psychological Medicine*, 17, 453-460.
- Brenner, M. H. (1976). *Estimating the social costs of economic policy: Implications for mental and physical health and criminal aggression* (Paper No. 5, Report to the Congressional Research

- Service and Joint Economic Committee of Congress). Washington, DC: U.S. Government Printing Office.
- Brenner, M. H. (1983). Mortality and economic instability: Detailed analysis for Britain. In J. John, D. Schwefel, & H. Zollner, (Eds.), *Influence of economic instability on health* (pp. 27-84). Berlin: Springer-Verlag.
- Catalano, R., & Dooley, D. (1977). Economic predictors of depressed mood and stressful life events. *Journal of Health and Social Behavior*, 18, 292-307.
- Cobb, S., & Kasl, S. V. (1977). *Termination: The consequence of job loss* (Report No. 76-1261). Cincinnati, OH: National Institute for Occupational Safety and Health.
- Derogatis, L. R. (1977). *SCL-90: Administration, scoring and procedures manual for the revised version*. Baltimore, MD: Clinical Psychometrics Research Unit, Johns Hopkins University School of Medicine.
- Dooley, D., Catalano, R., Jackson, R., & Brownell, A. (1981). Economic, life, and symptom changes in a non-metropolitan community. *Journal of Health and Social Behavior*, 22, 144-154.
- Gore, S. L. (1978). The effects of social support in moderating the health consequences of unemployment. *Journal of Health and Social Behavior*, 19, 157-165.
- Grayson, J. P. (1985). The closure of a factory and its impact on health. *International Journal of Health Services*, 15, 69-93.
- Kahn, R. L. (1981). *Work and health*. New York: Wiley.
- Kasl, S. V., & Cobb, S. (1979). Some mental health consequences of plant closing and job loss. In A. Ferman & J. P. Gordus (Eds.), *Mental health and the economy* (pp. 255-300). Kalamazoo, MI: Upjohn Institute for Employment Research.
- Kessler, R. C. (1987). The interplay of research design strategies and data analysis procedures in evaluating the effects of stress on health. In S. Kasl & C. Cooper (Eds.), *Stress and health: Issues in research methodology* (pp. 113-140). New York: Wiley.
- Kessler, R. C., House, J. S., & Turner, J. B. (1987). Unemployment and health in a community sample. *Journal of Health and Social Behavior*, 28, 51-59.
- Kessler, R. C., Price, R. H., & Wortman, C. B. (1985). Social factors in psychopathology: Stress, social support and coping processes. *Annual Review of Psychology*, 36, 531-572.
- Kessler, R. C., Turner, J. B., & House, J. S. (1987). Intervening processes in the relationship between unemployment and health. *Psychological Medicine*, 17, 949-961.
- Lehman, D. R., Wortman, C. B., & Williams, A. F. (1987). Long-term effects of losing a spouse or child in a motor vehicle crash. *Journal of Personality and Social Psychology*, 52, 218-231.
- Linn, M. W., Sandifer, R., & Stein, S. (1985). Effects of unemployment on mental and physical health. *American Journal of Public Health*, 75, 502-506.
- Manis, J. G., Brawer, M. J., Hunt, C. L., & Kercher, L. C. (1963). Validating a mental health scale. *American Sociological Review*, 28, 108-116.
- National Center for Health Statistics. (1981). Highlights from wave 1 of the National Survey of Personal Health Practices and Consequences: United States, 1979. *Vital and Health Statistics*, Series 15, No. 1.
- Parnes, & King, (1977). Middle-aged job loser. *Industrial Gerontology*, 4, 77-95.
- Pearlin, L. I., Lieberman, M. A., Menaghan, E. S., & Mullen, J. T. (1981). The stress process. *Journal of Health and Social Behavior*, 22, 337-356.
- Pearlin, L. I., & Scholler, C. (1978). The structure of coping. *Journal of Health and Social Behavior*, 19, 2-21.
- Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385-401.
- Rosenbaum, M. (1980). A schedule for assessing self-control behaviors: Preliminary findings. *Behavior Therapy*, 11, 109-121.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Shamir, B. (1986). Self-esteem and the psychological impact of unemployment. *Social Psychology Quarterly*, 49, 61-72.

- Spanier, G. B. (1976). Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family*, 38, 15-28.
- Thomas, L. E., McCabe, E., & Berry, J. E. (1980). Unemployment and family stress: A reassessment. *Family Relations*, 29, 517-524.
- Warr, P., & Jackson, P. (1985). Factors influencing the psychological impact of prolonged unemployment and of reemployment. *Psychological Medicine*, 15, 795-807.
- Zung, W. W. (1965). A self-report depression scale. *Archives of General Psychiatry*, 12, 63-70.

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