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The Stress Process

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This study uses longitudinal data to observe how life events, chronic life strains, self concepts, coping, and social supports come together to form a process of stress. It takes involuntary job disruptions as illustrating life events and shows how they adversely affect enduring role strains, economic strains in particular. These exacerbated strains, in turn, erode positive concepts of self, such as self-esteem and mastery. The diminished self-concepts then leave one especially vulnerable to experiencing symptoms of stress, of which depression is of special interest to this analysis. The interventions of coping and social supports are mainly indirect; that is, they do not act directly to buffer depression. Instead, they minimize the elevation of depression by dampening the antecedent process.

The process of social stress can be seen as combining three major conceptual domains: the sources of stress, the mediators of stress, and the manifestations of stress. Each of these extended domains subsumes a variety of subparts that have been intensively studied in recent years. Thus, in the search for sources of stress, considerable interest has been directed to life events and to chronic life strains, especially the former; in work concerned with conditions capable of mediating the impact of stressful circumstances, coping and social supports have had a rather dramatic rise to prominence; and as for stress and its symptomatic manifestations, the expanding volume of research ranges from the microbiological substrates of stress to its overt emotional and behavioral expressions.

An overview of the large literature that deals with these spheres reveals important achievements mixed with certain discontinuities and deficiencies. It is especially striking that despite the attention given separately to the various components of stress, the intricate linkages that join them have not yet been unraveled. For example, social scientists ex-

amine the impact of life events on health; or they consider the enduring life strains that make some people more susceptible to depression than others; or they seek to specify dimensions of coping behavior or of support networks. But rarely, if ever, do they have the opportunity to undertake all of these tasks together. As a consequence, little is known of the manner in which the various components of stress are interconnected to form a process. The primary purpose of this paper is to identify some of these interconnections.

The present limited knowledge of process is certainly not the result of indifference or of failure to think of stress in terms of process. On the contrary, several models of a stress process are either implicitly or explicitly present in the literature (Scott and Howard, 1970), some of them interfacing quite closely with that which we shall develop and test here. A major reason there is not more empirically based knowledge about process is that the range of issues usually encompassed by single investigations is too truncated to observe the extended web of relationships that gives shape and substance to process. What is needed, by contrast, are investigations that contain under their umbrellas information about the broad array of social and psychological conditions that combine over time to create stress. The present study is able to assemble a variety of longitudinal data that cut across several of the crucial parameters involved in social stress. Though the data fall

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short of containing all the information one would ideally want, they do permit observation of how life events, life strains, self concepts, social resources, and coping behavior come together to influence depression.

THE STUDY BACKGROUND

This is a longitudinal study, the first wave of interviewing having been conducted in 1972–73 and the second four years later, in 1976–77. The original sample comprised 2,300 adults between the ages of 18 and 65, and was representative of the U.S. census-defined urbanized area of Chicago (U.S. Bureau of the Census, 1972), which includes suburban areas as well as Chicago proper. Interviews with male and female family heads were alternated so as to achieve as equal a number of men and women as possible. Because women are more often single heads of households, 58% of our final sample was female.

The content of the first interview was largely organized around three areas: the identification of the conflicts, frustrations, and other role strains encountered by parents, marriage partners, workers, and breadwinners; the identification of the coping behaviors people use to minimize the impact of the strains; and the assessment of symptoms of depression, anxiety, anger, cognitive disturbance, and a variety of situational stresses. All in all, the first-wave interviews enabled us to observe how rather durable strains experienced in key social roles, together with the use of coping repertoires and personal resources, are related to various aspects of psychological distress.

The follow-up interviews were conducted among the 88% of the respondents who four years earlier had told us that they would be willing to continue their participation in the study. Of those whom we succeeded in contacting from this pool, 82% agreed to the interview, yielding a total of 1,106 respondents. As we have reported in greater detail elsewhere (Pearlin and Lieberman, 1979), the attrition was to a small extent disproportionate among young, nonwhite males of limited income. The analysis presented in this paper includes only respondents for whom we have longitudinal data.

The second interview repeated many of the

original questions concerning chronic role strains, personal and social resources, coping behavior, and psychological functioning, making it possible to assess the changes that evolved in these areas over a four-year period. However, the follow-up interview was extended to include, first, many queries about the life events that had occurred in the interval between the two waves of interviews and, next, detailed questions about social affiliations and supports. All of the concepts from both interviews were measured through the use of LISREL.¹

No matter how extensive one's data or how finely honed one's statistical procedures, what one comes to understand of behavior and its social underpinnings depends on the concepts employed. Certainly, in the area of social stress, where research is often discontinuous, if not actually competing, conceptual specification is essential. A discussion of our orientations, therefore, is a necessary first step toward understanding both the stress process and our attempts to observe it. This discussion will be organized around an elaboration of the three major components of stress: its sources, mediators, and outcomes. As we consider the various aspects of these components, we shall at the same time propose how they fit together to form a process. It is this paradigm that will then be tested against our data.

A CONCEPTUAL OUTLINE OF THE STRESS PROCESS

Sources of Stress

The sources of social stress can be traced to the very boundaries of societies, their structures and cultures. As one moves closer to individual experience, however, stress can be seen as arising out of two broad circumstances: the occurrence of discrete events and the presence of relatively continuous problems. Of these, the study of life events has probably received by far the greater attention in recent years and we shall consider it first.

Eventful experience. Underlying much of life-events research are certain implicit assumptions and methodological shortcomings that have made its intellectual yield less than bountiful. Many of the problems of the re-

search, especially those of a methodological nature, have been reviewed elsewhere (e.g., Rabkin and Struening, 1976; Dohrenwend and Pearlin, 1981). We need only to call attention to a few of its features that are especially relevant to our own orientations. Foremost among them is the assumption that events lead to stress because the organism is fundamentally intolerant of change, an assumption rooted in the pioneering laboratory studies of Cannon (1935) and Selye (1956). These workers, as well as others who came to be inspired by their research, saw the natural state of the organism as one of equilibrium between the many inner and outer forces that it hosts. When a change occurs in one part of the organism, it is thought to create a disequilibrium among the other parts. This, in turn, imposes a period of readjustment during which the system struggles to reestablish a homeostasis. The struggle for readjustment can be wearing and exhausting, and under these conditions the organism becomes outstandingly vulnerable to stress and its physical and psychological consequences.

Social scientists, of course, are likely to be wary of any unqualified suggestions that change *qua* change is bad for people and inimical to their health, for change is an intrinsic part of normal social and biological life. Not only are changes always occurring at a societal level, but eventful change is also inescapably built into aging and the life cycle. In pointing out that events are part of life itself, we do not want to suggest that they cannot be harmful to people, for indeed they often are. We do want to emphasize, however, that adverse consequences, at least those involving psychological stress, depend not only on the number of events and the magnitude of the changes they entail, but on the quality of eventful change as well. This is clearly reflected in current research that seeks to distinguish life events, for example, according to their desirability (Gersten et al., 1974; Vinokur and Seltzer, 1975; Gersten et al., 1977; Mueller, 1979), by the degree of control people have over their occurrence (Fairbank and Hough, 1979), or by whether or not they are scheduled life-cycle transitions (Pearlin and Lieberman, 1979; Pearlin, 1980). Recognition that events of different quality may produce different effects represents an important development in life-events research.

Life strains. Once researchers have succeeded in identifying the classes of events that are likely to arouse stress, there remains the question of how events come to be stressful. Of course, this is not an unanswered question if one assumes that stress is the result of a struggle to reestablish a homeostasis following change. But if this assumption is no longer accepted, it becomes necessary to probe for the mechanisms that explain the links between events and stress. One such explanation is beginning to emerge. It suggests that events do not necessarily impact upon people directly but may, instead, exert their effects through a wider context of life strains. Thus the two major sources of stress—eventful experience and chronic strains—may converge in the production of stress. This convergence comes about in two ways, one of them illustrated by the findings of Brown and Harris (1978). They observed instances in which seemingly trivial life events precipitated episodes of depression. In accounting for such cases, they concluded that life events can function to bring into focus the unfavorable implications of life problems, and it is the new meaning of old problems that creates distress. Life events, from this perspective, lead to stress by adversely altering the meaning of persistent life strains.

The second way in which life events and life strains come together is suggested by our own earlier work (Pearlin and Lieberman, 1979). Our results indicate that life events may create new strains or intensify preexisting strains and it is these new or intensified strains, in turn, that eventuate in stress. Although the exacerbation of role strains can result from many factors, critical life events stand as potent antecedents. One of the important tasks of the present analysis is to observe empirically this convergence over time of events and strains as sources of stress.

Self concepts. Thus far, then, we have suggested that certain life events can intensify the more persistent role strains and, in this way, the events and the ensuing strain combine as sources of stress. Although events and chronic strains constitute a substantial segment of the etiological process, still another step can be observed, this one involving elements of self-concept. Specifically, life events and the role strains they generate are especially likely to eventuate in stress when they also result in a

diminishment of self. Two dimensions of self-concept are of particular relevance in this regard: mastery and self-esteem. Mastery refers to the extent to which people see themselves as being in control of the forces that importantly affect their lives. It is measured by a seven-item scale constructed for this investigation and subjected to confirmatory factor analysis (see Appendix A). Self-esteem, of course, involves the judgments one makes about one's own self-worth. This concept of self is assessed by the widely used Rosenberg scale (Rosenberg, 1965) (see Appendix B).

The protection and enhancement of the self, we submit, are fundamental goals after which people strive. The enduring presence of noxious circumstances, precisely of the kind represented in role strains, apparently functions to strip away the insulation that otherwise protects the self against threats to it (Kaplan, 1970). Persistent role strains can confront people with dogged evidence of their own failures—or lack of success—and with inescapable proof of their inability to alter the unwanted circumstances of their lives. Under these conditions, people become vulnerable to the loss of self-esteem and to the erosion of mastery. In the paradigm that we shall put to empirical test, the diminishment of these treasured elements of self is viewed as the final step in the process leading to stress.

Mediating Resources

It is now consensually accepted that the intensity of the stress that people exhibit cannot be adequately predicted solely from the intensity of its sources, whether the sources be life events, chronic role strains, the diminishment of self, or all three. Instead, people typically confront stress-provoking conditions with a variety of behaviors, perceptions, and cognitions that are often capable of altering the difficult conditions or of mediating their impact. Among the elements having a crucial place in the stress process, therefore, are those that can be invoked by people in behalf of their own defense. These are referred to collectively as mediators, of which two types are distinguished for the purposes of this paper: social supports and coping. By and large, even less may be known about the substance and mech-

anisms of the mediators of social stress than about its sources.

Social supports. Consider first the matter of social supports—the access to and use of individuals, groups, or organizations in dealing with life's vicissitudes. Although a number of scholarly efforts have sought to bring some clarity to an area surrounded by considerable ambiguity (see, for example, Caplan and Killilea, 1976; Cobb, 1976; Brown, 1978; Mueller, 1979; and House, 1981), the term *social supports* continues to reflect inconsistency in meaning and usage. Questions remain as to what constitutes a support system, what kinds of support can be drawn from the system, and what kinds of problems are amenable or resistant to reduction by supports. Indeed, although several studies show that support does modify the impact of stressful circumstances (e.g., Eaton, 1978; Gore, 1978; Lin et al., 1979; LaRocco et al., 1980), there is no clear understanding of the conditions that determine whether or not support will be effective (Lieberman and Mullan, 1978).

Within the scope of this paper we are unable to resolve in any complete fashion the many questions that cling to research into social supports. However, we can address certain issues. First, from the examination of our data it seems evident that a support system is not necessarily coextensive with a social network. If one possesses family, friends, and a circle of associates, one is not necessarily the automatic beneficiary of support in times of trouble. Our data suggest that the degree to which people can draw on social relations for support depends on more than either the extensiveness of the relations or the frequency of interaction. Support comes when people's engagement with one another extends to a level of involvement and concern, not when they merely touch at the surface of each other's lives. It appears, therefore, that being embedded in a network is only the first step toward having access to support; the final step depends on the quality of the relations one is able to find within the network. The qualities that seem to be especially critical involve the exchange of intimate communications and the presence of solidarity and trust. We shall have more to say of the qualities of support systems when we describe the measure used for this analysis.

Coping. The second mediating resource that

has a prominent part in the stress process is coping. In sheer volume, it probably exceeds by a large margin the space occupied by social supports in the literature. Historically, thinking about coping has been largely shaped by clinical perspectives, although some current psychologically oriented work is also keenly sensitive to social factors underlying individual coping (Folkman and Lazarus, 1980). In earlier papers we have described our own treatment of coping (Pearlin and Schooler, 1978; Pearlin, 1980), and only a brief description is needed here.

First, we are interested in the normative modes of coping that people learn from and share with their membership groups, not in those elements of coping that uniquely characterize individuals. Second, we distinguish coping behavior according to its functions, of which there are at least three: the modification of the situations giving rise to stressful problems; the modification of the meaning of problems in a manner that reduces their threat; and the management of stress symptoms. Third, we do not regard coping as a set of general dispositions that are aroused regardless of the nature of problems people face; they are, instead, specific behaviors that vary with the substance of people's problems and with the social roles in which the problems emerge. Fourth, the results of our analysis have led us to be impressed as much with the limitations of coping as with its efficacy. In particular, individual coping appears to be quite ineffective when directed to problems residing in formal organization, its authority, and reward systems; it is most effective in dealing with problems involved in face-to-face relations, such as in the family.

A review of what has been learned about coping should underscore, too, how little is still known of this rich and complex behavior. Despite the attention given to coping, by and large the actual coping functions of such behavior are largely putative. What is sorely needed is both to extend the identification of coping behaviors and to rely more on empirical evaluation and less on intuition in judging whether or not behavior that is labeled as coping indeed has coping functions.

The two mediators we have discussed—social resources and coping resources—are typically treated in research as separate and

unrelated issues. However, each is a resource that people can tap to mediate the stressful impact of life problems; although they are two distinct phenomena, they have similar functions in the stress process. While the mobilization and use of social resources are different from the mobilization and use of coping actions, each has the capacity to regulate the effects of stressful conditions. Individuals, faced with an array of problems and hardships as they move through the life course, do not choose between coping and supports, but use both in an effort to avoid, eliminate, or reduce distress. Finally, and of utmost importance, within the framework of the paradigm we are proposing, there are several junctures at which the mediators can conceivably intervene: prior to an event, between an event and the life strains that it stimulates, between the strain and the diminishment of self-concept, or prior to the stress outcome. We shall show below that by elaborating step by step the process that leads to stress, it becomes possible to observe multiple modes of potential intervention by social supports and coping.

Manifestations of Stress

Eventually the attempt to understand processes of stress has to confront what may be the most stubborn issue of all: the meaning and measurement of stress itself. At best, it can be recognized as a generic term that subsumes a variety of manifestations. Indeed, it is the very multiplicity of stress outcomes that seems to underlie much of the conceptual ambiguity. That is, in large measure the confusion surrounding the concept results from disagreements about which of its many outcomes can be regarded as the "real" manifestation of stress. There is probably a general agreement that stress refers to a response of the organism to conditions that, either consciously or unconsciously, are experienced as noxious. There is far less agreement as to where in the functioning of the organism this response is most clearly reflected: in the single cell, in an organ, or throughout the entire organism; in biochemical, physiological, or emotional functioning; at a level of systems, such as the endocrine, immunological, metabolic, or car-

diovascular systems; or in particular diseases, physical and psychological.

The methods that one employs in one's research to a considerable extent constrain the particular manifestations of stress that can be observed. For example, studies based on sample surveys of households, such as ours, typically rely on verbal reports. As a consequence, surveys must limit their inquiries to signs of stress of which people have some awareness and cannot include those that are at a level of unconsciousness or which depend on complicated and costly laboratory assays. Similarly, surveys must look for the naturalistic antecedents of stress rather than those that can be artificially manipulated. Finally, they must choose whether to treat stress as a situational state or a global trait. For example, job stresses can be thought of as separate and different from, say, stresses arising in marriage, and both of these are different from a more encompassing condition of the organism that remains constant as one moves across different social roles and situations.

In our research we use both situational and global assessments, and each has a vitally important part in the stress process. In the present report, however, we shall limit ourselves to but a single, global indicator of stress, that of depression. The assessment of depression is based on respondents' reports of how frequently in the preceding week they had experienced each of 10 symptoms (Derogatis et al., 1971; Lipman et al., 1969) (see Appendix C). Although these symptoms are prominent among people in psychiatric treatment who have been diagnosed as depressed, it is not certain that a high level of symptomatology in community populations represents the same clinical depression that is seen in treatment settings. Clinically based assessments simply cannot be used with confidence as diagnostic tools in the community. Nevertheless, though symptoms scales are not case-finding tools, their manifest substance distinguishes reasonably well people who differ with regard to their depressive affect.

Among the global indicators of stress, depression is especially well suited to studies concerned with social and economic antecedents. It is known to vary with such fundamental statuses as sex (Gove and Tudor, 1973; Pearlin, 1975), marital status (Radloff, 1975;

Warheit et al., 1976; Pearlin and Johnson, 1977), and income (Catalano and Dooley, 1977), indicating that the repeated experiences of people within these statuses influence their level of depression. Moreover, it is our view that depression may be especially sensitive to a distinctive kind of experience, namely, undesired experience that is both enduring and resistant to efforts aimed at change. It will be recalled from our discussion of mastery and self-esteem that these are the very kinds of experiences we also consider to be especially erosive of positive self-concepts. The diminishment of precisely these kinds of self-concepts, in turn, has been associated with vulnerability to depression (Seligman, 1975).

Although the study of depression is important in its own right, it also provides a clear reflecting surface for detecting problematic aspects of social and economic organization, for observing tenacious and unwanted experiences, and for appreciating the pivotal importance of self-concept. Perhaps more than other global psychological states, it offers the researcher a chance to identify and observe crucial elements of social life, of emotional life, and of their interconnections.

AN EMPIRICAL OUTLINE OF THE STRESS PROCESS

Thus far we have proposed that life events can lead to negative changes in peoples' roles, changes whose persistence wears away desired elements of self-concept, and that through this set of linkages stress is aroused. Coping and social supports, for their part, can intervene at different points along this process, thereby mediating the outcomes. Our principal remaining task is to test and elaborate this paradigm by observing the many empirical interrelationships that it entails. This task is best served by being selective, carefully choosing key variables rather than including all that might help to account for observed variance. The analysis is presented in a step-by-step fashion, starting with the bivariate relationship of life events to depression and progressively and cumulatively adding the other elements that enter into the proposed stress process. This stepwise presentation requires that the relationships which appear within each step of

the analysis be taken as provisional until the final step, when all the variables that figure into the analysis are presented. The pairwise correlations of the variables, together with their standard deviations and means, are presented in Appendix D.

Life Events and Depression

In the second interview of our study, respondents were asked to indicate which of 50 events they had experienced within the four-year interval following the initial interview.² There are several approaches that could be taken in examining the part played by life events in the stress process. One approach would be to establish a measure based on the overall magnitude of eventful change and to observe if this measure is related to depression (it is, slightly but significantly). But as we have argued earlier, any treatment of life events that ignores their qualitative differences is limited in explicating how life events affect the well-being of people. Therefore, a second approach would be to distinguish large qualitative classes of events—such as desirable-undesirable or scheduled-unscheduled—to see if there are differences in their effects on depression (there are: only the undesirable and unscheduled events have significant effects). This is an entirely reasonable approach, especially when the goal of the research is to evaluate the total contribution of classes of eventful experience to stress. Here, however, we have opted to examine a small, select group of events. A major advantage of this strategy is its simplicity and manageability. At the same time, it is highly suited to our primary interest in learning how events fit into a larger process of stress.

The events that we have chosen to examine involve the disruption of work life resulting from being fired ($N = 8$), being laid off ($N = 51$), being downgraded ($N = 21$), or having to leave work because of illness ($N = 8$). Obviously, job disruption of these sorts, even in cases where it is temporary, is involuntary, undesired, and unscheduled. Other events of similar quality would be equally appropriate to our goals, but the analysis of job disruptions enables us to make maximal use of our data.

How do events involving job disruption affect depression? Excluding respondents who

were not in the labor force at the time of the first interview and those who had voluntarily left it before the second, we created a dummy variable to represent the occurrence of a job disruption (0 = no disruption, 1 = disruption). As can be seen in path diagram A of Figure 1, we find that people who have experienced this involuntary event are also substantially more likely to have experienced an elevation in depression.³ Specifically, the estimated unstandardized regression coefficient predicting an increase in depression following a job disruption is .34, net of an array of control variables.⁴ (We employ the unstandardized weights throughout the analysis in response to Heise's [1975] admonition that standardized coefficients should be avoided in longitudinal studies of change because of the likelihood that the distributions of the measures will shift over time.) In this relationship certain life events can be seen to have an appreciable capacity to arouse stress. The task now is to explore how this happens.

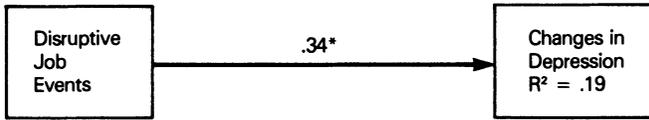
Role Strains and the Channeling of Life Events

How is it that people who have confronted unscheduled or undesired life events come to be stressed? Role strains, we believe, represent one of the important mechanisms linking events to stress. As we proposed earlier, events may induce adverse changes in the more persistent circumstances of people's lives; these adverse changes then act to intensify the level of stress that people experience. Thus events create stress not only—or even primarily—through their direct demand for readjustment, but also through their indirect exacerbation of role strains. If disruptive job events are taken as a case in point, one should find, first, that such events do increase role strains and, next, that when people experience intensified strains they also become more vulnerable to an intensified depression.

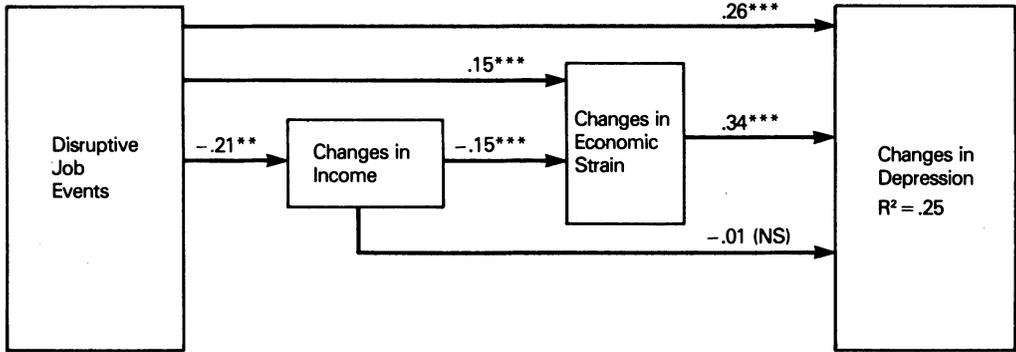
Several role strains are negatively affected by job disruption. For example, evidence of increased strains can be discerned in marriage, in parenthood, and, among those who are occupationally reestablished, in work life. However, there is one area that is especially likely to be affected by disrupted work; this, of

FIGURE 1. Path models of sources of stress

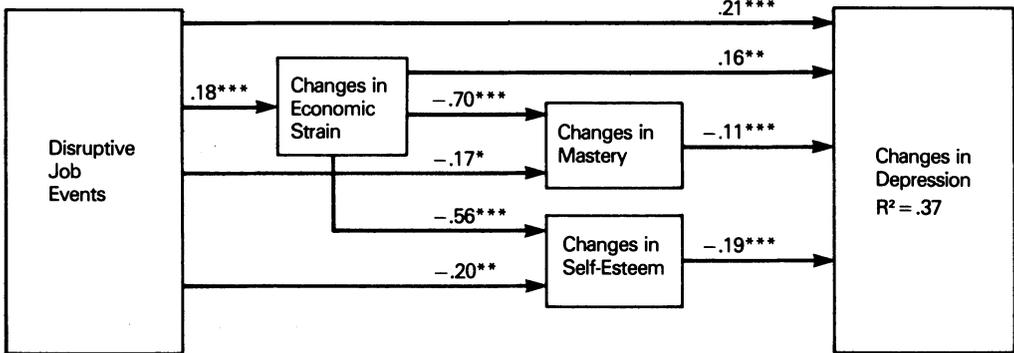
A. Events and Changes in Depression



B. Events, Economic Strain and Changes in Depression



C. Events, Economic Strain, Self Concept and Changes in Depression



*p < .05; **p < .01; ***p < .001

course, is the economic problems of households. Since it is not our purpose to maximize the variance for which we can statistically account, we shall deal exclusively with economic strain, omitting from consideration other strains. We select economic strain not only because it simplifies the analysis, but also because its a priori relevance to job disruption

makes it particularly suitable in helping us to identify and illustrate the key features of a stress process.

Our measure of economic strain is based on a number of items inquiring into the difficulty people have in acquiring both the necessities of life—food, clothing, housing, and medical care—and some of its more optimal accoutre-

ments, such as furniture, automobiles, and recreation (see Appendix E). Changes in these strains are assessed in the same manner as in depression, that is, by dealing with that part of strain which is manifested after regressing the time 2 measure on that of time 1. Increases in economic strain could be expected to result from a number of circumstances: inflation, additional children, the financial burdens of illness, and so on. Path diagram B in Figure 1 shows that job disruption is also a contributing factor, even though within the design of the present research the event may have occurred several years prior to the time that the increase in strain is observed. Actual changes in dollar income over the four-year period are also presented in the diagram in order to demonstrate that part of the effect of job disruption on economic strain is exercised indirectly through its adverse effect on the actual material level of people's lives. A log transformation was used to extend the usual skewness of the distribution of dollar income and to reveal relationships that would otherwise be obscured.

Substantively, diagram B shows that job disruption is likely to result in an intensification of economic strain, partly through the reduction of income. And as people experience an intensified strain, there is a substantial chance that they will also experience a heightened level of depression. Overall, then, it is evident that people are not simply depressed by an event, but also by the more enduring strains to which the event contributes. The direct path from job disruption to changes in depression decreases from .34 to .26 when economic strain is held constant, indicating that some of the total impact of the events is being mediated through role strains. Thus strains are both a product of life events and a channel through which life events come to have deleterious effects on psychological well-being.

Life Events, Life Strains, and Self-Concept

Just as life events influence depression indirectly through economic strains, so too is part of the influence of the strain on depression indirect. It is in this regard that the loss of prized elements of self-concept is of pivotal importance. It will be recalled that we view the

more tenacious role strains as being especially inimical to self-esteem and mastery, for hardships that are an enduring testimony to one's lack of success or to the inadequacy of one's efforts to avoid problems would seem to pose the most sustained affront to one's conceptions of self-worth and of being in control over personal destiny. By contrast, problems that by their very nature are short-lived, or those that are readily responsive to efforts to solve them, do not leave people convinced of their own deficiencies; in fact, successful encounters with these kinds of problems might enhance the self. It is the abiding problems to which people can see no end, those that seem to become fixtures of their existence, that are intrinsically uncongenial with positive self-concept. Although self-esteem and mastery represent quite distinct views of the self, each is particularly vulnerable to loss from the assaults of persistent hardships. Such loss, we propose, emerges as an important element in the causal process leading to depression.

Diagram C in Figure 1, which for simplicity does not include income change, presents a rather complex network of paths. For the present, attention need be directed only to those paths that are directly pertinent to the paradigm we are proposing, i.e., the paths connecting events to strains, strains to self-esteem and mastery, and the self concepts to depression. Consistent with the model we have outlined, this set of paths indicates, first, that the lives of people whose jobs have been involuntarily disrupted are more likely than those of the stably employed to be burdened by added economic strains ($B = .18$); next, the elevated economic strains are closely associated with the decline of self-esteem ($B = -.56$) and of mastery ($B = -.70$); finally, the worsening of each of these self concepts is related to an increase in depression ($B = -.19$ and $-.11$ respectively). It can also be noted that some of the impact of the events works through changes in self-concept, for the original coefficient of .34 between job disruption and changes in depression is now reduced to .21. This still leaves a substantial direct relationship between events and depression, but we assume that if the specification of the model were less selective and more complete this relationship would be reduced still further. However, as incomplete as the model is, it does succeed in re-

vealing how events, strains, and elements of the self are joined to each other as sources of depression.

There is a special issue surrounding the relationships between the self concepts and depression that needs recognition. Briefly, it might reasonably be asked if lowered self-esteem and mastery are inherent and inseparable symptoms of depression itself, not independent conditions whose loss contributes to the exacerbation of depression. There is a way to test this possibility. If self-esteem and mastery are intrinsic to the very nature of depression, then there could be no instance in which a rise in the level of depression occurs without a commensurate decrease in self-esteem and mastery. But if, as we have argued, these components of self are not merely symptomatic of depression but are conditions contributing to it, one should be able to hypothesize circumstances where depression would vary independently of changes in self-esteem and mastery. We have already suggested that such independence should exist where hardship results not from a continuing strain, but from an eruptive event, especially one that is apt to be appraised as a consequence of blind chance rather than of personal deficiency. The severe illness or death of a child represents just such blindly occurring events, events that are unlikely to be interpreted as resulting from one's personal shortcomings. Examination of these severe vicissitudes reveals that they do significantly lead to the intensification of depression; however, they are unrelated to changes in self-esteem or mastery. This independent variation stands as evidence that self components and depression are not simply different indicators of the same underlying state. It appears reasonable, therefore, to treat damaged self-concepts not as symptomatic of stress, but as sources of it.

Coping, Social Supports, and Their Interventions

Stress cannot be understood solely in terms of antecedent conditions, for people may differ considerably with regard to how they are affected by the same conditions. These differences presumably are the result of the ways people respond to life problems—that is, the

resources, actions, and perceptions they mobilize as they seek to avoid or minimize distress. The resources and actions that will be considered in this analysis are coping and social supports.

We begin by considering coping. The range of behavior that can be called upon to cope with life's challenges is indeed rich and varied. It will be recalled that within this range is a class of coping response that functions to control the meaning of problematic situations in a manner that helps to neutralize their threat. Two responses of this type are particularly relevant to the disruptive job events and economic strains that we have focused on here.

One coping behavior involves people's use of comparative frames of reference in such a way that their economic resources, no matter what their objective level, are judged in a positive way. The judgment is based both on comparisons people make with significant reference figures and on temporal comparisons. In the first instance, people perceptually seek out other persons or groups whose economic position is either worse or, at least, no better than their own. In selectively contrasting their own economic standing with those who may be engaged in a more severe struggle, they arrive at a positive appraisal of their own circumstances. Temporal frames of reference function similarly, except that one's own past and future constitute the significant reference points. Where one sees one's present circumstances either as an improvement over the past or as a prelude to future improvement, existing strains are assuaged. We have established, through confirmatory factor analysis, a single measure of positive comparisons by combining the information about subjects' use of reference figures and temporal frames of reference. The items are found in Appendix F.

The second economic coping behavior, also assessed through confirmatory factor analysis, involves the valuation or devaluation of economic achievements (the measure is shown in Appendix G). The relevance of the devaluation of economic success as a coping response lies in the fact that hardship is likely to be most stressful when it occurs in an area of life of central importance; correspondingly, the stressful impact of the same objective conditions can be cushioned when the priority of that area is low. In demeaning the importance

of money and monetary success, therefore, one may shield oneself—within limits, of course—from some of the stressful consequences of economic problems.

Although making positive comparisons and devaluating monetary success represent quite different coping techniques, they are alike to the extent that each can attribute benign meaning to a situation and, in this manner, reduce its stressfulness. In observing the interventions of economic coping, we additively combine the drawing of positive comparisons and the devaluation of success into a single score.

Since the questions about coping were asked in both the first and second interviews, we are faced with having to decide which of the data is more appropriate to the analysis underway. We have the option of using information from the first wave, which would inform us as to how coping dispositions that existed prior to the events are related to subsequent outcomes. Or we could juxtapose information drawn from both interviews, which would inform us as to how coping dispositions changed. Neither of these, however, is quite as suitable to our purposes as knowledge of the coping dispositions that were reported at the second interview. Ideally, we would want to be able to identify the coping repertoires that one could call upon during the process we are describing, beginning with job disruption and ending with depression. We cannot be sure that the dispositions that existed at the time of the second interview are those that existed precisely at the initiation of the process and lasting for its duration. However, in our estimation the dispositions present at the second point in time are likely to have been more contemporaneous with the process than the coping dispositions reported before the job disruption.⁵

Turning now to social supports, we confront a notion that is sufficiently unspecified that it potentially embraces virtually all social relations, even the most intermittent and contractual. Here, however, our concerns are limited to what is recognized as emotional support, in distinction from support of an instrumental nature. As we earlier noted, our data indicate that emotional support is not provided by the entire range of one's social relations, but primarily by those having certain special qualities, trust and intimacy in particular. These are

qualities, it can be recognized, that are commonly properties of marital relations. We would not argue that trust and intimacy are always to be found in marriage, for they are certainly absent from many. Equally certain, many nonmarried people find trust and intimacy in relationships outside marriage. Nevertheless, marriage is an institution distinguished by its potential for being a continuous reservoir of emotional support, and, consistent with the findings from other research (Brown et al., 1975; Eaton, 1978), we have sought to incorporate these considerations into our measure of supports.

The measure starts with a question, asked only in the second interview, that was addressed to all subjects, regardless of their marital status: "Among your friends and relatives, excluding your (husband/wife), is there someone you feel you can tell just about anything to, someone you can count on for understanding and advice?" Respondents were scored from 0 to 2, depending on whether they indicated no one, one person, or two or more.

Because respondents were instructed to exclude spouses from this enumeration, and because marriage can be a source of distinctly intense and available support, we brought into our assessment of supports an additional question that asked married subjects about the level of intimate exchange they have with their spouses. Specifically, respondents indicated how strongly they agreed or disagreed with the statement that their spouse is someone . . . "I can really talk with about things that are important to me." All of the married subjects who agreed to this statement had a value of 1 added to whatever their score was on the preceding question. For example, if a respondent had earlier indicated that there was no one outside marriage "to tell just about anything to," the respondent would still receive a score of 1 if he or she agreed with the statement concerning the availability of intimate exchange within marriage. The married subjects were scored 0 if neither spouse nor another person provided such exchange; and, of course, if one indicated both spouse and another, one's score would be 2.

Through this procedure a single measure was created to evaluate the availability of effective supports for both married and nonmarried people. The values of the measure range from 1

to 3, and a mean of 2.68 indicates that most people do have access to a source of emotional support.

How do the mediators—coping behavior and social supports—exercise their functions? Past research, with rare but notable exceptions (e.g., LaRocco et al., 1980), has used the inhibition of the symptoms of stress as the sole criterion for judging the efficacy of mediators. If the present analysis were in keeping with this practice, we would look exclusively at the ability of the mediators to suppress directly the emergence of depression. Indeed, our earlier analysis of coping (Pearlin and Schooler, 1978) weighed the efficacy of coping responses in just this manner. However, the paradigm we have developed in the present analysis makes it possible to evaluate mediating functions in a considerably more elaborate fashion. Specifically, using the paradigm presented in diagram C of Figure 1, we can observe whether coping and social supports intervene by: barricading against the strain that might otherwise follow job disruption; sustaining self-esteem and mastery in the face of persistent strains; directly inhibiting depression; or some combination of all of these. In short, we are able to determine whether the mediators, to the extent that they are effective, prevent an elevation of depression by neutralizing any or all of its antecedent conditions, by directly buffering its symptoms, or both.

The mediators may intervene at these various points either as main conditions or in interaction with the other conditions that are present. We shall put aside briefly the matter of interactions and first consider the main effects of coping and supports. Treated in this way, we can simply ask whether active coping and ac-

cess to intimate supports make any difference to the changes observed in economic strain, in self-esteem and mastery, and in depression.

The elements of the answer are assembled in Table 1. It can be noted first that the mediators have no direct effect on depression; both coping and supports have low and insignificant coefficients in relationship to depression ($B = .03$ and $-.03$ respectively). Thus neither coping strategies nor emotional supports have any direct bearing on changes in depression independent of the sources of stress. However, the findings suggest that the mediators do play important roles at prior points in the process. Coping and supports reduce economic strain independently of the effects of job disruption ($B = -.19$ and $-.08$ respectively); and similarly, both help to buttress one's sense of mastery when changes in economic strain and job disruption are held constant ($B = .15$ and $.11$). All in all, it can be observed that the additive effects of the mediators on the stress process are exercised not directly on certain stress outcomes, but indirectly on certain conditions antecedent to the stress.

The relationships in Table 1 help to answer one important question, but they leave a second unanswered. They succeed in revealing that coping and supports are related to the various antecedent variables. However, as additive terms, coping and supports cannot test the twin possibilities that the impact of similar hardships might vary with the levels of the two mediators or that the efficacy of the mediators might vary with the severity of people's hardships. These interactional effects, it has been argued (LaRocco et al., 1980), are at the heart of propositions concerning the buffering effects of mediators. That is, if mediators do

TABLE 1. Sources of Depression and the Mediating Functions of Coping and Social Supports: Additive Model

| Predictor | Dependent Variables | | | |
|------------------------|----------------------------|------------------------|--------------------|-----------------------|
| | Changes in Economic Strain | Changes in Self-Esteem | Changes in Mastery | Changes in Depression |
| Job disruption | .14*** | -.20** | -.17 (NS) | .21*** |
| Coping | -.19*** | .07* | .15** | .03 (NS) |
| Social supports | -.08*** | .04 (NS) | .11* | -.03 (NS) |
| Economic strain change | | -.47*** | -.52*** | .19** |
| Self-esteem change | | | | -.19*** |
| Mastery change | | | | -.11*** |
| R ² | .45 | .24 | .25 | .38 |

* $p < .05$; ** $p < .01$; *** $p < .001$.

have buffering effects, they can be most closely seen in terms of how they reduce the adverse impact of the sources of stress. In order to get some clearer perspective of the potential buffering effects of the mediators, therefore, we shall redirect our attention from the additive model to one that is interactive.

For this purpose, we created eight multiplicative terms—the products of the two mediators with each of the four relevant sources (job disruption, strain, self-esteem, and mastery).⁶ We then evaluated the relevance of the interactions for each equation, a total of 18 possible interactions: the two terms involving job disruption in predicting economic strain, self-esteem, mastery, and depression; the two involving economic strain in predicting self-esteem, mastery, and depression; and the four interaction terms with self-esteem and mastery in predicting depression.

Do coping and supports combine with the sources of stress to mediate their effects? The answer is affirmative, but it is qualified by the fact that the statistically significant interactions almost exclusively involve job disruption. That is, the mediating functions of coping and supports cannot be observed in conjunction with the other antecedents of stress.⁷ Those that are significant are displayed in the lower rows of Table 2; the upper rows show the coefficients of the main terms with the interactions entered into the regression equations.

Within the limited range of significant effects, there are some noteworthy results. Thus, with regard to the job disruption–coping combination, it is evident that coping does blunt

some of the deleterious consequences of actual job loss. It can be seen in the table that the estimated coefficient of this interaction term in predicting economic strain is $-.17$; it is $.33$ in relationship to self-esteem; and, finally, in predicting changes in depression it is $-.13$. The significance and direction of these relationships indicate that job losers who are also active economic copers have a greater chance than the less efficacious copers to escape the heightened strain, the loss of self-esteem, and the elevated depression that can be triggered off by this undesirable event. Only the loss of mastery is unaffected by the coping responses of job losers; regardless of the level of coping, job loss reduces the sense of personal efficacy.

Social supports, on the other hand, seem to function in a somewhat more specialized fashion than coping, for their effectiveness is exclusively confined to helping job losers avoid the lowering of positive self-concepts. Thus, of the two significant job disruption–social supports coefficients, one predicts self-esteem ($B = .26$) and the other mastery ($B = .45$). It would appear that the supports of people who have experienced job loss do not prevent economic strain from arising in their lives, nor do supports help protect them directly against depression. But they do succeed in aiding job losers to resist the adoption of a diminished view of themselves. In this manner they indirectly militate against an increase in depression.

The mediating functions of coping and supports for job losers can be calculated in another way, one that is somewhat more informative

TABLE 2. Sources of Depression and the Mediating Functions of Coping and Social Supports: Interactional Model

| Predictor | Dependent Variables | | | |
|---------------------------|----------------------------|------------------------|--------------------|-----------------------|
| | Changes in Economic Strain | Changes in Self-Esteem | Changes in Mastery | Changes in Depression |
| Job disruption | .76*** | -2.07*** | -1.35*** | .71*** |
| Coping | -.16*** | .03 (NS) | .15*** | .05*** |
| Social supports | -.07*** | .00 (NS) | .05 (NS) | -.03 (NS) |
| Economic strain change | | -.40*** | -.49*** | .16*** |
| Self-esteem change | | | | -.17*** |
| Mastery change | | | | -.11*** |
| Job disruption × coping | -.17*** | .33*** | — | -.13* |
| Job disruption × supports | — | .26** | .45*** | — |
| R ² | .47 | .28 | .27 | .38 |

* $p < .05$; ** $p < .01$; *** $p < .001$.

than the interaction coefficient alone. The procedure for this has been described by, among others, LaRocco et al. (1980, p. 215, Note 3) in their analysis of the efficacy of social supports. As applied to the present data, it involves computing the extent to which the regression coefficients between job disruption and its various dependent variables are changed with each change in a standard deviation of coping or of supports. For example, when coping is taken into account, the estimated coefficient for the effect of job disruption on economic strain is $.76 + (-.17 \times \text{coping value})$. Substituting representative values of coping yields the estimated effect at different coping levels. At the mean (4.09), the effect is $.76 + (-.17 \times 4.09)$, or .06; at one standard deviation above the mean ($4.09 + .73$, or 4.82), the effect is $.76 + (-.17 \times 4.82)$, or $-.06$. (See Appendix D for means and standard deviations.)

If it is recalled from Table 1 that the impact of job disruption on strain was estimated at .14, it becomes evident in Table 3 that the noninteractive model overestimated the impact for effective copers, and underestimated its effect on ineffective copers. Table 3 displays parallel computations for the other significant interaction effects.

Although our primary interest is knowing how the impact of the sources of stress may be

conditioned by the mediators, a brief view of the other side of the coin is useful. When we consider how the efficacy of the mediators varies with people's job disruption experience, a rather clear picture emerges. Simply put, it appears that coping and supports benefit most those who are most in need. That is, the effectiveness of the mediators in vitiating strain, in buttressing the self, and in buffering depression is greater among the job losers than those who have been stably employed. This does not mean that job losers are more likely to be active copers or to have greater access to social supports; indeed, in the case of coping it is the opposite. What the results do indicate, quite clearly, is that when job losers do possess these resources, they are more likely to be the recipients of their benefits than are those with the same resources but whose employment has not been disrupted.

All in all, it is evident that the mediators do mediate. Their effects, however, are more potent under some conditions than others and more potent, too, in buffering some elements in the stress process than others. Clearly, the understanding of the functions of coping and supports requires more than their conceptualization and measurement. It also requires that researchers address themselves, first, to the types of problems to which these mediators are

TABLE 3. Effects of Job Disruption on Economic Strain, Self-Esteem, Mastery, and Depression: Interactive Effects with Coping and Social Supports

| Dependent Variable | Effects of Job Disruption | |
|--------------------|---------------------------|---|
| | Additive Model | Interactive Model |
| Economic strain | .14 | [$.76 + (-.17 \times \text{coping value})$] at 1 SD above coping mean: $-.06$ at coping mean: $.06$ at 1 SD below coping mean: $.19$ |
| Self-esteem | $-.20$ | [$-2.07 + (.33 \times \text{coping value}) + (.26 \times \text{social supports value})$] at 1 SD above mean on coping and on social supports: $.36$ at mean on coping and on social supports: $-.02$ at 1 SD below mean on coping and on social supports: $-.41$ |
| Mastery | $-.17$ | [$-1.35 + (.45 \times \text{social supports value})$] at 1 SD above social supports mean: $.11$ at social supports mean: $-.14$ at 1 SD below social supports mean: $-.40$ |
| Depression | .21 | [$.71 + (-.13 \times \text{coping value})$] at 1 SD above coping mean: $.08$ at coping mean: $.18$ at 1 SD below coping mean: $.27$ |

in response and, second, to the particular junctures of the stress process at which they can intervene. When judged against these desiderata, research into coping and social supports would seem to be in the very early stages of its development.

DISCUSSION

Although we are vitally interested in depression, it has not been our aim to search out as exhaustively as possible its causes. Instead, using depression as an important indicator of stress, we have sought to create some synthesis among domains that typically cannot be treated together. It is our view that more is known of the various components of stress and of limited relationships among them than of the extended interconnections that give shape to a process. Of course, in attempting to discern the more extended set of interconnections, it is inevitable that the separate components will be better understood. Thus, as more is learned about the process of stress, more also should be learned about life events and chronic life strains, the strengths and vulnerabilities of the self, and the nature of coping and social supports. Any progress that is achieved in understanding the underlying order among the many elements of stress must also add to the understanding of each of them.

It needs to be emphasized that at every step of our analysis it was necessary to be highly selective. It was neither feasible nor productive to consider all major life events or all major chronic strains; similarly, it was neither possible nor meaningful to examine the entire reservoir of coping responses or the gamut of potentially supportive systems; finally, we considered but one manifestation of stress, when, of course, there is a large range. In selecting and choosing data for inclusion in the analysis, we sought to assemble those variables that would enable us to outline and test what we conceive to be a model of the stress process. But, of course, the very necessity to be selective raises questions about the generality of our findings. At this point we can only depend on further study to learn, for example, how our results might differ were we to look at different events, different role strains, different aspects of self, different indices of mediators,

and different outcomes. Indeed, it also needs to be asked how the relationships might be altered if they were observed in a time span shorter or longer than four years. We would guess that particular relationships would be changed if one or more of these conditions were changed, but we would also guess that the essential features of the process we have shown would persist.

There are certain caveats that must be attached to the paradigm we were able to develop. First, the paradigm represents our own conceptual imagery, and although it is empirically supported, it does not preclude the possibility that there are alternative models which, when tested against the same body of data, would also be supported. What has been presented in this paper is a theoretically and empirically reasonable way to approach a complex set of relationships; but there may be other approaches to the same phenomena as well. For example, a clinician might choose to begin the inquiry with depression in order to see if this psychological state increases exposure to undesired life events. Or a personality theorist might find reason to regard the self as the initiating force in the stress process. These are certainly acceptable approaches, although the question as to how well they fit empirical reality is an open one. We also recognize the incompleteness of what we have been able to do. In particular, some of the relationships that we presented as unidirectional are likely to be reciprocal. Obviously, multidirectionality must eventually be taken into account to capture more fully the complexities of the process through the life course.

Awareness of the formidable uncertainties and problems of this area of research should not obscure what has been learned. It now seems evident that research which considers but a single domain in looking for the sources of stress is likely to be shortcutting a more elaborate set of mechanisms leading to the stress outcome. Thus, if we had considered only job disruptions, only economic strain, or only self-concept, then our understanding of the circumstances that can result in depression would indeed be incomplete. Of course, not all antecedents need be present for stress to be aroused: Stress-provoking strains can be present without precipitating events, and people may be convinced of their own worthlessness

or impotence in the absence of apparent role strains. However, we can assert that it is more productive to examine the manner in which the different antecedents of stress converge than to treat each of them separately and apart from the others.

Similarly, the findings presented here indicate that researchers need to elaborate their views of mediators and their functions. Mediators are capable of affecting stress not only by acting directly on the outcome but by intervening at other points of the process as well. It is further evident that the full range of their functions is best revealed by looking at them in interaction with the sources of stress as well as by themselves, for the efficacy of coping and supports may be somewhat greater among those exposed to the more severe hardships.

Perhaps the most important lesson that could be conveyed by this analysis is that social stress is not a happening; instead, it is a complex, varied, and intellectually challenging process. Research into social stress needs to be raised to a level that matches the richness and intricacy of what it strives to explain.

NOTES

1. The measurement of concepts in social and behavioral science is susceptible to error resulting from response predispositions, the manner in which interviewers present questions, the defense-arousal properties of items, ambiguities in meaning, and the mix of social characteristics of interviewer and respondent. When the error introduced by these problems is random, the unreliability can result in a serious underestimation of the impact of the independent variables. On the other hand, nonrandom or correlated error is especially likely to occur in longitudinal studies, for the error underlying an answer at one time may be repeated when the same question is asked a second time. In this case one would overestimate the real correlation.

Statistical procedures involving maximum likelihood confirmatory factor analysis provide some help in dealing with these problems (Joreskog, 1969; Joreskog and van Thillo, 1972). We have used LISREL to develop measurement models of our constructs. This procedure allowed us to estimate the degree to which our scales were affected by correlated errors. It also permitted us to test explicitly the invariance of factor structure at our two time points. We compared measurement models that constrained factor loadings to equality over time with models permitting the two sets of loadings to vary. In no case was the unconstrained model a statistically

significant improvement. Thus we feel confident that the relationship between our constructs and indicators has remained stable over time. We did find some evidence of error over time in all of our scales, but the errors are small in magnitude and do not influence the stability of the estimates to any degree. Thus we have a reasonable degree of confidence in the reliability of the measures. The path analyses were run with ordinary least squares, with factor scores derived from Bartlett factor weights (Lawley and Maxwell, 1971).

2. It should be understood that there is no single time frame that is optimal for observing the effects of diverse life events. For some events, such as the death of a spouse, the impact is probably most fully discernible within a period of weeks. For other events, such as retirement, the effects might be more slow to accrue. The four-year interval of our investigation, therefore, would probably highlight the effect of some events and underestimate those of others. Differences in the length of time that life events exert their maximal impact can pose a problem for investigations examining the effects of a variety of events. For reasons that will be evident, this is not a problem in the present analysis.
3. We evaluate changes in the level of depression by controlling time 1 depression scores in the same model with other predictors. Change, therefore, is represented in that portion of depression at time 2 that is independent of the time 1 level. It will be noted throughout the analysis that all variables to which this procedure is applied include in their names the word "change."
4. All of the analyses control for the effects of key social characteristics: age, sex, race, occupational status, marital status, and education. A detailed analysis of the ways that these characteristics enter into the stress process goes far beyond the boundaries of this paper. By controlling for these characteristics we can be assured that the relationships to which we are addressing ourselves are not merely artifacts of people's social attributes. At the same time, it needs to be recognized that these simple controls do not substitute for an examination of the many ways that people's social and economic characteristics may affect their exposure and vulnerability to stress.
5. We cannot rule out the possibility, of course, that the disruption and strains themselves altered the coping strategies of our respondents. Indeed, the stability of individual coping strategies over time—that is, the impact of events and role strains on them—looms as an important question for future research. For the present, we make the simplifying assumption that such strategies are not profoundly affected by those variables.
6. As Namboodiri et al. (1975) note, specific interactional forms are as varied as the imaginations of researchers (p. 122), and the multiplicative approach taken here, while fairly standard in the field, does not exhaustively test for

all possible forms of nonlinearity and nonadditivity. In the absence of specific hypotheses, and with an already high number of interactions to access, we did not go beyond a single test of a multiplicative term for each interaction. Clearly, this restricted the sorts of interactions we could discover. The product term contrasts at its extreme respondents high on each variable with those low on each, leaving both high-low combinations at an intermediate point. Since it is reasonable to expect that high levels of coping and social supports may be especially critical for respondents facing a job disruption and experiencing high economic strain, this approach seems appropriate for these interactions. However, if the mediators have a greater effect when problems are minimal, or when self-esteem is weak and mastery is low, then we may be underestimating the interactive impact of these variables.

7. Because the interaction terms were correlated with one another, each term was added separately as a final step to the linear additive model, and the increment in explained variance was evaluated by a hierarchical F-test. The more conservative .01 significance level was used for these tests in order to avoid the greater risk of Type I errors in testing so large a set of interaction terms.

Six of the interaction terms reach statistical significance: job disruption by coping in predicting economic strain and depression; job disruption by social supports in predicting mastery; job disruption by coping, job disruption by social supports, and economic strain by coping in predicting self-esteem. When both terms involving job disruption were assessed simultaneously for self-esteem, each attained statistical significance. Since job disruption is logically prior to economic strain in our model, we used a hierarchical F to test whether the economic-strain-by-coping interaction significantly increased the explained variance net of the interactions involving job disruption. The F was not significant. It is for this reason that this term is not included in the final model shown in Table 2 and is excluded from discussion.

APPENDICES

All measures below were modeled, using LISREL, allowing time 1 and time 2 item errors to correlate with themselves over time. For specific scales some items were allowed to correlate with one another within each time point when this resulted in a statistically significant improvement of the fit of the model to the data. The lambdas were constrained to be equal for the two time points.

The unstandardized value of each item is shown within parentheses.

APPENDIX A

Mastery Model

How strongly do you agree or disagree with these statements about yourself?

1. There is really no way I can solve some of the problems I have. (1.00)
2. Sometimes I feel that I'm being pushed around in life. (.75)
3. I have little control over the things that happen to me. (.995)
4. I can do just about anything I really set my mind to. (.55)
5. I often feel helpless in dealing with the problems of life. (.92)
6. What happens to me in the future mostly depends on me. (.47)
7. There is little I can do to change many of the important things in my life. (.90)

Correlation between time 1 and time 2 measures = .44.

APPENDIX B

Self-Esteem Model

How strongly do you agree or disagree with these statements?

1. I feel that I'm a person of worth, at least on an equal with others. (.48)
2. I feel that I have a number of good qualities. (.42)
3. All in all, I am inclined to feel that I'm a failure. (.62)
4. I am able to do things as well as most other people. (.62)
5. I feel I do not have much to be proud of. (.58)
6. I take a positive attitude toward myself. (.72)
7. On the whole, I am satisfied with myself. (.80)
8. I certainly feel useless at times. (1.00)
9. I wish I could have more respect for myself. (.85)
10. At times I think I am no good at all. (.77)

Correlation between time 1 and time 2 measures = .43.

Correlated error between items 1 and 2 within each time.

APPENDIX C

Depression Model

During the past week, how often did you:

1. Lack enthusiasm for doing anything? (1.00)
2. Have a poor appetite? (.69)
3. Feel lonely? (.99)
4. Feel bored or have little interest in doing things? (1.11)
5. Lose sexual interest or pleasure? (.90)
6. Have trouble getting to sleep or staying asleep? (1.01)
7. Cry easily or feel like crying? (.81)
8. Feel downhearted or blue? (1.15)
9. Feel low in energy or slowed down? (1.16)
10. Feel hopeless about the future? (.76)

Correlation between time 1 and time 2 measures = .38.

Correlated error between items 1 and 9, 7 and 8, 8 and 10 within each time.

APPENDIX D
Pairwise Correlations, Means, and Standard Deviations of Variables in Analysis

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | Mean | SD |
|---------------------------|-----|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-------|
| 1. Depression-2 (616) | 100 | | | | | | | | | | | | | | | | | | 1.37 | .42 |
| 2. Depression-1 (619) | 26 | 100 | | | | | | | | | | | | | | | | | 1.28 | .33 |
| 3. Self-esteem-2 (618) | -49 | -29 | 100 | | | | | | | | | | | | | | | | 5.32 | .59 |
| 4. Self-esteem-1 (618) | -25 | -40 | 32 | 100 | | | | | | | | | | | | | | | 5.26 | .59 |
| 5. Mastery-2 (603) | -43 | -16 | 54 | 16 | 100 | | | | | | | | | | | | | | 3.72 | .74 |
| 6. Mastery-1 (615) | -20 | -30 | 26 | 48 | 33 | 100 | | | | | | | | | | | | | 3.78 | .70 |
| 7. Job disruption (629) | 29 | 02 | -21 | -08 | -17 | -13 | 100 | | | | | | | | | | | | .13 | .33 |
| 8. Econ. strain-2 (618) | 33 | 15 | -33 | -16 | -33 | -22 | 26 | 100 | | | | | | | | | | | 1.03 | .35 |
| 9. Econ. strain-1 (616) | 16 | 24 | -11 | -25 | -15 | -33 | 16 | -11 | 100 | | | | | | | | | | 1.00 | .31 |
| 10. Econ. coping-2 (589) | -21 | -11 | 27 | 16 | 31 | 18 | -19 | -54 | -30 | 100 | | | | | | | | | 4.09 | .73 |
| 11. Social supports (604) | -14 | -09 | 13 | 09 | 19 | 18 | -04 | -20 | -03 | 14 | 100 | | | | | | | | 2.68 | .56 |
| 12. Income change (512) | -03 | 01 | 10 | -03 | 09 | -05 | -07 | -12 | 04 | 09 | 03 | 100 | | | | | | | .09 | .53 |
| 13. Age (620) | -02 | -09 | -001 | 07 | -15 | -11 | -03 | -13 | -11 | -02 | -10 | 04 | 100 | | | | | | 45.06 | 12.34 |
| 14. Marital status (620) | 21 | 16 | -16 | -12 | -08 | -13 | 14 | 25 | 12 | -18 | -17 | 02 | 01 | 100 | | | | | 1.27 | .44 |
| 15. Sex (620) | -13 | -21 | 01 | 02 | 14 | 14 | 05 | -17 | -14 | 10 | 002 | -01 | -05 | -24 | 100 | | | | .61 | .49 |
| 16. Race (620) | 11 | 04 | -07 | -05 | -02 | 01 | -01 | -26 | -24 | 13 | 07 | -06 | -04 | -17 | 18 | 100 | | | .82 | .39 |
| 17. Occupation rank (617) | 001 | 01 | -10 | -04 | -04 | -04 | 01 | 10 | 09 | -04 | 003 | -07 | -03 | 03 | -05 | -13 | 100 | | 3.91 | 1.26 |
| 18. Education (620) | -02 | -005 | 07 | 12 | 13 | 21 | -13 | -16 | -20 | 14 | 14 | 03 | -27 | 01 | 14 | 17 | -15 | 100 | 4.95 | 2.08 |

Note: Ns are presented parenthetically; decimals have been omitted.
 Variable values: Job disruption—0 = no, 1 = yes. Marital status—
 1 = married, 2 = unmarried. Sex—0 = female, 1 = male. Race—0 = nonwhite,
 1 = white. Occupation rank—1 = higher executives and major professionals,
 2 = managers and lesser professionals, 3 = administrators, small business
 owners, and semiprofessionals, 4 = clerical and sales workers and technicians,
 5 = skilled manual workers, 6 = machine operators and semiskilled workers,
 7 = unskilled workers. Education—1 = 8th grade or less, 2 = some vocational
 training, 3 = some high school, 4 = vocational school graduate, 5 = high school
 graduate, 6 = some college or specialized training, 7 = college graduate,
 8 = graduate training beyond college.

APPENDIX E

Economic Strain Model

At the present time:

1. Are you able to afford a home suitable for (yourself/your family)? (1.00)
2. Are you able to afford furniture or household equipment that needs to be replaced? (1.44)
3. Are you able to afford the kind of car you need? (1.34)
4. Do you have enough money for the kind of food (you/your family) should have? (.94)
5. Do you have enough money for the kind of medical care (you/your family) should have? (.75)
6. Do you have enough money for the kind of clothing (you/your family) should have? (1.37)
7. Do you have enough money for the leisure activities (you/your family) want(s)? (1.53)
8. Do you have a great deal, some, a little, or no difficulty in paying your bills? (1.67)
9. At the end of the month do you end up with some money left over, just enough to make ends meet, or not enough money to make ends meet? (1.17)

Correlation between time 1 and time 2 measures = .59.

Correlated error between items 4 and 5, 4 and 6, 5 and 6, 8 and 9 within each time.

APPENDIX F

Economic Positive Comparisons Model

Would you say that your total family income is higher, lower, or about the same as:

1. Most of your friends? (1.00)
2. People with the same education as (yours/your husband's)? (.87)
3. Most of your relatives? (.98)
4. Most of your neighbors? (.93)
5. How do you think your standard of living a year or two from now will compare with the one you now have? (.28)
6. Compared to four years ago, are you able to afford a better, the same, or lower standard of living? (.45)

Correlation between time 1 and time 2 measures = .50.

Correlated error between items 5 and 6 within each time.

APPENDIX G

Devaluation of Importance of Money Model

Thinking of (yourself/your family), how much do you agree or disagree that:

1. Financial success does not interest (me/us)? (1.00)
2. (My/Our) money never seems to be enough for our wants? (1.89)

3. One of the most important things about a (person/family) is the amount of money they have? (1.79)

Correlation between time 1 and time 2 measures = .50.

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