(eds.), The Employed Mother in America. Chicago: Rand-McNally.

Strauss, Anselm.
1966 "The structure and ideology of American nursing." Pp. 60–108 in Fred Davis (ed.), The Nursing Profession. New York: John Wiley.

Summerskill, John.
1962 "Dropouts from college." Pp. 627–657 in Nevitt Sanford (ed.), The American College. New York: John Wiley.

Tate, Barbara.
1961 "Attrition rates in schools of nursing." Nursing Research 10 (Spring):91–96.

Vaillot, Madeline.
1962 Commitment to Nursing. New York: Lippincott.

Warnecke, Richard B.
1966 "Dropouts from collegiate nursing: A typological study of role conflict." Unpublished Ph.D. Dissertion. Durham: Duke University.

Wilensky, Harold L., and Charles M. Lebeaux.
1958 Industrial Society and Social Welfare. New York: Russell Sage Foundation.

Life Events as Stressors: A Methodological Inquiry*

BARBARA SNELL DOHRENWEND

The City College of the City University of New York

The literature on effects of stressful life events reveals two conceptions of stressfulness: undesirability and life change. Relations between stressful life events and psychological distress, severe psychological disorders, and organic illnesses have been demonstrated using a variety of specific measures derived from these two conceptions. Comparisons of measures of undesirability and of life change indicate that they are partially confounded. While all are related to Langner's psychological symptom inventory, a measure of life change is most highly correlated. These results, which are consistent with physiological findings, suggest that stressfulness is better conceived as life change than as undesirability of life events.

IN 1907 a physician who had observed the effects of a severe earthquake on the population of Messina described a clinical syndrome that he labeled "earthquake neurosis." He noted that it ". . . was produced immediately, that in general its duration was brief, as in acute illnesses, and that the symptoms disappeared without leaving any trace" (quoted without reference by Murri, 1912:537). It now appears that the syndrome is not specific to earthquakes, since observers have reported similar responses to a variety of public disasters. One of the most widely known of these reports is Lindemann's account (1944:146–147) of the reactions of survivors and others who lost a friend or relative in a Boston night club fire. In this account he emphasized the importance of the situation and the irrelevance of personal factors as determinants of extreme grief reactions.

The power of the situation to induce symptoms of psychological distress regardless of personal predisposition was demonstrated again in two studies of general populations exposed to disasters, both of which revealed incidence rates of post-disaster symptomatology approaching 100 per cent. In the first of these investigations, a systematic sample of the population of a rural section of Arkansas was interviewed shortly after the area had been hit by a severe tornado. Ninety per cent of those interviewed reported ". . . some form of acute emotional, physiological or psychosomatic after-effect" (Fritz & Marks, 1954: 34). The most common of these symptoms were "nervousness, excitability, hypersensitivity," reported by 49 per cent, and

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"Sleeplessness or poor sleep," reported by 46 per cent.

In the most ambitious study to date of popular reactions to disaster, Sheatsley and Feldman (1964) conducted interviews with a systematic sample of the population of the United States about one week after the assassination of President Kennedy. Among the questions in their structured interview were fifteen symptom items of the type that have been used to assess mental health in general populations (Gurin et al., 1960; Langner, 1962). Eighty-nine per cent of Sheatsley and Feldman's sample reported having one or more of these symptoms during the first four days following the assassination. By the time of the interviews, almost all of which were conducted on the seventh and eighth days after the assassination, only 50 per cent of respondents reported that they still had one or more symptoms.

By no means all of the untoward events experienced by members of a community are public disasters such as an earthquake or a presidential assassination. Probably, in a nation at peace with itself and with the rest of the world, almost all of the crises that most people experience in their lifetimes are private events such as the death of a relative or friend, illness, or an economic setback. Two recent studies have shown that such stressful life events, like stressful public events, induce transient symptoms of psychological disturbance (Dohrenwend and Dohrenwend, 1969:126–130; Myers et al., 1972). These events have also been shown to have more serious effects on health; specifically, they have been related to the onset of serious psychological disorders (Brown and Birley, 1968; 1970) and to varied and, in some cases, serious organic illnesses (Antonovsky and Kats, 1967; Rahe, 1968; Theorell and Rahe, 1970). At the same time, stressful life events, unlike stressful public events, are necessarily part of everyone's experience. This pervasiveness, together with the recent demonstrations of their varied relations to illness, has drawn increasing attention to stressful life events as an important subject of study in public health research.

Definition of Stressful Life Events

Investigators studying the effects of an earthquake, a tornado, or a presidential assassination have not found it necessary to argue that these events are stressful. In contrast, most investigators concerned with life events have deemed it necessary to explain their choice of the events they studied in terms of an explicit definition of stressful events. These definitions have revealed, however, not one but two distinct conceptions of the characteristic that makes an event stressful.

The first conception is exemplified by the work of Brown and Birley in which they demonstrated associations between antecedent stressful events and episodes of schizophrenia (1968) or severe depression (1970). In these studies they used ". . . a list of events which on common sense grounds are likely to produce emotional disturbance in many people" (1968:204). In defining stressful life events as negative or undesirable in quality Brown and Birley remained close to the conception of stressfulness most obviously implied by studies of public crises and disasters.

The second, less obvious conception of stressful life events focuses on change as the critical factor (e.g. Fröberg et al., 1971:291–292). This conception has been the basis for two measures of amount of exposure to such events. The first, relatively simple measure was used, for example, in a review of the literature on class and race differences in exposure to stress. For this purpose stressful events were defined as "objective events that disrupt or threaten to disrupt the individual's usual activities" (Dohrenwend and Dohrenwend, 1970:115), with the proviso that the events might be either undesirable or desirable in character. The measure of amount of exposure to stressful events in a given period of time was simply the number of such events experienced.

The second, more elaborate and sophisticated measure based on the conception of life change as stressful was developed by Holmes, Rahe, and their colleagues. After collecting a list of ". . . life events empirically observed to cluster at the time of

disease onset," Holmes and Rahe (1967: 215–217), observed that ". . . only some of the events are negative or 'stressful' in the conventional sense, i.e. are socially undesirable." Instead, they noted, "There was identified . . . one theme common to all these life events. The occurrence of each usually evoked or was associated with some adaptive or coping behavior on the part of the involved individual." To measure total exposure to stressfulness, these investigators did not simply count the number of events experienced, however, but introduced a major refinement by collecting judgments of the amount of readjustment required by each event on the list. Total exposure to stressful events was then calculated by summing the readjustment scores of all events experienced by an individual in a given period of time. Using this measure, Rahe (1968) showed that individuals who had experienced events that yielded higher total readjustment scores were more likely than individuals with lower total readjustment scores to become ill during a subsequent observation period, and that, among those who became ill, the ones with higher total scores suffered a larger number of illnesses. In further work, Theorell and Rahe (1970) demonstrated that increases in readjustment scores were associated with episodes of coronary heart disease.

These different conceptions and the variety of measures of stressful life events derived from them pose two methodological questions: How are the various measures related to each other? How do they compare with each other in terms of their relations to expected consequences of stressful life events? The present investigation is designed to provide empirical evidence on these questions.

Procedure

Data Collection

We will draw on interviews conducted in a cross sectional survey of 124 heads of families. These respondents are a systematic subsample of a cross sectional sample of 257 that was interviewed as part of a larger methodological study (Dohrenwend et al., 1970). The 257 respondents were divided into approximately equal subsamples to whom different interview schedules were administered. One of these schedules provides the data for the present investigation.

The sample consists of both men and women, married and single, including special groups of single female household heads, sampled on a probability basis from the general population of Washington Heights, Manhattan. The aim in selecting the sample was to give equal representation to white Protestants of American ancestry, Jews, Irish, Blacks, and Puerto Ricans. Moreover, the attempt was made to draw the sample in such a way as to balance educational levels within each ethnic group, with partial success. The completed sample is short on poorly educated respondents among white Protestants and to a lesser extent, among Jews. We are also somewhat short of college graduates among Puerto Ricans and among women who head households in which no husband is present. The 257 interviews obtained in the total cross sectional sample represent a completion rate of 66 per cent of the respondents designated for interview. The distribution of respondents in the subsample of 124 according to four demographic variables to be utilized in the analysis, age, sex, ethnicity, and family income, is shown in Table 1.

TABLE 1. SELECTED CHARACTERISTICS OF 124 SURVEY RESPONDENTS

Age	*%*
Less than 30	7.3
30–39	29.8
40–49	24.2
50–59	24.2
60 or more	14.5
Sex	
Male	37.9
Female	62.1
Ethnicity	
White Protestant	31.5
Jewish	18.5
Irish	14.5
Black	25.0
Puerto Rican	10.5
Family Income	
Less than $3000	13.7
$3000–$4999	22.6
$5000–$7499	20.2
$7500–$9999	17.7
$10,000 or more	25.8

TABLE 2. CHECK LIST OF LIFE EVENTS USED ON SURVEY

Started to school, training program
Graduated from school, training program
Failed school, training program
Moved to better neighborhood
Moved to worse neighborhood
Engaged
Married
Widowed
Divorced
Separated
Other broken love relationship
Explain:
Birth of first child
Birth of child other than first
Serious physical illness to self
Serious injury to self
Serious injury to loved one
Who?
Serious physical illness to loved one
Who?
Death of a loved one
Who?
Started to work on a job for the first time
Expanded business
Promoted or moved to more responsible job
Changed to more secure job
Business failed
Demoted or changed to less responsible job
Laid off
Fired
Other (Explain:)

At the end of the interview, the respondent was asked, "What was the last major event that, for better or for worse, changed or interrupted your usual activities?" This question was followed by probes concerning the date and other particulars of the event. Following these probes, all respondents were presented with a checklist of events, shown in Table 2, which was introduced as follows: "Some things happen to most people at one time or another; other things happen to only a few people. Which of these events have you experienced during the last 12 months?"

Life Event Measures

To build an index of the undesirability of events experienced, all events reported by the respondents were classified as culturally defined losses or gains or as ambiguous in this respect according to the following definitions.

Loss: An event or change that other people would generally think undesirable.

Gain: An event or change that other people would generally think desirable.

Ambiguous: An event or change whose desirability is ambiguous because people probably disagree about its desirability (or for lack of information about the event).

The coding of events was highly reliable; two coders working independently agreed on the classification into these three categories of 87 per cent of the events reported.

In this classification system, as in similar systems used by other investigators (e.g. Myers et al., 1971), the undesirability of an event is defined in public terms rather than in terms of the respondent's assessment of his experience. Thus, for example, although a number of respondents characterized a divorce as a change for the better this event was classified as a loss rather than a gain. This type of definition, by providing a uniform, objective measure of the undesirability of life events, avoids one possible source of confounding between the measure of stressful life events and measures of their possible effects on the individual.

In order to compute a total score to describe each individual's experience in terms of undesirability, each loss was assigned a score of plus one, each ambiguous event a score of zero, and each gain a score of minus one. The individual's score was the algebraic sum of all the events he reported.

Two measures were developed to indicate the amount of change involved in the reported life events. The first was simply the number of events reported by a respondent as occurring during the designated time period. The second was based on the "social readjustment ratings" collected by Holmes and Rahe (1967) for 43 events empirically found to be associated with illness onset. They obtained these ratings by asking judges to ". . . rate a series of life events as to their relative degrees of necessary readjustment." Further instructions were: "The mechanics of rating are these: Event 1, Marriage, has been given an arbitrary value of 500. As you complete each of the remaining events think to yourself, 'Is this event indicative of more or less readjustment than marriage?' 'Would the readjustment take longer

or shorter to accomplish?' If you decide the readjustment is more intense and protracted, then choose a *proportionately larger* number . . . If you decide the event represents less and shorter readjustment than marriage then indicate how much less by placing a *proportionately smaller* number in the opposite blank" (Holmes and Rahe 1967:213). For the present analysis the scores used are geometric means of ratings obtained from a "sample of convenience" of 394 American subjects that was heterogeneous with respect to social class, sex, age, race, religion, and marital status (Masuda and Holmes, 1967). Within this sample, the ratings given by different status groups, such as male versus female and single versus married, generally yielded rank correlations above .90 (Holmes and Rahe, 1967).

To utilize these social readjustment ratings, two coders independently judged which of the events reported by our respondents corresponded to those on the rated list. They agreed for 87.8 per cent of the events reported on our survey. Most disagreements were resolved cautiously in favor of deciding on no correspondence. Among events on which it was agreed that a correspondence existed, the two independent coders agreed about the particular correspondence for 94.1 per cent of the instances.

A measure of life change was constructed from these readjustment ratings, following the procedures used by Holmes and Rahe (1967), by summing the readjustment ratings for all events a respondent had reported in the last year to which these ratings could be assigned. Although all obviously major events such as marriages, divorces, births, deaths, illness, job changes, etc., as well as common minor events such as vacations were included, this measure necessarily omitted events reported by our respondents that were not on Holmes and Rahe's list. Insofar as omitted events had an impact on the respondents who reported them, their omission would tend to attenuate relations between this life change measure and the measure of effects of events. However, insofar as this attenuation occurred it does not account for the results obtained. On the contrary, in its absence the observed differences between correlations might have been larger.

The social readjustment ratings of events were also used to construct a second undesirability measure. For this purpose, each loss was assigned the appropriate rating with a positive sign and each gain the appropriate rating with a negative sign. Thus we allowed for the possibility of major losses having a greater tendency than minor losses to increase symptoms of distress and major gains having a greater tendency than minor gains to reduce symptoms. The total score for each respondent consisted of the algebraic sum of the positive and negative readjustment ratings of events reported for the last year.

In summary, four life events measures were constructed, two to indicate the undesirability of a respondent's life events and two to indicate the amount of life change they involved. For one measure of each type each event was given a weight of one, except that ambiguous events were weighted zero in the undesirability measure. For the other measure of each type, events were weighted according to the social readjustment ratings provided by Holmes and Rahe (1967) and by Masuda and Holmes (1967). These four life event measures are described in Table 3.

Measures of Effect of Stressful Life Events

Two measures representing different conceptions of the psychological effect of stressful life events were constructed from Langner's (1962) 22-item symptom scale. The first is a dichotomous measure dividing respondents into those who were more likely and those who were less likely to be psychologically impaired, using the cutting point of four or more symptoms on the basis of Langner's finding that scores above this cutting point "identified only 1 per cent of the psychiatrically evaluated Wells, but . . . almost three quarters of the entire Impaired group" (1962:275). This score can be used to test the hypothesis that relatively stressful life events are associated with impaired rather than healthy psychological functioning.

The second effect measure was a con-

TABLE 3. MEASURES OF A RESPONDENT'S STRESSFUL LIFE EVENTS

Weight Assigned to Each Event	Conception of Property That Makes Events Stressful	
	Undesirability	Amount of Change Entailed
One	# losses minus # gains	# events
Social readjustment rating*	Sum of readjustment ratings for losses minus sum of readjustment ratings for gains	Sum of readjustment ratings for all events

* From Holmes and Rahe, 1967; Masuda and Holmes, 1967.

tinuous symptom score obtained by adding all responses coded as symptomatic by Langner. This score can be used to test the hypothesis that the relation between level of stressful life events and psychological symptions is a continuous one: The greater the life stress the greater the psychological distress.

Results

Relations Among Measures of Stressful Life Events

It is obvious that the measures for which each event was given a weight of one and the measures in which each event was weighted according to its social readjustment rating are not independent, since respondents with a greater number of events will tend to have higher scores on both measures. There is, however, no *a priori* reason to assume that undesirability measures and life change measures will be correlated. Nor does the evidence indicate that they were when each event was given a weight of one. The majority of respondents reported one loss or one gain, with the average being 1.5 losses and 1.2 gains.

In contrast, the measures of undesirability and of life change that were weighted according to social readjustment ratings of life events were not independent. Comparison of the readjustment ratings of life events classified as losses as against those classified as gains revealed that the mean rating for losses was 413 as against 225 for gains. Ambiguous events fell between with a mean of 327.

As a test of the relationship between the two measures based on social readjustment ratings, we divided the respondents into three approximately equal groups having low, medium, and high life change scores and cross classified each respondent as having only gains, mixed gains and losses, or only losses. The relationship was in the direction to be expected from the means for different categories of events; the majority of respondents with low life change scores reported only gains while the majority with high life change scores reported only losses. The overall relationship was highly significant ($X^2 = 40.15$ $df = 4$, $p < .001$).

Given this relationship between undesirability of events and amount of life change, it is not surprising that measures of undesirability and measures of life change have yielded similar results in studies of effects of stressful life events. The question is whether one shows a stronger relation to measures of expected effects when they are compared directly.

Relation of Life Event Measures to Psychological Symptom Measures

Table 4 gives the correlations between the four life event measures and the two psychological symptom measures. These correlations are based on measures all of which yielded skewed data. However, since this characteristic, which tends to reduce the size of product moment correlations, affected all of the correlations, their comparisons should not be influenced by it. Moreover, an analysis using contingency tables and partitioned Chi-square yielded results consistent with those reported here.

We note first that comparisons between correlations involving undesirability measures as against those involving change measures appear to yield inconsistent results. When each event was given a weight of one, the undesirability measure yielded the higher correlations; whereas when each

TABLE 4. CORRELATIONS BETWEEN MEASURES OF STRESSFUL LIFE EVENTS AND MEASURES OF PSYCHOLOGICAL SYMPTOMS

	Measure of Stressful Life Events			
	Each Event Weighted one [a]		Each Event Weighted According to Social Readjustment Rating	
Symptom Measure	Desirability Measure	Change Measure	Desirability Measure	Change Measure
Dichotomous: 0–3 vs. 4 or more symptoms	.28 [b]	.18 [c]	.35 [b]	.40 [b]
Continuous	.29 [b]	.24 [b]	.29 [b]	.35 [b]

[a] For desirability measure ambiguous events were weighted zero.
[b] $p < .01$.
[c] $p < .05$.

event was weighted according to its social readjustment rating, the change measure yielded the higher correlations. This apparent inconsistency is resolved, however, when we consider these results in the light of the relationship between the undesirability of events and their social readjustment ratings.

The change measure for which each event was given a weight of one yielded the lowest correlations. This measure implies that each event should have equal impact regardless of its undesirability and regardless of the readjustment it might require. The assumption that gains and losses have opposite effects, implied by scoring the former minus one and the latter plus one, increased the correlations. This difference between the correlations suggests that undesirable life events are more likely than desirable ones to be associated with elevated psychological symptom scores. However, this interpretation is open to question because, in adding information to the life event measure about the undesirability of life events, we also added, in attenuated form, information about their social readjustment ratings. This contamination occurred because gains, with the lowest average social readjustment rating, were scored minus one, ambiguous events, with an intermediate average readjustment rating, were scored zero, and losses, with the highest average social readjustment rating, were scored plus one. Therefore, we cannot infer that the higher correlations for the undesirability as against the change measure in the first comparison necessarily indicate that undesirability of life events is more strongly associated with level of psychological symptom scores than amount of life change.

This dilemma is resolved by the results of the comparison of the undesirability and the change measures for which events were weighted according to their social readjustment ratings. Consider the change measure first. Because of the relation between the undesirability of events and their social readjustment ratings, respondents with low life change scores were more likely to have experienced gains than respondents with high life change scores and, conversely, those with high life change scores were more likely to have experienced losses. Thus, the relatively high correlations between this measure of life change and psychological symptom scores could be due primarily to either aspect, undesirability or life change, of respondents' life events.

To the extent that the correlations with the change measure were due to the undesirability of life events, they should be improved by assigning negative readjustment ratings to gains and positive readjustment ratings to losses, thus distinguishing a change for the better from a change for the worse. The correlations in Table 4 show, however, that the undesirability measure based on directed social readjustment ratings yielded lower correlations with the psychological symptom measures than the change measure in which the readjustment ratings of all events were summed without regard to the undesirability of the events. Moreover, the scatter plots for these correlations indicate that the negative life change scores obtained by assigning negative readjustment ratings to gains were unrelated to symptom levels. Thus, the evi-

dence from the correlations in Table 4 is consistent with the conclusion that life change is a more useful conception than undesirability of the characteristic that makes life events stressful.

This interpretation of the correlational results rests on the assumption, however, that the relations between stressful life events and psychological symptom scores are not simply a reflection of underlying associations of each with social status variables. There is, for example, evidence of an inverse relation between social class and stressful life events (Dohrenwend, 1970) as well as evidence that both sex and social class are strongly associated, the latter inversely, with symptom scores based on Langner's inventory (Dohrenwend and Dohrenwend, 1969:65; Phillips and Segal, 1969). However, the partial correlations between the life change measure based on social readjustment ratings and psychological symptom scores, with social class, sex, age, or ethnicity controlled, are all significantly different from zero at the .01 level of probability. This finding that status variables do not explain the relationship between stressful life events and psychological symptom measures is consistent with results reported by other investigators (Myers et al., 1971; Myers et al., 1972).

In Table 4, we presented the correlation of each life event measure with two symptom measures based on different conceptions of the psychological effect of stressful life events. The question is whether the measures of stressful life events do better at predicting the entire range of symptom scores or at predicting the dichotomous score designed to indicate health versus impaired psychological functioning.

Only the least sensitive life events measure, the one designed to indicate change by simply counting the number of events reported, was clearly more highly correlated with the continuous than with the dichotomous system measure. In contrast, the change measure based on social readjustment ratings of events, which was the life event measure most closely associated with symptom measures, was more highly correlated with the dichotomous than with the continuous symptom measure. The scatter plot of the relation between this life change measure and continuous symptom scores indicates that there was little relationship between these two variables among respondents with symptom scores in the high range, particularly those with six or more symptoms. These results suggest that the most sensitive measure of stressful life events, life change scores based on social readjustment ratings of events, contributes little to the explanation of differences in symptom levels within the range that may indicate psychological impairment.

Discussion

In studies of effects of stressful life events the question of whether undesirability or change is the characteristic that makes events stressful has not been directly posed heretofore. The analog to this issue has been investigated, however, in recent research on physiological responses to psychosocial stressors. This work was based on the ideas of Selye, who posited a specific stress response to any environmental changes requiring adaptation and noted, for example, "Normal activities—a game of tennis or even a passionate kiss—can produce considerable stress. . ." (Selye, 1956:53).

To determine whether, as Selye sugested, pleasant and unpleasant stimuli produce similar physiological effects, Levi recorded affective and physiological responses to a series of films selected to contrast in the amount and kinds of emotions they would be expected to arouse. From this research he concluded, "Enhancement [of physiological response] occurs not only in response to stimuli which most subjects rate as predominantly 'unpleasant' but also when the self-ratings indicate predominantly 'pleasant' emotional reactions in most of the subjects, as in the case of viewing the comedy 'Charley's Aunt'" (Levi, 1972:146).

This physiological evidence strengthens the inference drawn from the present study that change rather than undesirability is the characteristic of life events that should be measured for the more accurate assessment of their stressfulness. Further research

is needed, however, to determine whether this inference concerning life events holds for effects such as serious psychological and organic illnesses as well as for relatively mild psychological symptoms. The cumulative gain in knowledge from the considerable effort now going into research on varied effects of stressful life events will be accelerated by resolution of this methodological issue.

REFERENCES

Antonovsky, A., and R. Kats.
1967 "The life crisis history as a tool in epidemiological research," Journal of Health and Social Behavior 8 (March): 15–21.

Brown, G. W., and J. L. T. Birley.
1968 "Crises and life changes and the onset of schizophrenia." Journal of Health and Social Behavior 9 (June):203–214.
1970 "Social precipitants of severe psychiatric disorders." Pp. 321–325 in E. H. Hare and J. K. Wing (eds.), Psychiatric Epidemiology: Proceedings of the International Symposium held at Aberdeen University 22–5 July 1969. New York: Oxford University Press.

Dohrenwend, B. P., E. T. Chin-Song, G. Egri, F. R. Mendelsohn and J. Stokes.
1970 "Measures of psychiatric disorder in contrasting class and ethnic groups." Pp. 159–202 in E. H. Hare and J. K. Wing (eds.), Psychiatric Epidemiology: Proceedings of the International Symposium held at Aberdeen University 22–5 July 1969. New York: Oxford University Press.

Dohrenwend, B. P., and B. S. Dohrenwend.
1969 Social Status and Psychological Disorder: A Causal Inquiry. New York: John Wiley.

Dohrenwend, B. S.
1970 "Social class and stressful events." Pp. 313–319 in E. H. Hare and J. K. Wing (eds.), Psychiatric Epidemiology: Proceedings of the International Symposium held at Aberdeen University 22–5 July 1969. New York: Oxford University Press.

Dohrenwend, B. S., and B. P. Dohrenwend.
1970 "Class and race as status related sources of stress." Pp. 111–140 in S. Levine and N. A. Scotch (eds.), Social Stress, Chicago: Aldine.

Fritz, C. E., and E. S. Marks.
1954 "The NORC studies of human behavior in disaster." Journal of Social Issues 10(3):26–41.

Fröberg, J., C.-G. Karlsson, L. Levi and L. Lidberg.
1971 "Physiological and biochemical stress reactions induced by psychosocial stimuli." Pp. 280–295 in L. Levi (ed.), Society, Stress and Disease: The Psychosocial Environment and Psychosomatic Diseases. New York: Oxford University Press.

Gurin, G., J. Veroff and S. Feld.
1960 Americans View Their Mental Health. New York: Basic Books.

Holmes, T. H., and R. H. Rahe.
1967 "The social readjustment rating scale." Journal of Psychosomatic Research 11 (2):213–218.

Langner, T. S.
1962 "A twenty-two item screening score of psychiatric symptoms indicating impairment." Journal of Health and Human Behavior 3 (Winter):269–276.

Levi, L.
1972 "General discussion." Pp. 143–149 in L. Levi (ed.), Stress and Distress in Response to Psychosocial Stimuli. Stockholm: Almqvist & Wiksell.

Lindemann, E.
1944 "Symptomatology and management of acute grief." American Journal of Psychiatry 101 (September):141–148.

Masuda, M., and T. H. Holmes.
1967 "The social readjustment rating scale." Journal of Psychosomatic Research 11 (2):219–225.

Murri, A.
1912 "Delle neurosi da trauma." La Riforma Medica 28 (11 May):533–540.

Myers, J. K., J. J. Lindenthal, and M. P. Pepper
1971 "Life events and psychiatric impairment." Journal of Nervous and Mental Disease 152 (March): 149–157.

Myers, J. K., J. J. Lindenthal, M. P. Pepper and D. R. Ostrander.
1972 "Life events and mental status: A longitudinal study." Journal of Health and Social Behavior 13 (December):398–406.

Phillips, D. L., and B. F. Segal.
1969 "Sexual status and psychiatric symptoms." American Sociological Review 34 (February):58–72.

Rahe, R. H.
1968 "Life-change measurement as a predictor of illness." Proceedings of the Royal Society of Medicine 61 (November): 44–46.

Selye, H.
1956 The Stress of Life. New York: McGraw-Hill.

Sheatsley, P. B., and J. Feldman.
1964 "The assassination of President Kennedy: public reaction." Public Opinion Quarterly 28 (Summer):189–215.

Theorell, T., and R. H. Rahe.
1970 "Life changes in relation to the onset of myocardial infarction." Pp. III–1–III–20 in Psychosocial Factors in Relation to the Onset of Myocardial Infarction and to Some Metabolic Variables–A Pilot Study by T. Theorell. Stockholm: Department of Medicine, Seraphimer Hospital, Karolinska Institutet.