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Assessing the Impact of Life Changes: Development of the Life Experiences Survey

Irwin G. Sarason, James H. Johnson, and Judith M. Siegel
University of Washington

This article describes the development of a new instrument, the Life Experiences Survey, for the measurement of life changes. It was designed to eliminate certain shortcomings of previous life stress measures and allows for separate assessment of positive and negative life experiences as well as individualized ratings of the impact of events. Several studies bearing on the usefulness of the Life Experiences Survey are presented, and the implications of the findings are discussed.

During recent years, numerous studies have investigated the relationship between life stress and susceptibility to physical and psychological problems. Most of these studies have been based on the assumptions that (a) life changes require adaptation on the part of the individual and are stressful, and (b) persons experiencing marked degrees of life change during the recent past are susceptible to physical and psychiatric problems.

There is considerable evidence that a relationship exists between life stress, operationally defined in terms of self-reported life changes, and physical illness (Dohrenwend & Dohrenwend, 1974b). Rahe and Lind (1971) have reported a relationship between life stress and sudden cardiac death. Theorell and Rahe (1971) and Edwards (1971) have provided data suggestive of a link between life stress and myocardial infarction. Holmes (1970) and Rahe (1968) both found a relationship between life stress and major and minor health changes, and Wyler, Masuda, and Holmes (1971) have shown that life change is related to seriousness of chronic illness.

There also have been studies of non-health-related correlates of life change that have yielded positive results. For example, significant negative relationships between life stress and academic (Harris, 1973) and teacher (Carranza, 1973) performance have been found. Several researchers have demonstrated a relationship between extent of life changes and psychiatric symptomatology (Dekker & Webb, 1974; Paykel et al., 1969). Vinokur and Selzer (1975) and others (e.g., Constantini, Braun, Davis, & Iervolino, 1973) have also found life stress to be related to the occurrence of depression, anxiety, and tension. A comprehensive review of the life stress literature and a consideration of methodological issues in this area of research has been presented by Rabkin and Struening (1976).

Questions of both a methodological and theoretical nature can be raised concerning present methods of assessing life changes. By far the most widely used instrument in life stress research is the Schedule of Recent Experiences (SRE; Holmes & Rahe, 1967). This is a self-administered questionnaire containing a list of 43 events to which subjects respond by checking those events that they have experienced during the recent past (previous 6 months or 1 year). To determine the scoring weights for specific events, Holmes and Rahe (1967) had a large group of subjects rate

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Requests for reprints should be sent to Irwin G. Sarason, Department of Psychology NI-25, University of Washington, Seattle, Washington 98195.

each of the 43 items with regard to the amount of social readjustment that the various events required. The item *marriage* (assigned a value of 500) was used as an arbitrary standard or anchor point for making ratings. Mean values were obtained for each of the items. These mean values (divided by the constant of 10) were taken to represent the average amount of social readjustment required by the events. The values, termed *life change units,* when summed yield a total life stress score.

Although the development of the SRE represents a valuable initial attempt at the quantification of the impact of life change, its adequacy has been questioned on several counts (Rabkin & Struening, 1976). The SRE was based on the assumption that life changes per se are stressful regardless of the desirability of the events experienced. Therefore, both desirable and undesirable events are combined in determining the life stress score. On the other hand, several writers have questioned the logic of combining positive and negative events (Brown, 1974; Mechanic, 1975; Sarason, De Monchaux & Hunt, 1975). It has been argued that undesirable events (e.g., death of a close family member) may have a very different, and possibly a more detrimental, effect on individuals than positive events (e.g., outstanding personal achievement). It seems reasonable, therefore, to consider conceptualizing life stress primarily in terms of events that exert negative impacts.

Vinokur and Selzer (1975) have provided information that bears on this issue. These investigators used a specially modified version of the SRE, which yielded separate values for positive and negative life change. Several stress-related measures such as self-ratings of depression, anxiety, and tension were used, as well as measures of aggression, paranoia, and suicidal proclivity. The study provided support for a relationship between life changes and several of these measures but only when using a measure of undesirable events. Positive change was not found to be systematically related to the personality measures. Vinokur and Selzer (1975) concluded that

> it seems reasonable to reject the notion that adjustment to change per se is the crucial determinant of life stress and its sequelae. Instead, it appears that the contribution of life events to psychological impairment is mediated by stress that is evoked by some undesirable aspect of the events rather than by change per se (pp. 333–344).

Similar evidence that psychological difficulties are related to undesirable, but not desirable events has been provided by Mueller, Edwards, and Yarvis (1977). It would seem necessary to take this desirability–undesirability dimension into account in the assessment of life change.

Even though it might be advisable to categorize events as being desirable or undesirable for purposes of assessment, there are some difficulties with this approach. For example, events may vary in terms of their desirability depending on the circumstances and perceptions of the respondent. To illustrate, "pregnancy" may be a highly desirable event for a woman who wants a child, but it may be viewed as quite undesirable by an unwed teenager. Given the fact that individuals perceive events differently, it is somehow important to individualize ratings of the desirability of the events that they experience.

A related issue concerns the quantification of life changes. Because individuals vary in how they are affected by events, the values derived from group ratings (such as those used with the SRE) may not accurately reflect the impact that events have on particular individuals. Problems inherent in applying group-derived values to individual cases become obvious when it is noted that certain classes of events listed in the SRE can be quite ambiguous. For instance, if a subject responds to the item *major change in financial status,* it is uncertain if the response refers to a major change in a positive or negative direction. It is not clear that the life change unit associated with major change in financial status is as appropriate to the person who has recently become bankrupt as to the person who has recently inherited a large sum of money. Thus, even though life change units do seem to provide a quantitative measure of overall life change, in some cases, they may not reflect the actual amount of stress resulting from the experiencing of specific events. Findings bearing on this issue have recently been reported by Yamamoto and Kinney (1976). These investigators found life

stress scores, based on self-ratings of the stressfulness of events, to be better predictors than scores derived by using mean adjustment ratings similar to those used with the SRE.

Bearing in mind the methodological issues mentioned above, it would appear that a measure of life stress should possess three characteristics. First, it should include a list of events experienced with at least some degree of frequency in the population being investigated. Second, it should allow for ratings, by respondents themselves, of the desirability or undesirability of the events. Third, it should allow for individualized ratings of the personal impact of the events experienced. The present article describes a new measure of life stress, the Life Experiences Survey (LES), constructed according to these guidelines and describes the results of several studies bearing on its usefulness.

Development of the LES

The LES is a 57-item self-report measure that allows respondents to indicate events that they have experienced during the past year. The scale has two portions: Section 1, designed for all respondents, contains a list of 47 specific events plus three blank spaces in which subjects can indicate other events that they may have experienced. The events listed in Section 1 refer to life changes that are common to individuals in a wide variety of situations. The 10 events listed in Section 2 are designed primarily for use with students, but they can be adapted for other populations. Section 2 deals specifically with changes experienced in the academic environment. Section 1 is appropriate for use with subjects drawn from the general population, whereas both sections are relevant to a student population. (In the present research, responses to items of Sections 1 and 2 were combined in deriving life change scores as this research was conducted with college students.)

The LES items were chosen to represent life changes frequently experienced by individuals in the general population. Many of the items are based on existing life stress measures, particularly the SRE. Others were included because they were judged to be events that occur frequently and that potentially might exert a significant impact on the lives of persons experiencing them. Thirty-four of the events listed in the LES are similar in content to those found in the SRE (Holmes & Rahe, 1967). In the construction of the present scale, however, certain items were made more specific. For example, the SRE contains the item *pregnancy,* which may be endorsed by women but perhaps not by a man whose wife or girlfriend has become pregnant. The present scale allows both men and women to endorse the item of pregnancy in the following manner: *Female*: Pregnancy; *Male*: Wife's/girlfriend's pregnancy. The SRE includes the item *Wife begins or stops work,* an item that fails to assess the impact on women whose husbands begin or cease working. The present scale lists two items: *Married male*: Change in wife's work outside the home (beginning work, ceasing work, changing to a new job, etc.), and *Married female*: Change in husband's work (loss of job, beginning a new job, etc.) Examples of events not listed in the SRE but included here are male and female items dealing with abortion and more general items such as serious injury or illness of close friend, engagement, breaking up with boyfriend/girlfriend, and so forth. Nine of the 10 school-related items are unique to the LES. Finally, some of the events from the SRE thought to be of relatively little consequence (e.g., Christmas, vacation, etc.) were not included, and certain other events were reworded to simplify responding.

The format of the LES calls for subjects to rate separately the desirability and impact of events that they have experienced. Thus, they are asked to indicate those events experienced during the past year (0–6 months or 7 months – 1 year) [1] as well as (a) whether they viewed the event as being positive or negative and (b) the perceived impact of the particular event on their life *at the time of occurrence.* Ratings are on a 7-point scale ranging from extremely negative (−3) to ex-

[1] Although the LES provides for the assessment of life change occurring during two 6-month intervals, all analyses to date have involved change scores based on the entire preceding 12-month time period.

tremely positive (+3). Summing the impact ratings of those events designated as positive by the subject provides a *positive change score.* A *negative change score* is derived by summing the impact ratings of those events experienced as negative by the subject. By adding these two values, a *total change score* can be obtained, representing the total amount of rated change (desirable and undesirable) experienced by the subject during the past year. Although the findings cited earlier (Mueller et al., 1977; Vinokur & Selzer, 1975) suggest that this total change score might be less predictive of health-related variables than an index of negative change, this measure was used in the present research to provide further information concerning the relationships between negative change, change per se, and stress-related dependent variables. (The LES is presented in the Appendix.)

For any new instrument it is necessary to obtain certain kinds of information. Normative data should be provided that include information about the effects of demographic variables (e.g., sex). Evidence should also be presented concerning the instrument's stability over time and correlations with relevant dependent measures. Finally, in the case of self-report scales, it should be demonstrated that measures derived from the instrument do not simply reflect the effects of response sets such as the tendency to "fake good." The instrument's scores should not be highly correlated with factors such as social desirability.

Normative Data and an Examination of Sex Differences

The first study undertaken with the LES obtained general information concerning the responses of college students to the instrument and investigated the possibility of differences in response due to sex.

The LES was administered in class to 345 students enrolled in introductory psychology courses at the University of Washington during the fall quarter of 1975. Values were obtained for positive, negative, and total life change scores. Means and standard deviations were derived separately for males ($n = 174$) and females ($n = 171$) on each of these measures, and tests for sex differences were conducted.[2] Data from Section 1 and Sections 1 and 2 combined are presented separately in Table 1. The table shows that there were no significant differences between males and females on any of the three life change measures. It can also be seen that the life change scores of this sample of college students are generally low. Higher values might well have been obtained if subjects from the general population had been surveyed. Finally, it can be noted that the results of this and a number of other studies with the LES have shown that the positive and negative life change scores are essentially uncorrelated.

Table 1
Means and Standard Deviations of Male and Female Respondents on the Life Experiences Survey (LES)

	Males[a]		Females[b]	
LES score	*M*	*SD*	*M*	*SD*
Positive	9.74	8.07	9.57	6.66
	6.87	5.97	6.71	5.51
Negative	6.22	6.28	7.04	7.90
	4.66	4.36	5.64	6.43
Total	15.97	11.08	16.61	10.23
	11.53	8.01	12.35	8.82

Note. In each case figures in top rows are derived from responses to Parts 1 and 2 combined. Figures in the bottom rows are derived from Part 1 only.
[a] $n = 174$.
[b] $n = 171$.

Reliability of the LES

Two test–retest reliability studies of the LES have been conducted. Both involved subjects drawn from undergraduate psychology courses with a 5- to 6-week time interval between test and retest. There were 34 subjects in the first study and 58 in the second. Responses were scored for positive, negative,

[2] Data concerning the mean ratings of these events; the frequency of endorsement of various events; and percentile ranks for positive, negative, and total change scores can be obtained without charge from the authors.

and total life changes in each case. Pearson product-moment correlations were computed to determine the relationships between scores obtained at the two testings. Test–retest correlations for the positive change score were .19 and .53 ($p < .001$). The reliability coefficients for the negative change score were .56 ($p < .001$) and .88 ($p < .001$). The coefficients for the total change score were .63 ($p < .001$) and .64 ($p < .001$).

Although the findings of the two studies reported here vary to some extent, perhaps due to the relatively small sample sizes, they suggest that LES is a moderately reliable instrument especially when the negative and total change scores are considered.[3] It should be noted that test–retest reliability coefficients found with instruments of this type are likely to underestimate the reliability of the measure. That is, with a time interval of 5–6 weeks, subjects may actually experience a variety of events, both positive and negative, that may be reflected in responses given at the time of retesting. As these changes reflect the actual occurrence of life changes, rather than simply inconsistencies in reporting, it would be inappropriate to consider the total variability in responding as error. As subjects generally seem to report somewhat higher levels of positive than negative change on the LES, it seems possible that the lower reliability estimates found with the positive change measure may be due, in part, to the greater likelihood of positive changes occurring within the time interval between test and retest.

Correlates of the LES

To the extent that the LES measures life stress, its scores should correlate with relevant personality indices. Further, an analysis of the correlational patterns should provide information concerning whether life stress is more usefully conceptualized in terms of negative life change or total life change.

Anxiety, Academic Achievement, Social Desirability, and the LES

A group of 100 male and female students drawn from introduction to personality courses were administered the LES, the State–Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970), and a short form of the Marlowe-Crowne Social Desirability Scale (Strahan & Gerbasi, 1972). Academic transcripts were available for 75 of these students. The correlations among life change scores, anxiety, and grade point average (GPA) are presented in Table 2.

Inspection of these correlations shows that the total and negative change scores correlate significantly and in a positive direction with state and trait anxiety, whereas the positive change score is not significantly related to either measure. Tests for significance of the difference between correlations suggested that positive and negative change scores differ significantly in their correlations with state anxiety ($p < .01$). Although negative change scores were significantly correlated with trait anxiety and positive change scores were not, the difference between these correlations was not significant. Significant correlations between negative change and anxiety have also been found in data collected as part of two other investigations. For a sample of naval personnel ($N = 76$), correlations of .46 ($p < .001$) and .40 ($p < .001$) were found with state and trait anxiety, respectively. With college students ($N = 82$), a correlation of .24 ($p < .05$) has also been found between negative change and anxiety as measured by the Multiple Affect Adjective Checklist (Zuckerman & Lubin, 1965).

With regard to GPA, positive, negative, and total change scores were all found to be negatively correlated with GPA. Even though the correlation between positive change and GPA was smaller than the correlations between the negative and total change scores and this measure, the differences between these correlations were not significant. These results are

[3] It should be noted that in addition to the two reliability studies reported here, reliability data are available on one additional small sample of 12 subjects who took the LES on two different occasions as part of another investigation. The time interval between test and retest was 8 weeks. Here, reliability coefficients of .61 ($p < .05$), .72 ($p < .01$), and .82 ($p < .001$) were obtained for positive, negative, and total change scores, respectively.

Table 2
Correlations Between Life Change Scores, Anxiety, and Academic Achievement

LES Life change scores	Anxiety		Grade point average[b]
	Trait[a]	State[a]	
Positive	.04	.03	−.21
Negative	.29**	.46***	−.38***
Total	.24*	.37***	−.40***
Balance (negative − positive events)	−.21*	−.36***	.18

Note. LES = Life Experiences Survey.
[a] $n = 97$.
[b] $n = 73$.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

consistent with other studies that have found significant relationships between life stress (assessed by other measures) and measures of anxiety (Constantini et al., 1973) and academic achievement (Carranza, 1973).

As it seemed reasonable that the effects of positive change might, in part, ameliorate the stress produced by negative experiences, a balance or subtractive score (negative − positive) was also computed for each subject and was correlated with the dependent measures. As can be seen in Table 2, in no case was this balance score more predictive than the negative change score alone, although differences between correlations were not significant. These results are similar to those reported by Mueller et al. (1977) and Vinokur and Selzer (1975), who have found such a balance score to be less predictive of stress-related variables than measures of negative life change.

The relationships between life change scores and the social desirability measure were nonsignificant. Correlations between positive, negative, and total change scores and social desirability were −.05, .05, and .01, respectively. This suggests that responses to the LES are relatively free from the influence of social desirability response bias.

Personal Maladjustment and the LES

To determine the relationship between life stress and personal maladjustment, the LES and the Psychological Screening Inventory (PSI) were administered to 75 male and female volunteers drawn from introduction to personality courses at the University of Washington.

The PSI (Lanyon, 1970, 1973) is a 130-item true–false inventory that yields scores on five subscales: Alienation (Al), Social Nonconformity (Sn), Discomfort (Di), Expression (Ex), and Defensiveness (De). The Al scale was designed for "assessing similarity to psychiatric patients," and the Sn scale, for "assessing similarity to incarcerated prisoners." The Di scale appears to be a measure of neuroticism, the Ex scale is a measure of the introversion–extraversion dimension, and the De scale is a measure of test-taking attitude.

Correlations between positive, negative, and total life change scores and the five PSI scales are presented in Table 3. The table shows that negative life change is significantly related to scores on the Sn and Di scales. These findings suggest a relationship between negative change, as assessed by the LES, and certain types of personal maladjustment. Although two PSI scales were correlated with negative change only, the PSI Ex scale was found to correlate significantly with the positive change score. Thus, it would appear that extraverted individuals experience greater degrees of positive change than do introverted persons. The results obtained here are similar to those obtained by Constantini et al. (1973) in their investigation correlating life stress scores, derived from the Holmes and Rahe (1967) scale, with PSI scores. The fact that

Table 3
Correlations Between Life Change and PSI Scores

Life change	PSI				
	Al	Sn	Di	Ex	De
Positive	.14	.03	−.07	.28**	.06
Negative	−.10	.20*	.23*	−.02	−.16
Total	.03	.15	−.10	.18	−.06

Note. PSI = Psychological Screening Inventory; Al = Alienation; Sn = Social Nonconformity; Di = Discomfort; Ex = Expression; De = Defensiveness.
* $p < .05$.
** $p < .02$.

in the present study PSI measures of personal maladjustment as well as certain of the measures considered earlier (e.g., anxiety) correlate with negative but not with positive change provide further support for the notion that life stress may best be conceptualized in terms of negative change.

Depression, Locus of Control, and the LES

Scores on the LES, the Beck Depression Inventory (Beck, 1967), and the Internal–External (I–E) Locus of Control Scale (Rotter, 1966) were obtained for a sample of 64 (34 males 30 females) college students drawn from undergraduate psychology courses. Correlations between life change scores and these two measures are presented in Table 4. The table reveals a significant relationship between negative change and scores on the Beck Depression Inventory, which is consistent with evidence presented by Vinokur and Selzer (1975), who found negative change to be related to self-ratings of depression. An additional finding of interest is that individuals who report having experienced high levels of negative change appear to be more externally oriented, perceiving themselves as being less capable of exerting control over reinforcement contingencies in their environment.

A Study of Counseling Center Clients

In addition to the findings presented above, life change scores have also been obtained from a group of students receiving treatment at a university counseling center for psychological problems. Based on earlier findings of a relationship between negative life change and measures of personal maladjustment, it was predicted that this group would differ from a randomly selected group of college students in their negative change scores but not in terms of positive change. The counseling center sample consisted of 18 students (16 females and 2 males). For purpose of comparison, LES records of 18 (16 females and 2 males) students were selected at random from protocols obtained from students enrolled in introduction to personality courses at the University of Washington. (Undergraduates at all academic levels are enrolled in these courses.) Mean positive, negative, and total change scores for these two groups are presented in Table 5.

No significant differences were obtained for the positive and total change scores. The counseling center clients did, however, display significantly higher negative change scores than did the comparison group, $t(34) = 2.21$, $p < .05$. In order to rule out the possibility that these findings are unique to the random sample selected for comparison, a second comparison group ($n = 18$) was randomly drawn from the completed LES protocols of introductory psychology students. Again, significance between group means was found for negative, $t(34) = 2.89$, $p < .01$, but not for positive or total life change. These findings provide additional support for a relationship between negative life change as assessed by the LES and problems of a psychological nature.

Table 4
Correlations Between Life Change, Depression, and Locus of Control

Life change score	Beck depression	Locus of control
Positive	−.15	−.05
Negative	.24*	.32**
Total	.06	.17

* $p < .05$.
** $p < .02$.

Table 5
Life Change Scores for Normals and Counseling Center Clients

Group	Change					
	Positive		Negative		Total	
	M	*SD*	*M*	*SD*	*M*	*SD*
Normals	10.55	8.26	9.61	9.59	20.16	11.48
Counseling center	8.33	5.83	16.61	9.37	24.94	10.91

Note. $n = 18$ for both groups.

A Comparison of the LES and SRE Approaches as Measures of Life Change

If the LES represents an improvement over the SRE, it should be possible to demonstrate that measures derived from the LES are more highly related to relevant dependent measures than are SRE scores. Further analyses of some of the data already reported, along with analyses of additional data, were undertaken to provide some basis for comparing these two indices of life stress. The comparisons were accomplished by scoring only the 34 items of the LES that are common to the Holmes and Rahe (1967) measure. These items were scored to yield four measures. Three of these measures were LES positive, negative, and total life change scores derived in the manner described earlier. A fourth measure was derived by applying the life change units used with the SRE to each of the 34 items. It was thus possible to derive a measure comparable to the SRE based on responses to these events. Although these measures were based on 34 rather than the entire 43 items of the Holmes and Rahe scale, it was felt that they would provide an adequate basis for comparing the LES and SRE scoring procedures. Based on the findings reported earlier, it was predicted that the LES negative change score would be more predictive of dependent measures than would the Holmes and Rahe measure. No predictions were made regarding the LES positive and total change scores.

In one comparative study, 69 female subjects from undergraduate human sexuality courses were given the LES, the Beck Depression Inventory, and the State–Trait Anxiety Inventory. The four life change measures were derived as outlined above. One somewhat surprising finding was that no significant correlations were found between any of the four life change measures and anxiety. Given the rather consistent finding of a relationship between negative change and anxiety reported earlier, these results might best be attributed to the rather select nature of the sample studied. Significant findings were, however, obtained for correlations with the Beck Depression Inventory. Correlations between positive, negative, and total LES scores and depression were .02, .37 ($p < .01$), and .24 ($p < .05$), respectively. The correlation between the life change unit score, similar to that used with the SRE, and depression was .17 (*ns*). The difference between the correlations obtained with the LES negative change score and the Holmes and Rahe score was significant, $t(66) = 2.31$, $p < .05$.

A second comparative study of the LES and SRE measures concerned the relationship between these measures and the scores on the PSI. As in the original analysis (which included the entire LES), two PSI adjustment measures were found to be significantly correlated with life change when only 34 items were scored, Sn and Di (neuroticism). Correlations between change scores and these measures are presented in Table 6. As can be seen, the LES negative change scores correlated significantly with both measures of adjustment (Sn and Di), whereas no significant relationships were found between these two measures and the life change unit score. Although the differences between these correlations did not reach statistical significance, the pattern of results does seem to support the

Table 6
Correlations Between LES Change Scores, Life Change Unit Scores (34 items), and Psychological Screening Inventory (PSI) Scale Scores

LES Life Change score	PSI	
	Sn	Di
Positive	.02	−.04
Negative	.26*	.25*
Total	.18	.12
Unit	.14	.15

Note. LES = Life Experiences Survey; *Sn* = Social Nonconformity; Di = Discomfort.
* $p < .05$.

superiority of the LES measure of negative change.

Discussion

The results of the studies reported here suggest that the LES may be a useful research and, perhaps also, clinical tool. They indicate that negative and total change scores, derived from this scale, are reasonably reliable over a 5- to 6-week time interval, although the positive change score appears to be less stable. Support for the usefulness of the scale is provided by the findings showing that the negative life change score is significantly related to a number of stress-related dependent measures. In addition, scale responses appear to be relatively free from social desirability biases, and the measure is capable of differentiating college students who have sought help for adjustment problems from those who have not.

Other results also suggest that the LES possesses certain advantages over the SRE as an instrument for assessing life stress. These advantages relate particularly to the important distinction between desirable and undesirable change made by the LES. The results show that positive and negative life change scores exhibit different patterns of relationships with relevant dependent measures. It can be noted that there was not a single case in which both positive and negative change scores were significantly correlated with the same dependent measures. This suggests that the separate assessment of positive and negative change by the LES represents a step forward in assessing relationships between life changes and diverse dependent measures. It seems possible that life stress is most accurately conceptualized in terms of negative life changes rather than in terms of positive or total change. Our findings and those reported by others suggest that it is the negative change measure that should be used if one's purpose is to determine degree of "life stress."

Although the results reported here emphasize the role of negative change, it should be pointed out that the failure to find significant correlations between positive change and the dependent measures may be related to the lower reliability of the positive change score rather than to the unstressful nature of positive life change. The findings of Mueller et al. (1977) and Vinokur and Selzer (1975), which are consistent with the present results, however, support conclusions emphasizing the importance of negative life changes.

A major consideration in the assessment of life stress concerns the nature of the relationships obtained between life change scores and stress-related dependent variables. One might question, for example, whether relationships such as those reported in this article and found elsewhere in the literature reflect the effects of life stress on individuals or simply reflect the effects of specific variables on the reporting of life change. Regarding life stress research in general, one might also question whether persons experiencing high levels of life stress are actually more susceptible to the development of physical and/or psychological problems or whether persons who already manifest such difficulties are more prone to experience life change. Thus, the directionality of the relationships obtained in life stress studies is often unclear. This makes it difficult to draw firm cause–effect conclusions. Although authors such as Brown (1972) have made a strong case for the causal role of life stress, and even though most research in the area seems to be based on the assumption that change plays a causal role, definitive answers regarding cause–effect relationships must ultimately come from longitudinal stud-

ies that are more complex than those typically found in the life stress literature.

Although based on available research findings, it is not possible to resolve this directionality issue even though some data are available regarding the degree to which life stress scores may themselves be influenced by the psychological state of the respondent at the time of testing. In a recent study by Siegel, Johnson, and Sarason (Note 1), the effects of an experimentally induced depressive state on responding to the LES was investigated. The subjects, who had previously completed the LES, were randomly assigned to one of three experimental conditions: neutral, elation, and depression. By using an affect induction procedure developed by Velten (1968), it was possible to induce transient states of elation and depression in these subjects. Subjects were then given the LES a second time. Although a manipulation check indicated that the affect induction procedure did result in elation and depression in the two experimental groups, these mood states had no effect on the number of life changes reported or on any of the LES scores. These results suggest that the significant correlations between the LES and depression do not result from the effects of the depressive mood state on responding to the LES. These results might be interpreted as being consistent with the notion that a causal relationship exists between negative events and depression. However, additional data are needed to draw firm conclusions. (Although mood state does not influence responding per se, depressed individuals as a result of their condition may actually experience more negative changes, thus resulting in a correlation between change and depression.) The results do suggest, however, that responses to the LES are not unduly influenced by the mood state of the respondent.

Finally, in considering the assessment of life change and its effect on individuals, it would seem necessary to take into account the role of variables in addition to life stress. For example, it may be noted that even though significant relationships between change scores and dependent measures were found in this research, the magnitude of the correlations was in most instances low, suggesting that life stress accounts for a relatively small proportion of the variance reflected in the measures. This finding of significant but low correlations is consistent with the results of other life stress studies. It thus seems appropriate to question whether these findings reflect the inadequacy of present life stress measures or if it is, in fact, reasonable to expect such measures to correlate highly with stress-related variables. Dohrenwend and Dohrenwend (1974a) have pointed out that it is likely that the effects of life stress differ from person to person depending on their individual characteristics. Some persons may be greatly affected by even moderate levels of life change, whereas others may be affected very little by relatively high levels. If this is the case, it may not be unreasonable to expect correlations of the low magnitude that have typically been obtained. Perhaps we can expect to find stronger relationships only as variables determining the effects of life change are taken into account.

Unfortunately, relatively little research has been directed toward investigating the role of moderator variables, although the research that has been conducted is provocative. Nuckolls, Cassel, and Kaplan (1972) investigated the relationships between life stress and pregnancy and birth complications. No significant relationships were found among these variables when all subjects were considered. However, when mothers were divided into those who displayed high and low levels of "psychosocial assets," significant results were obtained. Subjects showing high levels of both life change and psychosocial assets (support systems in their environment) did not show evidence of increased complications. Those who displayed high levels of life change and low levels of psychosocial assets did have an increased frequency of such complications.

The importance of moderator variables has also been suggested by the results of a study conducted by Johnson and Sarason (in press) in which the relationships among life change and measures of anxiety and depression were examined as a function of locus of control orientation (Rotter, 1966). It was predicted that a relationship between negative change and depression and anxiety would be found

for externally oriented subjects (who presumably see themselves as having little control over environmental events) but not for internally oriented subjects (who tend to perceive themselves as capable of exerting control over environmental events). The results were in line with this prediction, thus suggesting that life stress may affect individuals differently depending on the degree of their perceived control over events. In one other study, Smith, Johnson, and Sarason (1978) found the relationship between life stress and a measure of psychological adjustment to vary as a function of subjects' scores on a measure of sensation seeking (Zuckerman, Kolin, Price, & Zoob, 1964). Thus, the effects of life stress may also be mediated by self-reported "optimal level of stimulation."

It would appear, then, that one's perception of control over environmental events, sensation-seeking status, and degree of psychosocial assets may all mediate the effects of life stress. It seems likely that there are also other individual difference variables that moderate the effects of life changes, and research designed to identify them is needed. The LES, which possesses sufficient reliability and correlates with a variety of relevant dependent measures, could be used in studies aimed at identifying moderator variables and their effects. The format of the LES allows for the individualized rating of the impact of events plus the availability of separate measures of positive and negative change. This makes it especially appropriate for use in future research concerning how people deal with the stresses and strains of modern life.

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Appendix

The Life Experiences Survey

Listed below are a number of events which sometimes bring about change in the lives of those who experience them and which necessitate social readjustment. *Please check those events which you have experienced in the recent past and indicate the time period during which you have experienced each event.* Be sure that all check marks are directly across from the items they correspond to.

Also, for each item checked below, *please indicate the extent to which you viewed the event as having either a positive or negative impact on your life* at the time the event occurred. That is, *indicate the type and extent of impact that the event had.* A rating of −3 would indicate an extremely negative impact. A rating of 0 suggests no impact either positive or negative. A rating of +3 would indicate an extremely positive impact.

Section 1

	0 to 6 mo	7 mo to 1 yr	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
1. Marriage			−3	−2	−1	0	+1	+2	+3
2. Detention in jail or comparable institution			−3	−2	−1	0	+1	+2	+3
3. Death of spouse			−3	−2	−1	0	+1	+2	+3
4. Major change in sleeping habits (much more or much less sleep)			−3	−2	−1	0	+1	+2	+3

	0 to 6 mo	7 mo to 1 yr	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
5. Death of close family member:									
a. mother			−3	−2	−1	0	+1	+2	+3
b. father			−3	−2	−1	0	+1	+2	+3
c. brother			−3	−2	−1	0	+1	+2	+3
d. sister			−3	−2	−1	0	+1	+2	+3
e. grandmother			−3	−2	−1	0	+1	+2	+3
f. grandfather			−3	−2	−1	0	+1	+2	+3
g. other (specify)			−3	−2	−1	0	+1	+2	+3
6. Major change in eating habits (much more or much less food intake)			−3	−2	−1	0	+1	+2	+3
7. Foreclosure on mortgage or loan			−3	−2	−1	0	+1	+2	+3
8. Death of close friend			−3	−2	−1	0	+1	+2	+3
9. Outstanding personal achievement			−3	−2	−1	0	+1	+2	+3
10. Minor law violations (traffic tickets, disturbing the peace, etc.)			−3	−2	−1	0	+1	+2	+3
11. *Male*: Wife/girlfriend's pregnancy			−3	−2	−1	0	+1	+2	+3
12. *Female*: Pregnancy			−3	−2	−1	0	+1	+2	+3
13. Changed work situation (different work responsibility, major change in working conditions, working hours, etc.)			−3	−2	−1	0	+1	+2	+3
14. New job			−3	−2	−1	0	+1	+2	+3
15. Serious illness or injury of close family member:									
a. father			−3	−2	−1	0	+1	+2	+3
b. mother			−3	−2	−1	0	+1	+2	+3
c. sister			−3	−2	−1	0	+1	+2	+3
d. brother			−3	−2	−1	0	+1	+2	+3
e. grandfather			−3	−2	−1	0	+1	+2	+3
f. grandmother			−3	−2	−1	0	+1	+2	+3
g. spouse			−3	−2	−1	0	+1	+2	+3
h. other (specify)			−3	−2	−1	0	+1	+2	+3
16. Sexual difficulties			−3	−2	−1	0	+1	+2	+3
17. Trouble with employer (in danger of losing job, being suspended, demoted, etc.)			−3	−2	−1	0	+1	+2	+3
18. Trouble with in-laws			−3	−2	−1	0	+1	+2	+3
19. Major change in financial status (a lot better off or a lot worse off)			−3	−2	−1	0	+1	+2	+3
20. Major change in closeness of family members (increased or decreased closeness)			−3	−2	−1	0	+1	+2	+3
21. Gaining a new family member (through birth, adoption, family member moving in, etc.)			−3	−2	−1	0	+1	+2	+3
22. Change of residence			−3	−2	−1	0	+1	+2	+3
23. Marital separation from mate (due to conflict)			−3	−2	−1	0	+1	+2	+3
24. Major change in church activities (increased or decreased attendance)			−3	−2	−1	0	+1	+2	+3

	0 to 6 mo	7 mo to 1 yr	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
25. Marital reconcilation with mate			−3	−2	−1	0	+1	+2	+3
26. Major change in number of arguments with spouse (a lot more or a lot less arguments)			−3	−2	−1	0	+1	+2	+3
27. *Married male*: Change in wife's work outside the home (beginning work, ceasing work, changing to a new job, etc.)			−3	−2	−1	0	+1	+2	+3
28. *Married female*: Change in husband's work (loss of job, beginning new job, retirement, etc.)			−3	−2	−1	0	+1	+2	+3
29. Major change in usual type and/or amount of recreation			−3	−2	−1	0	+1	+2	+3
30. Borrowing more than $10,000 (buying home, business, etc.)			−3	−2	−1	0	+1	+2	+3
31. Borrowing less than $10,000 (buying car, TV, getting school loan, etc.)			−3	−2	−1	0	+1	+2	+3
32. Being fired from job			−3	−2	−1	0	+1	+2	+3
33. *Male*: Wife/girlfriend having abortion			−3	−2	−1	0	+1	+2	+3
34. *Female*: Having abortion			−3	−2	−1	0	+1	+2	+3
35. Major personal illness or injury			−3	−2	−1	0	+1	+2	+3
36. Major change in social activities, e.g., parties, movies, visiting (increased or decreased participation)			−3	−2	−1	0	+1	+2	+3
37. Major change in living conditions of family (building new home, remodeling, deterioration of home, neighborhood, etc.)			−3	−2	−1	0	+1	+2	+3
38. Divorce			−3	−2	−1	0	+1	+2	+3
39. Serious injury or illness of close friend			−3	−2	−1	0	+1	+2	+3
40. Retirement from work			−3	−2	−1	0	+1	+2	+3
41. Son or daughter leaving home (due to marriage, college, etc.)			−3	−2	−1	0	+1	+2	+3
42. Ending of formal schooling			−3	−2	−1	0	+1	+2	+3
43. Separation from spouse (due to work, travel, etc.)			−3	−2	−1	0	+1	+2	+3
44. Engagement			−3	−2	−1	0	+1	+2	+3
45. Breaking up with boyfriend/girlfriend			−3	−2	−1	0	+1	+2	+3
46. Leaving home for the first time			−3	−2	−1	0	+1	+2	+3
47. Reconciliation with boyfriend/girlfriend			−3	−2	−1	0	+1	+2	+3
Other recent experiences which have had an impact on your life. List and rate.									
48._____			−3	−2	−1	0	+1	+2	+3
49._____			−3	−2	−1	0	+1	+2	+3
50._____			−3	−2	−1	0	+1	+2	+3

	0 to 6 mo	7 mo to 1 yr	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
Section 2: Student Only									
51. Beginning a new school experience at a higher academic level (college, graduate school, professional school, etc.)			−3	−2	−1	0	+1	+2	+3
52. Changing to a new school at same academic level (undergraduate, graduate, etc.)			−3	−2	−1	0	+1	+2	+3
53. Academic probation			−3	−2	−1	0	+1	+2	+3
54. Being dismissed from dormitory or other residence			−3	−2	−1	0	+1	+2	+3
55. Failing an important exam			−3	−2	−1	0	+1	+2	+3
56. Changing a major			−3	−2	−1	0	+1	+2	+3
57. Failing a course			−3	−2	−1	0	+1	+2	+3
58. Dropping a course			−3	−2	−1	0	+1	+2	+3
59. Joining a fraternity/sorority			−3	−2	−1	0	+1	+2	+3
60. Financial problems concerning school (in danger of not having sufficient money to continue)			−3	−2	−1	0	+1	+2	+3

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