1983

Positive Events and Social Supports as Buffers of Life Change Stress

Sheldon Cohen
Carnegie Mellon University, scohen@cmu.edu

Harry M. Hoberman
University of Oregon

Positive Events and Social Supports as Buffers of Life Change Stress[1]

SHELDON COHEN[2]

Carnegie-Mellon University

HARRY M. HOBERMAN

University of Oregon

A perceived availability of social support measure (the ISEL) was designed with independent subscales measuring four separate support functions. In a sample of college students, both perceived availability of social support and number of positive events moderated the relationship between negative life stress and depressive and physical symptomatology. In the case of depressive symptoms, the data fit a "buffering" hypothesis pattern, i.e., they suggest that both social support and positive events protect one from the pathogenic effects of high levels of life stress but are relatively unimportant for those with low levels of stress. In the case of physical symptoms, the data only partially support the buffering hypothesis. Particularly, the data suggest that both social support and positive events protect one from the pathogenic effects of high levels of stress but harm those (i.e., are associated with increased symptomatology) with low levels of stress. Further analyses suggest that self-esteem and appraisal support were primarily responsible for the reported interactions between negative life stress and social support. In contrast, frequency of past social support was not an effective life stress buffer in either the case of depressive or physical symptomatology. Moreover, past support frequency was positively related to physical symptoms and unrelated to depressive symptoms, while perceived availability of support was negatively related to depressive symptoms and unrelated to physical symptoms.

Evidence of an association between recent stressful life events and a variety of psychological and physical disorders has steadily accumulated over the last 15 years. Life events have been linked to depression (e.g., Benjaminsen, 1981; Brown & Harris, 1978; Paykel, Myers, Dienelt, Klerman, Lindenthal & Pepper,

99

1969), neurotic impairment (Tennant & Andrews, 1978), coronary heart disease (Hinkle, 1974; Theorell, 1974), cancer (Jacobs & Charles, 1980), and a host of other physical and psychological problems (cf. Dohrenwend & Dohrenwend, 1978). However, correlations between life event scores and measures of health and well-being have rarely risen above .30, suggesting that life events may account at best for 9% of the variance in illness. Upon initial consideration, this suggests that even if a causal link exists between life stress and physical and psychological outcomes, it is small and the etiological significance of stress may be exaggerated.

The relatively low level of correlation between stressful life event scores and outcome variables may be due partly to the moderating effects of other factors. For example, recent research suggests that locus of control (Johnson & Sarason, 1979), sensation-seeking (Smith, Johnson, & Sarason, 1978), and arousal-seeking (Johnson & Sarason, 1979) all moderate the association between negative life events and self-reported depression. The majority of attention, however, has been focused on the possible role social support plays in moderating the life stress-health relationship (cf. Caplan, 1972; Cassel, 1976; Cobb, 1976; Dean & Lin, 1977; Heller, 1979; Henderson, 1977; Kaplan, Cassel, & Gore, 1977). In this context, the term "social support" refers to the various resources provided by one's interpersonal ties. The moderating effect of support most commonly referred to in this work is described by the so-called "buffering hypothesis." The hypothesis suggests that high levels of social support protect one from stress-induced pathology but social support level is relatively unimportant for those experiencing low levels of stress.

Many of the early studies of the buffering hypothesis employed social network measures to indicate support level. This approach assumes that (a) the benefits of one's social network are directly proportional to the size and range of the network and (b) having a relationship is equivalent to getting support from that relationship (Schaefer, Coyne, & Lazarus, 1981). The network studies are, at best, mixed in their support of the buffering hypothesis (cf. Schaefer et al., 1981; Cohen & Wills, Note 1). These results are hardly surprising in light of the obvious weakness of the above assumptions. Particularly, networks can themselves be stressful, e.g., causing conflict, in addition to or instead of being supportive.

If one assumes that the buffering qualities of social support are cognitively mediated, e.g., support operates by affecting one's interpretation of the stressor, knowledge of coping strategies or self-concept (cf. Cohen & McKay, in press), then a measure of perception of the availability of support would be a more sensitive indicator of its buffering effects than objective network measures. This is so because a cognitive analysis is concerned only with a person's beliefs about available support as opposed to its actual availability. In fact, although inconclusive, studies using measures of perceived availability of support provide

data that are generally consistent with the buffering hypothesis (e.g., Henderson et al., 1980; Wilcox, 1981).

Unfortunately, the work on perceived availability of support does not provide sufficient information to determine *how* the perception of support protects one from pathogenic outcomes. Although a number of these studies suggest that the perception that there is someone to talk to about one's problems (a close confidant) is key to the protective function of support (e.g., Brown, Bhrolchain, & Harris, 1975; Habif & Lahey, 1980; Miller & Ingham, 1979), few studies have examined the effectiveness of other support functions, e.g., the availability of self-esteem support or tangible aid.[3] Nor have existing studies generally compared the relative buffering effectiveness of confidant support to that of other functions. Thus, further work assessing the perceived availability of various functions of social support and comparing their abilities to buffer one against the pathogenic effects of life stress is imperative if we are to isolate the mechanisms by which interpersonal relationships protect one from stress-induced pathology.

A recent theoretical discussion of the buffering hypothesis also emphasizes the importance of the multidimensional measurement of social support. Cohen and McKay (in press) argue that one's interpersonal relationships function as stress buffers only when the type of support resources that are offered by one's relationships match the coping requirements elicited by the stressor(s). This stressor-support specificity model suggests the importance of assessing the coping requirements elicited by a stressing experience as well as a range of available support resources.

Another possible moderator of the relationship between life stress and health outcomes is desirable life events. Although undesirable life events are predictive of various psychological and physical outcomes, desirable events are not (e.g., Ross & Mirowsky, 1979; Vinokur & Selzer, 1975). Could it be that desirable events play a protective role? Lazarus, Kanner, & Folkman, (1980; also see Reich & Zautra, 1981) have recently suggested that positive events might serve as stress buffers. Particularly, they argue that the generation of positive feeling states may enhance the organism's capacity to adapt to stress. According to Lazarus et al., feelings of happiness and satisfaction facilitate coping by providing a "breather" from stressful situations, by helping to sustain activity needed to resolve a crisis, or by restoring psychological resources depleted during the organism's process of adjustment to life stress.

---

[3] A recent study that attempted such a comparison (Schaefer, Coyne, & Lazarus, 1981) failed to find a protective effect of any of three separate functions. However, their use of a social support instrument that assessed past support received, as opposed to perceptions of available support, has been criticized because past support measures reflect one's recent need for support as well as its availability (cf. Cohen & Wills, Note 1).

The study reported here examines both social support and positive events as possible moderators of the relationship between undesirable life events and physical and depressive symptomatology. A social support questionnaire was designed to measure the perceived availability of four separate functions of support as well as providing an overall support score. The four functions are appraisal support, self-esteem support, belonging support, and tangible support (cf. Cohen & McKay, in press). One purpose of the study is to determine the relative roles of each of these support functions in the buffering of life stress. By determining the relative buffering effectiveness of each function, we hope to isolate the mechanisms by which interpersonal relationships protect one from life stress-induced pathology. Moreover, it is our premise that the overall score from a multidimensional, population specific measure of perceived availability of support can provide a more sensitive test of the buffering hypothesis than scores (scales) that represent a narrower view of the support process. A second purpose of the study is to assess the role of life events that are perceived as desirable by the respondent in protecting one from the potential pathogenic effects of events perceived as undesirable.

Method

Subjects

The respondents were college students enrolled in a introductory class in social psychology at the University of Oregon. Students voluntarily completed a number of instruments that were administered over several class periods. Variations in the number of students attending class during these periods resulted in a variation in the number of respondents completing each instrument. Seventy students (27 males and 43 females) completed the life events scale and the physical and depressive symptoms checklists. Sixty-three of these students also completed the Interpersonal Support Evaluation List (ISEL), and 57 students completed the Inventory of Socially Supportive Behaviors (ISSB).

Instruments

The College Student Life Events Scale (CSLES). A modified version of the CSLES (Levine & Perkins, Note 2) was utilized. The original scale is composed of 137 items which represent events that fall into 14 different categories (e.g., academic affairs, male-female relationships, family matters). The modified version of the CSLES employed in the present study included an additional seven items. This large number of items (144) were used in an attempt to provide a reasonable sample of the population of events and increased sensitivity to the characteristics of the particular population under study. Twelve of the 144 items in the scale dealt with health-related issues. These items were not

used in calculating life stress scores because of the possibility that they were measuring the same thing as items in the symptom checklists.

Respondents were asked to indicate whether each event had occurred during either the last 6 months or during the period 7 months to a year ago. They were also asked to rate the impact of events that had occurred on a scale ranging from -3 (extremely negative) to $+3$ (extremely positive) as used by Sarason, Johnson, & Siegel (1978). A final rating assessed the degree to which each event elicited needs for each of the four types of support. The categories of needs were as follows: "talk"—needed to talk to someone; "money or help"—needed material aid; "belonging"—needed to feel part of a group; and "positive feedback"—needed positive feedback from people. Each event was rated on each need on 4-point scales ranging from "not important at all" to "extremely important." A subject score for each need was calculated by summing the scores for that need for those events that had negative impact ratings.

A variety of measures of both the type and impact of experienced life events were calculated for the sample. Since initial analyses indicated no difference between scores for 0 to 6 months and for the entire preceding year, only scores based on the 1-year period are reported. Separate scores were generated based on self-rated impact and unweighted events. Unweighted scores included the total number of life events checked, the total number of events checked that were rated as having a negative impact, and the total number of events checked that were rated as having a positive impact. Similar scores were calculated based on impact ratings. These included absolute impact of checked events (the summed absolute value of individual impact scores), the sum of impact scores for events that were rated as having a negative impact, and the sum of impact scores for events that were rated as having a positive impact. Since equivalent impact and unweighted scores were so highly correlated (.92 to .95), only analyses based on unweighted data will be reported.

Measures of social support. Two measures of social support were administered in this study. The first, the ISEL, assessed perceived availability of support, while the second, the ISSB, assessed perceived support received during the past month.

The ISEL consists of a list of 48 statements concerning the perceived availability of potential social resources. The items are counterbalanced for desirability that is, half of the items are positive statements about social relationships (e.g., "I know someone who would lend me their notes if I missed class."), while half are negative statements (e.g., "There isn't anyone at school or in town with whom I feel perfectly comfortable talking about my career goals."). Items were developed on theoretical grounds to cover the domain of socially-supportive elements of relationships which college students might be expected to experience. Respondents were asked to indicate whether each statement was "probably true" or "probably false" about themselves.

TABLE 1

MEAN AND RANGE CORRELATIONS BETWEEN INDIVIDUAL
ISEL SCALE ITEMS AND THEIR SUBSCALES

Subscale	CHISEL	
	Mean correlations	Range
Tangible	.49	.35–.63
Belonging	.52	.30–.62
Self-esteem	.44	.28–.58
Appraisal	.59	.53–.67

The ISEL was designed to assess the perceived availability of four separate functions of social support (see theoretical discussion in Cohen & McKay, in press) as well as providing an overall support measure. Thus, the items which comprise the ISEL fall into four 12-item subscales. The "tangible" subscale is intended to measure perceived availability of material aid; the "appraisal" subscale, the perceived availability of someone to talk to about one's problems; the "self-esteem" subscale, the perceived availability of a positive comparison when comparing one's self to others; and the "belonging" subscale, the perceived availability of people one can do things with. Subscale independence was maximized by selecting items (from a larger item pool) which were highly correlated with items in their own subscale and at the same time minimally correlated with other subscales. Table 1 shows the mean correlations between each item and its own subscale as well as the range of these correlations for the entire 48-item scale. The ISEL scale is presented in the Appendix.[4] Table 2 presents the intercorrelations between subscales. It is noteworthy that the belonging subscale is moderately correlated with both tangible and appraisal subscales. It is possible that feelings of belonging are necessary in order to approach someone for either tangible or appraisal support and thus it may not be possible to create a belonging subscale that is independent of tangible and appraisal measures. Finally, Table 3 presents the internal reliabilities of each of the subscales and the total support scale. These data demonstrate that the ISEL is a reliable measure of social support and that its subscales evidence reasonable independence from one another.

[4]The self-esteem subscale listed in the Appendix is a slightly reworded version of the scale used in this study. These changes were made to improve the internal reliability of the scale. The reliability of the revised scale is .68 as opposed to .60.

TABLE 2

INTERCORRELATIONS OF ISEL SUBSCALES

Subscale	
Tangible–belonging	.56
Tangible–self-esteem	.19
Tangible-appraisal	.22
Belonging–self-esteem	.26
Belonging–appraisal	.48
Self-esteem–appraisal	.19

The ISEL was moderately correlated (+.46, $p < .001$) with the previously validated measure of past support received that is described below (the Inventory of Socially Supportive Behaviors). Moreover, in two separate samples of college students (sample sizes of 328 and 114), the ISEL was correlated -.52 and -.64 with social anxiety.

The Inventory of Socially Supportive Behaviors (ISSB) is a 40-item scale in which respondents report the frequency with which they were the recipients of supportive actions in the last 4 weeks (Barrera, 1981; Barrera, Sandler, & Ramsay, 1980). Subjects are asked to indicate whether a particular behavior has occurred on a 5-point scale ranging from "not at all" to "about every day." The ISSB has been shown to possess adequate test-retest reliability and high internal consistency ($r = .93$) and found to be significantly correlated with network size and perceived support from one's family (Barrera et al., 1981). The internal reliability (Cronbach's alpha) of the ISSB, as measured in the study sample, is .92.

TABLE 3

INTERNAL RELIABILITIES (CRONBACH's)
ALPHA) FOR THE TOTAL ISEL
SCALE AND EACH SUBSCALE

	ISEL
Total scale	.77
Tangible scale	.71
Belonging scale	.75
Self-esteem scale	.60
Appraisal scale	.77

Outcome Measures

Center for Epidemiologic Studies Depression Scale (CES-D). The CES-D was designed to measure current level of depressive symptomatology, and especially depressive affect (Radloff, 1977). Twenty-items are rated on 4-point scales indicating the degree of their occurrence during the last week. The scales range from "rarely or none of the time" to "most all of the time." The CES-D has been found to have both adequate test-retest reliability and internal consistency (Radloff, 1977). The internal reliability (Cronbach's alpha) of the CES-D, as measured in the study sample, is .89.

Cohen-Hoberman Inventory of Physical Symptoms (CHIPS). The CHIPS is a list of 39 common physical symptoms. Items were carefully selected so as to exclude symptoms of an obviously psychological nature (e.g., felt nervous or depressed). The scale does, however, include many physical symptoms that have been traditionally viewed as psychosomatic (e.g., headache, weight loss). Each item is rated for how much that problem bothered or distressed the individual during the past 2 weeks. Items are rated on a 5-point scale from "not at all" to "extremely." In two separate college student samples (sample sizes of 331 and 114), the CHIPS was found to be significantly correlated (.22 and .29) with use of Student Health Facilities in the 5-week period following completion of the scale. The internal reliability (Cronbach's alpha) of the CHIPS, as measured in the study sample, is .88. The CES-D is moderately correlated with the CHIPS ($r = .44, p < .001$).

Procedures

The various instruments were distributed for completion during four different class sessions. the perceived availability of support scale (ISEL) was administered during the initial session, the life-events scale was administered 2 weeks later, the physical and depressive symptom checklists 3 weeks later, and lastly, the scale measuring past frequency of support (ISSB) was distributed 4 weeks after the initial session. Students attending class were encouraged but not required to complete the various scales. Each student developed a code number for use during the study and thus all data were collected anonymously.

Results

Life Event Scores as Predictors of Symptomatology

The correlations between the various unweighted life events scores and the depressive and physical symptoms are presented in Table 4. *T*-tests were used to compare the magnitudes of the correlations between different life stress scores and a single outcome (cf. Walker & Lev, 1953, p. 256). The total

TABLE 4

CORRELATIONS BETWEEN LIFE EVENTS SCORES AND PHYSICAL
AND DEPRESSIVE SYMPTOMATOLOGY[a]

Unweighted scores	Depressive symptoms (CES-D)	Physical symptoms (CHIPS)
Number of events	.25	.36
Number of negative events	.37	.41
Number of positive events	−.18	.07

[a]$p < .05$ for correlations of .23 or greater.

number of events was moderately correlated with both outcome variables. However, the number of negative events was a better predictor ($t(68) = 3.34$, $p < .01$) of depressive symptoms. Although the pattern of correlations was the same for physical symptoms, none of the correlations was statistically different from another. The number of positive events was not related to either outcome measure.

Positive Events as Stress Buffers

A stepwise regression analysis was employed to determine whether positive events buffered the effects of high levels of life stress. The number of negative life events and number of positive life events were forced into the equation first. These were followed by the interaction between the number of negative and number of positive events. The interaction accounted for a significant 6.4% increment in variance in predicting depression ($F(1,66) = 6.58$, $p < .01$) and a marginally significant 4% increment in the case of physical symptoms ($F(1,66) = 3.39, p < .07$). Graphs of these interactions are presented in Figure 1. It is noteworthy that although the graphs are based on median splits, the analyses themselves employed continuous data. The form of the interaction in predicting both depressive and physical symptoms supports the prediction that positive life events protect one from high levels of life stress but are relatively unimportant for those experiencing low levels of stress. In the case of physical symptoms, however, there is a slight crossover effect with high numbers of positive events helping those with high numbers of negative events but having a small negative impact on those with low numbers of negative events.

Social Support as a Stress Buffer

A stepwise regression analysis was also employed in determining whether perceived availability of social support served as a buffer for those experiencing
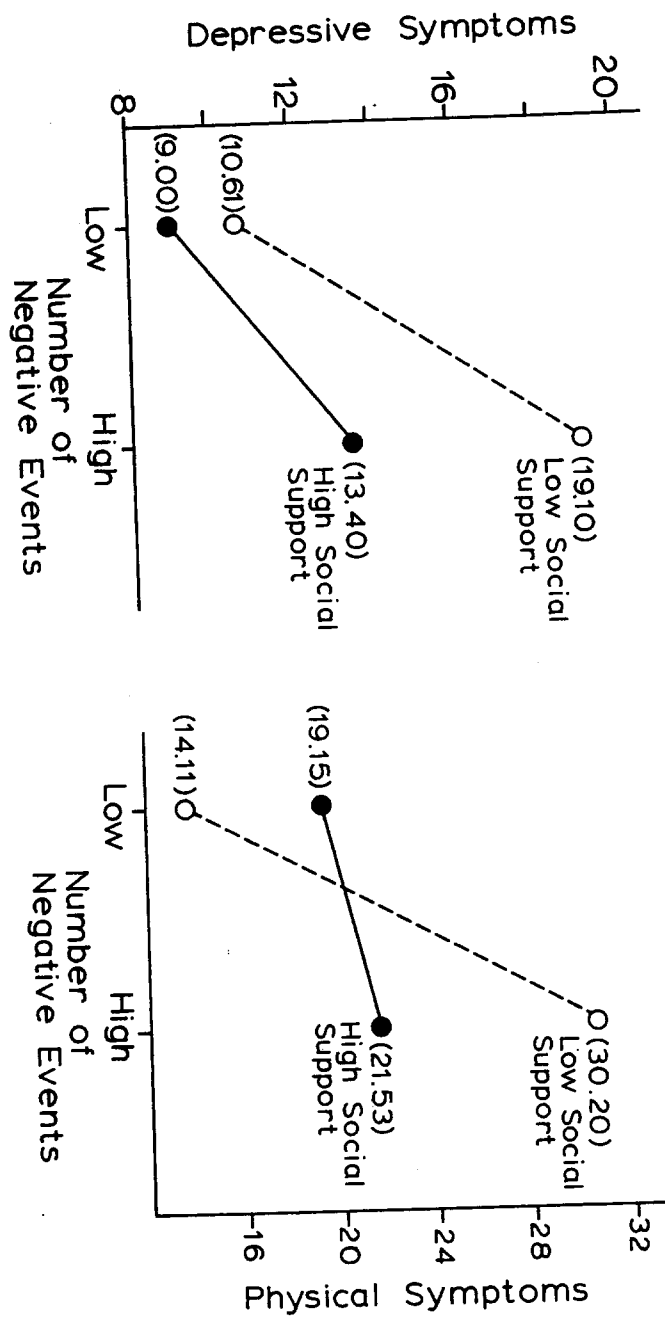
FIG. 1. Depiction of the interactions between number of negative life events and number of positive life events in the prediction of physical and depressive symptoms.
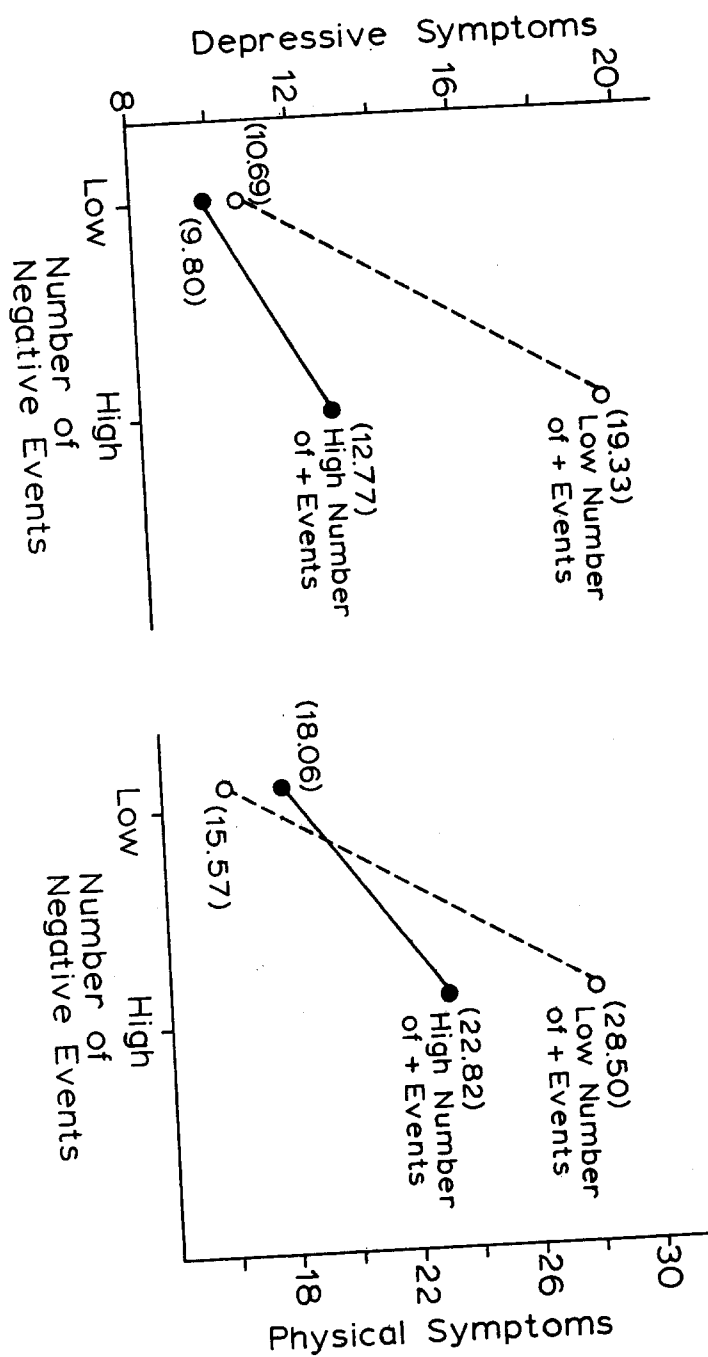
FIG. 2. Depiction of the interactions between number of negative life events and perceived availability of social support in the prediction of physical and depressive symptoms.

109

high levels of life stress. The number of negative events and perceived availability of support (ISEL) scores were forced into the equation first followed by the interaction between number of negative events and the ISEL. In both the case of depressive ($F(1,59) = 5.49$, $p < .02$) and physical symptomatology ($F(1,59) = 12.67$, $p < .001$), the interaction significantly added to the explained variance. The interaction accounted for an additional 6.6% of depressive symptom variance and an additional 14.7% of physical symptom variance. Figure 2 graphs these interactions. Again, the figures are based on median splits but the analyses were based on continuous data. As apparent from the figure, the form of the interaction predicting depressive symptoms is perfectly consistent with the buffering hypothesis. Although the form of the interaction for physical symptoms is similar, there is an unpredicted crossover, with people with low stress and low support having fewer symptoms than those with low stress and high support.

Since the analyses discussed above use number of life events viewed as negative as the stress score, one explanation for reported interactions is that various combinations of support levels and symptomatology are resulting in different interpretations of events. For example, persons with high levels of depressive symptomatology and low levels of social support may have viewed more of their events as having a negative impact than other persons. An analysis was conducted to eliminate this interpretation. In this analysis, a life events score based on number of events, *irrespective of the valence of their impact ratings*, was used as the stress score. Interactions similar to those graphed in Figure 2 were found for both depressive ($F(1,59) = 4.27$, $p < .04$) and physical symtomatology ($F(1,59) = 14.82$, $p < .001$). Hence, the buffer-life interactions reported above are not attributable to an event interpretation bias.

A set of regression analyses was also calculated to test the buffering capabilities of the frequency of past support. In these analyses, the perceived availability of support measure (ISEL) was replaced with the measure of frequency of past support (ISSB). A significant interaction between number of negative life events and the frequency of past support was found in the case of depressive symptomatology ($F(1,53) = 7.39$, $p < .009$). The form of the interaction is not, however, consistent with the buffering hypothesis but instead reflects a negative relationship between support and depressive symptomatology under low but not under high stress. The interaction was not significant in the case of physical symptoms.

Perceived availability of support (ISEL) subscales as buffers. Separate regressions were calculated to determine whether each subscale operated as a buffer. In each case, the number of negative events and the subscale in question were entered into the equation first followed by the interaction between negative events and the subscale. Figures 3 and 4 depict the data from each of these analyses. For depressive symptoms, there were significant interactions in the
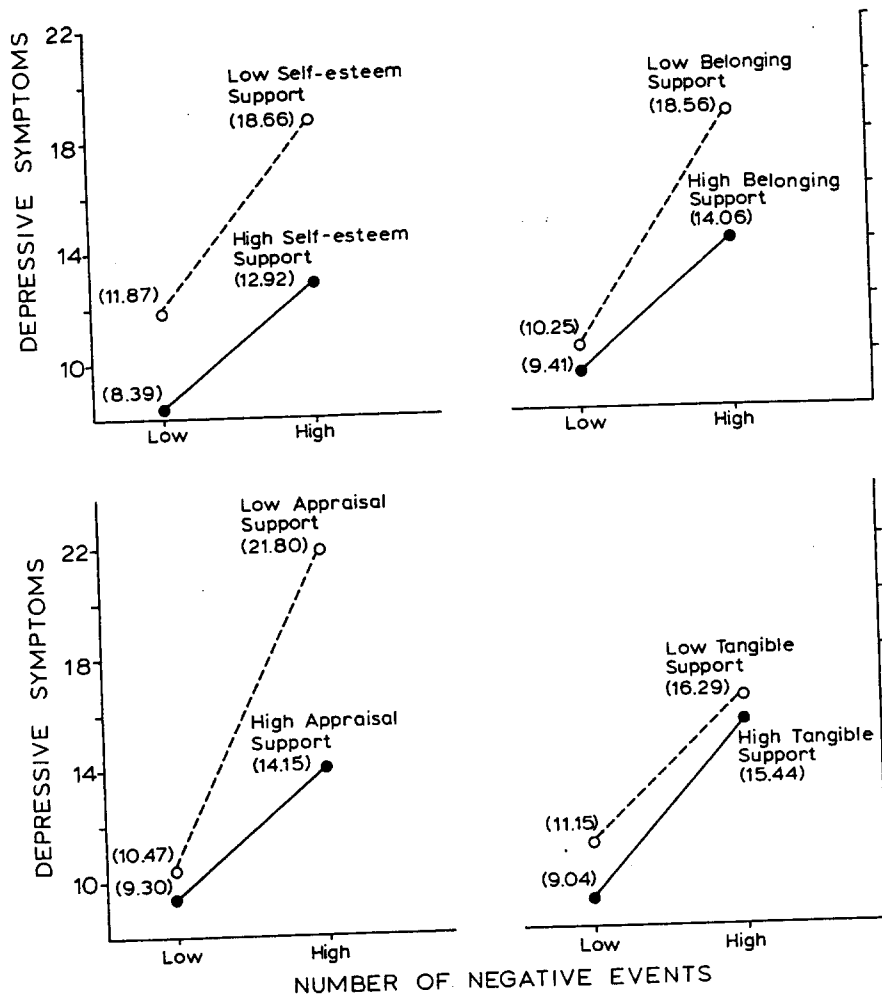
FIG. 3. Depiction of the interactions between number of negative life events and each social support subscale in the prediction of depressive symptomatology.

case of the appraisal ($F(1,59) = 5.33$, $p < .02$), self-esteem ($F(1,59) = 5.31$, $p < .03$), and belonging scales ($F(1,59) = 5.31$, $p < .03$). As apparent from Figure 3, in all of these cases the data are consistent with a buffering hypothesis. For physical symptoms, there were significant interactions in the case of the tangible ($F(1,59) = 7.43$, $p < .008$), belonging ($F(1,59) = 14.56$, $p < .003$),
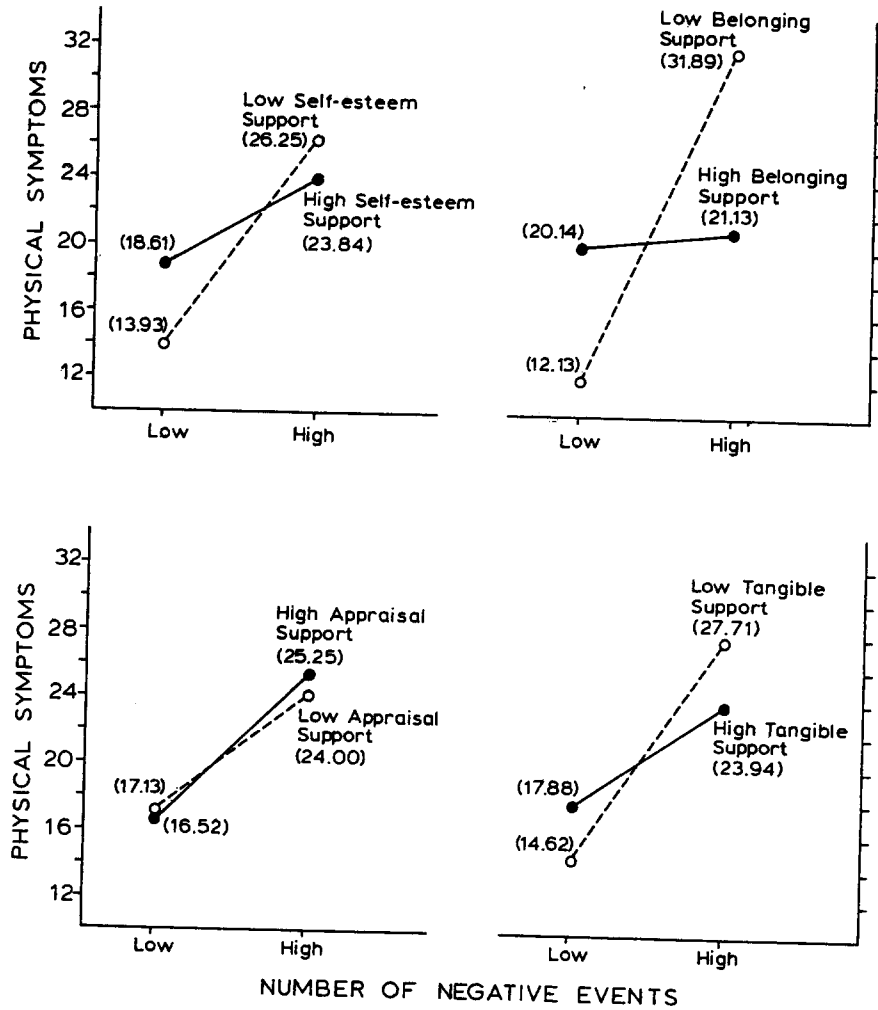
FIG. 4. Depiction of the interactions between number of negative life events and each social support subscale in the prediction of physical symptomatology.

and self-esteem scales ($F(1,59) = 6.37$, $p < .01$). As apparent from Figure 4, these data generally indicate crossover interactions, with support aiding those with high levels of life stress but hurting those with low levels.

In order to determine which of the four types of social support measured by the ISEL subscales made unique contributions to the buffering interaction,

another set of regression analyses were calculated. In this case, number of negative life events, the overall perceived availability of support (ISEL) score, and the respective interactions between each of the perceived availability of support subscales and the number of negative events were entered into the equation. The results reported below are the Fs for leaving the equation. Thus, they reflect unique contributions, i.e., significant variance accounted for with all other factors entered into the equation partialed out. In the case of depression, two of the interactions accounted for significant independent variance: the interaction of life stress and self-esteem ($F(1,56) = 6.88$, $p < .01$) and that of life stress and appraisal ($F(1,56) = 4.00$, $p < .05$). The two remaining interactions did not make unique contributions to the explanation of depressive symptomatology variance. Only the interaction between number of negative events and self-esteem ($F(1,56) = 4.72$, $p < .03$) made a unique contribution to the explanation of physical symptomatology variance.

Since only appraisal and self-esteem support contributed independently as buffers of cumulative life stress, an attempt was made to determine if these resources matched the needs that respondents reported were elicited by their events. Hence, the four need scores (talk, money and help, belonging, and positive feedback) were entered into a regression equation predicting the number of negative life events. Only positive feedback (self-esteem) made a significant unique contribution to explaining life stress variance ($F(1,73) = 6.43$, $p < .01$).

TABLE 5

CORRELATIONS BETWEEN SOCIAL SUPPORT MEASURES AND PHYSICAL
AND DEPRESSIVE SYMPTOMATOLOGY[a]

	Depressive symptoms (CES-D)	Physical symptoms (CHIPS)
Perceived availability of support (ISEL)	−.47	−.13
Tangible subscale	−.22	−.12
Belonging subscale	−.38	−.10
Self-esteem subscale	−.37	−.07
Appraisal subscale	−.33	−.08
Past frequency of support (ISSB)	.08	.22

[a]These correlations are based on 131 subjects who completed the ISEL and the symptom measures. $p < .05$ for correlations of .18 or greater,

Talk ($F(1,73) = 2.29$, $p < .13$) and money and help ($F(1,73) = 3.27$, $p < .08$) made marginally significant contributions.

Main Effects of Social Support

Although not central to our interest in social support as a moderator of the relationship between life stress and symptomatology, it is interesting to examine the simple relationship between social support and the outcome measures. These data are presented in Table 5. As apparent from the table, perceived availability of social support, i.e., the ISEL, was related to depressive but not physical symptoms. As perceived support increased, depression decreased. Although all four of the subscales of the ISEL were similarly correlated with depressive symptomatology, the tangible subscale was not quite as good a predictor as the others. None of the subscales was related to physical symptoms. It is also noteworthy that perceived availability of support was not significantly correlated with either the number of positive events (-.13) or the number of negative events (+.01).

In contrast to the those data discussed above, correlations between past frequency of support (the ISSB) and both outcome measures were in the opposite direction, i.e., persons experienced greater numbers of socially supportive behavior showed greater levels of both depressive and physical symptoms. Only the correlation with physical symptoms, however, approached statistical significance. Increases in past frequency of support were associated with increases in both the number of negative (+.28, $p < .03$) and the number of positive life events (+.28, $p < .03$).

Explaining the Maximum Amount of Variance

Finally, we were interested in determining how much of the variance in the outcome measures could be explained taking into account all of the predictors discussed above. Thus, regression analyses including the number of negative events, the perceived availability of support (ISEL), the interaction between positive and negative life events and the interaction between negative life events and the perceived availability of support (ISEL) were calculated to predict both the depressive and physical symptomatology. For depressive symptomatology, the regression accounted for 46% of the variance ($F(4,58) = 12.19$, $p < .001$), while for physical symptomatology, the regression accounted for 30% of the variance ($F(4,58) = 6.79$, $p < .001$).

The only unique (independent) predictor of depressive symptomatology variance was the interaction between number of negative and number of positive events ($F(1,58) = 17.98$, $p < .001$). The number of negative events ($F(1,58) = 6.01$, $p < .02$), perceived availability of social support ($F(1,58) = 4.86$, $p < .03$), and their interaction ($F(1,58) = 9.11$, $p < .004$) all contributed uniquely to the explanation of physical symptom variance.

Discussion

Life Events as Predictors of Symptomatology

As found in previous studies (e.g., Gersten, Langner, Eisenberg, & Orzeck, Vinokur & Selzer, 1975), life stress scores based on events that were rated by the respondent as having a negative impact were predictive of both depressive and physical symptomatology, while scores based on positive events were not related to either outcome measure. These results suggest that changes in one's life that are experienced as positive do not play an etiological role in the development of symptomatology.

Positive Events as Stress Buffers

Depressive and physical symptom data are clearly consistent with the hypothesis that many positive events partially protect persons from the pathogenic effect of many negative events. However, for physical symptoms, the interaction is only marginal and indicates a slight crossover, with high numbers of positive events hurting those with low numbers of negative events. Since this study is cross-sectional, there are some reasonable alternative causal explanations for these data. For example, it is possible that depressed people cause the occurrence of many negative events and of few positive events.

The protective effects of positive events reported above are consistent with the results of a recent intervention study not subject to alternative causal hypotheses. Reich and Zautra (1981) tested whether increasing one's pleasant events would protect them from the effects of negative life change. Those reporting prior negative life changes exhibited less psychiatric distress and greater pleasantness one month after being randomly assigned to a group that was instructed to engage in 12 pleasurable activities than those in groups instructed to engage in 2 or none. The intervention was ineffective for those without prior negative life change. Hence, combined results from our study and that of Reich and Zautra provide substantial support for the stress buffering effect of positive life events.

The possible protective role of positive events in the case of depression is also consistent with work on behavioral treatment programs for the depressed. These programs are based on the assumption that unipolar depression is caused by a reduction in the rate of response-contingent positive reinforcement and/or an increase in the rate of occurrence of aversive events (Lewinsohn, Youngren, & Grosscup, 1979). Lewinsohn and his colleagues (Lewinsohn, Sullivan, & Grosscup, 1980) have demonstrated that increasing the positive events in a depressed person's life is an effective means of treating depression. These data are also supportive of Lazarus et al.'s (1980) argument that feelings of happiness and satisfaction facilitate coping and provide a breather from stressful situations.

Because of the well-established relationship between negative life events and health related outcomes, most recent life event scales are made up primarily of normatively negative events. The role played in this study by events that were rated as positive suggests that it may be advantageous to employ scales that include a range of normatively positive events as well (see scales in MacPhillamy & Lewinsohn, Note 3; Kanner, Coyne, Schaefer, & Lazarus, 1981). Such a procedure would allow us to determine whether the protective effects of positive events found in the present study are attributable to the occurrence of objectively positive events or the tendency to interpret normatively negative events as positive.

Social Support as a Stress Buffer

Both data for physical symptoms and depressive symptoms are consistent with the hypothesis that perceived availability of support wholly or partly protects one from the pathogenic effects of high levels of life stress. However, data based on the measure of past support were not consistent with the buffering hypothesis. It is noteworthy that earlier studies using past support measures have also failed to find a buffering effect (Barrera, 1981; Schaefer et al., 1981; Sandler & Barrera, Note 4), while a number of studies using perceived availability of support measures have been successful (e.g., Henderson et al., 1980; Wilcox, 1981). It is likely that measures of support received in the past reflect one's recent need for support as well as its availability and thus may not provide an appropriate measure of social support. This explanation is supported by the fact that increases in past frequency of support were associated with increases in the number of negative life events. No association existed between number of life events and the perceived availability of support measure.

It is also important to mention the unpredicted decrease in physical symptoms that occurred for those with low levels of stress and low scores on the perceived availability of support scale (ISEL). Although similar crossover interactions are reported by Caplan (1971) in his study of the cardiovascular health of NASA administrators, scientists, and engineers, the crossover is not typical of data on the buffering hypothesis (cf. Cohen & Wills, Note 1). If the crossover is reliable, it may suggest that the increased responsibilities that are part and parcel of the interpersonal relationships that provide support, may themselves contribute a small increment in one's stress level and consequently in symptomatology. It is noteworthy that the crossover interaction has been found only in the prediction of physical outcomes and hence may be outcome specific.

What is responsible for the buffering effect of perceived social support? Our data indicate that self-esteem support—the availability of persons to bolster one's self-esteem—is central in the prediction of both depressive and psychological symptoms and that appraisal support—the availability of persons to

talk to about one's problems—is predictive in the case of depression. The importance of appraisal in the buffering process has been previously demonstrated by a number of studies that have used "the availability of a close confidant" as the measure of social support (e.g., Brown et al., 1975; Miller & Ingham, 1979). Only one previous study, however, has looked at the role of self-esteem bolstering in this process. Pearlin, Menaghan, Lieberman, and Mullan (1981) found that the buffering of depression among those experiencing job stress was attributable to social support operating to increase self-esteem and feelings of mastery. It is noteworthy that the self-esteem scale in the ISEL leans heavily on items that tap positive social comparison processes (cf. Wills, 1981). That is, we feel better about ourselves when we perceive that we are better than our comparison others. Moreover, the self-esteem subscale may be a measure of a component of self-esteem as well as of perceived availability of self-esteem support. These two concepts may, however, be inseparable since self-esteem is, to a large degree, determined by our perceptions of how we are viewed by others.

Why are appraisal and self-esteem support effective buffers? One possibility is that life event scales tap mostly stressor experiences that elicit coping requirements that are best met by appraisal and self-esteem resources. This is consistent with Cohen and McKay's (in press) argument that social support functions as a buffer of stress only when the available support meets the coping requirements elicited by the specific stressor or stressors experienced by an individual. Our own data suggests some very tentative support for this argument. Particularly, positive feedback (self-esteem) needs were the best predictors of overall life stress level, while appraisal and tangible needs also contributed marginally to the explanation of life stress variance. Thus it appears that the life events scores were heavily influenced by stressors that elicited self-esteem needs. As noted above, self-esteem resources were central in the buffering of both stress-induced depressive and physical symptomatology.

It is also possible that having someone to help you evaluate potential problems and help you come up with strategies to deal with those problems (appraisal support) is a broadly effective means of coping with stressors. Moreover, threats to self-esteem may be the most serious of stressful events and thus may be the type of stress that it is most important to counter.

It is important to note that the analyses that separately assessed the buffering effects of each of the four perceived support subscales indicated that belonging support interacts with negative life stress in the prediction of both physical and depressive symptoms (see Figs. 3 and 4). It is likely that the belonging -interactions failed to make significant unique contributions because of the fairly high correlations between belonging and the appraisal and tangible subscales. On the other hand, tangible support, even when considered in isolation, does not buffer the life events-depression relationship.

There is, however, a crossover interaction in the case of physical symptoms (see Fig. 4), although this interaction did not account for a significant amount of unique variance. If these results are reliable, they suggest that tangible support may intervene in the mechanism by which life stress leads to physical illness but not in the mechanism by which stress leads to depression. The lack of any unique variance contribution by the life stress-tangible support inter-action suggests, however, that these results are, at best, suggestive.

It is clear that further research comparing the relative contributions of different kinds of social support to the buffering process will be necessary to help us understand how that process operates. Hopefully, the data reported above provide an initial framework by which this research can proceed.

Main Effects of Social Support

Increases in perceived availability of support (the ISEL) were associated with decreases in depressive symptomatology. These data are consistent with those of previous studies (e.g., Andrews, Tennant, Hewson, & Vaillant, 1978). Although other studies have also found increased support associated with decreased physical health problems (cf. DiMatteo & Hays, 1981), no such relationship existed in the present study. It is worth noting that perceived availability of support is not even marginally correlated with number of life events or number of negative life events. Thus, the relationship between sup-port and symptomatology in this study is independent of that between life stress and symptomatology.

Although all of the ISEL subscales were also negatively correlated with depressive symptomatology, the tangible subscale was the weakest of these predictors. These results are contrary to those reported by Schaefer et al. (1981) who found that while tangible support was predictive of depressive symptoms, appraisal and emotional support were not. One explanation or these discrepant results is that Schaefer et al. employed a perceived availability of support mea-sure of tangible support and past frequency of support measures of appraisal and emotional support. Problems with past support measures are discussed above. A conceptually more interesting explanation for this discrepancy is that it is due to the differences in the populations under study. Schaefer et al. studied older adults (45 to 64 years old), while the present study was con-cerned with college students (17 through 25). It is likely that college students are less concerned with material goods than the people in the older sample and thus are less sensitive to the presence or absence of tangible support. This interpretation suggests the possibility that the kinds of social support we re-quire may change over the life cycle (cf. Kahn & Antonucci, 1980). Changes in support requirements may in turn merely reflect changes in the types of stressors we encounter as we age (cf. Cohen & McKay, in press).

The measure of frequency of past support (ISSB) did not fare as well. Persons experiencing greater numbers of socially supportive behaviors showed greater, instead of fewer, physical symptoms. As noted earlier, measures of support received in the past reflect one's recent need for support as well as its availability and thus may not provide an appropriate measure of social support. Consistent with this argument, the unexpected positive association between the past frequency of support and physical symptoms scale may be attributable to ill people having needed and sought support in the last month, thus having higher past frequency of support scores. This is supported by the fact that the ISSB scores increase with both the number of events (.28, $p < .02$) and number of negative events (.28, $p < .02$). Neither overall perceived availability of support (the ISEL) or any of the ISEL subscales were even marginally correlated with these life stress measures. It is noteworthy that Barrera (1981) also found that frequency of past support was positively related to symptomatology and that this relationship disappeared when the effects of stress were partialed out.

Improving the Prediction of Illness from Recent Life Events

It is noteworthy that 46% of the variance in depressive symptomatology and 30% of the variance in physical symtomatology were accounted for in this study. In the case of depression, the majority of this variance is attributable to the interaction that reflects the moderating role of positive events in the stress-symptom relationship. Similarly, the moderating role of social support plays an important part in the prediction of physical symptoms. It seems clear that further understanding of the relationship between life stress and disease can only occur if we are sensitive to the role of support, positive events, and other moderating variables in the stress-disease process.

Limits on Interpretation and Generality

As discussed above, the data reported in this paper are cross-sectional and hence subject to a number of alternative causal explanations. It is possible, for example, that an exogenous factor, e.g., social skills or introversion-extroversion, may be responsible for shifts in life events, perceived social support, and symptomatology. Additional analyses have excluded one (bias in event interpretation) of the alternative causal explanations, but causal inferences are not possible. Although we strongly feel that further tests of the buffering hypothesis should employ prospective and intervention designs (excluding exogenous factor explanations as well), we also feel that cross-sectional research provides a useful and less costly and time-consuming technique for the development of assessment tools. This is especially important if such tools have the potential of providing an understanding of the mechanism operative in the buffering process.

The homogeneity and other special characteristics of a student population also set potential limits in the generality of our results. As noted earlier, it is likely that there are developmental and cohort differences in the kinds of support that will effectively buffer one's life stress (cf. Kahn & Antonucci, 1980). Hopefully, the work reported in this study will stimulate similar development of multidimensional support measure for other populations. Accordingly, we have developed an adult version of the perceived availability scale (ISEL) that is presently being used to assess support in a general population adult sample.

REFERENCES

Andrews, G., Tennant, C., Hewson, D. M., & Vaillant, G. E. Life event stress, social support, coping style, and risk of psychological impairment. *Journal of Nervous and Mental Disease*, 1978, **166**, 307–316.

Barrera, M., Jr. Social support in the adjustment of pregnant adolescents: assessment issues. In B. H. Gottlieb (Ed.), *Social networks and social support*. Beverly Hills: Sage Publications, 1981.

Barrera, M., Jr., Sandler, I. N., & Ramsay, T. B. Preliminary development of a scale of social support: studies on college students. *American Journal of Community Psychology*, 1981, **9**, 435–447.

Benjaminsen, S. Stressful life events preceding the onset of neurotic depression. *Psychological Medicine*, 1981, **11**, 369–378.

Brown, G. W., Bhrolchain, M. N., & Harris, T. Social class and psychiatric disturbance among women in an urban population. *Sociology*, 1975, **9**, 225–254.

Brown, G. W., & Harris, T. *Social origins of depression: a study of psychiatric disorders in women.* London: Tavistock Publications, 1978.

Caplan, R. D. *Organizational stress and individual strain: a social psychological study of risk factors in coronary heart disease among administrators, engineers, and scientists.* Doctoral dissertation, University of Michigan, 1971. (*Dissertation Abstracts International*, 1972, **32**, 6706B–6707B.)

Cassel, J. C. The contribution of the social environment to host resistance. *American Journal of Epidemiology*, 1976, **104**, 107–123.

Cobb, S. Social support as a moderator of life stress. *Psychosomatic Medicine*, 1976, **38**, 300–314.

Cohen, S., & McKay, G. Social support, stress and the buffering hypothesis: a theoretical analysis. In A. Baum, J. E. Singer, & S. E. Taylor (Eds.), *Handbook of psychology and health* (Vol. IV). Hillsdale, NJ: Erlbaum, in press.

Dean, A., & Lin, N. The stress-buffering role of social support: problems and prospects for systematic investigation. *Journal of Nervous and Mental Disease*, 1977, **165**, 403–417.

DiMatteo, M. R., & Hays, R. Social support and serious illness. In B. H. Gottlieb (Ed.), *Social networks and social support.* Beverly Hills: Sage, 1981.

Dohrenwend, B. S., & Dohrenwend, B. P. Some issues in research on stressful life events. *The Journal of Nervous and Mental Disease*, 1978, **166**, 7–15.

Gersten, J. C., Langner, T. S., Eisenberg, J. G., & Orzeck, L. Child behavior and life events: undesirable change or change per se? In B. S. Dohrenwend & B. P. Dohrenwend (Eds.), *Stressful life events: their nature and effects.* New York: John Wiley & Sons, 1974.

Habif, V. L., & Lahey, B. B. Assessment of the life stress-depression relationship: The use of social support as a moderator variable. *Journal of Behavioral Assessment,* 1980, 2, 167–173.

Heller, K. The effects of social support: prevention and treatment implications. In A. P. Goldstein & F. H. Kaufos (Eds.), *Maximizing treatment gains.* New York: Academic Press, 1979.

Henderson, S. The social network support and neurosis: the function of attachment in adult life. *The British Journal of Psychiatry,* 1977, 131, 185–191.

Henderson, S., Byrne, D. G., Duncan-Jones, P., Scott, R., & Adcock, S. Social relationships, adversity and neurosis: a study of associations in a general population sample. *British Journal of Psychiatry,* 1980, 136, 574–583.

Hinkle, L. E., Jr. The effect of exposure to culture change, social change, and changes in interpersonal relationships on health. In B. S. Dohrenwend & B. P. Dohrenwend (Eds.), *Stressful life events: their nature and effects.* New York: John Wiley & Sons, 1974.

Jacobs, T. J., & Charles, E. Life events and the occurrence of cancer in children. *Psychosomatic Medicine,* 1980, 42, 11–24.

Johnson, J. H., & Sarason, I. G. Moderator variables in life stress research. In I. G. Sarason & C. D. Spielberger (Eds.), *Stress and anxiety* (Vol. 6). New York: John Wiley & Sons, 1979.

Kahn, R. L., & Antonucci, T. C. Convoys over the life course: attachment, roles and social support. In P. B. Baltes and O. G. Brim (Eds.), *Life-span development and behavior* (Vol. 3). New York: Academic Press, 1980.

Kanner, A. D., Coyne, J. C., Schaefer, C., & Lazarus, R. S. Comparison of two modes of stress measurement: daily hassles and uplifts versus major life events. *Journal of Behavioral Medicine,* 1981, 4, 1–39.

Kaplan, B. H., Cassel, J. C., & Gore, S. Social support and health. *Medical Care,* 1977, 15, 47–58.

Lazarus, R. S., Kanner, A. D., & Folkman, S. Emotions: a cognitive phenomenological analysis. In R. Plutchick & H. Kellerman (Eds.), *Theories of emotion.* New York: Academic Press, 1980.

Lewinsohn, P. M., Sullivan, M. J., & Grosscup, S. J. Changing reinforcing events: an approach to the treatment of depression. *Psychotherapy: Theory, Research, and Practice,* 1980, 17, 322–334.

Lewinsohn, P. M., Youngren, M. A., & Grosscup, S. J. Reinforcement and depression. In R. A. Depue (Ed.), *The psychobiology of the depressive disorders.* New York: Academic Press, 1979.

᠇r, P. McC., & Ingham, J. G. Reflections on the life-events-to-illness link with ᠇e preliminary findings. In I. G. Sarason & C. D. Spielberger (Eds.), *Stress ᠇nxiety* (Vol. 6). New York: John Wiley & Sons, 1979.