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Moderators of the Relationship Between Life Stress
and Reported Illness in Older Males

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ABSTRACT

Moderators of the Relationship Between Life Stress and Reported Illness in Older Males

Lina Bortolussi

The present study investigated the moderating effects of hardiness, social support and coping styles on the relationship between life stress and reported illness. The sample consisted of 150 males ($M = 60$) of middle-class socioeconomic status who were employed at the time of the study. Staged hierarchical multiple regressions were used to evaluate the moderating hypothesis for subjects reporting interpersonal and non-interpersonal life stress. A third analysis excluding the effects of coping styles evaluated the moderator effects of hardiness and social support. Life stress emerged as the most significant predictor of illness. Inconsistent evidence was found for the moderating effects of the three resistance resources. Hardiness failed to emerge as a moderator of stress but was a significant predictor of illness for subjects reporting interpersonal stress. A similar trend was revealed for support satisfaction for the non-interpersonal subgroup. Support satisfaction moderated the impact of stress when the effects of coping styles were ruled out. Availability of support also interacted with life stress to influence illness but in a direction opposite to that predicted. Self-denigration interacted with life stress to influence illness but in a direction opposite to that predicted under conditions of interpersonal stress. These findings emphasize the differential functions and importance of multiple resistance resources in stressful situations.

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The psychosocial approach to the study of health, focussing on the role of stressful life events in the etiology of illness, has been a field of interest and research for the last two decades. The general purpose of this line of research has been to establish and explore the nature of the causal link between life stress and illness by demonstrating an association between the occurrence of stressful life events and subsequent illness onset.

Research efforts in the area have provided evidence supporting the hypothesis that stressful life events are related to physical illness in general (Garrity, Marx & Somes, 1977, 1978; Matheny & Cupp, 1983; Stern, McCants & Pettine, 1982; Tutone, 1977; Wyler, Masuda & Holmes, 1971). A plethora of studies have also found life events to correlate with specific physical conditions ranging from pregnancy and birth complications (Gorsuch & Key, 1974; Nuckolls, Cassel & Kaplan, 1972) to heart disease (Rahe & Lind, 1971; Theorell & Rahe, 1971). In addition to physical illness, a number of studies have shown stressful life events to be associated with psychological maladjustment and psychiatric illness (Grant, Sweetwood, Gerst & Yager, 1978; Kale & Stenmark, 1983; Lin, Ensel, Simeone & Kuo, 1979; Sarason, Johnson & Siegel, 1978; Uhlenhuth & Paykel, 1973; Vinokur & Selzer, 1975).

Although there is evidence that a relationship between life stress and reports of illness does exist, the magnitude of correlation coefficients between measures of these variables has typically been low, in the .20 to .40 range (Johnson & Sarason, 1979; Kobasa, Maddi & Kahn, 1982; Rabkin & Struening, 1976). These results suggest that stressful life events by themselves account for only a small portion of the

variance in illness reported and therefore do not provide a complete and adequate understanding of the nature and strength of the relationsip between life stress and illness reports (Dohrenwend & Dohrenwend, 1978).

A number of factors may account for this poor predictive ability. Methodological shortcomings of the instruments used to assess life stress have often been cited as one such factor. One issue still plaguing the literature on measurement of life stress concerns the merit of scaling or weighting life events in contrast to simple counts of endorsed items in relation to the prediction of illness. Although some studies have reported findings in support of the weighting procedure (Ruch, 1977; Sarason, Potter, Antoni & Sarason, 1982), a review article by Zimmerman (1983) has presented extensive evidence demonstrating the equivalent predictive ability of weighted and unweighted life event scales in relation to subsequent illness reports, whether physical or mental.

Other researchers have suggested that the inclusion of qualitative dimensions of life change such as its controllability, desirability and anticipation yields stronger associations between life events and illness measures (Goldberg & Comstock, 1976; Johnson & Sarason, 1979; Matheny & Cupp, 1983; Ruch, 1977; Stern, McCants & Pettine, 1982; Suls & Mullen, 1981).

However, correlation coefficients of relatively low magnitude (r = .07 to .59) were found between measures of life stress and illness even after these factors have been taken into account. The findings suggest that factors other than measurement inadequacies may be operative. For instance, individuals may experience stress that does not result from life change (Johnson & Sarason, 1979). Stressors such as crowding or

pollution may influence health and adjustment. The low correlation coefficients may also be attributed to the presence of individuals who remain healthy despite high life stress scores. This viewpoint suggests that exposure to stressors alone is almost never a sufficient explanation for illness onset and further implies the presence of variables that may influence the impact of stress and alter an individual's susceptibility to illness. Increased accuracy of illness prediction should result when such variables are identified and taken into account experimentally (Johnson & Sarason, 1979; Mechanic, 1974; Rabkin & Struening, 1976).

In accordance with this assumption, the theoretical perspective adopted in the present study stems from the conceptual paradigm proposed by Lazarus and his colleagues (Holroyd & Lazarus, 1982). Specifically, this formulation emphasizes the view that stressful experiences cannot be understood merely in terms of the event itself and that the characteristics of the individual also have to be taken into account. Such a model allows for the presence of psychological variables that may influence the impact of stressors and consequently alter the individual's susceptibility to illness. Buffer variables are one type of psychological variables which may influence the individual's response to stressful life events and in turn alter one's susceptibility to the development of illness. Buffer variables function to help protect the individual against the adverse effects of life stress by helping to transform the individual's perception of stressful events so as to reduce the events' stressfulness. A buffer variable can also exert protective effects on health by directly influencing the individual's physiological processes when he is faced with a stressful situation. The present study

focuses on the role of three psychological variables as possible buffers or moderators of the life stress - illness relationship in a sample of older males. Specifically, the personality disposition of hardiness, social support and coping styles were examined for their buffering or moderating effects on life stress and illness.

Personality as a moderator of life stress

The current view on the relationship between life stress and reported illness maintains that health risk is determined by the balance between psychosocial factors which influence resistance as well as susceptibility to illness (Chesney & Gentry, 1982). Such a view warrants the incorporation of the mediating role of psychological processes in any conceptual paradigm on the life stress - illness relationship. Personality characteristics are considered to be among the factors which can increase or reduce an individual's susceptibility to the development and course of disease. A causal role of personality in the development of illness implies the involvement of personality variables in producing pathogenic alterations in the individual's physiological processes (Krantz & Glass, 1984). In contrast, a buffering or moderating effect implies that personality variables protect the individual from the deleterious influence of stress.

A number of personality factors have been linked to the incidence of illness in general as well as to various specific physical conditions. The strongest and most extensive evidence in support of the causal role of personality in the incidence of disease stems from the research done on the Type A Behavior Pattern (TABP) and its association with prevalence of Coronary Heart Disease (CHD) (Friedman & Rosenman, 1959). Individuals

with this behavior pattern exhibit an excessive competitive drive, impatience and time urgency. The sense of hostility that is often characteristic of Type A individuals may not be readily apparent but becomes overt when these individuals are confronted with situations perceived as stressful or frustrating (Rosenman & Chesney, 1984).

Both cross-sectional and longitudinal research has revealed significant associations between the TABP and prevalence of CHD that could not be attributed to differences in other traditional CHD risk factors such as cigarette smoking, diet and high blood pressure (Rosenman, Brand, Jenkins, Friedman, Straus, & Wurm, 1975; Rosenman, Friedman, Straus, Wurm, Kositchek, Hahn & Werthessen, 1964). At a physiological level, recent research indicates that Type A individuals show significantly greater elevations in measures indicative of sympathetic nervous system arousal such as systolic blood pressure, heart rate and catecholamine secretion when confronted with stressful situations. This is in contrast to their Type B counterparts who do not show such significant elevations (Krantz & Glass, 1984). These differences could probably be attributed to the different perceptions of stressful situations that distinguish between Type A and Type B individuals. With an initial disposition towards hostility and aggressiveness, the stressfulness of a situation may be enhanced significantly for Type A individuals. In turn, this can lead to an exaggerated physiological response in such individuals in contrast to their Type B counterparts. This research has helped to identify and delineate the process by which psychological factors may be translated into pathogenic physiological conditions.

A factor which has received considerable attention as a possible moderator of the life stress - illness link is the locus of control concept. Originally proposed by Rotter, the locus of control construct reflects the extent to which individuals believe they have influence and control over events encountered in the course of daily living. Individuals with an internal locus of control believe they can influence the course of events in their lives. In contrast, externally oriented individuals believe that the events that happen in one's life result from factors beyond one's own control such as chance, fate or luck (Strickland, 1978). Since this construct seems to reflect the individual's belief in having control or lack of control over life events, it is expected that internals and externals will respond differently to life situations. In turn, differential health-related outcomes are also expected for internals and externals.

In recent reviews of the findings on the locus of control construct (Lefcourt, 1983; Strickland, 1978; Wallston & Wallston, 1982), the bulk of the evidence reported suggests more positive health - related outcomes for internals in contrast to externally oriented individuals. Locus of control has been found to have a moderating effect on psychological well-being and physical health (Johnson & Sarason, 1978; Strickland, 1978). Overall, results from research in the area seem to suggest that it is perhaps those individuals experiencing high levels of life change but feeling no control over the events who are at highest risk for the subsequent development of illness, whether physical or psychological.

Hardiness as a moderator of life stress

Related support for the locus of control construct derives from

Kobasa's (1979a, 1979b) work on the personality disposition of hardiness.
The concept of hardiness has recently gained attention as a potentially
important moderator variable in the life stress - illness chain. The
construct of the hardy personality is rooted in existential personality
theory (Kobasa, 1979a, 1979b). According to this theoretical approach,
the hardy individual demonstrates originality and adaptability in
his/her basic orientation towards the future and its associated
uncertainty. This uncertainty does lead to feelings of anxiety but these
feelings are interpreted and accepted as a necessary part of living.

Kobasa identifies three concepts that appear relevant to this
orientation: commitment, control and challenge. Commitment is the
ability to involve oneself in a wide variety of situations and activities
in daily life. Control has already been described as the belief that one
can influence the course of events in one's life. Challenge is based on
the belief that novelty and change rather than security and stability is
the normative mode of life (Kobasa, 1982). According to Kobasa, these
three concepts collectively comprise the personality disposition of
hardiness which is hypothesized to function as a resistance resource in
the face of stressful life events.

Specifically, a sense of commitment to self provides the individual
with a sense of purpose and active involvement in life. This sense of
commitment provides the individual with a basis for dealing with problems
and setbacks that may arise as a result of stressful experiences.
Committed individuals benefit from the sense that they will not give up
in their attempts to resolve problematic and potentially stressful
situations that may arise in the course of their lives. A sense of

control allows the individual to perceive stressful events as predictable consequences of one's own activities which are subject to personal direction and manipulation (Kobasa, 1982). Persons with a sense of control have the ability to cognitively transform stressful situations and in turn to respond flexibly in order to effectively reduce stress. Such a disposition toward an internal, locus of control has been shown to have positive health related effects (Lefcourt, 1983; Strickland, 1978; Wallston & Wallston, 1982). The belief that novelty and change in one's life is the norm rather than the exception helps to perceptually mitigate the stressfulness of events by coloring such events as stimulating rather than threatening. The individual holding such a belief is more practiced at self-improved readjustment and flexibility in adapting to unexpected changes in life. This in turn helps attenuate the individual's stress response.

Kobasa and her colleagues have recently provided evidence in support of the role of hardiness as a resistance resource for life stress (Kobasa, 1979a, 1979b; Kobasa, Hilker & Maddi, 1979). A large group of middle-class male executives recruited from a company in the Chicago area completed questionnaires on life events, hardiness and physical illness. Consistent with the previous life stress - illness literature, a Pearson product-moment correlation of .24 was obtained between total life stress and illness scores. Subjects with high life stress scores were then divided into two groups according to their illness scores. The use of discriminant function analyses specified any group differences in personality dimensions. The results indicated that the high stress/low illness subjects were distinguished from their high stress/high illness

counterparts by their sense of commitment to self, their sense of meaningfulness about life as well as their internal locus of control. An additional finding indicated that for the same objective levels of stress, subjects with low or no illness felt less threatened subjectively (in personal, financial and interpersonal areas of their lives) than those subjects who did become ill. Overall, these results support the notion of hardiness as a buffer against stress but the retrospective nature of the studies prevents any causal interpretation of the data.

A prospective study was undertaken a few years subsequent to the original study (Kobasa, Maddi & Kahn, 1982). A sample of 259 middle-class male executives were mailed measures of stressful life events and illness as in the first study and were asked to indicate the events and symptoms that had occurred during the previous 3 1/2 years. Two additional mailings of the same life stress and illness questionnaires were sent to subjects instructing them to complete them for the preceding one-year period. Each of the three mailings were separated by one-year intervals. Analyses of covariance with illness change over time as the dependent variable were used to evaluate the moderator role of hardiness in health. The findings revealed a significant main effect for hardiness as well as a significant interaction between hardiness and stressful life events. These results indicate that hardiness has its greatest health preserving effect in the face of high life stress.

Social support: Conceptualization

_Substantial evidence has pointed to social support as an important, contributing factor in the maintenance of physical and psychological health (Cobb, 1976; Suls, 1982). Despite the consensus regarding the

beneficial effects of social support, there remains considerable diversity about its conceptualization and definition (Suls, 1982). Generally, social support may be defined as support/perceived to be available to an individual from various sources ranging from members of one's family and friends, to work colleagues and even professionals in the community (Gentry and Kobasa, 1984). Cobb (1976) views social support as a multidimensional concept. According to this definition, social support consists of information which leads individuals to believe that they are loved and cared for, esteemed and valued, as well as being members of a network that encourages communication, mutual obligation and reciprocal help. Thoits (1982) has defined social support as the gratification of a person's basic social needs through interactions with others. Basic social needs include affection, esteem/approval, a sense of belonging, identity and security. The individual's social ties and the networks they comprise represent social support only to the extent that such basic needs are met.   According to Thoits (1982), these needs may be fulfilled by the provision of either socioemotional or instrumental aid. Socioemotional aid involves the expression of feelings of affection, sympathy and understanding from significant others as well as leading the individual to feel that he is accepted and esteemed. Instrumental aid involves providing advice, information or financial help. The same elements of emotional sustenance and instrumental aid can be found in Silver and Wortman's (cited in Suls, 1982) multidimensional definition of social support. The expression of positive affect, encouraging the open expression of the individual's beliefs and feelings, the provision of material aid and leading the

individual to believe that he is part of a network that emphasizes mutual help are all elements constituting social support.

The above definitions have served to emphasize the multidimensional nature of social support as well as the fact that social support represents more than the mere quantity of social contacts and ties. The beneficial effects of social support cannot be assumed from simple access to social ties because not all ties are supportive (Thoits, 1982). Individuals must perceive their social supports to be available and supportive of their social needs before it can be viewed as useful and responsible for exerting any beneficial health-related effects (Gentry and Kobasa, 1984).

Social support: Mechanisms

The positive health-related effects attributed to social support are based on evidence supporting its role as a moderator of life stress. Despite the positive evidence, the considerable diversity in the conceptualization and measurement of social support has led to different conclusions regarding how social support operates (Cohen & Wills, 1985; Gentry & Kobasa, 1984). As a result, the mechanisms responsible for the observed protective effects of social support remain unclear.

Social support may exert a moderating effect on the life stress-illness link by helping to alter, attenuate or prevent the individual's stress appraisal response (Cohen & Wills, 1985). Cobb (1976) has suggested that social support can help to bolster the individual's perceived ability to cope with major life transitions or unexpected crises as well as help the individual adapt to any change that may be associated with these situations. For instance, esteem support may help

to counteract any threats to one's self-esteem that can occur as a result of stress appraisal and may encourage one to try and master problematic or difficult situations. Social support may further be protective against the adverse effects of life stresses by strengthening or restoring hope and morale. Social support may help to redefine the potential for harm posed by a stressful situation and lead the individual to feel that the situation is not hopeless and subject to change (Bruhn & Phillips, 1984; Cohen & Wills, 1985). Based on a subject-environment fit model, Caplan (cited in Broadhead et al., 1983) proposed that input from socially supportive relationships may help an individual reappraise a stressor. This would allow one to form a more realistic view of oneself as well as the situation. In turn, this may provide information about other available resources and coping strategies necessary to help the individual deal with the stress being experienced that otherwise would have been overlooked.

The above discussion has served to indicate that socially supportive ties can serve as significant informational resources that can help the individual to reappraise or redefine potential stressors. Supportive ties can also exert a direct anxiety-reducing effect when individuals are faced with stressful events or situations. In addition, the quality of these ties and relationships in contrast to the quantity may well be the crucial element responsible for the health-promoting effects of social support.

Social support: The empirical evidence

Substantial empirical evidence points to social support as a moderator of life stress and as a resistance resource for physical and

psychological illness (Cobb, 1976; Suls, 1982). However, early studies comprising the bulk of this evidence have largely overlooked the multidimensionality of social support, viewing it instead as a unitary concept, and are characterized by a wide range of measurements of social support (Broadhead et al., 1983; Cohen & Wills, 1985; Gentry & Kobasa, 1984; Thoits, 1982).

Nuckolls, Cassel and Kaplan (1972) looked at the effects of life stress and social supports on pregnancy and birth complications in a group of army wives. A significant relationship was found between life stress and pregnancy/birth complications when psychosocial assets were taken into account. Psychosocial assets were defined as social factors which helped a woman adapt to her first pregnancy. The subjects were questioned on their perceptions and feelings concerning their relationship with their husbands, extended families and their community. Under conditions of high life stress, women with low levels of psychosocial assets had almost three times more pregnancy and birth complications than women with high levels of social support. A second study provided evidence for social support as a moderator variable' in the relationship between life stress and severity of asthma (DeAraujo, Van Arsdel, Holmes & Dudley, 1973). Findings revealed that patients with high life change scores and low social supports needed three to four times as much medication than did patients in the other three groups.

A number of studies have also provided evidence for the positive effect of social support against psychological illness. Miller, Ingham & Davidson (1976) noted that individuals with few casual friends and who lacked a confidant reported higher psychiatric symptomatology. This

relationship held even when threatening life events were controlled. However, despite the positive findings, the results from this study could also reflect the presence and influence of a third confounding variable, for example; hostility which can lead to low social support and increased psychopathology.

Lin, Simeone, Ensel & Kuo (1979) assessed the effects of social support on psychiatric symptomatology using a scale which tapped the respondents' interactions and involvement with a number of individuals in their immediate environment. Social support was found to explain more than twice as much of the variance in psychiatric illness scores than stressful life events and demographic variables combined and was found to exert a buffering effect on high stress levels. Additional evidence for the buffering hypothesis was provided by Wilcox (1981). The relationship between life events and psychological disorders was found to be dependent on the level of social support. The results indicated that the relationship between life stress and psychiatric symptomatology strengthened as social supports decreased. In contrast, the relationship between life stress and psychiatric symptomatology became negligible as the number of available supporters increased. Using a story identification technique as a measure of social support, Turner (1981) found social support to have an important effect on psychological well-being independent of stress. Although it did not reach significant levels, a stronger relationship was found between social support and well-being for high stress versus middle and low stress groups. Miller and Lefcourt (1983) looked at the effects of social intimacy and life change events on emotional disturbance in a group of college students.

Their results indicated more emotional disturbance under conditions of high negative life stress in those students who lacked a current intimate relationship.

In spite of this positive evidence, support for a buffering effect of social resources was not found in a longitudinal study by Williams, Ware & Donald (1981). Social support was assessed with a 9-item measure tapping the subject's social contacts and resources at present and during the prior year. Their results indicated a positive value of social support at all levels of life events supporting a simple, additive model of direct, positive effects for social supports and negative effects for life events on mental health.

The nature of later research on the moderating functions of social resources in the life stress-illness relationship underwent major changes regarding the conceptualization and operationalization of social support. The majority of studies shifted away from viewing social support as a unitary concept (Suls, 1982), making a distinction between the quantitative and qualitative aspects of social support (Bruhn & Philips, 1984). Along with these changes came the major finding that different dimensions of social support differentially affect health (Gentry & Kobasa, 1984).

In a study using Navy Submarine school subjects, Sarason et al. (1982), looked at the effects of life events and social support on illness. Both availability and satisfaction indices of social support were assessed. Negative, but not positive life events, were found to be associated with illness reports. Positive correlations were found between life events and illness for both low in contrast to high

availability and satisfaction subgroups. However, larger effects were found with the satisfaction dimension of social support, indicating that the quality of an individual's social support systems is a more important determining factor in subsequent illness than the mere availability of social contacts.

Similar findings were obtained in a study by Schaefer, Coyne & Lazarus (1981). The number of relationships available to the subject and the subject's perception of the supportive value of his/her social interactions served as indicators of social support. The authors reported that tangible and emotional social support were inversely associated with depression and negative morale but did not mediate the effects of life events on these outcome variables. Similar to the results of the previous study, perceived value of or satisfaction with social support showed stronger associations with symptomatology and morale than availability of support. Sandler and Barrera (1984) assessed the effects of support network size, satisfaction with received support as well as the frequency of occurrence of supportive behaviors on psychological disorder. Overall, the results indicated satisfaction with support and not size or quantity of support as the critical feature of social support in relation to somatization and overall psychological symptomatology. Higher stress-disorder correlations were found for low versus high social support satisfaction groups. Cohen, McGowan, Fooskas & Rose (1984) tested the stress buffering effects of received and perceived availability of social support on psychological disorder. Received support was defined as the amount of social support, whether in the form of material aid or emotional assistance, that the individual

received during the past month. Perceived availability of support was defined as the perceived availability of different aspects of social support. Items on material aid and socioemotional aid including appraisal, sense of belonging and self-esteem served as an index of perceived available support. Cross-sectional and prospective analyses revealed significant interactions between negative life events and perceived availability of support. The results indicated that the positive relationship between negative events and psychological symptomatology was strengthened as perceived social support decreased. Such findings demonstrate the stress buffering effects of perceived social support.

The above results reinforce the hypothesis that positive health-related effects are related to the qualitative dimensions of social support. Studies have reported both main and moderating effects on stress for perceived support or satisfaction with one's obtained support in contrast to the mere availability of support. The findings emphasize the individual's active role in determining the resulting effects of social support. Social support will have positive erfects on health only when the individual perceives it to be sufficiently available and satisfying.

The relative lack of positive results for the quantitative dimension of social support may reflect that in some cases, availability of support may not necessarily equate with satisfying support (Sandler & Barrera, 1984; Sarason et al., 1982; Schaefer et al., 1981). Available support may involve negative, interpersonal elements such as demands or constraints that may counteract the positive effects of social support (Gentry &

Kobasa, 1984). In such situations, the individual's available support can be viewed as annoying or irritating. The negative perception of one's available support could lead to feelings of inadequacy, hostility, incompetence and low morale. These feelings can further compound the individual's negative state and can be associated with difficulty(ies) in coping with stressful situations. The result from such states can translate into high physiological strain which in turn can alter the individual's susceptibility to the development of illness.

Coping: Theoretical and conceptual aspects

The past few years have witnessed the re-emergence and recognition of coping as a moderator of the effects of exposure to stress (Wheaton, 1983). The current view in the stress-coping literature maintains that inappropriate use of coping strategies can facilitate the deleterious effects of stress on physical health (Wong and Reker, 1984).

As is the case with many psychological variables, the enormous complexity of coping has led to difficulties with its conceptualization, resulting in a plethora of definitions. Lazarus and Folkman (1984b) define coping as the "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the person's resources" (p.141). Tobin, Holroyd and Reynolds (1982) state that coping involves "cognitive, emotional and behavioral strategies used for reducing the effects of stressful events" (p.2). Additional definitions of coping view coping as the individual's attempts to resist and overcome stressors (Fleming, Baum & Singer, 1984) or the processes that people use to actually contend with life strains (Pearlin and Schooler, 1978).

In spite of their diversity, the above definitions share a number of fundamental characteristics which comprise the current view on coping and distinguish it from the more traditional theoretical perspectives. The theme of the individual's struggle with, as well as the efforts and attempts to deal with the demands, conflicts and distressing emotions that arise in relation to stressful experiences is central to the above definitions. This focus on the notion of management instead of mastery avoids the interchangeability of coping and mastery commonly found in more traditional approaches (Lazarus and Folkman, 1984b). As a result, coping strategies such as avoidance, denial and even acceptance of stressful conditions can be regarded as effective ways of coping in addition to attempts at mastering the stressful situation (Lazarus and Folkman, 1984b).

With the emphasis toward a person-environment interaction and away from a rigid psychoanalytic or trait paradigm, the current perspective on coping further avoids categorization of coping strategies into those that are inherently adaptive and mature versus others that are intrinsically maladaptive and primitive (Wong and Reker, 1984). In contrast to earlier conceptual paradigms, the transactional view of coping postulates that the effectiveness of coping depends on the extent that it matches the nature of the stressor (Wong and Reker, 1984). This latter characteristic serves to emphasize the multidimensionality of coping and reflects the view of coping as a dynamic and transactional process instead of as a fixed, static behavior pattern. It further emphasizes the central role of psychological mediation in the coping process.

The acceptance of coping as a dynamic and interactive person-

environment process rejects the notion that all of an individual's coping strategies will be consistently effective across situations. According to this view, no single coping strategy will characterize all of an individual's coping responses across all stressful situations (Fleming et al., 1984). The view of coping as a multidimensional concept is further reflected in the assumption that more than one coping strategy may be, used in a particular stressful situation. In such cases, the relative proportion of each type of coping strategy used would vary in accordance with the appraisal of the situation. Evidence from recent studies done on coping supports this point. The results indicated that the majority of individuals who were interviewed regarding their use of coping activities in stressful situations reported the use of more than one coping strategy in their attempts to deal with the stressors (Folkman and Lazarus, 1980; Pearlin and Schooler, 1978).

The view of coping as a transactional process has been supported by the recognition of the important role of psychological mediation in the coping process. The concept of appraisal has been identified as an important psychological mediator which influences the individual's choice of coping activity. Appraisal can be defined as the evaluative process which helps the individual determine and interpret the meaning or significance of a situation as well as the coping resources that are available to deal with the situation (Folkman and Lazarus, 1980). Appraisal is the process which allows for individual differences in responses to common environmental conditions (Lazarus and Folkman, 1984a). An individual who evaluates a situation as a threat will tend to react differently from and use different coping strategies from those of

an individual who appraises the same situation as a challenge (McCrae,
1984). The mediating process of appraisal also prompts the individual to
select the coping strategy(ies) that are considered to be most
appropriate in a particular situation. This implies that a specific set
of coping responses used in a particular situation may or may not be used
in a different situation depending on the demands of the situation.

Coping: The empirical evidence

The above discussion has emphasized the central role of coping in
dealing with stressful situations. The effectiveness of coping in
helping the individual alter the stressful situation itself or control
the resulting distress associated with the situation can have major
repercussions in relation to the life stress-illness link. However, the
enormous complexity of the concept has made research in the area
difficult with studies characterized by a diversity in their
conceptualization and measurement of coping. Despite the
inconsistencies, available studies have demonstrated the beneficial
effects of coping in dealing with stress. The same studies also share
the conclusion that no single coping mechanism will characterize all of
an individual's responses to stress and assuredly lead to the successful
mitigation of the consequences of life stress (Folkman and Lazarus, 1980;
Pearlin and Schooler, 1978; Wheaton, 1983).

One of the earliest studies in the stress-coping literature assessed
coping with strains in four major life areas including marriage,
parenthood, household economics and occupation (Pearlin and Schooler,
1978). Seventeen coping factors were developed and standardized from
information gathered in interviews. These coping responses represented a

sample of three major types of coping techniques including responses that change the situation out of which stressful experiences arise, responses that function to control the meaning of the problem and those that function more for the management of distress. Results from regression analyses indicated that as the number of coping responses used increased, stress became less likely to be associated with emotional strains and distress in marital, parenting and household financing life areas.

Folkman and Lazarus (1980) analyzed the ways that middle-aged community residents coped with daily stressful events during the course of one year. Items classified into problem-focused and emotion-focused categories served as indices of coping. The problem-focused category included items that described cognitive problem-solving strategies used to manage or alter the source of the problem. Emotion-focused items described cognitive/behavioral strategies used to reduce or manage the emotional distress associated with the conflict. The findings indicated that in less than 2% of the stressful episodes reported did subjects describe only one way of coping and that the situational factors of appraisal and context of events accounted for most of the coping variability.

In addition to these studies, more recent research on stress and coping has focused on the moderating effects of coping resources on life stress and illness. One such study evaluated the effectiveness of coping strategies in moderating the effects of life events in relation to psychoneurotic symptoms in a group of college students (Tobin, Holroyd & Reynolds, 1983). Data collected from subjects with high life stress scores were entered into a regression analysis with coping subscales as

predictors and an index of psychoneurotic symptoms as the criterion variable. The coping subscales included problem-centered, cognitive restructuring, social-centered, management of emotion, avoidance and self-denigration ways of coping. The items comprising the problem-centered and cognitive restructuring subscales reflect/cognitions and behaviors which help the individual alter or manage the source of conflict. The use of social-centered coping strategies refers to the individual's use of social contacts and supports to help one deal with the situation. Items on the management of emotion subscale describe ways of coping which help to reduce or manage the emotional distress resulting from the problematic situation. The last two subscales consist of items reflective of the individual's avoidance or denial of the problem and self-blame and criticism for the problem, respectively. The results indicated that only two of the six subscales emerged as significant predictors of psychoneurotic symptoms with the avoidance subscale being positively correlated with the criterion variable while the social-centered subscale entered the regression equation with a negative correlation. These findings imply that under high stress, avoidance tends to exacerbate the negative effects of stressful life events while seeking social support tends to mitigate these negative effects.

A second study assessed the effects of the same six coping resources on tension headache in a group of college students (Holroyd, Tobin, Rogers, Hursey, Penzion & Holm, 1983). A multivariate analysis of variance revealed that tension headache and headache-free groups significantly differed in the coping strategies used when faced with a stressful situation. Headache sufferers relied less on problem-centered

coping and more on avoidance in contrast to their headache-free counterparts.

Moderator variables of life stress: Interactive effects

The stress literature has provided extensive evidence in support of hardiness, social supports and coping styles as moderators in the relationship between life stress and illness repports. However, the complexity of the stress process itself has recently led to a gradual shift in the nature of stress research, away from viewing moderator variables in isolation from one another and towards studying the possible joint effectiveness of more than one moderator variable on the life stress-disease link (Kobaşa, Maddi, Puccetti & Zola, 1985). Such research efforts are warranted for a more comprehensive understanding of how some individuals remain healthy despite highly stressful lives.

Although such studies are still scarce, a few recent studies have evaluated the joint effects of multiple moderator variables on the life stress-illness relationship. Billings and Moos (1981) assessed the extent to which coping and social resources attenuated the potential impact of life events on symptomatology. The items measuring coping style covered three methods (active-cognitive, avoidance, active-behavioral) and two focus of coping categories (problem- and emotion-focused). Both quantitative and qualitative dimensions of social resources were assessed. In line with other findings in the stress-coping literature, the avoidance coping style tended to be more highly related to symptomatology measures than the other two coping styles. In general, it was found that coping and social resources accounted for comparable amounts of criterion variance with a reduction in the life

events-symptomatology coefficient observed as coping and social resources were sequentially entered into the regression analysis. Although both quantitative and qualitative components of social support had a moderating effect on negative life stress, the effect was stronger for the qualitative dimension of support. This index was based on three subscales which measured degree of cohesion, expressiveness and conflict within the individual's social relationships.

A second study considered the joint moderating effects of social resources and the personality disposition of hardiness in a group of executives (Kobasa and Puccetti, 1983). Two subscales relevant to perceptions of a supportive climate at home and at work as well as a social assets scale served as measures of social support. The results indicated that social assets had no significant impact on health status but subjective perceptions of support played a more significant role, though not always a beneficial one. Whereas support at work buffered the detrimental effects of high stress conditions, family support had a negative effect on health for executives low on hardiness. Hardiness had main effects on illness scores, decreasing symptom reports regardless of stress levels. Hardiness also interacted with family support to lower illness, confirming the role of this latter variable as a resistance resource but only under conditions of high stress and hardiness. Executives high in hardiness but low in support showed significantly lower illness scores than those executives who were high in support but low on hardiness. These initial findings emphasize the importance of differentiating between various dimensions of social support and of monitoring the effects of a number of moderator variables in a single

study (Kobasa and Puccetti, 1983).

A third study evaluated the effects of the resistance resources of hardiness, social support and exercise on illness in a group of male business executives (Kobasa et al., 1985). The effects of these variables were considered one at a time and in combination. The results indicated a positive relationship between lower illness and the number of resources an individual possesses. Specifically, illness scores decreased as the number of resistance resources increased. The findings obtained from multiple regression analyses further indicated a differential effectiveness of the various resources considered. Hardiness emerged as a more important moderator against current and future self-reported illness than social support and exercise. The latter two variables also appeared to contribute positively to the maintenance of health but their effects were minor compared to those for hardiness. These results emphasize the importance of multiple resistance resources in the maintenance of health. They also point to hardiness as the most important moderator variable when its effects are considered in combination with those of social support and exercise.

Present study: Purpose and hypotheses

The literature on the relationship between life stress and illness reports has indicated the important moderating role of psychological variables in the prediction of illness. To date, a number of studies have examined the moderating role of various psychological variables in relation to the life stress-illness link. However, the majority of these studies have focussed on the moderating effects of variables individually or have overlooked the possible interactive effects among variables and

their relation to illness when more than one variable was considered.

The purpose of the present study was to investigate the moderating role of psychological variables in relation to the association between life stress and illness reports. Specifically, this study assessed the individual as well as possible interactive effects of hardiness, social supports and coping styles on the life stress-illness link in older males. These variables were examined for their direct and moderating effects on health by the use of regression techniques.

Based upon the literature on stress and illness, the first hypothesis predicted a low but positive correlation between total life change and illness scores, with the coefficient ranging between .20 and .40. An increase in the amount of criterion variance explained was expected with the inclusion of the moderator variables into the regression equation.

The second hypothesis of the present study examined the moderating effect of the hardiness variable on illness. In line with the hardiness literature, it was predicted that hardiness would not only negatively correlate with symptom reports but would also interact with life change scores to account for a significant increase in the portion of explained variance in illness scores. Follow-up analyses were expected to reveal significantly lower illness scores for the high stress subjects who are also high on hardiness in contrast to subjects low in hardiness under the same high stress conditions.

The next hypothesis assessed the moderating effect of social support on the life stress-illness link. With the multidimensionality of social support well established at both conceptual and empirical levels, it was

predicted that the quantitative and qualitative components of social support used in this study would have differential health-related effects. The literature has pointed to qualitative dimensions of social support as the crucial element responsible for the beneficial effects of social support on health. In relation to the present study, availability of support and satisfaction with one's support served as quantitative and qualitative components of social support, respectively. Based on the social support literature, the third hypothesis predicted that availability of support would have no significant effect on the relationship between life stress and self-reported illness while satisfaction with one's support would buffer the negative effects of life stress.

Consequently, the fourth hypothesis predicted satisfaction would increase the variance in total symptomatology scores and also interact with life change scores to significantly increase the explained variance in illness scores. As with the hardiness variable, follow-up analyses were predicted to reveal significantly lower total illness scores for subjects encountering high levels of life stress but who are highly satisfied with their available support systems. This is in contrast to their high stress counterparts who reported dissatisfaction with their available social supports. No significant differences in total illness scores were expected between the two low stress subgroups separated by their levels of support satisfaction.

The buffering effects of coping styles on the life change-illness link was examined in the fifth hypothesis. The literature on coping has indicated that coping strategies are major determinants of the way an

individual will deal with life situations, and have a substantial influence on resulting health status. In view of these findings, it was predicted that coping styles would interact with life changes to significantly increase the explained variance in illness scores in the present sample of older males. It was further hypothesized that the six coping styles used in this study would have differential health-related effects. Those coping styles aimed at helping the individual manage or alter the source of the problem would interact with high life stress to exert a beneficial effect on health. In the present study, the problem-centered, cognitive restructuring and social-centered coping styles were predicted to buffer the negative effects of life changes resulting in significantly lower illness scores. Those individuals high in the use of these coping strategies were expected to report significantly less symptomatology than those subjects low on the use of these strategies. The use of the coping style of management of emotions, which is directed at helping the individual manage with the emotional distress resulting from the problematic situation, was also predicted to buffer the effects of life stress but the effect was expected to be weaker than that of the three preceding ways of coping. Conversely, the last two coping styles of avoidance and self-denigration were predicted to have negative health-related effects. Individuals who depend mainly on either of these two strategies in the face of high stress were expected to have significantly higher illness scores in contrast to subjects who have less recourse to these ways of coping.

With regards to the relative importance of the predictor variables in the prediction of illness, the literature on stress leads to the

hypothesis that life change scores would enter the regression equation first and would account for the largest portion of explained variance in illness scores. Since this is one of the first studies to assess the interactive effects of more than two moderator variables simultaneously, the present study is largely exploratory in nature with specific predictions as to the relative importance of each buffer variable with respect to the life stress-illness link difficult to make at this point. However, based on the available studies which have examined the joint effects of hardiness and social supports and of social and coping resources, it was predicted that satisfaction with one's support would interact with hardiness to lower illness scores.

In conclusion, a number of psychological variables have been established as possible moderators or buffers of the life stress-illness relationship. The major goal of the present investigation was to determine the moderating and predictive roles of hardiness, social support and coping styles in the relationship between life stress and illness reports in a sample of older males.

Method

Subjects

An initial list of 1131 male graduates between the years 1940 and 1950 living within the Montreal area was obtained from a graduates' directory of an anglophone university. Potential subjects were mailed a brief letter which described the study as focussing on the role of various psychological variables in the life stress-illness relationship. A consent form on which they indicated their decision regarding participation in the study was also included in the package. From this

initial pool, 150 subjects (13.3%) agreed to participate. The subjects were exclusively male, white and middle-class according to Blishen's Index of Socioeconomic Status (1976). The mean socioeconomic rank of the sample was 37 with a range from 1 to 167. All subjects were employed at the time of the study with the nature of occupations ranging from managerial/executive positions to professions in the health and education fields. The sample was predominantly married (91%) and ranged in age from 54 to 69 years with a mean age of 60.

Materials

Life stress. The Life Experiences Survey (LES) (Sarason, Johnson & Siegel, 1978) was adapted for this study to provide an index of life change. The original measure lists 57 items as well as providing three additional blank spaces for subjects to report any additional events they may have experienced. In its original format, the scale consists of two sections, the first listing 47 events appropriate for use with subjects drawn from the general population and the second section containing 10 events designed primarily for use with a student population. For purposes of this study, a shortened 38-item version comprising events relevant to a middle-aged adult male sample was utilized. The self-report measure requires respondents to indicate the events they have experienced during the past year and to rate their desirability/undesirability as well as the impact of these events at the time of their occurrence. Impact ratings are based on a 7-point Likert scale ranging from extremely negative (-3) to extremely positive (+3) with a rating of zero for no impact. A positive life change score is obtained by summing the impact ratings of those events designated as positive. A sum of

impact ratings of events experienced as negative provides a negative life change score.. A total life change score representing the total amount of life change experienced by the subject during the past year is derived by summing the absolute value of the two individual change scores.

Results from initial reliability and validity studies point to the LES as a potentially useful research and clinical tool (Sarason et al., 1978). The studies investigating the temporal stability of the change scores at a 5- to 6-week time interval indicated adequate reliability for negative and total change scores but less stability for positive change scores. Test-retest correlations of .56 and .88 were obtained for negative change scores and .63 and .64, for total change scores. The coefficients for positive change scores were .19 and .53 (Sarason et al., 1978). Additional studies reported negative and total change scores to be significantly correlated with state and trait anxiety measures. Significant positive relationships were also found between negative change scores, depression and external-locus of control measures (Sarason et al., 1978). No significant findings were reported between any of the life change scores and social desirability measures.

Hardiness. Hardiness was assessed using the methodology developed by Kobasa (1979). Standardized scores from six scales based on already existing questionnaires and representing commitment, control and challenge were combined to provide a composite measure of hardiness. Negative indicators of commitment were obtained from the Alienation from Work and Alienation from Self scales of the Alienation Test (Maddi, Kobasa & Hoover, 1979). High scores on these scales indicate the subjects' lack of involvement in decision-making and goal-setting aspects

of their lives. Scores on the Locus of Control Scale (Rotter, Seeman & Liverant, 1962) and the Powerlessness Scale of the Alienation Test (Maddi et al., 1979) served as negative indicators of control. High scores on both scales reflect subjects' beliefs about lack of control over their lives. Challenge was measured negatively by the Security Scale of the California Life Goals Evaluation Schedule (Hahn, 1966) and the scale of Cognitive Structure from Jackson's Personality Research Form (1974). High scores on these scales suggest a preference for security and stability in contrast to novelty and change in one's life.

For five of the six subscales, subjects respond to the individual items by indicating the extent to which they agree or disagree with the statements according to a 4-point rating scheme ranging from not at all true (0) to completely true (3). Subjects indicate which of the two statements provided in each item better represents their attitude for the Locus of Control Scale.

To date, composite hardiness scores have shown a temporal stability estimate of .61 over a 5-year period and internal consistency coefficients in the 80's (Kobasa, 1982). In terms of discriminant validity, hardiness has been shown to have little or no relationship with factors such as age, education and job level (Kobasa, Maddi & Kahn, 1982), marital status and social support (Kobasa & Puccetti, 1983). In addition, hardiness is independent of stressful life events and constitutional predisposition to illness based on parents' illness history (Kobasa, Maddi & Courington, 1981).

Social support. An index of social support was obtained with the recently developed 27-item Social Support Questionnaire (SSQ) (Sarason,

Levine, Basham & Sarason, 1983). Each item asks respondents to list the people they can turn to and whom they can depend on in a given circumstance and then to indicate their degree of satisfaction with these social supports. These components have been termed availability and satisfaction, respectively. Availability of support is scored as the number of individuals from zero to nine listed per item. Satisfaction with one's available support in a given circumstance is rated on a 6-point scale ranging from very satisfied (6) to very dissatisfied (1). A mean availability and satisfaction score is then computed for each subject by dividing the sum of availability and satisfaction scores for all items by 27, the total number of items.

Initial studies done with the SSQ have shown it to have good internal consistency with reported alpha coefficients of .97 and .94 for availability and satisfaction scores, respectively. Inter-item correlations of .35 to .71 were obtained for availability items while correlations of .21 to .74 were found for satisfaction items. The SSQ was also shown to have temporal stability over a 4-week interval period with test-retest correlations of .90 and .83 for availability and satisfaction scores, respectively (Sarason et al., 1983).

Coping. Coping activities in response to stressful life events were measured by a modified version of the Coping Strategies Inventory (CSI) (Tobin, Holroyd & Reynolds, 1982). This two-part, 76-item inventory consists of six subscales reflecting the coping resources of problem-solving, cognitive restructuring, use of social support, management of emotions, avoidance and self-denigration. Results from initial validation studies indicate satisfactory internal consistency for all

subscales with Cronbach's alpha coefficients ranging from .77 to .92
using a standard stressor situation and coefficients between .76 and .92
using the individualized stressor situation. Completion of the scale at
a two-week interval with reference to the same stressful event provided
test-retest reliability coefficients ranging from .54 to .81 with a mean
coefficient of .70 (Tobin et al., 1982).

In the first part of the present version, subjects were asked to
report two hypothetical events, one that would not be at all stressful
and a second that would be extremely stressful if it were to happen.
They then indicated these events at the appropriate points on a
stressfulness rating scale which ranged from not at all stressful (0) to
extremely stressful (100) with a rating of moderately stressful (50) as
the midpoint. Ratings of 25 and 75 reflected slightly stressful and very
stressful events, respectively. Finally, subjects provided a brief,
written description of an actual event which occurred during the past
year that had been at least moderately stressful along with its
corresponding rating on the same scale. Subjects were not limited in
terms of the type or nature of event they could report. Those subjects
who could not report an event that had occurred during the past year were
asked to describe the most recent stressful event beyond the one-year
period which met the stressfulness rating criterion of 50 or above. The
individualized stressor situations reported were then classified
according to a five-category event typology. Categories included
stressful events with conflicts of a predominantly interpersonal nature
(involving family members = 1; non-family member = 2), work-related
events (3), health-related events (4) and events with major conflict

areas other than that specified in the other four categories (5).

For the present sample, there was uneven representation of events across these categories with interpersonal events involving family members and work-related events comprising the bulk of stressful situations described, these being reported 41.3 and 30% of the time. Interpersonal events involving non-family members, health-related events and other/miscellaneous events were more evenly distributed, comprising 8, 10.7 and 10% of all reported events. Coding of these events by two independent judges yielded high interrater reliability with 94.7% of stressor situations being identically classified by both raters. Due to the small percentage of interpersonal events involving non-family members and the similar nature of the conflict to those involving family members ('ie.: interpersonal), the events in the first two categories were collapsed to form a general, category of stressful situations with an interpersonal problem as the major source of conflict. The events in categories 3, 4 and 5 were also collapsed to form a second major category of stressful events with non-interpersonal sources of conflict. This resulted in the interpersonal category comprising 49.3% of reported situations and non-interpersonal events accounting for 50.7% of all reported situations. In addition to the above classification, stressor situations were also classified along an acuteness/chronicity dimension. Events of short-lived or brief duration since their occurrence were classified as acute while those with a duration spanning a longer period of time were classified as chronic situations. In contrast to the interpersonal/non-interpersonal dimension, events classified along the acuteness/chronicity dimension were unevenly distributed with acute

events representing 60.4% of total events and chronic situations comprising 39.6% of total events reported.

In the second part of the inventory, subjects responded to the individual items concerning coping strategies indicating the extent to which they were used in the actual stressful situation previously described. Items were endorsed according to a 5-point anchored Likert scale ranging from I did not use this at all (1) to this is the main thing that I did (6). The sum of the ratings obtained across all items on each subscale provided a total score for each of the six coping strategies subscales.

Illness. A shortened version of the Seriousness of Illness Rating Scale (SIRS) (Wyler, Masuda & Holmes, 1968) provided an index of illness. The original self-report checklist consist. of 126 commonly recognized physical and mental symptoms and diseases with each item having been assigned a magnitude of severity weight based on separate ratings by medical and non-medical samples. A significant Spearman's rho of .95 indicated highly concordant rank ordering of disease items across the two groups (Wyler et al., 1968). Homogeneity of disease ranking was also found within each sample. A highly significant correlation of .99 was also obtained in a second study using two medical samples and further points to the reproducibility of the scale (Wyler, Masuda & Holmes, 1970).

For the present study, symptoms and diseases of obvious irrelevance to a male sample were deleted and a total of 118 items comprised the final checklist. The sum of severity weight scores corresponding to the symptoms or diseases endorsed provided a total illness score for each

subject.

In addition to the above questionnaires, items indexing the demographic variables of age, marital status, education and occupation were also included.

Procedure

Subjects who agreed to participate were contacted by telephone to arrange individual meetings with the experimenter at the subject's convenience for place and time. All questionnaires were then completed by the subject during the session.

<p align="center">Results</p>

Preliminary analyses

Findings from the CSI stressful event typology resulted in events being classified along two dimensions: interpersonal/non-interpersonal and acuteness/chronicity. Based on these findings, some preliminary analysis was necessary to determine if the type of stressful situation experienced had an effect on the coping style used to deal with the situation. A multivariate analysis of variance (MANOVA) was used to test this hypothesis. Interpersonal/non-interpersonal events and acute/chronic events were entered as independent variables and the six coping styles as the dependent variables. The results indicated no significant effects for the acuteness/chronicity dimension but revealed a significant multivariate main effect for the interpersonal/non-interpersonal dimension, F (6, 140) = 3.98, p < .001. Follow-up univariate F-tests revealed significant effects for problem-centered, cognitive restructuring, avoidance and emotion-centered coping styles. It was found that each of these four coping styles was used to a significantly

greater extent in the case of non-interpersonal events in contrast to interpersonal events (see Table 1).

A second MANOVA was run to test whether the type of stressful situation described (interpersonal/ non-interpersonal) was related to differences in other individual characteristics including age, total life change and resistance resources of hardiness and social support. The results revealed no significant effects indicating that subjects who differed in the type of stressful situation they reported experiencing did not significantly differ on age, life stress levels or resistance resources used to deal with the situation.

Table 2 presents the means and standard deviations for all variables for both interpersonal and non-interpersonal subgroups. The two subgroups are highly comparable on all variables from age to coping styles. The non-interpersonal subgroup is however characterized by slightly higher illness scores than the subgroup of individuals reporting stressful situations of an interpersonal nature (see Table 2).

In Table 3, intercorrelations among the variables used in the study are presented for the whole sample. With a total of 66 correlation coefficients in the same analysis, the multi-stage Bonferroni statistical procedure was used to determine the correct alpha level for testing the significance of correlation coefficients (Tabachnik & Fidell, 1983). The .05 alpha level originally chosen was divided by the total number of correlation coefficients to obtain a resulting level of significance of .00075, rounded off to .001. At this level of significance, 16 of the original correlations were significant. The next step in the analysis

Table 1

Univariate F-tests for significant multivariate interpersonal/non-interpersonal main effect

Variable	F	Significance of F	Interpersonal (n=69)		Non-interpersonal (n=71)	
			M	SD	M	SD
Problem-Centered	5.67	.019	21.55	10.86	26.04	11.98
Cognitive Restructuring	11.50	.001	16.38	9.44	21.97	10.68
Avoidance	5.77	.018	12.81	7.48	15.68	8.09
Social-Centered	.39	.535	18.64	10.72	17.51	10.92
Emotion-Centered	5.61	.019	13.76	6.38	16.26	7.51
Self-denigration	.62	.432	4.78	9.69	6.08	9.26

Table 2

Means and Standard Deviations for Interpersonal and Non-interpersonal
Subgroups

Variable	Interpersonal (n=69)		Non-interpersonal (n=71)	
	M	SD	M	SD
Age	60.21	3.61	60.63	3.37
Life Change	5.94	6.31	5.66	4.92
Hardiness	- .06	1.98	- .02	2.24
Availability	3.90	1.85	3.59	1.79
Satisfaction	5.41	.60	5.49	.47
Illness	730.47	767.94	824.37	647.54

consisted of dividing the original alpha level by the remaining number of
coefficients. This resulted in a .001 level of significance as in the
previous step and the end of the analysis.

The demographic variable of age did not correlate with any of the
variables in the study. A number of significant correlations were found
among measures of life stress, resistance resources and illness. As
predicted, total life change scores significantly correlated with illness
scores, yielding a product-moment correlation coefficient of .41. Life
change scores also significantly and positively correlated with a number
of coping styles that included avoidance, emotion-centered and self-
denigration, accounting for 4 to 12% of the shared variance. The second
group of findings focussed on the pattern of intercorrelations among the
resistance resources of hardiness, social support and coping styles. The
results revealed a number of significant positive correlations among
these variables. Hardiness significantly correlated with availability of
support (r = .27). A significant correlation of .32 was also found
between the two measures of support. Despite the significant findings,
less than 10% of shared variance was accounted for by correlations
between hardiness and availability of social support and between the two
measures of social support themselves. Correlation coefficients for the
coping resources ranged from .15 for avoidance and social-centered coping
strategies to .67 for cognitive restructuring and emotion management
coping techniques. The portion of shared variance among coping styles
was greater than for personality and social resources but was still low
enough to reject the notion of multicollinearity among variables (see
Table 3).

Table 3

Correlations for the total sample

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Age		-.11	-.12	-.11	.09	-.04	.01	-.14	-.07	-.11	-.19	.01
2. Total life change			-.13	.09	-.11	.24	.25	.27*	.21	.34*	.26*	.41*
3. Hardiness				.27*	.23	-.08	-.10	-.13	-.12	-.12	-.01	.04
4. Available support					.32*	.10	.17	-.07	.18	.18	.10	.07
5. Satisfaction support						.10	.12	-.21	.12	.08	-.07	-.13
6. Problem centered							.62*	.23	.57*	.48*	.23	.12
7. Cognitive restructuring								.39*	.48*	.67*	.24	.07
8. Avoidance									.15	.58*	.39*	.11
9. Social centered										.55*	.05	.13
10. Emotion centered											.30*	.09
11. Self-denigration												.16
12. Illness												

* $p \leq .001$

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Primary analyses

Based on the findings of a significant relationship between type of event and coping styles, a staged hierarchical multiple regression analysis was conducted for the interpersonal and non-interpersonal subgroups separately. Total illness scores were regressed on total scores for life change, hardiness, social and coping resources. For both subgroups, age was entered first followed by total life change, hardiness, the two social resources and the six coping styles. Higher order interaction terms of total life change with age and each of the resistance resources were entered in the third stage followed by second order interactions of age, total life change and resistance resources in the final stage. The use of a staged hierarchical regression model was chosen since it allowed for variables at each stage to compete with one another.

The regression analysis for the interpersonal subgroup revealed three variables as significant predictors of illness which accounted for 26% of the total variance in illness scores. Total life change emerged as the strongest predictor of illness, correlating .39 with illness and accounting for 15% of the total variance in illness scores. This effect was revealed to be highly significant at the .001 level, F (1, 67) = 12.38. Hardiness emerged as the second strongest predictor of illness, accounting for an additional 6% of the explained variance in illness scores, increasing R^2 to .22. This increment in variance was found to be significant at the .02 level, F (1,67) = 5.52 (see Table 4). The third and last predictor to reach significance consisted of an interaction between total life change and the coping resource of self-denigration.

The inclusion of this variable increased R^2 from .22 to .26 and accounted for a significant increase of 4.6% in the total variance in illness scores, F (1,67) = 4.20, p < .04 (see table 4).

In addition to testing whether added subsets of variables significantly increase the explained variance in illness scores, the significance of the unique contribution of each variable to the variance in illness scores was also assessed. The results from these tests indicated that the unique contribution of each of the three variables was significant with the effect for total life change being the strongest, F (1,67) = 13.83, p < .01. The effects for hardiness and the interaction between total life change and self-denigration were highly similar in relation to their magnitude and significance. Although the unique contribution of hardiness was slightly larger than that of the life change X self-denigration interaction, F (1,67) = 5.59 vs 4.20, both effects were significant at the .05 level.

The analysis of the responses for the non-interpersonal subgroup also revealed three variables as significant predictors of illness, accounting for 23% of the variance in illness scores. Similar to the results of the analysis for the interpersonal subgroup, total life change emerged as the strongest predictor, once again accounting for a significant 15% of the variance in illness scores, F (1,66) = 12.29, p < .001. The correlation between total life change and illness scores of .39 further parallels that found by the regression analysis for the interpersonal subgroup. Satisfaction with one's social support emerged as the second strongest predictor of illness and accounted for an additional 3% of the variance in illness scores although this increase

Table 4

Regression Coefficients of Illness on Life-Change, Resistance Resources
and Their Interaction Terms

Predictor	Beta	R	R^2	$\triangle R^2$	F Change	Significance F Change
Interpersonal group						
Life Change	.3900	.39	.15	.152	12.38	.001
Hardiness	.2523	.46	.21	.064	5.52	.022
Life Change X						
Self-denigration	.2601	.51	.26	.046	4.20	.044
Non-interpersonal Group						
Life Change	.3888	.39	.15	.151	12.29	.001
Satisfaction	-.1885	.43	.19	.035	2.95	.090
Life Change X						
Availability	.3396	.47	.22	.039	3.36	.071
Whole group						
Life Change	.3874	.39	.15	.150	24.90	.000
Life Change X						
Availability	.2434	.41	.17	.022	3.69	.057
Life Change X						
Satisfaction	-1.3690	.45	.20	.033	5.73	.018

failed to reach significance. Parallel to the results for the interpersonal subgroup, an interaction term emerged as the third significant predictor of illness. This consisted of an interaction between total life change and availability of social support which accounted for an additional 4% of the explained variance in illness scores. This interaction however failed to add significantly to the variance in illness scores already explained by total life change and satisfaction with one's support (see Table 4).

Significance tests to assess the unique contribution of each predictor to the explained variance in illness scores revealed a significant effect for one variable and a trend towards significance for a second variable. The unique contribution of total life change was found to be significant at the .01 level, F (1,66) = 13.38, whereas the interaction of life change with availability of one's social supports showed a trend towards significance. The unique variance added to R^2 by satisfaction with one's social supports was not found to be significant.

A third staged hierarchical multiple regression analysis was performed on the total sample in order to test the moderating effects of hardiness and social resources on self-reported life stress and illness without the influence of coping strategies. Similar to the previous two regressions, age was entered first followed by total life change, hardiness and social resources in the second stage. First and second order interactions were sequentially entered in the third and fourth stages.

The results for this analysis indicated three variables as significant predictors of illness, accounting for 20% of the explained

variance in illness scores. In line with the previous two regression analyses, a correlation of .39 was found between total life change and illness. This variable emerged as the strongest predictor, entering the equation first and accounting for a significant 15% of the explained variance in illness scores, F (1,138) = 24.90, p < .000. In contrast to the two previous analyses, two interaction terms comprising total life change and each of the social resources resulted as significant predictors of illness scores. The interaction between total life change and availability of social support emerged as the second strongest predictor, accounting for an additional 2% of the variance in illness scores. This increase showed a trend toward significance, F (1, 138) = 3.69, p < .06. A 3% increase in R^2 was accounted for by the interaction between total life change and satisfaction with one's social support, the last significant predictor to enter the regression equation. This increase was found to be significant at the .02 level, F (1,138) = 5.73.

The results from the significance tests assessing each predictor's contribution of unique variance to R^2 paralleled those obtained for incremental F-tests. Specifically, these results indicated the strongest effect for life change scores followed by a weaker, but still significant effect, for the interaction between total life change and satisfaction with one's social support, F (1,138) = 26.33, p < .01 versus F (1,138) = 5.75; p < .05.

Additional analyses

· In order to examine the direction of the significant interactions found in the regression analyses, median splits were used to divide the sample into low and high total life change groups. For each subgroup,

simple bivariate regressions were calculated between illness and the appropriate resistance resource in each of the significant interactions.

A significant interaction between total life change and self-denigration was found for the interpersonal subgroup. The results from the bivariate regressions indicated that self-denigration functions in a way opposite to that predicted. Under conditions of low stress, the findings failed to reach significance and indicated that illness scores increase as the tendency to self-denigrate increases. This relationship however did not hold for conditions of high stress where it was found that illness scores significantly decrease as the tendency to self-denigrate increases, $r = .34$, $p < .05$.

Bivariate regressions between availability of support and illness scores for subjects in the non-interpersonal subgroup were also evaluated in conditions of high and low stress. Although not significant, these results indicated that under conditions of low stress, illness scores tend to decrease as available support increases. However, for high stress levels, the findings revealed a direct and positive relationship between availability of social support and illness with availability of support increasing as illness increases.

The findings for the availability of support and illness bivariate regression for the group as a whole replicated the pattern of results found for the non-interpersonal subgroup. Under low stress levels, illness scores decrease as availability of support increases. Although not significant, a direct and positive relationship was also revealed between available support and illness under conditions of high stress with availability of support increasing as illness increases.

The results for the support satisfaction and illness bivariate regressions were in the predicted direction in conditions of low and high stress but failed to reach significance. A direct and positive relationship was found between support satisfaction and illness for subjects experiencing low levels of life stress. Mean symptomatology scores tended to increase as satisfaction with one's support also increased. An opposite pattern of results was revealed for subjects experiencing relatively high stress levels. Lower mean illness scores were associated with increases in support satisfaction scores.

Discussion

The purpose of the present study was to examine the buffering role of a number of psychological variables in the relationship between life stress and illness reports. These relationships were investigated in a group of older Anglophone males. The psychological variables examined for their buffering effects on life stress included the personality disposition of hardiness, availability of social support, satisfaction with one's available supports and coping strategies.

In general, results from the present study provide support for the well-established association between life events and reported illness. However, the present findings failed to provide consistent evidence in support of the buffering hypothesis for the variables of hardiness, social support and coping resources in relation to the association between life stress and illness reports. Satisfaction with one's available supports for the group as a whole was found to be the only variable to buffer the adverse effects of life events in conditions of high stress. The difference in direction between the beta weight and the

correlation coefficient of the interaction between total life change and support satisfaction also pointed to this variable as a suppressor variable for the whole group. This variable apparently suppresses the variance in other predictor variables that is irrelevant to the prediction of illness scores (Tabachnick & Fidell, 1983). The pattern of intercorrelations found between this variable and other predictors for data obtained from the whole group, implies that the interaction between life change and support satisfaction may be suppressing variance in total life change. In its interaction with life changes, support satisfaction may be suppressing the effects of the adverse yet irrelevant aspects of life events on self-reported symptomatology that may become active under conditions of dissatisfaction with one's supports. At this point, additional research is necessary to further delineate and clarify this relationship.

Other psychological variables also interacted with total life change to influence symptomatology scores but the results refuted the original hypotheses. These variables included availability of support for the non-interpersonal and whole groups and the coping style of self-denigration for the interpersonal subgroup. Specifically, findings revealed that increases in total symptomatology reported were associated with increases in the number of supports available to the individual. Increases in the tendency to self-denigrate when confronted with interpersonal stressful situations were also associated with lower total illness scores. In addition, lack of support for the buffering hypothesis was evidenced by the main effects revealed for the variables of hardiness and satisfaction with one's available supports for the

interpersonal and non-interpersonal subgroups, respectively. Although these findings imply that hardiness and support satisfaction have beneficial effects on health, they function to influence the individual's illness state independently of life stress levels.

Results from the three regression analyses were consistent in their findings regarding life events in relation to illness. Total life change scores were found to be the strongest predictor of illness, accounting for the largest portion of criterion variance (15%). These results are consistent with earlier findings in the life stress literature which have commonly indicated a low but positive relationship between life stress and incidence of physical illness in general (Garrity et al., 1977, 1978; Kobasa, 1979a; Kobasa et al., 1979; Matheny & Cupp, 1983; Wyler et al., 1971). The results obtained in the present study further suggest that the total magnitude of life change, whether positive or negative, has deleterious effects on one's health and is a critical factor in accounting for the incidence of self-reported illness in older males. This relationship holds even when the effects of other factors such as personality, social support and coping styles have been taken into account.

On a methodological level, the present findings provide support for the usefulness of a subjective weighting procedure for life events scales in the prediction of illness (Sarason et al., 1978). In addition, these same findings provide support for the comparable predictive ability of life event scales based on subjectively derived magnitude ratings in relation to the incidence of subsequent illness. This is in comparison to scales based on objectively derived magnitude ratings or simple counts

of life events (Grant et al., 1978; Rabkin & Struening, 1976).

Contrary to original prediction, hardiness failed to show a buffering effect on life stress. The absence of a buffering effect for hardiness was consistently replicated in the three regression analyses. Results for the interpersonal subgroup did however indicate a main effect for hardiness which substantiate earlier findings on hardiness (Kobasa et al., 1982; Kobasa & Puccetti, 1983). The present finding implies that hardiness has a health-promoting effect and functions as a resistance resource for self-reported symptomatology at all levels of interpersonal life stress. Specifically, a main effect for hardiness implies that individuals who are hardy will generally tend to have lower illness scores regardless of the amount of interpersonal life stress they experience.

The lack of a buffering effect of hardiness on life stress was unexpected based on the evidence in support of such an effect reported by Kobasa and her colleagues (Kobasa et al., 1982; Kobasa, Maddi, Puccetti & Zola, 1985). A number of factors may help to account for the present findings. The lack of comparability between the life stress measures used in Kobasa's research and those used in the present study may have influenced the results. Although both studies used life event scales based on a weighting procedure for scoring life events, Kobasa's life stress measure was based on an objectively derived weighting procedure in contrast to the present study which used a life stress scale based on a subjectively derived weighting scheme. Sample differences could have been an additional factor to possibly influence the findings. The present sample was both smaller and older than that used in Kobasa's

studies. With the use of a small and homogeneous sample, researchers are at risk of obtaining a set of scores that may not be reflective and representative of those in the general population. Earlier research on hardiness was conducted on samples with mean ages lower than that of the present sample. It is possible that the disposition of hardiness may be differentially represented in samples of varying age groups. Additional research on the hardiness construct should be carried out with larger, more heterogeneous samples of varying ages before the findings of the present study can be interpreted and accepted as conclusive evidence refuting the buffering hypothesis. In addition, the inconsistent findings characterizing research in this still relatively new area warrant the need for further investigations.

The results obtained for the social support measures substantiate a multidimensional conceptualization of support and the differential health-related effects of quantitative and qualitative dimensions of social support. However, the findings obtained in the present study are inconsistent with the empirical evidence found for the different dimensions of social support.

Availability of social support served as a quantitative index of support in the present study. Two interactions which were comprised of available support and total life change emerged as significant predictors of total illness scores. These findings were obtained for the group as a whole and for subjects in the non-interpersonal subgroup and showed a trend towards significance in both cases. The results indicated a positive relationship between availability of support and illness scores under conditions of high stress. This was characterized by increases in

available supports as illness scores increased. A different pattern of findings emerged under conditions of low stress with illness scores decreasing as the number of available supports increased. These results are inconsistent with findings from earlier studies that have distinguished between the resulting health-related effects of quantitative and qualitative aspects of social support (Sandler & Barrera, 1984; Sarason et al., 1982; Schaefer et al., 1981). Such studies have generally found positive health-related effects for qualitative dimensions of social support. Satisfaction with one's supports or the perceived value of the individual's support systems are variables which have generally been found to lessen the impact of experienced life stresses and to alter the individual's susceptibility to illness. These same studies have generally failed to replicate the positive health-related effects of support satisfaction for quantitative measures of support such as support network size or the number of available supports.

Based on the social support literature, it was hypothesized that availability of support would have no effect on the relationship between life stress and reported illness. The findings from the present study were contrary to the original prediction. It was found that availability of support is associated with lower illness scores under conditions of low stress. A direct and positive relationship emerged between available support and illness scores under high stress. The present findings suggest that having social supports available may help to alter the individual's risk to the development of illness under conditions of low stress. However, the number of supports available seems to have an

adverse impact on health in the face of high stress.

The simultaneous assessment of life stress, social support and symptomatology as well as the resulting correlational nature of the findings render it difficult to elucidate the process that may be underlying the observed effects. The direction of the effects are difficult to untangle. For instance, the positive relationship obtained between available support and self-reported illness under high stress may be reflective of the individual's seeking of social support when in ill health. Thus, an increase in the individual's available supports can be due to the physical state of the individual.

The pattern of findings obtained for support satisfaction substantiated earlier results in support of the positive effects of qualitative aspects of social support on health (Sandler & Barrera, 1984; Sarason et al., 1982; Schaefer et al., 1981). Satisfaction with one's available supports was the only variable in the present study to buffer the negative effects of life stress in relation to reported illness. This finding was observed for the group as a whole in which the effects of coping styles were excluded.

Although support satisfaction emerged as a predictor that significantly increased the explained variance in illness scores, results from follow-up analyses indicated that the effects of support satisfaction were in the predicted direction but not significant under conditions of both low and high stress. Evidence favoring the buffering hypothesis was demonstrated by the association of lower total mean illness scores and higher support satisfaction under high stress levels. This was in contrast to the direct and positive relationship observed

between support satisfaction and illness for subjects experiencing low levels of life stress. These findings imply that satisfaction with one's supports has its most health-preserving effects when stress mounts.

More importantly, the present findings may be a first step to help elucidate the mechanisms or processes responsible for the positive health-related effects of support satisfaction. The results obtained in the present study as well as those obtained in earlier research focussing on the distinction between quantitative and qualitative dimensions of support, emphasize a link between beneficial effects on health and the perception of one's supports as positive and fulfilling. The individual that perceives himself as being surrounded by satisfying social ties may be better equipped to handle life stresses in contrast to individuals who lack social ties or perceive them as negative and unsatisfying. The perception of one's social ties as negative could lead to feelings of inadequacy, incompetence and even low morale or depression. In turn, such negative feelings could adversely affect an individual's perceived ability to cope with life stresses and in turn alter his susceptibility to the development of illness. In contrast, the perception of one's available supports as positive and satisfying can help bolster the individual's ability to cope with stressful situations. Such a positive perception may make one more receptive to other individuals' knowledge that could be useful in providing a solution for the stressful situation. The basic encouragement and affection that is offered by supportive others can also help to reduce the emotional distress associated with the stressful situation. This effect could function to help transform the individual's perception of stressful events as less stressful.

Alternatively, such an effect can help to reduce the physiological strain resulting from the experienced stress and in turn help buffer the deleterious effects of stress on the individual's physiological processes.

Only one of the coping styles used in the present study emerged as a significant predictor of illness. This consisted of an interaction between total life changes and self-denigration for subjects that reported a stressful event of an interpersonal nature. Follow-up analyses of this interaction however revealed the effect to be opposite to that predicted in the original hypothesis. Specifically, the present findings indicated that illness scores increased as the tendency to self-denigrate increased under conditions of low stress. An opposite relationship was found under high stress which was characterized by decreases in illness scores as self-denigration scores increased.

The present finding can be explained within the context of a transactional view of coping. This conceptual paradigm emphasizes that the effectiveness of coping is based on the achievement of a successful person-environment fit and the successful match between the coping style used and the nature of the environmental stressor encountered (Wong & Reker, 1984). The present results indicate that the individual's use of self-denigration or self blame as a coping strategy can have health-preserving effects against the deleterious effects of stress in situations involving conflicts of an interpersonal nature. This relationship is consistent across conflicts involving family or non-family members. The findings suggest that individuals who experienced an interpersonal conflict may be assuming the guilt or blame

for the situation's occurrence. The beneficial health-related effects of such a reaction may be due to a fulfilling effect resulting from the individual's acceptance of their possible causal role in relation to the conflict being experienced.

The explanation presented in this paper should only be accepted as tentative since other qualitative dimensions of stressful events that may be potentially important underlying determinants of the individual's behavior were not assessed. Data such as the original source of the conflict (ie: did the individual elicit or cause the situation) or its controllability on the part of the individual were not considered. Such factors may have provided additional information that may have helped to elucidate and delineate more clearly the processes underlying the individual's choice of coping strategy(ies) to deal with problematic situations. The lack of more detailed data about the situation in relation to the stressful events described by the subjects may have precluded any other effects of coping styles on life stress and illness from emerging. This lack of specificity may have also accounted for the absence of findings for coping styles for the non-interpersonal subgroup. Factors not considered in the present study may have been operative in influencing the individual's choice of coping strategy(ies) to deal with a stressful situation.

Overall, the significant findings found for the coping strategy of self-denigration substantiate the current view on coping. This theoretical perspective maintains that coping strategies such as denial, avoidance and even acceptance of the problem can be effective ways of coping in addition to/or instead of attempts at mastering the problematic

situation itself or the emotions resulting from that situation (Lazarus & Folkman, 1984b). Specifically, the present results indicated that the use of a coping strategy consisting of self-blame was effective in buffering the deleterious effects of stressful situations involving an interpersonal conflict. This was evidenced by the lower illness scores observed for those individuals who exhibited higher self-denigration scores. In addition, the present results fail to support the view of earlier psychoanalytically oriented paradigms on coping which categorized coping strategies into an adaptive/mature versus maladaptive/primitive classification scheme. The findings obtained for the coping technique of self-denigration provide evidence that a coping technique which would commonly be viewed as maladaptive can be effective in buffering the adverse effects of life stress on one's health.

A main goal of the present investigation was the assessment of possible interactive or joint effects of a number of moderator variables on the life stress-illness relationship. This was accomplished by the inclusion of two-way interaction terms in the last stage of variables in all three regression analyses. These terms consisted of interactions between total life change scores and moderator variables that were appropriate to the analysis being done.

Results from the three regression analyses failed to indicate the presence of interactive effects of any pair of moderator variables with life changes on the incidence of self-reported illness. The present findings contradict those obtained by Kobasa & Puccetti (1983). The results from that study revealed that an interaction between hardiness and certain elements of social support had positive effects on health as

reflected by lower illness scores.

The present findings suggest that those moderator variables that interacted with life stress to influence reported illness exerted their effects independently of the effects of other moderator variables. Such findings imply that those interactions account for a portion of variance in illness scores not shared with other variables. Further, the relative absence of interactive effects among moderator variables suggests a cumulative, yet independent effect of moderator variables on the relationship between life stress and illness reports. This explanation suggests important yet independent effects of the interactions of life stress with personality, social support and coping variables in the prediction of illness. If there is an interactive effect, this effect is in relation to life stress and not other moderator variables. The present findings are in line with those obtained in a recent study by Kobasa and her colleagues (1985). This study investigated the importance of multiple resistance resources in the maintenance of health. The resources of hardiness, social support and exercise were evaluated for their buffering effects on self-reported illness. The findings indicated that the more resources one possesses, the less the incidence of illness, thus supporting a cumulative effect of moderator variables on the association between life stress and illness reports.

Research on the joint effects of moderator variables on the relationship between life stress and illness reports is still in the preliminary and exploratory stages. The absence of positive findings in support of interactive effects among moderator variables in the present study are at best tentative and strongly suggest the need for additional

research.

There are a number of methodological shortcomings of the study that could help account for the present pattern of results and which limit the generalizability and validity of the findings. The small and relatively homogeneous subject sample is one factor which limits the validity of the present findings. Such a small sample could have also influenced the pattern of results in the general direction of non-significance. A replication of the present study with a larger and more heterogeneous sample is needed in order to help establish the reliability of the present results. Similar findings from such studies would also provide additional support for the validity and generalizability of results to an older population in general.

Methodological weaknesses at the measurement level could have also influenced the obtained results and should be considered in future research. One major methodological drawback deals with the use of contaminated life event measures. Although life changes resulted as the most important significant predictor of illness, the substantive correlation found between total life change and reported illness may have been confounded by various forms of contamination in the life event scale used in the present study.

Criterion-related contamination may have been one factor that played an important and influential role in the resulting relationship between life events and illness reports. Events which may themselves be consequences of the individual's illness state (ie: being unemployed) are often included in life event measures and may be a source of contamination for the results (Rabkin & Struening, 1976). Other life

event items directly refer to the respondent's physical or psychological condition. For such individuals, their concurrent health provides a direct source of contamination for their life event scores (Schroeder & Costa, 1984). These types of items represent a confounding of the individual and the dependent variable since the events may be indicators of the illness criterion to be predicted and should be eliminated from life events measures. Such items failed to be dropped from the life stress measure used in this study. The failure to eliminate such items may have influenced the resulting pattern of findings by inflating the correlation between total life change and illness scores.

In addition to criterion-related contamination, another source of confounding stems from the inclusion of social support related items in life event measures. Cross-sectional studies which measure life events and social support simultaneously may be methodologically weak since some of the items on life event measures may be reflective of changes in the individual's social support systems (ie.; divorce as a loss of support, marriage as a gain in social support). Cross-sectional studies which use life event scales including such items provide an inadequate test of the buffering hypothesis since the effects of life events and support are confounded with one another (Thoits, 1982). The inconsistent results found for social support in the present study may in part be due to the failure to eliminate items from the life stress measure which were confounded with changes in the individual's social support systems.

The last methodological issue deals with the overall design of the study. The present findings have indicated the implication of life stress in the incidence of self-reported illness and the involvement of

various psychological variables.in the life stress-illness link. However, the retrospective design of the study has provided data that is correlational in nature and which cannot be subjected to causal interpretation. A longitudinal study would resolve the limitations inherent to a cross-sectional design. Causal interpretation of the data is possible with the completion of measures of life stress, illness and psychological resources at different points in time. In order for life stress to be interpreted as being causally related to level of symptomatology reported, symptomatology levels assessed at the same time as life stress levels must be covaried out. Such a procedure would imply the use of illness change scores from time 1 to time 2 as the dependent variable. A positive relationship between life stress levels and illness scores could then be directly attributed to the causal influence of life stresses on the subsequent incidence of pathology.

The use of such a prospective design would also help to eliminate the confounding that is commonly found between measures of life stress and other psychological resources in cross-sectional studies. More specifically, assuming, that the adverse effects of life events and loss of social supports develop over time to influence the subsequent incidence of illness; levels of social support should be evaluated prior to the assessment of illness. The use of such a procedure would rule out any confounding between life stress and social support measures and would constitute an adequate test of the buffering hypothesis for social support.

Overall, the present investigation has provided evidence supporting the adverse effects of life changes and the positive effects of hardiness

and social support on the incidence of illness reports in older males. However, inconsistent evidence was reported for the moderating effects of hardiness, social support and coping strategies on the relationship between life stress and illness reports. An absence of joint or interactive effects among these moderator variables point to the independent effects of these psychological variables on the life stress and illness link. However, the preliminary nature of research in this area as well as the methodological weaknesses inherent in the present study warrant the need for further investigation. Future studies evaluating the effects of multiple resistance resources are needed so as to increase our understanding of the interdependence among such variables in their mediation of the life stress and illness relationship.

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Appendix A

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 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.

Life Events	0 to 6 Mo	7 to 12 Mo	Extremely negative	Moderately negative	Somewhat negative	No impact	Somewhat 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
5. Death of a 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   __ __ -3 -2 -1 0 +1 +2 +3

11. Changed work situa-
    tion (different work
    responsibility, major
    change in working con-
    ditions, working hours)   __ __ -3 -2 -1 0 +1 +2 +3

12. New job   __ __ -3 -2 -1 0 +1 +2 +3

13. Serious illness or in-
    jury 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

14. Sexual difficulties   __ __ -3 -2 -1 0 +1 +2 +3

15. Trouble with emplo-
    yer (in danger of
    losing job, being
    suspended, demoted,
    etc.,)   __ __ -3 -2 -1 0 +1 +2 +3

16. Trouble with in-laws   __ __ -3 -2 -1 0 +1 +2 +3

17. Major change in finan-
    cial status (a lot
    better off or a lot
    worse off)   __ __ -3 -2 -1 0 +1 +2 +3

18. Major change in close-
    ness of family members
    (increased or decresed
    closeness)   __ __ -3 -2 -1 0 +1 +2 +3

19. Gaining a new family
    member (through birth,
    adoption, family member
    moving in, etc.,)   __ __ -3 -2 -1 0 +1 +2 +3

20. Change of residence   __ __ -3 -2 -1 0 +1 +2 +3

21. Marital separation
    from mate (due to
    conflict)   __ __ -3 -2 -1 0 +1 +2 +3

22. Major change in
    church activities
    (increased or decreased
    attendance)   __ __ -3 -2 -1 0 +1 +2 +3

23. Marital reconciliation
    with mate   __ __ -3 -2 -1 0 +1 +2 +3

24. Major change in number
    of arguments with spouse
    (a lot more or a lot
    less arguments)   __ __ -3 -2 -1 0 +1 +2 +3

25. 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

26. Major change in usual
    type and/or amount of
    recreation   __ __ -3 -2 -1 0 +1 +2 +3

27. Borrowing more than
    $10,000 (buying home,
    business, etc.,)   __ __ -3 -2 -1 0 +1 +2 +3

28. Borrowing less than
    $10,000 (buying car,
    tv, getting school
    loan, etc.,)   __ __ -3 -2 -1 0 +1 +2 +3

29. Being fired from job   __ __ -3 -2 -1 0 +1 +2 +3

30. Major personal illness
    or injury   __ __ -3 -2 -1 0 +1 +2 +3

31. Major change in social
    activities, eg.: parties,
    movies, visiting (increased
    or decreased participation) __ __ -3 -2 -1 0 +1 +2 +3

32. Major change in living
    conditions of family
    (building new home,
    remodeling, deterio-
    ration of home, neigh-
    borhood, etc.,)   __ __ -3 -2 -1 0 +1 +2 +3

33. Divorce   __ __ -3 -2 -1 0 +1 +2 +3

34. Serious injury or
    illness of close friend   __ __ -3 -2 -1 0 +1 +2 +3

35. Retirement from work   __ __ -3 -2 -1 0 +1 +2 +3

36. Son or daughter leaving
    home (due to marriage,
    college, etc.,)   __ __ -3 -2 -1 0 +1 +2 +3

37. Separation from spouse
    (due to work, travel,
    etc.,)   __ __ -3 -2 -1 0 +1 +2 +3

38. Engagement   __ __ -3 -2 -1 0 +1 +2 +3

Other recent experiences which have had an impact on your life.
List and rate.

39. _____   __ __ -3 -2 -1 0 +1 +2 +3

40. _____   __ __ -3 -2 -1 0 +1 +2 +3

41. _____   __ __ -3 -2 -1 0 +1 +2 +3

Appendix B
The Hardiness Questionnaire

Instructions: The items below consist of attitudes with which you may or
may not agree. As you will see, many of the items are
worded very strongly. This is so you can decide the
DEGREE to which you agree or disagree. Please indicate
your reaction to each item according to the following
scheme:

0 = Not at all true
1 = A little true
2 = Quite true
3 = Completely true

Please read the items carefully. Be sure to answer all of
the items on the basis of the way you feel now. Don't
spend too much time on any one item.

1. I wonder why I work at all.
0   1   2   3

2. The human's fabled ability to think is not really such an advantage.
0   1   2   3

3. The more able person has a greater responsibility for the welfare of
the less able.
0   1   2   3

4. Politicians control our lives.
0   1   2   3

5. I live from day to day without trying to fit my activities into a
pattern.
0   1   2   3

6. Most of life is wasted in meaningless activity.
0   1   2   3

7. The attempt to know yourself is a waste of effort.
0   1   2   3

8. Public supported medical care is the right of everyone.
0   1   2   3

9. Most of my activities are determined by what society demands.
0   1   2   3

10. When I talk to a doctor, I want him to give me a detailed
explanation of any illness I have.
0   1   2   3

0 = Not at all true
1 = A little true
2 = Quite true
3 = Completely true

11. If you have to work, you might as well choose a career where you deal with matters of life and death.
    0   1   2   3

12. I am really interested in the possibility of expanding my consciousness through drugs.
    0   1   2.   3

13. Violence never is justified because it harms the doer and the receiver.
    0   1   2   3

14. There are only certain strict paths to follow if one is to be successful in our society.
    0   1   2   3

15. It doesn't bother me to put aside what I've been doing without finishing it.
    0   1   2   3

16. I find it difficult to imagine enthusiasm concerning work.
    0   1   2   3

17. Life is empty and has no meaning in it for me.
    0   1   2   3

18. The young owe the old complete economic security.
    0   1   2   3

19. Everyone is out to manipulate you toward his own ends.
    0   1   2   3

20. I have no use for theories which are only good guesses and are not closely tied to facts.
    0   1   2   3

21. It doesn't matter if people work hard at their jobs; only a few bosses profit.
    0   1   2   3

22. The belief in individuality is only justifiable to impress others.
    0   1   2   3

23. From each according to his ability; to each according to his need.
    0   1   2   3

> 0 = Not at all true
> 1 = A little true
> 2 = Quite true
> 3 = Completely true

24. Often when I interact with others, I feel insecure over the outcome.
    0   1   2   3

25. Each day I check the weather report so that I will know what to wear.
    0   1   2   3

26. Ordinary work is too boring to be worth doing.
    0   1   2   3

27. I wish I could be carried away by a revelation, as apparently happened to some historically important persons.
    0   1   2   3

28. A retired person should be free of all taxes.
    0   1   2   3

29. I try to avoid close relationships with people so that I will not be obligated to them.
    0   1   2   3

30. I tend to start right in on a new task without spending too much time thinking about the best way to proceed.
    0   1   2   3

31. I don't like my job or enjoy my work; I just put in my time to get paid.
    0   1   2   3

32. I long for a simple life in which body needs are the most important things and decisions don't have to be made.
    0   1   2   3

33. Ownership of property beyond providing for one's modest comfort and security should be illegal.
    0   1   2   3

34. Those who work for a living are manipulated by the bosses.
    0   1   2   3

35. My work is carefully planned and organized before it is begun.
    0   1   2   3

36. I find it hard to believe people who actually feel that the work they perform is of value to society.
    0   1   2   3

```
0 = Not at all true
1 = A little true
2 = Quite true
3 = Completely true
```

37. Unfortunately, people don't seem to know that they are only creatures after all.

    0   1   2   3

38. Government should guarantee jobs for all.

    0   1   2   3

39. No matter how hard you work, you never really seem to reach your goals.

    0   1   2   3

40. When I need one thing at the store, I get it without thinking what else I may need soon.

    0   1   2   3

41. If a job is dangerous, that makes it all the better.

    0   1   2   3

42. The most exciting thing for me is my own fantasies.

    0   1   2   3

43. To achieve freedom from want is a large enough goal for anyone.

    0   1   2   3

44. I feel no need to try my best at work, for it makes no difference anyway.

    0   1   2   3

45. I don't like situations that are uncertain.

    0   1   2   3

46. One who does one's best should expect to receive complete economic support from one's society.

    0   1   2   3

47. When you marry and have children you have lost your freedom of choice.

    0   1   2   3

48. I like to be with people who are unpredictable.

    0   1   2   3

49. New laws should not be passed if they damage one's income.

    0   1   2   3

0 = Not at all true
1 = A little true
2 = Quite true
3 = Completely true

50. My parents imposed their wishes and standards on me too much.
    0   1   2   3

51. I won't answer a person's questions until I am very clear as to what he's asking.
    0   1   2   3

52. There are no conditions which justify endangering the health, food and shelter of one's family or one's self.
    0   1   2   3

53. I am not sure I want to stay married because I don't want to feel tied down.
    0   1   2   3

54. I don't keep an accurate account of my financial resources.
    0   1   2   3

55. Wealth and fame are less important than knowing one has an assured minimal social security.
    0   1   2   3

56. Thinking of yourself as a free person leads to great frustration and difficulty.
    0   1   2   3

57. It upsets me to go into a situation without knowing what I can expect from it.
    0   1   2   3

58. Pensions large enough to provide for dignified living are the right of all when age or illness prevents one from working.
    0   1   2   3

59. No matter how hard I try, my efforts will accomplish nothing.
    0   1   2   3

60. Before I ask a question, I figure out exactly what I know already and what it is I need to find out.
    0   1   2   3

61. Steady saving is the best road to economic security.
    0   1   2   3

```
0 = Not at all true
1 = A little true
2 = Quite true
3 = Completely true
```

62. I very seldom make very detailed plans.
    0   1   2   3

63. When I take a vacation, I like to go without detailed plans or a time schedule.
    0   1   2   3

64. Often I do not really know my own mind.
    0   1   2   3

65. I don't enjoy confused conversations where people are unsure of what they mean to say.
    0   1   2   3

66. I like the adventure of going into a new situation without knowing what might happen.
    0   1   2   3

67. Once in a while I like to take a chance on something that isn't sure -- like gambling.
    0   1   2   3

Instructions: Please indicate which of the two statements provided in each item listed below BETTER represents your attitude.

1. __ a. Many of the unhappy things in people's lives are partly due to bad luck.
   __ b. People's misfortunes result from the mistakes they make.

2. __ a. One of the major reasons why we have wars is because people don't take enough interest in politics.
   __ b. There will always be wars, no matter how hard people try to prevent them.

3. __ a. In the long run, people get the respect they deserve in this world.
   __ b. Unfortunately, an individual's work often passes unrecognized no matter how hard he tries.

4. __ a. The idea that most teachers are unfair to students is nonsense.
   __ b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

5. __ a. Without the right breaks one cannot be an effective leader.
   __ b. Capable people who fail to become leaders have not taken advantage of their opportunities.

6. __ a. No matter how hard you try some people just don't like you.
   __ b. People who can't get others to like them don't understand how to get along with others.

7. __ a. I have often found that what is going to happen will happen.
   __ b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

8. __ a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
   __ b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

9. __ a. Becoming a success is a matter of hard work; luck has little or nothing to do with it.
   __ b. Getting a good job depends mainly on being in the right place at the right time.

10. __ a. The average citizen can have an influence in government decisions.
    __ b. This world is run by the few people in power, and there is not much the little guy can do about it.

11. __ a. When I make plans I am almost certain that I can make them work.
    __ b. It is not always wise to plan too far ahead because many things turn out to be a matter of good and bad fortune anyway.

12. __ a. In my case getting what I want has little or nothing to do with luck.
    __ b. Many times we might just as well decide what to do by flipping a coin.

13. __ a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
    __ b. Getting people to do the right thing depends upon ability; luck has little to do with it.

14. __ a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand nor control.
    __ b. By taking an active part in political and social affairs, the people can control world events.

15. __ a. Most people don't realize the extent to which their lives are controlled by accidental happenings.
    __ b. There is really no such thing as "luck".

16. __ a. It is hard to know whether or not a person really likes you.
    __ b. How many friends you have depends on how nice a person you are.

17. __ a. In the long run, the bad things that happen to us are balanced by the good ones.
    __ b. Most misfortunes are the result of lack of ability, ignorance, laziness or all three.

18. __ a. With enough effort we can wipe out political corruption.
    __ b. It is difficult for people to have control over things politicians do in office.

19. __ a. Sometimes I can't understand how supervisors arrive at work evaluations.
    __ b. There is a direct connection between how hard I work and the evaluations I get.

20. __ a. Many times I feel that I have little influence over the things that happen to me.
    __ b. It is impossible for me to believe that chance or luck plays an important role in my life.

21. __ a. People are lonely because they don't try to be friendly.
    __ b. There's not much use in trying too hard to please people, if they like you, they like you.

22. __ a. What happens to me is my own doing.
    __ b. Sometimes I feel that I don't have enough control over the direction my life is taking.

23. __ a. Most of the time I can't understand why politicians behave the
       way they do.
    __ b. In the long run, the people are responsible for bad government
       on a national as well as on a local basis.

Appendix C
The Social Support Questionnaire

Instructions:

The following questions ask about people in your environment who provide you with help or support. Each question has two parts. For the first part, list all the people you know, excluding yourself, whom you can count on for help or support in the manner described. Give the person's initials and their relationship to you (see example). Do not list more than one person next to each of the letters beneath the question.

For the second part, circle how satisfied you are with the overall support you have.

If you have no support for a question, check the words "No one", but still rate your level of satisfaction. Do not list more than nine persons per questions.

Please answer all questions as best you can. All your responses will be kept confidential.

EXAMPLE
Ex) Who do you know whom you can trust with information that could get you in trouble?

No one ___

A) T.N. (brother)   D) T.N. (father)   G) _____
B) L.M. (friend)   E) L.M. (employer) H) _____
C) R.S. (friend)   F) _____   I) _____

How Satisfied?

6 = very satisfied
5 = fairly satisfied
4 = little satisfied
3 = little dissatisfied
2 = fairly dissatisfied
1 = very dissatisfied

1. Whom can you really count on to listen to you when you need to talk?

No one ___

1) _____   4) _____   7) _____
2) _____   5) _____   8) _____
3) _____   6) _____   9) _____

2. How satisfied?

6   5   4   3   2   1

3. Whom could you really count on to help you if a person whom you thought was a good friend insulted you and told you that he/she didn't want to see you again?

No one ___

1) _____   4) _____   7) _____
2) _____   5) _____   8) _____
3) _____   6) _____   9) _____

4. How satisfied?

6   5   4   3   2   1

5. Whose lives do you feel that you are an important part of?

No one ___   1) _____   4) _____   7) _____
              2) _____   5) _____   8) _____
              3) _____   6) _____   9) _____

6. How satisfied?

6   5   4   3   2   1

7. Whom do you feel would help you if you were married and had just separated from your spouse?

No one ___   1) _____   4) _____   7) _____
              2) _____   5) _____   8) _____
              3) _____   6) _____   9) _____

8. How satisfied?

6   5   4   3   2   1

9. Whom could you really count on to help you out in a crisis situation, even though they would have to go out of their way to do so?

No one ___   1) _____   4) _____   7) _____
              2) _____   5) _____   8) _____
              3) _____   6) _____   9) _____

10. How satisfied?

6   5   4   3   2   1

11. Whom can you talk with frankly, without having to watch what you say?

No one ___   1) _____   4) _____   7) _____
              2) _____   5) _____   8) _____
              3) _____   6) _____   9) _____

12. How satisfied?

6   5   4   3   2   1

13. Who helps you feel that you truly have something to contribute to others?

No one ___

1) _____	4) _____	7) _____
2) _____	5) _____	8) _____
3) _____	6) _____	9) _____

14. How satisfied?

    6   5   4   3   2   1

15. Whom can you really count on to district you from your worries when you feel under stress?

No one ___

1) _____	4) _____	7) _____
2) _____	5) _____	8) _____
3) _____	6) _____	9) _____

16. How satisfied?

    6   5   4   3   2   1

17. Whom can you really count on to be dependable when you need help?

No one ___

1) _____	4) _____	7) _____
2) _____	5) _____	8) _____
3) _____	6) _____	9) _____

18. How satisfied?

    6   5   4   3   2   1

19. Whom can you really count on to help you out if you had just been fired from your job?

No one ___

1) _____	4) _____	7) _____
2) _____	5) _____	8) _____
3) _____	6) _____	9) _____

20. How satisfied?

    6   5   4   3   2   1

21. With whom can you totally be yourself?

No one ___

1) _____	4) _____	7) _____
2) _____	5) _____	8) _____
3) _____	6) _____	9) _____

22. How satisfied?

    6   5   4   3   2   1

23. Whom do you feel really appreciates you as a person?

No one ___
1) _____   4) _____   7) _____
2) _____   5) _____   8) _____
3) _____   6) _____   9) _____

24. How satisfied?

6   5   4   3   2   1

25. Whom can you really count on to give you useful suggestions to help you to avoid making mistakes?

No one ___
1) _____   4) _____   7) _____
2) _____   5) _____   8) _____
3) _____   6) _____   9) _____

26. How satisfied?

6   5   4   3   2   1

27. Whom can you count on to listen openly and uncritically to your innermost feelings?

No one ___
1) _____   4) _____   7) _____
2) _____   5) _____   8) _____
3) _____   6) _____   9) _____

28. How satisfied?

6   5   4   3   2   1

29. Whom will comfort you when you need it by holding you in their arms?

No one ___
1) _____   4) _____   7) _____
2) _____   5) _____   8) _____
3) _____   6) _____   9) _____

30. How satisfied?

6   5   4   3   2   1

31. Whom do you feel would help if a good friend of yours had been in a car accident and was hospitalized in serious condition?

No one ___
1) _____   4) _____   7) _____
2) _____   5) _____   8) _____
3) _____   6) _____   9) _____

32. How satisfied?

6   5   4   3   2   1

33. Whom can you really count on to help you feel more relaxed when you are under pressure or tense?

No one ___   1) _____   4) _____   7) _____
               2) _____   5) _____   8) _____
               3) _____   6) _____   9) _____

34. How satisfied?

6   5   4   3   2   1

35. Whom do you feel would help if a family-member very close to you died?

No one ___   1) _____   4) _____   7) _____
               2) _____   5) _____   8) _____
               3) _____   6) _____   9) _____

36. How satisfied?

6   5   4   3   2   1

37. Who accepts you totally, including both your worst and your best points?

No one ___   1) _____   4) _____   7) _____
               2) _____   5) _____   8) _____
               3) _____   6) _____   9) _____

38. How satisfied?

6   5   4   3   2   1

39. Whom can you really count on to care about you, regardless of what is happening to you?

No one ___   1) _____   4) _____   7) _____
               2) _____   5) _____   8) _____
               3) _____   6) _____   9) _____

40. How satisfied?

6   5   4   3   2   1

41. Whom can you really count on to listen to you when you are very angry at someone else?

No one ___   1) _____   4) _____   7) _____
               2) _____   5) _____   8) _____
               3) _____   6) _____   9) _____

42. How satisfied?

6   5   4   3   2   1

43. Whom can you really count on to tell you, in a thoughtful manner, when you need to improve in some way?

No one ___   1) _____   4) _____   7) _____
               2) _____   5) _____   8) _____
               3) _____   6) _____   9) _____

44. How satisfied?

6   5   4   3   2   1

45. Whom can you really count on to help you feel better when you are feeling generally down-in-the-dumps?

No one ___   1) _____   4) _____   7) _____
               2) _____   5) _____   8) _____
               3) _____   6) _____   9) _____

46. How satisfied?

6   5   4   3   2   1

47. Whom can you feel truly loves you deeply?

No one ___   1) _____   4) _____   7) _____
               2) _____   5) _____   8) _____
               3) _____   6) _____   9) _____

48. How satisfied?

6   5   4   3   2   1

49. Whom can count on to console you when you are very upset?

No one ___   1) _____   4) _____   7) _____
               2) _____   5) _____   8) _____
               3) _____   6) _____   9) _____

50. How satisfied?

6   5   4   3   2   1

51. Whom can you really count on to support you in major decisions you make?

No one ___   1) _____   4) _____   7) _____
               2) _____   5) _____   8) _____
               3) _____   6) _____   9) _____

52. How satisfied?

   6   5.   4   3   2 . 1

53. Whom can you really count on to help you feel better when you are
very irritable, ready to get angry at almost anything?

No one _____   1) _____   4) _____   7) _____
             2) _____   5) _____   8) _____
             3) _____   6) _____   9) _____

54. How satisfied?

   6   5   4   3   2   1

Appendix D
The Coping Strategies Inventory

The purpose of this questionnaire is to find out the kinds of stressful events or situations that trouble people in their day-to-day lives and how people deal with them. Below is a scale along which the stressfulness of such events can be rated. A rating of 0 would indicate that the event is not stressful at all. A rating of 100 would indicate an extremely stressful event. Ratings of 25, 50 and 75 would indicate the events as slightly, moderately6 and very stressful, respectively.

Take a few moments and think about two hypothetical events or situations that for you would obtain ratings of 0 and 100 if they were to occur. Indicate what these events would be (ex.: car broke down, death of a family member or spouse, physical illness,...) at the appropriate corresponding points on the scale. Then think about an actual event or situation that has been stressful (a rating of 50 or above) for you during the last six months to one year and indicate what this event was along with its corresponding rating on the same scale. This event might have been in relation to your family, your job, your health or your friends.

0	25	50	75	100
not at all stressful	slightly stressful	moderately stressful	very stressful	extremely stressful

After having indicated this event along with it's appropriate rating on the scale, please describe this stressful event in the space below. Describe what happened and include details such as the place, who was involved, what made jt important to you and what you did. The situation could be one that is going on right now or one that already happened; it could be an event that happened at just one time or one that has continued for some period of time. Don't worry about making it into an essay. Just write as you recollect the events. Continue writing on the back page if necessary.

_____

_____

_____

_____

_____

_____

Instructions

Please read each item below and determine the extent to which you used this in the previous situation. Mark your answer according to the following scheme.

A) I did not use this at all
B) I might have used it a little
C) I used this somewhat
D) I used this to a great extent
E) This was the main thing that I did

1. Just concentrate on what I had to do next; the next step.
   A   B   C   D   E

2. It was my mistake and I needed to suffer the consequences.
   A   B   C   D   E

3. I tried to get a new angle on the situation.
   A   B   C   D   E

4. Turned to work or substitute activity to take my mind off things.
   A   B   C   D   E

5. I tried to keep my feelings to myself.
   A   B   C   D   E

6. I took care of my emotions.
   A   B   C   D   E

7. I looked for the silver lining, so to speak; tried to look on the bright side of things.
   A   B   C   D   E

8. Talked to someone to find out more about the situation.
   A   B   C   D   E

9. Hoped a miracle would happen.
   A   B   C   D   E

10. Went along as if nothing were happening.
    A   B   C   D   E

11. I slept more than usual.
    A   B   C   D   E

12. I accepted sympathy and understanding from someone.
    A   B   C   D   E

13. I told myself things that helped me feel better.
    A   B   C   D   E

A) I did not use this at all
B) I might have used it a little
C) I used this somewhat
D) I used this to a great extent
E) This was the main thing that I did

14. I tried to forget the whole thing.
A   B   C   D   E

15. I was inspired to do something creative.
A   B   C   D   E

16. If I wasn't so careless, I know things like this wouldn't happen.
A   B   C   D   E

17. I talked to someone who could do something concrete about the problem.
A   B   C   D   E

18. I looked at things in a different light and tried to make the best of what was available.
A   B   C   D   E

19. I got away from it for a while; I tried to rest or take a vacation.
A   B   C   D   E

20. I tried to make myself feel better by eating, drinking, smoking or taking non-medical drugs (including alcohol).
A   B   C   D   E

21. I changed something so that things would turn out alright.
A   B   C   D   E

22. I avoided being with people.
A   B   C   D   E

23. I didn't let it get to me; I refused to think about it too much.
A   B   C   D   E

24. I asked a friend or relative I respect for advice.
A   B   C   D   E

25. I convinced myself that things aren't quite as bad as they seem.
A   B   C   D   E

26. I talked to someone about how I am feeling.
A   B   C   D   E

27. I stood my ground and fought for what I wanted.
A   B   C   D   E

A) I did not use this at all
B) I might have used it a little
C) I used this somewhat
D) I used this to a great extent
E) This was the main thing that I did

28. I just spent more time with people I like.
A   B   C   D   E

29. I looked to see if I had all the fact; maybe I was seeing things the wrong way.
A   B   C   D   E

30. I refused to believe that it would happen.
A   B   C   D   E

31. I came up with a couple of different solutions to the problem.
A   B   C   D   E

32. I changed the way I felt about the situation.
A   B   C   D   E

33. I wished that the situation would go away or somehow be over with.
A   B   C   D   E

34. I had fantasies or wishes about how things would turn out.
A   B   C   D   E

35. When I reorganized the way I looked at the situation, things didn't look so bad.
A   B   C   D   E

36. I made a plan of action and followed it.
A   B   C   D   E

37. I just took things one step at a time.
A   B   C   D   E

38. I realized that I brought the problem on myself.
A   B   C   D   E

39. I felt bad that I couldn't avoid the problem.
A   B   C   D   E

40. I wish that I could have changed the problem.
A   B   C   D   E

41. I stepped back from the situation and put things into perspective.
A   B   C   D   E

A) I did not use this at all
B) I might have used it a little
C) I used this somewhat
D) I used this to a great extent
E) This was the main thing that I did

42. I found somebody who was a good listener.
    A   B   C   D   E

43. I made light of the situation and refused to get too serious about it.
    A   B   C   D   E

44. I blamed myself.
    A   B   C   D   E

45. I went over the problem again and again in my mind and finally saw things in a different light.
    A   B   C   D   E

46. I let my feelings out somehow.
    A   B   C   D   E

47. I spent some time doing a hobby that helps me relax.
    A   B   C   D   E

48. I talked to someone that I'm very close to.
    A   B   C   D   E

49. I criticized myself for what happened.
    A   B   C   D   E

50. Since what happened was my fault, I really chewed myself out.
    A   B   C   D   E

51. I knew what had to be done, so I doubled my efforts and tried harder to make things work.
    A   B   C   D   E

52. I got in touch with my feelings.
    A   B   C   D   E

53. I told myself how stupid I was.
    A   B   C   D   E

54. I accepted my strong feelings, but didn't let them interfere with other things too much.
    A   B   C   D   E

A) I did not use this at all
B) I might have used it a little
C) I used this somewhat
D) I used this to a great extent
E) This was the main thing that I did

55. I realized how foolish I must have looked.
    A   B   C   D   E

56. I tackled the problem head-on.
    A   B   C   D   E

57. I thought about fantastic or unreal things that made me feel better.
    A   B   C   D   E

58. I did some nice things for people because that usually makes me feel better.
    A   B   C   D   E

59. I spent some time with my friends.
    A   B   C   D   E

60. It was a tricky problem, so I had to work around the edges to make things come out OK.
    A   B   C   D   E

61. I put myself in the person's place; that enabled me to see things differently.
    A   B   C   D   E

62. I hoped that if I waited long enough, things would turn out OK.
    A   B   C   D   E

63. I tried to analyze the problem in order to understand it better.
    A   B   C   D   E

64. I kicked myself for letting this happen.
    A   B   C   D   E

65. I avoided the person who was causing the trouble.
    A   B   C   D   E

66. I decided that it was really someone else's problem and not mine.
    A   B   C   D   E

67. I gave myself hell when this thing happened.
    A   B   C   D   E

68. I let my friends help out.
    A   B   C   D   E

A) I did not use this at all
B) I might have used it a little
C) I used this somewhat
D) I used this to a great extent
E) This was the main thing that I did

69. I tried to make myself feel better by going shopping and treating myself.
A   B   C   D   E

70. I looked to my family for support.
A   B   C   D   E

71. I realized that I was personally reponsible for my difficulties and really lectured myself.
A   B   C   D   E

72. Every time I think about it, I get upset; so I just stopped thinking about it.
A   B   C   D   E

73. I changed the way I felt about the situation.
A   B   C   D   E

74. I asked myself what was really important, and discovered that things weren't so bad after all.
A   B   C   D   E

75. I figured that most people wouldn't get themselves into this kind of mess.
A   B   C   D   E

76. I talked to someone who was in a similar situation.
A   B   C   D   E

Appendix E
The Seriousness of Illness Rating Scale

Instructions: Please check those symptoms or diseases you have experienced in the past year and indicate the period during which you have experienced each symptom or disease.

Item Number	Disease Items	0-6 mos	7 mos-1 yr	Score
1.	Dandruff			
2.	Warts			
3.	Cold sore, canker sore			
4.	Corns			
5.	Hiccups			
6.	Bad breath			
7.	Sty			
8.	Common cold			
9.	Farsightedness			
10.	Nosebleed			
11.	Sore throat			
12.	Nearsightedness			
13.	Sunburn			
14.	Constipation			
15.	Astigmatism			
16.	Laryngitis			
17.	Ringworm			
18.	Headache			
19.	Scabies			
20.	Boils			
21.	Heartburn			
22.	Acne			
23.	Abscessed tooth			
24.	Colorblindness			
25.	Tonsillitis			
26.	Diarrhea			
27.	Carbuncle			
28.	Chicken pox			
29.	Mumps			
30.	Dizziness			
31.	Sinus infection			
32.	Bed sores			
33.	Fainting			
34.	Measles			
35.	Infection of the middle ear			
36.	Varicose veins			
37.	Psoriasis			
38.	Haemorrhoids			
39.	Hay fever			
40.	Low blood pressure			

Item Number	Disease Items	0-6 mos	7 mos-1 yr	Score
41.	Eczema			
42.	Drug allergy			
43.	Bronchitis			
44.	Hyperventilation			
45.	Shingles			
46.	Mononucleosis			
47.	Infected eye			
48.	Bursitis			
49.	Whooping cough			
50.	Lumbago			
51.	Migraine			
52.	Hernia			
53.	Frostbite			
54.	Coiter			
55.	Heatstroke			
56.	Gonorrhea			
57.	Irregular heart beats			
58.	Overweight			
59.	Anemia			
60.	Anxiety reaction			
61.	Gout			
62.	Snake bite			
63.	Appendicitis			
64.	Pneumonia			
65.	Depression			
66.	Burns			
67.	Kidney infection			
68.	Inability for sexual intercourse			
69.	Hyperthyroid			
70.	Asthma			
71.	Glaucoma			
72.	Sexual deviation			
73.	Gallstones			
74.	Arthritis			
75.	Starvation			
76.	Syphilis			
77.	Accidental poisoning			
78.	Slipped Disk			
79.	Hepatitis			
80.	Kidney stones			
81.	Peptic ulcer			
82.	Pancreatitis			
83.	High blood pressure			
84.	Smallpox			
85.	Deafness			

Item Number	Disease Items	0-6 mos	7 mos-1 yr	Score
86.	Collapsed lung			
87.	Shark bite			
88.	Epilepsy			
89.	Chest pain			
90.	Nervous breakdown			
91	Diabetes			
92.	Blood clot in blood vessels			
93.	Hardening of the arteries			
94.	Emphysema			
95.	Tuberculosis			
96.	Alcoholism			
97.	Drug addiction			
98.	Coma			
99.	Cirrhosis of the liver			
100.	Parkinson's disease			
101.	Blindness			
102.	Mental retardation			
103.	Blood clot in the lung			
104.	Manic depressive psychosis			
105.	Stroke			
106.	Schizophrenia			
107.	Muscular dystrophy			
108.	Congenital heart defects			
109.	Tumor in the spinal cord			
110.	Cerebral palsy			
111.	Heart failure			
112.	Heart attack			
113.	Brain infection			
114.	Multiple sclerosis			
115.	Bleeding in the brain			
116.	Uremia			
117.	Cancer			
118.	Leukemia			