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STRESSFUL LIFE EVENTS, PERSONALITY HARDINESS, AND PSYCHOLOGICAL GROWTH

City University of New York PH.D. 1986

STRESSFUL LIFE EVENTS, PERSONALITY HARDINESS, AND PSYCHOLOGICAL GROWTH

by

DAVID NEMIROFF

A dissertation submitted to the Graduate Faculty in Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosopy, The City University of New York

1986

This manuscript has been read and accepted for the Graduate Faculty in Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

22 April 1986
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Abstract

STRESSFUL LIFE EVENTS, PERSONALITY HARDINESS, AND PSYCHOLOGICAL GROWTH

by

David Nemiroff

Adviser: Professor Suzanne Ouellette Kobasa

The general proposition is advanced that certain individuals may undergo psychological growth after stressful life events. Previous theoretical claims and empirical evidence in support of this proposition are reviewed and gaps are identified, including insufficient attention given to individual differences in personality as a possible mediating factor in the stress-growth relationship.

Two inter-related studies were conducted. The first included multiple regression analyses of longitudinal questionnaire data previously collected from two samples of executive and craft-level business managers who had participated in an earlier study of stress and illness. It was hypothesized that personality hardiness would interact with life stress to promote two specific forms of psychological growth: improved coping ability and enhanced social well-being. Results indicated that the hypothesis

was supported for one of the dependent variables in one of the samples: hardiness and life stress significantly predicted increases in coping ability among the executives. Family stress and the commitment component of hardiness were also found to be important for growth.

The second study was exploratory and idiographic, involving a content analysis of interview data previously collected from a subsample of the executives. Its aim was to investigate the nature and sources of psychological growth. It was hypothesized that hardiness would be significantly related to growth, and it was also expected that life stress would contribute to such positive change. Results indicated that the hypothesis was not supported but that several subjects cited specific stressful life events as change antecedents. In addition, changes were found in personality characteristics, values and attitudes, coping ability, self-knowledge, and social relationships, and a broadly-defined "social" dimension of change was identified. Evidence also suggested that events in the family context led to positive change while work-related events were followed by negative change and that cognitive factors were also important.

It was concluded from both investigations that psychological growth following life stress may well occur and that differences in hardiness may be partly responsible for it. Future research should consider stress within

specific life contexts and possible cognitive mediating factors associated with the growth process. Practical implications of the findings were also discussed.

ACKNOWLEDGEMENTS

Many people contributed to this research effort, including relatives, friends, and colleagues. To all of you I am deeply grateful.

First of all I would like to thank my parents, Mili and Leo, whose love, generous spirit, values, and love of life, people, and ideas shaped my personal and intellectual development profoundly, to say the least. My close friend and colleague Moses Weksler has been a pillar of support from the very beginning of my graduate school career. My good friend and colleague Stephen Sicilian provided wonderful encouragement and support, useful suggestions, and hawkeye proofreading. Dear friends Larry Rosen, Herb Bilick, and Bernard Rous have also been there in a number of ways, offering support, encouragement, advice, assistance, and much needed diversion. Arthur Weinberger, as good friend and colleague, provided continual infusions of optimism and strategic advice. Special thanks also go to my therapists and friends Miriam Shapiro and Bob Berk, whose kindness, skill, and humanity have enriched my life beyond words. My three sisters Judy, Sandy, and Maggie also helped me through their encouragement, love and support.

I would also very much like to thank my good friends Elaine Levy, Eileen Romm, Anne Saltzman, Burt and Marion D'Lugoff, uncle Bob and aunt Jewel Nemiroff, Ronna Kabatznik, Alan Lotterman, John Paige, Rachel Ovryn, Steve Goldstein, Rochelle Aaron, Fran Scavullo, Gale Griner, Robin Good, Leslie Voremberg, Beverly and Rosalind Goldstein, Judith Lachmanowitz, Jeffrey Lipner, Reicelle Schecter, Florence Weksler, Susan Rous, Judy Bilick, Emily Guile, Diane Moss, Janet Geller, Harriet Arnone, Ann Ehrich, Donna Thatcher, Diana Feit, Rosalind Eichenstein, Susan Maxwell, Ron Miller, Arnold Simmel, Marcia Torres, Frances Francois, Janzie Allmacher, Helene Wolarsky, Jody Brown, Sheree West, Tomi Berney, Bethamie Horowitz, Renee McCormick, Veronika Raj, Miriam Reinharth, Hank Solomon, Christina Taylor, Michael Greeley, Yvette Obadia, and Bob Schulman. Without all of them the job would have been a lot tougher.

My friend and colleague Hilary Liberty gave me loads of emotional support and was indefatigable in contributing time and effort in teaching me much of what I know about the computer and helping me organize the data. Good friends Bob Tobias and Helen Dermatis were always available and provided me with invaluable suggestions and leads about statistical analysis. Close friends Donna Eisenstadt and Bonnie Fenster were extremely helpful, first as coders and then in offering suggestions and advice on the project. The staff at the Computer Center, especially Nava Lehrer,

Roger Okon, Irene Browne, Phyllis Myrsky, Richard Drechsler, Meg Mielecleveland, Judy Rubin-Spitz, and Danny Choriki were also terrific.

Friends and colleagues in the Health Psychology group provided spirited support, interest, useful suggestions, and a most touching tribute, for which I am most grateful. These dear people were Suzanne Ouellette, Renee Feldman, Sherri Weiser, Andrew Lauren, Andy Rosenblum, Laurie Hopp, Ronnie Catan, Leo Flanagan, Andrea Martin, and Nina Parisi.

I am grateful to Professor Salvatore Maddi and his colleagues at the University of Chicago for their cooperation and assistance in facilitating the transfer of data from the Chicago Stress Project, an arduous process. I would also very much like to thank Professors Herb Saltzstein and Florence Denmark for participating as outside readers on my committee and contributing much interest and valuable suggestions at the defense.

I cannot fail to acknowledge the relationship I had over the years with the late Stanley Milgram, who had a major impact on my intellectual development at the Graduate Center. His tragic, irreplaceable loss saddened all of us. He was a kind and gentle man who really cared about his students and stimulated them with a rare and wonderful blend of creativity, humor, intellectual excitement, and zest for life. I feel immensely fortunate to have known and worked with him. Other helpful professors with whom I

worked in the program are Stephen Cohen, Howard Ehrlichman, Charles Smith, Walter Weiss, Charles Kadushin, and Alan Gross.

The three professors who served on my Dissertation Committee were very helpful to me in a number of ways. I am grateful to Professor Irwin Katz for two major contributions. First, in Dissertation Seminar he helped me develop my generic research skills and scientific thinking by taking me and the other students through the process of developing a research idea in stages, exposing it to colleagues, getting feedback and criticism, and making revisions in an effort to gradually define the proper scope of an investigation. Second, regarding this dissertation itself, through his keen interest in the topic Professor Katz made a key substantive recommendation in the proposal stage which in my judgment strengthened the work considerably by broadening its scope, eventually enabling me to gain a deeper understanding of the question being studied.

I would very much like to thank Professor Mort Bard for his advice and assistance all along the way, including his early encouragement to pursue this topic which emerged from my work with him in the area of stressful life events and the Adaptation to Homicide Project. He made psychology real and exciting. Both academically and personally Mort has been very helpful since I began the program, and I have

learned a great deal from him. He was always available when I needed help of any kind.

And finally I would like to express my heartfelt appreciation to my sponsor, Professor Suzanne Ouellette, for all of the countless ways that she contributed to this effort. She was there on every level, offering interest, encouragement, assistance, support, structure, criticism, advice, guidance, and humor, all conveyed with patience, concern, and humanity. She always seemed to know the right thing to do! I feel very fortunate to have worked with her, for she is a gifted educator and wonderful human being.

Sweet are the uses of adversity;
Which, like the toad, ugly and venomous,
Wears yet a precious jewel in his head;
And this our life, exempt from public haunt,
Finds tongues in toads,
Books in running brooks,
Sermons in stones,
And good in everything.

William Shakespeare,
As You Like It,
Act II, Scene I

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I. PURPOSE AND BACKGROUND

The purpose of this study is to investigate the relationship between life stress, personality, and psychological growth. I propose to address the following related questions. First, are there certain individuals who undergo psychological growth or change following stressful life events? Second, what is the nature of the growth they report? Third, does a specific personality construct distinguish them from others who do not report such change? And finally, what role does the life context of stressful events play in this process?

Two types of life stress are investigated in the present study: objectively-defined stressful life events, as conceptualized by Holmes & Rahe (1967), and subjectively-defined life events that are reported by subjects in interviews. Both types of life events were also grouped into certain life contexts such as one's family or work milieu. The personality construct is hardiness, deriving from the work of Kobasa (1982a). Types of psychological growth studied include the acquisition of a more adaptive coping repertoire known as "learned resourcefulness", assessed by a scale developed by Rosenbaum (1980a); improved social well-being, measured by a scale constructed by Donald & Ware (1982); and other forms of growth (e.g., change in attitudes and values) specific to certain individuals reported by them in focused

interviews. The subjects are 277 executive- and craft-level employees of a large utility company who completed questionnaires; twenty-nine of these were also given focused interviews. The data that will be analyzed in this investigation were collected as part of the Chicago Stress Project which was conducted from 1975 to 1983 at the University of Chicago.

Viewed from another perspective, the present study seeks to answer two questions. First, if growth occurs for hardy individuals, does it follow a stressful period that might have included several different types of life events? This issue will be investigated by a quantitative analysis of questionnaire data for all subjects in the study. Second, for some of the subjects, is hardiness more likely to lead to growth, what type of growth is it, and is it related to a specific type of life context or event? This problem will be approached through the qualitative analysis of focused interviews.

The growth-producing effects of stressful life events have been hypothesized by several writers (e.g., Dohrenwend, 1978; Caplan, 1964; Antonovsky, 1979; Goldberger & Breznitz, 1982; Moos & Billings, 1982; Kobasa, 1982a) but have only recently begun to come under empirical investigation (e.g., Haan, 1977; Breznitz & Eshel, 1982; Doherty, 1980, 1983; Taylor, Wood & Lichtman, 1983). In my view, this state of affairs exists for two related reasons:

first, life stress research has been primarily epidemiologically-oriented and concerned with two issues -- the relationship between stress and illness, and those factors which mitigate or exacerbate the illness-provoking aspects of stress; and second, the notion of "psychological growth" and related concepts such as maturity have not been adequately developed by life stress researchers, either theoretically or empirically.

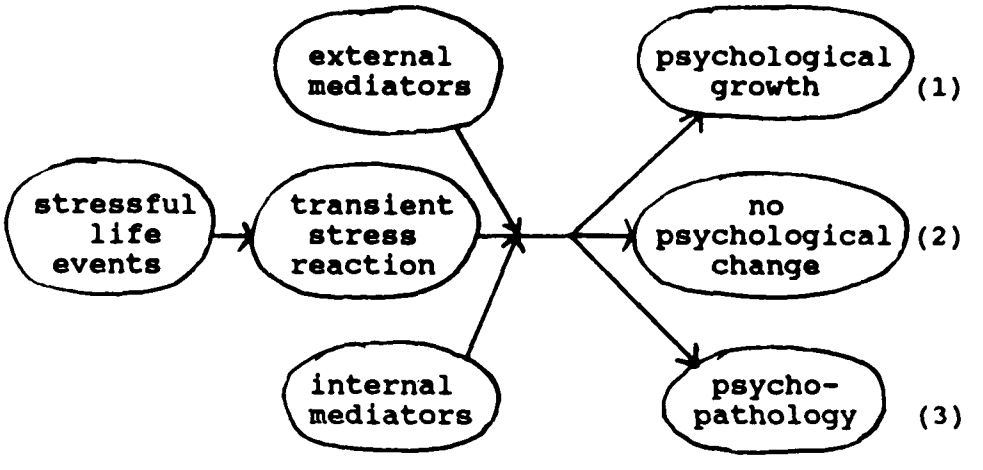
My interest in this topic grows out of a number of theoretical and empirical perspectives, all of which point towards a hypothesized stress-personality-growth connection. The perspectives are: stressful life events; developmental psychology; crisis theory and research; humanistic-existential psychology; coping, adaptation, and the principle of stress innoculation. In the next section I will discuss stressful life events, describe a model of the life stress process showing the hypothesized pathway to growth or change, and present some empirical evidence in support of the model. In that section and in succeeding ones I will attempt to demonstrate how the various perspectives contribute to the model and point towards the main hypotheses of this study, while at the same time showing some of the limitations of work in this area that has already been done.

Stressful life events

According to a number of writers who have conducted and critically reviewed research in this area (e.g., Dohrenwend & Dohrenwend, 1974, 1981; Rabkin & Struening, 1976; Breznitz & Goldberger, 1982), there is a large body of empirical evidence indicating a significant relationship between the number and magnitude of stressful events and physical and mental disorder. Having repeatedly found this association, but also having observed that many individuals do not become ill after undergoing stressful events (as indicated by the small, though significant correlations found with large samples (see Rabkin & Streuning, 1976)), investigators turned their attention to the nature and surrounding circumstances of the stress-illness relationship and to individual differences in adaptation to stressful life events. The conceptual question became: what keeps people healthy in the face of stress, and what distinguishes them from others who fall ill? Empirically, the issue became: what variables mediate the relationship between stress and illness? According to Kobasa & Puccetti (1983), Lefcourt (1981) and others, the current focus of life event research is on such mediating variables.

Three major classes of such variables, identified by Dohrenwend (1978), are: 1)internal or psychological mediators; 2) external or situational mediators; and 3)event characteristics. Internal mediators include

personality characteristics, coping strategies and histories, physical constitution, and other resources within the person. External mediators comprise material, social, and other environmental resources. Event characteristics include magnitude, desirability, controllability, predictability, and context. Numerous variables from the above three classes of mediators have been found to moderate or "buffer" the effects of stress on illness, both individually and in some cases in conjunction with one another (e.g., Sandler & Lakey, 1982; Kobasa & Puccetti, 1983). These mediators fit together in the following model of the life stress adaptation process presented by Dohrenwend (1978, p. 2):



According to Dohrenwend, soon after an individual undergoes a stressful life event he experiences a "transient stress reaction" which includes a normal amount of psychological distress or strain. The final outcome (represented by the three boxes at right), which occurs later, is heavily

influenced by the role mediating factors. A mediating stress "buffer", for example, reduces the chance that transient psychological distress develops into full-blown psychopathology. An expanded version of this model would also include physical, as well as psychological, reactions to stressful life events.

Health status has been the most frequently studied outcome variable in life stress research. It has most often been conceptualized and operationalized as the absence, or presence to varying degrees, of physical or psychological symptomatology (Rabkin & Streuning, 1976). In Dohrenwend's model psychological health status appears to correspond to a continuum between boxes (2) and (3). Notice also that her model includes another outcome variable, namely "psychological growth," which goes beyond merely keeping healthy, as Dohernwend indicates (Dohrenwend, 1978, p. 3):

> ...a person who experiences stressful life events may undergo psychological growth as a result. That is, he may be judged to have matured or, in more general terms, to have changed his values and aspirations, or developed new capabilities in ways that are adaptive to and valued by others in the social setting in which he lives (my italics).

Dohrenwend's conception of psychological growth appears to accommodate one of the variables under study in this investigation, namely the acquisition of new coping strategies, which could be considered a new capability. In addition, she contends that a person can undergo other

changes, such as a shift in values.

As stated earlier, other writers besides Dohrenwend have also claimed that stress can have beneficial effects. Antonovsky (1979), for example, argues that stressful life events create tension within the individual and that tension itself is not inherently bad, that it might even be "salutary". Goldberger & Breznitz (1982) also assert that stress may produce positive outcome. Selye (1974) introduced the notion of "eustress" which refers to a type of stress that is positive both physiologically and psychologically. Eustress is considered stress experienced at an optimal level, and this varies among individuals, according to Selye. The type of person most likely to benefit from stress (or, make use of eustress) is someone who has an optimistic orientation towards life's challenges, an ability to regulate his own life, and a tendency to be familiar with and maintain his own optimal level of stress. Such a predisposition, according to Selye, enables the person to maintain a "growth-promoting lifestyle."

Empirical research, however, has not kept pace with these and other theoretical claims that individuals may undergo psychological growth or positive change after stressful life events. As suggested earlier, one possible reason for this, apart from the emphasis on health status in life event research, is that the notion of psychological

growth has been only vaguely conceptualized and operationalized by stress researchers. Conceptually, with the exception of Dohrenwend (1978), most writers who hypothesize a stress-growth connection have simply not elaborated on the term "growth" (e.g., Antonovsky, 1979; Breznitz & Goldberger, 1982; Moos & Billings, 1982; Kobasa, 1982a). Even more specific definitions, such as those provided by Dohrenwend (see above) have been criticized as being too vague and global. Cox (1974), for example, asserts that the concept of maturity (one of Dohrenwend's dimensions of growth) is loosely defined, perhaps because there is a tacit assumption that everyone knows what is meant by the term. She suggests that more empirical progress will be made by utilizing more specific, already operationalized constructs related to psychological growth and maturity such as changes in self-esteem (Coopersmith, 1967), ego strength (Barron, 1963) and competence (White, 1959). Such a direction has already been taken by certain researchers (e.g., Mortimer, Finch, & Kumka, 1982) who have approached the issue of psychological growth from the perspective of change in adulthood.

Within life stress research, the emphasis on a global conception of growth has been matched by a global empirical approach. For example, Folkman, Lazarus, and their colleagues (e.g., Folkman & Lazarus, 1980; Aldwin, Folkman, Schaefer, Coyne, & Lazarus, 1980) appear to have included a global notion of growth in their development of a

questionnaire which asks subjects to indicate how they coped with and reacted to specific life events. Not only do several items in this scale appear to have high face validity for psychological growth (e.g., "changed or grew as a person in a good way", "came out of the experience better than when I went in"), but in factor analyses with two different populations Aldwin and others (1980) and Merrick (1983) have extracted a factor they labelled "growth" which includes the above two items and other similar ones. While identification of such a factor indicates a recognition that growth might, in fact, be one outcome of a stressful experience, the above items and other direct approaches to studying psychological growth suggest that the concept is still too rudimentary and global.

More indirect approaches to the study of growth view it not as global but as multi-dimensional and more specific. With regard to specific measures of growth, several investigators whose work follows have utilized specific personality characteristics as outcome variables in life event research and intrepreted positive change in these characteristics as equivalent to psychological growth. The variables studied include locus of control (Doherty, 1980, 1983; Andrisani & Nestel, 1976), self-actualization (Petosa, 1981), self-esteem (Taylor, Wood, & Lichtman, 1983), and ego defense mechanisms (Haan, 1977).

Change in locus of control has been analyzed as a function of single life events (e.g. divorce) as well as multiple, related life events. Doherty (1980, 1983) examined the impact of divorce on locus of control. In his first investigation, a retrospective, cross-sectional study of national probability data, he compared the locus of control scores of 3 marital status groups. He found that the divorced group was significantly more internal than the married and single groups, a result that surprised him. He said (Doherty, 1983, p. 836): "I interpreted this finding as implying that successful coping with the rigors of divorce may lead a signficant number of individuals to stronger beliefs in the personal control of their lives." He then hypothesized that divorce could be followed by an increase in internality and tested this hypothesis prospectively (Doherty, 1983). Analyzing eight-year longitudinal data on women, he found a short-run (3-year) sharp increase in externality in the divorced group compared to the married group, followed by much less of an increase in externality in the divorced group in the long run (over the next 5 years) compared to the married group. While this result did not fully support the hypothesis (both groups became more external over the eight years), there was a trend in the predicted direction so that by the 8th year women in the divorced group were slightly more internal than their married counterparts.

Andrisani & Nestel (1976) looked at the prospective impact of multiple, employment-related events on locus of control. In this study the mediating variable of event characteristics (i.e.,event desirability) was also examined. The authors found that desirable events (e.g., re-entry into the labor force, a raise, and an increase in occupational status) were associated with an increase in internality over a two-year period, while undesirable events (e.g., changes like the three mentioned above, but in the opposite direction) were associated with a decrease in internality.

Petosa (1981) investigated the impact of stressful life events on self-actualization in a college population. Stressful life events were measured by the Life Experiences Survey (Sarason, Johnson, & Siegel, 1979), a 57-item self report measure that differs from the Holmes & Rahe (1967) Social Readjustment Rating Scale in that it asks respondents to estimate the valence and impact of each event experienced, rather than having them check off events whose objective magnitude of stressfulness has already been determined by outside judges. Self-actualization was assessed by the Personal Orientation Inventory (POI) (Shostrom, 1974). Negatively perceived events were found to be negatively associated with self-actualization scores while positively perceived events were positively related to POI scores. While Petosa interpreted that latter result as evidence in support of Selye's notion of eustress, he

also pointed out that since the measures were taken at one point in time the direction of causation is by no means clear (an alternative explanation might be that subjects high in self-actualization might have had a greater tendency than those low in the characteristic to experience positive life events). Such a problem underscores the importance of using a longitudinal approach to investigate the stress-growth question.

Taylor, Wood, & Lichtman (1983) interviewed 78 women who had recovered from breast cancer. Patients were asked several questions about how they adjusted to the illness. One question pertained to how they had changed since getting cancer. Negative changes were reported by 17% of the patients, 30% reported no change, and 53% reported only positive changes. Patients were also asked to rate their self-esteem before getting cancer, at various times during the illness, and at the time of the interview. The majority of those interviewed rated themselves as not only having high self-esteem at interview time - higher than while they had the cancer - but also higher than before they became ill.

The impact of stressful life events on ego mechanisms was investigated by Haan (1977). In a longitudinal study, two groups of subjects were compared in terms of frequency of illness. The more frequently ill were found at a later time to be more empathic and more tolerant of ambiguity,

although less able to control their affect. In another analysis of data from the same larger study, Haan found that similar changes in subjects' ego functions had occurred as a result of changes in family composition over time. In discussing these findings, Haan claimed that certain individuals may like stress in some ways, and that experiencing stress and surviving gives us knowledge of ourselves and may enable us to care more about others. She stated (Haan, 1982, p. 255):

> The experience of stress, moreover, does not inevitably lead, in common sense terms, to personal deterioration. Although we expect deterioration, we contrarily expect that stress benefits people, making them tender, humble, and hardy...It may facilitate growth by tempering arrogance and by enhancing our tenderness towards ourselves and others.

Haan's study also sheds some light on another question: is the nature of a particular type of stressful life event related to the type of psychological growth a subject might undergo? In Haan's study the "event" was being ill. One outcome was greater empathy. It seems reasonable to assume that there is a qualitative similarity or conceptual link between cause and effect here: these subjects, having gone through the undoubtedly painful experience of chronic illness report a greater ability to feel the pain of others. The present study will investigate this question through analysis of open-ended data obtained from interviews in which subjects had the opportunity to elaborate on ways in which they may have

changed, as well as to point to reasons for the change.

One limitation of most of the above research is that it is only concerned with stressful events and outcome. In failing to consider internal (as well as external) stress mediators, such an approach suffers from a major drawback of early life event research, as pointed out by Kobasa (1982b) -- not taking into account individual differences. It seems reasonable to hypothesize, as Dohrenwend (1978) did in explaining her model presented earlier, that in the long run a stressful life event may affect some people negatively, others not at all, and still others positively. It is also plausible to postulate, based on considerable evidence from life stress-health status research, that there might be individual differences among these three groups.

In the following section I will sample from two bodies of research that speak to individual differences in adaptation to stress: 1) case studies using a focused interview approach that provide idiographic data; and 2) epidemiologically-oriented research that uses standardized questionnaires generating nomothetic data.

Rich idiographic material is available from several studies of the stress of war, and a new, changing emphasis in this area may be indicative of a broadening approach to stress and outcome generally: the landmark study of combat stress in World War II conducted by Grinker & Spiegel

(1945) had an almost exclusively pathological emphasis, while more recent attempts to investigate the stress of the Vietnam war (e.g., Lifton, 1973; Egendorf, 1981) and the Arab-Israeli 1973 war (Yarom, 1982; Breznitz & Eshel, 1982) examine how soldiers changed and grew from their experiences. As should become evident, forms of growth include changes in values, social relationships, and coping capacities. There is also some attempt to investigate individual differences in the tendency to undergo positive change.

In the course of conducting his research on Vietnam veterans, Lifton (1973) organized rap groups for some of the men he met - particularly those who suffered from excessive guilt feelings as a result of killing and surviving. Lifton claims that the war and the rap sessions enabled these veterans to re-examine their perceptions of themselves and their attitudes towards society, and that some of them changed their values, becoming more morally and socially conscious. The individual difference variable that Lifton thought was critical in distinguishing between those who changed in this way and those who didn't was a willingness to acknowledge what he called "animating guilt."

In a series of case studies of Vietnam veterans, Egendorf (1981) identified a small minority from a larger subject pool who appeared to have undergone personal growth

as a result of their war experience. In his profile of these men, Egendorf described most of them as having come from supportive family backgrounds and acquired psychological strengths when young. As a whole, he said, they looked to the military to help them mature as men. After the war, they all claimed to have benefitted personally in some ways from having lived through it. One veteran said (Egendorf, 1981, p. 769): "I have an appreciation for war, how really rotten it is, and it's maturing and sobering." Another:

> I'm a more reserved person now, more open to people, and more likely to listen to the other side rather than just accept what authority says about them, because the war made me question authority after I found all the things I had been told and believed were true weren't true at all.

And a third: "The most significant thing in the changes I went through was facing death, looking at it, saying I would die all right and that's it, wanting to make it count after this." Egendorf also provided some categorical descriptions for the changes taking place in the men. There were gains in self-confidence, self-awareness, altruistic tendencies, finding meaningful and satisfying work, and a deepening of social relationships, including greater openness to people. In addition, he identified certain coping strategies used by these veterans which he says facilitated their growth: 1) they approached their military situations as a set of challenges; 2) they did not block out negative aspects of

extreme situations (i.e., they acknowledged their anxiety at these times); 3) they assumed responsibility for their behavior; 4) they reflected on their experiences and worked them through.

Yarom (1982) interviewed 31 men who participated in the Arab-Israeli 1973 Yom Kippur War. The interviews, conducted at least two years after the conflict, tapped both global and specific forms of psychological change. To assess global outcomes, the interviews included the same types of broad, open-ended questions about the positive and negative effects of a stressful life experience utilized by Taylor and her colleagues (1983) cited earlier. Sixteen of the men said that the war had primarily a positive, but also a negative, effect on them, while another 10 reported that the reverse had been true. Another four reported only positive changes, and one soldier claimed the war had no effect on him. From a content analysis of responses to other questions, Yarom identified one global positive outcome and also related specific changes. The main positive effect, evident in 17 of the 20 veterans who reported positive outcomes he called an existential change. It consisted of a re-evaluation of personal values and priorities, and it was expressed by some of the men in statements about how they acquired more maturity, a more serious approach to life, a broader perspective, and a more soul-searching attitude. Comments from two soldiers are illustrative and reminiscent of remarks of Egendorf's

(1981) subjects (Yarom, 1982, p. 12):

> -I learned to differentiate between the more important and the less important things in life.
>
> -More maturity. Maturity - this is the key word. A more realistic perception of things, more perspective. The war changed me a lot. There is in me much more self-awareness, openness, desire to looke more deeply into more significant things.

Cast in terms of a possible qualitative connection between the type of life event an individual experiences and the kind of internal psychological change he might undergo following that event (alluded to earlier), one could say that what an "existential change" means in this context is that for some people facing death causes them to value life even more than they did before.

Twelve of the 17 men Yarom interviewed did in fact report that life had more meaning and that they were enjoying it more than before the war. Yarom found that the existential change not only affected values in this way but also self-concept and social relationships. With regard to self-concept, some men reported increases in self-esteem, self-confidence, and coping ability, along with improved social relationships. Gains in coping ability came in part from proving to themselves that they could cope better than they had anticipated (negative change for some of the men included decreased coping capacity). What was the specific nature of this improved coping ability? According to Yarom, there were reports of greater vigilance and

alertness, reactions that Janis (1981) has said are common after stressful events and which help one cope better with future stress. Concerning relationships with others, most of the soldiers who underwent positive change indicated that they had adopted a more positive attitude toward people in general and become closer to and more caring toward significant people in their lives. An important individual difference variable that may have been responsible for the different outcomes, according to Yarom, was the degree to which individuals who fought in the war were willing to come to terms with their own mortality, through the resolution of what Yarom called an existential crisis. Ability to resolve this crisis depended, in turn, on the availability and utilization of internal and external resources. A systematic exploration of these mediating factors would seem to be the logical next step in research along this line.

From a methodological standpoint, the studies on war stress reported above are illustrative of the value of an idiographic, phenomenological approach to research on life stress and change. Spontaneous, elaborated, detailed responses to questions about stressful experiences can, according to Fischer (1984), who used a phenomenological approach to study crime victimization, bring the research much closer to the actual phenomena being investigated. The subject himself is able to vividly convey the experience by using his own words, to give the event a

temporal flow, to describe the particular meaning the experience had for him, and to capture it in its entirety. For the event of crime victimization, according to Fischer (1984, p. 169):

> ...phenomenological analyses provide a coherent sense of what it is like to be criminally victimized -- to live through that experience, and how that experience embodies human existence.

Another work is relevant to the present investigation. Bard (1982) conducted an exploratory, retrospective study of how family members adapted to the sudden death of a close relative. Focused interviews were conducted with 40 subjects at least two years after the death had occurred. The interview was divided into three phases -- 1) a description of the circumstances surrounding the death; 2) the subject's experience immediately afterwards, including his contacts with formal and informal helping systems and (in the case of homicide) the criminal justice system; 3) the short and long range impact on the subject's life in major areas of functioning, including work outside the home; household routines, finances; social activities; recreation; sexual functioning; and physical health. Preliminary content analyses of the interviews revealed evidence of at least two positive outcomes for some subjects: 1) a deepening of personal relationships, particularly with those individuals who, previously having had only a casual relationship with the subjects, came to their aid during the crisis; and 2) a change in values

similar to the kind of existential change Yarom (1982) found -- e.g., greater awareness of one's own mortality, a re-ordering of life's priorities, and a strengthened desire to "make things count."

One limitation of this interview-based research, however, which the present study seeks to remedy, is that although the importance of individual differences is acknowledged and attempts are made to identify key individual difference constructs, no attempt is made to measure them quantitatively.

With regard to the reports of improved coping ability that Yarom (1982) found, Breznitz & Eshel (1982) suggest three new, specific coping strategies that a person can acquire after undergoing stressful life events that will help them cope more effectively with similar events in the future. First, the individual can become familiar with and gain some mastery over the emotions he experiences in response to the event (he has, in a sense, the opportunity to learn the emotion-focused coping skill that Lazarus (1966) referred to as "palliation"). Military training involves this process, in that soldiers are exposed to stressful, simulated combat conditions to prepare for actual combat. Second, the person has the opportunity to acquire specific, problem-focused coping skills, be they cognitive, motor, or social. Finally, the individual may be strengthened in a more general way, by gaining in

maturity (Breznitz & Eshel, 1982, p. 239):

> People who have been through a lot often claim that in some sense they have profited by gaining insights and understanding they lacked before. They have, so to speak, become more mature.

This third effect on the individual is viewed by the authors as nonspecific, meaning that it should not only help in coping with similar stress in the future but also stressful situations that are only distantly related to the original experience. With this theoretical backdrop, Breznitz & Eshel hypothesized that life stress would have a positive effect on actual coping behavior in two specific stressful situations -- taking a university admissions examination and performing tasks in which they were told that their leadership ability was being assessed.

In the first study, a random sample of 323 individuals planning to take an admissions test for the University of Haifa, Israel, were given an 80-item schedule, the Life Event Questionnaire (LEQ). The instrument was based on the Schedule of Recent Life Events (Holmes & Rahe, 1967), but had greater differentiation of events (e.g., death of a family member was broken down by individual family members) and included individual items relating specifically to life in Israel (e.g., participation in war). After subjects took the examination, correlations were made between LEQ scores (overall and for individual events) and the test scores. Results indicated that: (1) the number of life events was directly related to test scores; and (2)

specific life events, including the following, were related positively to examination scores: getting married, change in residence, change in school, change to different line of work, and participation in war. Only two items were negatively correlated with test score: major negative change in financial state and increase in family get-togethers. The authors also point out that the finding of an overall positive relationship between life stress and academic performance was in contrast to evidence from previous research on these two variables, in which a negative association was found (e.g., Lloyd, Alexander, Rice & Greenfield, 1980). The authors assumed that no significant differences in intelligence existed among subjects and concluded accordingly that life change was the most important predictor variable for test performance because it "enriches human experience, making the individual more prepared for intellectually stressful and demanding conditions". Offering a more specific explanation for the results, they suggest that subjects effectively employed the emotion-focused coping skill they acquired from previous stressful experiences to better concentrate on the task at hand. (Breznitz & Eshel, 1982, p.249). While the results of this study are interesting and suggestive, a stronger test of the hypothesis would involve controlling for intelligence, previous academic performance, socio-economic status and other possibly confounding variables.

In the leadership study, 69 members of the Israeli army were first given the LEQ. Six army psychologists later used subjects' performance on the following tasks to assess their leadership ability: (1) a group discussion situation in which subjects had to reach agreement on an issue and persuade other group members to agree with them; (2) a personal interview. Subjects were rated on a 9-point scale ranging from "no leadership ability - not recommended" to "recommended for a position". Stress was induced by telling the subjects that their performance would affect the likelihood of their becoming officers in the future. Results indicated that the number of life events, along with most individual items, were positively correlated with leadership scores.

From the standpoint of nomothetic research, we can hypothesize at this point that mediating variables might help explain why some individuals undergo personal change after stressful experiences and others do not. This approach uses the same logic that has been used to identify mediating variables that buffer the effects of stress on illness. Indeed a broadened, more comprehensive approach to mediating and outcome variables in life stress research might have the following taxonomy, with illustrative examples:

Independent variable	Mediating variable	Example	Dependent or outcome variable
Stressful life events	moderator	hardiness; social contact	health status
Stressful life events	exacerbator	Type-A behavior; social contact	health status
Stressful life events	facilitator	hardiness; social contact	personality; values; coping strategies

The first type of mediating variable has been studied extensively, and, as indicated earlier, many moderator variables have been identified. The second type has also been investigated, occasionally directly (e.g., in the case of Type- A behavior (e.g., Friedman & Rosenman, 1958)) but more often as the inverse of a moderator variable (e.g., certain types of social contact have been found to moderate the impact of stress on illness, while other types have been found to exacerbate it). The third type appears to have been little studied in this paradigm, but three specific personality characteristics - locus of control, sensation-seeking, and hardiness - theoretically appear to have potential as growth-facilitator mediating variables. The first two will be discussed in this section; the last under the humanistic-existential perspective.

There is considerable evidence that locus of control acts as a stress buffer for both a variety of life events (Johnson & Sarason, 1978; Huisani & Neff, 1981; Lefcourt, 1981) and for specific, life-threatening experiences such as spinal cord injury (Shadish, Hickman, & Arrick, 1981), other serious accidents (Bullman & Wortman, 1977), and chronic hemodialysis (Poll & Kaplan-DeNour, 1980).Internals have been found to manifest significantly lower levels of symptomatology than externals following the occurrence of stressful events. In addition, locus of control has been found to interact significantly with other moderator variables such as social support (e.g., Sandler & Lakey, 1982). Two writers have also hypothesized that locus of control may also interact with stress to enhance or facilitate growth (Moos & Billings, 1982, p. 227):

> Personal resources such as internal control may also enable individuals to remain healthy in the face of high levels of stress and to reappraise potentially disabling traumatic events as opportunities for personal growth.

The sensation-seeking motive has also been found to lessen the adverse impact of stressful life events (see Smith, Johnson, and Sarason, 1978). This personality characteristic, which has been construed as an individual's need for stimulation (see Maddi, 1980b) would also seem to be a reasonable candidate for a growth-facilitator: stressful life events by their nature involve change, novelty, and stimulation, and individuals high on

sensation-seeking may well like a certain amount of stress and be able to learn, grow, or change from it.

In this connection, research conducted by Finkel has shed some light on the relationship between stress and psychological growth and also attempted to identify a possible explanatory mediating process along with a personality variable associated with it. In a series of studies, Finkel (1974, 1975) and Finkel & Jacobsen (1977) investigated the concept of "stren", defined by Hollister (1967) as a "strengthening" or "growth-potentiating" experience and treated as an antonym of a trauma, defined as a psychologically injurious experience.

In his first study, Finkel (1974) found that college students recalled both traumatizing and strenthening experiences with approximately equal frequency. In addition, unexpectedly, some of the same events were evaluated as strengthening by some students and as traumatic by others (e.g., a major failure in school, sexual relations, a situation involving physical danger, and the death of someone close.) Subjects had difficulty categorizing some of these events, and in some cases started classifying them as traumas but concluded that they were really strens. This led to the creation of a third category of events, those that were initially perceived as traumatic but later considered strengthening. About one-third of the events fell into this category and it was

found that the change in subjects' conceptions of these events involved a reinterpretation of the subjective meaning of the event rather than its objective characteristics. Finkel compared this reinterpretation of an event to the successful resolution of a crisis.

In the second study, Finkel (1975) sought to discover more about this resolution process. Working with another group of college students and using the same procedure he employed in his first investigation, Finkel found that at least one "resolved experience" -- one that starts off as a trauma but ends up a stren -- was reported by most of the subjects. Regarding the nature of the resolution process, he found, as in the first study, that it was primarily cognitive in nature and that subjects' first interpretation often involved a negative appraisal of the self, a situation, a family member or friend, while the revised interpretation was more positive and optimistic. Focusing on how subjects' views of themselves changed during the resolution process, Finkel (1975, p. 176) stated:

> The new view of self after the resolution process is not devoid of flaws and weaknesses; to the contrary, mistakes, hurts, insecurities, dependency, and fears are painfully acknowledged. What does emerge are attributes (e.g., the discovered ability to cope, adapt, learn, grow, and become self-reliant and independent) which produce a greater sense of strength, depth, maturity, sensitivity, honesty, and self-confidence.

Finally, Finkel & Jacobsen (1977) investigated strens, traumas, and trauma-strens (trauma-resolved experiences) over time in an adult sample. They found that for the third category of events, after the first trauma resolution additional resolutions became more frequent. This is consistent with the notion that resolution of a stressful event may be followed by enhanced coping ability. In addition, in interviews, some subjects recalled using the lessons from previously experienced traumas to resolve later ones. Also, of the three variables affecting the resolution process that were examined (age, type of event, and the person), the authors concluded that "the person" was the most critical, and the characteristic of the person that was deemed to be most helpful was the tendency to engage in what Finkel refers to as a cognitive-intuitive, reinterpretive process of looking at the meaning of the event in a new, more positive way.

The literature reviewed thus far suggests that the outcome of stressful life events is multi-dimensional, offers some evidence that psychological growth or change does occur, and begins to implicate possible individual difference variables that may distinguish between those who change and those who don't. The evidence presented indicates that there may be positive changes in personality characteristics, values, performance, social relationships, and coping capacity. Accordingly, a case can be made at this stage in life stress research that health status is

only one of several variables that need to be considered when investigating outcome. While other, "growth-related" outcomes such as those above have been identified, it appears that they have not been studied systematically enough, nor have they been sufficiently explained. These are two goals of the present work.

Existing theory and research has also not sufficiently addressed the role that the context of a life event might play in causing individuals to change, and this is another goal of the present study. "Context" has been investigated in life stress/health status research and has been conceptualized in two ways. First, it has been defined by some investigators simply as the life area within which certain types of life events may be categorized (e.g., Myers, Lindenthal, & Pepper, 1975; Folkman & Lazarus, 1980). For example, the Myers group placed the events of "divorce" and "birth of a child" in the <u>family</u> context, and "promotion" in a <u>work</u> context. Second, context has been conceptualized in more complex fashion by some researchers (e.g., Brown, 1981) to include not only life area but socio-economic and demographic factors, the involvement of other people, effects of contemporaneous stressors, and other surrounding circumstances (see Brown, 1981). The importance of context and its differential impact on how individuals cope with stressful life events has been investigated by several writers (e.g., Pearlin & Schooler, 1978; Folkman & Lazarus, 1980); its effect on psychological

and physical health has also been studied (e.g., Brown, 1981; Liem & Rayman, 1982). While research reported above suggests that life events in certain contexts (e.g., divorce) might produce growth for some individuals, there does not appear to have been a study comparing the effects of different contexts on such an outcome.

From the available literature it appears that two promising outcome variables which can be conceptualized as specific measures of psychological growth are coping ability and social well-being. With regard to coping ability, we have already presented both theoretical and empirical support for the notion that experiencing a stressful event strengthens one's ability to cope with future stress. A full rationale for using coping ability as an outcome measure in the present study will be presented below in the section on coping, adaptation, and the principle of stress innoculation.

As an outcome variable in life stress research, social well-being has received less attention than coping ability. Yet evidence reported above from, for example, research on war stress (e.g., Egendorf, 1981; Yarom, 1982), sudden death of a close relative (Bard, 1982) and empathy (Haan, 1977) suggests the possibility that one's social well-being can be enhanced after stressful experiences. As conceptualized by Donald & Ware (1982), this notion is derived from an earlier concept of "social health", which

has been studied mostly in the context of health surveys (e.g., Renne, 1974; Donald, Ware, Brook, & Davies-Avery, 1978). Social well-being is operationally defined in this investigation as the breadth and depth of one's social relationships with family and friends along with one's participation in community organizations such as the church and civic clubs. Regarding Renne's (1974) study, she assessed the social health of approximately 7000 adults in California in a community survey. She conceptualized and measured social health in terms of the degree to which an individual was a functioning member of her community. Components of Renne's social health construct were employability, marital satisfaction, sociability, and community involvement. These four criteria were operationalized on a questionnaire as follows: employability included items that assessed level of education, occupational level, and job stability; marital satisfaction consisted of attitudinal questions with semantic differential responses indicating the degree of satisfaction-dissatisfaction; sociability included items measuring number of close friends and frequency of contact with them; and community involvement included number of organizations a subject belonged to along with degree of activity in such organizations and also political activity (e.g., voting activity). An overall social health index was also constructed by summing constructed index scores for each of the four components. Renne found that social

health was correlated with psychological and physical well-being and subjective evaluation of one's own health.

Donald and her colleagues (1978) had originally conceptualized social health as one aspect of a broadened, tri-partite, holistic definition of health put forth by the World Health Organization (WHO) in 1948 (Brook, Ware, Davies-Avery, Stewart, Donald, Rogers, & Williams, 1979, p.6): "Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." While WHO laid the conceptual foundation for the notion of social health, it did not operationalize the concept. Reviewing the literature on social health, Donald and her colleagues report that it has most often been operationalized in ways similar to Renne's (1974) conception, namely as the breadth and depth of one's social relationships, including those with family, friends, and community organizations. Following this lead, they developed a questionnaire to measure these components of social health.

Constructs related to social well-being have only recently come under consideration as an outcome variable in both lifespan developmental and life stress research. Regarding the former, Vaillant (1977) used a measure of social adjustment based in part on Renne's (1974) criteria in his longitudinal study of adult male development. He found that this variable was associated with good

psychological adjustment. With regard to life stress research, Cohen & Lazarus (1983) contend that stress and coping can have a significant impact on social functioning and recommend that more research be conducted to investigate not only the components of social health presented here but also the effectiveness of one's interpersonal skills and the degree to which one successfully fulfills social roles. The present study investigates the joint impact of stress and personality on social well-being, testing the hypothesis that it can be enhanced for certain individuals following stressful events.

Given that some individuals may change after stressful life events, and given that one aim of the present study is to ascertain if hardiness distinguishes between those who do or don't change, it would be useful to to explain theoretically how growth might occur. In order to do this we must turn our attention again to outcome variables in life stress research. Why has health status been the main outcome variable investigated thus far? As noted earlier, one answer could be that life stress research was an outgrowth of epidemiology and the study of psychosomatic disorders (indeed research on stressful life events still typically appears in either of these two sections in Abnormal Psychology textbooks.) The typical life stress paradigm appears constrained by this epidemiological-psychosomatic tradition and its concomitant

organismic assumptions. These assumptions seem to be based on a tension-reduction, homeostatic model of human nature, rendering the organism primarily reactive. According to this view, a life event impacts on a person, causing a normal, transient stress reaction (see Dohrenwend's model, above), which includes tension; then adjustive mechanisms come into play in an effort to reduce the tension and return the organism to the state it was in before the event occurred.

In contrast, the idea that an individual can undergo psychological growth or change after a stressful event implies a different view of human nature, namely what might be described as a tension-resolution dialectical assumption. The organism is assumed to be active as well as reactive -- a life event occurs, creating tension; then adaptive mechanisms may actively be brought to bear by the organism in order to "resolve" the tension. It is the resolution of tension that may lead to growth, following an idea of Antonovsky's (1979) mentioned earlier. Lazarus' transactional model of adaptation to stress is closer to this dialectical assumption than to the simple homeostatic model presented above because it portrays the individual as more active; however, in the Lazarus model (e.g., Lazarus & Launier, 1978) the person only appears active insofar as he is avoiding illness.

The tension-resolution assumption is also similar to the tension-activation model of the organism offered by Maddi (1980a), but in the present context it is derived from developmental psychology, crisis theory, and humanistic-existential psychology, to be discussed below.

Developmental Psychology

Two bodies of literature in developmental psychology can contribute to Dohrenwend's model of the life stress process and to the formulation of the main hypotheses of this study: 1) developmental stage theories; and 2) life-span developmental research.

Well-known developmental stage theories, such as those postulated for cognitive, moral, psychosocial, and ego development (Piaget, 1950; Kohlberg, 1963; Erikson, 1959; Loevinger, 1966) all make the assumption that psychological growth and development unfold dialectically. According to this type of theory, by actively coping with and resolving tasks faced at one stage of development, the individual moves on to another, higher stage in a particular psychological domain and is changed in so doing. In cognitive development, for example, Piaget (1950) assumes that adaptation consists of a continual interaction between the organism's assimilation of new experiences and its accommodation to those experiences. Erikson's (1950, 1959) theory of psychosocial development appears to include the same assumption, which is inherently dialectical. In the

words of Vaillant, whose life-span developmental studies of Harvard men were influenced by Erikson's theory (Vaillant, 1977, p.201), Erikson

> ...was among the first social scientists to appreciate fully that adults do not march on from life event to life event (my italics), from graduation to marriage to "empty nest" to retirement. Instead, he demonstrated that adults change dynamically in the process.

One way in which Vaillant (1977) found that adults change is by relinquishing less mature in favor of more mature ego defense mechanisms, including increased sublimation, altruism and humor.

The Piagetian assumption about organismic adaptation is made in this study with regard to the growth-producing effects of stressful life events.

Life-span developmental research is relevant to the present study in two ways: first, for several years it has addressed the issue of whether or not individuals actually change in adulthood (e.g., see Schaie & Parham, 1979); second, it has recently begun to also investigate the role that environmental stressors such as life events might play in the process of change (Hultsch & Plemons, 1979; Fiske, 1982). Much of the research in the first category has been concerned with the stability or variability of personality characteristics over time apart from explicit environmental or situation influences. There appears to be considerable evidence for both stability and change. Several authors

have found substantial stability (e.g., Barton, Cattell, & Vaughn, 1973; Britton & Britton, 1972; Costa, McCrae, & Arenberg, 1980; Kelly, 1955; Schaie & Parham, 1976; Fiske, 1982) while others have found significant change (e.g., Block, 1971; Neugarten, 1969; Campbell, 1966; Dyer, Monson, & VanDrummelen, 1971; Goodwin & Schaie, 1969). A third, or middle position on the issue is taken by Kimmel (1974), who believes that the weight of existing research suggests that individuals do in fact change in adulthood, but in specific, limited ways, and less than in childhood or adolescence.

Regarding the role of the environment, some writers have devoted attention to the impact of discrete life events on the course of adult development. (e.g., Bloom, 1974; Marris, 1975; Elder, 1979; Sears, 1977; Neugarten, 1977; Datan & Ginsberg, 1975; Lowenthal, 1971; Hultsch & Plemons, 1979; Fiske, 1982). Bloom (1974), for example, subscribes to what he considers the common sense notion that individuals change with a changing environment and that the normal developmental events of adulthood (e.g., college graduation, marriage, childbirth, children leaving home, retirement) result in continual personality development throughout life. Neugarten (1977) claims that change in adulthood does exist and does not occur merely because of "age" but rather because of a variety of life experiences, including developmental events which are either "on-time" or "off-time" along with accidental

events. Some of the research emerging from this perspective has attempted to test certain developmental stage theories, such as those of Erikson (e.g., Levinson, Darrow, Klein, Levinson, & McKee, 1978) while other investigations (e.g., Mortimer, Finch, & Kumka, 1982) have made no a priori theoretical assumptions. The study by Mortimer and his associates also represents an integration of two paradigms (that of life event and lifespan developmental research). Such a pooling of knowledge has also been attempted and recommended by several writers (e.g., Lowenthal & Chiroboga, 1973; Hultsch & Plemons 1979; and Fiske, 1982) who view it as a more effective method for addressing the issue of psychological change in adulthood.

Mortimer and his colleagues investigated the impact of specific positive and negative life events on the competence levels of young men over a decade following college graduation. Competence levels were assessed at graduation and again after ten years. Three groups were identified, according to whether their competence level increased, remained stable, or decreased over the decade. Life events significantly discriminated between the three groups and also predicted levels of competence assessed at the final time period. Positive events (e.g., an improvement in relations with parents or spouse, educational accomplishments, obtaining a job, raise, or promotion) were followed by increases in competence while negative events (e.g., a deterioration in relations with

parents or spouse, or a job loss) were followed by declines in competence.

Although much of the research on change in adulthood has been exclusively nomothetic, there has been some work that has utilized idiographic techniques as well (including interviews), notably that of Murray (1938), White (1975), and Vaillant (1977). The present study draws on this tradition in attempting to investigate change in adulthood and the influence of stressful life events on such change.

Crisis theory and research

Crisis theory may also be used to explain parts of Dohrenwend's model in relation to growth after stressful events. In defining the concept of crisis, Caplan (1964) distinguished between it and normal difficulties in life. During the time surrounding normal difficulties, there is tension and temporary disequilibrium while problems are being solved, but eventually normal equilibrium is re-established. In a crisis the "problem stimulus" is larger and the usual re-equilibrating forces are unsuccessful within the usual time frame. In other words, demands are so great that they tax an individual's coping mechanisms beyond capacity. After a crisis, when equilibrium is eventually achieved it may differ significantly from the previous one. Caplan views a crisis as a turning point for the person, and he states that an individual may change in unexpected ways as a result of it

(Caplan, 1964, p. 36):

> The changes may be toward increased health and maturity, in which case the crisis was a period of opportunity. The changes may be toward reduced capacity to deal effectively with life's problems, and in that case the crisis was a harmful episode.

Caplan hypothesized that the outcome of a crisis depends on how a person handles it, and adds that the possibility of the two kinds of outcomes he just mentioned differs from earlier views of stress as something that was never helpful. The old theory, according to Caplan, could not account for the commmon observation that individuals who succeed in mastering a distressing experience in particular ways often appear strengthened by this whole episode and better able to deal with stress in the future. Some men, for example, have emerged from combat experiences with traumatic neuroses (see Grinker & Spiegel, 1945) while others have come out of them matured and strengthened, with increased self-reliance and greater capacity for leadership and initiative. Caplan's view is consistent with the findings of Egendorf (1981) and Yarom (1982) reported earlier.

A psychoanalytic view of the crisis concept relevant to the present investigation is offered by Rapoport (1962). A crisis, according to Rapoport (1962, p.24) is likely to "reactivate unresolved or partially resolved unconscious conflicts." What this means is that on the one hand the

individual may be more vulnerable to injury from a stressful event that is similar in nature to one experienced in the past (for example, a major loss) that was not adequately resolved, but on the other hand, according to Rapoport, the current crisis may give him a "second chance" to resolve the earlier experience and thereby improve his ability to cope with similar crises in the future.

Smith (1970) also considers a crisis a time of opportunity for positive change. He points out that one aim of crisis intervention is to help the individual learn more effective coping skills that can replace the ones that have failed him during the crisis and give him more control over his environment. To test this idea he investigated change in locus of control over a 6-week period in a group of crisis-intervention patients and compared them to a group of non-crisis psychotherapy patients. Results indicated that the crisis group became significantly more internal over the six weeks, while the non-crisis group did not change significantly.

Bard & Sangrey (1979) have focused on the crisis concept as it relates to a specific type of stressful life event -- crime victimization. They describe the crisis reaction that victims experience, citing vivid particular examples. Though some elements of the reaction are specific to this kind of event, the overall pattern, it is

claimed, applies to all crises, including grief and disaster aftermaths (see Parkes, 1972; Lindemann, 1944). These authors also identify factors which aid in successful crisis-resolution and that may enable individuals to eventually gain strength from this painful experience. They delineate three stages to the reaction: impact (characterized by disorganization of the self); recoil (the struggle to adapt to the violation of self); and reorganization (eventual readjustment and reintegration of the self). Victims seldom progress through these stages in linear fashion -- instead they slip back, move ahead, and slip back again until they finally complete the process. Regarding the long-term outcome of the crisis, Bard & Sangrey (1979, p. 47) state:

> The violation of self can hardly be called a positive experience, but it does present an opportunity for change. One of two things will happen: Either victims become reordered, reborn, put back together so that they are stronger than before, or their experiences during the crisis will promote further disorder with long-term negative consequences.
>
> A great deal depends on the kind of help the victim receives...The victim who receives appropriate help from family and friends, for example, will come out of the crisis with a heightened appreciation for them and a greater ability to seek their help again. Weathering a crisis can be a strengthening experience for victims and those who love them.(my italics)

It appears from the work of Caplan (1964), Rapoport (1962), and Bard & Sangrey (1979) that the outcome of a crisis depends, at least in part, on how well the person progresses through the stages described above. The present

study hypothesizes that hardy individuals are better able to traverse these stages than nonhardy ones.

From a combined crisis-developmental perspective, Riegel (1975) and Danish & D'Angelli (1980) have argued that a life crisis may not only simply result in psychological growth but may actually be necessary for it to occur. They view crises as forcing the individual to "restructure" his life and values.

There have also been some attempts to utilize crisis theory to explain research findings that support a stress-growth connection. Kraus (1979) proposed a crisis model to account for the short and long-run impact of divorce after reviewing a number of studies. The crisis view was put forth as an alternative to what Kraus called the traditional "pathogenic perspective on divorce" (prevalent prior to the 1960's and 1970's) which concentrated only on the short-run. She distinguished between short-term emotional turmoil on the one hand (assumed to occur for most individuals) and the possibility of either positive or negative outcomes over the long-term and found empirical evidence consistent with this. For example, in a study conducted by Brown, Feldberg, Fox, & Kohen (1976), seventeen of thirty divorced women who were interviewed reported that in the long run they had become strengthened after their divorce in a number of ways, including developing greater personal autonomy, a new sense

of competence and control, better relationships with their children, and freedom to develop more of their own interests. In addition, as noted earlier, Yarom (1982) proposed the idea that facing death during wartime is akin to an existential crisis that, if adequately resolved, could result in psychological growth.

Humanistic-existential psychology

The organismic assumption that an individual may be changed by and grow from a stressful experience is also consistent with the humanistic notion of the self-actualization motive, as elucidated by Maslow (1954) and Rogers (1961). These writers assume that tension is part of life, and that the organism cannot grow without it. Given that stressful life events normally produce tension, it would seem that stress could be growth-enhancing for individuals high in the self-actualization motive. Existentialist psychologists believe that man is constantly changing and evolving over his lifetime through his interaction with the world (e.g., see Maddi, 1980). Important life events are considered turning points for the individual and have the potential to affect him profoundly. Jaspers (1923) called some of these turning points "marginal" or "frontier" situations (e.g., a situation that causes one to face one's own death) and saw them as new opportunities for the person. By fully experiencing and conquering these situations, according to Jaspers, an

active, involved individual can undergo psychological growth. Jaspers also contended that human beings cannot avoid stressful, conflictual situations -- with society, others, and oneself. He said (Jaspers, 1923, p. 326):

> Conflicts may be sources of defeat, lost life, and a limitation of our potentiality but they may also lead to greater depth of living and the birth of more far-reaching unities, which flourish in the tensions that engender them.

The hardiness personality style, conceptualized and tested empirically as a stress-resistance resource by Kobasa (1982a), also emerges from this existential perspective and appears to offer a conceptual link between life stress and growth. In addition, it focuses on individual differences. According to Kobasa (1982a), hardiness consists of three dimensions: commitment, control, and challenge. Individuals who are committed (as opposed to being alienated) presumably have the self-esteem, competence, and sense of community to cope effectively with stressful events. Those who are high on control (as opposed to feeling powerless) feel they can not only influence and bring about events in their lives but can also lessen their possible adverse impact by interpreting them as meaningful. Finally, persons high on challenge (as opposed to security) are oriented towards change rather than stability in life -- they are more likely to appraise stressful events as challenging rather than threatening.

The stress-moderating effects of hardiness and also of its subscales have been investigated, both retrospectively and prospectively (e.g., Kobasa, 1979; Kobasa, Maddi, & Kahn, 1982). Hardiness has been found to reduce the occurrence of physical and mental symptomatology for several different populations, including business executives and army officers (see Kobasa, 1982a). The commitment subscale has also been found to buffer life stress among a group of lawyers (Kobasa, 1982b). Control has been found to attenuate the relationship between life stress and symptomatology in research cited earlier (e.g., Johnson & Sarason, 1978; Lefcourt, 1981) The idea of extending the notion of hardiness from a stress-illness moderator to a stress-growth facilitator seems promising, especially with regard to the challenge dimension. Kobasa herself has hypothesized (Kobasa, 1982a, p. 7):

> From the perspective of challenge, much of the disruption associated with the occurrence of a stressful life event can be anticipated as an opportunity and incentive for personal growth, rather than a simple threat to security.

This hypothesis has yet to be tested.

In addition, hardy individuals are more inclined than nonhardy persons to use "transformational" as opposed to "regressive" coping strategies when dealing with stressful life events (Maddi, 1980b; Kobasa, 1982b). Transformational coping consists of facing a stressful experience squarely by attempting to solve the "external"

problems created by the event and also appraising the situation as optimistically as possible. Regressive coping includes problem-avoidance and temporary reduction of emotional distress through unproductive escape mechanisms (e.g., excessive drinking) along with pessimistic appraisal. Transformational coping has been hypothesized to be a growth-facilitator by Maddi & Kobasa (1984).

Coping, adaptation, and the principle of stress-innoculation

Given that one hypothesis of this study is that stress and personality work together to promote the acquisition of effective coping strategies, it is necessary to justify the use of coping strategies as an outcome variable. In order to do this we might ask several questions: 1) which coping strategies have been identified? 2) which ones have been found to be effective in buffering stress? 3) how do individuals develop or acquire these strategies?

With regard to the types of coping strategies individuals employ, from a conceptual standpoint, Pearlin & Schooler (1978) and Moos & Billings (1982) have identified 3 major classes of coping modes: 1) appraisal-focused coping; 2) problem-focused coping; and 3) emotion-focused coping. Appraisal-focused coping strategies essentially involve clarifying or changing the meaning of a stressful life event so that its new meaning is less threatening than its old one (Moos & Billings, 1982), which might include,

for example, re-appraising the controllability of an event (Parkes, 1984) -- this is assumed to be primarily a cognitive activity. Problem-focused coping includes direct action to solve the problem created by the event -- it is assumed to be primarily a behavioral activity: the individual acts on the environment. Emotion-focused coping consists essentially of managing one's emotional reaction to an event.

Empirically, a finding that has been consistently reported in a number of studies (e.g., Pearlin & Schooler, 1978; Folkman & Lazarus, 1980) is that individuals tend to employ a variety of coping stategies. Folkman & Lazarus found, for example, that both problem- and emotion-focused coping were used in almost all stressful episodes. In addition, there is also evidence that use of a particular strategy may be related to the life area where the event occurs (Pearlin & Schooler, 1978), or specific event characteristics (Parkes, 1984). With regard to the latter, Parkes found that individuals tended to favor problem-focused techniques for controllable events and emotion-focused techniques for uncontrollable events.

The second question, having to do with which coping strategies have been found to be effective, is relevant to the present study for the following reason: in order to justify the use of a particular coping strategy or repertoire as a measure of psychological growth, it is

necessary to demonstrate that the construct has a hierarchical and unipolar property (simply put, this means that possessing or using more of it is more adpative for the person than possessing or using less of it). One effective way to make this argument is to present empirical evidence in support of a particular coping strategy's effectiveness in buffering stress. This means drawing upon literature in which coping strategies were investigated as mediating variables. In this connection we must first ask, what are criteria of effectiveness? Several writers who have taken up this question appear to agree on the following criteria (Caplan, 1964; Hamburg & Adams, 1967; and Ilfield, 1980): 1) how well personal distress is relieved; 2) how well one's sense of personal worth is maintained; 3) how well one is restored to previous level of functioning. At the most general level, the claim has been made by Gal & Lazarus (1975) that being engaged in activity, rather than remaining passive is effective for most persons in most stressful situations. But what does effective coping activity consist of?

From the perspective of crisis theory, Rapoport (1962) and Caplan (1964) claim that certain strategies are effective by their very nature. Rapoport asserts that appraisal-, problem-, and emotion-focused coping are all effective, and that an important aspect of both problem- and emotion-focused coping involves a willingness to seek and accept help from others. Drawing on his own clinical

experience, Caplan (1964) identified eight effective coping techniques that he claimed could be applied to a variety of situations. The first six appear to include problem-and emotion-focused strategies while the last two seem to relate more to the individual's personality:

(1) active exploration of reality issues and search for information;
(2) free expression of both positive and negative feelings and a tolerance of frustration;
(3) active invoking of help from others;
(4) breaking problems down into manageable units and solving them one at a time;
(5) awareness of fatigue and tendencies toward disorganization with pacing of efforts and maintenance of control in as many areas of functioning as possible;
(6) active mastery of feelings when possible and acceptance of inevitability when not;
(7) flexibility and willingness to change;
(8) basic trust in oneself and others and basic optimism about the outcome.

The idea that certain coping strategies are more effective or adaptive than others suggests that coping strategies may be ordered hierarchically. Several writers have developed this notion, either explicitly or implicitly, and their work is described below.

As noted earlier, Maddi (1980b) and Kobasa (1982b) have distinguished between <u>transformational</u> and <u>regressive</u> coping, hypothesizing that the former is more adaptive than the latter. Evidence in support of this comes from a study of Kobasa's (1982b) in which it was found that lawyers who avoided regressive coping were less likely to develop physical and mental symptoms of strain after stressful life

events than those who did engage in such coping.

Regarding other coping strategies that have been ordered hierarchically, the so-called Type-A behavior pattern has been found to be less adaptive to life stress than the Type-B pattern (Friedman & Rosenman, 1958; Vickers, Hervig, Rahe, & Rosenman, 1981). Haan (1977) developed a three-tier hierarchy of effective coping tied to the ego mechanisms of "coping", "defending" and "fragmentation". Vaillant (1977) also formulated a coping hierarchy based on the ego mechanisms -- he grouped them on a continuum of effectiveness, ranging from "mature" to "neurotic", "immature" and "psychotic." Among mature mechanisms he included altruism, humor, suppression, anticipation, and sublimation. In his longitudinal study of Harvard male graduates (Vaillant, 1977) he found that the level of maturity of subjects' ego mechanisms correlated with scales measuring objective psychopathology and level of functioning in marriage, work, and social relationships. Additional evidence of the maladaptive nature of the less mature ego mechanisms has also been reported by Andrews, Tennant, Hewson, & Vaillant (1978); Tanck & Robbins (1979); and Frydman (1981).

Finally, Ilfield (1980) inquired into the nature of effective coping strategies by studying coping in approximately 2300 subjects who faced stressors in four major life contexts-- marriage, parenting, job, and

finances. He found three major strategies: 1)direct action against the perceived stressor; 2) rationalizing or avoiding the stressor; 3) accepting the stressor without being able to change it. Coping effectiveness was defined as the extent to which a strategy is predictive of dependent variables that include distress in the particular life area and psychiatric symptomatology. Of the three styles, direct action was found to be most effective in the areas of marriage, parenting, and finances; there was no difference among the three with regard to work stress.

Least studied of the three questions asked above is the origin of coping strategies. This question is relevant to the present study because a clear understanding of how coping strategies develop might implicate stressful events and their resolution in this developmental process. In most studies of life stress in which coping strategies are investigated as mediating variables, it is assumed that individuals possess the strategies in their repertoires to varying degrees, and little attention is given to how they acquired them. Theory and research related to the principle of "stress-innoculation" can shed light on this issue. The essence of this principle is as follows: experiencing a stressful event, along with the specific type of emotional reaction to that event, may enable an individual to become strengthened or "innoculated" against future stressful events. In effect the person acquires a new, more effective coping strategy. The idea of

innoculation is taken from the biological analogy of an individual being injected with a live bacterial or viral vaccine so that his immunological system is better able to resist the invasion of an organism of the same kind in the future. In the words of Meichenbaum, Turk, & Burstein (1975, p. 344):

> ...one way to develop maximal protection against emotional stress is for the person to experience similar but less extreme versions of the stress.

According to Breznitz (1971), basic training in the military is based on the principle of stress-innoculation. The principle is consistent with the general hypothesis advanced in this study.

Several writers have investigated or attempted to explain the stress-innoculation concept in their work -- Janis (1965), Meichenbaum, Turk, & Burstein (1975), Meichenbaum (1977), and Novaco (1977).

Janis (1958, 1965) provides empirical support for the notion in his research on "the work of worrying." The work of worrying is seen as part of the process of coping with certain kinds of stressful life events. In a prototypical situation, a patient is informed by his physician that he must undergo surgery to ameliorate a certain condition; the patient then experiences a certain amount of normal, anticipatory anxiety; she undergoes surgery, which is followed by a convalescent period. Janis (1965) found, in research with surgical patients, that those who experienced

moderate amounts of anxiety prior to surgery coped better with the procedure (as indicated by, among other things, less post-surgical pain) than patients who experienced little or no pre-surgical anxiety. His explanation for this finding was that the former group engaged in "the work of worrying" and he has concluded that deliberately allowing oneself to experience a certain amount of anxiety between earlier and future related stressful life events can enhance coping capacity for the future event. It is important to note that the notion of "the work of worrying" includes the idea that anxiety is a normal, useful emotion which can have instrumental or motivational value: the patients in Janis' study with moderate amounts of anxiety were also the ones who sought and received the most information about what the post-surgical period would be like (amount of information received was also found to be related to post-surgical adjustment). It is reasonable to assume that these patients' anxiety motivated them to seek medical information, in much the same way that moderate amounts of anxiety have been found to motivate students to prepare more effectively for an examination (see Mechanic, 1962).

Additional empirical support for the "work of worrying" phenomenon comes from the research of Egendorf (1981) on Vietnam veterans described earlier: recall that some of Egendorf's subjects who said that they benefitted from their war experience also reported a tendency to

acknowledge their anxiety during stressful situations.

It also should be noted that the positive, adaptive value given to anxiety during a stressful period is in marked contrast to more recent, cognitively-oriented approaches to coping (e.g., Pearlin & Schooler, 1978; Lazarus & Launier, 1978). These authors view emotional reactions as often inevitable but unuseful and undesirable consequences of stressful events that are only to be "managed." Such a view suggests inadequate attention given to the natural, adaptive value of certain kinds of emotional reactions, as suggested by Horowitz (1982), as well as the possibility that one can learn from one's emotional reactions (Rapoport, 1962).

Meichenbaum, Turk, & Burstein (1975) also investigated the notion of the "work of worrying" and found results consistent with those of Janis (1965). In a study of children awaiting tonsillectomies, the degree of "work of worrying" was operationalized by allowing the children to play with different types of toys while waiting for surgery and by giving them projective tests (including pictures of a child in a hospital). The "work of worrying" group was found to have played with more stress-related toys and told projective stories that had characters worrying more. With regard to outcome, these children were found to have less post-surgical difficulty than the group called "deniers", who tended to avoid stress-related content in their playing

and stories.

Meichenbaum's (1977) stress-innoculation training incorporates the work of worrying. The training consists essentially of three phases, which are cognitive preparation, coping skills acquistion and rehearsal, and skills application and practice. Novaco (1977) has successfully conducted such stress-innoculation training with police officers. According to Meichenbaum & Novaco (1978, p. 278) the purpose of stress-innoculation training is:

> ...to convey to the participants a sense of control. This sense of control in turn influences ability to cope, and so on. The goal is to reverse the maladaptive, vicious cycle that leads to a sense of learned helplessness and to implement an adaptive, virtuous cycle that leads to a sense of learned resourcefulness.

The work of Janis (1965) and Meichenbaum (1977), while consistent with the idea of the positive effects of stress, does not give sufficient attention to individual differences. Specifically, we might ask, are certain individuals more likely than others to engage in "the work of worrrying?" And are certain individuals more likely to benefit from stress-innoculation training than others? These are as yet unanswered questions.

Operating out of a behavioral perspective, Rosenbaum (1980a, 1983) hypothesized that some individuals possess a coping repertoire that enables them to resist factors which are assumed to cause specific forms of psychopathology (e.g., depression and phobias), and he has labeled this repertoire "learned resourcefulness". Behaviors in this repertoire used to be called, according to Rosenbaum, self-control behaviors and coping skills. He defines learned resourcefulness as constituting a compendium of skills that an individual uses to control the disabling effects that certain internal events (such as emotions, pain, or undesired thoughts) have on normal behavior. In developing the concept, Rosenbaum draws heavily from the work of Meichenbaum (1977), and also utilizes Bandura's notion of self-efficacy (Bandura, 1977) as well as the concepts of problem- and emotion-focused coping presented earlier. Learned resourcefulness consists of: (a) the use of cognitions and self-statements to cope with disturbing emotional and physiological responses; (b) application of problem-solving strategies (e.g., planning, problem definition, evaluating alternative solutions, anticipation of consequences); (c) the ability to delay immediate gratification; (d) a general belief in one's ability to self-regulate internal events. This repertoire is similar to the set of skills acquired through the stress-innoculation training cited above. Extrapolating to the natural (as opposed to intervention-related)

development of such a skill-set, it is reasonable to hypothesize that naturally-occurring stressful events, along with a predisposition to deal with such events in the manner Meichenbaum teaches could enable certain individuals to gain in learned resourcefulness.

Rosenbaum (1980b) has constructed the Self-Control Schedule (the SCS) which assesses these four dimensions of learned resourcefulness (LR). Resourcefulness has been found to be an effective coping strategy when used to resist various types of stress. In one study, for example, Rosenbaum (1980b) found that subjects high in learned resourcefulness were able to tolerate painful stimulation longer than subjects low in LR. In another, as reported in Rosenbaum (1983), seasick sailors who were high LR performed better at work than another group of seasick sailors who were low in LR. Finally, Rosenbaum & Palmon (in press) found that high LR epileptic patients had lower level of functional impairment soon after seizures than low LR patients, even though both groups reported the same degree of depression and anxiety immediately following the seizures. In a related study, Ruff & Sheldon (1967) found that possession of one skill included in the learned resourcefulness repertoire -- problem-solving ability -- enabled astronauts to better control anxiety during space flights.

Empirical evidence such as that presented above suggests that learned resourcefulness is a strategy that is effective in coping with different kinds of stress. It qualifies as an appropriate outcome variable for this investigation for two reasons. First, the evidence just presented suggests that it meets the requirement of being hierarchical and unipolar which were described earlier. Second, as indicated by a factor analysis performed by Redden, Tucker, & Young (1983), it is a multi-dimensional coping skill repertoire, consisting of elements of appraisal-, emotion-, and problem-focused coping. This suggests that being high on learned resourcefulness means that one possesses a variety of coping skills, and utilization of such a variety is a major finding in coping research. In other words, learned resourcefulness would appear to have good external validity.

It should also be noted that learned resourcefulness includes the kinds of behaviors and belief that have been considered by several writers to be associated with maturity, and that maturity has in turn been hypothesized to be another form of psychological growth an individual could experience following stressful life events (see Dohrenwend, 1978; Caplan, 1964; Haan, 1977; and Egindorf, 1981). Specifically, self-control and the ability to delay gratification have often been considered synonymous with maturity (see Cox, 1974), while problem-solving ability and a belief in self-efficacy have also been considered aspects

of the mature ego (Barron, 1963). One could argue, therefore, at least on conceptual grounds, that learned resourcefulness is not only an effective coping strategy but a mature one as well.

Rosenbaum (1983) has suggested that a promising direction for future research would be an investigation of the antecedents of learned resourcefulness. It is my contention, as noted above and as indicated in one of the central hypotheses of this investigation that life stress and personality hardiness could be two such antecedents.

It should be noted that the construct and measure of "learned resourcefulness" appears to have at least one limitation: it does not include those coping skills which involve asking other people for help, a coping technique found to be effective in dealing with stress by Caplan (1964), Rapoport (1962), Folkman & Lazarus (1980), and Gore (1981) and also one which would seem to be effective on intuitive grounds. Gore, for example, contends that a stressful life event may prompt an individual to "mobilize" her social network in order to cope with that event's debilitating effects. This implies that an individual's social network could be strengthened or enlarged in the process. Given the sizable body of evidence indicating that social support is a stress-buffer (e.g., Cohen & Wills, 1985; Cobb, 1976), what this means, in effect, is that enhanced social well-being following a stressful event

may not only be viewed as an end in itself but also conceptualized as an additional resource that is added to one's stress-resistance repertoire. Accordingly, a test involving the outcome variable of social well-being may serve to compensate for the limitation in Rosenbaum's work, allowing one to eventually arrive at a more accurate, generic definition of "learned resourcefulness", thereby bringing one closer to identifying the broadest, most effective, and most veridical coping repertoire.

Overview of Aims

In summary, given the background just presented, what were the aims of the present investigation?

First, this study examined, through the quantitative analysis of nomothetic questionnaire data, the relationship between a variety of stressful life events, personality hardiness, and two specific outcomes used as measures of psychological growth, namely coping ability and social well-being. The construct representing coping ability is Rosenbaum's (1980b) learned resourcefulness, and that for social well-being is the one developed by Donald and Ware (1982). The effect of life contexts (e.g., family, work) was also investigated by separately analyzing the relationships between contextually-bound life stress, hardiness, and outcome. The rationale for this nomothetic method is that if statistically significant relationships among these variables exist then it would constitute

empirical evidence for a sizable sample of individuals in this particular population that psychological growth may well have occurred.

Second, the relationship between life events, personality, and psychological growth was approached idiographically and from the perspective of positive psychological change in adulthood. The method used was a qualitative analysis of interview data. The main issue addressed was whether subjects high in hardiness were more likely to change than those low in hardiness. Related questions included: 1) positive versus negative or no change for all subjects; 2) particular ways that subjects changed; and 3) whether they implicated specific life events and their contexts in the change process. The rationale for using this idiographic method is two-fold: first, it is primarily exploratory in its attempt to uncover heretofore minimally studied types and sources of psychological change; and second, it is an attempt to investigate whether idiographic data can provide particular illustrations of the nomothetic notions studied through the use of standardized questionnaires.

It should be pointed out that the design of the questionnaire study in this investigation has a limitation: even though the study is longitudinal, it is not a true prospective study because pre-measures on the outcome variables were not collected. Therefore, if some subjects

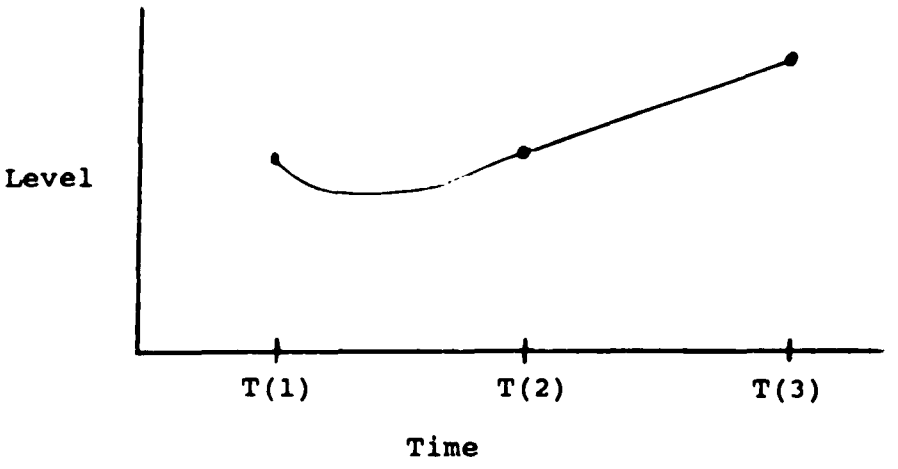
have higher learned resourcefulness and social well-being scores than others, and if these scores are significantly associated with stress, hardiness, or their interaction measured prior to outcome, this suggests that some change or psychological growth (as measured by these two variables) may have occurred for these subjects, but one cannot state this conclusively. Evidence in support of the general hypotheses obtained from a true prospective study would enable one to rule out the possibility that differences obtained on the outcome variables existed prior to the occurrence and resolution of stressful events. Given that this identical design limitation exists for numerous published studies investigating the relationship between stressful life events and health status, where pre-measures of health status are not reported (see Rabkin & Streuning, 1976), use of the present design seems justified as a first step in this line of research. In addition, reports of psychological growth or change that might emerge from the focused interviews, though retrospective in nature, would seem to constitute worthy evidence.

The next chapter consists of a report on the questionnaire study. It is followed by a chapter on the interview study and then a general discussion chapter.

II.QUESTIONNAIRE STUDY

A. HYPOTHESES and RELATED QUESTIONS

This study investigates the relationship between life stress, hardiness, and two measures of psychological growth -- enhanced coping ability and greater social well-being. It should be emphasized at this point that an adequate examination of these relationships necessarily involves a longitudinal design covering a period of at least a year. Theory and research presented above suggest that the short-run effects of stressful life events are different from the long-run effects, and that if certain (i.e., hardy) individuals undergo psychological growth or change following life stress this is likely to take more than a few months. From the perspective of crisis theory and research, adequate resolution of a crisis is likely to take several months (Caplan, 1964; Miller, 1982; Bard, 1982). One can imagine the following schematic stages following the occurrence of a stressful life event:



T(1): time of occurrence of stressful life event
T(2): end of period of disruption, return to pre-stress level
T(1)-T(2): period of disruption
T(2)-T(3): period during which growth or change occurs

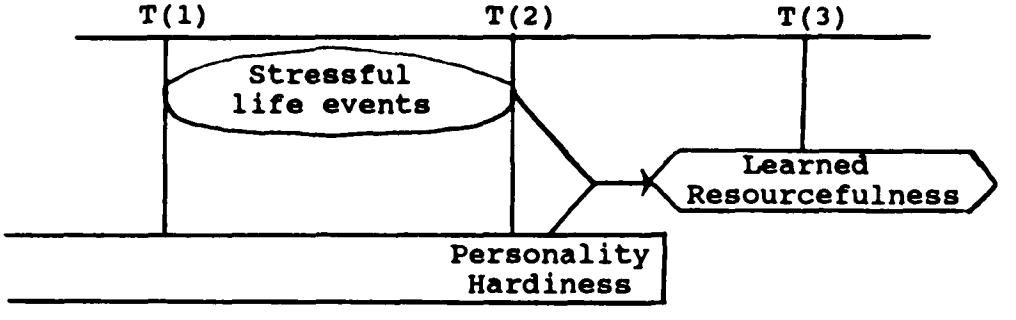
In the above diagram, the short-run could be represented by T(1)-T(2), the long-run by T(1)-T(3). The vertical axis could be personality characteristics, values, coping ability, performance, or health status. If an individual is to undergo psychological growth of any kind following a stressful event it is likely to take time, because the first task at hand is to return to the level the person was at prior to the event. Growth is hypothesized to occur after this phase, when the person has a chance to reflect on, learn from, and integrate the experience.

Bearing in mind the limitation of the design discussed at the end of the last chapter, the other advantage of a longitudinal design is that it allows one to make inferences about causation with greater confidence than in

a retrospective study. Suppose that stress and personality are measured at one point in time and psychological growth is measured later; if a relationship between these three variables is found one can infer the direction of causation more confidently than if these variables are measured at the same point in time.

For purposes of clearly stating hypotheses, general time frames are schematically drawn for each of the dependent variables being investigated (specific time periods will be described in the Method section below).

1. Coping Strategies



HYPOTHESIS 1: Personality hardiness, measured at T(2), will interact with stressful life events that have occurred between T(1) and T(2) to promote Learned Resourcefulness at T(3).

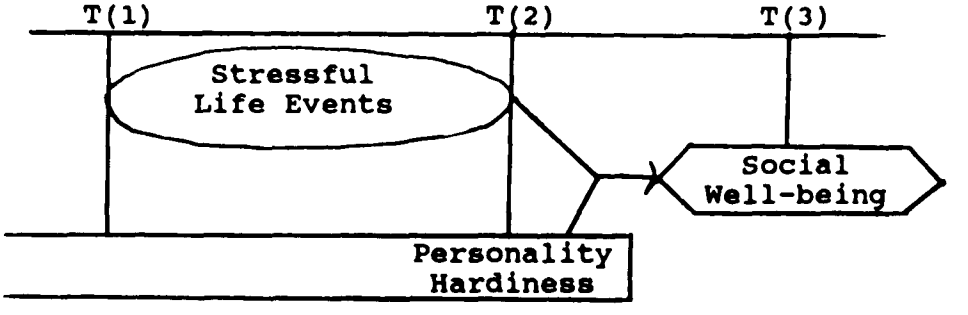
Related questions

1.1 What is the effect of the interaction of each of the hardiness subscales and life stress on learned resourcefulness?

1.2 How does hardiness act in conjunction with stressful life events in specfic life contexts (e.g., work, family) to affect learned resourcefulness?

1.3 What is the joint effect of the hardiness subscales and contextually-bound life stress on learned resourcefulness?

2. Social Well-being



HYPOTHESIS 2: Hardiness, measured at T(2), will interact with stress that has occurred between T(1) and T(2) to promote enhanced social well-being at T(3).

Related questions

2.1 Is there an interaction between the subscales of hardiness and overall life stress that results in improved social well-being?

2.2 How does hardiness combine with stressful life events in specific life contexts to affect changes in social well-being?

2.3 What are the joint effects of the subscales of hardiness and contextual life stress on social well-being?

One assumption made in formulating these two hypotheses is that hardiness and life stress are independent variables. It might be argued, however, that they are not, namely that hardiness scores might change as a result of stress. In response to this claim it should be pointed out that previous research has shown that stress and subsequent hardiness are uncorrelated (e.g., Kobasa, Maddi, & Kahn, 1982). As a check on this finding, correlations between hardiness and stress for the present samples were also obtained (see Results). In addition, an attempt was made to control for demographic variables that might affect the hypotheses.

The general rationale for these two hypotheses derives from the theoretically and empirically-based argument advanced in Chapter I which has to do with the nature of the interaction between life stress and hardiness. It is assumed that individuals high in hardiness are more likely than those low in this characteristic to appraise stressful life events as opportunities for psychological growth and are also more likely to resolve the experiences provoked by these events in such a way as to undergo growth. The specific forms of psychological growth hypothesized also follow from the case made in Chapter I.

B. METHOD

This study and the following one involved the analysis of data that was collected between 1980 and 1983 as part of the Chicago Stress Project, which was directed by Salvatore Maddi and Suzanne Kobasa at the University of Chicago, beginning in 1975, and was partially supported by NIMH Grant MH 28839. The data used consisted of some data that have not been previously analyzed at all and other data that have not been analyzed from the theoretical perspective presented here.

Overview of Procedure

The subject pool for this study was one group of executives and one group of craft workers in a large utility company. A composite questionnaire was mailed to the executive sample in 1980, along with a letter requesting cooperation and an informed consent statement. Included in the questionnaire were measures of stressful life events that had occurred over the previous 3 years, along with measures of personality and demographic characteristics (including age, education, job level, marital status, religion (see Appendix A-1)). Three years later, these respondents were mailed additional questionnaires that included a measure of learned resourcefulness (the Self-Control Scale) and a measure of social well-being (the Social Contacts and Resources Scale). For the craft workers, a composite questionnaire

was mailed in 1981 which included: measures of stressful life events that had occurred in the previous two years; and measures of personality and demographic characteristics. Two years later, these subjects were mailed additional questionnaires that contained the Self-Control Scale and the Social Contacts and Resources Scale. For subjects who had not responded within the first 10 days a second mailing was done after this interval, and for those who had still not responded a follow-up postcard was sent 10 days after the second mailing. Response rates for the entire Chicago Stress Project ranged from 75 to 88% (Kobasa, 1986).

Sample sizes for the periods of data collection were as follows:

	1980	1981	1982	1983
Executives	159			87
Craft Workers		317		190

Since data collected for this investigation spans 6 years (1977-83), specific time periods will be denoted as follows:

1977	1978	1979	1980	1981	1982	1983
t(1)	t(2)	t(3)	t(4)	t(5)	t(6)	t(7)

Measures of Stressful Life Events

Two nomothetic measures of stressful life events were used both emerging from the same, life change-oriented, conceptualization of stressful life events developed by Holmes & Rahe (1967). For the executives the widely used Schedule of Recent Life Events (SRE) (Holmes & Rahe, 1967) employed. This instrument lists a variety of events (both desirable and undesirable) whose stressfulness had been objectively determined on the basis of the amount of life readjustment they required on a scale of 0 to 100. Judges assigned weights to each event by comparing it to marriage, which was given a modulus weight of 50. Modifications in the SRE made for this study included greater specification of certain items (e.g., from "change in number of arguments with spouse" to "increase in number of arguments" and "decrease in number of arguments"). In addition, events empirically obtained from other management personnel in the company considered typical for this population were added, following a methodological recommendation of Dohrenwend, Krasnoff, Askenasy, & Dohrenwend (1978). For the craft workers, the Psychiatric Epidemiological Research Instrument (PERI) (Doherenwend et al., 1978) was used, which is similar to the SRE in most respects. The only difference significant for this study was that the weighting range was from 0 to 1,000. For data analysis, the events for the craft workers were also divided into five categories, according to the life context in which

they occurred: work, family, personal, home/social relations, and financial/legal. For all events listed under each of these categories, see Appendix A-2.

Measures of Personality Dispositions

The personality dispositions of hardiness and its three components -- control, commitment, and challenge -- were measured by five scales. Control was measured negatively by the Locus of Control Scale (Rotter, Seeman, & Liverant, 1962) and the Powerlessness Scale of the Alienation Test (Maddi, Kobasa, & Hoover, 1979). The Locus of Control Scale consists of items presented in a forced choice format and has been found to be a reliable, valid indicator of the extent to which one believes one's behavior is controlled by one's self or by the external world (see Lefcourt, 1981). The Powerlessness Scale has also been found to have good reliability and validity (with internal consistency of .88 and stability of .71), showing negative correlations with dominance and positive correlations with trait anxiety and external locus of control (Maddi et al., 1979). Sample items for control include "Becoming a success is a matter of hard work; luck has little or nothing to do with it," versus "Getting a good job depends mainly on being in the right place at the right time" (Locus of Control), and "No matter how hard you work, you never seem to reach your goals" (Powerlessness).

Commitment was measured negatively by the Alienation from Self and Alienation from Work scales of the Alienation Test. A high score on Alienation from Self indicates lack of a sense of meaning in life, passivity, and detachment from self and the world. Sample items include: "Life is empty and has no meaning in it for me" and "The attempt to know yourself is a waste of effort. Alienation from work indicates unwillingness to engage oneself in a productive occupation. Examples of items are: "I find it difficult to imagine enthusiasm concerning my work" and "I don't like my job or enjoy my work; I just put in my time to get paid." Over various adult samples, these two scales have shown an average internal consistency of .85 (self) and .79 (work). Regarding stability, correlations over a 3-week period of .77 and .70 have been obtained. Relevant to construct validity, the scales have been found to be negatively correlated with achievement motivation, empathy, and purpose.

Challenge was measured negatively by the Security Scale of the California Life Goals Evaluation Schedule (Hahn, 1966). This scale measures the extent to which stability, predictability, and safety are deemed important for a person. Individuals who score high on this scale are more likely to perceive change and stress in their lives as threatening rather than challenging. The following items are illustrative: "There are no conditions which justify endangering the health, food, and shelter of one's family

or of one's self," and "Steady saving is the best road to economic security." The hardiness questionnaires are presented in Appendix A-3.

Measures of Coping Strategies

Coping strategies were measured by Rosenbaum's (1980a) 36-item Self-Control Scale (SCS), designed to assess learned resourcefulness, which includes the following four dimensions: 1) a set of self-instructions (or "self-statements") on how to cope with physiological and emotional reactions to stressful occurrences; 2) a set of specific problem-solving strategies; 3) the ability to delay immediate gratification; 4) a belief in one's ability to regulate one's own internal reactions to stressful occurrences. The scale is presented in a forced-choice format: subjects respond to items on a 6-point Likert scale by using codes ranging from +3 (i.e., "Very characteristic of me, extremely descriptive") to -3 (i.e.,"Very uncharacteristic of me, extremely undescriptive").

With regard to self-instructions (12 items), sample items include: "When I am feeling depressed I tend to think about pleasant events" and "When I feel pain in a certain part of my body, I try not to think about it".

In the case of problem-solving strategies (11 items), specific items include: "When I find it difficult to concentrate on a certain job, I divide the job into smaller segments", "Facing the need to make a decision, I usually find out all the possible alternatives instead of deciding quickly and spontaneously," and "When I am short of money, I decide to record all my expenses in order to plan more carefully for the future."

With reference to delay of gratification (4 items), examples of items include: "I tend to postpone unpleasant duties even if I could perform them immediately," and "First of all I prefer to finish a job that I have to do and then start doing things I really like."

Concerning belief in self-regulation (9 items), sample items include: "Often by changing my way of thinking I am able to change my feelings about almost everything," and "I need outside help to get rid of some of my bad habits". The SCS is reproduced in Appendix A-4.

The reliability of the SCS was established in a number of studies involving more than 600 subjects (Rosenbaum, 1980a). With regard to test-retest stability, the SCS showed a correlation of .86 for a four-week interval on a group of undergraduates. The scale has also shown satisfactory internal consistency among items across six different samples - alpha coefficients ranged from .78 to .86. For example, the alpha coefficient for an adult male

sample (average age of 50 years) of 105 was .80 and for a college sample of 179 was .82 (Rosenbaum, 1980a).

Relevant to construct validity, the SCS has been found to be negatively correlated with the Irrational Beliefs Test (Jones, 1968). Ellis (1962,1973) and Meichenbaum (1977) demonstrated that "appropriate" or "rational" self-verbalizations were directly related to the degree of self-control of emotional arousal. Jones' scale was constructed to measure the ten types of irrational beliefs described by Ellis (1962). The test has also been found to be significantly related to the likelihood of becoming emotionally aroused in various types of situations (Goldfried & Sobocinski, 1975) and with depression as measured by the Beck Depression Inventory (Beck, 1967; Nelson, 1977). Among the scales on the Irrational Beliefs Test that correlated negatively with the SCS are frustration reactivity, anxious overconcern, problem avoidance, dependency, and helplessness. In addition, the SCS has been found to correlate negatively with a scale measuring speech anxiety in group situations (the Personal Report of Communication Apprehension, McCroskey & Richmond, 1980) in a study by Redden and his colleagues (Redden et al., 1983). McCroskey & Richmond had hypothesized that self-control and communication appprehension were negatively related. Finally, Rosenbaum (1980a) provided further evidence in support of the construct validity of the scale when he found experimentally that subjects high

on the SCS were better able to tolerate the noxious effects of a cold pressor than those low on the scale; in the same study, the SCS was also found to correlate with a measure of self-control on Cattell's 16 PF (Cattell, Ebert, & Tatsuoka, 1970).

Measure of Social Well-being

Social well-being was measured by the Social Contacts and Resources Scale developed by Donald and her colleagues (Donald, Ware, Brook, & Davies-Avery, 1978; Donald & Ware, 1982). The scale consists of 11 items assessing the extent and quality of one's social relationships with family members and friends, along with degree of participation in community organizations (including church groups, clubs, parent groups, etc.). Seven items measure the frequency and nature of social contact over specified periods of time (e.g., "How often during the past month have you had friends over to your home?"); three measure the size of certain components of one's social network (e.g., "About how many close friends do you have -- people you feel at ease with and can talk with about what is on your mind? (You may include relatives))"; one item measures the quality of one's relationships with other people ("In general, how well are you getting along with other people these days -- would you say better than ususal, about the same, or not as well as usual?"). Eight of the items are of the forced choice variety while three call for

open-ended numerical responses. Objective, quantitative measures as opposed to subjective, qualitative ones were emphasized in this instrument to minimize the degree of overlap between social and psychological health (measures of the latter are considered by the authors to be more subjective).

The 11 items were conceptually derived from earlier measures of social health (e.g., Renne, 1974), research by Myers on social integration, life events, and mental status (e.g., Myers, Lindenthal, & Pepper, 1975) and the work by Dohrenwend, Dohrenwend, & Cook (1973) on life stress and social role functioning. On the basis of a principal-components factor analysis of item responses from over 4500 adults, Donald & Ware (1982) have constructed three multi-item scales that measure different aspects of social well-being. The scales are a composite social well-being index (8 items), social contact (3 items), and group participation (2 items). Because distributions of responses to the items had different variances, item scores were standardized before being summated to form these scales. Donald & Ware also scored five items not included in the social contact or group participation scales for separate analyses. These were also standardized and consisted of: number of neighborhood acquaintances, number of close friends and relatives, telephone contacts, the rating of how well one is getting along with others, and attendance at religious services. The whole scale appears

in Appendix A-5.

With regard to reliability, Donald & Ware report moderate alpha coefficients for internal consistency ranging from 0.66 to 0.86 from their sample for all three multi-item scales, along with one-year stability coefficients ranging from .55 to .68. In addition, stability coefficients for four of the five individual items mentioned above varied from .50 to .80 (the coefficient for "getting along with others" was only .23). Concerning the validity of the various measures, Donald and Ware report the following. The content validity of the whole scale is favorable when items are compared to the content of other related published scales (e.g., Renne, 1974; Dohrenwend, Dohrenwend, & Cook, 1973) in that they represent three of the four major role areas connected with social functioning (family, friends, and community), and that they also measure social well-being rather than physical or mental health status. With reference to construct validity, convergent validity was supported by the fact that the social well-being items correlated with the Emotional Ties Scale, a measure of social well-being developed by Veit, Ware, & Donald (in press). In addition, the discriminant validity of two of the multi-item scales was found to be satisfactory in that each item was more sensitive to the particular social construct it intended to measure (e.g., group participation or social contacts) than to other social well-being constructs.

C. RESULTS and DISCUSSION

A. Sample Profiles

Demographic Characteristics

Group 1, consisting of 87 executives, were exclusively male and in 1980 had a mean age of 53 (ranging from 30 to 59) with nearly two-thirds between the age of 45 and 54. All except for three were married, three-fourths (72%) were Protestant (with most of the rest Catholic) and 85% had completed college. Most (72%) were middle-level managers (Level 3) with another fifth at the fourth level and the remaining 5 were either at Level 5 or were officers of the company. By 1980, two-thirds of the group had been at Level 3 or higher for over 10 years.

Group 2, comprising 190 craft-level employees, were younger, not as well-educated, and more heterogeneous than the executives on other characteristics. They were predominantly male (82%) and in 1981 had a mean age of 43 years with a range of 30 to 64. Three-quarters (74%) were married and nearly all were either Protestant (49%) or Catholic (44%). Slightly more than half (52%) had only high school diplomas, while another 36% were college graduates. The majority had been at their current job level for at least six years.

A complete description of the two samples' demographic characteristics is presented in Appendix C-1.

Personality Characteristics

Composite hardiness scores as well as hardiness component scores were utilized in the data analysis for both samples. The former had been constructed by Kobasa, Maddi, & Kahn (1982) using the following procedure: scores for the five subscales -- locus of control, powerlessness, security, alienation from self, and alienation from work -- were standardized and summed to arrive at the composite score, which was then converted to a positive form. Means and standard deviations for the two groups were as follows: craft workers -- mean 0.048, s.d. 4.36; executives -- mean 0.072, s.d. 4.76. A t-test revealed no significant difference between the means of the two groups ($t(175)=.02$, ns). In addition, the five subscales scores for each of the craft worker subjects were also available for analysis; these were converted to positive form.

Stressful Life Events

How much life stress did the subjects report, and what was the relative nature of the stressful life events they experienced?

Concerning the magnitude of life stress, an attempt was made to compare the stress levels of the executive and craft groups by dividing the craft stress scores by 10 (since their PERI event weights ranged from 0 to 1,000 while the executive SRE weights ranged from 0 to 100), but because different instruments were used such a comparison should be interpreted with caution. The executives showed a mean three-year life stress score of 431.7 (s.d.=287) with a range of 0 to 1375 and an annual mean of 144. This is comparable to the stress level reported for another professional group -- lawyers -- whose yearly stress score was found to be 189 in one study (Kobasa, 1982b). The craft employees had a average overall stress score for the two years they were reporting of 773.5 (s.d.=499.3) with a range from 0 to 3425 and an annual stress score of 387.

Regarding the relative nature of the stressful events reported, data was available for the craft workers. Most life stress occurred in the work area (43% of total stress reported), followed by family (22%), personal (17%), financial and legal (11%) and home and social relations (8%). Examples of significant events in each of these areas were as follows: 1) work -- 'demotion','increase in workload', or 'transfer to another department'; 2) family -- 'divorce';'death of a family member', or 'person moved out of household'; 3) personal -- 'started drinking more', 'outstanding personal achievement', or 'personal injury or illness'; 4) financial and legal -- 'took out a mortgage',

'took a cut in salary', or 'assaulted or robbed'; and 5) home and social relations -- 'moved to a better residence or neighborhood', 'death of a close friend', or 'lost a home through some disaster' (see Appendix A-2 for the complete list). Work stress was also found to be the most common in a group of lawyers studied by Kobasa (1982b), and among business executives (Kobasa, Maddi, & Kahn, 1982), suggesting at least a qualitative similarity between the craft group and these professional groups in terms of life stress experienced.

Learned Resourcefulness

Means and standard deviations for the Learned Resourcefulness scores for the two executive groups are shown below, and they are compared with normative data reported by Rosenbaum (1980a) on a sample of Israeli adults whose mean age was 50 and whose mean level of education was 10 years.

Table 1

Means and Standard Deviations for Learned Resourcefulness Scores, Sample Groups and Comparison Group

	Mean	S.D.
Executives (n=87)	32.6	18.6
Craft Employees (n=190)	35.2	23.6
Israeli adults (n=105)	31.3	23.2

A t-test for the difference between means for the two sample groups in this study revealed no difference between them ($t(175)=.80$,ns).

Social Well-being

How can we describe the social well-being of the subjects, and how do they compare to other individuals whose social well-being has been assessed by the same instrument? Since data on the multi-item subscales of social well-being (i.e., composite index, social contacts, and group participation) are only available in standardized form, descriptions of the samples' social well-being characteristics will be provided for individual items included in the subscales. Characteristics of the two samples were so similar that they will be described as one group (a complete description is presented in Appendix C-2).

First, what were the social resources of the individuals in this study? Using constructs popular among sociologists (e.g., Fischer, 1976), we might ask first about the subjects' "primary groups", defined as family and friends. Subjects reported that they knew an average to 3 to 4 families in their neighborhoods well enough to visit them in their homes and that they had approximately six close friends (including relatives). These figures may be compared to the results of a Rand Corporation survey of over 2,000 Seattle, Washington, residents who were also given the Social Well-being scale (see Donald & Ware, 1982). This group reported slightly fewer neighborhood family acquaintances (an average of 2.7) but more close friends (between 9 and 10). With regard to "secondary group" resources, or results for the group participation subscale, subjects in the present study reported that they belonged to an average of slightly fewer than two voluntary groups or organizations. They are moderately active in the activities of these groups, attending the affairs they sponsor occasionally. They also reported that they attend religious services on the average of once a week.

Concerning social contacts, the subjects reported that, over a year's time, they get together with friends or relatives about 2 or 3 times a month and they also indicated that in the month preceding completion of the questionnaires they had home visits with friends this often. Telephone contact with close friends or relatives

averaged once a week, and the subjects wrote personal letters less than once a month. By comparison, the Rand sample was on average slightly more socially active, a difference that could conceivably be explained by the age difference, in that age and social contacts were found to be negatively related in the present investigation. Finally, when asked how well they were getting along with others, most subjects reported "about the same as usual."

B. Personality, Life Stress, Demographics Characteristics and Outcome Measures

Before testing the first two hypotheses of this study, it was necessary to determine first if hardiness and life stress were independent of one another, second whether relationships existed between the samples' demographic characteristics as described above and the dependent variables of learned resourcefulness and social well-being, and third whether recent stress (i.e., during the three years prior to outcome for the executives, and two years for the craft workers) had a significant effect on the dependent variables.

The stress-hardiness correlation for the executives was $r = .08$, ns, and it was $r = -.02$, ns, for the craft workers, indicating that the two independent variables were indeed independent. As a first step toward investigating the possible influence of demographic characteristics and

recent life stress on the hypotheses, correlational analyses were performed for both samples. For interval-level demographic variables (i.e., age, education, and time at job level), straight Pearson product-moment correlations were calculated; for nominal-level variables (i.e., religion, sex, and marital status) the data were collapsed into two groups, permitting straightforward interpretation of correlations as measures of association, justifiable according to Cohen & Cohen (1984). Because the executive sample was all male and 97% married, sex and marital status was not entered into the analysis for them, as it was for the craft group, which was less homogeneous. The results appear in Tables 2 and 3.

As Table 2 indicates, none of the demographic variables or recent life stress were found to be related to outcome for the executives. Accordingly, it was not necessary to control for demographics when the hypotheses were tested for this group. For the craft workers, as shown in Table 3, sex, age, marital status, and time at job level were significantly related to three out of the four outcome variables. None of the other demographic variables or recent life stress were related to outcome. Accordingly, the effects of these variables on the hypotheses were investigated through the regression analyses reported below.

Table 2

Correlations and Associations between Demographic Characteristics, Recent Life Stress, and Outcome Variables, Executives (N=87)

	Learned Resourcefulness	Social Well-being Index	Social Contacts	Group Participation
Age	-.13	-.05	-.04	-.06
Religion[1]	-.11	.05	.08	.01
Education	-.12	-.06	-.08	-.09
Time at Level	.05	-.13	-.11	-.07
Recent Stress	.02	.04	.07	-.02

[1] Direction: two groups (Protestant and Other), a positive correlation indicates that the outcome measure is associated with Protestant.

Table 3

Correlations and Associations between Demographic Characteristics, Recent Life Stress, and Outcome Variables, Craft Workers (N=190)

	Learned Resourcefulness	Social Well-being Index	Social Contacts	Group Participation
Sex[1]	.19**	.03	.11	-.11
Age	.05	-.05	-.14*	-.06
Marital Status[2]	.14*	.10	.23**	-.06
Religion	-.05	.07	-.02	.04
Education	-.01	.01	.01	.01
Time at Level	-.05	-.04	-.01	-.14*
Recent Stress	-.01	.05	.06	-.03

*p<.05
**p<.01
1 Direction: a positive sign indicates an association with females.
2 Direction: for two groups (married and unmarried) a positive sign indicates an association with unmarried.

C. Personality, Life Stress, and Learned Resourcefulness

The questionnaire data were subjected to a multiple regression analysis. because all variables are continuous, both theoretically and empirically, and because temporal predictions were made (Cohen & Cohen, 1984). In addition, since theoretical predictions were also made, a hierarchical procedure was called for, in which the order

of entry of the variables is specified by the investigator according to his theory. Following the theoretical model put forth in this study, for the regression equation computed hardiness was entered first, then stressful life events, and finally the product of these two terms. The first two terms entered into the equation test main effects of the independent variables while the product term tests for an interaction effect. Hypothesis 1 predicted that the interaction term will be significant, namely that the combined effects of hardiness and life stress will result in increased learned resourcefulness at a later time.

The results of the analyses for both samples appear in Table 4. As the table indicates, for both groups the overall regression model was significant and there was a significant main effect for hardiness. In addition, for the Executive group there was a significant interaction between hardiness and stressful life events, evident from the significant R^2 increment of .053, $F(1,83)=4.48$, $p < .05$. Accordingly, Hypothesis 1 was supported for the executives, but not for the craft workers. Further analyses will be reported separately for each sample.

Table 4

Hierarchical Multiple Regression Analyses between Hardiness, Stressful Life Events, and Learned Resourcefulness, Executives and Craft-level Subjects

Variable	beta	Cumulative R^2	Increase in R^2	F test on increment
Executives (n=87)				
Hardiness (A)	.27	.064	.064	5.29*
Life Stress (B)	-.05	.064	.000	0.01
A X B	.37	.117	.053	4.48*
R = .34			Overall F=	3.68*
Craft Group (n=190)				
Hardiness (A)	.19	.072	.072	14.53**
Life Stress (B)	.09	.082	.010	2.24
A X B	.09	.084	.002	0.50
R = .29			Overall F=	5.68**

*p<.05
**p<.01

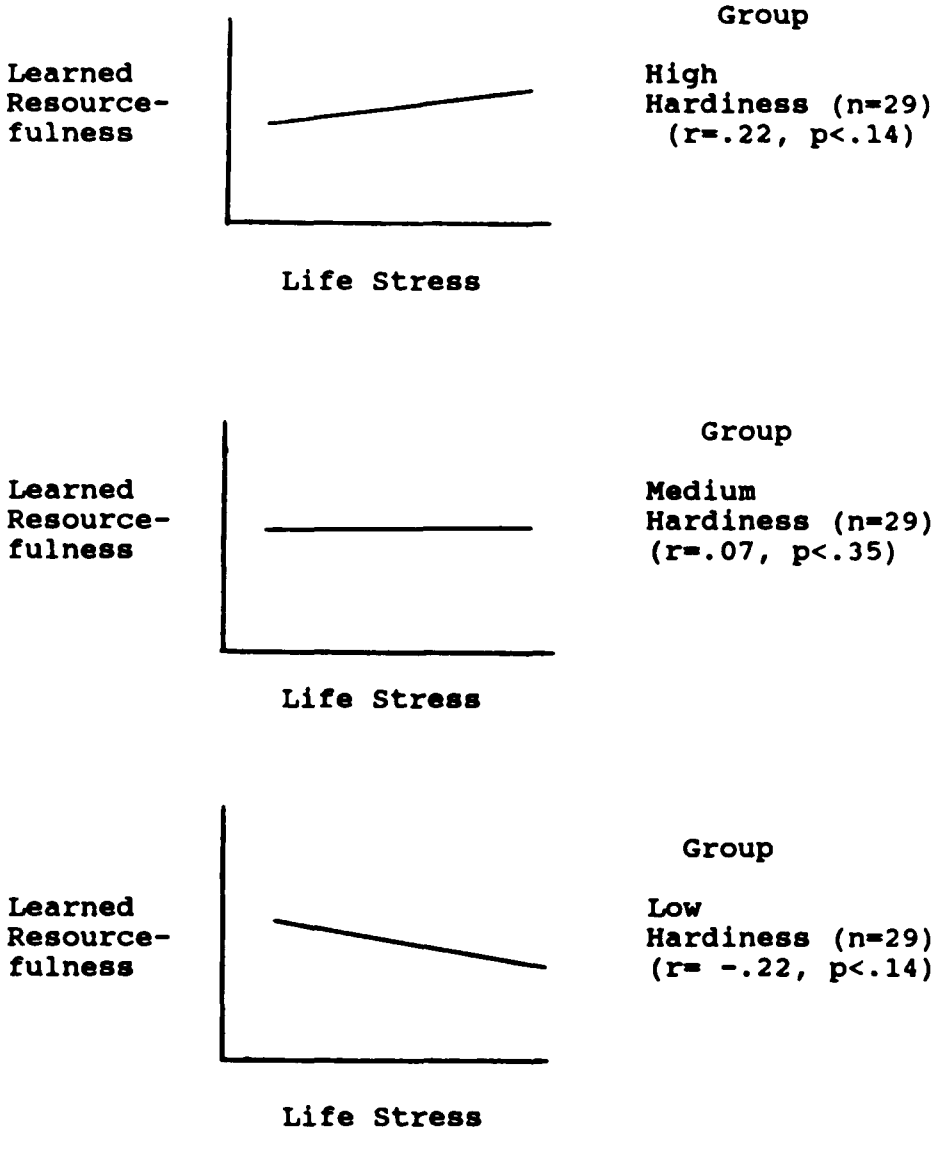
Executives

To ascertain the nature and direction of the interaction effect found for this sample, the relationship between one independent variable and the dependent variable should be tested at different levels of the other independent variable, following a procedure recommended by Cohen & Cohen (1984). Accordingly, in line with the theoretical model tested in this study, the relationship between stress and learned resourcefulness was examined at different levels of hardiness. To this end hardiness scores were first dichotomized (subjects were divided into two groups of approximately equal n (44,43) via a median split) and separate bivariate regression equations were

computed for the high and low hardy groups. While the results were in the predicted direction (i.e., the slope of the regression line was positive for the high hardy group and negative for the low hardy group), the bivariate correlations (equivalent to beta weights for bivariate regression) were not significant for either group, nor was there a significant difference between the two correlations, using the Fisher Z statistic (Ferguson, 1971). Hardiness scores were then trichotomized, resulting in three groups of high, medium, and low hardiness (n=29 for each). Bivariate regression equations were computed for each. Results are shown in Figure 1.

Figure 1

Correlations between Life Stress and Learned Resourcefulness for High, Medium, and Low Hardiness Groups, Executive Sample (N=87)



As the figure indicates, the direction of the interaction effect becomes clearer when hardiness is trichotomized: in line with Hypothesis 1, for the group highest on hardiness

stress and learned resourcefulness were found to be positively related ($r = .22$) at a level that approaches significance ($p < .14$); for the middle group there was no relationship, and for the lowest hardiness group the relationship was negative ($r = -.21$). Finally, the difference between the correlations of the top and bottom groups was computed, using Fisher's Z, and this difference was significant at the .12 level ($Z = 1.58$). These results indicate that as hardiness increases the relationship between life stress and later learned resourcefulness becomes more positive, consistent with Hypothesis 1. In other words, the hardier a subject is, the more likely he will be to have a higher level of learned resourcefulness the more life stress he reports.

Craft Workers

As indicated above, no interaction effect of hardiness and stress on learned resourcefulness was found for the craft-level employees. It was theorized at this point that perhaps the two demographic variables -- i.e., sex and marital status -- that had been found to correlate with learned resourcefulness (reported earlier) might be suppressing the effects of the predictor variables, so it was decided to control for these measures. Accordingly, both sex and marital status were treated as dummy variables in a hierarchical regression equation and, following the procedure recommended by Cohen & Cohen (1984), were then

entered simultaneously as the first term, followed by their interaction, then hardiness, stress, and the remaining interaction terms for all variables. The R^2 increment contributed by the addition of sex alone to the model was found to be significant ($F(1,185)=7.72$, $p<.01$), while that for marital status was not ($F(1,185)=1.55$,ns). None of the interaction effects were significant, rendering the results of the original model unchanged after the effects of sex and marital status were partialled out. In other words, Hypothesis 1 was still not supported for the craft workers even after controlling for sex and marital status.

Despite the fact that no interaction between hardiness and life stress on learned resourcefulness was found for the craft workers, results for the executives suggested that it might be fruitful to conduct the same kind of additional analyses that was done for that sample, namely to partition the craft group into three hardiness groups (high, medium, and low) and investigate the relationship between life stress and learned resourcefulness at each hardiness level. Accordingly, hardiness scores were trichotomized and three simple regression equations were calculated. As shown in Table 5, stress was found to be positively and significantly related to learned resourcefulness for the group highest in hardiness. The Fisher Z statistic, used to compare the correlations of the groups highest and lowest in hardiness, was not significant ($Z=1.23$, ns).

Table 5

Correlations between Life Stress and Learned Resourcefulness for High, Medium, and Low Hardiness Groups, Craft Sample (N=190)

Hardiness Group	r	p <
High (n=63)	.24	.05
Medium (n=63)	.02	.42
Low (n=64)	.05	.35

Interestingly, despite the lack of an interaction effect found for the whole craft worker sample, for those highest in hardiness life stress and learned resourcefulness were significantly, and positively, related. Recall that a positive relationship had been found for the group of executives highest in hardiness (see Figure 1), suggesting that high hardiness may be growth-producing for both of these populations.

Results for the executives indicate that the first Hypothesis was confirmed: hardy individuals who undergo stressful life events tend to show higher levels of coping ability three years after the stressful period. This evidence provides empirical support for the theoretical claims made by several writers cited earlier (e.g., Dohrenwend, 1978; Bard & Sangrey, 1979; Kobasa, 1982a; Moos

& Billings, 1982; Goldberger & Breznitz, 1982) that stressful life events can lead to psychological growth. In addition, with regard to a specific form of psychological growth, namely strengthened coping ability, the results also provide confirmation for the principle of stress innoculation (Meichenbaum, 1977). Finally, the results also offer support to the notion, hitherto not investigated, that there are individual differences in the tendency to change after stressful experiences, and that personality hardiness may account for these differences. It appears, accordingly, that hardiness is not only a buffer of life stress but a facilitator of personal growth as well, at least for the group of executives investigated in the present study.

It should be kept in mind, however, that there is an alternate explanation for the results. Recall that since pre-measures of learned resourcefulness had not been taken, it was not possible for the design to be completely prospective. Accordingly, learned resourcefulness scores among the executives before the stressful period might have been similar to the distribution after it, suggesting that the elevated scores of some executives cannot be conclusively attributed to the interaction of life stress and hardiness. This kind of alternate explanation needs to be acknowledged; it emerges from the design limitation of this exploratory research and has been mentioned by other writers (e.g., Rabkin & Streuning, 1976) who have discussed

the limitations of several hundred published retrospective studies of stress and health status. In other words, a stronger test of Hypothesis 1 requires a full prospective design, which is a subject for future research.

There are at least two different explanations that may also be offered for the differences in results between the two samples, including the negative results for the craft group. First, coping ability (learned resourcefulness) was measured three years after the stressful period for the executives, while only two years after the stressful period for the craft workers. It is possible that two years is not enough time for change or growth to occur. Second, the difference may be due to a difference between the way hardiness operates in these two occupational groups, especially low hardiness. Among the executives, those lowest in hardiness actually had a negative relationship between stress and coping ability, whereas among the craft workers there was no relationship (see Figure 1 and Table 5). In other words, the combined effects of stress and hardiness had a more variable effect on learned resourcefulness among executives than among craft workers. While those highest in hardiness in both groups showed the predicted gains in resourcefulness following life stress, executives low in hardiness showed weakened coping ability after stress as compared to craft workers low in hardiness. A task for future research would be to further investigate these apparent differences among occupational groups.

Having tested Hypothesis 1 for both samples, the next step was to try to answer the related questions posed. Question 1.1 was concerned with the combined effects of each of the hardiness subscales and life stress on learned resourcefulness. To investigate this issue, the hardiness scores for the craft workers were first parititioned into the five subscales that constituted it in 1981, namely locus of control, power, challenge, commitment to self and commitment to work. After this, five hierarchical multiple regression equations were computed with personality as the first term, life stress as the second and the interaction of these two variables as the third. None of the interaction terms were found to be even marginally significant.

Question 1.2 had to do with the joint effects of hardiness and stressful life events in specific life contexts (e.g., work, family) on resourcefulness. This question was investigated in the following way. First, total life stress was partitioned into its five components -- i.e., work stress, family, financial/legal, home/social relations, and personal stress -- and five regression equations were computed with the hardiness composite as the first term, followed by one of the life stress categories, and then the interaction term. Work, home/social relations, and personal stress were not found to be related to learned resourcefulness, nor did any of these independent variables interact significantly with

hardiness. There were some results worth noting for family stress and financial/legal stress, however: stressful family events interacted with hardiness at a marginally significant level ($F(1,186)=2.81$, $p<.10$), and financial/legal stress by itself predicted learned resourcefulness, also at a marginally significant level ($F(1,186)=3.28$, $p<.08$).

Finally, Question 1.3 was examined. It was concerned with the interactive effects of each of the hardiness subscales and each of the contextually-based life stress variables. The same multiple regression procedure was followed to investigate this. It was found that for four out of the five contextual stress categories the interaction terms were nonsignificant. Significant results were found, however, for the interaction of commitment to self and family stress ($F(1,186)=4.43$, $p \leq .05$).

These results suggest that both the context of stressful life events and one aspect of hardiness may make a difference in the tendencies of individuals to change. Specifically, although subjects reported only about half as much family stress compared to work stress, the former appeared to be more salient to self-committed subjects for growth than the latter. Perhaps this is because events within the family are by nature more personal and individuals committed to themselves are more likely to gain something positive from such experiences. In addition,

from a theoretical standpoint, the commitment component of hardiness is considered to be its most existential aspect (see Kobasa, 1979). Accordingly, this finding may be interpreted as providing support for the existential growth theory of Jaspers (1923) and the research of Yarom (1982), whose subjects underwent existential change following war stress.

D. Personality, Life Stress, and Social Well-being

The same procedure used to investigate the relationship between stressful life events, personality, and learned resourcefulness, namely hierarchical multiple regression analysis, was used to test Hypothesis 2 which was concerned with the other dependent variable, namely social well-being. As explained earlier, several rationally and empirically-derived criteria of social well-being have been offered by Donald & Ware (1982) and operationalized through the use of their 11-item questionnaire. These include three multi-item scales -- an overall composite index of social well-being, a measure of group participation, and a measure of social contacts. Regression analyses were conducted for all three of the multi-item scales. For all regression equations computed, personality was entered first, followed by stressful life events, and finally the interaction term consisting of the product of these two independent variables. Results for the two sample groups appear in Tables 6 and 7.

Table 6

Hierarchical Multiple Regression Analyses between Hardiness, Stressful Life Events, and Social Well-being Outcome Measures, Executives (N=87)

Variable	beta	Cumulative R^2	Increase in R^2	F test on increment
Social Well-being				
Hardiness (A)	.06	.007	.007	0.58
Life Stress (B)	-.01	.007	.000	0.03
A X B	.04	.008	.001	0.08
R = .09			Overall F =	0.22
Social Contacts				
Hardiness (A)	.09	.011	.011	0.92
Life Stress (B)	-.01	.011	.000	0.03
A X B	.02	.011	.000	0.04
R = .11			Overall F =	0.32
Group Participation				
Hardiness (A)	-.06	.000	.000	0.03
Life Stress (B)	.02	.000	.000	0.03
A X B	.09	.004	.004	0.33
R = .06			Overall F =	0.10

Table 7

Hierarchical Multiple Regression Analyses between Hardiness, Stressful Life Events, and Social Well-being Outcome Measures, Craft Workers (N=190)

Variable	beta	Cumulative R^2	Increase in R^2	F test on increment
Social Well-being				
Hardiness (A)	.09	.001	.001	0.19
Life Stress (B)	.02	.001	.000	0.08
A X B	-.23	.015	.014	2.64
R = .12			Overall F=	0.96
Social Contacts				
Hardiness (A)	.31	.027	.027	5.27**
Life Stress (B)	.10	.038	.011	2.21
A X B	.15	.044	.006	1.24
R = .21			Overall F=	2.90*
Group Participation				
Hardiness (A)	.08	.001	.001	0.19
Life Stress (B)	.01	.001	.000	0.07
A X B	-.23	.016	.015	2.83*
R = .13			Overall F=	1.01

**p<.10

*p<.05

As one can see, the only sample and outcome variables on which any of the predictor variables had noticeable effects was the craft workers' social contacts and group participation. Since none of the interaction terms were significant for either group , Hypothesis 2 was not supported. For social contacts, there was a significant main effect for hardiness at the .05 level and the overall model was marginally significant at a probability of .10. Hardiness, independently of its relationship to stress, appears to promote more social contact at a later point in time. Concerning group participation, the interaction term was marginally significant, but the negative beta weight indicates that it was in a direction opposite of what was predicted. To investigate this further, and to answer questions related to Hypothesis 2, additional analyses were undertaken, following a strategy identical to the one that was used for learned resourcefulness. Results will be reported for each sample separately.

Executives

The effect of life stress on the different social-well being measures was analyzed at different levels of hardiness. These results are shown in Table 8.

Table 8

Correlations between Life Stress and Social Well-being Outcome Measures, for High, Medium, and Low Hardiness Groups, Executives (N=87)

	Composite Index	Social Contacts	Group Participation
Hardiness Group			
High (n=29)	.11	.40*	.10
Medium (n=29)	-.17	.21	-.04
Low (n=29)	.00	.00	.00

*p<.05

As the table shows, there was a significant, positive relationship between stress and social contacts for the highest hardiness group. It should be noted, however, that even this significant correlation was of low magnitude. In addition, the relationship between stress and social contacts increases as hardiness increases, and the Fisher Z statistic (Z=1.53, p<.13) indicates a marginally significant difference between the highest and lowest hardiness group. No relationships or trends were found for the composite social well-being index or group participation.

Craft Workers

Despite the fact that the main hypothesis was not supported for the craft workers, it remained necessary to control for certain demographic variables which had been

found to correlate with social well-being outcome measures (see Table 3 above) in order to test for possible suppressor effects. Recall that marital status had correlated with social contacts, while time at job level had been found to relate to group participation. Accordingly, these two terms were entered simultaneously as the first step in a hierarchical regression equation, followed by their interaction, the predictor variables alone, and then interaction terms for all variables. Results for social contacts showed significant predictive effects for age alone ($F(1,181)=4.17$, $p<.05$) and marital status alone ($F(1,185)=11.17$, $p<.01$), but the original three-term predictor model remained unchanged, that is with nonsignificant effects. For group participation, time at level was not significant and the basic model remained unchanged except for the fact that the marginal probability of the hardiness/stress interaction term predicting group participation improved from $p<.10$ to $p<.07$. In summary, controlling for demographic variables did not aid in prediction. To investigate possible relationships among the variables that were not revealed in the regression analyses for the craft workers, the relationship between stress and social well-being was tested at different levels of hardiness. Results appear in Table 9.

Table 9

Correlations between Life Stress and Social Well-being Outcome Measures, for High, Medium, and Low Hardiness Groups, Craft Workers (N=190)

	Composite Index	Social Contacts	Group Participation
Hardiness Group			
High (n=64)	-.07	.15	-.08
Medium (n=63)	-.16	.24*	-.05
Low (n=63)	.13	-.09	.14

*p<.05

As indicated above, a positive, significant relationship was found for the relationship between stress and social contacts for those craft-workers with medium levels of hardiness. No other significant results were found.

How might we explain and interpret the results so far? One possible explanation for the lack of support for Hypothesis 2, especially with regard to the composite index of social well-being, may have to do with the construct validity of that index, which combines structural aspects of one's social well-being (e.g., number of close friends and organizational memberships) with functional aspects (e.g., frequency of contact with friends). Recently, Cohen

& Wills (1985) have found that these two kinds of variables work differently in relation to stress. Further analyses reported below tend to confirm this, and they also offer evidence that the components of hardiness and contexts of life stress need to be taken into account in an adequate test of this hypothesis.

What are the answers to the questions that were asked in relation to Hypothesis 2? The first (Question 2.1) was concerned with the joint effects of each of the hardiness subscales on social well-being. Following the hierarchical procedure used throughout, regression analyses revealed that none of the interaction terms contributed a statistically significant (i.e., with $p < .05$) increment to R^2, but some trends appeared which suggested that further investigation might reveal significant effects. Commitment to self was found to interact with total stress at marginally significant levels ($p < .11$) for all three of the social well-being outcome variables (positively for social contacts, negatively for the composite index and group participation). In addition, the combined effects of commitment to work and total life stress on the composite index and group participation were also negative, at the level of $p < .07$.

Question 2.2 addressed the issue of the combined effects on social well-being of hardiness and contextually-related life stress. When regression analyses

were conducted to investigate this question, some signficant results were found for family, home/social relations, and financial/legal stress when they predicted social contacts and group participation. In order to describe both the magnitude and direction of the effects, beta values from these regression analyses are presented in Table 10. With regard to magnitude, a significant beta weight means that the relevant term contributed significantly to an overall increase in R^2; with reference to the direction of effects, this is determined by the sign of the beta weight (for example, if the sign of the beta weight of the stress term is positive, stress has a positive relationship with the dependent measure of social well-being in the regression equation.)

Table 10

Beta Weights in Hierarchical Multiple Regression Analyses between Hardiness, Stressful Life Event Categories, and Social Well-being Measures, Craft Workers (N=190)

	Work Events	Family Events	Home/Social Events	Fin/Legal Events	Personal Events
Social Contacts					
Hardiness (A)	.18*	.12*	.12*	.13*	.11*
Stress (B)	.01	.03	.17**	.23**	.09
A X B	-.01	.20##	.06	.05	.16
Group Participation					
Hardiness (A)	.08	.07	.04	.12	.16
Stress (B)	.06	-.01	.03	.03	-.12
A X B	-.06	-.21*	-.03	-.11	-.19#

#p<.07
##p<.06
*p<.05
**p<.01

For stressful events occuring in a family context, hardiness alone predicts increased social contacts and interacts with those events at a marginally significant level; with regard to group participation, (and also the overall social well-being index, not shown in the table) the interaction term is significant, but in a direction opposite of what was predicted. Home/social and financial/legal stress predicted an increase in social contacts, apart from personality. A conceivable reason for the home/social effect is that there may be a confound between independent and dependent variables here: several events within the home/social context are related to social

contact, and one in particular is 'change in social activities'. The financial/legal finding might be explained by the notion that financial and or 'legal' changes in the lives of most people (both hardy and nonhardy) may necessitate more social contact, sought perhaps for financial or legal assistance and advice.

Finally, Question 2.3 asked about ways each of the hardiness subscales might interact with the magnitude of life stress in each of the five contextually-related categories. When this analysis was performed, two of the five stress categories (family stress and personal stress) and two of the five hardiness subscales -- commitment to self and commitment to work -- were involved in significant interaction effects. Having the strongest influence, commitment to self accounted for significant interactions in five of the six family and personal stress regression equations it was entered into, along with a marginally significant effect in the sixth, as shown in Table 11. Regarding the direction of these effects, as the table indicates it was positive on social contacts and negative on group participation and the overall index.

Table 11

Beta Weights of Interaction Terms in Hierarchical Multiple Regression Analyses between Commitment to Self, Stressful Life Event Categories, and Social Well-being Measures, Craft Workers (N=190)

	Work Events	Family Events	Home/Soc Events	Fin/Leg Events	Personal Events
Social Well-being (Composite Index)	-.07	-.28*	-.02	-.14	-.28*
Social Contacts	.02	.28*	.12	.09	.23#
Group Participation	-.05	-.32*	-.03	-.13	-.28*

#p<.07
*p<.05

If we compare the beta weights of Table 12 to those in Table 11, we observe that the interaction term of personality and family stress in the social contacts equation went from being marginally significant to being fully significant after substituting commitment to self for hardiness, and that the same was true for the interaction term of personality and personal stress with the composite index and group participation as the outcome measure. Family stress seems to be salient for self-committed craft workers, but it appears to affect their social well-being in complex ways. A possible explanation for these findings is that stress within the family causes them to seek more outside contact, possibly to relieve or offset that stress, but it also causes them to reduce the size of their network (as indicated by the negative relationship with the

composite index, which is mainly a measure of network size) and be less active in the activity of formal groups and associations, perhaps because this kind of activity has become lower priority following family stress. In short, the negative finding for the composite index and group participation, combined with the positive finding for social contacts, suggests that after stressful life events self-committed individuals may tend to deepen their social networks (consistent with seeing fewer people less often). This result supports the findings of other investigators (e.g., Bard, 1982; Yarom, 1982.)

Recall that the joint effect of commitment to self and family stress was also a significant predictor of increases in learned resourcefulness. It should be noted in this connection that events within a family context include the most stressful ones, such as death of a spouse and divorce. It is these types of events, when experienced by individuals with a strong sense of commitment to their own lives, that appear in the present study to be most associated with psychological growth, at least from a quantitative analysis of questionnaire data for this group of subjects.

III. INTERVIEW STUDY

A. HYPOTHESIS and RELATED QUESTIONS

This study investigates several issues through the analysis of open-ended data obtained in focused interviews. First, it examines the role that hardiness plays in whether or not subjects undergo psychological change as adults. Second, it asks whether subjects change negatively, positively, or not at all. Third, it attempts to identify and classify particular instances of change or growth. And finally, it looks at the extent to which stressful life events and their contexts, along with other factors, contribute to these changes. Here is the hypothesis and related questions:

HYPOTHESIS: High hardy individuals will be more likely than those low in hardiness to report positive, as opposed to negative or no change.

Related questions

1. In what direction do subjects change?
2. What is the nature of the changes that subjects report?
3. To what extent do do subjects point to specific life events as having contributed to the changes?

The rationale for the hypothesis emerges from the literature reviewed earlier and derives from the idea that hardy individuals are more likely to change as adults because they are presumably better able than nonhardy

persons to integrate not only discrete life events but also the continuous stream of life experiences into an overall, positive life plan. In addition, it is expected that the changes reported will not be limited to those in the categories of coping ability and social well-being investigated in the first study. The three related questions are posed as open empirical issues with no prior theoretical assumptions made.

B. METHOD

In 1981, the names of forty executives were selected from a larger sample pool of subjects studied in the Chicago Stress Project and asked to participate in an Interview Project. They were chosen by selecting the twenty subjects highest on hardiness and the twenty who were lowest. Eleven of these were not available for interviews. Of the remaining twenty-nine, fifteen of these subjects were high on hardiness, fourteen were low. They were administered focused interviews that lasted approximately one hour. The interviews covered subjects' present work and family situation, aspects of their life history, and health status (the interview protocol is reproduced in Appendix B-1.) Twenty-two interviews were made available to this investigator for analysis. Data on self-perceived changes in adulthood were obtained by performing a content analysis of relevant segments of the interviews. Each of the interviews was reviewed in its

entirety. Relevant segments were extracted for coding and analysis. The majority of relevant vignettes consisted of responses to the following question asked in the life history section:

> Do you think you have changed over the years, and if so, how?

Several subjects also spontaneously reported relevant information in response to other questions (see Appendix B-2). These data were also included. There was one vignette per subject. For purposes of analysis, relevant segments were combined to form vignettes in one of two ways: 1) if there was one segment per subject, it was considered a vignette; 2) if a subject had relevant response segments to both the main change question and other questions as well, these segments were combined, in the order of sequence, to form one vignette. Three of the subjects had not been asked the main change question, nor did they provide any other relevant data. Accordingly, they were excluded from the analysis.

With regard to organizing and coding the remaining 19 segments the following procedure was employed:

1. Vignettes were initially sorted by this investigator into two change categories. Criteria for assignment were as follows:

Category	Criterion
CHANGE	Subjects who reported that they had changed in some way, either in response to the main change question mentioned above and/or in response to one or more of the other questions listed in Appendix B-2.
NO CHANGE	Those who replied "No" to the main change question and who did not report any changes in response to other questions.

2. A coding sheet with instructions was constructed and used by raters to content analyze the vignettes for the presence, description, category, direction, and source of change if one was reported. The change categories developed were based on Yarom's (1982) taxonomy, which included changes in personality characteristics, attitudes, and interpersonal relationships. The coding sheet and instructions are presented below. For certain coding categories (e.g., contexts of stressful life events), explicit definitions were provided on the sheets; for others, (e.g., types of changes, such as those in personality characteristics, values, etc.), it was assumed that the raters, graduate students in psychology unaware of the purpose of the study, would have adequate knowledge of definitions.

3. Coding was completed for each segment first by the present investigator and then a reliablility check was conducted by having the coding performed by the two other raters. Reliability was determined by calculating coefficients of inter-rater agreement following a method recommended by Siegel (1956).

4. For the test of the Hypothesis a Fisher exact test was performed. To answer the related questions and for reporting other results chi-square analyses and qualitative, descriptive content analyses were conducted.

INSTRUCTIONS

This study is concerned, in part, with the issue of whether people undergo psychological change as adults and, if so, what constitutes the nature and origin of that change. You will be presented with several vignettes which have been exerpted from interviews with middle-aged business executives. They are employed by a large company undergoing a major reorganization. These subjects have been asked questions pertaining to their work life, family life, personal history, and health. The vignettes contain responses relevant to the issue being investigated. Your task will be first to read each vignette and then to answer a series of questions given on the attached sheets.

Thank you.

INTERVIEW CODING SHEET

Question	Rater's Response
1. Has the subject changed as an adult?	Yes _____
	No _____
	Unclear _____

2. If the answer is "yes" what is the specific nature of the the change or changes? Use the subject's own words to support your claim.

   (If there is more than one change, please number the changes here and in response to the following questions.)

   _____

   _____

   _____

   _____

   _____

   _____

   _____

3. Which one of the following general categories best characterizes each of the changes?

   Personality characteristics _____ Attitudes _____

   Self-knowledge _____ Social Relationships _____

   Values _____ Other (describe) _____

   Coping Ability _____ _____

In the next two questions you will be asked to determine the direction of change. Positive changes are those the subject considers desirable and/or contributing to his improved functioning or growth or maturity as a person. Negative changes are those the subject regards as undesirable and/or adversely affecting his functioning or level of maturity.

4. What is the primary direction of each of the changes?

Positive _____

Negative _____

Neutral _____

5. What is the primary direction of the subject's overall change?

Positive _____

Negative _____

Mixed _____

6. Can the change(s) be attributed, at least in part, to the clearly stated or implied occurrence of a specific event or series of events?

Yes _____

No _____

7. If so, which event(s)? Use the subject's own words to support your claim.

_____

_____

_____

8. Into which of the following life contexts or categories would you place the event(s)?

Work _____ Financial and Legal _____

Family _____ Home _____

Personal ____ Social _____

(Events in a "family" context pertain primarily to a relative or one's relationship with that relative (e.g., "divorce"); events considered "personal" relate to the subject himself (e.g., personal illness); events in the "home" context include "remodeling a home"; and "social" events include "making a new friend.")

9. Is there another explanation for the change(s), in addition to, or besides, an event?

Yes _____

No _____

Unclear _____

10. If so, what is the explanation? Use the subject's own words to support your claim.

_____

_____

_____

_____

C. RESULTS and DISCUSSION

In this section I will present results of the reliability check, report and discuss the results of the analysis of interview data as they relate to the hypothesis and other questions posed, and present and discuss qualitative findings on the nature and source of the changes reported by subjects.

Reliability of Ratings

Inter-rater reliability coefficients were calculated for the ten items the three judges answered after reading each of 19 vignettes, following a method recommended by Siegel (1956). This method consists of calculating the ratio of the number of actual pairwise agreements among the three judges over the number of possible pairwise agreements for each item. These results appear in Table 12. As the table indicates, the highest level of agreement was for the presence or absence of overall change in the subjects (.95), while the lowest was for identifying factors that contributed to change other than stressful life events (.62). These coefficients were considered adequate. Accordingly, the following analysis is based on the ratings of the investigator.

Table 12

Inter-rater Reliability Coefficients

Item	Coefficient
1. Presence or absence of overall change	.95
2. Identification of specific change	.73
3. Category of each change	.63
4. Direction of each change	.75
5. Primary direction of overall change	.73
6. Presence or absence of contributing life event	.81
7. Identification of specific contributing event	.86
8. Life context of event	.84
9. Presence or absence of other contributing factors	.72
10. Identification of other contributing factors	.62

Change and Hardiness

The hypothesis of the study was that subjects high on hardiness would be more likely than those low in hardiness to report positive, as opposed to negative or no change.

Hardiness levels were available for 16 of the 19 subjects. The 16 had been assigned the level of high or low hardiness, determined by a median split of the scores for all subjects in the larger executive pool of 1981. A cross-tabulation of subjects' direction of change and

hardiness levels is presented in Table 13. In order to test the hypothesis, the subject whose change direction had been rated as mixed was eliminated from the analysis and the directional categories were collapsed to two: 1) positive change; and 2) negative or no change. Because cell frequencies were small, a Fisher exact test (Ferguson, 1971) was performed to test the hypothesis that hardiness was significantly related to positive change. These results were not significant ($p=.59$), hence the Hypothesis was not supported. For this group of subjects, then, hardiness did not appear to distinguish between those who changed in positive ways and those who did not. It is possible that the negative results could be due, in part, to the small number of subjects. A stronger test of the hypothesis would involve a larger sample.

Table 13

Direction of Change and

Hardiness Levels

(N=16)

Hardiness Level	Direction of Change			
	Positive Change	Mixed Change	Negative Change	No Change
High	4	1	3	1
Low	4		1	2
TOTAL	8	1	4	3

Overall Change and Direction

Apart from hardiness, of the 19 subjects, 16 clearly reported that they had changed as adults and three said they had not. With reference to related question 1, which had to do with the direction of change for all subjects, for eleven of the subjects overall change was positive; for four it was negative; and for one it was mixed (this subjects reported one positive and one negative change.) These results are shown in Table 14.

Table 14

Directional Change

Categories of Subjects

(N=19)

	Positive Change	Mixed Change	Negative Change	No Change	TOTAL
Number of Subjects	11	1	4	3	19

A chi-square analysis with Yates' correction factor (used with small cell frequencies) was conducted (Ferguson, 1971) after eliminating the subject whose change was mixed. The results were marginally significant ($\chi(2) = 4.79$, $p<.10$). It appears then, that at least for this small sample of subjects, that psychological change does occur in adulthood, and that it is primarily in the positive direction. This supports the theoretical claims of Erikson (1950) and Neugarten (1969), and is consistent with empirical evidence obtained by several investigators, including Vaillant (1977), Kimmel (1974), Neugarten (1977), and Mortimer, Finch, & Kumka (1982).

Categories of Changes

The second related question asked about the nature of the changes reported by subjects. These results are first presented for subjects who reported positive changes. An overview is presented in Table 15, which provides a frequency distribution of the general categories of positive changes for the 12 subjects who reported them.

Table 15

Categories of Positive Change Reported by Subjects

(N=12)

Change Category	Number of Different Subjects Reporting Positive Changes
Personality Characteristics	9
Values and Attitudes	5
Self-knowledge	4
Coping Ability	2
Social Relationships	2
	22*

*Exceeds number of subjects because some subjects reported more than one change.

As the table shows, subjects reported having positively changed most frequently in the area of personality characteristics, followed by values and

attitudes, and then the other categories. The specific nature of the changes along with factors contributing to them are reported below.

Change, Stressful Life Events, Hardiness, Context, and Other Contributing Factors

The final question related to the hypothesis asked to what extent subjects pointed to specific life events as having contributed to change.

Nine out of the 16 subjects who changed reported that this was the case. Six of the nine changed in a positive direction, two in the negative, and one person reported both a positive and negative change. Regarding the role of hardiness, high hardy subjects appeared no more likely than low hardy subjects to point to events as contributing to positive change. These results do suggest that life events play a role in contributing to positive change for some individuals, but the finding should be interpreted cautiously because of the small number of subjects.

Life events cited by subjects that contributed to change were also placed in a context -- either a work, family, personal, financial/legal, or home/social milieu. The distribution of change instances by change category and life context appears in Table 16 for those change instances where subjects cited a contributing life event.

Table 16

Number of Positive Change Instances for Which Subjects Cited Life Events, by Change Category and Context of Life Event

(N=9)

	Life Context		
	Work	Family	Personal
Change Category			
Personality	3	1	1
Values and Attitudes	1	1	1
Self-knowledge		1	1
Coping Ability		1	1
Social Relationships		2	
	4	6	4

The table shows that events in non-work contexts (family and personal spheres) (10 change instances) were associated with most of the relevant changes subjects reported, as compared to the work context (4 instances). The specific contextual nature of the life events cited, along with results that suggest a qualitative similarity between specific type of change and specific type of life event will be reported below.

Of the twelve subjects reporting positive changes, ten cited contributing factors other than, or in addition to, discrete life events. For six of these the factor appeared to be cognitive in nature, consisting of a decision or realization on their part. Two of the other four attributed the change to their own individual effort or hard work, another to an increase in confidence, and the fourth to age. Of the five subjects reporting negative changes, none implicated factors other than life events.

These results suggest that positive psychological change may tend to be accompanied by some kind of constructive cognitive activity on the part of the subjects whereas negative change may not be. This finding is consistent with evidence obtained by several investigators whose work was cited earlier, including Egindorf (1981), Lifton (1973), and Finkel (1975) who found that a process akin to cognitive restructuring was related to psychological growth following life stress.

Specific Nature and Source of Positive Changes

Personality Characterstics

What kind of growth in personality did the subjects report? Three main subcategories emerged. Subjects either said they had become less intense or more "mellow" (4 cases), more sympathetic towards or understanding of others (3), or more extroverted (2). Those who had "mellowed" said they were less intense especially in the workplace, mainly with regard to the pace of their getting things done; they all attributed this change to factors related to the work context. In this regard, all four said the change had followed some kind of work-related decision or realization on their part. For example, two subjects said they had become less intense after they had decided not to seek further advancement in the company. One of these subjects also pointed to an external event -- the company reorganization -- as having contributed to his change.

Three executives said they had become more sympathetic towards or understanding of others. All attributed this change, at least in part, to specific stressful life events, and in every case the event involved a serious personal illness or death of a close family member. In the words of one subject whose wife had died of cancer two years before the interview: "I am more sympathetic to other people's concerns, having gone through some of the trauma myself." This finding is consistent with the

evidence obtained by Haan (1977) that some individuals who had undergone chronic illness later became more empathic towards others.

Two subjects reported that they had become more extroverted. One attributed this change merely to age, while the other attributed it to another change he had undergone on a deeper level, namely an increase in confidence.

Values and Attitudes

Four executives gave responses that were interpreted as indicating that their values had changed in ways they considered positive. For three of these, work had become less important and their families more important. The fourth subject, whose youngest child was about to move out of his house, leaving him alone with his wife, said that his values had shifted in the direction of his becoming more concerned with his own life and less with that of his children. With regard to changes in attitudes, one subject made a general statement that he had developed a more positive attitude toward life as a result of ovecoming earlier negative attitudes.

Self-knowledge

Four executives reported gains in self-knowledge. Two of these discovered personal talents or other attributes they previously had not been aware of, while a third became more aware of his limitations, directly as a result of a specific life event:

> I always thought I could change jobs. In the eleventh year of my career I actually went to a job placement and was interviewing. Didn't do it but it was a rude awakening. You think your something until you actually put yourself and your experience into categories that could meet job skills or the job market...So if you ask about turning points, changes, that was a rude awakening.

Coping Ability

Increased coping ability was reported by two subjects, and in both cases they implicated specific stressful life events in the change. These two individuals had also undergone a change in personality characteristics, having become more understanding of others (see above). With regard to coping ability, one person said that after experiencing a heart attack and subsequent surgery he made a decision to worry less, especially about trivial matters, and had also developed new ways of calming himself down when under stress. The other discussed how one stressful period in his life had strengthened his ability to cope:

> Taking care of the kids by myself while my wife was in the hospital for those 8 or 9 years taught me a lot about myself, about stamina, caring, about being able to handle troubles and trauma, so anything that comes along has never even come close. When people come to me with problems I become extremely optimistic because I know there has to be a way. And I haven't been wrong up to now.

This subject's change appears to illustrate a variation of Meichenbaum's (1977) stress-innoculation principle. In Meichenbaum's formulation coping with a small stressor enhances one's ability to cope with a larger one; in this instance the reverse is the case, but the same "innoculation" notion seems to be operating.

Social Relationships

Two subjects reported positive changes in social relationships, with life events playing a role in both cases. One said that after the last of his children moved out of the house he had expanded his friendships and degree of community participation. The other described how his social role in his family had changed and how he had become closer to his daughter after his wife's death:

> Now I find myself being both parents. I guess my biggest role is trying to make sure I listen to what my daughter is telling me, that I take time and put the newspaper down or whatever I'm doing and try to encourage her to tell me what is going on. To me that is very important. She did this with her mother, and of course her mother's not there.

Positive Change - A Central Theme

Analyzing the nature of the positive changes for the twelve subjects who reported them, there appeared to be a common thread running through more than half the changes. Seven of the twelve moved in what could be described as a positive "social" direction, whether through certain changes in personality (i.e., becoming more understanding of others, or becoming more extroverted), values (i.e., considering one's family more important than one's job), or through changes in social relationships themselves (e.g., becoming closer to others). This kind of positive change or growth in adulthood has been noted by several writers. Vaillant (1977), for example, found that psychological growth was associated with increases in altruism. Heath (1968) found that greater maturity included movement from autocentrism (self-centeredness) towards allocentrism (other-centeredness). And Horney (1950) considers maturity to be accompanied by movement "toward" people, as opposed to movement "against" or "away" from them. For five of these seven subjects stressful life events, mostly in a personal or family context, contributed to their becoming more social. In three cases a personal or family illness or death was involved, in another children moved out of the house, and the fifth cited the company reorganization. So for four out of the five subjects who cited events the events themselves could be considered "social" in nature, and the nature of their stressfulness inheres in the idea

that there was an actual or threatened loss of someone close. Subjects appeared to cope with this by changing -- becoming closer to others. Thus for these subjects a case can be made that there was a qualitative connection between the type of event reported and type of change experienced.

It should be acknowledged at this point that the evidence reported here of "positive change" or "psychological growth" inescapably involved certain value-laden assumptions stemming from two sources. First, such assumptions come from the values of the investigator and raters. Second, this was coupled with a possible tendency to to infer from some subjects an implicit sense of desirability on their part that was derived in part from the context of their comments. For example, two subjects who reported having become more mellow conveyed a sense of satisfaction through contextually-related comments. It was quite apparent from this investigation that the value-laden nature of psychological growth is an important issue for future research.

Nature and Source of Negative Changes

Five subjects reported negative changes. Three of these said they had developed more negative attitudes towards people, especially those at work. They all attributed the change to events in the work context. One said:

> I've become much more cynical about people and I have lost a lot of respect for people who I previously respected. I'm very cautious and sensitive about trusting people now because I've been misled by people I had significant trust in, especially in the business world.

The development of more cynical, skeptical, or mistrustful attitudes towards people was also found by Yarom (1982) in his study of the effects of war stress on Israeli veterans. A fourth subject said he had become more intense and agresssive and that this had created "communication barriers" with other people for him both at home and at work. The fifth reported that his ability to cope with high stress had diminished, but he wasn't sure to what to attribute this change.

Having noted earlier that most of the subjects who changed in positive ways did so along a broadly defined "social" dimension, we observe that movement on this continuum appeared to have also occurred for four out of five of those who reported negative changes. The shift can be construed as either "away from" or "against" people, expressed either in personality predisposition, attitude, or behavior, as opposed to the movement "toward" people shown by those reporting positive changes.

The empirically-derived, higher order "social" factor that emerges from this study may offer a different, potentially useful perspective on psychological change in adulthood, one that could help unify changes traditionally

classified into the conceptually distinct categories of personality, values, attitudes, and interpersonal relationships (e.g., Hilton, 1964; Kimmel, 1974; Schaie & Parham, 1976). In addition, the qualitative evidence obtained in the present study, though modest, also suggests that socially-related stressful life events might contribute to such changes within the person.

IV. GENERAL DISCUSSION

The first hypothesis of the questionnaire study was supported for one of the two samples investigated: executives high on hardiness who report high levels of life stress tend to show higher levels of coping ability three years after a stressful period than those low in hardiness. Evidence from data analysis of the craft worker sample indicated that although the hypothesis was not confirmed, subjects highest on hardiness did have a positive, significant relationship between life stress and future coping ability. Further analyses of the craft sample revealed that one aspect of hardiness -- i.e., commitment to self -- interacted significantly with stress in a particular life context (the family) to result in improved coping ability.

The second hypothesis of the questionnaire study was that stressful life events for individuals high on hardiness would be followed by greater social well-being at least two years after the stressful period. This hypothesis was not supported for either sample. Some evidence was found, however, that was consistent with the theoretical questions posed. For instance, in a pattern similar to that found for learned resourcefulness in the craft group, subjects highest in hardiness among the executives showed a positive, significant relationship between life stress and one aspect of social well-being,

namely social contacts. In addition, the higher subjects were on commitment to self the more likely they were to show increases in social contacts following stressful events within the family, a finding similar to that obtained for learned resourcefulness. Finally, one result was clearly opposite of what was predicted: hardy individuals who experienced high family stress tended to have less community group participation, rather than more as predicted.

The main hypothesis of the interview study was that high hardy individuals would be more likely than those low in hardiness to report that they had changed in specific, positive ways as adults. This hypothesis was not supported: subjects both high and low in hardiness appeared equally likely to report changes. Three additional, related questions were addressed in the interview study. First, were subjects more likely to change in the positive direction, as opposed to not at all or in a negative way? Results indicated that most of the subjects interviewed reported positive change. Second, from a qualitative standpoint, what was the nature of the changes that subjects reported?

Those who changed did so in a variety of ways. Most of the changes were in personality characteristics, values, and attitudes; others were in the categories of self-knowledge, coping ability, and social relationships.

There was also a common theme found running through more than half the changes, both positive and negative: subjects appeared to have either moved forward or backward along what could be described as a "social" dimension. Specific positive social changes included greater sympathy for others, greater extroversion, valuing one's family more vis-a-vis one's job, and developing closer social relationships. Negative social changes mostly took the form of adopting more suspicious, cynical, or mistrustful attitudes towards others. Third, to what extent did subjects point to stressful life events as having contributed to their changes? They did so for two-thirds of their change instances. Regarding the life context of the events, life events in the family and personal context, rather than those related to work, contributed to most of positive changes, while work events played a role in most of the negative changes. Another contributing factor was also identified: some subjects who underwent positive change reported that just prior to the change they had made a decision or experienced a realization of some kind.

To what extent is it possible to integrate the results of these two studies? First, focusing on life stress and its context, evidence from both studies suggest that both the magnitude and qualitative nature of stressful life events within a personal or family context may play an important developmental role in the lives of certain individuals. Second, with regard to personality, the

studies led to different results: hardiness mediated between the magnitude of family stress and positive changes in coping ability and social well-being for subjects in the questionnaire study, but it did not discriminate between those who showed positive change and those who didn't in the interview study. Third, the predominant type of idiographic change reported by subjects in the interview study was social in nature and could be conceptualized in terms of one of the nomothetic outcome variables in the questionnaire study, namely social well-being. Finally, reports of subjects who were interviewed can be used to illustrate or phenomenologically "flesh out" some of the questionnaire findings. For example, recall that one subject reported that after suffering a heart attack he developed new coping skills, including an ability to calm himself down. Such a skill is in fact part of the learned resourcefulness repertoire. Recall also that another said that he had become closer to his daughter after his wife's death, illustrating how a life event within the family can effect one's social well-being. This person's experience and that of two others who were interviewed also shows how a social loss can be followed by a social gain. Viewed together, both studies seem to suggest that a promising direction for future research on life stress and personal change would involve not only investigating the sheer magnitude of stressful life events but also their qualitative and contextual nature as well.

In conclusion, the studies offer modest evidence that hardy individuals do undergo psychological growth following stressful life events, that such change may take a variety of forms, and that life stress within one's own family and personal sphere may contribute more to positive change than stress in other contexts. Alongside evidence from life stress/health status research, results from the present investigation suggest that for some individuals stressful life events not only affect their health but other aspects of their lives as well, such as their personalities, coping ability, social well-being, values, attitudes, and self-knowledge.

The results of this study suggest several areas for future research in addition to those already mentioned. First, there needs to be an inquiry into the change process that occurs after a person experiences a stressful life event. Some light was shed on one possible aspect of this process by the results of the interview study: as noted earlier, several subjects who reported positive changes stated that these had occurred following some kind of cognitive activity -- either a decision or realization related to their own life course. This suggestive finding is consistent with a considerable amount of previous theory and research reviewed earlier, such as that in the area of crisis theory (e.g., Caplan, 1964; Rapoport, 1962; Bard & Sangrey, 1979), transformational coping (Maddi, 1980b; Kobasa, 1982b; Maddi & Kobasa, 1984), focusing (Gendlin,

1981), cognitive restructuring (Finkel, 1977), stress-innoculation (Meichenbaum, 1977), and the work of worrying (Janis, 1965). All of this evidence suggests that stressful life events may lead to psychological growth because of the use of a particular type of coping strategy that appears to involve engaging in self-reflective behavior in which individuals face and try to learn from not only a stressful life event itself but also from their own affective, cognitive, and behavioral role in and reaction to the event. For example, in a study of Vietnam veterans Egendorf (1981) found that those who claimed to have grown from their involvement in the war had a were more likely to have ackowledged their anxiety, assumed responsibility for their behavior, reflected on their experiences and worked them through. Lifton (1973) also found that Vietnam veterans who reported gains (in the form of greater moral and social consciousness) acknowledged their responsibility for what they did. Given that little is known about this process, that it is likely to be a complicated one and that its nature probably varies considerably among different individuals, using a combined nomothetic and idiographic approach would seem to be useful for identifying its elements. For example, in research on life stress and health status, Maddi & Kobasa (1984), provide idiographic evidence that one aspect of transformational coping (measured nomothetically) may involve self-reflective behavior. And Mullen & Suls (1982)

found that a contruct conceptually similar to self-reflectiveness, namely "private self-consciousness" was a buffer of life stress in college students. If such a process is found to be important for psychological growth another question for future research is whether hardy individuals are more likely to employ it than nonhardy persons.

Second, with reference to methodology, as already suggested, a combined nomothetic-idiographic approach, in the tradition of Murray (1938), would seem warranted. In this connection, a stronger test of the proposition addressed in the present investigation warrants a pre-post prospective design, so that the presence and degree of psychological growth following stressful life events can be measured directly. In addition, other nomothetic outcome measures, including a more qualitative measure of social well-being along with attitudes, values, and personality characteristics, could be investigated. In such a combined approach the actual experiences of subjects as reported by them in focused interviews could be organized systematically to illustrate nomothetic findings.

Third, the hypotheses need to be tested on other populations, so that positive results can be generalized and that hypotheses that were not supported can be retested. The present studies involved mostly males who were fairly homogeneous in terms of age range, occupation,

education, and ethnic background.

The finding that life stress and hardiness was associated with improved coping ability has practical implications. From the standpoint of crisis intervention, given that this result supports the principle of stress-innoculation, it is possible to have crisis intervention programs incorporate this principle -- individuals can be helped to develop new coping skills following a stressful experience, which is likely to also enhance their self-esteem. More generally, if crisis victims are helped to discover what they have learned from a stressful experience they might begin to experience positive change in other areas as well. From a preventive standpoint, if a stressful life event has yet to occur (e.g., upcoming surgery) an individual's coping ability can be strengthened by giving him training in stress innoculation.

Finally, from the perspective of public education, the study provides further support for the idea that life stress is not always negative, and it casts into further doubt the homeostatic notion that the best a person can hope for after a stressful event is to return to the way he was before the event occurred. The results of this investigation offer at least some hope that difficult, painful experiences, often unavoidable in life, may at least provide a measure of good for some people.

Appendix A-1 : DEMOGRAPHIC QUESTIONNAIRE

University of Chicago
Department of Behavioral Sciences

Executive Stress Study

In order to properly interpret your responses in the sections which follow, we would like to have some information about your present life and background. Most of the questions can be answered by circling the appropriate number.

1. This questionnaire is being filled out by a:

   Man 1 Woman 2

2. Your age at your last birthday:

   25-29 1 30-39 2 40-49 3 50-59 4 60-69 5

3. Your present marital status is:

   Married 1 Divorced 2 Separated 3

   Widowed 4 Single 5

4. Please indicate the number of your living children:

   Males _____
   Females _____

5. Please indicate the number of your living siblings:

   Brothers _____
   Sisters _____

6. Please indicate your religious affiliation:

   Protestant 1 Roman Catholic 2 Jewish 3 Other 4

7. How often do you attend religious services?

   Very often 1 Fairly often 2 Sometimes 3 Almost never 4

8. What is the highest grade you completed in school?

   Some high school 1 Graduated from high school 2

   Some college 3 Graduated from college 4

   Some graduate school 5 Advanced degree 6

9. Your spouse's occupation is:

   Homemaker 1 Clerical or white collar 2

   Professional or technical 3

   Administrative/managerial 4

   Other 5 (Specify: _____)

10. Your job level is

    2nd 1 3rd 2 4th 3 5th 4 Officer 5

11. How long have you been at this level?

    0-2 years 1 3-5 years 2 6-10 years 3 Over 10 4

Appendix A-2 : STRESSFUL LIFE EVENTS*
University of Chicago
Department of Behavioral Sciences
Executive Study Questionnaire
(CRAFT WORKERS)

We will begin by asking you to indicate the sort of things that have been happening to you over the last two years. The tables which follow list events and four six-month time periods covering the last 24 months. For each occurrence of an event in six month period, enter how stressful the event was to you according to the following scale.

1 = Not Stressful
2 = Mildly Stressful
3 = Moderately Stressful
4 = Very Stressful

If an event did not occur in the two-year period, it is not necessary to enter any values. Examples of how to fill out the tables are shown below.

EVENT	MONTHS PRIOR TO TODAY'S DATE: One-Six	Seven-Twelve	Thirteen-Eighteen	Nineteen-Twenty-four
Relations with co-workers worsened		3,4		
Moved to a better residence			1	

In the first example, relations with co-workers worsened twice in the period from 7-12 months ago. One occurrence was moderately stressful (3), the other was very stressful (4).

A move to a better residence occurred in the prior 13-18 month period and was evaluated as "Not stressful" (1).

*Events below are grouped by life context and date columns are omitted. In addition, Executives completed a questionnaire identical to this except that the period covered was the preceding three years.

WORK EVENTS

__Relations with co-workers worsened

__Relations with co-workers improved

__Decrease in morale among co-workers

__Relations with boss improved

__Trouble with boss

__Relations with customers improved

__Trouble with customers

__Gaining a new supervisor

__Loss of a mentor

__Relations with subordinates improved

__Trouble with subordinates

__Work hours or conditions worsened

__Work hours or conditions improved

__Decrease in work load

__Increase in work load

__Job responsibilities changed for better

__Job responsibilities changed for worse

__Completion of a major project on the job

__Transfer to another department

__Transfer to another company

__Promotion to a new job

__Demoted

__Did not get an expected promotion

__Discriminated against against or over-looked at work

__Very difficult job decision

__Top management gives sign of poor leadership

__Government action disruptive to your work

__A technological development changes your work

__Relations between departments disrupts your work

FAMILY EVENTS

__You became engaged

__You married

__You or spouse became pregnant

__Relations with spouse worsened

__Relations with spouse improved

__Marital infidelity

__Marital separation

__Marital reconciliation

__Divorce

__Birth of a first child

__Birth of a second or later child

__Abortion

__Miscarriage or still-birth

__Found out that cannot have children

__Adopted a child

__Started menopause

__Spouse begins school

__Spouse ends school

__Spouse began work

__Spouse ends work

__Marriage of a son or daughter

__Divorce of child

__Change in number of family get-togethers

__New person moved into household

__Person moved out of household

__Someone expected to leave stayed on in household

__Worsening in health of family member

__Death of spouse

__Death of child

__Death of parent

__Death of sibling

__Death of other family member

__Birth of grandchild

__Family argument other than with spouse

__Change in responsi-bilities at home

__Trouble with in-laws

PERSONAL EVENTS

__Started drinking less

__Started drinking more

__Started smoking less

__Started smoking more

__Other revision of personal habits

__Sexual difficulties

__Fell in love

__Improvement in physical appearance

__Worsening in physical appearance

__Change in sleeping habits

__Outstanding personal achievement

__Took a vacation

__Could not take a planned vacation

__Took a non-vacation trip

__Began school or training program

__Had problems in school or training program

__Ended school or training program

__Personal injury or illness

__Your health improved

__Your health worsened

FINANCIAL AND LEGAL EVENTS

__Took out a mortgage or loan

__Bought a car or other large item

__Foreclosure of a mortgage or loan

__Repossession of a car or other large item

__Took a cut in wage or salary

__Suffered a loss of money or property not related to work

__Got a substantial increase in salary

__Did not get an expected salary increase

__Had financial improvement not related to work

__Assaulted or robbed

__Involved in an accident

__Involved in a lawsuit

__Involved in a court case

__Minor violation of the law

__Started a business or profession

HOME AND SOCIAL RELATIONS EVENTS

__Moved to a better residence or neighborhood

__Moved to a worse residence or neighborhood

__Moved to an equivalent residence or neighborhood

__Unable to move after expecting to

__Built a home or had one built

__Remodeled a home

__Lost a home through some disaster

__Change in political activities

__Change in recreational activities

__Change in community activities

__Change in church activities

__Change in social activities

__Made a new friend

__Broke up with a friend

__Death of a close friend

Appendix A-3

ATTITUDE QUESTIONNAIRE
(Hardiness Scales)

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 on the basis of the way you feel now. Don't spend too much time on any one item.

The more able person has a greater responsibility for the welfare of the less able.

Public supported medical care is the right of everyone.

Violence never is justified because it harms both the doer and the receiver.

The young owe the old complete economic security.

From each according to his ability; to each according to his needs

A retired person should be free of all taxes.

Ownership of property beyond providing for one's modest comfort and security should be illegal.

Government should guarantee jobs for all.

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

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

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

There are no conditions which justify endangering the health, food and shelter of one's family or one's self

Wealth and fame are less important than knowing one has an assured minimal social security.

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

Steady saving is the best road to economic security.

Those who work for a living are manipulated by the bosses.

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

I feel no need to try by best at work for it makes no difference anyway.

Politicians control our lives.

Most of my activities are determined by what society demands.

There are only certain strict paths to follow if one is to be successful in our society.

Everyone is out to manipulate you towards his own ends.

Often when I interact with others, I feel insecure over the outcome.

I try to avoid close relationships with people so that I will not be obligated to them.

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

My parents imposed their wishes and standards on me too much.

I am not sure I want to stay married because I don't want to feel tied down.

Thinking of yourself as a free person leads to great frustration and difficulty.

No matter how hard I try, my efforts will accomplish nothing.

Often I do not really know my own mind.

I wonder why I work at all.

Most of life is wasted in meaningless activity.

Whatever your goals at work, you can reach them if you plan carefully and keep trying.

If you have work, you might as well choose a career where you deal with matters of life and death.

I find it difficult to imagine enthusiasm concerning my work.

It doesn't matter if people work hard at their jobs; only a few bosses profit.

You can understand and control yourself by thinking over your feelings and actions.

Ordinary work is too boring to be worth doing.

I don't like my job or enjoy my work; I just put in my time to get paid.

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

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

The human's fabled ability to think is not really such an advantage.

The attempt to know yourself is a waste of effort.

By expressing your views to legislators and friends, you can have an influence on social policy.

I am really interested in the possibility of expanding my consciousness through drugs.

Life is empty and has no meaning for me.

The belief in individuality is only justifiable to impress others.

I wish I could be carried away by a revelation, as apparently happened to some historically important persons.

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

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

The most exciting thing for me is my own fantasies.

You can really make it by interacting with people who can get things done and expect you to do likewise.

Through working hard at being a prent you can really influence the way your children turn out.

Please answer the following items by placing a T (True) or F (False) on the line alongside each of them.

I live from day to day without trying to fit my activities into a pattern.

When I talk to a doctor, I want him to give me a detailed explanation of any illness I have.

It doesn't bother me to put aside what I've been doing without finishing it.

I have no use for theories which are only good guesses and are not closely tied to facts.

Each day I check the weather report so that I will know what to wear.

I tend to start right in on a new task without spending much time thinking about the best way to proceed.

My work is carefully planned and organized before it is begun.

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

I don't like situations that are uncertain.

I like to be with people who are unpredictable.

I won't answer a person's questions until I am very clear as to what he is asking.

I don't keep an accurate account of my financial resources.

It upsets me to go into a situation without knowing what I can expect from it.

Before I ask a question, I figure out exactly what I know already and what it is I need to find out.

I very seldom make detailed plans.

When I take a vacation, I like to go without detailed plans or a time schedule.

I don't enjoy confused conversations where people are unsure of what they mean to say.

I like the adventure of going into a new situation without knowing what might happen.

Once in a while I like to take a chance on something that isn't sure -- like gambling.

Please indicate which of the two statements provided in each item listed below BETTER represents your attitude. Place your choice, "1" or "2", on the blank provided next to each pair.

1. 1. Children get into trouble because their parents punish them too much.
   2. The trouble with most children nowadays is that their parents are too easy with them.

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

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

4. 1. In the long run, people get the respect they deserve in this world.
   2. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5. 1. The idea that most teachers are unfair to students is nonsense.
   2. Most students don't realize the extent to which their grades are influences by accidental happenings.

6. 1. Without the right breaks one cannot be an effective leader.
   2. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. 1. No matter how hard you try some people just don't like you.
   2. People who can't get others to like them don't understand how to get along with others.

8. 1. Heredity plays the major role in determining one's personality.
   2. It is one's experiences in life which determine what one is like.

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

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

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

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

13.1. When I make plans I am almost certain that I can make them work.
   2. 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.

14.1. There are certain people who are just no good.
   2. There is some good in everybody.

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

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

17.1. As far as world affairs are concerned, most of us are the victims of forces we can neither understand or control.
   2. By taking an active part in political and social affairs the people can control world events.

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

19.1. One should always be willing to admit mistakes.
2. It is usually best to cover up one's mistakes.

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

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

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

23.1. Sometimes I can't understand how supervisors arrive at work evaluations.
2. There is a direct connection between how hard I work and evaluations I get.

24.1. A good leader expects people to decide for themselves what they should do.
2. A good leader makes it clear to everybody what their jobs are.

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

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

27.1. There is too much emphasis on athletics in high school.
2. Team sports are an excellent way to build character.

28.1. What happens to me is of my own doing.
2. Sometimes I feel that I don't have enough control over the direction my life is taking.

29.1. Most of the time I can't understand why politicians behave the way they do.
2. In the long run the people are responsible for bad government on a national as well as local level.

Appendix A-4

BEHAVIOR SURVEY
(Self-Control Scale)

DIRECTIONS:
Please indicate how characteristic or descriptive each of the following statements is of you by using the code given below.

+3 Very characteristic of me, extremely descriptive
+2 Rather characteristic of me, quite descriptive
+1 Somewhat characteristic of me, slightly descriptive
-1 Somewhat uncharacteristic of me, slightly undescriptive
-2 Rather uncharacteristic of me, quite undescriptive
-3 Very uncharacteristic of me, extremely undescriptive

___ When I do a boring job, I think about the less boring parts of the job and the reward that I will receive once I am finished.

___ When I have to do something that is anxiety arousing for me, I try to visualize how I will overcome my anxieties while doing it.

___ Often by changing my way of thinking I am able to change my feelings about almost everything.

___ I often find it difficult to overcome my feelings of nervousness and tension without any outside help.

___ When I am feeling depressed I try to think about pleasant events.

___ I cannot avoid thinking about mistakes I have made in the past.

___ When I am faced with a difficult problem, I try to approach its solution in a systematic way.

___ I usually do my duties quicker when somebody is pressuring me.

___ When I am faced with a difficult decision, I prefer to postpone making a decision even if all the facts are at my disposal.

___ When I find that I have difficulties in concentrating on my reading, I look for ways to increase my concentration.

___ When I plan to work, I remove all the things that are not relevant to my work.

___ When I try to get rid of a bad habit, I first try to find out all factors that maintain this habit.

___ When an unpleasant thought is bothering me, I try to think about something pleasant.

___ If I would smoke two packages of cigarettes a day, I probably would need outside help to stop smoking.

___ When I am in a low modd, I try to act cheerful so my mood will change.

___ If I had the pills with me, I would take a tranquilizer whenever I felt tense and nervous.

___ When I am depressed, I try to keep myself busy with things that I like.

___ I tend to postpone unpleasant duties even if I could perform them immediately.

___ I need outside help to get rid of some of my bad habits.

___ When I find it difficult to settle down and do a certain job, I look for ways to help me settle down.

___ Although it makes me feel bad, I cannot avoid thinking about all kinds of possible catastrophes in the future.

___ First of all I prefer to finish a job that I have to do and then start doing the things I really like.

___ When I feel pain in a certain part of my body, I try not to think about it.

___ My self-esteem increases once I am able to overcome a bad habit.

___ In order to overcome bad feelings that accompany failure, I often tell myself that it is not so catastrophic and that I can do something about it.

___ When I feel that I am too impulsive, I tell myself "stop and think before you do anything."

___ Even when I am terribly angry at somebody, I consider my actions very carefully.

___ Facing the need to make a decision, I usually find out all the possible alternatives instead of deciding quickly and spontaneously.

___ Usually I do first the things I really like to do even if there are more urgent things to do.

___ When I realize that I cannot help but be late for an important meeting, I tell myself to keep calm.

___ When I feel pain in my body, I try to divert my thoughts from it.

___ I usually plan my work when faced with a number of things to do.

___ When I am short of money, I decide to record all my expenses in order to plan more carefully for the future.

___ If I find it difficult to concentrate on a certain job, I divide the job into smaller segments.

___ Often I cannot overcome unpleasant thoughts that bother me.

___ Once I am hungry and unable to eat, I try to divert my thoughts away from my stomach or try to imagine that I am satisfied.

Appendix A-5

SOCIAL ACTIVITIES
(Social Well-being Scale)

1. ABOUT HOW MANY FAMILIES IN YOUR NEIGHBORHOOD ARE YOU WELL ENOUGH ACQUAINTED WITH THAT YOU VISIT EACH OTHER IN YOUR HOMES?

   _____ families

2. ABOUT HOW MANY CLOSE FRIENDS DO YOU HAVE - PEOPLE YOU FEEL AT EASE WITH AND CAN TALK WITH ABOUT WHAT IS ON YOUR MIND? (YOU MAY INCLUDE RELATIVES.) (Enter number on line)

   _____ close friends

3. OVER A YEAR'S TIME, ABOUT HOW OFTEN DO YOU GET TOGETHER WITH FRIENDS OR RELATIVES, LIKE GOING OUT TOGTHER OR VISITING IN EACH OTHER'S HOMES?

   (Circle one)

   Every day 1
   Several days a week 2
   About once a week 3
   2 or 3 times a month 4
   About once month 5
   5 to 10 times a year 6
   Less than 5 times a year 7

4. DURING THE PAST MONTH, ABOUT HOW OFTEN HAVE YOU HAD FRIENDS OVER TO YOUR HOME (DO NOT COUNT RELATIVES.)

   (Circle one)

   Every day 1
   Several days a week 2
   About once a week 3
   2 or 3 times in past month 4
   Once in past month 5
   Not at all in past month 6

5. ABOUT HOW OFTEN HAVE YOU VISITED WITH FRIENDS AT THEIR HOMES DURING THE PAST MONTH? (DO NOT COUNT RELATIVES.)

(Circle one)

Every day 1
Several days a week 2
About once a week 3
2 or 3 times in past month 4
Once in past month 5
Not at all in past month 6

6. ABOUT HOW OFTEN WERE YOU ON THE TELEPHONE WITH CLOSE FRIENDS OR RELATIVES DURING THE PAST MONTH?

(Circle one)

Every day 1
Several days a week 2
About once a week 3
2 or 3 times 4
Once 5
Not at all 6

7. ABOUT HOW OFTEN DID YOU WRITE A LETTER TO A FRIEND OR RELATIVE DURING THE PAST MONTH?

(Circle one)

Every day 1
Several days a week 2
About once a week 3
2 or 3 times in past month 4
Once in past month 5
Not at all in past month 6

8. IN GENERAL, HOW WELL ARE YOU GETTING ALONG WITH OTHER PEOPLE THESE DAYS - WOULD YOU SAY BETTER THAN USUAL, ABOUT THE SAME, OR NOT AS WELL AS USUAL?

(Circle one)

Better than usual 1
About the same 2
Not as well as usual 3

9. HOW OFTEN HAVE YOU ATTENDED A RELIGIOUS SERVICE DURING THE PAST MONTH?

(Circle one)

Every day 1
More than once a week 2
Once a week 3
2 or 3 times in past month 4
Once in past month 5
Not at all in past month 6

10. ABOUT HOW MANY VOLUNTARY GROUPS OR ORGANIZATIONS DO YOU BELONG TO - LIKE CHURCH GROUPS, CLUBS, OR LODGES, PARENT GROUPS, ETC. ("Voluntary means because you want to.)

_____ groups or organizations

(Write in number. If none, enter "0")

11. HOW ACTIVE ARE YOU IN THE AFFAIRS OF THESE GROUPS OR CLUBS YOU BELONG TO? (If you belong to a great many, just count those you feel closest to. If you don't belong to any, circle 4.)

(Circle one)

Very active, attend most meetings.....1
Fairly active, attend fairly often.....2
Not active, belong but hardly every go...3
Do not belong to any groups or clubs.....4

8/81

Appendix B-1

EXECUTIVE INTERVIEW

I. Present Work Situation

A. General

1. Please briefly describe your job for me.
2. What are the best things about your job? Why?
3. What are the worst things about your job? Why?
4. Have things changed in the last year? If so, how?
5. Can you imagine things better? How?
6. Do you try to make things better? How?

B. Reorganization

7. I understand that a major company reogranization is on the way. Can you tell me what will happen?
8. How is the reorganization likely to affect your work?
9. How do you feel the reorganization will affect your colleagues? Why?
10. Have you discussed the reorganization with others at work? With whom? Do they see it as you do?
11. How does all this make you feel?
12. Has the impending reorganization had effects yet on your life? How? (influences on your work, family life, relations with friends, social activities, community activities, personal habits, recreation?)
13. What's the worst that can happen to you in the reorganization? The best?

II. Present Family Situation

14. Please describe your family -- a little about each member and what they're like.
15. What are the most satisfying aspects of your family life?
16. What are the sources of stress in your family life?
17. Have things changed in the last year? If so, how?
18. Can you imagine things better? How?
19. Do you try to make things better? How?
20. Do things that are happening in the family affect your performance at work? Your feelings about work? If so, how?
21. What about the other way around -- do things happening at work affect your family life? How?
22. What do you find your wife needs most from you these days? What do your children need most from you?
23. What do you need most from your wife these days? What do you need most from your children?

III. Life Review

24. I would like you to think about your early life for a few minutes now. Could you start by taking a few minutes to tell me about your past, whatever comes to mind, whatever seems important.
25. What was your mother like? What were the best things about your relationship with her? The worst things?
26. What was your father like? What were the best things about your relationship with him? The worst things?
27. Please describe your brothers and sisters (if any) and your relationship with them. Are there any particular incidents involving them that you remember?
28. What was your most important relationship with another male in your childhood? Teenage years? College years?
29. What was your most important relationship with a female in your childhood? Teenage years? College years?
30. (Administer Coddington Early Life Events Scale now).
31. What was the worst thing that happened in your early life?
32. What was the best thing that happened in your early life?
33. What have been your main satisfactions in life? Why?
34. What have been your main disapointments in life? Why?
35. Do you think you have changed over the years? If so, how?
36. Are there changes you would like to make in the future?

IV. Health and Illness

37. How is your health these days -- would you say it is poor, fair, good, excellent, or what?
38. How is your health compared to other people your age -- would you say it is better, about the same, or worse?
39. How often does your health get in the way of what you want to do -- would you say it is never, rarely, sometimes, often, or all the time?
40. If you're feeling sick, with a minor illness, what do you do about it?
41. Have you had any major illlnesses recently? Could you tell me about what happened?
42. Do you get down in the dumps, depressed? Why? What do you do about it?
43. Do you get tense, anxious? Why? What do you do about it?
44. Do you have any concerns about your health or condition that we haven't covered?

Appendix B-2

Interview Questions Yielding Relevant Responses

Interview Section	Question
I. Present Work Situation	-Have things changed in the last year? If so, how? -Has the impending reorganization had effects yet on your life? How? (influences on your work, family life, relations with friends, social activities, community activities, personal habits, recreation?)
II. Present Family Situation	-What are the sources of stress in your family life? -Have things changed in the last year? If so, how? -Do things that are happening in the family affect your performance at work? Your feelings about work? If so, how?
III. Life Review	-What have been your main satisfactions in life? Why? -What have been your main disappointments in life? Why? -Do you think you have changed over the years? If so, how?
IV. Health and Illness	-Have you had any major illnesses recently? Could you tell me about what happened? -Do you get down in the dumps, depressed? Why? What do you do about it? -Do you get tense, anxious? Why? What do you do about it?

Appendix C-1: Sample Demographic Characteristics*

	Executive (N=87)	Craft (N=190)
Sex		
Male	87 (100%)	154 (81.5%)
Female	-	35 (18.5%)
No response	-	1
Age		
30-34	-	34 (18.4%)
35-44	22 (25.3%)	70 (37.8%)
45-54	56 (64.4%)	71 (38.4%)
55-64	9 (10.3%)	10 (5.4%)
No response	-	5
Marital Status		
Married	84 (96.6%)	159 (74.2%)
Divorced/Separated	1 (1.1%)	17 (9.0%)
Widowed	-	2 (1.1%)
Never Married	2 (2.3%)	11 (5.8%)
No response	-	1
Religion		
Protestant	63 (72.4%)	91 (48.7%)
Catholic	19 (21.8%)	83 (44.4%)
Other	5 (5.7%)	4 (2.1%)
None	-	9 (4.8%)
No response	-	3
Educational Level		
High School graduate	13 (14.9%)	98 (52.1%)
College graduate	53 (60.9%)	53 (60.9%)
Advanced degree	21 (24.1%)	16 (8.5%)
Other	-	21 (11.2%)
No response	-	3
Job Level		
2nd	-	190 (100%)
3rd	63 (72.4%)	-
4th	19 (21.8%)	-
5th/Officer	5 (5.7%)	-
Years at Job Level		
0-2 years	8 (9.2%)	49 (25.9%)
3-5 "	16 (18.4%)	30 (15.9%)
6-10	43 (49.4%)	31 (16.4%)
Over 10 years	20 (23.0%)	29 (41.8%)
No response		1

*All figures are for the Executives in 1975 and the Craft Workers in 1981, except for the Executives' age, which is as of 1980.

Appendix C-2
Social Well-being
Means and Standard Deviations for Sample Groups and Comparison Group*

MULTI-ITEM SCALES and Individual items	Rand Sample (N=2235)	Executives (N=87)	Craft Workers (N=190)
A. COMPOSITE INDEX**	0.017(4.7)	0.027(4.7)	.061(5.0)
1. Neighborhood acquaintances	2.7(3.4)	4.1(2.7)	3.1(2.7)
2. Close friends and relatives	9.5(11.3)	6.1(2.9)	5.9(2.8)
3. Get-togethers with friends/relatives	4.5(1.5)	3.8(1.2)	3.9(1.3)
4. Home visits by friends	3.2(1.3)	2.4(0.9)	2.4(1.0)
5. Visits to friends' homes	3.2(1.3)	2.4(0.9)	2.4(1.0)
6. Telephone contacts	4.5(1.2)	4.2(1.3)	4.5(1.1)
9. Religious attendance	2.0(1.4)	2.8(1.4)	2.9(1.5)
10. Voluntary group memberships	1.0(1.4)	2.0(1.6)	1.6(1.5)
11. Voluntary group activity	2.1(1.2)	2.1(1.0)	2.4(1.2)
B. SOCIAL CONTACTS**	-0.004(2.4)	-0.001(2.4)	-.001(2.5)
(Consists of summated standard scores on items 3,4,5)			
C. GRP PARTICIPATION**	0.013(1.9)	0.052(1.8)	.017(1.8)
(Consists of summated standard scores on items 10 + 11)			
Other items			
7. Letters written	2.0(1.2)	1.5(0.9)	1.4(0.8)
8. Getting along with others	2.2(0.5)	2.0(0.3)	2.1(0.5)

*Standard deviations in parentheses
**Standardized scores
1 Scores reported here are based on coded responses to scale items (see Appendix A-5).

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