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# The Assessment Of Life Stress And Related Symptoms

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THE ASSESSMENT OF LIFE STRESS

AND RELATED SYMPTOMS

(TITLE)

BY

DONALD B. HANE

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF

MASTER OF ARTS

IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY  
CHARLESTON, ILLINOIS

1980

YEAR

I HEREBY RECOMMEND THIS THESIS BE ACCEPTED AS FULFILLING  
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THE ASSESSMENT OF LIFE STRESS

AND

RELATED SYMPTOMS

BY

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B.A., Eastern Illinois University, Charleston, 1979

ABSTRACT OF A THESIS

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### Abstract

The study of stress and its related influence upon physiological and emotional functioning has been well documented in the research literature. Current research has demonstrated an interesting relationship between the experience of life stress and the advent of such physical distress as tension headache, peptic ulcer, backache, myocardial infarction, and cancer as well as the whole range of neurotic and psychotic disorders. This study was directly concerned with the influence of environmental demand on certain physiological and psychological processes. A sample of undergraduate and graduate college students were administered three separate self-report measures designed to tap into the following:

- 1) life stress, 2) frequency of stress-related symptoms experienced, and 3) coping styles. Both quantitative and subjective indices of stress were obtained and evaluated in terms of symptoms experienced. This study was designed to describe the relationship between accumulated life stress (as assessed quantitatively and subjectively) and symptoms, as well as other phenomena relevant to the study of life stress.

Participants consisted of 202 students. Data collection consisted of each student's response to each of the self-report measures. Results indicated that both physical and emotional symptoms are related positively to higher life change unit values. Consistent with previous research, a modest yet significant relationship was demonstrated between several symptoms and life stress as assessed quantitatively. Of particular interest was the enhancement of the majority of product-moment values when symptoms were correlated with each individual's subjective estimate of perceived stress. The utility of cognitive appraisal in assessing degree

of stress experience is presented. Results indicated that cognitive/subjective appraisal may be the preferred method and key component in the assessment of life stress. Component analysis of symptoms reinforced this notion. Contrary to popular conception, no relationship was demonstrated between life stress and alcohol, marijuana, and hard drug use. Of primary interest was the ability to predict participant membership into low and high stress classifications based on symptoms. Prediction of group membership on the basis of symptoms resulted in a success rate significantly greater than chance.

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This thesis is dedicated to Mom, Dad, and all of my brothers to be found in Belmont.

People are constantly interacting with their environment. This interaction largely consists of that set of behaviors which allow them to meet the demands of the environment, and typically remain within the norms and standards set down by their society. Human beings, like all living organisms, are a species of survival. Behavior, from birth until death, is to a great extent a function of adaptation to an ever changing set of circumstances. Psychologists for years have set elaborate theories in their attempts to understand, predict, control, and bring meaning to human behavior. This paper advocates that behavior may best be understood in terms of the constant interaction between person and environment, and the individuals conscious and unconscious efforts directed towards adaptation and the achievement of homeostasis. Coelho, Hamburg, and Adams(1974) believe that in all instances, internal and external environmental stimuli instigate an equilibrating process on the part of the individual. This study is directly concerned with the influence of environmental demand on certain physiological and psychological processes, and the means by which people adjust to these demands.

The study of stress and its related influence upon physiological and emotional functioning is well documented in the research literature. Even so, today there is a general lack of agreement in attempts made at a specific and explicit definition of the stress construct. Stress may be identified in terms of specific environmental stimuli which place demand upon the individual. Monat and Lazarus(1977) perceive stress as a collective term for one area of study that includes the stimuli producing stress reactions, the reactions themselves,

and the various intervening processes. More reductionist viewpoints, such as those proposed in physics, define stress in terms of the strain, pressure, or force placed upon a given system.

Girdano and Everly(1979) view stress as the fairly predictable arousal of psychophysiological (mind-body) systems which if prolonged can fatigue or damage the system to the point of malfunction and disease. It is apparent that Girdano and Everly have based their concept of stress on the work of Hans Seyle. Seyle(1976) portrays stress as the nonspecific response of the body to any demand, with the subsequent initiation of a General Adaptation Syndrome (G.A.S.). The notion that an individuals continuous efforts at adaptation while stressed, may produce fatigue or damage to a given system to the point of malfunction or pathology is born out of Seyle's exhaustion phase (Stage 3, G.A.S.). Seyle's impact has been profound and continues to be a major influence in attempts at definition of the stress construct. Lumsden(1975) states that an exogenous or endogenous stimulus is termed a stressor when it places a demand on the system and its resources, requiring adaptation. Stokols(1979) looks at the stress construct in terms of a state of imbalance within an organism that a) is elicited by an actual or perceived disparity between environmental demands and the organisms capacity to cope with these demands; and b) is manifested through a variety of physiological, emotional, and behavioral responses. For the purpose of this study, all of these viewpoints concerning stress may be regarded as pertinent and applicable.

Stress, whether defined in terms of environmental demand or consequent influences on psychophysiological functioning, can not be fully understood without discussion of relevant stimulus events.

Holmes and Masuda(1978) in developing their Social Readjustment Rating Scale (SRRS) look at life stress in terms of readjustment demands made upon individuals experiencing certain life events. The SRRS consists of classes of major events which includes: divorce, personal illness or injury, and death of close family member. Each of the 43 items included on the SRRS is assigned a numerical weight based upon the degree of readjustment demanded upon the individual experiencing that event. Therefore, death of spouse, is assigned a number significantly greater than change in sleeping habits. Holmes and Masuda look at stress in terms of the readjustment demands placed on an individual in the face of changing life circumstances. Yet while Holmes and Masuda place increasing significance upon the more distressing(major) life events, the role of less immediately threatening situations must also be taken into consideration.

While the impact of major events on individual readjustment is evident, the importance of less dramatic and routine stressors also must be explored. In his study of depression, McLean(1976) identified the role of smaller, high-frequency stressors, deriving from frustrations in personal and social goal attainment, referring to these as micro-stressors. Microstressors are defined in terms of small, repetitive personal and social frustration, which include such things as marital discord, an unfriendly superior, a crying baby, rush-hour traffic, and social skills deficits. The ability of microstressors to influence behavior is chiefly by virtue of their cumulative effect, which is particularly clear in instances of reactive depression, McLean(1976). So in terms of situations, stress is best identified in terms of those events and experiences which require adjustment to daily frustrations

as well as major trauma. While stress situations may vary along a frequency, intensity, and duration continuum, Lazarus(1966) believes that stress can not be defined exclusively by situations, as the capacity of any individual to produce stress reactions depends on characteristics of the individual.

The importance of subjective interpretation or appraisal in determining the perception of a given event is subject to variance. Individual differences play a key role in determining whether an event is appraised as stressful. What one individual will fear and avoid, another individual may enjoy and seek, e.g., the individual who pilots an airplane as opposed to the individual who refuses to fly on one. Hamburg and Adams(1967) advocate that for an event to become a source of stress it must be judged or appraised as potentially harmful. This appraisal requires the individual to impose meaning onto the situation based upon personal belief systems. In support, McGrath(1977) postulates that emotional experiences, and to some extent physiological and performance measures are in part a function of the perceptions, expectations, or cognitive appraisal which the individual makes concerning the situation. In short, the individual is confronted with a given situation, and cognitive processes are largely responsible for the evaluation of the events threatening or nonthreatening nature. Lazarus(1966) formulated cognitive appraisal as the mechanism by which the evaluation of threat or harm could be understood, i.e., a judgment about the meaning or future significance of a situation based not only on the actual properties of the stimulus, but on the belief systems and personal meanings attributed by the individual.

In addition to an individual's subjective interpretation of stimuli,

properties inherent to that same stimuli must be evaluated in assessing the concept of stress. Seyle(1976) postulates that stress does not imply necessarily an aversive change, describing intense pleasure and fulfillment as stress inducing agents. In support, Dohrenwend(1973) believes that stressfulness is better conceived of as life change rather than as undesirability of life events. This school of thought advocates that any life change, including those which are personally and socially desirable, such as entrances into social fields, are significant stressors as they demand adaptation on the part of the individual.

Current research, such as that conducted by Mueller(1977), advocates that the key dimension of life events is their threatening or undesirable nature. These studies favor undesirability, such as exits from social fields, as the characteristic of life events that should be measured to most accurately assess their stressfulness. In support, Theorell(1976) studied the effects of interaction between discord and life change on blood pressure, serum lipids, serum transaminases, and illness patterns on a population of male, middle-aged building construction workers. Results demonstrate that life change without discord associated was not related to subsequent illness. In subjects with both life crisis and discord, increased rates of hypertension, neurosis, and illness in general were observed. This school of thought postulates that it is the undesirable or aversive nature of life events which is the critical component essentially underlying pathology.

For the purpose of this paper, it appears likely that life changes, desirable and undesirable, are significant to the extent that they require readjustment. Life experience should not be viewed strictly in



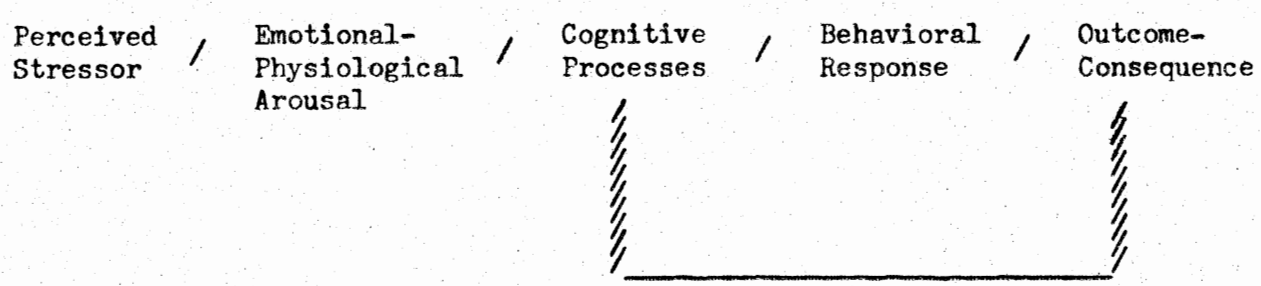
terms of the desirable-undesirable dichotomy, but rather in terms of their potentially complex interaction. In their study concentrated on examining the relationship between life change and subsequent illness experience, Marx, Garrity, and Bowers(1975) found a significant relationship between life events, conceived of in terms of life change, and subsequent illness reports. In short, all stimuli (threatening and pleasurable) found in the environment play a potentially causative role in influencing as individual's behavior/functioning, yet it appears that the more undesirable experiences play a more significant role.

In contrast to the abundance of literature to be found regarding the study of stress, research investigating the ways and means by which individuals adjust and adapt to the same stress is lacking. White(1974) ascertains that the concepts of coping, mastery, and defense belong in the more general category of strategies of adaptation. Adaptation to ones environment is a constant, dynamic, ever-evolving process. Adaptation in terms of evolutionary processes is of central importance in studying the survival history of any species of animal. Hamburg, Coelho, and Adams(1974) state that biological adaptation is centrally concerned with the genetic development of populations of organisms in response to demands placed upon their environment (reproductive success). In attempts to define adaptation within the psychosocial realm, it will be necessary to examine those concepts relating to coping and defense.

In attempting to define the coping construct, one is likely to encounter areas of agreement/disagreement. In general, coping activities occur in response to environmental demand and stress. Coping behaviors occur when the individual is confronted by a situation which he evaluates as potentially threatening. Monat and Lazarus(1977) conceive of coping as an individuals efforts directed at mastery of conditions of harm,



threat, or challenge when a routine autonomic response is not available. In support, Murphy(1962) argues that coping involves choices in the ways of using resources and also new structures and integrations developed by the individual to master unique problems with the environment. Coping efforts are directed towards achieving a balance when this balance becomes upset. The notion of the tendency to achieve homeostasis indicates a need on the part of the individual to maintain harmony with his internal and external environment. The notion of a need to achieve homeostasis implies that the individual is experiencing a state of disequilibrium. This state of homeostatic imbalance may be initiated by conditions of perceived harm or threat, and includes the experience of life events and/or environmental demand. When individuals perceive themselves as stressed, a variety of emotional and physiological changes usually occur. The experiencing of intense emotion is often accompanied by autonomic arousal. The experience of autonomic arousal conjointly with strong emotion creates this state of disequilibrium within the individual. Homeostasis becomes upset. The aim of the individual is to move towards an adaptive and tolerable level of physiological and emotional arousal. The following paradigm illustrates:



This paradigm reflects the beliefs of Lazarus(1977) which are summarized as follows.

1. Cognitive processes determine the quality and intensity of an emotional reaction.

2. Such processes also underlie coping activities which in turn continually shape the emotional reaction by altering the relationship between person and environment.
3. As a result of constant coping and feedback efforts, the individual continually reappraises his relationship with the environment, his behaviors, and consequent changes in the intensity/quality of the emotional reaction.

The attempt on the part of the individual is to move towards tolerable and adaptive levels of stress. Menninger(1977) believes that the drives of the organism must be so directed and modified as to permit the maintenance of a level of tension which is tolerable, productive, maximally satisfying, and consistent with growth. In support, Pelletier(1977) states that every individual operates or seeks to operate at a level of tolerable nonpathogenic stress, which contributes to heightened functioning and performance. Coping is the process, while movement towards homeostasis is the outcome.

Studies done on stress and performance indicate that there are adaptive levels of stress which enhance individual functioning. There appears to be a crucial point at which stress becomes critical and performance experiences deterioration. McGrath(1977) refers to this phenomenon as the inverted-U theme, stating that the intensity of environmental stimulation is curvilinearly related to the degree of felt stress and degree of effectiveness. The activity of the individual is directed towards maintaining emotional and autonomic arousal within tolerable and effective limits. The actual cognitive and behavioral processes involved in the self-regulation of emotion and autonomic arousal are varied and multifaceted.

The interaction between environmental demand/threat/frustration and emotional and physiological functioning is at the very least, complex. The individual utilizes cognitive and behavioral avenues in an effort

to maintain a state of tolerable, nonpathogenic arousal. There are a multitude of adaptive and maladaptive responses in the organisms attempt to cope. This section will identify some of the major behaviors and action tendencies which allow the individual to deal effectively with the potentially deleterious aspects of life stress.

In short, coping strategies are those sets of overt and covert behaviors that people engage, that are under their control, and are performed specifically to modulate an aversive situation, i.e., alleviate experienced distress, Hamburg and Adams(1967). Pearlin and Schooler(1978) believe that coping strategies serve three functions which include responses that:

1. Change the situation out of which the problematic experiences arise.
2. Control the meaning of the problematic experience after it occurs but before the emergence of stress.
3. Control the stress after it has emerged.

In all instances, coping refers to behavior used by individuals attempting to alter the ongoing relationship with their environment in an effort directed to enhance internal and external states.

The most generally acceptive form of adaptive coping is described in the literature as mastery. Coping in the form of mastery is usually utilized by an individual under conditions of relatively low threat and in effect may be described as problem-solving behaviors, Lazarus, Averill, and Opton(1974). Mastery involves an individual who is oriented to the task at hand, and involves behaviors which deal directly with the demand (task-orientation). Therefore, in order for mastery to be used in successful coping, the demand must be well-defined and subject to alteration. Murphy(1962) describes mastery as those action tendencies aimed at eliminating or mitigating the anticipated harmful confrontation

that defines the threat. For example, an introductory psychology class is informed that their midterm will be administered in one week. Two students in that class feel threatened by this knowledge and experience some of the autonomic and emotional aspects of stress. In this instance the potential threat is well-defined as are those steps necessary to help alleviate the threat. While one student begins to actively prepare for the stressor (reviews notes, reads book, seeks out professor), the other student does not define the threat, or engage in task-oriented behaviors designed in preparation of meeting the threat. On the day of the midterm, the student who has actively taken steps to deal with the stressor experiences a feeling of confidence as a result of threat reduction through active preparation. The student unprepared for the exam is likely to appraise the situation as significantly more threatening than the prepared student. Lazarus, Averill, and Opton(1974) define such efforts designed to actively prepare for harm or threat as direct-action coping behaviors. Mastery emphasizes successful performance in meeting task requirements, Hamburg, Coelho, and Adams(1974).

Other direct-action modes of coping include themes of experience and information. McGrath(1977) states that prior experience with the task, the stressor, and/or the situation, attenuates the effects of stress. Therefore, an individual who engages in role rehearsal, actively practices, or gains exposure/experience with potential sources of threat will likely experience enhanced functioning in dealing with the stressor. In his study of stress effects of parachuting on experienced and inexperienced parachutists, Fenz(1975) found that skill/experience is directly related to the way in which an individual has learned to control autonomic and emotional arousal. In his study, Fenz(1975) found that experienced parachutists showed an early rise

in heart rate during the early phases of the jump sequence, followed by a steady decline, so at the time of the jump, heart rate was close to normal levels. In contrast, inexperienced parachutists showed a steady rise in heart rate after arriving at the airport, and peaked to an average of 122 beats per minute at the time of the jump.

Another direct-action method of coping is found by examining individual efforts directed towards securing adequate information concerning the environment. White(1974) states that adaptive behavior requires that the individual have the right amount of information to serve as a guide to action, therefore adaptation may take the form of either seeking more information or trying to cut down on the existing input. In instances where information is lacking, seeking and securing relevant information may effectively reduce threat appraisal. For example, take the individual who experiences a fear when flying. Perhaps statistics and information regarding the relative safety of air flight as compared to car travel will help to reduce threat appraisal.

The utilization of social contacts in attenuating the effects of stress has been documented in the research literature. Social affiliation may fall under the rubric of a direct-action mode of coping. In their study of primates, Washburn, Hamburg, and Bishop(1974) conclude that the central role of the group becomes immediately apparent when examining the ways in which nonhuman primates cope with their environment. In regards to human behavior and functioning, close social contacts help to enable the individual to cope with changing situations and environmental demand. Totman(1979) states that the presence of social support has been shown to militate against the potentially harmful effects of life change. In differentiation between heart patients and matched healthy controls, Totman(1979) concluded that being cut-off from customary pursuits

and from familiar social contacts is potentially harmful to health.

In their study examining the relationships between life events, symptoms, and social support, Miller, Ingham, and Davidson(1976) found evidence indicating that those people with few casual friends tended to have higher symptom levels (backache, headache, dizziness, anxiety, irritability) than those individuals with greater numbers of social ties. The role of the group in providing a means by which to cope and thereby adapt is evident by observing those individuals facing stress. Mechanic(1974) states that the ability of persons to maintain psychological comfort will depend not only on their intrapsychic resources, but also, and perhaps more importantly on the social supports available or absent in the environment. The availability of friends and social ties allow the individual to express internalized thoughts/feelings, seek advice/information, and gain reassurance/support. Social affiliation provides an institutional means by which the individual may enhance the prospect of successfully coping with environmental strain.

There are other important cognitive and emotional aspects of stress-related behavior. A somewhat common response pattern found in those individuals faced with conditions of harm/threat is a tendency to "worry". These individuals may obsess concerning their situation, bodily states, and potential avenues of threat reduction. Murphy(1962) states that a stable disposition exists which protects the individual against threat either by avoiding thoughts about the threatening material or by ruminating about it. Elevations on scale 7 of the M.M.P.I. help to identify those individuals who become preoccupied with identified as well as vague sources of environmental demand. The literature also describes the individual who under stress demonstrates aggressive behavior in the form of negatively toned affect and overt behavior. Murphy(1962)



postulates that anger does not occur unless there is threat. A core concept to which psychology adheres is the experimentally demonstrated phenomenon of frustration (ineffective attempts at threat reduction) occurring antecedent to aggressive affect and overt behavior (hostility). While rumination and hostility may occur in response to conditions of mild/moderate threat, defense is typically initiated when an individual is subject to severe threat/demand.

Turk(1979) states that successful coping in a given situation does not always involve active mastery, but rather that retreat, toleration, or disengagement may be the most healthy response in certain circumstances. In this sense, defense is looked at from the psychoanalytic point of view. Mechanisms such as denial, repression, projection, and reaction formation are used by the individual as a means of reducing anxiety, or removing the threat entirely from consciousness. The adaptive uses of defense such as denial have been documented in studies of parents with terminally ill children, and persons suffering from personal catastrophe. In her study of childrens methods of coping, Murphy(1974) concluded that defense mechanisms are normally and constructively used in the total process of coping, when the child is in danger of being overwhelmed or is confronted with threats that can not be mastered given the current stage of development or present situation. Yet continual distortions of reality are likely to inhibit effective functioning. It appears that defense plays an adaptive role in initially protecting the individual from being overwhelmed by intense threat. The appropriate criterion for evaluating various defensive processes is the extent to which such processes facilitate coping and mastery, Mechanic(1974). In order to be adaptive, defense must play a temporary yet crucial protective function in maintaining ego-integration under intense threat.

White(1974) believes that defense on a short-term basis has adaptive value, yet on a long-term basis contains no provision for dealing with or altering a potentially unbearable situation. Therefore, on a short-term basis, defense has a legitimate place among strategies of adaptation.

In short, there are a variety of ways in which individuals respond to stress. The particular tendencies an individual exhibits in efforts aimed at dealing with the demand are subject to situational and individual variance. The interplay between situation and person is at the least complex, and in need of research.

When an individual does not utilize or have coping resources available to him, a potentially significant homeostatic mechanism may be lost. Studies of men in combat have clearly depicted the deleterious effects of chronic stress in the etiology of personality disorganization, i.e., combat fatigue. The hazards of war, e.g., threat to life, lack of sleep and rest, severe climatic conditions, inadequate nutrition, disease, and the continuous threat to ones safety and security all resulted in a general lowering of the individuals resistance to stress. Coleman(1976) reported that of the slightly over ten million men accepted for military service during WW2, approximately 1,363,000 were given a medical discharge, of which approximately 39% were for neuropsychiatric disorders.

Several studies have reported on the role of environmental factors as causal influences in the development of schizophrenia. In one study, patients with acute onset of schizophrenia and their relatives were interviewed separately to establish the frequency of certain kinds of crisis and life changes in a thirteen week period prior to onset. Brown and Birley(1968) found that these two groups differed markedly in the proportion experiencing life changes in the thirteen week period prior to onset. In support, Paykel(1974) has summarized a series of studies



dealing with the relationship of life events with psychiatric disorder, and found that life events tend to occur greater than chance expectation prior to the development of psychiatric disorder.

Stressful situations may profoundly influence physiological functioning as well as psychological processes. Current evidence advocates that stressful life events play a role in the advent of somatic illness. Lundberg and Theorell(1975) provide a study in which fifty-six infarction patients and a matched group of thirty-three control subjects reported respectively life changes that occurred one year prior to infarction. Findings indicate that the infarctions had higher life change scores than subjects in the control group. Holmes and Masuda(1974) through use of the SRRS, found a strong, positive correlation expressed between the magnitude of life crisis and the seriousness of illness experienced. In support, Payne(1975) administered a similar scale, the Schedule of Recent Experience (SRE), to a sample of 192 employed men between the ages of thirty and sixty, and found that long-standing health troubles of both physical and psychological kinds were related to higher life change unit values.

Psychological research has clearly demonstrated a significant association between the experiencing of life stress and the advent of psychophysiological responses. Pelletier(1977) reports that most standard medical textbooks attribute anywhere from 50-80 per cent of all disease to psychosomatic or stress-related origins. The actual usage of the term, psychosomatic, has accumulated a variety of criticism. In general, the dominant feature in psychophysiological reactions is an observable, pathological, physical response to stress, Schlesinger and Groves(1976). The complex interplay between mind (psyche) and body (soma) must be evaluated in terms of etiology, duration, and

remission of organic disease and psychiatric disorder. Such stress-related disease processes include: peptic ulcer, ulcerative colitis, bronchial asthma, atopic dermatitis, hay fever, migraine/tension headache, sleep-onset insomnia, alcoholism, and the whole range of neurotic and psychotic disorders, Pelletier(1977).

The purpose of this study is largely descriptive in nature. Each participant will provide both quantitative and qualitative information regarding the degree of stress each has experienced one year prior to the onset of certain stress-related symptoms. The purpose here is to describe the existing relationship between accumulated life stress (both objective and subjective indicators) and subsequent reports of stress-related responses. In addition, this study will provide relevant information with regard to specific emotional/physical processes and life stress. In short, this study is designed to describe important phenomena as it relates to the study of life stress and stress-related responses.

#### Method.

Subjects. Participants consisted of two-hundred and two volunteers selected predominantly from undergraduate psychology courses offered at Eastern Illinois University. Respondants were comprised of one-hundred and forty-four females and fifty-eight males. Respondants ages ranged from seventeen to fifty-six years of age, with a mean age of twenty-one.

Instruments. Materials consisted of three separate sheets of paper respectively entitled Form A, Form B, and Form C (see Appendix A). Form A consisted of 28 life events which occur in the life of a college student. These 28 life are presented in a modified version of the SRRS adopted specifically for the college population by Girdano and Everly(1979).

Form B consists of 15 items which assess individual behavioral/emotional symptoms described in the literature as stress-related reactions. Form B measures the frequency (over a four week period) of an individual's experience with the following: sleep-onset insomnia, headache, alcohol intake, depression, gastrointestinal upset, rumination, heartburn, marijuana use, skin disorder, hard drug use, hyperventilation, tension, tics/tremors, asthma, and coughs/colds/congestion. Each subject utilized the method of rating in reporting the frequency of each symptom experienced. A visual presentation of the continuum in Form B consisted of a five-point rating system as follows: (A) never, (B) 1-2 times weekly, (C) 3-4 times weekly, (D) 5-6 times weekly, and (E) daily. In addition, one item (#44) is presented allowing personal appraisal of the degree of stress that individual has experienced in the past year. Form C consists of a series of statements designed to tap into specific coping behaviors of the individual in response to two specific stressful situations. In this section, a statement describing the stress situation is presented, and sixteen statements follow (representing specific thoughts, feelings, and behaviors) depicting response alternatives to the stressful situation. Each participant rated how likely he/she would be to perform each of the actions on a 5-point continuum. The continuum ranges from A, representing never, to E, representing always. Form C is designed to tap into four typical coping responses (four factors) which include: task-orientation, rumination, hostility, and social affiliation.

Procedure. Each participant was seated and materials (Forms A,B,C) were administered on a group basis within the classroom. Prior to beginning, a sheet obtaining informed consent was passed among the students while a limited description of the study was explained. Each form contained explicit written instructions which allowed respondents to

proceed at their own pace. Data collection consisted of participants responses or ratings to each of the statements found in Forms A, B, and C. This same procedure was used for the seven groups which comprised the subject pool.

Results. The relationship between current life stress as measured by Form A and specific symptoms as measured by Form B were examined using product-moment correlation coefficients. Several of these symptoms showed a modest yet significant positive association with life stress (depression/  $r=.27$ ,  $p=.001$ , tension/irritability/  $r=.22$ ,  $p=.001$ , hyperventilation/  $r=.22$ ,  $p=.001$ , and heartburn/  $r=.22$ ,  $p=.001$ ). Item 44 on Form B asked for a subjective evaluation of current life stress. Single item subjective evaluation correlated .26 with the Form A life stress scale. The pattern of correlation of this item with the other symptoms is given in Table 1.

To clarify this pattern, the 15 specific symptom items were subjected to a principal component analysis. Four components with eigenvalues greater than unity were extracted and rotated to a varimax criterion. These components accounted for 50% of the total variance. The first component loaded on items reflecting subjective distress, e.g., depression, tension/irritability, and rumination. The second component loaded on items reflecting drug or chemical use, e.g., alcohol and marijuana. The third component loaded on items reflecting direct physical distress, e.g., gastrointestinal upset, heartburn, and headache; and the fourth on observable physical distress, e.g., tics/tremors, asthma, and hyperventilation. Symptoms in the subjective distress component were correlated with Form A ( $r=.23$ ,  $p=.001$ ) and with item 44 ( $r=.46$ ,  $p=.001$ ). Symptoms in the direct physical component were also correlated with Form A ( $r=.24$ ,  $p=.001$ ) and item 44 ( $r=.26$ ,  $p=.001$ ). Component scores were generated for each volunteer. The correlation of these scores with the life stress and

subjective stress measures is also given in Table 1.

Participants were next separated into low and high stress classifications utilizing a median split (life change units, LCU=380) on the life change inventory. Group means were computed for each symptom. The mean frequency of an individual's recent experience with sleep-onset insomnia increased from low to high stress groups (1.98 to 2.49, respectively). The mean frequency of an individual's experience with rumination also experienced an increase from low to high stress groups (3.13 to 3.53, respectively). The means and associated  $F$  tests for these groups on the specific symptoms are given in Table 2.

A discriminant analysis was done on groups using the 15 symptoms. For each symptom a weight was assigned which would provide the greatest mean difference among groups for maximum discrimination. The discriminant weights are given in Table 3. The group centroids on this function are  $-.39082$  for the low stress group and  $.39082$  for the high stress group. The resulting discriminant function successfully classified 72% of members in the low stress group and 60% of members in the high stress group. A total of 66.34% of group cases were correctly classified. Prediction of group membership was not particularly enhanced by the coping data.

### Discussion

The findings of the present study provide useful information with regard to life stress and specific psychological and physiological processes. Consistent with previous research, data suggests a modest yet significant relationship between life stress (Form A) and the subsequent reporting of specific stress-related symptoms (depression, tension/irritability, heartburn, and hyperventilation). Of particular interest is the enhancement of the majority of product-moment values

when symptoms were correlated with each individuals subjective estimate of perceived stress. Results appear to favor the utility of single question cognitive assessment (Form B, item 44). Enhanced product-moment values across the majority of symptoms were demonstrated in conjunction with participants subjective interpretation of their stress. These results lend support to cognitive appraisal as a central feature in the assessment of life stress. Component analysis of symptoms reinforces this notion. Both Form A and item 44/Form B were able to predict those symptoms in the direct physical component with equal success. However, item 44 demonstrates significantly better predictive ability in the subjective distress component. Neither Form A or item 44 were able to predict with accuracy symptoms existing in the chemical/drugs or overt physical components.

Results indicate that symptoms of both psychological and physical kinds are positively related to higher life change unit values. Of particular interest is the demonstration of no relationship between life stress and popularized tension reducing agents (alcohol, marijuana, and hard drugs). Results indicate that frequency of drug use is not related to the degree of stress an individual reports.. This notion of no relationship is contrary to popular conception particularly in regard to alcohol consumption.

Perhaps of central import is the idea that there is a somewhat orderly and predictable relationship regarding life stress and the experience of certain physical and emotional symptoms. This notion is reinforced by being able to predict group membership into low and high stress classifications based on symptoms with a success rate significantly greater than chance. The findings of the present study suggest that this predictive utility exists. Results indicate that there is a somewhat orderly and predictable relationship between stress and symptoms.



The possibility exists that if one may successfully predict stress on the basis of symptoms, the reverse will also hold true. The ability to prospectively predict the development of certain stress-related responses on the basis of a stress score would open new avenues in holistic medicine and preventive health management. Better predictive utility and controlled studies are needed for such a tool to become a reality.

Table 1

## Product-moment coefficients

Symptoms	Life stress	Subjective stress <sup>1</sup>
insomnia	.17**	.19**
headache	.11	.18**
alcohol use	.01	.05
depression	.27***	.47***
gastrointestinal upset	.19**	.29***
heartburn	.22***	.15*
marijuana use	.01	.00
skin disorder	.06	.10*
hard drugs	.12*	.08
hyperventilation	.22***	.15*
tension/irritability	.22***	.41***
tics/tremors	.13*	.20**
asthma	.07	.09
rumination	.16*	.46***
coughs/colds	.12*	.12*
subjective stress	.26***	1.00
Component score		
subjective distress	.23***	.46***
chemical/drugs	.06	.03
direct physical	.24***	.26***
overt physical	.03	.05

<sup>1</sup>Represents participants response to item 44.

\* $p \leq .05$

\*\* $p \leq .01$

\*\*\* $p \leq .001$



Table 2

Group means and associated F tests

Symptom	Low stress	High stress	<u>F</u>	p
insomnia	1.98	2.49	15.04	.0001
headache	2.02	2.17	1.45	.231
alcohol use	2.22	2.29	.30	.582
depression	2.22	2.55	9.27	.003
gastrointestinal upset	1.74	1.94	3.33	.07
heartburn	1.12	1.29	5.81	.017
marijuana use	1.39	1.46	.19	.662
skin disorder	1.60	1.73	.86	.354
hard drugs	1.02	1.05	1.04	.309
hyperventilation	1.37	1.53	2.62	.107
tension/irritability	2.27	2.60	7.16	.008
tics/tremors	1.16	1.30	3.49	.063
asthma	1.11	1.09	.73	.787
rumination	3.13	3.53	5.61	.019
coughs/colds	1.98	2.08	.44	.508

<sup>1</sup>Degrees of freedom for F tests were 1,200.

Table 3  
Discriminant weights

<u>Symptom</u>	<u>Weights</u>
insomnia	.60
headache	-.12
alcohol use	.00
depression	.37
gastrointestinal upset	-.02
heartburn	.42
marijuana use	-.02
skin disorder	-.02
hard drugs	.11
hyperventilation	.18
tension/irritability	.11
tics/tremors	.26
asthma	-.23
rumination	.00
coughs/colds	.11

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Appendix A: Forms A, B, and C

Total anonymity and confidentiality in completing this form is guaranteed. Please respond to each item as honestly as possible.

Form A

Instructions: Below (items 1-28) are listed events which occur in the life of a college student. If you have experienced the event in the last 12 months, fill in the letter (A) on your answer sheet. If you have not experienced the event in the last 12 months, fill in the letter (B). If you have experienced a given event more than once in the last year, fill in the letter (C). In summary:

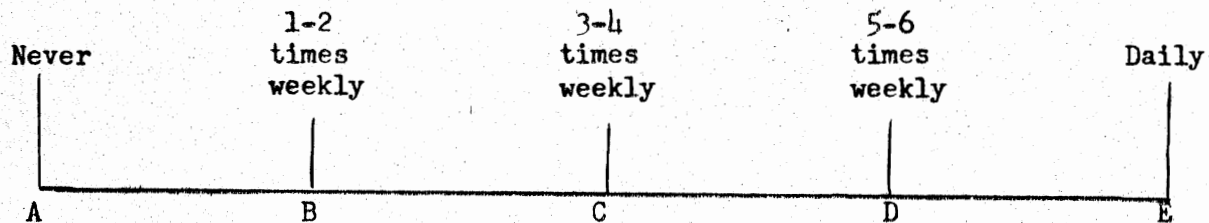
- (A) I have experienced this event in the past year.
- (B) I have not experienced this event in the past year.
- (C) I have experienced this event more than once in the past year.

Events

1. Death of a close family member.
2. Jail term.
3. Final year or first year in college.
4. Pregnancy (to you or caused by you).
5. Severe personal illness or injury.
6. Marriage.
7. Any interpersonal or relationship problems.
8. Financial difficulties.
9. Death of a close friend.
10. Arguments with your roommate (more than every other day).
11. Major disagreements with your family.
12. Major change in personal habits.
13. Change in living arrangement.
14. Beginning or ending a job.
15. Problems with your boss or professor.
16. Outstanding personal achievement.
17. Failure in some course.
18. Final exams.
19. Increased or decreased dating.
20. Change in working conditions.
21. Change in your major.
22. Change in your sleeping habits.
23. Several-day vacation.
24. Change in eating habits.
25. Family reunion.
26. Change in recreational activities.
27. Minor illness or injury.
28. Minor violations of the law.

Form B

Instructions: Respond to the following statements (items 29-44) with the letter on Scale 1 which best describes the frequency with which you have experienced each statement within the last 4 weeks, beginning today and going back.

Scale 1

Example: If you have smoked marijuana on the average of 5 times a week over the last 4 weeks, you would respond to item #35 by filling in letter (D) on your answer sheet.

29. I have taken 25 minutes or more to fall asleep.
30. I have experienced a headache.
31. I have drunk wine, beer, or alcohol.
32. I have felt sad and down/depressed.
33. I have experienced stomach upset.
34. I have developed heartburn.
35. I have smoked pot.
36. My skin has broken-out and/or developed a rash or irritation.
37. I have taken harder drugs (cocaine, LSD, uppers, etc.).
38. I have experienced episodes of dizziness or light-headedness.
39. I have felt tense and/or irritable.
40. I have experienced tics, involuntary twitches, and/or tremors.
41. I have experienced episodes of asthma.
42. I have thought and/or worried about those things which bother me.
43. I have experienced coughs, colds, and/or general congestion.
44. In the past year, I have experienced:
  - A. no stress or pressure
  - B. slight stress and pressure
  - C. moderate stress and pressure
  - D. extreme stress and pressure
  - E. unbearable stress and pressure

Form C

In this situation, how likely would you be to perform each of the actions listed:

A	B	C	D	E
Never				Always

You are getting up to give a speech before a large group.

45. Think about how I got into this.
46. Tell myself I can handle this.
47. Get angry about unrelated things that don't work out right.
48. Concentrate on what is most important.
49. Wish this were over.
50. Seek the company of friends.
51. Observe other people who might be about.
52. Pay attention to my bodily sensations.
53. Try and see the humor in the situation.
54. Get angry with other people.
55. Talk to other people about what is happening.
56. Plan how to approach the situation.
57. Try to carefully understand what I am expected to do.
58. Get angry with myself.
59. Tell someone how I feel.
60. Seek reassurance from others.

You are starting out in a sail boat onto a rough sea.

61. Think about how I got into this.
62. Tell myself I can handle this.
63. Get angry about unrelated things that don't work out right.
64. Concentrate on what is most important.
65. Wish this were over.
66. Seek the company of friends.
67. Observe other people who might be about.
68. Pay attention to my bodily sensations.
69. Try to see the humor in the situation.
70. Get angry with other people.
71. Talk to other people about what is happening.
72. Plan how to approach the situation.
73. Try to carefully understand what I am expected to do.
74. Get angry with myself.
75. Tell someone how I feel.
76. Seek reassurance from others.