



12-1-1980

## Responsivity to an Experimentally Induced Stress as a Function of Life Change and Personality

Jerry Allan Boriskin

Follow this and additional works at: <https://commons.und.edu/theses>

[How does access to this work benefit you? Let us know!](#)

---

### Recommended Citation

Boriskin, Jerry Allan, "Responsivity to an Experimentally Induced Stress as a Function of Life Change and Personality" (1980). *Theses and Dissertations*. 2599.

<https://commons.und.edu/theses/2599>

This Dissertation is brought to you for free and open access by the Theses, Dissertations, and Senior Projects at UND Scholarly Commons. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of UND Scholarly Commons. For more information, please contact [und.common@library.und.edu](mailto:und.common@library.und.edu).

RESPONSIVITY TO AN EXPERIMENTALLY INDUCED STRESS AS  
A FUNCTION OF LIFE CHANGE AND PERSONALITY

by  
Jerry Allan Boriskin

Bachelor of Arts, State University of New York at Stony Brook, 1973

Master of Arts, University of North Dakota, 1977

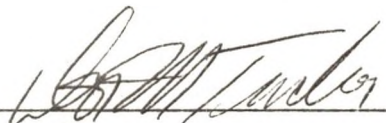
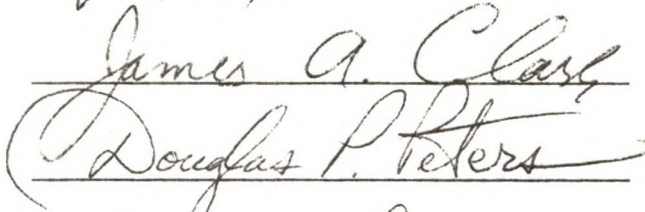
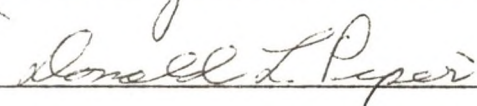
A Dissertation  
Submitted to the Graduate Faculty  
of the  
University of North Dakota  
in partial fulfillment of the requirements  
for the degree of  
Doctor of Philosophy

Grand Forks, North Dakota

December  
1980

This Dissertation submitted by Jerry Allan Boriskin in partial fulfillment of the requirements for the Degree of Doctor of Philosophy from the University of North Dakota is hereby approved by the Faculty Advisory Committee under whom the work has been done.

  
\_\_\_\_\_  
(Chairman)

  
\_\_\_\_\_  
James A. Clark  
  
\_\_\_\_\_  
Douglas P. Peters  
  
\_\_\_\_\_  
Donald L. Piper

This Dissertation meets the standards for appearance and conforms to the style and format requirements of the Graduate School of the University of North Dakota, and is hereby approved.

\_\_\_\_\_  
Dean of the Graduate School

Permission

Title RESPONSIVITY TO AN EXPERIMENTALLY INDUCED STRESS AS A  
FUNCTION OF LIFE CHANGE AND PERSONALITY

Department PSYCHOLOGY

Degree DOCTOR OF PHILOSOPHY

In presenting this dissertation in partial fulfillment of the requirements for a graduate degree from the University of North Dakota, I agree that the Library of this University shall make it freely available for inspection. I further agree that permission for extensive copying for scholarly purposes may be granted by the professor who supervised my dissertation work or, in his absence, by the Chairman of the Department or the Dean of the Graduate School. It is understood that any copying or publication or other use of this dissertation or part thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the University of North Dakota in any scholarly use which may be made of any material in my dissertation.

Signature Jerry Allen Borkin

Date July 21, 1980



## TABLE OF CONTENTS

LIST OF ILLUSTRATIONS . . . . .	vi
LIST OF TABLES . . . . .	vii
ACKNOWLEDGMENTS . . . . .	viii
ABSTRACT . . . . .	ix
Chapter	
I. INTRODUCTION AND REVIEW OF THE LITERATURE . . . . .	1
The Social Readjustment Rating Scale	
Psychological Concomitants of Life Change	
Methodological Considerations	
Reliability	
Instrumentation	
Positive versus Negative Life Change	
Causality	
Practical Significance of the Obtained Correlations	
Life Change and Responsivity to Stress	
Lazarus' Model of Stress Induction	
Appraisal Manipulation, Personality Variables and	
Responses to Stress	
The Proposed Study	
II. METHOD . . . . .	23
Subjects	
Materials	
Equipment	
Stressor	
Procedure	
III. RESULTS . . . . .	37
Recent Life Change	
Remote Life Change	
Interrelationship of Recent and Remote Life Change	
Sensation-Seeking as a Moderator Variable	
State Anxiety: Prefilm, Postfilm, Difference Scores	

Overall Relationship Between Personality/Life Change and Skin Conductance	
Specific Relationships Between Personality/Life Change Measures and Skin Conductance	
Skin Conductance Response to Film: Experimenter Effects	
Skin Conductance Response to Film: Dominance Effects	

IV. DISCUSSION . . . . .	60
APPENDICES . . . . .	69
A. THE LIFE EXPERIENCES SURVEY . . . . .	70
B. THE LANYON PSI SUBSCALE . . . . .	77
C. EXPERIMENTER'S PROCEDURES . . . . .	79
D. DEBRIEFING . . . . .	80
E. CONSENT FORM FOR RESEARCH PARTICIPATION . . . . .	81
F. SIGNIFICANT CORRELATIONS BETWEEN SKIN CONDUCTANCE AND LIFE CHANGE/PERSONALITY MEASURES . . . . .	82
REFERENCES . . . . .	84

## LIST OF ILLUSTRATIONS

### Figure

1. COMPARISON BY EXPERIMENTER GROUPS OF T SCORE LOG  
TRANSFORMED SKIN CONDUCTANCE RESPONSES  
TO STRESSFUL FILM . . . . . 56

## LIST OF TABLES

### Table

1.	MEANS AND STANDARD DEVIATIONS OF RECENT LIFE CHANGE RESPONSES TO THE LIFE EXPERIENCES SURVEY (LES) . . . . .	38
2.	MEANS AND STANDARD DEVIATIONS OF PERSONALITY MEASURES . . . . .	39
3.	CORRELATION OF PERSONALITY MEASURES WITH RECENT LIFE CHANGE . . . . .	40
4.	INTERCORRELATION OF SEVERAL PERSONALITY MEASURES . . . . .	42
5.	CORRELATION OF PERSONALITY MEASURES WITH REMOTE LIFE CHANGE . . . . .	44
6.	INTERCORRELATION OF RECENT AND REMOTE LIFE CHANGE . . . . .	46
7.	ANALYSIS OF VARIANCE FOR NEGATIVE LIFE CHANGE (RECENT) AND THE SENSATION-SEEKING SCALE V . . . . .	47
8.	CORRELATIONS OF STATE ANXIETY (PRE, POST, DIFFERENCE) WITH PERSONALITY VARIABLES AND LIFE CHANGES . . . . .	50
9.	MEANS AND STANDARD DEVIATIONS OF T TRANSFORMED SKIN CONDUCTANCE FOR EACH 10 SECOND INTERVAL . . . . .	52
10.	ONE WAY ANALYSIS OF VARIANCE: LIFE CHANGE/PERSONALITY MEASURES BY EXPERIMENTER GROUPS . . . . .	58

## ACKNOWLEDGMENTS

I wish to express my sincerest appreciation to Dr. John Tyler and Dr. James Clark whose contributions to my professional growth extend far beyond the present manuscript. Sincerest thanks to Dr. Don Tucker, Dr. Douglas Peters, and Dr. Donald Piper, who each in their own way contributed to the quality and integrity of the final product.

A special thanks to Pat Newman for his assistance with some aversive details in the final days of the project.

Last, but not least, I wish to express my gratitude to my family. My wife Wendy, and my son Matthew, provided support and assistance through every phase of the project; our next child's imminent arrival provided additional inspiration.

Finally, my ever-lasting gratitude to my parents, Morris and Sarah, who would have been proud.



## ABSTRACT

Recent research has consistently shown that life change, as measured by the Social Readjustment Rating Scale, is significantly correlated with the onset of physical and/or psychological problems. Despite their statistical significance these correlations account for very little variance. More recently it has been suggested that personality variables may mediate one's ability to cope with life change. In the present study the relationships between life change and the personality measures of Repression-Sensitization, Sensation-Seeking, Health Locus of Control, State-Trait Anxiety and self reported psychological discomfort (Lanyon's PSI Discomfort subscale) were investigated in a multiple regression analysis.

The second major goal of the study was to examine how the above-mentioned variables affect one's responsivity to a film-induced stress. Specifically, do subjects who have experienced more life changes differ in their self reported and physiological responses to a standard stressor? Do the personality variables of Repression-Sensitization, Sensation-Seeking, Health Locus of Control, State-Trait Anxiety and psychological discomfort affect subjects' responsivity? Does life change interact in any meaningful way with the personality variables in the film stress situation?

One hundred and six female undergraduates completed Sarason's Life Experiences Survey and the personality questionnaires.



Eighty-eight subjects returned for the second part of the study and were randomly assigned to one of three male experimenter assistants. Subjects viewed a stressful film, It Didn't Have to Happen. Dependent measures were pre minus post film state anxiety and skin conductance, which was measured continuously throughout the film.

Results of the present study demonstrated significant relationships between reported life change and several personality measures. Most notably, reported negative life change--both recent (within 1 year) and remote (beyond 1 year)--was significantly associated with Repression-Sensitization, State-Trait Anxiety, psychological discomfort and the chance dimension of Health Locus of Control. However, these measures were all highly intercorrelated and did not contribute unique variance to reported life change. These results were interpreted in terms of Neuroticism, a tendency to employ mainly undesirable adjectives in describing oneself. Subjects higher on the Neuroticism dimension may tend to endorse significantly more negative life change items. Further, higher negative life change was associated with fewer positive life changes. Thus, reported life change may in fact be mediated by the personality variable/dimension of Neuroticism. Previously reported correlations between life change and subsequent physical illness may simply reflect a greater tendency to report, endorse or recognize ill health.

The study did not support previously reported evidence of Sensation-Seeking as a moderator variable.

In regard to the physiological measure of stress responsivity, an overall relationship between the personality/life change measures and skin conductance was not found. Skin conductance responses were,

however, significantly associated with specific life change/personality measures at specific intervals during the film. Considered preliminary, these relationships were cautiously interpreted and discussed in the text.

Finally, despite rigorous attempts for consistency, the experimenter variable had a very powerful effect upon subjects' psychophysiological response to the filmed stress; the three experimenters were successfully discerned on the basis of skin conductance via a discriminant function analysis. Thus subtle differences between experimenters had a significant effect upon subsequent responsivity to a filmed stress.

## CHAPTER I

### INTRODUCTION AND REVIEW OF THE LITERATURE

The interrelationship of psychological, environmental and physical variables is an idea of great antiquity. Ancient physicians accepted as fact such notions as "dying of a broken heart" or "losing the will to live."

More recently, Tuke's (1884) tome on the influence of the mind on the body might be considered the forebearer of modern psychosomatic medicine. Cannon's (1929) observations and experimentation provided some foundation for the notion that strong emotions (e.g., fear and anger) have dramatic physiological concomitants. Selye (1956) formulated the "general adaptation syndrome," an endocrinological and physiological description of reactions to noxious stimuli. As Rabkin and Struening (1976) note, Selye's treatise was largely responsible for popularizing the concept of stress in the scientific community and stimulated much research in the medical and social sciences.

The environmental and psychological components of ill health are receiving increased attention from a wide variety of disciplines. Baldwin (1978) reports the creation of the Academy of Behavioral Medicine, an interdisciplinary research organization which seeks to integrate the understanding of biological and psychological aspects of illness.



A major contribution to continued interdisciplinary interest in stress is recent research which implicates socially induced stress as a precipitating factor in the onset of disease. Meyer (1951) was among the first to document a temporal relationship between life changes and the onset of ill health. Along with the standard medical history, Meyer compiled a "life chart" and found that clusters of life events often preceded illness. Among the events he considered important were: ". . . the changes of habitat, school entrance, graduation or changes, or failures; the various jobs; the dates of possibly important births and deaths in the family, and other fundamentally important environmental incidents" (Meyer, 1951, p. 53). Meyer observed that life events need not be negative to be associated with illness onset. This notion has heretofore been accepted implicitly, but is now being seriously challenged. The importance of positive versus negative life changes will be discussed in greater depth later in this section.

#### The Social Readjustment Rating Scale

Meyer's work, as well as that of his contemporaries (Green, 1954; Kissen, 1958; Weiss, Rollin, Fischer & Bepler, 1957), was primarily a retrospective description, lacking in careful control, quantification and statistical sophistication. Many of these handicaps were overcome in 1967 when Holmes and Rahe developed the Social Readjustment Rating Scale (SRRS), a 43 item compilation of stressful life changes. In concordance with Meyer's observations, some of the life changes are positive. The items selected were thought to be of sufficient magnitude to be disruptive, thereby requiring adjustment. A normative sample

of 394 subjects was selected to rate the "amount of readjustment" required for each life change event. It was found that there was strong agreement between subgroups and among individuals regarding the significance of the 43 life events that transcended social, age, sex, religious, educational, marital and racial differences. Thus, the SRRS is comprised of 43 life events each weighted by a standardized value known as a Life Change Unit (LCU).

Early studies, with their retrospective methodology, demonstrated a dramatic association between clusters of life events and onset of disease. Rahe and Lind (1971) reported a significantly greater increase in subjects' LCUs during the 6 months preceding sudden cardiac death than was reported during a corresponding period by healthy control subjects. The relationship in the experimental group was significant for subjects with and without prior cardiac history. Similar relationships have been found for the onset of myocardial infarction (Edwards, 1971; Rahe & Paasikivi, 1971; Theorell & Rahe, 1971), transient diabetes (Hong & Holmes, cited in Holmes & Masuda, 1974), minor illness in healthy subjects (Rahe & Holmes, 1969), the occurrence of accidental injury (Tollefson, 1972), as well as a decline in college GPA (Harris, 1972) and poor job performance (Carranza, 1972).

The SRRS has also been shown to have significant predictive validity as to changes in physical health. Rahe's (1968) study of 2500 naval personnel demonstrated a significant association between LCU score and subsequent health changes. In the first months of duty, the high risk group (upper 30% in LCU score) had nearly 90% more first illnesses than the low risk group (bottom 30% in LCU scores); this pattern



continued throughout the six month tour of duty. In the next one to two year period, health pattern differences became markedly more pronounced, both in frequency and seriousness. Significant findings were also reported by Holmes and Holmes (1970); Rahe, Mahan and Arthur (1970); Casey, Thorensen and Smith (1970); Wyler, Masuda and Holmes (1971). For a more complete review of the retrospective and prospective health studies through 1977, see Boriskin (1977) and Dohrenwend and Dohrenwend (1974).

More recently, Garritty, Marx and Somes (1977) attempted to verify Rahe and Holmes' contention that health changes generally reach a peak at least six months after the increase in life change. In a prospective study with a large sample of college students, they found that the predictive power of LCUs increased with the time of occurrence. At nine months the predictive relationship was maximal for four out of five of the health outcome measures. In addition, they report that more minor health problems tended to occur immediately after the life changes, whereas more serious health problems tended to occur later. Therefore, there seems to be a substantial latency between life change and the onset of more serious illness. Unfortunately, the study was terminated at nine months, so the subsequent nature of the relationship is unknown.

Personality factors may also be important mediating variables which determine in part who will suffer ill health, or alternatively, who will be more likely to seek medical assistance (Dohrenwend & Dohrenwend, 1974; Mechanic, 1975; Rabkin & Struening, 1976). Unravelling this complex interrelationship is one of the major challenges in current life stress research. To date only two studies have attempted to directly



assess this relationship. Garrity, Simes and Marx (1977) administered the Omnibus Personality Inventory and correlated it with the College Schedule of Recent Experience (a variation of the SRRS specifically for college students) and several health outcome measures. They found that emotional sensitivity (described as social and esthetic inclinations, a willingness to express oneself) increased the likelihood of subsequent health problems for high life change subjects. To a lesser extent, a factor called liberal intellectualism (described as the ability to tolerate ambiguity, intellectual flexibility and appreciation of abstraction) also resulted in greater risk.

Marx, Garrity and Simes (1977) used the Heimler Scale of Social Functioning as a measure of possible coping skills among 56 subjects of high life change. Poor coping skills were significantly predictive of subsequent ill health.

Despite the strong intuitive appeal that life change and illness are causally linked, the above studies are far from conclusive. All that has been demonstrated thus far is that there is a consistent correlation, small but highly significant, between health changes and clusters of life events. To conclude cause and effect on the basis of correlation would be specious. Further, we must take into consideration the methodological critiques that have been leveled against the SRRS. These critiques will be discussed in greater detail later in the text. Finally, we must question whether it is good health that is adversely affected, or simply a tendency to report ill health (e.g., to physicians, infirmaries, hospitals). Thus, psychological and personality factors may play more than a mediating role. Interestingly, the psychological/

personality concomitants and correlates of life change have become the major focal point of recent investigation.

### Psychological Concomitants of Life Change

Employing the SRRS and similar instruments in populations with psychological problems, several investigators have found significant differences in recent life change. Dekker and Webb (1974) found that SRRS scores from psychiatric inpatients and outpatients did not differ; however, both inpatients and outpatients had significantly higher LCUs than normals. They also reported that life change correlated significantly with age, anxiety and the Social Desirability Scale of the MMPI. Reuley (1974), using a state measure of anxiety (the IPAT Anxiety Questionnaire), found that the SRRS correlates significantly with some anxiety measures and not with others. Correlated with the SRRS were the "somatic concomitants of anxiety, a feeling of inadequacy, and a concern with the ability to realize self ideals."

Paykel (1974) observed that the amount of preceding stress, its time relationship to onset and to a limited extent the types of events involved varied with the type of psychological disorder. Patients who had attempted suicide reported the greatest number of events, depressives the next highest, then schizophrenics. Among the mixed neurotic outpatients he found a linear relationship between the amount of life change and the severity of symptoms. Finally, he reported that only undesirable events occur excessively before the psychological disorder; desirable events do not.



Plutchik, Hyman, Conte and Karasu (1977) found that psychiatric patients seen in an emergency room had both a greater number of current life stresses and a greater number of physical symptoms than did two comparison groups (medical screening patients and dermatology patients). Clum (1978) reported some support, although weak, for the contention that both life change and personality variables influence post-psychiatric hospitalization outcome.

Using a modification of the SRRS, Sarason, Johnson and Siegel (1978) compared life change scores from a group of students receiving treatment at a university counseling center for psychological problems with scores from a random sample of undergraduates. It was found that the counseling center clients displayed significantly higher negative change scores than did the comparison group.

A recent study that did not employ the SRRS shows some interesting long term effects of extreme stress. Dor-shav (1978) followed up 42 concentration camp survivors and assessed their personality and cognitive functioning. He found that survivors manifested evidence of impoverishment and constriction of personality, appeared less accessible, less "connected" and more liable emotionally. In terms of their perceptual-cognitive functioning survivors tended to be more global, less complex and less differentiated, as indicated by the Hidden Figures Test and Rorschach responses. In addition, there were also indications of a breakdown in "ego boundaries." Finally, Dor-shav notes that there was some evidence suggesting that the younger the victim was at the time of incarceration, the more severe the impairment.

Several investigators have sought to relate life changes to personality variables in non-psychopathological populations. Vinokur and Seltzer (1975), using an instrument similar to Sarason's, found that negative life change correlated with measures of tension, distress and such emotional disturbances as increased suicidal ruminations, anxiety and paranoid thinking. Similarly, Grant, Sweetwood, Yager and Gerst (1978) found that life change significantly correlates with reported psychological symptomatology.

Boriskin (1977), using a modified College Schedule of Recent Experiences, found that cumulative life change was significantly correlated with Repression-Sensitization; sensitizers tend to report more life change. A slight but significant relationship was found with field dependence-independence. There was no relationship to mood as measured by the Mood Adjective Checklist or internal-external locus of control as measured by the Adult Nowicki-Strickland Scale.

Johnson and Sarason (1978) reported a significant correlation between recent negative life changes and Rotter's internal-external locus of control. No such relationship was found for total life change (positive and negative life events). For subjects with an external locus of control, it was found that negative life change correlated significantly with depression and trait anxiety. Johnson and Sarason conclude that locus of control may be a moderator variable for the effects of negative life change upon psychological symptomatology.

Smith, Johnson and Sarason (1978) examined life change and the sensation-seeking motive (as measured by the SSS, Zuckerman, Kolin, Price & Zoob, 1964) as a function of psychological distress (measured by



the Discomfort Scale of Lanyon's Psychological Screening Inventory, Lanyon, 1970). They found a significant main effect of negative life change such that greater psychological discomfort is reported. Among the low-sensation-seeking group, high-negative life change subjects had significantly higher distress scores than did those who had experienced low levels of life change. Furthermore, a correlational analysis demonstrated a significant relationship between negative life change scores and Discomfort scores in low sensation seekers but no significant relationship in high sensation seekers. Thus, the authors suggest that the effects of life stress may also be mediated by self-reported "optimal level of stimulation", a notion which has great intuitive appeal but is in need of further validation.

#### Methodological Considerations

Results of the aforementioned studies, both in the physical health and psychological realm, are fascinating and provocative. The large number of studies with significant results and the variety of populations investigated strongly suggest that life change and a wide variety of physical/psychological problems are unquestionably, and perhaps causally, linked. In order to obtain a more balanced perspective of the current status of this line of research, however, we must consider issues of instrumentation reliability and validity, experimental design and methodology and problems of data interpretation.

### Reliability

Rahe (1974) reports that test-retest reliability of the SRRS ranges from .26 to .90. Sarason, DeMonchaux and Hunt (1975) contend that the reliability of the instrument is insufficient. More recently, Sarason, Johnson and Siegel (1978) found that most of the inconsistency in reporting was attributable to the positive events. Using their instrument, the Life Experience Survey, Sarason et al. (1978) report reliability coefficients for the negative change scores from .56 to .88. They suggest that their instrument is moderately reliable, particularly when negative change scores are considered.

### Instrumentation

A number of investigators have challenged the advisability of using standardized LCU weights. Holmes and Rahe's contention that LCU ratings transcend demographic variables has not been consistently validated (Boriskin, 1977). In addition, several investigators (Lundberg, Theorell & Lind, 1975; Grant, Gerst & Yager, 1976; Yamamoto & Kinney, 1976) have documented increased predictive power on the basis of individualized ratings. Further, Stone and Neal (1978) have noted that simply changing the wording from "amount of readjustment required" to "stressfulness" significantly alters LCU weights. Thus he contends that the investigator is left in the unenviable position of having to choose which weights he will employ.

Chiriboga (1977) reported that stress variables which tapped the individual's perception of life events accounted for more of the



variance in correlations covering several psychosocial indices of adaptation, but he did not report whether the contribution was significant. Boriskin (1977) found that individualized ratings accounted for slightly more variance, but the improvement was non-significant. In fact, it was found that individualized or standardized LCU weights did not significantly enhance the relationship obtained by merely counting the number of life change events. This is consistent with Rahe and Arthur's (1978) contention that ". . . such refinements do not substantially increase the existing correlations found between subjects' number of recent life change events and their subsequent symptomatology and near future illness reporting." Thus, there is considerable controversy as to how life change is to be measured, which weighting system or scaling technique the investigator will employ and which of the several instruments available is to be employed in a given population.

#### Positive versus Negative Life Change

Holmes and Rahe (1967), on the basis of Meyer's work, scaled life events in terms of "the intensity and length of time necessary to accommodate a life event, regardless of its desirability." Since significant results were obtained with the SRRS, it was implicitly assumed that change per se, not desirability of the event, was the salient dimension. More recently Brown (1974), Mechanic (1975) and Sarason, DeMonchaux and Hunt (1975) have challenged this notion. They suggest that only undesirable change has deleterious effects, and that by not discriminating between desirable and undesirable events, previous researchers may have mitigated the observed statistical finding between life

change and various outcome measures. Gersten, Langner, Eisenberg and Orzek (1974) reported that with a sample of 700 children, undesirable events yielded a better prediction of behavioral impairment than the total number of life changes. Vinokur and Seltzer (1975), using a modification of the SRRS, found that only undesirable life change was related to the psychological measures employed. They conclude that,

. . . it seems reasonable to reject the notion that adjustment to change per se is the crucial determinant of life stress and its sequelae. Instead, it appears that the contribution of life events to psychological impairment is mediated by stress that is evoked by some undesirable aspect of events rather than change per se (p. 336).

Similar evidence was reported by Mueller, Edwards and Yarvis (1977).

Sarason, Johnson and Siegel (1978) contend that individuals perceive events differently, and that it is therefore essential to individualize ratings of desirability versus undesirability. For example, they note that pregnancy may be a highly desirable event to a married woman but may be viewed as an undesirable event by an unwed college freshman. As a result, they developed the Life Experience Survey (LES), which permits subjects to individually rate life change in either a positive or negative valence.

Initial applications of the LES support the notion that undesirable change is a more sensitive indicator of the concomitants of life change. They demonstrate that negative life change, as measured by the LES, is significantly associated with a decline in GPA, increased psychological discomfort, anxiety and depression. Further, negative life change identifies moderator variables such as locus of control and sensation-seeking, whereas total or positive life change do not (see Johnson & Sarason, 1978; Sarason, Johnson & Siegel, 1978; Smith, Johnson



& Sarason, 1978). Because of the individualized ratings of magnitude and desirability of life change, the inclusion of items specifically geared toward college students and the initial results supporting the significance of undesirable events, the LES will probably become the instrument of choice in life change research.

### Causality

In evaluating life change studies, we must keep in mind that causality has not yet been documented. These studies have been of a correlational design, and therefore cause and effect cannot be established. It is possible, as noted by Rabkin and Struening (1976) and Sarason, Johnson and Siegel (1978), that changes in mental or physical health produce increased life change.

In studies of impaired physical health, contamination of the dependent variable(s) must be questioned. In several studies physical health changes are based on self reports; therefore, there is the obvious possibility that all that is being measured is a response bias. It may simply be a personality variable that is measured (e.g., willingness to self disclose, hysterical/histrionic tendencies) rather than actual health changes.

In those studies in which the dependent variable is reporting to an infirmary or clinic, what may actually be measured is "illness behavior" rather than differences in actual physical health. This possibility has been noted by Mechanic (1975), who is undertaking a large scale prospective study to examine changes in illness behavior as a function of life changes and personality. Cline and Chosey (1972)

controlled for illness behavior by scheduling all subjects in their prospective study for routine physical exams. They obtained a highly significant correlation (.35) between recent life change and illness rates over the following year. This would tend to support the notion that health changes, not illness behavior, are the sequelae of life change but additional validation is needed.

Similarly, instruments such as the SRRS may simply be measuring a particular response style such that subjects who are higher on measures of sensitization, depression and anxiety may report more life change. Finally, though it may be that life change results in psychological discomfort, it might alternatively be the case that psychological upheavals create increased life change.

Overall it is readily apparent that we must exercise caution in interpreting the data currently available. Although measuring concomitants of life change with instruments like the SRRS or the LES represents a vast improvement over the subjective, post hoc and theoretically abstruse traditions of prior psychosomatic research, we are still unable to conclusively demonstrate causality. As ever, we must continually be cognizant of the limits of our instrumentation and measurements.

#### Practical Significance of the Obtained Correlations

Another issue that has been raised repeatedly is the size of the obtained correlations. Wershow and Reinhart (1974) and Rabkin and Struening (1976) note that in existing research very little variance is accounted for by the life change variable. Given the current state of the art, there is little clinical predictive power in knowing an



individual's level of recent life change. If the consistently significant results obtained are indeed attributable to life change rather than a repeated methodological anomaly, intrapsychic, personality, social, environmental and genetic factors most likely account for much of the variance. Thus, the small correlations between life change and psychological and physical health problems simply demonstrate the limitations of our current level of knowledge. As such, there are many discoveries yet to be made concerning the nature and power of these potential mediating variables.

#### Life Change and Responsivity to Stress

If we are someday to comprehend the impact of moderator variables as well as understand the causal dynamics between life change and psychological/physical health, we must have a model available to assess responsivity to stressful stimuli as a function of life change. A major gap in our present knowledge is whether increased life change results in greater vulnerability or responsivity to an in vivo stress. Further, we are ignorant of the differential physiological concomitants of various levels of recent and long-term life changes, as well as the mediating effects of psychological variables. Thus, it would be useful to study the life change variable under a laboratory stress situation in order to expand our knowledge beyond the epidemiological level. It is in part the purpose of the present study to explore self report and physiological concomitants of a lab-induced stress as a function of life change.

Lazarus' Model of Stress Induction

As Appley and Trumbull (1967) noted, since Selye's invited address to the American Psychological Association in 1955, there has been a veritable explosion in the number of psychological studies employing the term "stress". In many instances it has replaced such venerable terms as: anxiety, conflict, arousal, emotional distress, ego threat, environmental deprivation, threat to security and negative affect. Despite its ubiquity, there is considerable variation as far as definition, induction and measurement. A partial list of stress-inducing techniques would include: shock, threat of shock, ego threat, extreme cold, competition, novel light and sound stimuli, stimulus deprivation, filmed stimuli and hypnosis. Indices of a stressed state include: attention, skilled motoric and cognitive tasks (see Kahneman, 1973), self report of anxiety or mood and physiological responses. According to Appley and Trumbull (1967), the existence of stress is most often operationally defined in terms of physiological changes. However, there is great variability in the physiological indices employed (e.g., heart rate, GSR, blood volume and uric acid level).

"There are, then, clearly wide variations in specific uses, specific definitions and specific purposes with which the term 'stress' has been associated" (Appley & Trumbull, 1967, p. 6). Therefore, exploration of the life change variable will require a somewhat arbitrary choice in measurement, definition and induction of stress in a laboratory situation.



Many of the above mentioned stress manipulations involve deception and threat. Such manipulations may raise ethical difficulties. In fact, many stress studies of the 1950's and 1960's utilizing shock to human subjects could not be run under today's more stringent standards of ethics. Lazarus, Speisman, Mordkoff and Davison (1962) obviated these difficulties and others by employing a film of a stressful nature. Since motor performance was not the dependent measure, stressor main effects were not confounded by differences in subject's native ability (see Lazarus et al., 1962). Lazarus views stress responsivity as a multidimensional phenomenon, and therefore self report, GSR and heart rate responses to the films were reported. Further, appraisal manipulations and personality variables have been examined more closely in this model than in any other. For these reasons, as well as the more naturalistic quality of a film stimulus, Lazarus' model of stress induction was chosen for this study.

#### Appraisal Manipulation, Personality Variables and Responses to Stress

Since Lazarus' (1966) theoretical system of stress is primarily cognitive, he and his associates have repeatedly emphasized the importance of psychological appraisal. According to Lazarus, we distinguish between threatening and non-threatening stimuli by the cognitive process of "appraisal". Once a stimulus is seen as threatening, "coping" processes, which are mediated by the cognitive activity Lazarus calls "secondary appraisal," attempt to reduce or eliminate the anticipated harm.

Speisman, Lazarus, Mordkoff and Davison (1964) sought to manipulate the process of appraisal by creating different sound tracks to accompany a stressful film. Their "trauma track" intensified subjects' stress responses whereas the "intellectualization" and the "denial and reaction formation" track significantly reduced physiological and self reported stress responses, or to use their terminology, "short-circuited the threat." Lazarus and Alfert (1964) found that a "denial and reaction formation" sound track is even more effective in reducing stress responses if preceded by an introductory statement of a similar flavor. Moreover, they reported that the amount of stress reaction and the capacity of the narrative to reduce stress reactions is dependent upon personality. Subjects prone to denial (as measured by a high K on the MMPI) did indeed deny affective disturbances more than low deniers but displayed significantly higher autonomic reactions.

Folkins, Lawson, Opton and Lazarus (1968) explored systematic desensitization as a means of reducing stress responses. They found that the components of systematic desensitization (relaxation and cognitive rehearsal) were as effective alone as when combined in a complete desensitization program. On measures of skin conductance and self report, cognitive rehearsal seemed to be the most effective threat reducer. Goleman and Schwartz (1976) examined meditation as an intervention in stress reactivity. Experienced meditators and naive subjects in the meditation condition exhibited less stress reactivity (both physiological and self report) than did control subjects.

Weinstein, Averill, Opton and Lazarus (1968) reported that repressors had significantly higher discrepancy scores (indicating



greater autonomic than self report stress responses) than did sensitizers. However, further analysis demonstrated that self report was the major contributor to the discrepancy rather than physiological indicators. Interestingly, Woods (1977) found that repressors and sensitizers did not significantly differ in self reported emotional arousal following a stressful film. Unfortunately, physiological data was not collected.

Goldstein (1977) reported that relative to sensitizers, repressors are more labile physiologically, especially on measures of skin conductance.

In an interesting study, Haley (1974) explored eye movement responses of repressors and sensitizers to a stressful film. He found repressors and sensitizers to have equivalent levels of perceptual scanning (both significantly higher than intermediate subjects) independent of the film content. However, they did differ in on/off and average point of looking at the stressful segments such that repressors were avoiding stressful film content.

Parson, Fulgenzi and Edelberg (1969), using a group task rather than a film stressor, found that repressors had significantly greater skin conductance responsivity than sensitizers. Early and Kleinknecht (1978) reported that sensitizers were more physiologically aroused than repressors both during baseline and during the presentation of a recording of a dentist's drill. However, Early and Kleinknecht's physiological measure was the palmar sweat index, which is less reliable than the GSR.

Rappaport and Katkin (1972), using a mild ego involving stress, reported that high trait anxious subjects displayed significantly higher GSR responses during the stress condition.

Lazarus et al. (1962) compared subjects who demonstrated little physiological responsivity to a stressful film to subjects displaying marked autonomic responsivity. Using the California Personality Inventory, subjects displaying little responsivity were described as: "self centered, self seeking, confident, forceful, impulsive, outgoing and shrewd." Subjects displaying marked reactivity were described as: "conscientious, self reliant, concerned with integrity, responsible, stable, mature, moderate, and responsive to the plight of others."

Overall, appraisal and personality do seem to moderate responsivity to stress, but some of the available data involving the repression-sensitization dimension is confusing and contradictory.

#### The Proposed Study

The first phase of the present study was an attempt to replicate previous findings which suggest a relationship between several personality variables and recent life change. The life Experience Survey, along with the Repression-Sensitization Scale, the Sensation Seeking Scale and the Psychological Discomfort Scale from Lanyon's (1970) Psychological Screening Inventory, was administered to a large sample of subjects. Sensation-Seeking and Repression-Sensitization was correlated with life change in an attempt to replicate the results of Smith et al. (1978) and Boriskin (1977). The correlation of these variables to, and



their interaction with, life change and reported psychological discomfort was also investigated.

The second phase of this study was an attempt to explore the impact of life change and the above mentioned personality variables in response to an in vivo stress. There is currently no data available as to how subjects with different levels of recent and long term life change respond to stressful stimuli. Specifically, the following questions were explored:

1. What are the physiological concomitants of life change in response to an experimentally induced stress? Is there greater sympathetic responsivity or lability among high or low life change subjects? Is the relationship the same or different for recent versus long term life change (e.g., are the physiological concomitants correlated with recent or long term life change)?

2. Are there any differences in self reported duress as a function of recent or long term life change?

3. Previous findings with Repression-Sensitization in the Lazarus stress paradigm have been contradictory. Will Repression-Sensitization correlate significantly with physiological and/or self reported stress responsivity in the present study? Will there be any interaction between Repression-Sensitization and life change as a function of responsivity to the induced stress?

4. Is the personality variable of preferred level of stimulation, as measured by Zuckerman, Eysenck and Eysenck's (1978) Sensation-Seeking Scale, related to physiological/self report responsivity to a film-induced stress? (Currently, there is no such



data available.) Is there any interaction between Sensation-Seeking and life change in relation to stress responsivity?

## CHAPTER II

### METHOD

#### Subjects

Since sex differences in physiological responsivity to stressful stimuli are well-documented phenomena (Greenfeld & Sternbach, 1972), same sex subjects were employed in the present study. One hundred six volunteer female subjects were obtained from the psychology subject pool at the University of North Dakota. Of these, 45 were freshmen, 37 were sophomores, 18 were juniors and 6 were seniors. Ninety-eight subjects were single, seven were married and only one was divorced. Their mean age was 20.0 years, with a SD of 3.0 years; the mean GPA was 3.07, with a SD of .43. Eighty-eight subjects completed the entire experiment. Physiological data for eight subjects was excluded due to equipment failure or experimenter error; three subjects requested that the stressful film be stopped, and seven subjects failed to appear for the second part of the experiment.

Subjects received research credit for their participation in the study. Treatment of participants was in accordance with the ethical standards of the American Psychological Association.

#### Materials

##### Life Experience Survey

This newly developed 60 item instrument (Sarason et al., 1978) was employed as a measure of life change. The Life Events Survey (LES,

Appendix A) is comprised of two sections. Section 1 contains a list of 47 specific life events that are common to individuals in a wide variety of situations. Three blank spaces are provided for subjects to indicate other events they may have experienced. Section 2 lists 10 events which are specifically associated with an academic environment. Section 2 is used in addition to Section 1 when a student sample is employed.

Thirty-four of the events listed in Section 1 of the LES are very similar to those found in the original Social Readjustment Rating Scale (Holmes & Rahe, 1967); in many instances the wording has been changed for the sake of simplicity and/or increased precision. Nine of the 10 school-related items of Section 2 are unique to the LES.

The LES asks subjects to indicate which events they have experienced during the past year (0-6 months or 7 months-1 year). Although the LES provides for two 6 month intervals, Sarason et al. (1978) performed all their analyses on change scores based upon the entire preceding 12 month time period. In the present study, the time frame was modified such that recent life change (within 1 year) and remote life change (beyond 1 year) could be measured.

The LES requires subjects to assess the impact of all experienced life changes on a 7 point rating scale; ratings range from extremely negative (-3) to extremely positive (+3). Summing the impact ratings of those events experienced and designated as positive by the subject provides a positive change score. A negative change score is obtained by summing the impact ratings of those experienced events perceived as negative by the subject. Thus, the format of the LES allows



for the individualized rating of the impact of experienced events as well as separate measures of positive and negative change.

#### Repression-Sensitization Scale

Composed of 127 items from the D, Pt, Welsh Anxiety, L, K, and Hy scales of the MMPI, the R-S scale was developed by Byrne (1961) in an attempt to discriminate between individuals utilizing avoidance responses (repressors) and individuals who tend to quickly recognize and respond to affective stimuli (sensitizers).

Byrne, Barry and Nelson's (1963) revised R-S scale typically has been discussed and interpreted in terms of ego defense. Woods (1977) reported that evidence for this interpretation is somewhat contradictory, but nonetheless most current investigators deal with the R-S continuum in terms of "coping strategies for threat". Lefcourt (1966) suggested an alternative hypothesis; he suggested that R-S is a measure of preferred modes of self presentation. In accordance with this hypothesis, sensitizers desire to appear sensitive and feeling, whereas repressors are primarily concerned with appearing more stoical. Empirical support for this hypothesis was provided by Lefcourt (1966), but Woods (1977) was unable to replicate these results.

Although the true meaning of the R-S construct is yet to be resolved, the R-S scale has been significantly correlated with a number of personality measures. The R-S scale is positively correlated with the Manifest Anxiety Scale, Edwards' Social Desirability Scale, Rotter's I-E and measures of cognitive complexity; R-S is unrelated to measures



of intelligence, religiosity and field dependence-independence (Bell & Byrne, 1978).

It is also interesting to note that the R-S was positively correlated with the frequency of tension headaches, colds, emotional difficulties and frequency of accidents and illnesses in two independent samples (Byrne, Steinberg & Schwartz, 1968). In a large scale study at the Mayo Clinic, Schwartz, Krupp and Byrne (1971) reported that when repressors become ill, it is likely to be a purely organic diagnosis, whereas sensitizers tend to exhibit disorders with psychological components.

#### Sensation-Seeking Scale

Several theorists, including Berlyne (1960), Leuba (1955) and Fiske and Maddi (1961) have proposed the concept of an optimal level of stimulation, excitation or activation. The drive reduction theory of motivation is predicated upon the concept that the common goal of all primary motivation is to reduce stimulation to a minimum. The above theorists proposed that too little stimulation may in fact lead the organism to increase stimulation, whereas too much stimulation, as in a sensory overload situation, results in behavior aimed at stimulation reduction. Thus, there is purported to be an optimal level of arousal that may be situation specific.

Zuckerman et al. (1964) were interested in the personality implications of the optimal stimulation concept and attempted to operationalize this concept with the Sensation-Seeking Scale (SSS).

The original scale, SSS II, (Zuckerman et al., 1964) was shown to be of adequate reliability and validity. The scale has subsequently

been employed in a large number of studies and does in fact seem to measure a salient dimension of personality. Among the correlates of sensation seeking are: hypomania and impulsivity, F, Pd and Ma Scales of the MMPI (Zuckerman & Bone, 1972); a dominant impulsive, nonconforming type of extraversion as measured by the 16 PF (Zuckerman & Bone, 1972); preferred viewing of more complex stimuli (Zuckerman & Bone, 1972); greater drug and sexual experience--in Caucasian samples only (Kaestner, Rosen & Appel, 1977); and state anxiety (Bone, Montgomery, Sundstrom, Cowling & Calef, 1972). Sensation-seekers also tend to display a greater Orienting Response to novel visual and auditory stimuli but do not differ in habituation (Neary & Zuckerman, 1976). Sensation-seeking does not seem to be related to: IQ, scholastic aptitude, hypnotizability, trait anxiety or locus of control (Zuckerman, 1975).

The SSS was originally intended as a means of predicting individual responses to sensory deprivation; its record in this domain has been somewhat inconsistent. However, Lambert and Levy (1972) suggest that the need for stimulation in this situation may be mediated by two distinct variables: stimulation seeking and isolation discomfort. This may in part explain some of the inconsistency in prior studies.

Petrie's (1967) augmenting-reducing dimension is conceptually similar to the notion of sensation-seeking. Sales (1971) hypothesized that reducers would report a greater need for stimulation than augmenters. However, Kish, Frankel and Berry's (1976) data did not support this hypothesis. Several methodological flaws were noted by the authors of this study, and further research appears necessary.



Smith et al. (1978) administered the SSS, the Life Experience Survey and the Psychological Screening Inventory to 42 male and 33 female subjects. Subjects scoring above and below the median of sensation-seeking were assigned to cells of three separate 2 x 2 factorial designs (for positive, negative and total life change during the prior 12 months). Scores on the PSI were significantly related to the amount of negative life change experienced during the previous year. Among low sensation seekers, high negative life change subjects had significantly higher distress scores than those who had experienced low levels of negative change. Thus, sensation-seeking appeared to be a moderator variable in terms of reported discomfort as a result of negative life change.

The SSS II (Zuckerman et al., 1964) contained a general scale based only on the first unrotated factor. Zuckerman's (1971) subsequent factor analyses yielded four factors in addition to the original general scale. The four subscales of the SSS IV are:

1. Thrill and Adventure Seeking (TAS) comprised of items expressing the desire to engage in sports or activities involving physical danger (e.g., mountain climbing, parachute jumping, scuba diving, speeding in a car).
2. Experience Seeking (ES) contains items describing the desire to seek new experiences through the mind and senses by living in a nonconforming life style with unconventional friends, and through travel.
3. Disinhibition (Dis) was named for items describing the need to disinhibit behavior in the social sphere by drinking, partying and seeking variety in sexual partners.
4. Boredom Susceptibility (BS) items indicate an aversion for repetitive experience of any kind, routine work, or even dull or predictable people. Other items indicate a restless reaction when things are unchanging. (Zuckerman, 1971, pp. 45-47)

Zuckerman et al. (1978) further refined the Sensation-Seeking Scale on the basis of cross-sex, cross-cultural similarities in items



loadings. The SSS V, employed in the present study, contains 10 items representing each of the four above mentioned factors, and a Total Score, the sum of the four factors.

### State-Trait Anxiety Inventory

Spielberger, Gorsuch and Lushene's (1970) State-Trait Anxiety Inventory (STAI) is a two part questionnaire widely used as a self report measure of anxiety. The Trait Anxiety scale--A-Trait contains 20 items which require subjects to describe how they generally feel. Subjects respond to each item (e.g., "I am content;" "I get in a state of tension or turmoil as I think over my recent concerns and interests.") by endorsing 1,2,3 or 4 representing "almost never," "sometimes," "often" or "almost always." The total score is thus an index of a subject's general or trait level of anxiety.

The State Anxiety Scale--A-State contains 20 items which require the subject to evaluate his current level of discomfort. Thus, the total score of the A-State Scale reflects the subject's reported level of anxiety at a particular moment in time.

Auerbach (1973a, 1973b), Spielberger (1972), and Spielberger, Auerbach, Wadsworth, Dunn and Taulbee (1973) have reported that individual differences in anxiety proneness (A-Trait) are relatively stable and impervious to stress. The A-State scale has, however, been found to be sensitive to various stresses (Hodges & Spielberger, 1969; Kendall, Finch, Auerbach, Hooke & Mikulka, 1976). Further, Auerbach (1973a), Hodges and Spielberger (1969), O'Neil, Spielberger and Hansen (1969), and Rappaport and Katkin (1972) reported greater increases in state

anxiety for high-trait-anxious than for low-trait-anxious subjects in stressful situations of an ego threatening nature. However, changes in state anxiety were reported to be unrelated to level of trait anxiety in situations of physical threat (Auerbach, Kendall, Cuttler & Levitt, 1976; Hodges & Spielberger, 1966; Johnson, Dobbs & Leventhal, 1970) or films depicting automobile accidents (Kendall et al., 1976). Kendall (1978) further explored the relationship between state and trait anxiety. His results support an interaction model of anxiety and suggest the need for measures of situational components of trait anxiety.

In the present study both A-Trait and A-State anxiety were measured. A-State difference scores (pre stress - post stress scores) were used as a measure of responsivity to the filmed stress.

Psychological Screening Inventory--  
Psychological Discomfort Scale

Lanyon's (1970) Psychological Screening Inventory is a 130 item true-false questionnaire designed as a brief mental health screening device. Containing five subscales of 20-30 items, the Psychological Screening Inventory is purported by Lanyon (1974) to be a more appropriate mental health measure for student populations than the MMPI.

The Discomfort Subscale (Di) was intended to measure the personality dimension of anxiety or perceived maladjustment.

Persons high on this dimension have been described (e.g., Block, 1965; Eysenck, 1962) as readily susceptible to anxiety and to neurotic breakdown under stress, tending to get little enjoyment from life, complaining of varied somatic symptoms, and admitting to many psychological discomforts and difficulties. Persons low on this dimension are considered to perceive themselves as satisfied and subjectively comfortable, adaptable and resourceful and able to meet new situations with flexibility. (Lanyon, 1970, p. 13)



It is not clear whether subsequent validation supports this description, but Lanyon's (1970, 1974) data suggest that anxiety is one of the most prominent characteristics of high-Di scorers.

The Psychological Discomfort Subscale was utilized by Smith et al. (1978) as a dependent measure and is the primary reason for its inclusion in the present study.

#### Multidimensional Health Locus of Control Scales

Recent reviews of the literature (Strickland, 1978; Wallston & Wallston, 1978) suggest that locus of control, Rotter's (1966) generalized expectancy of reinforcement, may have important implications with respect to health and health-related behavior. The internal-external (I-E) dimension refers to the degree to which an individual perceives events as dependent upon his own behavior or as a function of luck, chance, fate or powers beyond his control. In regard to health knowledge and preventive care, it was found that internals are more likely to assume responsibility for their health and their physical well-being and take preventive measures against accidents or disease (Balch & Ross, 1975; Coan, 1973; Seeman & Evans, 1962; Wallston, Maides & Wallston, 1976; Wallston, Wallston, Kaplan & Maides, 1976; Williams, 1972).

Several studies indicate that internals are generally more proficient in biofeedback tasks wherein heart rate, GSR and cardiovascular responses had to be altered (Gatchel, 1975; Ray, 1974; Wagner, Bourgeois, Levenson & Denton, 1974). DeGood (1975) reported that diastolic blood pressure change seemed to be a function of an interdependence of I-E expectancies and the situation; thus, diastolic elevation in a shock



avoidance situation was lowest when personal and situational control factors were congruent.

Berggren, Ohman and Fredrickson (1977), comparing extreme I-E scores, reported significantly longer habituation (as measured by skin conductance) for external subjects. The investigators suggest that externals have poorer control of attention than internals; external subjects were ostensibly attending to irrelevant events and could not differentiate between relevant and irrelevant cues. Thus, Berggren et al. (1977) suggest that internals habituate more quickly and are more attentive to task relevant cues.

Regarding psychological adjustment, Strickland (1978) concludes on the basis of her review of the literature that the reporting of contentment (e.g., less anxiety, fewer mood disturbance) is related to internality, whereas pathological difficulties (e.g., severity of psychiatric diagnosis) are related to externality. Strickland (1978) acknowledges that these findings are correlative, and thus there is no way of knowing whether external beliefs accompany a predisposition to psychological difficulties or if external beliefs occur as a function of the disturbances. Considering the I-E relationship to depression and the fact that externals displayed poorer performance than internals in a "learned helplessness task," Strickland stated:

Obviously individuals have differing coping styles and respond to circumstances in diverse but possibly predictable ways. Increased research with the I-E variable might give additional clues as to individual responses to aversive or traumatic life situations. (Strickland, 1978, p. 1201)

Since health-related behavior and the personality dimension of locus of control have theoretical significance to life events and

physiological responsivity to stress, the Multidimensional HLC was employed in the present study. In an attempt to refine the I-E dimension to health specific beliefs and expectations, Wallston et al. (1976) developed a Health Locus of Control Scale (HLC). This development of the HLC was predicated upon the notion that a more specific measure would provide a stronger relationship between reported locus of control and health behaviors. Wallston et al. (1976) and Wallston and Wallston (1978) provide and review data which support their hypotheses. In response to theoretical suggestions and reliability concerns, Wallston, Wallston and DeVellis (1978) constructed the Multidimensional Health Locus of Control Scales (MHLC). The 18 item MHLC contains three subscales which tap the belief that the source of reinforcement regarding health matters is: primarily internal (IHLC), a matter of chance (CHLC) or under the control of powerful others (PHLC).

#### Equipment

Skin conductance was measured with a Marietta Apparatus GSR Model #12-100 and recorded continually on a Linear Corporation strip chart recorder. Beckman silver-silver chloride electrodes were attached to the palmar surface of the hand; one electrode was placed on the pad below the index finger and the other on the pad below the small finger (Edelberg, 1967). The electrodes were held in place by adhesive collars and a non-constricting velcro strap. Electrode paste manufactured by the Biofeedback Institute, Inc. was the contact medium.



### Stressor

A 13 minute black and white International Film Bureau, Inc. (1962) film entitled It Didn't Have to Happen was the stress stimulus. An industrial safety film, it portrays three workshop accidents in which one worker severely lacerates his finger in a planer, another worker amputates his finger in a milling machine and a third worker's negligence with a circular saw results in the fatal impalement of a nearby co-worker. It Didn't Have to Happen has been used in previous research and has been found to be an effective and reliable stressor (Lazarus & Opton, 1966). For experimenter convenience, as well as to minimize equipment noise artifact, the film was recorded on a 3/4" video tape with a Sony Video Tape Deck and viewed by the subject on a Panasonic television monitor.

### Procedure

Part I. In a single testing session subjects were asked to complete: the Life Experience Survey, the Repression-Sensitization Scale, the Sensation-Seeking Scale, the STAI A-Trait Anxiety Questionnaire, the Lanyon Psychological Discomfort Scale and the Multidimensional Health Locus of Control Scale. Printed instructions were provided with each questionnaire; these instructions were also read aloud by the experimenter before subjects were permitted to proceed. In order to receive credit for their participation, subjects were required to attend the second part of the experiment.



Part II. Subjects were scheduled individually and assigned to one of three male experimental assistants. The subjects were escorted to an 8' x 9' dimly lit room and seated in a reclining chair. The video tapedeck and the skin conductance equipment were behind a one-way mirror. The contents of the experimental room were: the television, the reclining chair, the electrodes and a small table.

After the experimental assistants reviewed the instructions, subjects were asked to complete the STAI - State Anxiety Questionnaire. The experimental assistants waited in an adjacent room while subjects completed the questionnaire.

Upon return, the experimental assistants informed subjects that GSR electrodes were going to be attached to the palmar surface of the (dominant or non-dominant) hand; dominant or non-dominant hand was determined by the random numbers table. After briefly explaining the skin conductance measure and assuring subjects of its safety, the experimental assistant cleansed the skin with alcohol and attached the electrodes. Subjects were then informed: "I will be on the other side of the mirror recording your skin's electrical activity. Please try to keep your hand as stationary as possible so that the electrodes remain in good contact with the skin."

"I am now going to leave the room. You are to sit quietly for the next 10 minutes while I calibrate the equipment." This is the "hydration" period utilized by Lazarus et al. (1962), Lazarus and Opton (1966) and others. "You will then see a brief movie on this television."

At this point the television was turned on and the release (Appendix E) was read to the subject. Subjects were informed that the

film was not a pleasant one, and that full research credit would be awarded should the subject choose not to view the film or request that it be stopped. After the subject's signature was obtained, the experimental assistants continued: "The movie will last 13 minutes. When it is over I want you to pick up the clipboard and complete the Self Evaluation Questionnaire (STAI - A State) once again; complete it according to how you feel at that time. You may find it necessary to remove the electrodes in order to complete the Self Evaluation Questionnaire . . . you may do so at the end of the movie. After that is done I will return again. Do you have any questions?"

Experimental assistants wore white laboratory coats and were trained to interact with the subject in a uniform manner. They were required to memorize, rehearse and adhere to the experimenter's procedure (Appendix C). Upon completion of the study subjects were carefully debriefed (Appendix D), awarded research credit and asked to keep the rationale and contents of the study confidential.

## CHAPTER III

### RESULTS

#### Recent Life Change

Recent life change was measured by summing positive and negative ratings of life events occurring within one year. Recent positive life change, recent negative life change and total life change scores from the present study and Sarason et al. (1978) are presented in Table 1. Reported recent life change between the two samples was not significantly different despite the modification in time frame (e.g., requesting life change within one year vs. two 6 month interval ratings and the addition of a remote life change measure).

Means and standard deviations of subjects' scores on the personality measures employed are summarized in Table 2.

Positive life change (recent) was significantly correlated with the Boredom Susceptibility subscale (BS) of SSS V,  $r = .2584$ ,  $t(106) = 2.73$ ,  $p = .004$ ; thus, subjects with greater boredom susceptibility reported fewer positive life changes. Positive life change (recent) was, however, not significantly associated with other sensation seeking dimensions, nor was it significantly related to measures of anxiety, psychological discomfort, health locus of control or repression-sensitization (Table 3).

Negative life change (recent) was significantly correlated with the Repression-Sensitization Scale,  $r = .3400$ ,  $t(106) = 3.87$ ,  $p = .000$ ,



Table 1

Means and Standard Deviations of Recent Life Change Responses  
to the Life Experiences Survey (LES)

LES Score	Sarason, Johnson & Siegel <sup>a</sup>		Boriskin <sup>b</sup>		
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>t</u> <sup>c</sup>
Positive	9.57	6.66	10.689	7.381	1.303 n.s.
Negative	7.04	7.90	7.764	6.832	.777 n.s.
Total	16.61	10.23	18.453	10.154	1.456 n.s.

<sup>a</sup>Female scores (n=171)

<sup>b</sup>n=106

<sup>c</sup>df=275

Table 2

## Means and Standard Deviations of Personality Measures

	<u>Repression- Sensitization</u>	<u>Sensation-Seeking Scale V</u>				
		TAS	ES	Dis	BS	Total
Mean	40.981	6.292	4.519	3.905	2.094	16.868
SD	19.971	2.204	1.938	2.994	1.682	5.162
	<u>Trait Anxiety</u>	<u>Multidimensional Health Locus of Control</u>				
		Internality (IHLC)	Chance (CHLC)	Power (PHLC)		
Mean	37.368	25.962	18.085		17.019	
SD	9.620	4.506	4.636		4.771	
	<u>Lanyon PSI Discomfort Scale</u>	<u>State Anxiety</u>				
		Prefilm	Postfilm			
Mean	9.057	38.124	44.968			
SD	5.525	8.774	11.651			

Table 3

## Correlation of Personality Measures with Recent Life Change

	Repression- Sensitization	Sensation-Seeking Scale V				
		TAS	ES	Dis	BS	Total
Recent Positive Change	.0839	-.0225	.0893	-.0368	-.2584**	-.0746
Recent Negative Change	.3400***	-.0114	.1043	.1546	.1627	.1563

	Trait Anxiety	Multidimensional Health Locus of Control		
		Internality (IHLC)	Chance (CHLC)	Power (PHLC)
Recent Positive Change	-.0180	.1359	.1355	-.0458
Recent Negative Change	.3006***	-.0758	.2599**	-.0115

	Lanyon PSI Discomfort Scale	State Anxiety	
		Prefilm	Postfilm
Recent Positive Change	.0294	-.1495	-.0731
Recent Negative Change	.3092***	.2887**	.1478

\*p&lt;.05

\*\*p&lt;.01

\*\*\*p&lt;.001



the STAI-A-Trait Scale,  $r = .3006$ ,  $t(106) = 3.21$ ,  $p = .001$ , the Lanyon PSI Discomfort Scale,  $r = .3092$ ,  $t(106) = 3.32$ ,  $p = .001$ , the Chance subscale of the MHLC,  $r = .2599$ ,  $t(106) = 2.75$ ,  $p = .004$ , and pre-film state anxiety (STAI-A-State),  $r = .2887$ ,  $t(106) = 3.08$ ,  $p = .002$ .

It is clear that Negative life change (recent) was significantly associated with several personality measures. However, as can be seen in Table 4, these personality measures are nonorthogonal and in fact are highly correlated with one another. Thus, for example, subjects who tended to be sensitizers reported greater trait anxiety, less control over their physical health, greater psychological discomfort and greater state anxiety. A stepwise multiple regression predicting Negative life change (recent) from the personality variables and other life change dimensions resulted in a significant association with Repression-Sensitization, and Experience Seeking (ES) from the SSS V,  $R = .4173$ ,  $F(2, 85) = 8.962$ ,  $p = .0003$ . (R-S was the more powerful predictor, Beta = .39131 vs. ES, where Beta = .1607; R-S accounting for 88.2% of the predicted variance.) These two variables accounted for 16.7% of the Negative life change (recent) variance,  $R = .40904$ ,  $F(2, 85) = 5.626$ ,  $p = .0051$ .

Thus, it appears that R-S accounted for a significant portion of the Negative life change (recent) variance, and that State and Trait Anxiety, MHLC and Psychological Discomfort did not contribute unique variance.

Table 4

## Intercorrelation of Several Personality Measures

	Repression Sensitization	Trait Anxiety	MHLC-Chance	Lanyon PSI Discomfort	State Anxiety (Pre)
R-S	1.0000				
TA	.8559***	1.0000			
CHLC	.4431***	.3249***	1.0000		
PSI-Di	.8613***	.8464***	.4415***	1.0000	
SA-Pre	.4570***	.4524***	.2524**	.4163***	1.0000

\* $p < .05$ \*\* $p < .01$ \*\*\* $p < .001$ Remote Life Change

Remote life change was measured by summing positive and negative ratings of life events occurring beyond one year. Subjects' mean remote positive life changes rating was 5.585 with  $SD = 5.184$ ; the mean remote negative life change rating was 5.509 with  $SD = 4.959$ ; and the total mean remote life change rating was 11.094 with  $SD = 7.913$ .

Positive life change (remote) was significantly associated with Repression-Sensitization,  $r = -.2014$ ,  $t(106) = 2.10$ ,  $p = .019$ , and with Psychological Discomfort,  $r = .1694$ ,  $t(106) = 1.75$ ,  $p = .041$ . As noted above, R-S and PSI-Discomfort were highly intercorrelated. The multiple regression predicting positive life change (remote) from RS and PSI-Discomfort resulted in  $R = .23177$ ,  $F(2, 85) = 2.412$ ,  $p = .0957$ , and accounted for only 5.4% of the variance. R-S was the more powerful

predictor of the two,  $Beta = -.2425$ , with PSI-Discomfort not adding unique variance,  $Beta = .01263$ ; RS contributed 99% of the predicted positive life change (remote) variance.

Negative life change (remote) was significantly associated with the following personality variables: Repression-Sensitization,  $r = .2501$ ,  $t(106) = 2.55$ ,  $p = .005$ ; Disinhibition (Dis) from SSS V,  $r = .1749$ ,  $t(106) = 1.81$ ,  $p = .036$ ; STAI-A-Trait Anxiety,  $r = .3073$ ,  $t(106) = 3.13$ ,  $p = .001$ ; PSI-Discomfort,  $r = .2165$ ,  $t(106) = 2.26$ ,  $p = .013$  and STAI-A-State Anxiety (prefilm),  $r = .1698$ ,  $t(106) = 1.90$ ,  $p = .048$  (see Table 5). Reported Negative life change (remote) was significantly correlated with Positive life change (remote),  $r = .2169$ ,  $t(106) = 2.27$ ,  $p = .013$ ; Positive life change (recent),  $r = -.1624$ ,  $t(106) = 1.67$ ,  $p = .048$ ; and Negative life change (recent),  $r = .1823$ ,  $t(106) = 1.89$ ,  $p = .031$ .

A stepwise multiple regression predicting Negative life change (remote) from the personality variables and other life change dimensions resulted in a significant association with STAI-A-Trait Anxiety, Positive life change (remote) and Positive life change (recent). A standard multiple regression with these variables resulted in  $R = .47486$ ,  $F(3, 84) = 6.041$ ,  $p = .0009$ , thus accounting for 22.5% of the Negative life change (remote) variance. Of the three predictors, STAI-A-Trait Anxiety was most powerful,  $Beta = .3681$  (Positive life change - recent,  $Beta = -.17509$ ; Positive life change - remote,  $Beta = .2883$ ) accounting for 98% of the predicted Negative life change (remote) variance. R-S, PSI-Discomfort, Dis (SSS V) and STAI-A-State Anxiety (prefilm) did not contribute significant unique variance.



Table 5

## Correlation of Personality Measures with Remote Life Change

	<u>Repression- Sensitization</u>	<u>Sensation-Seeking Scale V</u>				
		TAS	ES	Dis	BS	Total
Remote Positive Change	-.2014*	.0783	.1126	-.0053	.1061	.1193
Remote Negative Change	.2501**	-.0730	.1387	.1749*	.1026	.1377
	<u>Trait Anxiety</u>	<u>Multidimensional Health Locus of Control</u>				
		Internality (IHLC)	Chance (CHLC)	Power (PHLC)		
Remote Positive Change	-.1380	.0458	-.0243	.0642		
Remote Negative Change	.3073***	.0068	.0573	.0008		
	<u>Lanyon PSI Discomfort Scale</u>	<u>State Anxiety</u>				
		Prefilm	Postfilm			
Remote Positive Change	-.1694*	-.1450	-.0868			
Remote Negative Change	.2165**	.1698*	.1825*			

\*p&lt;.05

\*\*p&lt;.01

\*\*\*p&lt;.001

Interrelationship of Recent and  
Remote Life Change

The overall association between the reporting of recent (total) life change and remote (total) life change was nonsignificant,  $r = -.0642$ ,  $t(106) = .656$ ,  $p = .257$ . Scores were separated into positive and negative life change and a correlational analysis was performed. As can be seen in Table 6, Negative life change (remote) is significantly associated with reported Positive life change (recent), Positive life change (remote) and Negative life change (recent). Therefore, subjects reporting more remote negative life change tended to report more recent negative life changes, fewer recent positive life changes and more remote positive life changes. This reporting trend, however, appears to be mediated by, or consistent with, the personality variable of trait anxiety as can be seen by the above mentioned multiple regression results.

Sensation-Seeking as a Moderator Variable

Data analyses similar to those described by Smith et al. (1978) were performed in order to assess the role of Sensation-Seeking as a moderator variable. Subjects scoring above and below the median of Negative life change (recent) and above and below the median of Tendency to Avoid Stimulation (TAS), Experience Seeking (ES), Disinhibition (Dis), Boredom Susceptibility (BS) and SS total (the equivalent of the General Score of SSS IV used by Smith et al.) were assigned to cells of five separate 2 x 2 factorial designs. Scores on the PSI-Discomfort scale (Lanyon) served as the dependent measures.

Table 6

## Intercorrelation of Recent and Remote Life Change

	Positive (Recent)	Negative (Recent)	Positive (Remote)	Negative (Remote)
Positive (Recent)	1.0000			
Negative (Recent)	.0193	1.0000		
Positive (Remote)	- .0701	- .0765	1.0000	
Negative (Remote)	- .1624*	.1823*	.2169*	1.0000

\* $p < .05$ 

No significant main or interaction effects were found in analyses of variance involving TAS, ES, BS and SS total. However, a significant main effect for Disinhibition (Dis) was found,  $F(1, 93) = 6.823$ ,  $p = .011$ , with subjects scoring higher on the Dis scale (less inhibited) having higher scores on the PSI-Discomfort scale than lower scores (see Table 7).

State Anxiety: Prefilm, Postfilm,  
Difference Scores

As can be seen in Table 8, Prefilm State Anxiety (STAI-A-State Prefilm) is significantly correlated with Trait Anxiety (STAI-A-Trait),  $r = .4524$ ,  $t(97) = 4.94$ ,  $p = .000$ ; Repression-Sensitization,  $r = .4570$ ,  $t(97) = 5.05$ ,  $p = .000$ ; Disinhibition,  $r = .1840$ ,  $t(97) = 1.83$ ,  $p = .036$ ; Chance (CHLC),  $r = .2624$ ,  $t(97) = 2.65$ ,  $p = .005$ ; Power (PHLC),  $r = -.1713$ ,  $t(97) = 1.69$ ,  $p = .047$ ; PSI-Discomfort,  $r = .4163$ ,  $t(97) =$



Table 7

Analysis of Variance for Negative Life Change (Recent)  
and the Sensation-Seeking Scale V

Source of Variation	Sum of Squares	df	Mean Square	F	p
Main Effects	114.329	2	57.164	1.879	0.159
Negative Life Change (Recent)	63.938	1	63.938	2.102	0.151
TAS	60.023	1	60.023	1.973	0.164
2-Way Interactions	31.932	1	31.932	1.050	0.308
Explained	146.261	3	48.754	1.603	0.194
Residual	2737.866	90	30.421		
Total	2884.127	93	31.012		
-----					
Main Effects	105.142	2	52.571	1.703	0.188
Negative Life Change (Recent)	72.151	1	72.151	2.337	0.130
ES	50.836	1	50.836	1.640	0.203
2-Way Interactions	.001	1	.001	0.000	0.996
Explained	105.143	3	35.048	1.135	0.339
Residual	2778.984	90	30.878		
Total	2884.127	93	31.012		
-----					
Main Effects	248.736	2	124.368	4.365	0.016
Negative Life Change (Recent)	37.714	1	37.714	1.324	0.253
Dis	194.430	1	194.430	6.823	0.011
2-Way Interactions	70.914	1	70.914	2.489	0.188
Explained	319.650	3	106.550	3.739	0.014
Residual	2564.478	90	28.494		
Total	2884.127	93	31.012		
-----					

Table 7--Continued

Source of Variation	Sum of Squares	df	Mean Square	F	p
Main Effects	62.116	2	31.058	0.995	0.374
Negative Life Change (Recent)	50.737	1	50.737	1.625	0.206
BS	7.810	1	7.810	0.250	0.618
2-Way Interactions	11.833	1	11.833	0.379	0.540
Explained	73.949	3	24.650	0.789	0.503
Residual	2810.178	90	31.224		
Total	2884.127	93	31.012		
-----					
Main Effects	57.975	2	28.988	0.969	0.383
Negative Life Change (Recent)	51.494	1	51.494	1.721	0.193
SSS V (Total)	1.983	1	1.983	0.066	0.797
2-Way Interactions	63.202	1	63.202	2.112	0.150
Explained	121.177	3	40.392	1.350	
Residual	2783.308	93	29.928		
Total	2904.485	96	30.255		

4.46,  $p = .000$ ; Negative life change (recent),  $r = .2887$ ,  $t(97) = 2.94$ ,  $p = .002$ ; and Negative life change (remote),  $r = .1698$ ,  $t(97) = 1.68$ ,  $p = .048$ . A stepwise multiple regression predicting State Anxiety (Prefilm) from the personality and life change variables resulted in a significant association with Repression-Sensitization and Power (MHLC). A standard multiple regression with those variables resulted in  $R = .52085$ ,  $F(2, 85) = 15.821$ ,  $p = .000001$ , thus accounting for 27.1% of the State Anxiety variance. Of the two predictors, R-S was the more

powerful,  $\beta = .5015$  (vs. Power [MHL] where  $\beta = -.2108$ ), accounting for 83.8% of the predicted State Anxiety variance.

Postfilm State Anxiety (STAI-A-State Postfilm) was significantly associated with Trait Anxiety (STAI-A-Trait),  $r = .3328$ ,  $t(94) = 3.38$ ,  $p = .001$ . Repression-Sensitization,  $r = .3349$ ,  $t(94) = 3.41$ ,  $p = .000$ ; Chance (CHLC),  $r = .2678$ ,  $t(94) = 2.57$ ,  $p = .005$ ; PSI-Discomfort,  $r = .3268$ ,  $t(94) = 3.32$ ,  $p = .001$ ; and Negative life change (remote),  $r = .1825$ ,  $t(94) = 1.81$ ,  $p = .039$ . A stepwise multiple regression predicting Postfilm State Anxiety from the life change and personality variables resulted in a significant association with only Repression-Sensitization,  $R = .33493$ ,  $F(1, 92) = 11.6241$ ,  $p = .00097$ . Thus, R-S accounts for 11.2% of the Postfilm State Anxiety variance.

As can be seen in Table 8, only the Power subscale of the MHL is significantly correlated with the change in anxiety (Pre-Post STAI-A-State),  $r = -.1963$ ,  $t(94) = 1.92$ ,  $p = .029$ . Thus, as belief in the ability of powerful others increased (external locus of control), so did the subject's anxiety response to the stress film. It should be noted, however, that only 3.89% of the anxiety change variance was accounted for.

#### Overall Relationship Between Personality/Life Change and Skin Conductance

Log transformed skin conductance maxima, as recommended by Lazarus et al. (1962), was recorded for each 10 second interval during the 3 minute baseline and 12.6 minute film. Preliminary data analyses resulted in high skin conductance intercorrelations--skin conductance correlated in the .90-.99 range between the three accidents and in the



Table 8

Correlations of State Anxiety (Pre, Post, Difference)  
with Personality Variables and Life Changes

	Repression			Sensation-Seeking V			
	Trait Anxiety	Sensitization					
			TAS	ES	Dis	BS	Total
State Anxiety	.4524***	.4570***	.0118	.0571	.1840*	.1085	.1564
State Anxiety (Post)	.3328***	.3349***	-.0530	.0464	.0107	.0942	.0094
Difference	.0312	.0324	.0762	.1350	.1610	-.0333	.1366
	Multidimensional Health Locus of Control			Lanyon PSI Discomfort Scale			
	IHLC	CHLC	PHLC				
State Anxiety (Pre)	-.0983	.2624**	-.1713*		.4163***		
State Anxiety (Post)	-.0234	.2678**	.0471		.3268***		
Difference	-.0563	-.0532	-.1963*		-.0087		
	Recent Life Change			Remote Life Change			
	Positive	Negative		Positive	Negative		
State Anxiety (Pre)	-.1495	.2887**		-.1450	.1698*		
State Anxiety (Post)	-.0731	.1478		-.0868	.1825*		
Difference	-.0298	.0861		-.0445	-.0313		

\*p&lt;.05

\*\*p&lt;.01

\*\*\*p&lt;.001

.70-.80 range throughout the film. In order to increase discriminant validity of skin conductance intervals, a T score transformation (within subjects) was performed. Thus, skin conductance analyses were performed on the T transformed data summarized on Table 9.

In order to assess the interrelationship between the skin conductance data and the various personality measures/life change measures, canonical correlation analyses were performed. The canonical correlation between the personality/life change measures and all skin conductance trials could not be performed since the number of variables exceeded the number of subjects. Therefore, a canonical correlation was performed on a smaller subset of skin conductance trials (every other trial, thus 18 skin conductance trials) with the personality/life change variables. The canonical correlation was not significant,  $R = .88513$ ,  $\chi^2(629) = 636.455$ ,  $p = .410$ . Another subset of skin conductance trials 30 seconds before and after each of the three accidents was selected. Again the canonical correlation was not significant,  $R = .71288$ ,  $\chi^2(357) = 298.34$ ,  $p = .989$ .

Difference scores were also calculated for skin conductance trials (e.g., T score log transformed skin conductance from interval 2 minus interval 1). The canonical correlation for the difference score skin conductance accident subset and the personality/life change variables was not significant,  $R = .5322$ ,  $\chi^2(357) = 307.55$ ,  $p = .972$ .

#### Specific Relationships Between Personality/Life Change Measures and Skin Conductance

Since the canonical correlation analyses did not demonstrate an overall relationship between personality/life change variables and skin

Table 9

Means and Standard Deviations of T Transformed Skin  
Conductance for Each 10 Second Interval

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
M	49.18	49.93	50.79	51.39	50.92	49.68	48.86	47.99	48.60	47.24
SD	14.03	13.44	10.83	10.21	9.87	8.75	7.92	7.32	7.65	7.53
	<u>11</u>	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>18</u>	<u>19</u>	<u>20*</u>
M	46.24	46.59	46.42	46.72	47.99	46.68	48.34	46.84	49.13	56.23
SD	6.79	7.09	7.06	7.36	6.88	7.25	6.52	6.46	7.47	7.21
	<u>21</u>	<u>22</u>	<u>23</u>	<u>24</u>	<u>25</u>	<u>26</u>	<u>27</u>	<u>28</u>	<u>29</u>	<u>30</u>
M	57.58	54.17	52.48	50.90	50.31	49.29	47.47	46.22	45.82	44.45
SD	7.16	8.49	7.91	7.74	7.37	7.56	7.28	6.38	6.32	6.05
	<u>31</u>	<u>32</u>	<u>33</u>	<u>34</u>	<u>35</u>	<u>36</u>	<u>37</u>	<u>38</u>	<u>39</u>	<u>40</u>
M	43.70	42.42	43.62	43.09	42.93	43.12	43.84	42.98	43.47	44.55
SD	5.96	5.41	7.56	6.60	6.26	7.46	8.38	7.38	7.35	7.37
	<u>41</u>	<u>42</u>	<u>43</u>	<u>44</u>	<u>45</u>	<u>46</u>	<u>47</u>	<u>48</u>	<u>49</u>	<u>50</u>
M	43.55	43.93	42.95	42.33	41.62	40.94	40.40	41.74	43.26	45.08
SD	5.86	6.27	6.31	5.79	6.24	6.40	7.59	8.74	10.87	10.59
	<u>51</u>	<u>52*</u>	<u>53</u>	<u>54</u>	<u>55</u>	<u>56</u>	<u>57</u>	<u>58</u>	<u>59</u>	<u>60</u>
M	49.29	60.96	65.03	60.49	58.26	56.12	55.06	53.77	51.98	51.14
SD	10.57	10.17	9.50	8.04	7.00	7.07	6.83	6.81	6.68	7.16
	<u>61</u>	<u>62</u>	<u>63</u>	<u>64</u>	<u>65</u>	<u>66</u>	<u>67</u>	<u>68*</u>	<u>69</u>	<u>70</u>
M	54.15	54.53	53.32	53.90	55.37	58.13	60.20	63.00	61.82	58.73
SD	8.54	8.82	8.86	9.17	9.31	8.45	8.13	8.02	7.96	7.44
	<u>71</u>	<u>72</u>	<u>73</u>	<u>74</u>	<u>75</u>	<u>76</u>				
M	56.49	56.11	54.62	54.08	52.94	51.22				
SD	7.89	7.82	8.37	8.52	8.95	10.24				

\*Occurrence of accident



conductance, the simple correlation matrix was examined for possible specific relationships between a given measure and skin conductance results. It should be noted that 76 skin conductance intervals were correlated with each life change/personality variable and that four significant correlations would occur by chance at alpha equal to .05. Although T score transformation greatly reduced skin conductance inter-correlation ( $r = 0.0$  to  $.25$  range), the skin conductance measures were not independent tests, therefore increasing the expected number of significant correlations. Therefore, extreme caution must be exercised in interpreting these results, and any conclusions must be viewed as highly tentative.

Negative life change (remote) was significantly correlated with the skin conductance intervals summarized in Appendix F.

During the early portions of the film, greater negative life change (remote) was associated, at specific intervals, with higher skin conductance. During the recovery phase of accident 1 (intervals 22 and 23), greater negative life change (remote) was associated with higher skin conductance (perhaps slower recovery). About one minute before the occurrence of accident 3 (intervals 59 and 60), the associations between negative life change (remote) and skin conductance reversed--greater negative life change was associated with lower skin conductance. This relationship disappeared during the anticipation and impact of accident 3, but reappeared during the recovery of accident 3 (intervals 70 and 71). Thus, during the recovery from accident 3 (interestingly at exactly the same time intervals from impact as the recovery from

accident 1), subjects reporting great negative life change (remote) tended to have lower skin conductance.

Positive life change (recent) was significantly correlated with the skin conductance intervals summarized in Appendix F. Higher skin conductance and more reported positive life change (recent) were significantly associated in a single interval (interval 22) during the recovery from accident 1. However, during the anticipation and impact of accident 3 (intervals 64, 65, 67, 68, 69) greater positive life change (recent) was significantly associated with lower skin conductance. During recovery (intervals 70, 71, 72) this relationship did not exist,  $r = -.0041$ ,  $t(86) = .031$ ,  $p = .49$ ;  $r = -.0641$ ,  $t(86) = .58$ ,  $p = .27$ ;  $r = -.0736$ ,  $t(86) = .67$ ,  $p = .25$ .

The Internal subscale of the MHLC was significantly correlated with the skin conductance intervals summarized in Appendix F. Internals tended to have lower skin conductance in the early portions of the film (prior to accident 1), but, between accidents 2 and 3, internals tended to have higher skin conductance than externals.

Post film state anxiety was significantly correlated with the skin conductance intervals summarized in Appendix F. Subjects reporting higher post film state anxiety tended to exhibit lower skin conductance during the initial portion of the movie (prior to accident 1). Between accidents 1 and 2 (intervals 25 and 26) greater state anxiety was significantly associated with higher skin conductance. Finally, during the last 30 seconds of the film (intervals 74, 75, 76) greater post film state anxiety was significantly associated with higher skin conductance. Thus, subjects reporting more post film state anxiety tended to exhibit



lower skin conductance initially but were at a higher state of arousal at the very end of the film. Interestingly, post film state anxiety was the only measure significantly associated with skin conductance at the very end of the film.

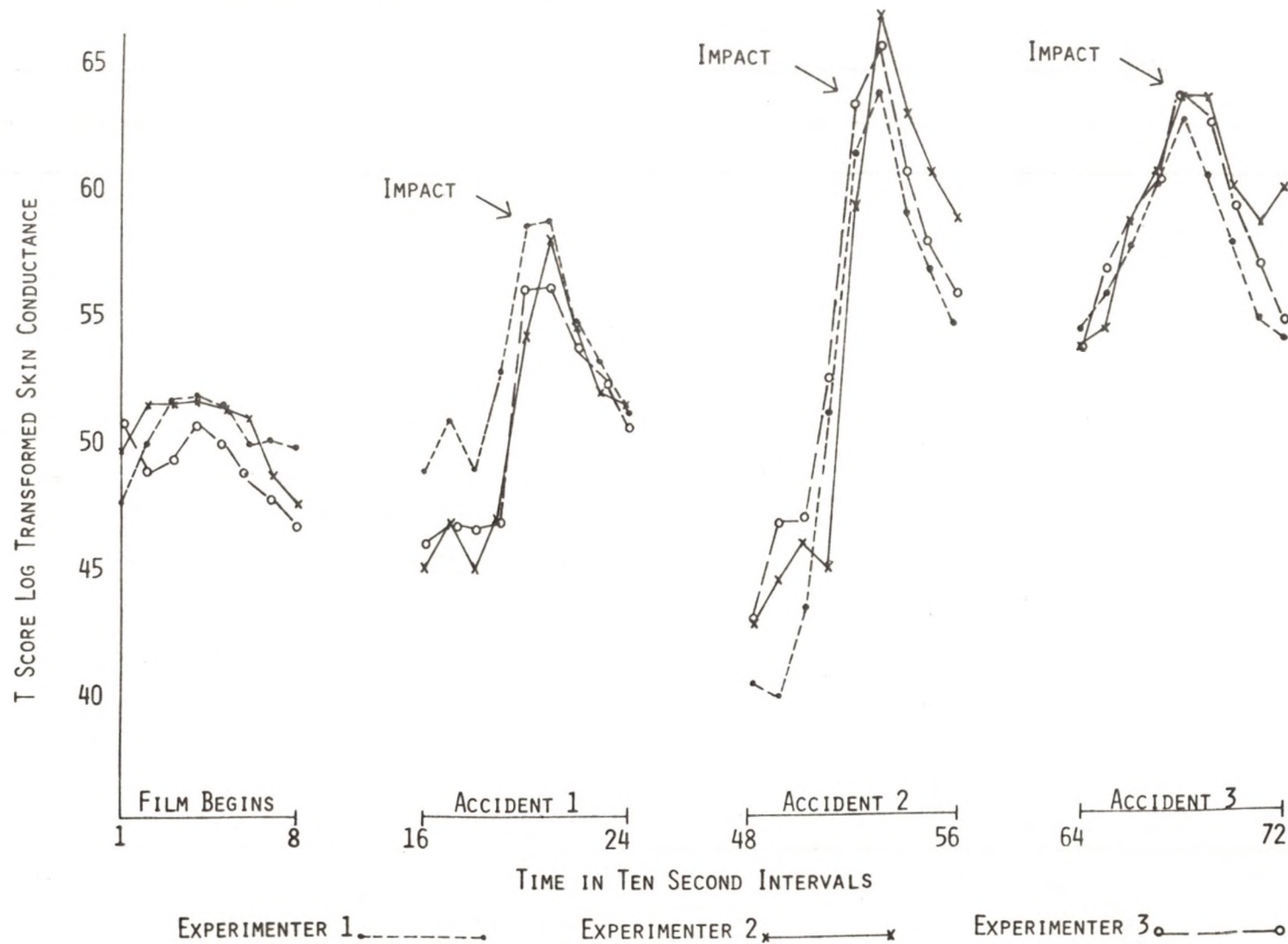
Skin Conductance Response to Film:  
Experimenter Effects

In order to assess experimenter effects upon skin conductance responses to the stressful film, a discriminant function analysis (SPSS "Discriminant", Tatsuoka, 1971) was employed. On the basis of all 76 skin conductance trials, the three experimenters were successfully differentiated,  $R = .9719$ ,  $\Lambda = .0087$ ,  $\chi^2(152) = 225.06$ ,  $p = .0001$ . Experimenter group membership was correctly classified for 100% of the cases on the basis of all skin conductance trials.

A second discriminant function analysis was performed in order to assess how well the experimenters could be differentiated on the basis of only accident skin conductance trials (intervals 17 through 23, 47 through 55, and 65 through 71--see Figure 1). The three experimenters were successfully differentiated, although less powerfully, on the basis of accident skin conductance trials,  $R = .6353$ ,  $\Lambda = .4416$ ,  $\chi^2(42) = 61.29$ ,  $p = .0275$ . Experimenter group membership was correctly classified for 68% of the cases on the basis of the accident skin conductance trials. Visual inspection of Figure 1 suggests greatest discriminant validity may come from accident 1 skin conductance only. Therefore, separate discriminant function analyses were performed for each accident.



Figure 1. Comparison by experimenter groups of T score log transformed skin conductance responses to stressful film.



Surprisingly, the greatest discrimination occurred across accident 2, wherein the three experimenters were significantly discerned,  $\underline{R} = .510$ ,  $\text{Lambda} = .6815$ ,  $\chi^2(14) = 31.45$ ,  $\underline{p} = .0048$ . In addition, experimenters were successfully discriminated, although less powerfully, across accident 1,  $\underline{R} = .394$ ,  $\text{Lambda} = .738$ ,  $\chi^2(14) = 25.61$ ,  $\underline{p} = .029$ . Experimenters were not successfully discriminated across accident 3,  $\underline{R} = .309$ ,  $\text{Lambda} = .894$ ,  $\chi^2(14) = 9.18$ ,  $\underline{p} = .819$ .

In order to insure that the above mentioned results were not confounded by differences in experimenter groups on the basis of personality and life change measures, a series of one-way ANOVAs was performed. As can be seen in Table 10, experimenter groups do not differ significantly on any of the life change and personality measures employed.

Skin Conductance Response to  
Film: Dominance Effects

In order to assess dominance effects upon skin conductance responses to the stressful film, a discriminant function analysis was performed. On the basis of all 76 skin conductance trials, dominant and nondominant hand were successfully differentiated,  $\underline{R} = .9400$ ,  $\text{Lambda} = .1162$ ,  $\chi^2(76) = 103.31$ ,  $\underline{p} = .020$ . Dominant versus nondominant group membership was correctly classified for 97.7% of the cases on the basis of all skin conductance trials.

A second discriminant function analysis was performed in order to assess how well dominance could be differentiated on the basis of only accident skin conductance trials. Dominance was not significantly differentiated on the basis of only accident skin conductance trials,  $\underline{R} = .4675$ ,  $\text{Lambda} = .7815$ ,  $\chi^2(21) = 18.62$ ,  $\underline{p} = .610$ .

Table 10

## One Way Analysis of Variance: Life Change/Personality Measures by Experimenter Groups

Positive Life Change (Recent) by Experimenter					Negative Life Change (Recent) by Experimenter				
	<u>df</u>	<u>Sum of Squares</u>	<u>M.S.</u>	<u>F</u>		<u>df</u>	<u>Sum of Squares</u>	<u>M.S.</u>	<u>F</u>
Between Groups	2	114.98	57.49	1.073	Between Groups	2	53.40	26.82	.500
Within Groups	85	4554.10			Within Groups	85	4540.33	53.42	
Total	87	4669.08	111.06		Total	87	4593.73	80.14	
Positive Life Change (Remote) by Experimenter					Negative Life Change (Remote) by Experimenter				
	<u>df</u>	<u>Sum of Squares</u>	<u>M.S.</u>	<u>F</u>		<u>df</u>	<u>Sum of Squares</u>	<u>M.S.</u>	<u>F</u>
Between Groups	2	6.84	3.42	.140	Between Groups	2	24.64	12.32	.570
Within Groups	85	2072.23	24.38		Within Groups	85	1837.13	21.61	
Total	87	2079.07	27.80		Total	87	1861.77	33.93	
Repression-Sensitization by Experimenter					Sensation-Seeking Scale V by Experimenter				
	<u>df</u>	<u>Sum of Squares</u>	<u>M.S.</u>	<u>F</u>		<u>df</u>	<u>Sum of Squares</u>	<u>M.S.</u>	<u>F</u>
Between Groups	2	122.09	61.04	.152	Between Groups	2	31.86	15.93	.610
Within Groups	85	34132.23	401.56		Within Groups	85	2204.09	25.93	
Total	87	34254.32	462.60		Total	87	2235.95	41.86	



Table 10--Continued

Trait Anxiety by Experimenter					IHLC by Experimenter				
	df	Sum of Squares	M.S.	F		df	Sum of Squares	M.S.	F
Between Groups	2	76.96	38.48	.414 n.s.	Between Groups	2	12.63	6.31	.303 n.s.
Within Groups	85	7897.91	92.92		Within Groups	85	1970.27	20.83	
Total	87	7974.87	131.40		Total	87	1982.90	27.14	
PHLC by Experimenter					CHLC by Experimenter				
	df	Sum of Squares	M.S.	F		df	Sum of Squares	M.S.	F
Between Groups	2	24.53	12.26	.587 n.s.	Between Groups	2	47.35	23.68	.980 n.s.
Within Groups	85	1775.56	20.89		Within Groups	85	2052.73	47.35	
Total	87	1800.09	33.15		Total	87	2100.08	71.03	
PSI Discomfort by Experimenter					State Anxiety (Prefilm) by Experimenter				
	df	Sum of Squares	M.S.	F		df	Sum of Squares	M.S.	F
Between Groups	2	8.50	4.25	.134 n.s.	Between Groups	2	27.07	13.53	.165 n.s.
Within Groups	85	2693.08	31.68		Within Groups	85	6956.75	81.84	
Total	87	2701.58	35.93		Total	87	6983.82	95.37	
State Anxiety (Postfilm) by Experimenter									
	df	Sum of Squares	M.S.	F					
Between Groups	2	257.17	128.58	.398 n.s.					
Within Groups	85	11729.92	222.51						
Total	87	11987.09	351.09						

## CHAPTER IV

### DISCUSSION

Results of the present study demonstrated significant relationship between reported life change and several personality measures.

Greater boredom susceptibility, as measured by the BS subscale of the SSS V, was associated with fewer positive life changes (recent). Thus, an aversion for routine, repetitive experiences, a restless reaction when things are unchanging and a dislike for dull, predictable people may be associated with a reluctance to endorse positive life change items. Alternatively, the paucity of positive life changes within the past year may result in a transient increase in boredom susceptibility. The later interpretation seems more viable in that the BS, positive life change relationship did not emerge for positive life change occurring more than one year ago (remote). It should be noted, however, that Boredom Susceptibility accounted for only 6.7% of the positive life change (recent) variance.

Negative life change (recent) was associated with the following measures: Repression-Sensitization, STAI-A-Trait and State, the Lanyon PSI Discomfort Scale and the Chance subscale of the MHLC. However, these measures were highly intercorrelated such that subjects who tended to be sensitizers reported greater trait anxiety, less control over their physical health, greater psychological discomfort and greater

state anxiety. Multiple regression analysis revealed that R-S accounts for a significant but modest portion (11.6%) of the negative life change variance and that State and Trait Anxiety, MHLC and Psychological Discomfort do not contribute unique variance. It would be specious to interpret this relationship only in R-S terms, even though the obtained relationship is quite consistent with results of a previous study (Boriskin, 1977).

R-S, it would appear, did not have the unique and robust attributes suggested by many authors (see Bell & Byrne, 1978). R-S may in fact be another anxiety measure. Abbott (1972) and Golin, Herron, Lakota and Reineck (1967) obtained high correlations between R-S and the Taylor Manifest Anxiety Scale. Bell and Byrne (1978), however, suggested that these findings were "measurement artifacts", due in part to 29 overlapping items. In the present study, the Spielberger et al. (1970) STAI scale was employed, and the obtained correlation was sufficiently high to seriously question the meaning of the R-S scale. Similarly, the meaning of the Lanyon PSI Discomfort Scale must be questioned.

It would appear that the above mentioned personality scales may be in fact measuring much the same personality dimension. Lykken, Tellegen and Katzenmeyer (1973) suggested that the published scales purporting to measure "Trait Anxiety," "Anxiety Factor" or "Manifest Anxiety" are in reality measures of "Neuroticism," whether in the form of Eysenck's "N," Block's "Ego Resiliency" or the ubiquitous first factor of the MMPI. "The other scales mentioned all measure Neuroticism, an important dimension, to be sure, but one which has spawned a larger number of competing yardsticks than any other psychological factor with



the possible exception of general intelligence" (Lykken et al., 1973, p. 21). Neuroticism, in part, was defined as the tendency to employ mainly undesirable adjectives in describing oneself. Thus, subjects scoring high on the Neuroticism dimension tend to endorse items with an undesirable, "sick" or self-critical connotation. Endorsement of more negative life change (recent) may simply be a function of this "Neurotic" tendency.

Results obtained in the remote life change dimension lend further credence to this notion. Positive life change (remote) was negatively correlated with R-S and PSI Discomfort. Multiple regression analysis demonstrated that R-S accounts for a significant but small portion of the negative life change variance, and that PSI Discomfort adds little unique variance. Thus, sensitizers, or subjects higher on the Neuroticism dimension, tended to report fewer positive life changes (remote).

Negative life change (remote) was also significantly associated with the Neuroticism measures (e.g., R-S, Lanyon PSI Discomfort and STAI-A-Trait and State). Multiple regression analysis resulted in Trait Anxiety as the most powerful predictor, with the other measures not contributing unique variance. Thus, subjects higher on the Neuroticism dimension, or having a greater tendency for self depreciation, tended to endorse significantly more negative life change (remote) items. Further, higher negative life change (remote) was associated with fewer reported positive life changes (recent and remote). The multiple regression with Trait Anxiety and positive life change (recent and remote) accounted for 22.5% of the negative life change (remote) variance.

Therefore, greater negative life change appears to be associated with a tendency toward self criticism and admission of more "neurotic" symptoms as well as a tendency to endorse fewer positive life events.

Thus, reported life change may in fact be mediated by the personality variable/dimension of Neuroticism. This presents a serious challenge to previously obtained results with life change measures. As such, the reported correlations between life change and subsequent physical illness may simply reflect a greater tendency to report, endorse or recognize ill health. Similarly, the reported relationship between negative life change and psychological problems may be a function of the same tendency. As such, we must endeavor to reinterpret previous research as well as take into account for future research the personality component of reported life change.

The Smith et al. (1978) contention that Sensation-Seeking is a moderator variable for negative life change was not supported by the present study. Not only did the current study fail to replicate their results, the above mentioned Neuroticism dimension raises serious doubt as to whether Psychological Discomfort, as measured by the Lanyon PSI, was an appropriate dependent measure.

In terms of the self-reported effects of the stressful film, pre and post state anxiety were not surprisingly, significantly associated with R-S, Trait Anxiety, Psychological Discomfort, or alternatively, the self-deprecatory Neuroticism dimension. Change in reported anxiety (Pre-Post STAI-A-State Anxiety) was significantly associated with the Power subscale of the MHLC. Thus, subjects with greater belief in powerful others (external locus of control) tended to report a greater



anxiety response to the film. It is possible that subjects with greater dependence upon powerful others to maintain their physical/psychological integrity were more disrupted, independent of the Neuroticism dimension, by a stressor. As such, external locus of control, in this specific realm, may have mediated self reported effects of a stressful experience. It should be noted, however, that only 3.9% of the anxiety change variance was accounted for by the Power subscale.

In regard to the physiological measures of stress responsivity, an overall relationship between the personality/life change measures and skin conductance was not found. The canonical correlation for the accident subset of skin conductance trials and the personality/life change measures failed to reach significance. Similarly, the canonical correlation with a larger subset of skin conductance trials was not significant.

Skin conductance responses were significantly associated with specific measures at specific times during the film. As noted earlier, these results must be evaluated conservatively since they are based upon post hoc comparisons across 76 skin conductance intervals. During several intervals early in the film, greater negative life change (remote) was associated with higher skin conductance. During the recovery phase of accident 1, greater negative life change (remote) was associated with higher skin conductance. This relationship disappeared immediately thereafter and did not appear during or after accident 2. Interestingly, just before accident 3 the relationship between negative life change (remote) and skin conductance reversed--greater negative life change (remote) was associated with lower skin conductance. This relationship



occurred once again during the recovery from accident 3. It is possible that more cumulative negative life experience induced higher arousal to the benign and mildly aversive sequences of the film (early part of the film and recovery from accident 1) but resulted in lower autonomic arousal, and perhaps quicker recovery, from the most aversive sequence. Thus, greater negative life change may sensitize subjects to impending threat, resulting in increased arousal or preparedness for duress and slower recovery from a lesser stress (accident 1). More negative life change may then result in better coping with more noxious stimuli, perhaps a function of specific cognitions and/or defensive strategies. However, extreme caution must be exercised in interpreting these results for reasons noted above as well as the fact that a maximum of only 6.2% of the variance was accounted for.

Positive life change (recent) was the only other life change dimension correlated with skin conductance response to the stressor. Subjects reporting more positive life change (recent) tended to exhibit lower skin conductance during the anticipation and impact of the most stressful sequence. A possible consequence of more positive life events may be a reluctance to acknowledge, or the tendency to deny, a stressful stimulus. Subsequent recovery from the stressful stimulus did not, however, seem to be affected. Once again, we must attend to the fact that despite their significance, these correlations accounted for very little variance.

During the initial portion of the film, subjects reporting higher post film state anxiety tended to exhibit lower skin conductance. After the first accident, and at the very end of the film, high state

anxious subjects had higher skin conductance. Therefore, the autonomic state of arousal at the very end of the film may have influenced subjects' self reported levels of anxiety--greater arousal resulting in more state anxiety. Alternatively, the increased level of perceived anxiety by the end of the film, or perhaps the expectation of an unannounced stressor, may have resulted in the observed physiological changes.

It is noteworthy that several of the personality variables employed did not significantly correlate with autonomic responses to the stressful stimuli. The R-S, Trait Anxiety and Psychological Discomfort variables were not associated with skin conductance responses in the present sample. This, however, is consistent with the Lykken et al. (1973) contention that Neuroticism is not a significant predictor of autonomic responsivity to stress.

The Zuckerman et al. (1978) Sensation-Seeking Scale also failed to predict physiological responsivity to the film. The Sensation-Seeking dimension did not, at least in the current study, appear to have predictive validity in a lab-induced stress situation. Therefore, "optimal level of stimulation" may more appropriately be stated as "preferred optimal level of stimulation," since this personality dimension, as measured by the SSS V, did not appear to have a psychophysiological substrate. Further investigation, particularly with a wider range of sensation seeking than represented in the present sample, seems warranted.

Surprisingly, despite rigorous attempts for consistency, the experimenter variable had a very powerful effect upon subjects' psychophysiological response to the experiment. On the basis of skin



conductance, the three experimenters were successfully discriminated across two of the three accidents and even more powerfully during the entire length of the experiment. The operant variable is impossible to determine, but it is clear that subtle differences between individuals greatly affected subjects' skin conductance. Experimenter effects have not, heretofore, been documented in this particular experimental paradigm (e.g., film-induced stress induction).

In addition, experimenter bias, even with a single experimenter, must be considered a possible uncontrolled variable in this type of psychophysiological research. Experimenter bias may therefore be one of the variables contributing to the inconsistency in the personality-psychophysiological studies cited earlier. Finally, Lazarus' notion of "cognitive appraisal" may have more subtle concomitants (e.g., inter-experimenter and intraexperimenter biases) than previously suspected. Clearly, more research is in order.

Perhaps the most important contribution of the present study is a heightened awareness of the complexity involved in research of this nature. Measuring life change is not a simple, objective endeavor. Neuroticism is a variable which stimulates many serious questions and is worthy of serious attention for future research.

Whereas the personality variables employed were not predictive of physiological responsivity to a stress, several life change variables were associated with autonomic arousal at specific intervals. Whether this is a replicable finding, generalizable to more stressed populations, remains to be seen. Actually, college student subjects yield a restricted range, so nonsignificance and small correlation coefficients



may be misleading. It is entirely possible that the above mentioned relationships would be more powerful in a heterogeneous population. Finally, the powerful and specific experimenter effect presents a challenge to previous research and demands closer scrutiny in the planning of future research.

While the present study stimulates more questions than provides definitive answers, a new direction in life stress research was initiated. The integration of life change variables, personality variables and physiological responsivity with an actual stress is a first and necessary step in unravelling the complex concomitants of life change.

## APPENDIX A

### THE LIFE EXPERIENCES SURVEY

Name: \_\_\_\_\_ Age: \_\_\_\_\_  
Subject Number: \_\_\_\_\_ Marital Status: \_\_\_\_\_  
Telephone Number: \_\_\_\_\_ Educational Status: \_\_\_\_\_  
Discussion Section Instructor: \_\_\_\_\_ GPA: \_\_\_\_\_

Following are a number of events which sometimes bring about change in the lives of those who experience them and which necessitate social readjustment. Please check those events which you have experienced and indicate the time period (within 1 year; beyond 1 year) during which you have experienced each event. Be sure that all check marks are directly across from the items they correspond to.

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

Section 1

	occurred within 1 year	occurred more than 1 year ago	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
1. Marriage			-3	-2	-1	0	+1	+2	+3
2. Detention in jail or comparable institution			-3	-2	-1	0	+1	+2	+3
3. Death of spouse			-3	-2	-1	0	+1	+2	+3
4. Major change in sleeping habits (much more or much less sleep)			-3	-2	-1	0	+1	+2	+3
5. Death of close family member:									
a. mother			-3	-2	-1	0	+1	+2	+3
b. father			-3	-2	-1	0	+1	+2	+3
c. brother			-3	-2	-1	0	+1	+2	+3
d. sister			-3	-2	-1	0	+1	+2	+3
e. grandmother			-3	-2	-1	0	+1	+2	+3
f. grandfather			-3	-2	-1	0	+1	+2	+3
g. other (specify)			-3	-2	-1	0	+1	+2	+3
6. Major change in eating habits (much more or much less food intake)			-3	-2	-1	0	+1	+2	+3
7. Foreclosure on mortgage or loan			-3	-2	-1	0	+1	+2	+3
8. Death of close friend			-3	-2	-1	0	+1	+2	+3
9. Outstanding personal achievement			-3	-2	-1	0	+1	+2	+3
10. Minor law violations (traffic tickets, disturbing the peace, etc.)			-3	-2	-1	0	+1	+2	+3



Section 1

	occurred within 1 year	occurred more than 1 year ago	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
11. <u>Male:</u> Wife/girlfriend's pregnancy			-3	-2	-1	0	+1	+2	+3
12. <u>Female:</u> Pregnancy			-3	-2	-1	0	+1	+2	+3
13. Changed work situation (different work responsibility, major change in working conditions, working hours, etc.)			-3	-2	-1	0	+1	+2	+3
14. New job			-3	-2	-1	0	+1	+2	+3
15. Serious illness or injury of close family member:									
a. father			-3	-2	-1	0	+1	+2	+3
b. mother			-3	-2	-1	0	+1	+2	+3
c. sister			-3	-2	-1	0	+1	+2	+3
d. brother			-3	-2	-1	0	+1	+2	+3
e. grandfather			-3	-2	-1	0	+1	+2	+3
f. grandmother			-3	-2	-1	0	+1	+2	+3
g. spouse			-3	-2	-1	0	+1	+2	+3
h. other (specify)			-3	-2	-1	0	+1	+2	+3
16. Sexual difficulties			-3	-2	-1	0	+1	+2	+3
17. Trouble with employer (in danger of losing job, being suspended, demoted, etc.)			-3	-2	-1	0	+1	+2	+3
18. Trouble with in-laws			-3	-2	-1	0	+1	+2	+3
19. Major change in financial status (a lot better off or a lot worse off)			-3	-2	-1	0	+1	+2	+3

Section 1

	occurred within 1 year	occurred more than 1 year ago	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
20. Major change in closeness of family members (increased or decreased closeness)			-3	-2	-1	0	+1	+2	+3
21. Gaining a new family member (through birth, adoption, family member moving in, etc.)			-3	-2	-1	0	+1	+2	+3
22. Change of residence			-3	-2	-1	0	+1	+2	+3
23. Marital separation from mate (due to conflict)			-3	-2	-1	0	+1	+2	+3
24. Major change in church activities (increased or decreased attendance)			-3	-2	-1	0	+1	+2	+3
25. Marital reconciliation with mate			-3	-2	-1	0	+1	+2	+3
26. Major change in number of arguments with spouse (a lot more or a lot less arguments)			-3	-2	-1	0	+1	+2	+3
27. <u>Married male:</u> Change in wife's work outside the home (beginning work, ceasing work, changing to a new job, etc.)			-3	-2	-1	0	+1	+2	+3
28. <u>Married female:</u> Change in husband's work (loss of job, beginning new job, retirement, etc.)			-3	-2	-1	0	+1	+2	+3
29. Major change in usual type and/or amount of recreation			-3	-2	-1	0	+1	+2	+3
30. Borrowing more than \$10,000 (buying home, business, etc.)			-3	-2	-1	0	+1	+2	+3

Section 1

	occurred within 1 year	occurred more than 1 year ago	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
31. Borrowing less than \$10,000 (buying car, TV, getting school loan, etc.)			-3	-2	-1	0	+1	+2	+3
32. Being fired from job			-3	-2	-1	0	+1	+2	+3
33. <u>Male:</u> Wife/girlfriend having abortion			-3	-2	-1	0	+1	+2	+3
34. <u>Female:</u> Having abortion			-3	-2	-1	0	+1	+2	+3
35. Major personal illness or injury			-3	-2	-1	0	+1	+2	+3
36. Major change in social activities, e.g., parties, movies, visiting (increased or decreased participation)			-3	-2	-1	0	+1	+2	+3
37. Major change in living conditions of family (building new home, remodeling, deterioration of home, neighborhood, etc.)			-3	-2	-1	0	+1	+2	+3
38. Divorce			-3	-2	-1	0	+1	+2	+3
39. Serious injury or illness of close friend			-3	-2	-1	0	+1	+2	+3
40. Retirement from work			-3	-2	-1	0	+1	+2	+3
41. Son or daughter leaving home (due to marriage, college, etc.)			-3	-2	-1	0	+1	+2	+3
42. Ending of formal schooling			-3	-2	-1	0	+1	+2	+3
43. Separation from spouse (due to work, travel, etc.)			-3	-2	-1	0	+1	+2	+3
44. Engagement			-3	-2	-1	0	+1	+2	+3



Section 1

	occurred within 1 year	occurred more than 1 year ago	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
45. Breaking up with boyfriend/girlfriend			-3	-2	-1	0	+1	+2	+3
46. Leaving home for the first time			-3	-2	-1	0	+1	+2	+3
47. Reconciliation with boyfriend/girlfriend			-3	-2	-1	0	+1	+2	+3
<u>Other recent experiences which have had an impact on your life. List and rate.</u>									
48. _____			-3	-2	-1	0	+1	+2	+3
49. _____			-3	-2	-1	0	+1	+2	+3
50. _____			-3	-2	-1	0	+1	+2	+3

75

Section 2: Student Only

51. Beginning a new school experience at a higher academic level (college, graduate school, professional school, etc.)			-3	-2	-1	0	+1	+2	+3
52. Changing to a new school at same academic level (undergraduate, graduate, etc.)			-3	-2	-1	0	+1	+2	+3
53. Academic probation			-3	-2	-1	0	+1	+2	+3
54. Being dismissed from dormitory or other residence			-3	-2	-1	0	+1	+2	+3
55. Failing an important exam			-3	-2	-1	0	+1	+2	+3

## Section 2

	occurred within 1 year	occurred more than 1 year ago	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
56. Changing a major			-3	-2	-1	0	+1	+2	+3
57. Failing a course			-3	-2	-1	0	+1	+2	+3
58. Dropping a course			-3	-2	-1	0	+1	+2	+3
59. Joining a fraternity/sorority			-3	-2	-1	0	+1	+2	+3
60. Financial problems concerning school (in danger of not having sufficient money to continue)			-3	-2	-1	0	+1	+2	+3

## APPENDIX B

### THE LANYON PSI SUBSCALE

Name: \_\_\_\_\_

Subject Number: \_\_\_\_\_

The following questions are to be answered True or False.

Please indicate your response to all 30 questions on the computer answer sheet: 1 = True; 2 = False. Please respond to all items as honestly as possible.

1. I am often tired during the day.
2. I am usually happy.
3. I forget things more quickly nowadays.
4. I don't get sick very often.
5. I am tempted to sleep too much.
6. Occasionally I feel dizzy or light-headed.
7. I am pretty healthy for my age.
8. Sometimes I am no good for anything at all.
9. I have a lot of energy.
10. I frequently feel nauseated.
11. I feel isolated from other people.
12. Much of my life is uninteresting.
13. I rarely wake up tired.
14. I can usually judge what effect I will have on others.
15. Sometimes I wish I could control myself better.



16. My strength often seems to drain away from me.
17. I rarely stumble or trip when I walk.
18. I think there is something wrong with my memory.
19. My health is no problem for me.
20. People often embarrass me.
21. My appetite is very healthy.
22. I have little confidence in myself.
23. I often find it hard to concentrate.
24. At times I feel worn out for no special reason.
25. I rarely feel anxious in my stomach.
26. I rarely or never get headaches.
27. I am easily distracted from a task.
28. I guess I am not very efficient.
29. When I sleep I toss and turn.
30. I seldom feel frightened.

## APPENDIX C

### EXPERIMENTER'S PROCEDURES

Experimenter greets subject (Hi, I'm \_\_\_\_\_, thank you for coming) and escorts her to the experimental room. "Please be seated in the reclining chair. The first thing I'd like you to do is to complete the Self Evaluation Questionnaire. This is very similar to the one you completed several weeks ago, but the instructions are slightly different; let me read them with you." (E then reads the instructions emphasizing how you feel now.) "Please complete the Self Evaluation Questionnaire now--I'll return in a few moments." E leaves the room and returns in about 5 minutes.

E returns: "Now I'm going to attach the GSR electrodes to the palm of your hand." (Dominant or nondominant hand determined by the random number table.) "Are you left or right handed? Okay so we will attach the electrodes to your \_\_\_\_\_ hand. If you are not familiar with GSR let me briefly explain it to you. These electrodes will measure the electrical activity of your skin; previous research suggests that the electrical activity of your skin coincides with emotional arousal. You will not feel anything from the electrodes--there is no shock or discomfort involved." E cleans skin and attaches electrodes.

"I will be on the other side of the mirror recording your skin's electrical activity. Please try to keep your hand as stationary as possible so that the electrodes remain in good contact with the skin."

"I am now going to leave the room. You are to sit quietly for the next ten minutes while I calibrate the equipment. You will then see a brief movie on this television." (E turns on T.V.--then reads the release to the subject and obtains her signature.) "The movie will last about 13 minutes. When it is over I want you to pick up the clipboard and complete the Self Evaluation Questionnaire once again; complete it according to how you feel at that time. You may find it necessary to remove the electrodes in order to complete the Self Evaluation Questionnaire--you may do so at the end of the movie. After that is done I will return again. Do you have any questions?"



## APPENDIX D

### DEBRIEFING

You have participated in an experiment in which we are attempting to learn whether people from various backgrounds (e.g., different levels of life experiences) react differently to a stressful situation. The Life Experiences Survey, which you completed several weeks ago measures recent and remote life changes (show copy of questionnaire).

We will compare subjects' life experiences to their self reported duress (self evaluation questionnaire) and physiological responses to the stressful film. Thus do people with more life experiences show a greater or lesser response to the stress?

Also, you completed a measure called Repression-Sensitization (show S). This attempts to measure the Freudian defense of repression (e.g., trying to defend against anxiety provoking stimuli by keeping them out of awareness). Sensitization is the opposite end of the continuum whereby the person tends to sensationalize that which he experiences. You completed a Sensation Seeking Questionnaire which attempts to measure preferred level of optimal stimulation. People tend to vary on this dimension--some people prefer little stimulation whereas others are not happy unless there is a great deal of activity and variability in their environment. You also completed the Self Evaluation Questionnaires--these are anxiety measures. The first one you completed several weeks ago measures your general level of anxiety (or trait anxiety) whereas the 2 you completed today measure situational (or state anxiety). Here again we will see if these personality dimensions affect responsiveness to the stressful film. Initial results should be available in early June. You may contact the experimenter if you are interested.

One final note--the film you saw was an effective stress inducer, but the scenes you observed were staged by professional actors, therefore nobody was actually injured. (Pause) It is essential that you not discuss the purpose of this study, or discuss the contents of the film with anyone until the end of the semester; to do so would jeopardize the results of the study. By revealing the content of the film to prospective subjects, you would change its impact upon that subject. As a result any relationship between the personality variables and stress responsiveness would be totally obscured. So again, please do not discuss the experiment with anyone until the end of the semester; to do so would probably ruin the study.



## APPENDIX E

### CONSENT FORM FOR RESEARCH PARTICIPATION

Department of Psychology

University of North Dakota

#### Consent Form for Research Participation

I, \_\_\_\_\_, voluntarily agree to participate in the research project as described below. I understand that I may discontinue my participation at any time and that my name will not be used in any reporting of the results of this study. I further understand that the researcher(s) for this study has/have signed a paper on record endorsing the American Psychological Association's ethical standards for psychological research involving human subjects.

#### Research Project Description:

The film you are going to see will not be a pleasant one. You may choose not to view this film and still receive research credit. Further, after the film has started, if at any point you feel that you do not want to watch the rest of it, let me know and I will stop it.

My signature below confirms that I have read and understood the above.

Subject's Signature \_\_\_\_\_

Witness \_\_\_\_\_

Date \_\_\_\_\_

# APPENDIX F

## SIGNIFICANT CORRELATIONS BETWEEN SKIN CONDUCTANCE AND LIFE CHANGE/PERSONALITY MEASURES

### Negative Life Change (Remote)

<u>Interval</u>	<u>r</u>	<u>t(86)</u>
3	.2369	2.23
6	.1871	1.75
9	.1938	1.81
14	.2021	1.89
22	.1943	1.82
23	.2029	1.90
59	-.1905	1.78
60	-.2199	2.07
70	-.2126	1.99
71	-.2495	2.36

### Positive Life Change (Recent)

<u>Interval</u>	<u>r</u>	<u>t(86)</u>
22	.1854	1.73*
38	.2019	1.89*
64	-.2449	2.31*
65	-.2076	1.95*
67	-.2705	2.58**
68	-.2131	2.00*
69	-.1917	1.79*

### Multidimensional Health Locus of Control - Internal Subscale

<u>Interval</u>	<u>r</u>	<u>t(86)</u>
2	-.2170	2.04*
4	-.2322	2.19*
5	-.2908	2.79***
6	-.2417	2.53**
7	-.2659	2.53**
8	-.2626	2.49**
9	-.2047	1.92*
11	.1800	1.69*
32	.2265	2.13*

Multidimensional Health Locus of Control - Internal Subscale

<u>Interval</u>	<u>r</u>	<u>t(86)</u>
33	.2042	1.91*
34	.2179	2.05*
37	.2282	2.15*
56	.2519	2.38**
57	.2780	2.65***
58	.2166	2.03*
59	.1916	1.79*
62	.1880	1.78*

Post Film State Anxiety

<u>Interval</u>	<u>r</u>	<u>t(86)</u>
1	-.2607	2.47**
3	-.2498	2.36**
4	-.2261	2.13*
5	-.2295	2.16*
6	-.2247	2.11*
7	-.1972	1.84*
10	-.1862	1.68*
13	-.2414	2.28*
16	-.2259	2.13*
17	-.2046	1.92*
25	.2715	2.59**
26	.3167	3.06***
68	.1891	1.69*
74	.1832	1.63*
75	.2172	2.04*
76	.2342	2.21*

\*p&lt;.05

\*\*p&lt;.01

\*\*\*p&lt;.005



## REFERENCES

- Abbott, R. D. On confounding of the Repression-Sensitization and Manifest Anxiety Scales. Psychological Reports, 1972, 30, 392-394.
- Appley, M. H., & Trumbull, R. On the concept of psychological stress. In M. H. Appley & R. Trumbull (Eds.), Psychological Stress. New York: Meredith Publishing Company, 1967.
- Auerbach, S. M. Effects of orienting instructions, feedback-information, and trait-anxiety level on state anxiety. Psychological Reports, 1973, 33, 779-786. (a)
- Auerbach, S. M. Trait-state anxiety and adjustment to surgery. Journal of Consulting and Clinical Psychology, 1973, 40, 264-271. (b)
- Auerbach, S. M., Kendall, P. C., Cuttler, H. F., & Levitt, N. R. Anxiety, locus of control, type of preparatory information and adjustment to dental surgery. Journal of Consulting and Clinical Psychology, 1976, 44, 809-818.
- Balch, P., & Ross, A. W. Predicting success in weight reduction as a function of locus of control: A unidimensional and multidimensional approach. Journal of Consulting and Clinical Psychology, 1975, 43, 119.
- Baldwin, D. Health behavior researchers create new professional organization. APA Monitor, 1978, 9(8), 4.
- Bell, P. A., & Byrne, D. Repression-sensitization. In H. London & J. E. Exner, Jr. (Eds.), Dimensions of Personality. New York: John Wiley & Sons, 1978.
- Berggren, T., Ohman, A., & Fredrickson, M. Locus of control and habituation of the electrodermal orienting response to non-signal and signal stimuli. Journal of Personality and Social Psychology, 1977, 35, 708-716.
- Berlyne, D. E. Conflict, arousal, and curiosity. New York: McGraw-Hill, 1960.
- Block, J. The challenge of response sets. New York: Appleton-Century-Crofts, 1965.

- Bone, R., Montgomery, D. D., Sundstrom, P. E., Cowling, L. W., & Calef, R. Relationships of sensation-seeking. Psychological Reports, 1972, 30, 894.
- Boriskin, J. A. Correlates of perceived and experienced life stress. Unpublished master's thesis, University of North Dakota, 1977.
- Brown, G. W. Meaning, measurement, and stress of life events. In B. S. Dohrenwend & B. P. Dohrenwend (Eds.), Stressful life events--their nature and effects. New York: John Wiley & Sons, 1974.
- Byrne, D. The Repression-Sensitization Scale: Rationale, reliability, and validity. Journal of Personality, 1961, 29, 334-349.
- Byrne, D., Barry, J., & Nelson, D. Relation of the revised Repression-Sensitization Scale to measures of self description. Psychological Reports, 1963, 13, 323-334.
- Byrne, D., Steinberg, M. A., & Schwartz, M. S. Relationship between repression-sensitization and physical illness. Journal of Abnormal Psychology, 1968, 73, 154-155.
- Cannon, W. B. Bodily changes in pain, hunger, fear and rage, an account of recent research into the function of emotional excitement (2nd ed.). New York: D. Appleton and Company, 1929.
- Carranza, E. A study of the impact of life changes on high school teacher performance in the Lansing school district. Unpublished doctoral dissertation, Michigan State University, 1972.
- Casey, R. L., Thorensen, A. R., & Smith, F. J. The use of the schedule of recent experience in an institutional health care setting. Journal of Psychosomatic Research, 1970, 14, 149-154.
- Chiriboga, D. A. Life event weighting systems: A comparative analysis. Journal of Psychosomatic Research, 1977, 21, 415-422.
- Cline, D. W., & Chosey, J. J. A prospective study of life changes and subsequent health changes. Archives of General Psychiatry, 1972, 27, 51-53.
- Clum, G. A. Personality traits and environmental variables as independent predictors of posthospitalization outcome. Journal of Consulting and Clinical Psychology, 1978, 46(5), 839-843.
- Coan, R. W. Personality variables associated with cigarette smoking. Journal of Personality and Social Psychology, 1973, 26, 86-104.
- DeGood, D. E. Cognitive control factors in vascular stress responses. Psychophysiology, 1975, 12, 399-401.



- Dekker, D., & Webb, J. T. Relationship of the Social Readjustment Rating Scale to psychiatric patient status, anxiety and social desirability. Journal of Psychosomatic Research, 1974, 18, 124-130.
- Dohrenwend, B. S., & Dohrenwend, B. P. (Eds.) Stressful life events--their nature and effects. New York: John Wiley & Sons, 1974.
- Dor-shav, N. K. On the long-range effects of concentration camp internment on Nazi victims: 25 years later. Journal of Consulting and Clinical Psychology, 1978, 46(1), 1-11.
- Early, C. E., & Kleinknecht, R. A. The palmar sweat index as a function of repression-sensitization and a fear of dentistry. Journal of Consulting and Clinical Psychology, 1978, 46(1), 184-185.
- Edelberg, R. Electrical properties of the skin. In C. C. Brown (Ed.), Methods in psychophysiology. Baltimore: Williams & Wilkins, 1967.
- Edwards, M. K. Life crisis and myocardial infarction. Unpublished nursing thesis, University of Washington, 1971.
- Eysenck, H. J. The Maudsley Personality Inventory: Manual. San Diego, California: Educational and Industrial Testing Service, 1962.
- Fiske, D. W., & Maddi, S. R. A conceptual framework. In D. W. Fiske & S. R. Maddi (Eds.), Functions of varied experience. Homewood, Illinois: Dorsey Press, 1961.
- Folkins, C. H., Lawson, K. O., Opton, E. M., & Lazarus, R. L. Desensitization and the experimental reduction of threat. Journal of Abnormal Psychology, 1968, 73(2), 100-113.
- Garrity, T. F., Marx, M., & Somes, G. The influence of illness severity and time since life change on the size of the life change-health change relationship. Journal of Psychosomatic Research, 1977, 21, 377-382.
- Garrity, T. F., Somes, G., & Marx, M. Personality factors in resistance to illness after recent life change. Journal of Psychosomatic Research, 1977, 21(1), 23-32.
- Gatchel, R. J. Change-over training sessions of relationships between locus of control and voluntary heart-rate control. Perceptual and Motor Skills, 1975, 40, 424-426.
- Gersten, J. C., Langner, T. S., Eisenberg, J. G., & Orzek, L. Child behavior and life events: Undesirable change or change per se. In B. S. Dohrenwend & B. P. Dohrenwend (Eds.), Stressful life events--their nature and effects. New York: John Wiley & Sons, 1974.



- Goldstein, Y. N. Electrical skin conductance and cardiac responses of repressors, midlines, and sensitizers to affective stimulus films. Dissertation Abstracts Int., 1977, 37B(5), 4742B-4743B.
- Goleman, D. J., & Schwartz, G. E. Meditation as an intervention in stress reactivity. Journal of Consulting and Clinical Psychology, 1976, 44(3), 456-466.
- Golin, S., Herron, E. W., Lakota, R., & Reineck, L. Factor analytic study of the Manifest-Anxiety, Extraversion, and Repression-Sensitization Scales. Journal of Consulting Psychology, 1967, 31, 564-569.
- Grant, I., Gerst, M., & Yager, J. Scaling of life events by psychiatric patients and normals. Journal of Psychosomatic Research, 1976, 20, 141-149.
- Grant, I., Sweetwood, H., Yager, J., & Gerst, M. S. Patterns in the relationship of life events and psychiatric symptoms over time. Journal of Psychosomatic Research, 1978, 22, 183-191.
- Green, W. A. Psychological factors and reticulo-endothelial disease. Psychosomatic Medicine, 1954, 16, 220-230.
- Greenfeld, N., & Sternbach, R. (Eds.), Handbook of psychophysiology. New York: Holt, Reinhart and Winston, Inc., 1972.
- Haley, G. A. Eye movement responses of repressors and sensitizers to a stressful film. Journal of Research in Personality, 1974, 8, 88-94.
- Harris, P. W. The relationship of life change to academic performance among selected college freshmen at varying levels of college readiness. Unpublished doctoral dissertation, East Texas University, 1972.
- Hodges, W. F., & Spielberger, C. D. The effects of threat of shock on heart rate for subjects who differ in manifest anxiety and fear of shock. Psychophysiology, 1966, 2, 287-294.
- Hodges, W. F., & Spielberger, C. D. Digit span: An indicant of trait or state anxiety? Journal of Consulting and Clinical Psychology, 1969, 33, 430-434.
- Holmes, T. S., & Holmes, T. H. Short-term intrusions into the life style routine. Journal of Psychosomatic Research, 1970, 14, 121-132.
- Holmes, T. H., & Masuda, M. Life change and illness susceptibility. In B. S. Dohrenwend & B. P. Dohrenwend (Eds.), Stressful life events--their nature and effects. New York: John Wiley & Sons, 1974.
- Holmes, T. H., & Rahe, R. H. The Social Readjustment Rating Scale. Journal of Psychosomatic Research, 1967, 11, 213-218.

- Johnson, J. E., Dobbs, J. M., & Leventhal, H. Psychological factors in the welfare of surgical patients. Nursing Research, 1970, 19, 18-29.
- Johnson, J. H., & Sarason, I. G. Life stress, depression and anxiety: Internal-external control as a moderator variable. Journal of Psychosomatic Research, 1978, 22, 205-208.
- Jones, H. E. The study of patterns of emotional expression. In M. L. Reymert (Ed.), Feelings and emotions: The Moosehart Symposium. New York: McGraw-Hill, 1950.
- Kaestner, E., Rosen, L., & Appel, P. Patterns of drug abuse: Relationships with ethnicity, sensation-seeking and anxiety. Journal of Consulting and Clinical Psychology, 1977, 45, 462-467.
- Kahneman, D. Attention and effort. New Jersey: Prentice Hall, 1973.
- Kendall, P. C. Anxiety: States, traits - situations? Journal of Consulting and Clinical Psychology, 1978, 46(2), 280-287.
- Kendall, P. C., Finch, A. J., Jr., Auerbach, S. M., Hooke, J. F., & Mikulka, P. J. The State-Trait Anxiety Inventory: A systematic evaluation. Journal of Consulting and Clinical Psychology, 1976, 44, 406-412.
- Kish, G. B., Frankel, J. J., & Berry, R. A. Augmenting-reducing and sensation-seeking: A test of Sales' hypothesis. Journal of Clinical Psychology, 1976, 32, 302-305.
- Kissen, D. M. Some psychosocial aspects of pulmonary tuberculosis. International Journal of Social Psychiatry, 1958, 3, 252-259.
- Lambert, W., & Levy, L. Sensation-seeking and short term sensory isolation. Journal of Personality and Social Psychology, 1972, 24, 46-52.
- Lanyon, R. I. Development and validation of a psychological screening inventory. Journal of Consulting and Clinical Psychology, 1970, 35, (No. 1, Part 2), 1-24.
- Lanyon, R. I. Technology of personality assessment: The Psychological Screening Inventory. In B. A. Maher (Ed.), Progress in experimental personality research, Vol. VII. New York: Academic Press, 1974.
- Lazarus, R. S. Psychological stress and the coping process. New York: McGraw-Hill, 1966.
- Lazarus, R. S., & Alfert, E. Short-circuiting of threat by experimentally altering cognitive appraisal. Journal of Abnormal and Social Psychology, 1964, 69(2), 195-205.



- Lazarus, R. W., & Opton, E. M. The study of psychological stress: A summary of theoretical formulations and experimental findings. In C. D. Spielberger (Ed.), Anxiety and behavior. New York: Academic Press, 1966.
- Lazarus, R. S., Speisman, J. C., Mordkoff, A. M., & Davison, L. A. A laboratory study of psychological stress produced by a motion picture film. Psychological Monographs, 1962, 76(34, Whole No. 553).
- Leuba, C. Toward some integration of learning theories: The concept of optimal stimulation. Psychological Reports, 1955, 1, 27-33.
- Lefcourt, H. M. Repression-sensitization: A measure of the evaluation of emotional expression. Journal of Consulting Psychology, 1966, 30, 444-449.
- Lundberg, U., Theorell, T., & Lind, E. Life changes and myocardial infarction: Individual differences in life change scaling. Journal of Psychosomatic Research, 1975, 19, 27-32.
- Lykken, D. T., Tellegen, A., & Katzenmeyer, C. Manual for the Activity Preference Questionnaire (APQ). Minneapolis, Minnesota: Reports from the Research Laboratories of the Department of Psychiatry, University of Minnesota, Report Number PR-73-4, 1973.
- Marx, M. B., Garritty, T. F., & Somes, G. W. The effects of imbalance in life satisfaction and frustrations upon illness behavior in college students. Journal of Psychosomatic Research, 1977, 21(6), 423-427.
- Mechanic, D. Some problems in the measurement of stress and social readjustment. Journal of Human Stress, 1975, 1, 43-48.
- Meyer, A. The life chart and the obligation of specifying positive data in psychopathological diagnosis. In E. E. Winters (Ed.), The collected papers of Adolf Meyer (Vol. 3). Baltimore, Maryland: The Johns Hopkins University Press, 1951.
- Mueller, D. P., Edwards, D. W., & Yarvis, R. M. Stressful life events and psychiatric symptomology: Change or undesirability? Journal of Health and Social Behavior, 1977, 18, 307-317.
- Neary, R. S., & Zuckerman, M. Sensation-seeking, trait and state anxiety and the electrodermal orienting response. Psychophysiology, 1976, 13(3), 205-211.
- O'Neil, J. F., Spielberger, C. D., & Hansen, D. M. The effects of state anxiety and task difficulty on computer-assisted learning. Journal of Educational Psychology, 1969, 60, 343-350.
- Parson, O. A., Fulgenzi, L. B., & Edelberg, R. Aggressiveness and physiological responsivity in groups of repressors and sensitizers. Journal of Personality and Social Psychology, 1969, 12(3), 235-244.



- Paykel, E. A. Life stress and psychiatric disorder: Applications of the clinical approach. In B. S. Dohrenwend & B. P. Dohrenwend (Eds.), Stressful life events--their nature and effects. New York: John Wiley & Sons, 1974.
- Petrie, A. Individuality in pain and suffering. Chicago: Chicago University Press, 1967.
- Plutchik, R., Hyman, I., Conte, H., & Karasu, T. B. Medical symptoms and life stresses in psychiatric emergency-room patients. Journal of Abnormal Psychology, 1977, 86(4), 447-449.
- Rabkin, J. G., & Struening, E. L. Life events, stress, and illness. Science, 1976, 194, 1013-1020.
- Rahe, R. H. Life-change measurement as a predictor of illness. Proceedings of the Royal Society of Medicine, 1968, 61, 1124-1126.
- Rahe, R. H. The pathway between subjects' recent life changes and their near-future illness reports: Representative results and methodological issues. In B. S. Dohrenwend & B. P. Dohrenwend (Eds.), Stressful life events--their nature and effects. New York: John Wiley & Sons, 1974.
- Rahe, R. H., & Arthur, R. J. Life changes and illness studies. Journal of Human Stress, 1978, 4(1), 3-15.
- Rahe, R. H., & Holmes, T. H. Qualitative and quantitative definition of life crisis and its association with health change. Unpublished manuscript, 1969. (Available from Thomas H. Holmes, M.D., Department of Psychiatry and Behavioral Sciences, University of Washington, Seattle, Washington 98195.)
- Rahe, R. H., & Lind, E. Psychosocial factors and sudden cardiac death: A pilot study. Journal of Psychosomatic Research, 1971, 15, 241-249.
- Rahe, R. H., Mahan, J. L., & Arthur, R. J. Prediction of near-future health changes from subjects' preceding life changes. Journal of Psychosomatic Research, 1970, 14, 401-406.
- Rahe, R. H., & Paasikivi, J. Psychosocial factors and myocardial infarction--an outpatient study in Sweden. Journal of Psychosomatic Research, 1971, 15, 33-39.
- Rappaport, H., & Katkin, E. S. Relationships among manifest anxiety, response to stress, and the perception of autonomic activity. Journal of Consulting and Clinical Psychology, 1972, 38, 219-224.
- Ray, W. J. The relationship of locus of control, self-report measures, and feedback to the voluntary control of heart rate. Psychophysiology, 1974, 11, 527-534.

- Reuley, W. The relationship of life events to several aspects of anxiety. Journal of Psychosomatic Research, 1974, 18, 401-424.
- Rotter, J. B. Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 1966, 80 (1, Whole No. 609).
- Sales, S. M. Need for stimulation as a factor in social behavior. Journal of Personality and Social Psychology, 1971, 19(1), 124-134.
- Sarason, I. G., DeMonchaux, C., & Hunt, T. Methodological issues in the assessment of life stress. In L. Levi (Ed.), Emotions: Their parameters and measurement. New York: Raven Press, 1975.
- Sarason, I. G., Johnson, J. H., & Siegel, J. M. Assessing the impact of life change: Development of the life experiences survey. Journal of Consulting and Clinical Psychology, 1978, 46(5), 932-946.
- Schwartz, M. S., Krupp, N. E., & Byrne, D. Repression-sensitization and medical diagnosis. Journal of Abnormal Psychology, 1971, 78, 286-291.
- Seeman, M., & Evans, J. W. Alienation and learning in a hospital setting. American Sociological Review, 1962, 27, 772-783.
- Selye, H. The stress of life. New York: McGraw-Hill, 1956.
- Smith, R. E., Johnson, J. H., & Sarason, I. G. Life change, the sensation-seeking motive, and psychological distress. Journal of Consulting and Clinical Psychology, 1978, 46(2), 348-349.
- Speisman, J. C., Lazarus, R. S., Mordkoff, A. M., & Davison, L. A. Experimental reduction of stress based on ego-defense theory. Journal of Abnormal and Social Psychology, 1964, 68, 367-380.
- Spielberger, C. D. Anxiety as an emotional state. In C. D. Spielberger (Ed.), Anxiety: Current trends in theory and research (Vol. 1). New York: Academic Press, 1972.
- Spielberger, C. D., Auerbach, S. M., Wadsworth, A. P., Dunn, T. M., & Taulbee, E. S. Emotional reactions to surgery. Journal of Consulting and Clinical Psychology, 1973, 40, 33-38.
- Spielberger, C. D., Gorsuch, R. L., & Lushene, R. E. STAI manual for the State-Trait Anxiety Inventory ("Self-Evaluation Questionnaire"). Palo Alto, California: Consulting Psychologists Press, 1970.
- Stone, A. A., & Neal, J. M. Life event scales: Psychophysical training and rating dimension effects on event-weighting coefficients. Journal of Consulting and Clinical Psychology, 1978, 46(5), 849-853.



- Strickland, B. R. Internal-external expectancies and health-related behavior. Journal of Consulting and Clinical Psychology, 1978, 46(6), 1192-1211.
- Tatsuoka, M. Multivariate analysis. New York: John Wiley & Sons, 1971.
- Theorell, T., & Rahe, R. H. Psychosocial factors and myocardial infarction--an inpatient study in Sweden. Journal of Psychosomatic Research, 1971, 15, 25-31.
- Tollefson, D. J. The relationship between the occurrence of fractures and life events. Unpublished nursing thesis, University of Washington, 1972.
- Tuke, D. T. Illustrations of the influence of the mind upon the body. London: Churchill, 1884.
- Vinokur, A., & Seltzer, J. Desirable versus undesirable life events: Their relationship to stress and mental distress. Journal of Personality and Social Psychology, 1975, 32(2), 329-337.
- Wagner, C., Bourgeois, A., Levenson, H., & Denton, J. Multidimensional locus of control and voluntary control of GSR. Perceptual and Motor Skills, 1974, 39, 1142.
- Wallston, K. A., Maides, S., & Wallston, B. S. Health-related information seeking as a function of health-related locus of control and health value. Journal of Research in Personality, 1976, 10, 215-222.
- Wallston, B. S., & Wallston, K. A. Locus of control and health: A review of the literature. Health Education Monographs, 1978, 6, 107-117.
- Wallston, K. A., Wallston, B. S., & DeVellis, R. Development of the Multidimensional Health Locus of Control (MHLC) Scales. Health Education Monographs, 1978, 6, 160-170.
- Wallston, B. S., Wallston, K. A., Kaplan, G. D., & Maides, S. A. Development and validation of the Health Locus of Control Scale. Journal of Consulting and Clinical Psychology, 1976, 44, 580-585.
- Weinstein, J., Averill, J. R., Opton, E. M., & Lazarus, R. S. Defensive style and discrepancy between self-report and physiological indexes of stress. Journal of Personality and Social Psychology, 1968, 10(4), 406-413.
- Weiss, E. D., Rollin, H. R., Fischer, H. K., & Bepler, C. R. Emotional factors in coronary occlusion. Archives of Internal Medicine, 1957, 99, 628-641.



- Wershow, H. J., & Reinhart, G. Life change and hospitalization: A heretical view. Journal of Psychosomatic Research, 1974, 18, 393-401.
- Williams, A. F. Factors associated with seat belt use in families. Journal of Safety Research, 1972, 4(3), 133-138.
- Woods, D. J. The repression-sensitization variable and self-reported emotional arousal: Effects of stress and instructional set. Journal of Consulting and Clinical Psychology, 1977, 45(2), 173-183.
- Wyler, A. R., Masuda, M., & Holmes, T. H. Magnitude of life events and seriousness of illness. Psychosomatic Medicine, 1971, 33, 115.
- Yamamoto, K. J., & Kinney, D. K. Pregnant women's ratings of different factors influencing psychological stress during pregnancy. Psychological Reports, 1976, 39, 203-214.
- Zuckerman, M. Dimensions of sensation-seeking. Journal of Consulting and Clinical Psychology, 1971, 36(1), 45-52.
- Zuckerman, M. Manual and research report for the Sensation-Seeking Scale (SSS). Unpublished manuscript, University of Delaware, 1975.
- Zuckerman, M., & Bone, R. What is the sensation-seeker? Personality trait and experience correlates of the Sensation-Seeking Scales. Journal of Consulting and Clinical Psychology, 1972, 39(2), 308-321.
- Zuckerman, M., Eysenck, S., & Eysenck, H. G. Sensation-seeking in England and America: Cross-cultural, age and sex comparisons. Journal of Consulting and Clinical Psychology, 1978, 46, 139-149.
- Zuckerman, M., Kolin, E., Price, L., & Zoob, I. Development of a Sensation-Seeking Scale. Journal of Consulting Psychology, 1964, 28, 477-482.