Stress, Stress Factors, and Self-report Measures: Clarification of Power, a New Factor

© Patricia J. Wheeler

Saint Mary's University

ISBN 0-315-48188-9

Table of Contents

List of Tables

Acknowledgements

I would like to thank those individuals who helped me with various aspects of my research. Thanks to Valerie Bolivar, for her invaluable assistance with the statistical analysis and interpretation of my results. Appreciation is also extended to Dr. Rory O'Day, for his support and constructive input, and to Dr. Jim Gerry, for providing the time and interest to be on my committee. Special thanks to Dr. Robert Konopasky, for his guidance, support, and sense of humor, which ensured completion of this research. Last but not least, I would like to thank my parents for their enduring support and encouragement.

Stress, Stress Factors, and Self-report Measures: Clarification of Power, a New Factor

Submitted in partial fulfillment
of the requirements for the degree of
Master of Science
at Saint Mary's University
Halifax, Nova Scotia

Approval: _____
Faculty Advisor

Approval: _____
Committee Member

Approval: _____
Committee Member

Date: September 25, 1988

Abstract

Stress, Stress Factors, and Self-Report Measures: Clarification of Power, a New Factor

Patricia J. Wheeler

September 12, 1988

The Check List of Arousal and Stress (CLAS) has been developed as an alternate form of the Stress Arousal Check List (SACL). Both offer assessment of two independent mood factors, stress and arousal, one employing adjectives and the other short phrases.

A scale to assess a third factor, power, has also been developed and combined with the CLAS to form the Checklist of Arousal, Stress, and Power (CLASP). However, several items comprising the CLAS and CLASP showed small loadings on the appropriate factors. In this study, those items were replaced with other short simple phrases and their factor loadings ascertained.

The items comprising the stress, arousal, and power scales on these tests, are not equally keyed positive and negative. A revised checklist was developed to provide an equal number of positive and negative phrases. This checklist, the CLASP-R, has 48 items, or 8 positively and 8 negatively keyed phrases per scale.

To further explore and assess the third factor, power, an alternate form of the power scale of the CLASP was developed. This power scale consists of single

words, similar to the the original SACL scales, and which was combined with the SACL to form the SACL-P.

The factors measured by the SACL have been described in some studies as monopolar and in others as bipolar. It has been argued that the response and scoring system format used that is, symmetric versus asymmetric, determine the outcome of these factor analytic studies. This study used a symmetric scoring scale, that is, one which provides an equal number of positive and negative response choices, as proposed by Meddis (1972), and compared the results of factor analysis of subject responses with studies using the asymmetric format.

The study was conducted in two parts. In the first part, the original SACL was administered to 310 university students, using the symmetric response format. The results were factor analyzed to determine the effects of the symmetric response format, that is, whether the symmetric response format yielded results different (monopolar vs. bipolar) from those obtained in previous studies when an asymmetric response format was used.

In the second part, the SACL-P and the CLASP-R were administered to 468 university students, also using a symmetric response format. The responses were factor analyzed to determine whether these moods are bipolar or monopolar.

The results of the factor analysis indicated that use of a symmetric response format, as opposed to an asymmetric one, yielded a monopolar factor structure.

The reliability of these scales was also determined, using "internal consistency", "test-retest", and "alternate form" measures. The SACL (Form A) was administered, on four separate occasions, to the same subjects, with intervals of 45 minutes, then 2 days, and finally 5-6 weeks between sessions. A section of this sample was given Form B as well as Form A. Both forms were administered during the first session. The CLASP-R and the SACL-P were administered on four separate occasions, also to the same subjects, with intervals of 45 minutes, 2 days, and then 1 week between administrations.

Computation of Cronbach's Alpha indicated internal consistency for all three scales, the SACL, the SACL-P, and the CLASP-R.

Pearson Product Moment Correlation coefficients were computed. The results of these analyses were significant and indicated that Form A and Form B of the SACL are alternate forms of each other, and the SACL-P and the CLASP-R are alternate forms of each other. Pearson Product Moment Correlation coefficients also indicated that the checklists are reliable over time.

The nature, causes, and treatment of stress have been a focus of research, study, and investigation for many years. Defining the concept has proved to be difficult, and operational definitions are diverse, for example, measures of job satisfaction, daily living conditions, life events (marriage, divorce, death of a relative/friend), catecholamine secretion, blood-glucose levels, and self-report inventories. It has been suggested that studies on stress may be organized according to three models which the literature has identified as: 1) Stress as a stimulus; 2) Stress as a response; 3) Stress as an interaction between a stimulus and a response. (Cox, 1978; McGrath, 1970, Apply and Trumbull, 1967; Levine and Scotch, 1970)

The intent of this thesis is to review and organize the stress literature and to expand and improve established stress measures. First of all, a brief history of stress is presented, then the three models of stress are reviewed. A discussion of the three factors of stress, that is stress, arousal, and power, is presented. The significance of power and coping, as involved in the experience of stress, is then discussed in some detail. The next section provides a review of the measures of stress appropriate to each of the three models, with emphasis on the interactional-model stress measures: the SACL (Stress Arousal Checklist), a two factor measure of stress, the CLAS (Checklist of Arousal and Stress), an alternate form of the SACL, and the CLASP (Checklist of Arousal, Stress and Power), an expanded version of the CLAS which includes measurement of a third factor- power.

A revised version of the CLASP, the CLASP-R (Checklist of Arousal, Stress, and Power- Revised) is then presented, which offers an equal number of positively and negatively keyed phrases for each of the 3 scales, stress, arousal, and power, as well as replacement of the items which previously failed to show significant loadings on the appropriate factors of the CLASP.

An expanded version of the SACL, the SACL-P (Stress Arousal Checklist-Power), is presented. This checklist is an expansion of the SACL and includes a scale for the measurement of the power factor.

Factor strucure and reliability of the checklists is also considered.

History

There is a long history to the word "stress", which was derived from the Latin "stringere", to draw tight. The word has been found in literature as early as 1303 A.D., in the poetry of Robert Mannyng. From the 14th century onwards numerous variations of the word can be found in English literature: "stres, sresse, stresce, srest", and "straisse". In the 15th century, according to the Oxford English Dictionary, the term was used to denote "physical strain or pressure" and was particularly applied to such fields as engineering and architecture. But the definition was also expanded over the next 100 years or so. By 1704, the expansion of the definition allowed one to characterize persons as well as things. Stress began to describe such things as "hardship, straits", or "adversity" (Shaffer,1982). By the mid-19th century, the concept of stress was broadened further to include "strain upon a bodily organ or mental

power" (Shaffer, 1982, p.1). Definitions continued to be changed, modified, and expanded, but the focus on "force" persisted until approximately 1936, when Selye presented his paper on a theory of stress which contained a radically different definition of stress. Originally, Selye avoided the use of the term, but when he did include the term in his publications, he reversed the traditional usage. Selye's viewpoint was that stress was not an agent or force, but rather, a result produced within the individual because of some other agent or force. There continues to be many supporters of this viewpoint of stress (Kagan and Levi, 1971), as well as many opponents (Welford,1973) who support the original view of stress as an agent or force. Others have modified Selye's definition , for example, McGrath (1976) and Cox (1978), and developed their own definitions and theories of stress.

Models of Stress

The literature can be organized into three basic models of stress and most studies can be placed into one of these three models.

The first model views stress as a stimulus; stress is described in terms of the stimulus characteristics of disturbing or noxious environments; stress is considered the independent variable in stress studies.

In the second model, stress is considered a response and it is described in terms of a person's response to disturbing or noxious environments; stress is the dependent variable within the parameters of this model.

The third model views stress as a condition emanating from a "lack of fit" between the person and his environment (Cox,1978). Here, stress is an intervening variable between the stimulus and the response and is studied in terms of its antecedent factors and its effects.

Stress as a Stimulus:

Stimulus-based definitions equate stress with the characteristics of the environment which act in a disturbing and disruptive way on the individual. It follows an engineering model insofar as external stresses are believed to cause strain within the individual. In such an approach, stress is treated as an independent variable (Symonds, 1947). Sir Charles Symonds very specifically described this model when discussing psychological disorders in RAF flying personnel, saying that (flying) stress is what happens to the man, not that which happens in him; it is a set of causes, not a set of symptoms. This engineering–type model is said to parallel Hooke's Law of Elasticity (Cox, 1978), suggesting that people have a built–in resistance to stress, just as physical systems have an "elastic limit". Up to a point, stress can be tolerated, but when it becomes intolerable, permanent damage, physiological and psychological, may result. Stress of this sort includes extremes of sensory stimulation, such as, temperature, noise level, degree of isolation, and extremes in work load. Weitz (1970) has identified several different types of situations which have been treated as stressful, such as, speeded information processing, noxious environmental stimuli, disrupted physiological function (disease, sleep loss etc.), isolation and confinement, and group pressure. In summary, these situations are viewed as demands made on the person by the environment. Cox (1978) has stated that there are two important questions to

keep in mind when considering the stimulus based definition of stress. The first question is "what conditions can be assumed to be stressful?", and the second is, "what characteristics do they share?"

Not all stimulus-based theories of stress are as simplistic as the engineering model. Welford (1973), for example, has proposed that man functions best when moderate demand has been placed on him. If an individual's performance is below his potential it may be due to either too high or too low a level of demand. Cox (1978), as well, states that, even though an undemanding situation may result in maximum well-being in the case of machinery, undemanding or boring situations for an individual can be as stressful as situations in which demand is excessive. There is also variation among individuals with respect to their tolerance of stress. What may be tolerable to one person and is considered a "weak stressor" could be completely intolerable to another. In studies conducted by Ruff and Korchin (1964) and Korchin and Ruff (1964), it was concluded that the backgrounds of individuals contribute significantly to the degree of stress tolerance. They found that astronauts who were from a stable, supportive early environment, who participated in training situations and simulated space flights, did not have their performance or mood aversely affected when subjected to stress. When a different situation was encountered, the astronaut would 1) stop, 2) appraise the situation, 3) decide on what action should be taken, and then 4) follow it through. They were described as ambitious, capable, intelligent, successful, self-assured, persevering, highly controlled , and very accurate in their perception of reality.

Similar conclusions were drawn by Levine (1975) from studies conducted on rats. Tolerance of stress was shown to be related to heredity, early experience, and later learning. Rats subjected to electric shock and other stressors in early life developed normally and could cope well with stress in later life, but rats not exposed to such early experiences grew up to be timid and deviant by comparison. More adaptive adult behavior was clearly associated with infantile experience with stress.

Stress as a Response:

Response–based definitions of stress are concerned with particular responses or patterns of response. With these definitions, stress is conceptualized as a dependent variable, as the person's response to a stressor agent. This model of stress was initially generated by Selye (1956) who describes stress as "the non–specific (physiological) response of the body to any demand placed upon it". He understood stress to be the person's response to his environment. Selye's concept of the response-based model of stress has three main aspects. First, the physiological stress response does not depend on the nature of the stressor or on the species in which the response is evoked. Second, the series of defense (stress) reactions progresses through three specific stages which he identifies as, first, the alarm reaction, then resistance, and finally, exhaustion. Selye refers to these three stages as the General Adaptation Syndrome (GAS) (Selye, 1983b).

The first stage of the GAS, the alarm reaction, is the organism's reaction to diverse stimuli to which it cannot adapt. The alarm reaction stage is divided into two phases, the shock phase and the countershock phase. The

initial and immediate reaction to the noxious agent occurs during the shock phase. Various signs of injury such as tachycardia, loss of muscle tone, decreased temperature, and decreased blood pressure are usual symptoms. The countershock phase is manifested by a rebound reaction during which defenses are mobilized. The adrenal cortex is enlarged and there is an increase in the secretion of the corticoid hormones. This first stage may be so pronounced that the organism will die during the alarm reaction phase within days or even the first few hours. If the organism does not die, the alarm reaction phase will be followed by the resistance phase.

This phase of resistance is characterized by the organism's apparent adaption to the stressor and the consequent improvement or disappearance of the symptoms. The physiological characteristics of this second phase are quite different from those of the alarm reaction phase. In the latter, the cells of the adrenal cortex discharge their secretory granules into the bloodstream and become depleted of their corticoid-containing lipid storage material. With continued exposure to the noxious agent, however, the acquired "adaptation" may be lost, and the organism will "progress" to a third stage.

Adaptability has its limits, and this third and final stage, exhaustion, will occur if the stressor is sufficiently severe or prolonged. There will be a recurrence of symptoms, such as decreased blood pressure, and, should the stress and its severity persist, death will follow.

The third and final characteristic of Selye's theory of stress is that severe and prolonged defense responses give rise to disease states, referred to as the diseases of adaptation. Such diseases occur when the maintenance of

defense and adaptation exhausts the organism's physiological resources. Selye (1983b) maintained the non-specific nature of stress responses and described them as general malaise associated with an illness regardless of the specific nature of the diseases associated with it. The condition of stressis manifested by loss of appetite and associated weight loss and weakness, a loss of ambition and a recognizable facial expression associated with illness. Additional characteristics include enlargement and discoloration of the adrenal glands, marked shrinkage of the thymus, spleen, and lymph nodes, and severe bleeding ulcers of the stomach. Selye beleived that this general malaise occured in all conditions of illness and was a manifestation of the non-specific general adaptation syndrome.

Physiological indices are often among the measures utilized in this approach to the study of stress, for example, catecholamine secretion (Frankenhaeuser, 1975; Taggart and Carruthers, 1971). For example, Frankenhaeuser has identified differences in levels of catecholamine secretion under various psychosocial conditions, where the levels of epinephrine increase to three to five times the resting levels when the individual is in a situation of moderate stress. The secreting cells of the adrenal medulla are closely connected with preganglionic fibers of the sympathetic nervous system, and their secretory activity is controlled by stimulation through these nerve pathways. Increased secretions have been elicited by such different stimuli as cold, heat, anoxia, hypoglycemia, hypotension, hemorrhage, burns, physical exercise, psychosocial stimuli, and pharmacological agents such as caffeine, nicotine, and alcohol (Frankenhaeuser, 1975).

Kagan and Levi (1971), taking Selye's (1956) lead, minimize the importance of the stimulus and claim that these physical stress responses themselves, not the stressful situations which only seem to produce them, wear out the individual and lead to structural and functional damage, and eventual mortality. External influences interact with genetic factors, and with early experience to form what Kagan and Levi call the "psychobiological program". This psychobiological program determines the nature and experience of stress, which in turn may produce antecedents of disease and then disease itself.

Stress as an Interaction between Stimulus and Response:

This approach to stress proposes that stress arises from particular relationships between a person and the environment. It draws from both the stimulus- and response-based definitions but is not simply a mechanical fusion of the two models. It emphasizes the transactional nature of the phenomenon. Cox (1978) describes stress as a complex and dynamic system of transaction between the person and the environment in which individual perceptual phenomenon are emphasized as being significant influential factors in the experience of stress. According to Cox, stress occurs when there is an imbalance between the perceived demand and the individual's perception of his capability to meet that demand.

Proponents of this model, like McGrath (1976), and Lazarus (1976), emphasize that stress occurs when the demands placed on an individual exceed his adjustive capabilities and resources. These authors attend to external conditions as well as the constitutional vulnerability of the

individual and the adequacy of his cognitive defense mechanisms. The significant aspect here is not actual demand and actual capability but the person's *perception* of the demand and of his capability. Stress occurs when there is a discrepancy between an individual's situational demands and that individual's perceived ability to respond productively. If a situation places excessive demands on a person, but that person is unaware of his limitations, then he will not experience stress until he realizes that he does not have the ability to deal with the demand. Stress occurs when the imbalance between demand and capability is recognized.

This model of stress, as presented by Cox and Mackay (1978), outlines five stages of stress. The first stage is described in terms of the sources of demand relating to the person and is part of his environment. "Demand" refers to a request for action, physical or mental, and implies some time constraints. Demand has usually been considered to be an aspect of the person's environment (external), but this model includes both external and internal demands. For example, an individual's psychological and physical needs may come from internally generated demands.

The second stage involves the way the person perceives the demand and his ability to cope with it. According to Cox (1978) and Cox and Mackay (1981) stress arises when an imbalance exists between the perceived demand and the person's perception of his capability to meet that demand. What is important is the balance or imbalance between perceived demand and perceived ability <u>not</u> between actual demand and actual ability. An individual will not experience stress in a situation of excessive demands if he is unaware of any limitations to meet those demands. With the realization

that the demand cannot be met, or the recognition of an imbalance between demands and capability, a subjective or emotional experience of stress will occur. This subjective experience of stress is associated with physiological changes and the initiation of cognitive and behavioral attempts to reduce the stressful nature of the demand.

The third stage of this model consists of the psychophysiological changes which represent the response to stress. These responses to stress are described as being the methods of coping available to the individual.

The fourth stage involves the consequences of the response. Was the need for success great or small? Was the response to the demand adequate? As explained by Sells (1970) stress is experienced only when the individual's failure to meet the demand has important consequences, or when adverse consequences were expected.

This brings us to the fifth stage of this model, which is feedback, and which occurs at all other stages of stress and has the effect of shaping the outcome at each of those stages. Feedback occurs when a physiological response, for example, release of adrenaline, influences the individual's perception of the stressful situation, or when a behavioral response alters the actual nature of the demand.

A similar model based on an interactional definition has been proposed by Howarth (1978). According to Howarth, there may be several classes of reasons for the imbalance between the perceived demand and the perceived capability. Biologically, stress may be said to arise when there is a

significant difference between the individual's lifestyle and that kind of life to which primitive man became evolutionarily adapted. Developmentally, stress occurs if an indiyidual's upbringing and educaton has not prepared him to meet the demands of his lifestyle. Socially, stress may be experienced because of conflicting social pressures or from being forced to assume inconsistent roles. From a phenomenological standpoint, stress occurs when one fails to live up to one's ideals or attain one's goals.

McGrath (1970) has refined the interactional model of stress, suggesting that an individual may experience stress when a situation is perceived as creating a demand which threatens to exceed the person's capabilities and resources to meet it, and when it is important that the demand be met. Although it was initially believed that a small discrepancy between perceived demand and perceived capability would not be experienced as very stressful, McGrath (1976) later determined that the closer the perceived demand is to perceived capability, the greater the degree of stress which will be experienced. This has been identified as the theory of minimum discrepancy, maximum stress.

A model presented by Lazarus (1976) contains the same emphasis on inability to meet the environmental demands. Lazarus states that "stress occurs when there are demands on a person which tax or exceed his adjustive resources" (1976, P.47). Lazarus strongly emphasizes that stress depends not only on the stimuli in the environment but on the individual and the adequacy of his defense and coping mechanisms in dealing with and responding to these stimuli. The experience of stress is greatly dependent upon how the individual appraises the situation, and on frustration (danger

or harm which has already occurred), conflict (the presence of two or more incompatible goals), and threat (the anticipation of harm, whether physical, psychological, or social). The intensity of the threat depends on how capable the person feels in dealing with the danger. If he is unable to master the situation and feels helpless, the threat will be considered more severe.

In summary, the interactional model of stress is psychologically oriented, insofar as it asserts that stress involves the individual's perception of his environment, as well as his relationship to that environment. It involves the individual's exposure to unpleasant stimuli, and the response to that stimuli, and the intervening psychological and physiological coping stategies that occur. A main element permeating all aspects of this model is the person's perception of the situation, and perception of his ability to respond appropriately. Does the individual perceive himself as being able to cope and having the resources and power to bring into play to alleviate the unpleasant situation?

Three Factors of Stress

The Interactional Model Definition identifies the factors of *stress* and *arousal* in the experience of stress. As defined by Mackay, Cox, Burrows and Lazzerini (1978), the first, "stress", is the internal response to the perceived favorability of the external environment. It is referred to as negative hedonistic tone, which reflects a lack of well-being or discomfort. This is very similar to one of two components of stress described by Meddis (1969) as hedonic tone. This "hedonic tone" reflects a general sense of well-being. Similarly, Russell and Mehrabian (1977) identify an element of stress which

they call pleasantness/unpleasantness or pleasure/displeasure. The pleasure or displeasure is bipolar in nature and, as such, is a continuum ranging from extreme pain or unhappiness at one end to extreme happiness or ecstasy at the opposite end.

Arousal, the second identified factor involved in the experience of stress, is the representation of ongoing automatic and somatic activity (Mackay et al, 1978). It reflects activation or "vigor". Other authors have discussed similar factors. Vigor is a term used by Meddis (1969) in describing a component of stress, which corresponds to the physiological concept of arousal. Cox (1978) indicates that information about the environment that the senses make available is processed at the level of the cerebral cortex , via the classical sensory pathways, which serve a cueing or informational function (Hebb, 1955). The "information" gained stimulates the reticular formation, which serves an "arousal" function. Cox cites findings of Moruzzi and Magoun (1949) that stimulation of the reticular formation led to cessation of cortical electrical activity associated with drowsiness and sleep, and a change to that electrical activity associated with wakefulness. In discussing his checklist of mood adjectives, Cox (1978) refers to the words which measure arousal as those which reflect the electrical activity of the reticular formation associated with wakefulness.

Russell and Mehrabian (1977) identify a dimension of arousal, which, they propose, ranges from sleep through intermediate states of drowsiness and then alertness, to frenzied excitement at the opposite end of the continuum.

However, variations in the description of arousal can be found in the literature. Thayer (1967) describes arousal as having two separate dimensions. In addition to the description involving the central neural structure and the reticular activating system, Thayer also refers to arousal in terms of total organismic energy release (see also Duffy, 1962, who uses the term without any necessary connection with neural structures).

Rather than reticular formation activity, Frankenhaeuser (1978) speaks of arousal as a measure of physiological response. It is a dependent variable influenced by psychological impact and perception of a stimulus, and subsequent reaction to this impact on the individual. The measures utilized by Frankenhaeuser address catecholamine levels, which have been found to vary widely under different psychosocial conditions.

Power has also been described as a stress factor. An essential element influencing the degree to which an individual experiences stress, is whether that person feels that he is coping, where coping is identified as having the resources, ability, and control, or power, in a situation to act and bring about change to meet the demand. Power, and the individual's perception of themselves and the control they can bring to a situation directly determines the occurrence of "stress" and "arousal". Power, or dominance, is described by Russell and Mehrabian (1977) and Konopasky (1986) as ranging from feelings of total lack of control of or influence on events and surroundings to the opposite extreme of feeling influential and in control. It is described as a strength/weakness factor.

Other references to this factor can also be found in the literature. For example, Lazarus (1976) mentions that stress occurs when there are demands on the person which he believes exceed his resources. Cox (1978) maintains that stress is experienced when an imbalance occurs between the perceived demand and the individual's perception of his ability to meet that demand. Cox and Mackay (1981) report that a feeling of lack of control or powerless in the workplace leads to the experience of stress. Russell and Mehrabian (1977) refer to it as a factor of dominance-submissiveness. They propose that pleasure-displeasure (stress), arousal-nonarousal and dominance-submissiveness are all necessary and sufficient to describe emotional states. The relevance and influence of this third factor on the experience of stress will be further discussed.

Power and Coping

It is useful to clarify the relationship between feelings of coping and feelings of power. As stated by Folkman and Lazarus (1980) stress is determined by the relationship between the person and the environment in that particular situation, as well as the evaluation of the available coping resources and options. They define coping as the "cognitive and behavioral efforts made to master, tolerate, or reduce internal and external demands and conflicts among them." However, an individual will not make efforts to control, master or reduce the effects of the situation, that is, problem solve, unless he believes he has resources, and options available to him. If the individual believes there are no resources available to him, then he will feel powerlessness and unable to control or master the situation.

Processes of Coping

Various processes of coping and their relationship to the stress emotions have been identified in the literature. A main process that has been educed by Lazarus (1970) is "cognitive appraisal-reappraisal". This process, and others, including harmful/constructive stress (Selye, 1974), locus of control (Rotter, 1966), active/passive mastery (Guttman, 1974), and direct action versus palliation (Lazarus, 1977) directly influence coping, the degree of control or power they experience in a situation, and the subsequent degree of stress which is perceived. Each will be briefly discussed.

Cognitive Appraisal-Reappraisal

Lazarus (1977) utilizes the concepts of cognitive appraisal and reappraisal in his analysis of stress. He proposes that all emotions depend on cognitive appraisals, and then reappraisals, of the immediate as well as potential significance of a person's adaptive transactions with the environment, to promote their well-being. Cognitive appraisal, or mediation, enables individuals to distinguish between harmless and dangerous stimuli in order to generate an appropriate response, or adaptation. This assessment or appraisal, and availability of an adaptive response or behavior, determines if and how stress is perceived by the individual. The same stimulus configurations produce different stress response patterns in different individuals, based on their personality characteristics, and history (Korchin and Ruff, 1964; Ruff and Korchin, 1964), heredity, early experience and later learning (Levine, 1967, 1975). In order to understand the various response patternings and the stabilities of emotion

and coping in an individual, the processes mediating between the stimulus configuration and the response pattern must be examined (Lazarus, 1977).

Cognitive appraisal cannot be viewed as static, since adaptive responses involve constantly changing events which require new evaluations based both on how one has just reacted and on the anticipated or actual response of the environment. This requires a reappraisal process based on the feedback received from the flow of events. Every action alters the subsequent character of the transaction which, in turn, changes the initial cognitive appraisal. For example, an initial appraisal of threat may change to a judgement of benignity as one discovers that they have mastered the threat, overcome the damage, or survived in spite of it all.

Challenge versus Threat (or Constructive vs. Harmful Stress)

The manner in which an individual appraises a situation is largely dependent upon whether they view it as a "challenge" or a "threat". The difference is one of positive versus negative disposition, where "challenge" emphasizes a mood of positive mastery and gain in a situation which taxes one's resources, and "threat" reflects the harm in a transaction, whether perceived as actual or potential. The individual may not see himself as having access to resources to deal with, control and master the situation and, as a result, his feelings of power are diminished; he may feel helpless and threatened. The difference affects a person's mental and physical status and one's coping behavior during the adaptive transaction. These two aspects of appraisal correspond to two types of stress discussed by Selye (1974) which he refers to as constructive versus harmful stress, or eustress/distress.

Locus of Control and Mastery

The process of "controlling" the situation has been viewed as mediated by either an internal locus of control or an external locus of control (Rotter, 1966). In Rotter's terms, "internals" feel that their well-being can be controlled by their own actions, as opposed to luck, fate, or powerful others. Externals, says Rotter, develop feelings of helplessness, and the conviction that their fate is externally controlled; there is little they can do to manage their lives in a world in which power resides elsewhere. Internals on the other hand are oriented toward a mastery of events operating on the conviction that, with discipline, one may affect one's own fate.

Guttman (1974) distinguishes between two types of mastery: active mastery and passive mastery. The former involves aggressive striving toward autonomy, and the control of external events, while the latter seeks to master the source of one's pleasure and security by self-control and by the inhibition of aggressive responses. In the case of passive mastery, one avoids strife where possible and fits oneself into the expectation of stronger others in order to influence them indirectly (to bring about change). In both cases, the individual has an internal locus of control, and is taking responsibility and control to bring about change; the one involves dealing with the situation, perhaps by employing problem-solving, and the other by dealing with the individuals themselves. Mastery of a situation, whether active or passive, influences whether an individual perceives a situation as a challenge or a threat.

Direct Action versus Palliation

Two additional coping processes discussed in the literature are direct action versus palliation (Lazarus, 1977). Direct action involves attempts to master one's difficult situation through attacking the enemy or source of conflict (using problem solving strategies) , but differs from active mastery in that it also involves avoidance, and preparation against harmful confrontation. Palliation is strictly directed at reducing, eliminating, or tolerating the distressing visceral, motor, or affective features of a stress emotion, or anticipation of such interaction with the environment. The aim of the process is comfort-seeking, by regulating emotion and moderating or softening distress. Two modes are employed to achieve this: 1) intra-psychic modes, which involve denial-avoidance thinking and perceiving, and intellectualized detachment (which can at times lead to "inappropriate" benign appraisals), and 2) symptom-directed actions, which consist of use of alcohol, drugs, sedatives, yoga, and muscle relaxation. These modes of action/inaction are addressed at the consequences or symptoms of the unpleasant situation or transaction, rather than at the situation itself.

Palliative modes of coping are a protective mechanism against debilitating stress. Although they may at times be maladaptive, as in the case of an inappropriately benign appraisal (i.e., denying the severity of physical symptoms of disease, thereby delaying treatment), they are appropriate and reflective of healthy adaptive behavior when no effective direct action is available, or when palliation does not interfere with direct action when such action is available to the individual. For example, in a case of personal crisis, self-deception or denial in the early stages seems to be very helpful in

"keeping a person going" psychologically, until he is strong enough to engage in more direct and adaptive actions.

Measures of Stress

In addition to investigating the causes and treatment of stress, research has also paid extensive attention to the measurement of stress. The tools or procedures of measurement which an investigator selects depends upon the definition of stress which that researcher advocates: stress as a stimulus, stress as a response, or stress as an interaction between stimulus and response.

Measures of Stress, Stress Defined as a Stimulus

Within this model of stress, appropriate measures would include measures of conditions or events to which people are subjected such as temperature, noise level, overwork, isolation, and life events such as marriage, divorce, and death of a loved one. A scale developed by Holmes and Rahe (1967) called the Schedule of Recent Life Experiences (SRE) is a list of 43 possible life events which have been assigned scores based on their assumed impact on life and the degree of readjustment involved in coping with them. For example, "death of a spouse" was given a value of 100 while "minor violations of the law" was assigned a value of 11. These values were established by having subjects evaluate the extent of social readjustment required by each of the life events on a scale of 0-100, using marriage as a starting point with an arbitrarily assigned value of 50 by the authors.

Measures of Stress, Stress Defined as a Response

Researchers who advocate the response-based model of stress often utilize physiological indices as measures of stress, for example, the amount of catecholamine found in the individual's urine. Frankenhaeuser (1975) has demonstrated that there is an increase in catecholamine secretion in subjects in response to stressful situations such as race-car driving. Selye (1983b) has suggested a variety of physiological indices to measure stress, which include enlargement of the adrenal cortex, an increase in the secretion of corticoid hormones, and symptoms of a general malaise syndrome associated with the GAS, that is, enlargement and discoloration of the adrenals, intense shrinkage of the thymus, spleen and lymph nodes, and deep bleeding ulcers.

Measures of Stress, Stress Defined as an Interaction

One well accepted method of the measurement of stress based on the interactional model is the use of self-report mood adjective checklists. Various forms of mood adjective checklists have been used since 1950, when Cattell (1950) developed a list of self-descriptive adjectives. Using this list as a reference point, Nowlis and Nowlis (1956) developed a scale to measure transient mood states, which they called the Mood Adjective Checklist (MACL) (see Appendix A). The MACL allows for self-rating on 12 mood factors, and is probably the most widely used multiple mood scale. It has appeared in various formats ranging from 40 to 140 items, with all forms providing for self-rating on the 12 mood factors. These 12 factors were identified in research in which a list of 130 words were administered to approximately 450 college students who were asked to indicate whether or not

the adjectives described themselves (Nowlis and Nowlis, 1956). Factor analysis of the data yielded 12 monopolar factors identified as aggression, anxiety, surgency, elation, fatigue, social affection, sadness, skepticism, egotism, vigour, concentration, and nonchalance. This suggested that moods which were often thought to be mutually exclusive could vary independently of each other and could, therefore, be simultaneously present in the same individual.

Thayer (1967), who was influenced by the work of Nowlis and Nowlis (1956), developed the Activation-Deactivation Checklist (AD-ACL). Thayer was interested in the more basic factors of mood and, as a result, the AD-ACL is a simpler measure, providing ratings for 4 mood factors: general activation, high activation, general deactivation, and deactivation-sleep. The AD-ACL instructs subjects to respond to each adjective on the checklist according to how well the word describes their feelings at the moment. A four point response scale is provided for each adjective, with symbols to indicate "definitely feel", "feel slightly", "cannot decide" and "definitely do not feel". On the AD-ACL, 28 activation/deactivation adjectives such as "peppy" and "leisurely" were presented with 21 additional mood adjectives such as "blue" and "grouchy", which were included as a means of disguising the intent of the test. The AD-ACL was administered to 211 students and the resulting data factor analyzed. The analysis yielded four monopolar factors: general activation, high activation, general deactivation, and deactivation-sleep. Thayer suggested that these factors approximate four points on a hypothetical activation or arousal continuum.

The final version of the AD-ACL consists of 50 adjectives (Thayer, 1978a). Two high activation adjectives (tense, anxious) were added to the original 22 activation adjectives. These adjectives are interspersed among 26 other mood-descriptive adjectives included by Thayer to both disguise the purpose of the test and to provide data on a variety of mood dimensions. A short form of the checklist was also developed, which consists of only 20 adjectives, those activation-deactivation items which yielded the highest factor loadings in the original research.

While the results of Thayer's initial study (1967) yielded monopolar results, subsequent research (Thayer,1978a), using the 20-item checklist, yielded results that showed that the AD-ACL represented two bipolar factors. In the latter research Thayer also used a larger sample size. The first factor included those items which composed the high activation and general deactivation factors, and the second factor included those items which comprised the general activation and deactivation-sleep factors. These factors covered two dimensions of mood or activation: one ranged from feelings of subjective tension to placidity and quietness, and the second ranged from feelings of energy and vigour to the opposite feelings of sleepiness and tiredness.

Due to difficulties experienced by Mackay et al (1978) in interpreting Thayer's factor analytic results with the AD-ACL, being monopolar in 1967 and bipolar in 1978, they developed an alternate checklist, the Stress Arousal Checklist (SACL). They theorized that the difference between the factor analytic results of Mackay (1978) and Thayer (1978a) may be due to the use of particular adjectives used by Thayer on his checklist. Being an American,

Thayer used words common to the American culture which may have been innapropriate for the British population used by Mackay et al in their research. The use of such adjectives as "peppy", "full of life", "clutched up", and "blue" would perhaps be much lower in the U.K. than in the U.S., confusing to British subjects, and subsequently alter overall factor structure. Mackay et al (1978) used the original AD-ACL as a basis for the SACL, deleting those items felt to be too American, and adding adjectives believed to be more appropriate for a British population. The 45-adjective list which resulted was administered to 145 students, and analysis of the results yielded two bipolar factors which were identified as "stress" and "arousal". The "stress" factor corresponded to a combination of Thayer's high activation and general deactivation factors (which reflects feelings ranging from subjective tension to the opposite feelings of placidity and quietness), and the arousal factor corresponded to a combination of the general activation and deactivation-sleep factors (which reflects feelings ranging from energy and vigour to the opposite feelings of sleepiness and tiredness). The checklist was reduced to 34 items, after Mackay et al eliminated 11 items which showed loadings less than 0.40 on one or the other factor. Four additional adjectives were dropped from the checklist because they were felt to be somewhat difficult for the subjects and because they showed relatively weak loadings on the factors, yielding a 30-item checklist (see Appendix B). Mackay et al suggest that the 30 items which compose the SACL reflect two basic aspects of mood: 1) arousal, which is defined as being alert, awake, attentive, and lively, and 2) stress, which is defined as feeling tense, uncomfortable, unpleasant, and bothered. They also provided "alternate" forms of the SACL, which they labelled A, B, C, and D (see Appendix C for a copy of Form B). However, these forms differ from one

another only with respect to the order in which the items are presented; the same 30 items appear in each form.

The SACL has been criticized. Cruikshank (1982) found that frequent explanation was requested by subjects for various checklist items. As "not clear"or "cannot decide" responses are scored identically to "definitely do not feel" responses, it was wondered whether a large number of "difficult" items might result in spuriously low scale scores. King, Burrows, and Stanley (1983) dealt with this issue by eliminating those items which they felt were difficult. However, reducing the number of adjectives to a total of 20 for the two scales may have jeopardized the reliability and validity of the test.

McGovern (1987) addressed this issue of difficulty of the adjectives of the SACL by constructing an alternate form of the SACL, the Checklist of Arousal and Stress (CLAS). The single-word adjectives of the SACL were replaced with short, simple phrases. In addition, McGovern also investigated the involvement of a third factor, power, in the experience of stress. It has been suggested in the literature that a scale measuring three factors might better assess mood state than a two factor scale (Lazarus, 1976; McGrath, 1976; Russell and Mehrabian, 1977; Cox, 1978). To investigate this possibility, a 15-item power scale was developed. In aid of enhancing comprehension of the items, short phrases were used instead of single adjectives. This scale was combined with the CLAS to form the 45-item Checklist of Arousal, Stress, and Power (CLASP).

Factor analysis of responses to the CLAS indicated that it measured four factors: high and low stress and high and low arousal. Scores on the

stress and arousal scales of the CLAS correlated significantly with SACL scores. But, several items on the test failed to load significantly on the appropriate factor. Four items of the CLAS, the alternate form of the SACL, failed to reach the loading cut-off of 0.40, established by Mackay et al (1978). "Excited by life", an arousal item, and "satisfied with life", "life is good", and "even-tempered", all stress items, failed to load on their respective factors. A fifth item, "heavy-hearted", failed to load on the stress factor as intended, but did load significantly on the arousal factor.

A similar situation emerged with the power scale of the CLASP. (A power scale was developed by McGovern [1987] and added to the CLAS to form the CLASP, the Checklist of Arousal, Stress and Power). Three items of the power scale fell below the cut-off criterion of 0.40, specifically, "unsure of myself", "like a lightweight", and "meek and mild".

The recommendation made by McGovern was that the problematic items, those on the CLAS and on the power scale of the CLASP, be replaced with phrases which would better reflect the factor. This would require the additions of a high arousal item to replace "excited by life", three low stress phrases to replace "satisfied with life", "life is good", and "even-tempered", and finally, three low power items to replace "like a lightweight", "meek and mild", and "unsure of myself". Since "heavy-hearted" failed to show an appropriate loading on the high stress factor, but did show an appropriate loading on the low power factor, it was suggested that this phrase be included on the power scale to replace one of those three low power items previously mentioned. An additional high stress item was sought to replace this item on the stress scale.

In this study, these substitutions were added to the CLASP-R. In addition, items were added so that an equal number of positively and negatively keyed items would comprise each scale of the checklist.

Several high stress phrases were added to the CLASP-R for the purpose of expanding the checklist, and one of these additions was used to replace "heavy-hearted". The high stress phrases which were added were as follows:

uneasy about many things
too many responsibilities
fearful of the unknown
at my wits end
tensed up
nervous about what's going to happen next
down in the dumps

Several low stress phrases were also added to expand the stress scale of the checklist. The intention was to use three of these additions as substitutions for "satisfied with life", "life is good", and "even-tempered". The low stress phrases which were added were as follows:

content with myself
pleased with the way things are
secure and at ease
enjoying myself
happy with the way things have turned out
have peace of mind
my life is going smoothly"

On the arousal scale, five high arousal phrases were added to also expand the arousal scale; one of these items was used to replace "excited by life". The high arousal items which were added were as follows:

a go-getter
lots of spirit
keen to get involved
full of enthusiasm
interested in what's going on"

On the low arousal scale, in addition to retaining "heavy-hearted" from the stress scale, five items were added for the purpose of increasing the length of this scale. They included:

drained and listless
hard to keep awake
on the verge of exhaustion
ready to drop

Three high power items were added to the power scale in order to increase the length of this scale. They were as follows:

a born leader
talented and skillful
strong and tough

Six low power items were added to the power scale to expand the length of this scale, and three of these additions were used to replace "like a lightweight", "unsure of myself", and "meek and mild". The low power phrases which were added to the scale were as follows:

find it hard to make a decision
unable to assert myself
easily intimidated
lacking in resources
dominated by others
vulnerable to things around me

These additions and substitutions resulted in a 68-item checklist for the assessment of arousal, stress, and power (see Appendix D). The intention was to initially add more items than necessary to each scale and, following factor analysis of the results, to retain the 48 checklist items which showed the highest factor loadings on the respective factor.

In this study, one objective was to expand the SACL so that it would be an alternate form of the CLASP-R. A power scale was developed which was combined with the SACL to form the Stress Arousal Checklist-Power (SACL-P), as an alternate form of the CLASP-R. It retains the original 30 items of the SACL (18 stress items, and 12 arousal items), and includes 22 additional power items (11 high power items and 11 low power items). Not all 22 power items were to be retained and included in the final checklist. Following the factor analysis of the results, the 18 items showing the highest factor loadings (9 high power and 9 low power items) would comprise the power scale. As the SACL is comprised of single words, this scale was developed by locating items consisting of appropriate single-word adjectives. The high power items (or words) included:

ambitious capable
confident competent

informed	industrious
resourceful	powerful
effective	tough
assertive	

The low power items included:

helpless	powerless
unproductive	vulnerable
indecisive	incompetent
unsuccessful	defeated
defenseless	weak
overpowered	

These items were dispersed throughout the SACL, to yield a 52-item checklist the SACL-P. (see Appendix E)

This study addressed an additional issue raised in the stress measurement literature, that is, the affect of the type of response format offered by the checklists (symmetrical vs. asymmetrical) on factor structure. Meddis (1972) indicated that a symmetric format will yield monopolar factors whereas an asymmetric format will yield bipolar factors.

In this study a symmetrical response format was offered to respondents similar to the format suggested by Meddis (1972). Subjects chose from an equal number of positive and negative response choices: "++", definitely feel,"+", feel slightly, "-", do not feel, or "--", definitely do not feel. The "?" response was to be used only when the item was unclear to the subject.

Monopolar versus Bipolar Factors

An ongoing question in the measurement of moods is whether the factors identified in the checklists are monopolar or bipolar and whether the moods should be conceptualized as monopolar or bipolar. Nowlis and Nowlis (1956) constructed and used the Mood Adjective Checklist in research in which they postulated four bipolar mood dimensions. They were identified as first, the level of activation, which is that aspect of mood in which there is perception of readiness for action such as moving, acting, responding, thinking, working, and paying attention at one pole, and perception of readiness for sleep, rest, and remaining inactive at the opposite end of the pole. (This is similar to the aspect of "arousal" as presented by Russell and Mehrabian [1977] and Cox [1978]). The second, the level of control, refers to that aspect of mood in which there is perception of the degree to which internal and external events are, have been, or will be under control, or the extent to which they are out of control. The third dimension, social orientation, refers to the aspect of mood in which there is readiness for interaction with others, or readiness to ignore, reject, or even hurt others. This dimension resembles the coping mechanism of "direct action" as described by Lazaus (1976). The fourth dimension is described as hedonic tone, and refers to the aspect of mood in which there is pleasantness or unpleasantness. This parallels the pleasantness-unpleasantness element of "stress" as discussed by Russell and Mehrabian (1977), and the hedonic tone element proposed by Meddis (1969).

However, when Green and Nowlis (1957) subsequently factor analyzed the adjective correlations, eight monopolar factors were identified instead of

four bipolar factors. Borgatta (1961) conducted his own analysis and also identified monopolar factors, but only six of the eight factors emerged. In 1978, researched conducted by Lorr, Daston, and Smith isolated eight monopolar mood factors, five of which had been identified in previous studies. These factors were called Cheerful, Energetic (which is correlated with the McNair and Lorr's (1964) factor of Vigour-Activity), Anger-Hostility, Tense-Anxious, Depressed, Inert-Fatigued (which is essentially the same as the Deactivation factor of Green and Nowlis, 1957), Thoughtful, and Relaxed-Composed. The three "new" factors were "Cheerful", "Thoughtful", and "Composed-Relaxed". The authors postulated that mood states often assumed to be mutually exclusive can co-exist.

Thayer (1967), using the definition of activation proposed by Duffy (1962), which emphasizes organismic energy release rather than levels of wakefulness, developed the AD-ACL. Research was conducted using this tool, and results yielded monopolar factors identified as 1) General activation (lively, active, energetic), 2) High activation (clutched-up, jittery, stirred-up), 3) General deactivation (at rest, leisurely, calm), and 4) Deactivaton-sleep (sleepy, tired, drowsy). Interestingly, later research with this same scale yielded bipolar rather than monopolar results (Thayer, 1978). Thayer (1978, P. 747) attributed this apparent inconsistency in findings to the use of an orthogonal rotation solution. According to Thayer, the orthogonality of the factors was suspect because the factors usually did not show independent variation in various experimental studies.

Further research by Bentler (1969) and Meddis (1972) led to a proposal for conceptualizing the polarity "problem". Meddis believes that mood states

are bipolar and that such a factor structure will be evident with the use of a symmetric response scale, in contrast to the more conventional asymmetric response scale, when subjects rated their moods. He postulates that monopolar factors result when the response choices are: "not at all", "a little", "quite a bit", and "extremely", and that bipolar factors result when the response choices are: "definitely", "slightly", "do not feel that way", and "definitely do not". Meddis maintains that ratings on the asymmetric intensity scale result in skewed distributions to the positive end because of the larger number of positive alternatives. If that is true, the monopolar factor structure is more descriptive of the number of asymmetric response options than the moods. Meddis proposes that use of asymmetric response scales suppresses negative correlations between mood states and negatively influences the factor analysis against the discovery of bipolar factors. There are two categories of acceptance but only one of rejection and, because of this, when there is a larger number of positive response choices in the response scale, for example, for "happy" (from "slightly" to "definitely"), it cannot be matched by a comparable availability of responses for "sad" (from "no" to "definitely no") No such second negative category exists in the responses. As a result, two mood states which should be negatively correlated do not emerge as such in the analysis. Using a symmetric response format, Meddis found two large and one small bipolar factors. For example, Thayer's two monopolar factors "General activation" and "Deactivation-sleep" were found to belong to a single bipolar activation factor. These findings were more supportive of the apparently "common-sense" stand held in the scientific community that mood states are bipolar.

Debate in this area has continued however, often addressing the issue of symmetric versus asymmetric rating scales, but also, the construction and nature of the words which comprise these checklists to represent various factors. This issue has been addressed particularly in the development of checklists designed for the purpose of measuring stress.

Checklist Reliability

The reliability of various tests (the SACL, the MACL, and the AD-ACL) has not been systematically investigated. Anastasi (1976) states that reliability refers to the consistency of scores obtained by the same persons when reassessed with the same test on a different occasion (test-retest), and to the consistency of test scores obtained from different sets of equivalent scales (alternate form). MacKay et al (1978) constructed and administered alternate forms of the Stress Arousal Check List (SACL), but the difference in forms consisted only of varying the order of adjectives. They utilized a test-retest procedure in a subsequent analysis.

McGovern (1987) constructed the CLAS, an alternate form of the SACL, addressing the issue of "difficulty of items" (Cruikshank, 1982). This was done by using short, simple phrases rather than the more difficult single adjectives of the SACL. It was hoped that the use of "easy" items would minimize the problems associated with the "?" response category, that is, subjects choosing "?" because they were unfamiliar with the word rather than because they were unsure if it applied to their feelings or mood at that moment. Five items of the CLAS showed factor loadings below the 0.40 cut-off criterion established by Mackay et al (1978) as appropriate for inclusion of

the item in a SACL scale. McGovern recommended that these items be replaced with phrases which would better reflect the factor being represented

The development of the alternate form of the SACL also addressed a third factor of stress, identified by Konopasky (1986) and Russell and Mehrabian (1977) as "power". McGovern (1987) expanded the CLAS to include a scale measuring this factor. The result was the Check List of Arousal, Stress and Power (CLASP) It has been proposed in the literature that a test including measurement of this factor might better measure stress and mood state, than a scale based on a two-factor theory. Indeed, review of the literature (Sells, 1970; Levine and Scotch, 1970; Monat and Lazarus, 1977; Lazarus,1977) has led to the proposal that an individual's level of stress and arousal can only be accurately assessed within the context of the amount of control, or power, that the individual perceives himself as having and the degree to which he feels he can cope and exercise such control/power in a situation. The amount of stress and arousal experienced (and subsequently assessed) is directly related to the perception of power/control over the situation and the feeling of coping.

In the present study, an alternate form of the CLASP, the SACL-P, was developed. The scale is comprised of single adjectives, with 18 power items being added to the original 30-item SACL to yield a 48-item scale. As such, it does not have an equal number of positively and negatively keyed words on the stress and arousal scales.

The present study assessed reliability of the scales using internal consistency, alternate form, and test-retest procedures with the SACL, the

SACL-P, and the CLASP-R. The test-retest procedure involved administering each checklist to the same subjects on four separate occasions.

Validity

Validity of the SACL has been demonstrated in a number of different studies. Burrows, Cox, and Simpson (1977) provide evidence of the predictive validity of the SACL in a study on the measurement of stress in a sales training situation. A physiological instrument, the measurement of capillary blood glucose levels, and a psychological one, the SACL, were utilized to measure stress in participants who were required to complete arduous and demanding sales training tasks. The results indicated that both blood glucose levels and the SACL are useful in describing the nature and operation of stress in this occupational situation.

Studies on validity have also been conducted by Ray and Fitzgibbon (1981), and Cox, Thirlaway, and Cox (1982). Cox et al (1982) investigated the relationships among physiological measures, such as heart rate, heart rate variability, and blood glucose levels, and a psychological measure, the SACL. The results confirmed the checklist as a valid tool for the measurement of stress.

As the CLAS has been established as a reliable alternate form of the SACL (McGovern,1987), these studies "lend" validity to the CLAS as a measure of stress.

Factor Analytic Technique

There were three goals to the present study. The first was to construct a revised form of the Checklist of Arousal, Stress, and Power (CLASP), the Checklist of Arousal, Stress, and Power-Revised (CLASP-R). The second goal was the development of a power scale for the SACL, to be combined with the SACL to form the SACL-P. The third goal was to employ a symmetric response format with these checklists, one which would provide an equal number of positive and negative response choices i.e., ++ + - -- ?. This response format was used with the SACL as well as the SACL-P and the CLASP-R, the data analyzed, and compared with that reported by Mackay et al (1978) and McGovern (1987). As factor analysis was such an integral part of this study, it will be briefly discussed here.

According to Gorsuch (1983), factor analysis is a useful aid in concisely summarizing the interrelationships among variables. Variables which are identified as qualitatively different (where little generalization can be made from variables in one area to those in another) are referred to as "separate factors". Observed correlations among measures of specific variables result from variables reflecting the same factor. As Gorsuch explains, the calculation of the measure of the degree of generalizability found between each variable and each factor is referred to as the "factor loading". Factor loadings reflect quantitative relationships; the further the factor loading is from zero the more one can generalize from that factor to the variable. The main characteristic of the factor analytic approach is the assumption that observed covariation is due to some underlying common factors. In the present study, the purpose of factor analysis was to determine which factors

underlie the mood checklist item responses, and which factors underlie stress.

There are three basic steps in the factor analytic process (Kim and Mueller,1978). The first consists of computing the correlation matrix for all the measured variables. Second, the number of factors required to represent the data are extracted. This can be done in one of several ways. One procedure involves considering only factors that account for variances greater than one or have eigenvalues greater than one. Another criterion suggests that only that number of factors required to account for 60 percent of the cumulative percent of variance should be extracted. The third procedure involves a plot of the total variance associated with each factor. Typically, this plot shows a distinct break between the steep slope of the large significant factors and a trailing off of the rest of the factors. This gradual trailing off has been labelled the scree, and experimental evidence indicates that the scree begins at the factor which represents the last of the true number of factors.

The third step in the factor analytic process involves rotation. This phase of factor analysis attempts to achieve a simple structure, each factor having maximal loadings for some variables and minimal loadings for the remainder. While rotation does not alter the commonalities and the percentage of total variance explained, the percentage of variance accounted for by each factor does change. Rotation redistributes the explained variance for the individual factors. Different rotation methods, therefore, might actually result in the identification of somewhat different factors.

The principal components analysis with varimax rotation was used by Mackay et al (1978) and McGovern (1987). For the purpose of consistency in procedure and analysis, this method of analysis was used in the present study as well. Components analysis summarizes data by means of a linear combination of the observed data. Principal components analysis is used whenever uncorrelated linear combinations of the observed variables are desired. The first principal component accounts for the largest amount of the variance, and the second accounts for the next largest amount, and is uncorrelated with the first. Successive components explain progressively smaller portions of the total sample variance and are all uncorrelated with each other (Norusis,1985).

In the present study, the criterion used for determining the number of factors that should be extracted was the Kaiser criterion. This involves extracting only those factors with eigenvalues greater than one. It is the most commonly used procedure for determining the number of initial factors to be extracted (Kim and Mueller,1978). After extracting the factors, the factor matrix was subjected to varimax rotation, which is a method of orthogonal rotation. This is defined by Kim and Mueller (1978b, P. 85) as the "operation through which a simple structure is sought under the restriction that factors be orthogonal or uncorrelated. Factors which are obtained through this rotation are by definition uncorrelated". The varimax rotation attempts to minimize the number of variables that have high loadings on multiple factors, thereby simplifying the interpretation of the factors.

Method

Overview

There were three goals in the present study. The first goal consisted of replacing items on the CLAS, and the CLASP, which showed small loadings on the appropriate factors in McGovern's (1987) analysis, with appropriate short, simple phrases. The CLASP was also expanded to provide an equal number of positively and negatively keyed items. The revised checklist is the CLASP-R.

The second goal consisted of development of a power scale for the SACL to be combined with the SACL forming the SACL-P.

The third goal involved investigating the effect of response format on factor structure. A symmetric response format, rather than the asymmetric format used previously by researchers (i.e., Mackay et al [1978], McGrath [1976]), was employed with all checklists. The data from all three checklists was factor analyzed and compared with the findings of Mackay et al (1978), and McGovern (1987).

In summary, subjects were given three checklists: 1) the SACL, 2) an expanded version of the CLASP, the CLASP-R, developed by the author, and 3) an expanded version of the SACL, the SACL-P, which included a scale to measure power , also developed by the author.

Subjects

Four hundred and sixty-eight undergraduate psychology students participated as subjects in this two-part study. Personal statistics were provided by 425. Of these, 67.1% were freshmen, or first year students; 25.2% were sophmores and juniors, and 7% were seniors in their fourth and final year of study. The average age of the participants was 19.8 years. Forty-seven percent were males, and 53% of the participants were females. All participants received credit, a small bonus in their course grade, for their participation in the study.

Test Materials

Three checklists were utilized in this study: the original SACL, the CLASP-R, and the SACL-P. The SACL, a measure of the degree of stress perceived or experienced by the individual, provides scores for two independent factors, stress and arousal (see Appendix B). It is comprised of 30 adjectives, 18 of which make up the stress scale, and 12 of which make up the arousal scale. On the stress scale, 10 of the 18 "stress" adjectives are described as high stress words, while the remaining 8 are low stress adjectives. On the arousal scale, there are 7 high arousal words and 5 low arousal words. Form A and Form B of the SACL were administered. Form B contains the same 30 items as Form A, the only difference consisting of an alternate ordering of items (see Appendix C).

The SACL-P, an expanded version of the SACL, was developed to provide a scale which measured a third factor of stress, that is, power. The

adjectives which comprise the power scale of the SACL-P were selected by the author after consultation with colleagues, and with the help of a dictionary (Oxford Illustrated Dictionary, 1975), and thesaurus (Roget's11, The New Thesaurus,1980). Twenty-two adjectives were selected, 11 of which were considered to reflect high power, and 11 which were considered to reflect low power. This scale was combined with the SACL prior to administration, yielding a 52-item scale (see Appendix E).

The CLASP-R, which consists of short phrases rather than single adjectives, was developed as an improved version of the CLASP insofar as previous items which failed to load appropriately on their respective factor were replaced with new phrases, and the scale was expanded to provide for an equal number of positively and negatively keyed items. Eight items which had previously failed to show appropriate loadings on their respective factors were deleted: four "stress" items ("heavy-hearted", "satisfied with life", "even-tempered", and "life is good"), one "arousal" item ("excited by life"), and three "power" items ("unsure of myself", "like a lightweight", and "meek and mild"). "Heavy-hearted" had loaded highly (.68) on the low arousal factor in a previous analysis and, therefore, was included as an additional low arousal item. The expansion of the scale involved the addition of six high stress items, seven low stress items, five high arousal items, four low arousal items, three high power items, and five low power items, yielding a 68-item scale (see Appendix D).

In the final analysis of the SACL-P and the CLASP-R, items showing the smallest factor loadings on each scale were deleted from each checklist. This procedure was intended to produce two 48-item checklists, each of which

measure three factors of stress: stress, arousal, and power, with an equal number of positively and negatively keyed items on each scale of the CLASP-R, that is, 8 high stress, 8 low stress; 8 high arousal, 8 low arousal; and 8 high power, and 8 low power.

Consistent with the research of Meddis (1972), a symmetric scoring format was developed, offering an equal number of positive and negative response choices. The response choices were "++", "+ ","-", "--", "?". The fifth response choice (?) was to be used only when the subject was unfamiliar with the meaning of a word. This use of the "?" response in this research was different than in previous research (Mackay et al,1978; Nowlis and Nowlis,1956; Thayer,1967), in which it meant either that a subject was not sure if the word or phrase described their feelings at the moment, or the subject was unfamiliar with the meaning of the word. The same response format was used with all three checklists.

Printed instructions were attached to each of the checklists. The instructions for the SACL (Form A and B) in the present study followed the same format as those developed by Mackay et al (1978) (see Appendix F). One item from the SACL, "relaxed", appears in the instructions in examples of the possible responses from which a subject may select. However, the number of response choices was increased from four to five, to provide for an equal number of positive and negative options apart from the "?" response.

The instructions advised the subject to respond to each item in one of five ways: 1) if the item definitely described how the subject felt at the moment, he was to circle the double plus indicated as "++" to the right of the

response, 2) if the item only likely applied to the subject's feelings at the moment, he was to select and circle the single plus, "+", response, 3) if the item did not particularly apply to the subject's feelings at the moment, then he was to circle the single minus, "-", response, 4) if the subject clearly decided that the item does not apply to his feelings at the moment, then the double minus, "--", was to be selected and circled, and, 5) if the item was not clear to the subject, then he was to circle the question mark, "?".

Instructions for the SACL-P were identical to those of the SACL with one exception (see Appendix G). The item from the checklist used in the instructions was "confident", rather than "relaxed". On the CLASP-R, the instructions were modified slightly (see Appendix H). The term "phrase" or "phrases" was substituted on any occasion that "word" or "words" occurred in the original instructions, and the phrase "in control" appears in the instructions rather than "confident".

In addition to the written instructions, subjects also received brief oral instructions, before receiving the checklists. Subjects were told that they would receive two checklists. If they were participating in Part 1, they received the SACL, Form A and the SACL, Form B. Each checklist was given separately, with the first being collected before the second was distributed. If the subjects were participating in Part 2, they were given the SACL-P and the CLASP-R, which were also administered and collected separately.

Procedure

The SACL (Form A and Form B), the SACL-P, and the multi-worded, revised form of the CLASP, the CLASP-R, were administered, in a two part format, to two groups of subjects. In Part 1, the SACL was administered to 310 students. A group of 100 of these students also completed Form B, with half, or 50, receiving Form A first and then Form B, and the other half receiving the checklists in the reverse order. A second group of 108 of the 310 students completed Form A of the checklist on three subsequent occasions with intervals of 45 minutes, two days, and then 5-6 weeks between administrations. In Part 2, the SACL-P and the CLASP-R were administered to 468 students. Approximately half, or 271 subjects, received the SACL-P first and then the CLASP-R, while the remaining subjects received the checklists in the reverse order. These subjects were also administered these checklists three times, with intervals of 45 minutes, two days, and one week between administrations. Subjects were instructed to respond to each item on each checklist. Finally, subjects were also asked to provide information indicating their gender, age, and year of university study.

The time required for the administration of the checklists was approximately fifteen minutes for the SACL (Form A and Form B), and twenty minutes for the SACL-P and the CLASP-R, including instructions, completion, and handling of the materials.

Results

The data were responses to the three checklists, the SACL, the SACL-P, and the CLASP-R. The responses to the three checklists were all scored in the same manner. The two acceptance categories, "++" and "+", were scored 4 and 3 respectively, while the two rejection categories, "--" and "-", were scored 2 and 1 respectively. The "?" category was scored 0. Consistent with Cox and Mackay (in press) this scoring was collapsed in the factor analysis. Scores of 4 and 3 on the high stress, high arousal, and high power scales were given a value of 2, and scores of 2 and 1 on were given a value of 1. Scores of 4 and 3 on the low stress, low arousal, and low power scales were given a value of 1, while scores of 2 and 1 were given a value of 2. Scores of 0 on all scales retained a value of 0. Data from checklists with missing or two responses to the same item were not included in the analysis: 1) there were 9 SACL'S with missing responses, yielding a sample for Part I of 301, 2) there were 43 SACL-P checklists with missing or two responses to the same item, yielding a sample of 425, and 3) there were 2 incomplete CLASP-R checklists and 47 checklists with missing or two responses to the same item, yielding a sample of 419.

Each data set was factor analyzed. The number of factors extracted by Principal Components was determined by the Kaizer criterion which includes only those factors which have eigenvalues greater than one. Once extracted, these factors were subjected to varimax rotation.

Factor Analysis of the SACL

The results of the factor analysis of the SACL data collected from 301 subjects is presented in Table I. In addition, Table I compares these results with those of Mackay et al (1978) and McGovern (1987).

The analysis yielded four monopolar factors, which accounted for 55% of the variance: high stress (Factor 1), low arousal (Factor 2), low-stress (Factor 3), and high arousal (Factor 4). As can be seen in Table I, Mackay's (9178) analysis yielded bipolar factors, but McGovern's (1987) results were monopolar.

Table I
Factor Loadings of SACL Items

SACL Adjective	Mackay et al's Loadings	Factor	McGovern's Loadings	Factor	Present Loadings	Factor
tense	0.75	1	0.81	1	0.71	1
worried	0.69	1	0.75	1	0.77	1
apprehensive	0.54	1	0.58	1	0.49	1
bothered	0.71	1	0.63	1	0.75	1
dejected	0.59	1	0.57	1	0.31	1
uptight	0.70	1	0.76	1	0.78	1
jittery	0.64	1	0.72	1	0.16	1
nervous	0.64	1	0.75	1	0.52	1
distressed	0.73	1	0.72	1	0.76	1
peaceful	-0.68	1	0.71	3	0.56	3
relaxed	-0.77	1	0.61	3	0.69	3
cheerful	-0.64	1	0.66	3	0.50	3
contented	-0.73	1	0.55	3	0.51	3
pleasant	-0.68	1	0.74	3	0.66	3
comfortable	-0.56	1	0.60	3	0.61	3
calm	-0.68	1	0.43	3	0.68	3
restful	-0.55	1	0.32	3	0.18	3
active	0.71	2	0.67	2	0.67	4
eregetic	0.75	2	0.73	2	0.62	4
vigourous	0.69	2	0.84	2	0.68	4
alert	0.63	2	0.40	2	0.28	4
lively	0.77	2	0.73	2	0.56	4
activated	0.66	2	0.76	2	0.72	4
stimulated	0.60	2	0.59	2	0.64	4
drowsy	-0.71	2	0.77	4	0.85	2
tired	-0.61	2	0.80	4	0.83	2
idle	-0.54	2	0.11	4	0.16	2
sluggish	-0.65	2	0.59	4	0.69	2
sleepy	-0.75	2	0.85	4	0.84	2

Factor loadings for individual items showed small differences in the three studies. Mean factor loadings for all items were very consistent, and are presented in Table 2.

Table 2

Mean Factor Loadings of the High Stress, Low Stress, High Arousal,and Low Arousal Scales of the SACL

Factor	Mackay	McGovern	Present
High Stress	0.67	0.71	0.60
Low Stress	0.66	0.58	0.55
High Arousal	0.69	0.67	0.60
Low Arousal	0.65	0.62	0.67

In previous studies, Mackay et al established a factor loading of 0.40 as the minimum loading for adjectives to be included in the scale measuring that factor. This criterion was also adopted by McGovern (1987). In the current study, a factor loading of 0.30 was set as the minimum loading for adjectives to be included in the scale measuring that factor. According to Gorsuch (1983), the size of the sample determines the criterion for interpretating elements as significant. An estimate of the necessary criterion level can be obtained by doubling the standard error which is appropriate for that sample size. For example, the minimum significant correlation coefficient ($p \leq .05$) with an "n" of 100 is .2; therefore, only elements greater than an absolute value of .4 would be interpreted if the analysis was based on 100 subjects. If elements as low as .3 are to be interpretated, a minimum "n" of 175 would be needed (Gorsuch, 1983). Given the sample size of 301 in this study for the SACL, (and 425 for the SACL-P, and 416 for the CLASP-R), the

0.30 criteria is conservative and appropriate as a criterion of significance of items as measures of the factor.

In the current study, four items fell below the 0.30 criterion: "jittery" showed a factor loading of .16 on the high stress factor, while it showed one of .47 on Factor 4 (high arousal). "Restful", which also failed to load appropriately in the McGovern (1987) study showed a loading of .18 on the low stress factor, Factor 3. "Alert" showed a loading of .28 on the high arousal factor, and it did not show a loading of any magnitude on any of the other factors. "Idle" showed a loading of .16 on the low arousal factor.

Factor Analysis of the SACL-P

Results of the factor analysis of the SACL-P data collected from 425 subjects are presented in Table 3. The table also compares these results with those of the SACL obtained in the present study. Six monopolar factors emerged in the following order: high arousal (Factor 1), low power (Factor 2), low arousal (Factor 3), low stress (Factor 4), high stress (Factor 5), and high power (Factor 7). These six factors accounted for 53% of the variance. Table 3 shows the difference in factor loadings of the various items of the SACL when additional items, power scale items, were included in the checklist.

Table 3

Factor Loadings of SACL-P Items

SACL-P Adjective	SACL-P Loadings	Factor	SACL Loadings	Factor
tense	0.51	5	0.71	1
worried	0.66	5	0.77	1
appehensive	0.42	5	0.49	1
bothered	0.64	5	0.75	1
uneasy	0.50	5	0.70	1
dejected	0.25	5	0.31	1
uptight	0.58	5	0.78	1
jittery	0.16	5	0.16	1
nervous	0.38	5	0.52	1
distressed	0.64	5	0.76	1
peaceful	0.67	4	0.56	3
relaxed	0.51	4	0.69	3
cheerful	0.61	4	0.50	3
contented	0.56	4	0.51	3
pleasant	0.63	4	0.66	3
comfortable	0.66	4	0.61	3
calm	0.46	4	0.68	3
restful	0.23	4	0.18	3
active	0.66	1	0.67	4
energetic	0.68	1	0.62	4
vigorous	0.73	1	0.68	4
alert	0.45	1	0.28	4
lively	0.60	1	0.56	4
activated	0.62	1	0.72	4
stimulated	0.66	1	0.64	4
drowsy	0.82	3	0.85	2
tired	0.88	3	0.85	2
idle	0.17	3	0.16	2
sluggish	0.66	3	0.69	2
sleepy	0.89	3	0.84	2

(table 2 continues)

SACL-P Adjective	SACL-P Loadings	Factor	SACL Loadings	Factor
ambitious	0.12	7	--	--
capable	0.06	7	--	--
competent	-0.02	7	--	--
confident	0.17	7	--	--
informed	0.23	7	--	--
industrious	0.14	7	--	--
resourceful	0.27	7	--	--
powerful	0.62	7	--	--
effective	0.51	7	--	--
tough	0.77	7	--	--
assertive	0.03	7	--	--
helpless	0.49	2	--	--
unproductive	0.37	2	--	--
indecisive	0.32.	2	--	--
unsuccessful	0.66	2	--	--
defenseless	0.58	2	--	--
overpowered	0.65	2	--	--
weak	0.58	2	--	--
powerless	0.72	2	--	--
vulnerable	0.36	2	--	--
incompetent	0.70	2	--	--
defeated	0.63	2	--	--

The mean factor loadings for the SACL-P can be seen in Table 4. They remained basically consistent with the mean factor loadings of the SACL.

Table 4

Mean Factor Loadings of the High Stress, Low Stress, High Arousal, Low Arousal, High Power, and Low Power Items of the SACL-P

FACTOR	SACL	SACL-P
High Stress	0.60	0.47
Low Stress	0.55	0.54
High Arousal	0.60	0.63
Low Arousal	0.67	0.68
High Power	--	0.26
Low Power	--	0.55

Twelve of the items comprising the expanded 52-item SACL-P fell below the 0.30 loading cut-off criterion. Three of these items, as outlined above, fell below the same cut-off criterion in the analysis of the SACL alone ("jittery", .16; "restful", .23; and "idle", .17). On the SACL-P, "jittery" loaded on Factor 6 with a loading of .69. This was the single high loading for Factor 6 and is considered a trivial factor. According to Gorsuch (1983), factors with less than two or three items showing high loadings on that factor alone, are insufficiently clear and are considered to be "trivial". Similarly, "restful" and "idle" loaded on Factors 10 and 9, respectively, with loadings of .73 and .80. As these were the only items to load on these two factors they were also considered trivial. In this analysis, "dejected" also fell below the cut-off criterion with a loading of .25 on the high stress factor (Factor 5). It showed a loading of .51 on the low power factor (Factor 2).

The remaining eight items which failed to load appropriately on the SACL-P had been added to represent high power: "ambitious" (.12), "capable" (.06), "competent" (-.02), "confident" (.17), "industrious" (.14), "resourceful" (.27), and "assertive" (.03). However, 7 of the 8 items did load significantly on the high arousal factor (Factor I) with loadings of .63, .32, .32, .40, .64, .56, and .43, respectively. The eighth word, "informed", loaded on Factor 8, a trivial factor, and was deleted from the checklist.

Factor Analysis of the CLASP-R

The factor loadings for the analysis of the CLASP-R are contained in Table 5. The data was collected from 419 subjects. Similar to the results of the SACL-P, the analysis yielded six monopolar factors: high arousal (Factor 1), low arousal (Factor 2), high stress (Factor 3), low stress (Factor 4), low power (Factor 5), and high power (Factor 6).

Of the 37 items of the CLASP-R retained from the CLASP, 10 failed to show loadings above the cut-off criterion of 0.30. The original low arousal item, "wound down", showed a loading of .27 on that factor. However, it did load significantly on Factor 5, the low power factor, with a loading of .33. "Heavy-hearted", which was found in McGovern's (1987) analysis to be a low arousal item with a loading of .68, failed to load appropriately at .09 on this factor. Four items on the low stress factor, "easy-going", "light-hearted", "happy go lucky", and "taking it easy" did not load significantly on that factor with loadings of .29, .13, .17, and .01 respectively. However, all four loaded on Factor 6, the high power factor, with loadings of .61, .56, .67, and .51 respectively. One of the new items, "content with myself", selected to reflect

low stress, did not load appropriately at .26, but it did show a loading of .42 on the high power factor. On the power scale, four of the eight original high power items did not load significantly on that factor. They were "able to hold my own" (.11), "in control" (.29), "likely to succeed" (.13), and "a go-getter" (.21). They were omitted from the checklist.

Of the 31 "new" substitutions and additions to the CLASP to form the CLASP-R, 10 showed loadings below the 0.30 cut-off criterion on the factor which they were intended to represent.

Table 5

Factor Loadings of CLASP-R Items

Phrase	CLASP-R Loadings	Factor
under a great strain	0.72	3
in a panic	0.43	3
on edge	0.34	3
a bundle of nerves	0.38	3
carrying the weight of the world	0.53	3
in over my head	0.55	3
down in the dumps	0.49	3
at the end of my rope	0.41	3
a lot on my mind	0.76	3
uneasy about many things	0.69	3
too many responsibilities	0.54	3
fearful of the unknown	0.20	3
at my wits end	0.34	3
tensed up	0.47	3
in a panic	0.43	3
nervous about what's going to happen next	0.47	3
full of energy	0.70	1
full of pep	0.69	1
full of life	0.72	1
full of vim and vigor	0.73	1
raring to go	0.76	1
wide awake	0.46	1
lots of spirit	0.59	1
keen to get involved	0.33	1
full of enthusiasm	0.58	1
interested in what's going on	0.28	1
wound down	0.27	2
really tired	0.80	2
worn-out	0.75	2
no get-up-and-go	0.37	2

(table 5 continues)

Phrase	CLASP-R Loadings	Factor
half asleep	0.78	2
heavy-hearted	0.09	2
drained and listless	0.61	2
hard to keep awake	0.80	2
on the verge of exhaustion	0.66	2
ready to drop	0.57	2
easy-going	0.29	4
light-hearted	0.13	4
happy-go-lucky	0.17	4
taking it easy	0.01	4
at peace	0.32	4
content with myself	0.26	4
pleased with the way things are	0.58	4
secure and at ease	0.40	4
enjoying myself	0.59	4
happy with the way things have turned out	0.67	4
have peace of mind	0.53	4
my life is going smoothly	0.56	4
self-confident	0.31	6
sure of myself	0.36	6
self-assured	0.31	6
able to hold my own	0.11	6
in control	0.29	6
on top of things	0.35	6
likely to succeed	0.13	6
a go-getter	0.21	6
a born leader	0.01	6
talented and skillful	0.10	6
strong and tough	0.20	6
going nowhere fast	0.61	5
not making any progress	0.63	5

(table 5 continues)

Phrase	CLASP-R Loadings	Factor
like a failure	0.55	5
can't make up my mind	0.31	5
find it hard to make a decision	0.19	5
unable to assert myself	0.41	5
easily intimidated	0.13	5
lacking in resources	0.43	5
dominated by others	0.13	5
vulnerable to things around me	0.19	5

The mean factor loadings of the CLASP-R are presented in Table 6, where they are compared to those of the CLASP, as well as the SACL-P. Comparing the mean factor loadings of the CLASP-R with those of the SACL-P reveals that, overall, the loadings are basically consistent. They are somewhat higher on the SACL-P than on the CLASP-R for the high power scale.

Table 6

Mean Factor Loadings of the High Stress, Low Stress, High Arousal, Low Arousal, High Power, and Low Power Items of the CLASP-R

Factor	CLASP	CLASP-R	SACL-P
High Stress	0.58	0.48	0.47
Low Stress	0.44	0.38	0.54
High Arousal	0.65	0.58	0.63
Low Arousal	0.64	0.57	0.68
High Power	0.69	0.22	0.26
Low Power	0.37	0.36	0.55

The 48-item SACL-P, and 48-item CLASP-R were constructed by deleting appropriate items from each checklist. On the 52-item SACL-P, 4 items were deleted which fell below the cut-off criterion on the appropriate factors. The items which were deleted were "jittery" (high stress), "restful" (low stress), "idle" (low arousal), and "informed" (high power), with loadings of .16, .23, .17, and .23 respectively. Several items which failed to load on the intended factor were retained and included in the list of items showing high loadings on other factors . For example, "dejected", selected to reflect high stress, showed a loading of only .25 on that scale, but a loading of .51 on "low power". It was retained and included on the low power scale. Similarly, seven high power items fell below the 0.30 cut-off criterion on that scale. They were: "ambitious"(.12), "capable"(.06), "competent"(-.02), "confident"(.17), "industrious"(14), "resourceful"(.27), and "assertive"(.03). However, all seven

showed significant loadings on "high arousal", with loadings of .63, .32, .60, .40, .64, .56 and .43 respectively,and were included on that scale. The resulting 48-item SACL-P consists of 15 stress items (8 high, 7 low), 18 arousal items (14 high, 4 low), and 15 power items (3 high, 12 low) (see Appendix I). With the exception of the stress scale, a balanced number of positively and negatively keyed items per scale could not be selected. Perhaps further investigation and test development can locate enough items to achieve this balance.

On the 68-item CLASP-R, 20 items were deleted. On the high stress scale, 7 items were deleted. They were "on edge" (.34), "uneasy about many things" (.69), "too many responsibilities" (.54), "fearful of the unknown" (.20), "at my wits end" (.34), "tensed up" (.47), and "nervous about what's going to happen next" (.47). It can be seen that several of the items which were deleted showed acceptable loadings on this factor. However, since only 8 of the 15 available high stress items were needed to complete the scale, the item which showed a small loading, that is, "fearful of the unknown" (.20), as well as those items with the lowest loadings which were "new" or additional items to the checklist, were deleted. Original checklist items were retained whenever possible. On "low stress", 5 items showed low loadings ("easy going", .29; "taking it easy", .01; "light-hearted", .13; "happy-go-lucky", .17; and "content with myself", .26), but showed high loadings of .61, .51, .56, .67, and .42, respectively, on "high power", and they were included on that scale.

On the high arousal scale, 2 items were deleted: "keen to get involved" (.33), and "interested in what's going on" (.28). Although "keen to get involved" showed an appropriate loading on that factor (.33), only 8 of the 9 available items were needed to complete the scale and consequently, this

item, which showed the lowest loading, was deleted. However, "interested in what's going on" showed a high loading (.59) on "low stress", and was included on that scale. Two low arousal items were also deleted: "heavy-hearted", which showed a loading of .09, and "wound down", with a loading of .27. "Wound down" showed a loading (.33) on "low power" and was included on the scale reflecting that factor.

Only 4 items showed adequate factor loadings on the high power factor. They were "self-confident" (.31), "self assured" (.31), "on top of things" (.35), and "sure of myself" (.36). These 4 items and the following 5 items, originally selected to reflect low stress, comprise the high power scale: "at peace", "taking it easy", "easy going", "light-hearted", and "happy go lucky". Six items selected to reflect low power together with "wound down" comprise the low power scale.

The 48-item CLASP-R, like the SACL-P, consists of three scales: Stress, Arousal, and Power. There are 16 stress items (8 high stress, and 8 low stress), 16 arousal items (8 high arousal and 8 low arousal), and 16 power items (9 high power and 7 low power) (see Appendix J), indicating that the scales are almost balanced in terms of positively and negatively keyed items.

The mean factor loadings for the 48-item checklists are presented in Table 7. The mean factor loadings of the 48-item scales are more consistent than the mean factor loadings of the 68-item and 52-item scales, when compared with the mean factor loadings of McGovern (1987)

Table 7

Mean Factor Loadings for the High Stress, Low Stress, High Arousal, Low Arousal, High Power, and Low Power Items of the 48-Item SACL-P and 48-Item CLASP-R

Factor	48-Item SACL-P	48-Item CLASP-R
High Stress	0.47	0.53
Low Stress	0.59	0.53
High Arousal	0.57	0.65
Low Arousal	0.81	0.67
High Power	0.63	0.46
Low Power	0.55	0.47

Reliability Coefficients

After each checklist was scored, the responses were analyzed by assessing the consistency of responses to the items comprising each scale. Cronbach's alpha was calculated for the stress and arousal scales of the SACL, Form A and Form B, for the stress, arousal and power scales of the SACL-P, and for the stress, arousal, and power scales of the CLASP-R. The reliability coefficients for the separate scales of the SACL, the SACL-P and the CLASP-R are shown in Table 8.

Table 8

Cronbach's Alpha Reliability Coefficients for the Stress and Arousal Scales of the SACL, and for the Stress, Arousal and Power Scales of the SACL-P and the CLASP-R

Scale	SACL (Form A)	SACL (Form B)	SACL-P	CLASP-R
Stress	0.89*	0.92*	0.91*	0.94*
Arousal	0.89*	0.90*	0.90*	0.92*
Power	--	--	0.89*	0.90*

* denotes $p \leq .05$

Pagano (1986) suggests guidelines for evaluating correlation coefficients. He argues that correlation coefficients of .50 or .60 are considered moderate or fairly high. Correlation coefficients above this level are considered high, while those below this level are considered low. These guidelines were adopted in this study.

To demonstrate the consistency in SACL scores over time, Pearson Product Moment Correlation Coefficients between scale scores on four separate administrations were computed. The correlation coefficients are presented in Table 9.

Table 9

Pearson Product Moment Correlation Coefficients for the SACL

AD*	1ST	2ST	3ST	4ST	1AR	AR	3AR	4AR
1ST	1.00	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
2ST	.66	1.00	-	-	-	-	-	-
	P = .001	-	-	-	-	-	-	-
3ST	.23	.28	1.00	-	-	-	-	-
	P = .010	P = .003	-	-	-	-	-	-
4ST	.15	.25	-.01	1.00	-	-	-	-
	P = .100	P = .018	P = .494	-	-	-	-	
1AR	-.31	-.28	-.07	.01	1.00	-	-	-
	P = .001	P = .001	P = .250	P = .492	-	-	-	
2AR	-.37	-.35	-.131	-.05	.60	1.00	-	-
	P = .001	P = .001	P = .095	P = .336	P = .001	-	-	-
3AR	-.18	-.20	-.20	-.15	.27	.32	1.00	-
	P = .040	P = .021	P = .020	P = .106	P = .003	P = .001	-	-
4AR	.01	.02	-.16	-.17	.22	.15	.14	1.00
	P=.469	P = .433	P = .095	P = .079	P = .034	P = .108	P = .127	-

AD.*: Administration of test; reads both vertically and horizontally.

There is a significant and high positive correlation between subjects' stress scores on the first and second administration, separated by 45 minutes, and between subjects' arousal scores. The correlations were .66 and .60 respectively. The correlations decrease over time, 2 days, from administrations one to three, but they remain significant ($p \leq .01$) with correlations of .23 between the stress scores and .27 between the arousal scores. Between administrations one and four, separated by a five week interval, the correlations were smaller. The correlation coefficient between stress scores

was not significant (p=.10), although the correlation coefficient between arousal scores was significant (p=.03).

To demonstrate that Form A and Form B of the SACL are alternate forms of each other, Pearson Product Moment Correlation coefficients between stress and arousal scale scores were computed (see Table 10). The significant correlations indicate that Form A and Form B of the SACL are alternate forms, indicating that the ordering of items, the only difference between them, does not affect the scores on these two measures.

Table 10

Reliability Coefficients between the Stress and Arousal Scales of the SACL-Form A, and the SACL-Form B

Scale	Coefficient
Stress	.89*
Arousal	.92*

* denotes p≤ .001

The reliability of the SACL-P and the CLASP-R scales was assessed by computing Pearson Product Moment correlation coefficients between scale scores for four separate administrations of the SACL-P and the CLASP-R (see Tables 11 and 12). Correlations between stress scores, arousal scores, and power scores of the SACL-P were calculated and are presented in Table 11.

Table 11

Pearson Product Moment Correlation Coefficients for the SACL-P

AD*	1ST	1AR	1PR	2ST	2AR	2PR	3ST	3AR	3PR	4ST	4AR	4I
1ST	1.00											
1AR	-.35 P = .001	1.00										
1PR	-.64 P = .001	.61 P = .001	1.00									
2ST	.80 P = .001	-.35 P = .001	-.66 P = .001	1.00								
2AR	-.40 P = .001	.67 P = .001	.57 P = .001	-.48 P = .001	1.00							
2PR	-.62 P = .001	.48 P = .001	.82 P = .001	-.76 P = .001	.63 P = .001	1.00						
3ST	.49 P = .001	-.22 P = .001	-.40 P = .001	.55 P = .001	-.25 P = .001	-.43 P = .001	1.00					
3AR	-.17 P = .001	.24 P = .001	.24 P = .001	-.20 P = .001	.30 P = .001	.25 P = .001	-.38 P = .001	1.00				
3PR	-.32 P = .001	.27 P = .001	.50 P = .001	-.43 P = .001	.30 P = .001	.53 P = .001	-.70 P = .001	.64 P = .001	1.00			
4ST	.30 P = .001	-.10 P = .040	.27 P = .001	.42 P = .001	-.14 P = .006	-.29 P = .001	.47 P = .001	-.25 P = .001	-.39 P = .001	1.00		
4AR	-.13 P = .009	.21 P = .001	.25 P = .001	-.21 P = .001	.30 P = .001	.26 P = .001	-.22 P = .001	.47 P = .001	.38 P = .001	-.51 P = .001	1.00	
4PR	-.24 P = .001	.21 P = .001	.45 P = .001	-.40 P = .001	.26 P = .001	.48 P = .001	-.36 P = .001	.35 P = .001	.56 P = .001	-.75 P = .001	.67 P = .001	

AD*: Administration of test reads both vertically and horizontally.

There are significant positive correlations between scores of the first and second administration separated by 45 minutes for all three scales, stress, arousal and power.

The correlation coefficients between the scale scores where the administrations were separated by two days and one week, decreases over time but remains significant ($p \leq .001$), that is, .49 and .31 between sessions

one and three and sessions one and four for stress scores, .24 and .21 between similar sessions for arousal scores, and .50 and .45 between the same sessions for power scores.

Pearson Product Moment Correlation Coefficients computed on the CLASP-R are presented in Table 12. There was a significant ($p \leq .001$) and high positive correlation between results of the first and second administration, where there was a 45 minute interval, for all three scales , stress, arousal and power. The correlations between results of subsequent administrations where there were intervals of two days and one week decrease over time but remain significant ($p \leq .001$). For example, the correlations were .65 and .54 between scores for sessions one and three, and sessions one and four of the stress scale respectively, .33 and .22 between the scores for the same sessions on the arousal scale, and .67 and .56 between the scores of these sessions on the power scale respectively.

Table 12

Pearson Product Moment Correlation Coefficients for the CLASP-R

AD*	1ST	1AR	1PR	2ST	2AR	2PR	3ST	3AR	3PR	4ST	4AR	4PR
1ST	1.00											
1AR	-.56 P = .001	1.00										
1PR	-.76 P = .001	.59 P = .001	1.00									
2ST	.90 P = .001	-.54 P = .001	-.72 P = .001	1.00								
2AR	-.54 P = .001	.73 P = .001	.55 P = .001	-.63 P = .001	1.00							
2PR	-.76 P = .001	.54 P = .001	.86 P = .001	-.81 P = .001	.65 P = .001	1.00						
3ST	.65 P = .001	-.32 P = .001	-.57 P = .001	.67 P = .001	-.39 P = .001	-.63 P = .001	1.00					
3AR	-.38 P = .001	.33 P = .001	.39 P = .001	-.36 P = .001	.42 P = .001	.43 P = .001	-.61 P = .001	1.00				
3PR	-.61 P = .001	.38 P = .001	.67 P = .001	-.63 P = .001	.43 P = .001	.74 P = .001	-.82 P = .001	.65 P = .001	1.00			
4ST	.54 P = .001	-.32 P = .001	-.57 P = .001	.67 P = .001	-.39 P = .01	-.63 P = .001	.66 P = .001	-.61 P = .001	-.82 P = .001	1.00 P = .001		
4AR	-.38 P = .001	.22 P = .001	.39 P = .001	-.36 P = .001	.42 P = .001	.43 P = .001	-.61 P = .001	.40 P = .001	.65 P = .001	-.61 P = .001	1.00	
4PR	-.61 P = .001	.38 P = .001	.56 P = .001	-.63 P = .001	.43 P = .001	.74 P = .001	-.82 P = .001	.65 P = .001	.70 P = .001	-.82 P = .001	.65 P = .001	

AD*: Administration of test; reads both vertically and horizontally.

To determine whether the CLASP-R and the SACL-P are alternate forms, Pearson Product Moment correlation coefficients between scale scores on the SACL-P and the CLASP-R were computed. These highly significant correlations are presented in Table 13. The significance and size of the correlations indicate that the CLASP-R and the SACL-P are alternate forms of each other.

Table 13

Reliability Coefficient between the Stress Arousal and Power Scales of the SACL-P and the CLASP-R

Scale	Coefficient
Stress	.80*
Arousal	.82*
Power	.81*

* denotes $p \leq .001$

Summary of Results

The use of a symmetric response format with the SACL did not yield a bipolar factor structure in this study. Rather, four monopolar factors were found: high stress (Factor 1), low stress (Factor 2), high arousal (Factor 3) and low arousal (Factor 4). The analyses of the SACL-P and the CLASP-R data were consistent with the findings of the SACL. Analysis of the SACL-P data yielded the following monopolar factors: high arousal (Factor 1), low power (Factor 2), low arousal (Factor 3), low stress (Factor 4), high stress (Factor 5) and high power (Factor 7). Analysis of the CLASP-R data also yielded the following monopolar factors: high arousal (Factor 1), low arousal (Factor 2), high stress (Factor 3), low stress (Factor 4), low power (Factor 5), and high power (Factor 6).

Four of the items on the 52-item SACL-P failed to show appropriate loadings on any of the factors and these were deleted from the checklist. Unfortunately, too few items showed appropriate loadings on the low arousal and high power factors, four and three items per scale respectively. To achieve an equal number of positively and negatively keyed items per scale, additional items will have to be secured. On the CLASP-R, 13 items failed to show a significant loading on any of the six factors, and these were deleted from the checklist. Seven additional items loaded on factors other than where they were expected to load. For example, five items which were thought to reflect low stress showed loadings below the .30 cut-off criterion on that factor, and loaded rather on the high power factor. One item which was thought to reflect high arousal loaded instead on the low stress factor, and one item thought to reflect low arousal loaded on the low power factor.

Cronbach's Alpha was used to assess internal consistency of the stress and arousal scales of the SACL, the stress and arousal and power scales of the SACL-P, and the stress, arousal and power scales of the CLASP-R. All of the coefficients for these scales were high and significant, clearly indicating internal consistency.

Pearson Product Moment Correlation coefficients were calculated between scores of Form A and Form B of the SACL, and scores of the SACL-P and the CLASP-R. These analyses yielded high and significant correlations, indicating that Form A and Form B of the SACL are alternate forms of each other, and that the SACL-P and the CLASP-R are also alternate forms. Reliability of these tests was also assessed by computing Pearson Product Moment Correlation coefficients between scores of separate administrations

of the stress and arousal scales of the SACL, and between results of separate administrations of the stress, arousal and power scales of the SACL-P and the CLASP-R. These analyses yielded high and significant correlations, indicating that these checklists are reliable over time.

To assess common variance Pearson correlation coefficients were also computed between scores of the stress and arousal scales of the SACL, and between the stress and arousal, stress and power, and arousal and power scales of the SACL-P and of the CLASP-R. Significant correlations were consistently found between the stress and arousal scales of the SACL and, similarly, significant correlations were found between the stress and arousal scales, the stress and power scales, and the arousal and power scales of the SACL-P and the CLASP-R.

On the SACL there is a significant negative correlation between the scores of the stress and arousal scales (-.31, $P \leq .001$) which is shown in Table 9.

The correlations between stress and arousal, stress and power, and arousal and power scores of the SACL-P were computed. These coefficients are presented in Table 11. There were very significant ($p \leq .001$) negative correlations between the stress and arousal scales (-.35), and the stress and power scales (-.64). A significant ($p \leq .001$) and high positive correlation occured between the arousal and power scales (.61).

On the CLASP-R there were high and significant negative correlations between the scores of the stress and arousal scales (-.56) and stress and power scales (-.76) at the $p \leq .001$ level of significance. A high and significant

($p \leq .001$) positive correlation occurred between the scores of the stress and arousal scales (.59). These coefficients are presented in Table 12.

Discussion

There were three goals in the present study: 1) to determine whether use of a symmetric response format changed the factor structure of the SACL; 2) to develop a power scale for the SACL; and 3) to develop a revised and expanded version of the CLASP, the CLASP-R.

First, the implications of using a symmetric as opposed to an asymmetric response-scoring format with the SACL will be considered with respect to the polarity and number of factors yielded by factor analysis. Next, the number of high loading variables per factor will be discussed, as well as differences among the loadings for the SACL items found by Mackay et al (1978), McGovern (1987), and in the present study. The criteria for determining significant factor loadings will then be outlined, and the number of factors which should be interpreted from among those extracted during the analysis of the SACL data will be discussed.

The use of a symmetric response-scoring format and the polarity of the SACL-P and CLASP-R items will then be considered, as well as the number of high loading variables per factor. Also discussed will be the number of factors which should be interpreted, as well as the order in which these factors were extracted.

The reliability of the SACL, the SACL-P, and the CLASP-R, will be discussed at length. Implications of the results for assessment and treatment will also be considered. Suggestions for future research will then be presented before concluding with a brief summary.

Factors and Factor Loadings of the SACL

The polarity of the SACL factors.

The results of the present study were basically consistent with those of McGovern (1987), whereby an orthogonal factor analysis of the SACL responses yielded four monopolar factors, high stress, low stress, high arousal, and low arousal, but differed significantly from those of Mackay et al (1978) who found two bipolar factors, stress and arousal. Meddis (1972) maintains that the discovery of monopolar factors, which indicate that mood states vary independently of each other, and may be present in the same individual at the same time, goes against common sense. He suggested that the "discovery" of monopolar factors comes about when one employs asymmetric response formats which offer subjects only one rejection response but two acceptance responses. Consistent with this speculaton, Meddis' (1969) use of a symmetric response scale in mood research (1969) yielded bipolar results. The present study did employ a symmetric response scale which provided for two categories of acceptance, two categories of rejection, and one "?" category to indicate that the meaning of the adjective was not clear. The two acceptance categories, "++" and "+", were scored 4 and 3 respectively, while the two rejection categories, "--" and "-", were scored 2 and 1 respectively. The "?" category was scored 0. consistent with Cox and Mackay, (in press) this scoring was collapsed in the factor analysis. Scores of 4 and 3 on high stress and high arousal were assigned a value of 2, and scores of 2 and 1 on these scales were assigned a value of 1. Scores of 4 and 3 on the low stress and low arousal scales were assigned a value of 1, while scores of 2 and 1 on

these scales were assigned a value of 2. Scores of 0 retained the original value of 0.

The present study failed to support Meddis' (1972) contention concerning asymmetry and polarity. Evidence contradictory to Meddis' contention that response format symmetry (or asymmetry) determined factor polarity was also provided by Mackay et al (1978) who offered subjects an asymmetric response format, but found bipolar factors in the factor analysis. Meddis' theory does not provide an explanation for the discrepancy in these findings, but it has been suggested (Mackay et al, 1978) that it is due to some inherent difference between British and North American subjects.

The polarity of the factor structure in the present study differs from Mackay et al (1978) insofar as monopolar as opposed to bipolar results were obtained. Rather than high stress words showing a positive loading and low stress words showing a negative loading on stress, and high arousal words showing a positive loading and low arousal words showing a negative loading on arousal, the present analysis yielded four factors, with items showing only positive loadings on these factors. These findings suggest that mood states vary independently of each other.

With the finding of monopolar factors in this analysis, the question arises as to whether the scales used for the assessment of these factors of stress should also, correspondingly, be monopolar. Should the SACL provide four scale scores, namely, high stress, low stress, high arousal, and low arousal scores rather than stress and arousal scores? To ensure an appropriate number of items per scale in a four scale test would require a considerable

expansion of the test. It is suggested that this would be difficult, given the difficulty in the present analysis of securing a few additional items.

Low loading SACL items.

While the polarity of the factor structure of the SACL, reported by Mackay et al (1978) differs from that of the present study and McGovern's (1987) study, the factor loadings of the items in all three studies were generally similar but there were some differences. There were four adjectives in the present study which did not load appropriately on the expected factor, "jittery", "restful", "alert", and "idle", in comparison to two ("restful" and "idle") in the McGovern analysis . In the present study, "jittery", a high stress adjective, showed only a .16 loading on the high stress factor, "restful" showed a loading of only .18 on the low stress factor, "alert" obtained a loading of .28 on the high arousal factor, and "idle" showed a loading of only .16 on the low arousal factor. These findings are not inconsistent with other studies. Cruickshank (1982) found a loading of .73 for "jittery", .60 for "restful" and .52 for "alert" on their expected factors, but found that "idle" failed to load on any of the four factors. King, Burrows, and Stanley (1983) did not even include "jittery", "restful" or "idle" in their 20-item version of the SACL, arguing that only those items on their checklist with the highest factor loadings, should be employed. McCormick, Walkey and Taylor (1985) did obtain similar loadings to Mackay et al (1978) for the three items on the appropriate factors.

The factor loading cut-off point

In the present study a 0.30 cut-off criterion ($p \leq .05$) was determined for inclusion of items on a scale measuring that factor. Gorsuch (1983) has suggested that a criterion of 0.30 is appropriate for a sample size of 175 or more. Given the present sample size of 316, the 0.30 criterion was an acceptable cut-off for identifying significant loadings for items. Mackay et al (1978) offered no explanation for their adoption of the 0.40 cut-off criterion, but it has been speculated (McGovern, 1987) that it was because of their small sample size. In accordance with Mackay et al's (1978) procedures, McGovern also selected the 0.40 criterion, although 0.30 would have been acceptable, given her sample size of 394. "Jittery", a high stress scale item, also failed to reach this criterion on the high stress factor, as did "idle" on the low arousal factor. "Alert" approached a significant loading on the arousal scale (.28), and scarcely reached criteria in McGovern's (1987) analysis (.40), suggesting that its utility on a scale measuring high arousal within a Canadian population is questionable.

Number of factors to be interpreted for the SACL data

Gorsuch (1983) defines trivial factors as those factors which do not have at least two or three items showing loadings above a specified criterion level on that factor and on that factor alone. Another indicator of importance of a factor is the increased percentage of variance for which the total number of factors accounts. "Restful" did load on Factor 5 (.51), which had an eigenvalue greater than one and was, accordingly, extracted during the analysis. "Idle" was the only other item to load significantly on Factor 5 (.71).

While Factors 1, 2, 3, and 4, accounted for 27.4, 15.5, 7.2, and 4.6 percent of the total variance respectively, this fifth factor accounted for only an additional 3.8 percent of the variance. In accordance with the guidelines suggested by Gorsuch (1983) this factor could be labelled a trivial one, since only two items showed salient loadings. Also, the factor accounted for a small, that is, 3.8 percent, of the total variance. Gorsuch states that "if a new factor does not add very much to the information already extracted, it would not be worth extracting and interpreting." (1983, P. 165). It was decided that the variance in responses would be better represented by four than five factors.

Factors and Factor Loadings of the SACL-P

The polarity of SACL-P factors

The second goal of this study involved the development of an 18-item power scale, to be combined with the 30-item SACL to form a 48-item SACL-P. The SACL-P was to be a three component measure of stress providing scores for three independent factors: stress, arousal and power. Consistent with other SACL scales, the power scale of the SACL-P consists of single adjectives. To achieve this goal, a 22-item power scale was initially developed (to provide for some flexibilty in the final selection of items for the scale). The entire scale, consisting of 52-items, was administered to 468 subjects. The data was factor analyzed and six monopolar factors emerged: high stress, low stress, high arousal, low arousal, high power, and low power. The four power items showing the lowest factor loadings were then deleted from the checklist, yielding a 48-item SACL-P.

Given Meddis' (1972) arguments regarding response formats and factor structure and Cox's views on the "logic" of factor structure for moods, bipolar factors were predicted. However, the present analyses yielded monopolar factors. Why did monopolar factors emerge when a modified, that is, a symmetric response format, as suggested by Meddis (1972), was used? Mackay et al (1978) have suggested that certain characteristics of the sample population might influence the factor structure.

The circumstances under which and the means by which moods are assessed may also influence the factor structure of the responses. For example, questionnaire data collected in a research situation is usually non-threatening; the subject has the "luxury" of expressing some degree of contradiction or monopolarity in his emotions. Perhaps behavioral ratings of moods in a field setting would yield results with a bipolar structure.

The results of this factor analysis indicates that mood states are monopolar and vary independently of each other, or, moods thought to be mutually exclusive can be experienced by the same individual concurrently in varying degrees of intensity. Some examples would include a happy yet tearful mother of the groom, the frightened and ecstatic thrill seeker, and the relieved but saddened retiree.

Low loading SACL-P items.

Four of the original SACL items fell below the 0.30 cut-off criterion on the SACL-P. Three of the four items were the same items as those on the SACL which loaded below the 0.30 cut-off criterion: "jittery" (.16), "restful"

(.23) and "idle" (.17). In the present analysis "jittery" loaded significantly (.69) on a sixth factor. As it was the one item to load significantly on that factor alone, the factor was considered trivial. "Restful" loaded significantly on factor 10 (.73). As it was the only item to show a loading of any magnitude solely on this factor, the factor was considered trivial. One can question the utility of retaining these items on the SACL. The fourth item, "dejected", which showed a loading of .31 on the SACL high stress factor, showed one of only .25 on the SACL-P. It did show a significant loading on Factor 2 (.51), the low power factor.

On the power scale of the SACL-P eight of the twenty-two items failed to load above the 0.30 cut-off criterion. All eight adjectives were selected to reflect high power: ambitious, capable, competent, confident, informed, industrious, resourceful, and assertive. Several additional items are needed to offer a number of adjectives reflecting high power equal to the number reflecting low power on the power scale of the SACL-P.

Number of factors to be interpreted for the SACL-P data

In addition to the six factors previously discussed, which accounted for a total of 52 percent of the variance (27.3, 11.0, 5.1, 3.7, 3.0, and 2.3 for Factors 1, 2, 3, 4, 5, and 7 respectively), four additional factors with eigenvalues greater than one were extracted during the analysis of the SACL-P data. Factors 6, 8, 9 and 10 are statistically trivial accounting for a very small percentage of the variance, 2.6 per cent, 2.2 per cent, 2.0 per cent, and 1.9 per cent respectively. The only items of any magnitude to load on these factors alone were "jittery" (Factor 6), "informed" (Factor 8), "idle" (Factor 9) and "restful" (Factor 10).

Order of extraction of factors on the SACL and the SACL-P

The order in which the SACL-P factors were extracted differed from the order in which factors were extracted for the SACL. Analysis of the SACL data yielded high stress on Factor 1, low arousal on Factor 2, low stress on Factor 3, and high arousal on Factor 4. The order was quite different for the SACL-P: high arousal loaded on Factor 1, low power on Factor 2, low arousal on Factor 3, low stress on Factor 4, high stress on Factor 5, and high power on Factor 7. The first principal component accounts for the largest amount of variance in the sample while successive factors explain progressively smaller amounts of the total sample variance (Norusis, 1985). The high arousal factor accounts for more of the variance (27.3 per cent) on the SACL-P than does the high stress factor (3.0 percent) while the reverse is true for the analysis of the SACL data (high stress, 27.4 percent and high arousal, 3.8 percent). Gorsuch (1983) explains the reason for this in terms of the number of variables with significant loadings found within that factor. In the SACL-P analysis, there was an "over-representation" by items on the high arousal factor, whereby several items expected to reflect high power, showed high loadings on high arousal, increasing the number of salient loadings on this factor to 19. There were only three items which loaded on high power. On the SACL-P, the high arousal factor had the highest number of salient loadings, 19, compared to the high stress factor which had only 11. In the SACL analysis the high stress factor contained 13 salient loadings compared to 9 on the high arousal factor.

Factors and Factor Loadings of CLASP-R Items

The polarity of the CLASP-R factors

The third goal of this study was to develop a 48-item, revised and expanded version of the CLASP, the CLASP-R, which would measure three independent stress factors, stress, arousal and power, and be an alternate form of the SACL-P. The expanded CLASP-R, which consisted of 68 short phrases, was administered to 468 subjects and the data factor analyzed; again, six monopolar factors emerged: high stress, low stress, high arousal, low arousal, high power, and low power. Twenty items which showed the lowest loadings on these factors were deleted from the checklist to yield a 48-item CLASP-R.

Number of factors to be interpreted for the CLASP-R data

Six factors, in addition to the six previously discussed, with eigenvalues greater than one were extracted in the analysis of the CLASP-R data. The six additional factors were examined to determine if they warranted interpretation. Four items, "easily intimidated", "dominated by others", "vulnerable to things around me", and "heavy-hearted" all loaded significantly on Factor 7 with loadings of .65, .69, .54 and .36 respectively. (This was the only factor on which these items loaded significantly and this seventh factor accounted for 2.2 per cent of the variance). Given the number of salient loadings, the number of significant loadings specific to this factor and the amount of variance for which this factor accounts, the factor must be given consideration. Perhaps this factor measures depression which may be a correlate of stress. Further investigation might determine whether

measurement of depression apart from discomfort and low arousal and low power would add important information to our assessment of stress.

The five remaining factors can be considered statistically trivial insofar as they each accounted for a very small percentage (less than 2 per cent) of the variance. Factors 8, 9, 10, 11 and 12 accounted for 1.8, 1.7, 1.7, 1.6 and 1.5 per cent of the variance respectively, in contrast to 31.7, 8.2, 5.4, 3.1, 2.4, 2.2, and 2.2 percent accounted for by Factors 1, 2, 3, 4, 5, and 6 respectively. Factor 8 had only two variables loading significantly on it alone, factor 9 did not have any variables loading on it alone, and factor 10, 11, and 12 had only one variable loading on each of these factors alone.

Order of extraction of factors of the CLASP-R

As earlier outlined, factors are extracted in the order of the percentage of variance for which they account. The order of extraction on the CLASP-R is as follows: high arousal (Factor 1), low arousal (Factor 2), high stress (Factor 3), low stress (Factor 4), low power (Factor 5) and high power (Factor 6). Similar to the SACL-P analysis, the high arousal factor accounted for the greatest amount of variance in the CLASP-R sample (31.7 per cent). Ten phrases showed significant loadings on it. There are inconsistencies in the order of extraction of four of the remaining factors of the SACL-P and the CLASP-R analysis. In part these differences in order of extraction were determined by the number of items included in each questionnaire to measure one factor or another.

For example, 22 items, written to reflect power, were added to the SACL, 11 high power items and 11 low power items. Whereas 8 of the 11 items selected to reflect high power failed to show significant loadings on this factor, they did show high loadings on high arousal. All 11 low power items did load significantly on low power. This resulted in a large imbalance in the number of items per factor, thereby influencing directly the results of analysis.

Reliability

Another objective of the present study involved assessing the reliability of the SACL, the SACL-P and the CLASP-R. Three different methods of assessing reliability were employed in the present study: 1) internal consistencies of the stress and arousal scales of the SACL, and the stress, arousal, and power scales of the SACL-P and the CLASP-R were assessed using Cronbach's alpha; 2) consistency of scores on the stress and arousal scales of Form A and Form B of the SACL, and consistency of scores on the stress, arousal, and power scales of the SACL-P and the CLASP-R was assessed by computing Pearson Product Moment Correlation Coefficients between these scores; and 3) test-retest reliability of the scales was assessed by computing Pearson Product Moment Correlation Coefficients between scores on repeated administrations of these tests.

Chronbach's Coefficient Alpha assesses homogeneity within a test. The highly significant coefficients obtained for the stress and arousal scales of the SACL, both for Form A and Form B, and for the stress, arousal and power scales of the SACL-P and the CLASP-R indicate that each of these scales is comprised of homogeneous items.

The large and significant ($p \leq .001$) Pearson Product Moment Correlation Coefficients Between Form A and Form B demonstrate that Form A and Form B of the SACL are alternate forms of each other, which was expected, given that each form is comprised of the same items, differing only in order of presentation.

The significant ($p \leq .001$) and large Pearson Product Moment Correlation Coefficients computed on subjects' scores on the stress, arousal and power scales of the SACL-P and CLASP-R, the tests being administered in immediate succession, also demonstrates that the SACL-P is an alternate form of the CLASP-R. Significant ($p \leq 05$) and moderately high to high correlations were found between the scores for corresponding scales of the SACL-P and the CLASP-R.

Measures of temporal stability for the SACL, the SACL-P, and the CLASP-R scores were also estimated by computing Pearson's Product Moment Correlation Coefficients among scale scores for tests administered over different intervals. On all three tests the correlation coefficients decrease over time from test-retest intervals of 45 minutes to 5 weeks, but they remain at or close to significance ($p \leq .05$). For example, on the SACL-P, the correlation coefficient of the stress scores of administration 1 and administration 4, where there was a 5 week interval, was .31 ($p \leq .001$). This indicates that these scales are reliable over time. On the CLASP-R the correlation coefficients are consistently larger than the SACL-P suggesting that this test may be more reliable.

However, significant ($p \leq .05$) and moderately high correlation coefficients between the separate scales intended to reflect different factors of stress, that is, stress and arousal on the SACL, stress and arousal, stress and power, arousal and power on the SACL-P and the CLASP-R, indicate that the scales are not independent. Although the factors underlying these scales are abstract concepts and, by way of the factor analysis, independent, subjects scores on the scales, which represent these factors, are not. The scales do not perfectly represent the factors, but only reflect that factor. Clearly, the same item (word or phrase) may reflect, to a greater or lesser extent, more than one factor. A large and significant positive correlation between arousal and power suggests a strong connection between the two, which raises an imortant question. Is the correlation between the arousal and power scale scores attributable more to the fact that the scales are varying reflections of the same factor rather than two different factors, or more attributable to the particular items making up the scales.

It is suggested that arousal and power are indeed two independent aspects, or factors, of sress, but, a clearer, more distinct conceptualization of these factors may be possible and, one could, possibly, secure items which reflect, basically, one or the other factor. Perhaps items which load significantly on one factor only should be included on the respective scale. Items which load significantly on more than one, even if the other loadings are lower, would be omitted. In this way, the correlations between different scales would diminish.

The stress factor also could be redefined so that it reflects a specific facet of the environment, that is, pleasantness or unpleasantness, rather than a

general description or summary of stress which may include power and arousal factors. In its current form, the stress scale alone could be a stress "test"; the items which comprise the scale reflect general aspects of stress and not aspects only related to the environment.

Mackay et al (1978) tested and then retested with the SACL, but did not report the results of analysis of reliability in their brief paper, other than to mention that the factor structure of the results remained bipolar. Cruickshank (1984) administered the 45-item checklist to 189 subjects on two separate occasions (pre- and post-medical appointment). However, rather than compare the results of the two separate administrations to assess reliability over time, the checklists from the two sessions were combined to yield a sample size of 336 valid cases (378, minus checklists with missing data, which were omitted from the analysis). The data was then analyzed as a single sample. Other research has been conducted using test-retest, but this has involved use of checklists other than the SACL. For example, Thayer (1967) implemented test-retest procedures on four groups of university students administering various forms of the AD-ACL on two separate occasions. Correlations for the "activation adjectives" ranged from .57 to .87; the median coefficient was .75 ($p \leq .05$). Zucherman (1960) used the Affect Adjective Checklist (AACL) in a test-retest situation with 50 university students. There was a one week interval between administrations and the correlation coefficient between test scores was .68 ($p \leq .001$).

In summary, the correlation coefficients observed from the data in the present study indicate that:

1) the items comprising the stress and arousal scales of the SACL, and the stress, arousal and power scales of the SACL-P, and CLASP-R are homogeneous;

2) there was consistency of response to different test forms ($p \leq .001$), specifically, Form A as compared to Form B of the SACL, and the SACL-P as compared to the CLASP-R;

3) students responded consistently to the SACL (Form A), over a three week period ($p \leq .05$). The only exception occurred between results of administration one and administration four of the stress scale, when consistency fell below significance ($p = .10$);

4) there was consistency of response to the same test form over time ($p \leq .001$), specifically the SACL-P and the CLASP-R, with the greatest degree of consistency over time occurring on the test comprised of phrases rather than single adjectives (the CLASP-R);

5) significant correlations exist between the separate scales of the tests, suggesting some commonalities among them.

The Interactional Model and a One-Factor Measurement Scale

Most interactional measures of stress provide scores reflecting only two factors, stress and arousal. Measurement of a third factor, power, was addressed by McGovern (1987). The importance of assessing power is well represented in the literature. For example, Lazarus (1976) mentions that stress occurs when there are demands on the person which he believes exceed his resources. Cox (1978), similarly, proposes that stress is experienced when an imbalance occurs between the perceived demand and the individual's perception of his abilities to meet that demand. Since the perception of one's

own control or power in a situation seems to influence the experience of stress, this factor should definitely be considered when assessing an individual for stress. Indeed, this factor may not have received proper attention. Not only does power play a significant role in the experience of stress, but the results of the present study suggest that it may be the predominant and determining factor in the occurrence of stress.

Power, essentially, is an interactional component, dependent on the person's perception of the environment. How one perceives a demand, and how one perceives oneself as being able to meet that demand and cope involves a mixing and matching of environmental and personal qualities. If an individual finds himself in an unpleasant situation, yet feels he has abundant resources to deal with the unpleasantness, he feels "in control", can cope, and has a sense of power over his condition. The interaction of the perceived demand and the perceived resources yields a perception of control/power. As stated by Monat and Lazarus (1977) coping does not always *follow* emotion, it can precede it and influence its form and intensity, that is, degree of stress. Power, or the lack of it, can be a direct determinant in an individual's perception of a situation as being pleasant or unpleasant (stressful). Similarly, the second factor, arousal, occurs concurrently with feelings of power. As individuals feel in control in a situation, they also feel activated, and stimulated.

These results suggest a re-thinking of the stress scales reviewed to date. Perhaps "stress" should be considered a global concept comprised of three independent factors. However, the significance of these factors in the measurement of stress may not be equal. Power, and how one perceives

oneself in their ability to cope, is usually the most important aspect of stress. A measure of stress which is interactional would be a power But, a comprehensive assessment of stress might also assess "pleasantness/ unpleasantness" in the environment and "activation" in the person. A comprehensive measure of stress could include a three scale test, one stimulus based, one response based and one, interactional.

Definition of Stress, Arousal, and Power

A redefinition of terms is required not only for stress (pleasure/ displeasure) but also for power (dominance/submissiveness), and for arousal. Power has been closely associated with "coping", which has been described as cognitive and behavioral efforts to master, tolerate, or reduce internal and external demands and conflicts among them (Folkman and Lazarus, 1980). These efforts consist of numerous variations and methods, from the locus of control and mastery to direct action and palliation. These varied methods of coping, and resulting feelings of dominance, control and/or power, would also benefit from clarification when included in the measurement of stress and power. A fourth factor in the experience of stress has been proposed (Konopasky, R., October,1987-personal communication) which involves "trancendence", but examination of the various facets of coping would lead one to question whether this is actually a new and different factor, or a component of the power factor, that is, a form of palliation. Lazarus (1976) describes palliation as a mode of coping whose goal is to relieve the emotional impact of stress (i.e., bodily or psychological disturbances). The term "palliative" is used because these methods do not alter the threatening or damaging events but make the person feel better. Problem-solving is not

involved. This is a similarity shared by the method of trancendance, whereby one does does not directly address the threatening or harmful events, but rather, goes beyond or "rises above" the situation so that a stress condition is avoided. There are many differences between palliation and trancendance as well, and to answer the question as to whether or not trancendance is a component of power, or a fourth independent factor, a specific definition of this concept will have to be developed and its role in the experience of stress investigated.

Whereas a complete redefinition of arousal may not be indicated, a clarification is certainly necessary to ascertain whether the measurement of arousal is in terms of the neural structure involvement and wakefulness (the definition adopted in this study) or in terms of total organismic energy release and intensity. The literature refers to arousal in the occurrence and measurement of stress, but it applies the two definitions interchangeably with no separation or distinction made in their use or the implications of such lack of distinction. It is necessary to ascertain which definition or concept of arousal is being applied when interpreting and analyzing research data. The focus of arousal which is adopted would greatly influence the nature of the interdependence of arousal with power.

An illustration of the interdependency of arousal levels and the individual's feelings of power can be found in the literature. Frankenhaeuser (1975) describes arousal as a dependent variable influenced by psychological impact (perception) and subsequent reaction on the individual. The "arousal" is a measure of levels of epinephrine in the system. With increased feelings of control, from a state of helplessness to an ability to master the

disturbing influences on the part of the individual, levels of epinephrine have been found to decrease. Here Frankenhaeuser is speaking of arousal as a measure of physiological response of the individual and, within this framework, an increase in control or power would be expected to be accompanied by lowered levels of arousal.

The clarification of this arousal factor is essential, because the application of only one or the other of the two aspects of arousal in the investigation and measurement of stress could result in lost or missed information. To include both aspects in the scale to measure arousal would provide information on both aspects of arousal experienced by the individual.

Past research has also shown that the definition of arousal which is used not only dictates whether a high or a low score on the arousal scale is beneficial or detrimental, but also appears to influence the polarity of the factors extracted in the analysis of the data. For example, Thayer (1967) used the physiological response of the individual as described by Duffy (1962), that is, energy release of the organism, as a measure of arousal. It was stated by Duffy (1962) that empirical assessment *procedures* do not differ with the use of one definition or the other. However, what was not addressed was that *results* of the factor analysis of responses of the empirical assessment may differ. The possibility of such a correlation was found by Thayer (1967), using the physiological energy release index, which yielded monopolar results in the factor structure of the data, yet, in later research (1978), using the reference of alertness and wakefulness, bipolar results were obtained. However, in his 1967 research, Thayer did not include checklist items which would assess arousal as "physiological energy release" (i.e., "heart pounding", "sweaty

palms"). He used a separate instrument, the Lafayette Multipurpose Polygraph recorder, for this purpose, to measure heart rate. He used the exact same checklist items in his initial, 1967, research when using Duffy's (1962) definition of arousal, as he did in later research in 1978, when the definition of arousal shifted to "wakefulness". His definitions changed, but the self report measurement scale did not change to accommodate the shift in the focus of arousal.

Implications for Assessment and Treatment

The significance given to the third factor, power (dominance/ submissiveness), is important as it directly influences the occurrence, extent and interpretation of the first two factors. As described by Russell and Mehrabian (1977), only dominance makes it possible to distinguish angry from anxious, alert from surprised, relaxed from protected, and disdainful from impotent. They suggest that the first word in each pair involves dominance or feelings of control, and the second involvs submissiveness, or feelings of lack of control. Their research found that dominance contributed significantly to the prediction of various emotional states. A respondents' scores, therefore, on the power scale are valuable in ascertaining the nature and significance of the presence or absence of other emotions, and what interventions for treatment would be appropriate. For example, if a respondent's profile on the pleasure/displeasure scale indicates tension and worry from the environment (i.e., on the job), the therapist could consider the score on the dominance/submissiveness, that is,power, scale to help determine whether a change in the environment or additional training/ education to enhance a feeling of power is indicated. The alteration of the

physiological response to stress would be indicated given problematic arousal scores.

The assessment of stress, it is proposed, would involve a "stress as stimulus" measure (a measure of the pleasure/displeasure factor), a "stress as response" measure (a measure of activation/vigour), and an "interactional" measure of stress (a measure of dominance/submissiveness).

Directions for Future Research

With respect to the definition of arousal and its involvement in stress, a clarificaton is in order. Currently, arousal is defined in one of two ways: 1) energy release of the organism, which is manifested in blood pressure and catecholamine levels; and 2) level of wakefulness, which reflected in degree of alertness and mental energy. In order for proper comparision among research results, arousal must be defined consistently. It would also be interesting to determine whether definition and polarity go together.

In this study the alertness/wakefulness description was applied. Further research could be conducted using a Canadian population to determine if differences in factor analytic results emerge as a result of the application of an alternate arousal definition. However, it would be necessary to include additional items on the checklists to accurately reflect the alternate definition involved, that is, "heart pounding", "palpitations", "sweaty palms", "butterflies", and this in itself may affect factor structure. A physiological measure of heart rate could be implemented as a supplement to

the scale scores, although this may be tedious and time consuming for such a large sample.

Introduction of a third factor (power) in the measurement of stress has clouded the boundaries of the two factors (stress and arousal) requiring that they be given more precise definitons. This is particularly the case for the arousal factor; lack of clarity in its definition makes its relationship to power confusing.

The resulting analysis of this and other data has also been shown to be very susceptible to unique characteristics of the sample involved (i.e., Canadian vs. British vs. Australian) Administering these checklists, the SACL, the SACL-P, and the CLASP-R, to a large British population would provide further information as to the extent of influence of cultural differences on the polarity and factor structure of the results obtained. In light of past research conducted on various British populations (Mackay et al [1978], Meddis [1972], King, Burrows and Stanley [1983]) it is predicted that bipolar results will emerge from analysis of the data. Accordingly, further research using a North American population will yield monopolar results in the factor analysis of the data.

It would also be interesting to administer these checklists to other populations as well, to determine if findings replicate across cultures, or if different or additional factors emerge. For example, would a fourth independent factor, trancendence perhaps, emerge in the analysis of the data collected from an Asian/Eastern culture. Differences would suggest that the

experience of stress varies across cultures and these differences might help to identify new treatment approaches.

Further clarification of the factor structure of mood states is essential. The factor structure of mood states has important implications for the "real life" world as well as the clinical setting, influencing how people perceive and react to the emotional states of others. Therapeutic interventions, based on a theory of bipolar moods, might attempt to persuade clients to feel one way or the other. If one holds a theory of monopolar moods, the intervention might be to encourage clients to accept conflicting emotions. A goal may be to help the client realize that conflicting emotions may not necessarily something to be avoided, but rather, to be reconciled and accepted within the individual and even perhaps necessary in some situations. An example would be the case of a child sexually abused by a parent. In a situation such as this a child may love the parent yet feel anger and hatred toward that parent as well for the hurt inflicted. Both emotions (love and hate) are appropriate, yet conflicting, and the child would require guidance to help him appreciate this and to know that it is "O.K." to have both feelings. For the child to deny the anger or hatred would promote resentment, confusion and increased conflict, while to deny the feelings of love would result in guilt. A child may ask how can he or she could hate the parent who has raised and nurtured him or her and, yet, love the parent who caused such pain? Acceptance of the existence of both of these emotions is necessary for the child to deal with the trauma.

In a situation of threat the mood of the individual being threatened may be bipolar; the person would be frightened and not calm. In a more

relaxed, unthreatening situation, individuals may show mixed emotions in reaction to the situation such as being intensely happy and sad at a wedding.

It has been proposed that four rather than three factors are necessary to properly define a model of stress (Konopasky, R. October, 1987-personal communication). This would involve inclusion of a factor identified as "transcendence", and more research in this area is indicated to clarify and establish its role in the experience of stress. Is this component of stress an additional, independent factor, or is it a variation of an already existing factor, that is, power? Further research would establish the role of this proposed fourth factor , and it is predicted that a correlation will be found between this and the power factor, specifcally in its involvement in coping processes (i.e., types of palliation). Implications of such research would provide further information for treatment and intervention. For example, given an individual who is in a very unpleasant situation which cannot be changed, such as the death of a loved one, the only coping mechanism may be to "rise above" the situation. This "transcendence" involves intellectualized detachment as a coping process. Other coping processes would involve meditation, yoga, and muscle relaxation. Further methods of coping and intervention may be realized as this aspect is further researched, defined and clarified.

A power scale for the SACL was developed in this study. However, too few items showed high loadings on this factor: only three items showed high loadings on low power. Additional and new items should be selected to increase the number of these items.

Conclusions

To conclude, the SACL, a two factor measure of stress developed by Mackay et al (1978) was administered to a Canadian sample and the data was factor analyzed. The results of the analysis of the data obtained from the Canadian sample were similar to those of McGovern (1987) insofar as monopolar factors were extracted: high stress, low stress, high arousal, and low arousal. The results differed from those of Mackay et al (1978) who reported bipolar factors.

At this time, the reasons for the discrepancy between the present findings of monopolar factors and those of Mackay et al (1978) remains unclear. However, the use of a symmetric as opposed to an asymmetric response format did not yield bipolar results, as predicted by Meddis (1972)

Further research on a third factor of stress involved development of a new power scale, which was combined with the SACL to form the SACL-P. The factor analytic results of responses by 468 subjects to the SACL-P indicated that the SACL-P is also based on monopolar factors: high stress, low stress, high arousal, low arousal, high power, and low power.

In addition, a second three-factor measure of stress, the CLASP-R, was revised and expanded to provide eight positively and negatively keyed items on each scale. The resulting checklist was called the CLASP-R. The factor analytic results obtained here indicated that the CLASP-R measures six monopolar factors: high stress, low stress, high arousal, low arousal, high power, and low power.

The significance of using a symmetric as opposed to an asymmetric response format with these scales was discussed, as well as checklist reliability. A high correlation was discovered among the different scales of the checklists and the importance of this in the development of a model of stress, and implications for assessment and treatment, was discussed.

References

Anastasi, A. (1982). Psychological testing. New York: MacMillan Publishing Co., Inc.

Apply, M. H., & Trumbull, R. (Eds.). (1967). Psychological stress: Issues in research. New York: Appleton-Century Crofts.

Bentler, P. M. (1969). Semantic space is (approximately) bipolar. Journal of Psychology, 71, 33-40.

Bohlin, G., & Kjellberg, A. (1973). Self-reported arousal during sleep deprivation and its relation to performance and physiological variables. Scandinavian Journal of Psychology, 16, 203-208.

Borgotta, E. F. (1967). Mood, personality and interaction. Journal of General Psychology, 64, 105-137.

Burrows, G., Cox, T., & Simpson, G. (1977). The measurement of stress in a sales training situation. Journal of Occupational Psychology, 50, 45-51.

Cattell, R. B. (1950). Personality: A systematic theoretical and factual study. New York: McGraw-Hill.

Coulson, J., Carr, C. T., Hutchinson, L. & Eagle, D. (Eds.). (1975). The Oxford Illustrated Dictionary. Oxford: Clarendon Press.

Cox, T. (1978). Stress. Baltimore: University Park Press.

Cox. T., & Mackay, C. (1981). A transactional approach to occupational stress. In E. N. Corlett and J. Richardson (Eds.), Stress, work design and productivity. Chichester: John Wiley and Sons.

Cox, T., & Mackay, C. (in press). The measurement of self-reported stress and arousal. British Journal of Psychology.

Cox, T., Thiraway, M., & Cox, S. (1982). Repetitive work, well-being, and arousal. In H. Ursin and K. Murison (Eds.), Biological and psychological bases of psychosomatic disease. Oxford, England: Pergamon.

Cronbach, L.-J. (1951). Coefficient alpha and the internal structure of tests. Psychometrika, 16(3), 297-334.

Cruickshank, P. J. (1982). Patient stress and the computer in the consulting room. Social Science and Medicine, 16, 1371-1376.

Duffy, E. (1962). Activation and behavior. New York: Wiley.

Folkins, C. H. (1970). Temporal factors and the cognitive mediators of stress reaction. Journal of Personality and Social Psychology, 14, 173-184.

Folkman S. & Lazarus, R. (1980). An analysis of coping in a middle-aged community sample. Journal of Health and Social Behavior, 21, 219-239.

Frankenhaeuser, M. (1975). Experimental approaches to the study of catecholamines and emotion. In L. Levi (Ed.), Emotions: Their parameters and measurement. New York: Raven Press.

Gorsuch, Richard. (1983). Factor analysis. New Jersey: Lawrence Erlbaum Associates, Publishers.

Green, R., & Nowlis, V. (1957). A factor analytic study of the domain of mood with independent experimental validation of the factors. American Psychologist, 12, 438.

Guttman, D. L. (1974). The country of old men: Cross-cultural studies in the psychology of later life. In R. L. Levine (Ed.), Culture & personality: Contemporary readings. Chicago: Aldine Publishing Company.

Hebb, Donald O. (1955). Drives and the conceptual nervous system. Psychological Review, 62, 243-254.

Howarth, C. I. (1978). Environmental stress. In C.I. Howarth and W.C. Gillham (Eds.), The uses of psychology. London: Unwin.

Izard, C. E. (1972). Patterns of emotion. New York: Academic Press.

Jahoda, M., & Warren, N. (1966). Attitudes. London: Penguin.

Kagan, A., & Levi, L. (1971). Adaptations of the psychosocial environment to man's abilities and needs. In L. Levi (Ed.), Society, stress and disease. London: Oxford University Press.

Kim, J. & Mueller, C. W. (1978). Introduction to factor analysis- what it is and how to do it. London: Sage Publications.

Kim, J. & Mueller, C. W. (1978). Factor analysis- statistical methods and practical issues. London: Sage Publications.

King, M. G., Burrows, G. D. and Stanley, G. V. (1983). Measurement of stress and arousal: validation of the stress/arousal adjective checklist. British Journal of Psychology, 74, 473-479.

Konopasky, Robert J. (1986, April). Three factor checklist: Preliminary report of a new test for measuring stress. Paper presented at the Saint Mary's University Psychology Department Conference, Halifax, Nova Scotia.

Korchin, S. J., & Ruff, G. E. (1964). Personality characteristics of the Mercury astronauts. In G. H. Grosser, H. Wechsler, & M. Greenblatt (Eds.), The threat of impending disaster. Cambridge, Mass.: M.I.T. Press.

Lazarus, R. (1970). Cognitive and personality factors underlying threat and coping. In S. Levine and N. Scotch (Eds.), Social stress. Chicago: Aldine Publishing Company.

Lazarus, R. (1976). Patterns of adjustment. New York: McGraw-Hill.

Lazarus, R. (1977) Introduction. In A. Monat and R. Lazarus (Eds.), Stress and coping: An anthology. New York: Columbia University Press.

Lazarus, R. (1977). Cognitive and coping processes in emotion. In A. Monat & R. Lazarus (Eds.), Stress and coping: An anthology. New York: Columbia University Press.

Lazarus, R. (1984). Stress, appraisal and coping. New York: McGraw-Hill.

Levine, S. (1967). Maternal and environmental influences on the adrenocortical response to stress in weanling rats. Science, 156, 258.

Levine, S. (1975). Psychosocial factors in growth and development. In L. Levi (Ed.), Society, stress and disease, Vol. 2. New York: Oxford University Press.

Levine, S. & Scotch, N. (1970). Social stress. Chicago: Aldine Publishing Company.

Lorr, M., Daston, P., & Smith, I. R. (1967). An analysis of mood states. Educational and Psychological Measurements, 27, 89-96.

Lorr, M., McNair, D. M. & Fisher, S. (1982). Evidence for bipolar mood states. Journal of Personality Assessment, 46(4), 432-436.

MacKay, C. J., Cox, T., Burrows, G., & Lazzerini, T. (1978). Inventory for the measurement of self-reported stress and arousal. Journal of Social and Clinical Psychology, 17, 283-284.

McCormick, I. A., Walkey, F. H. and Taylor, A. J. W. (1985). The stress arousal checklist: an independent analysis. Educational and Psychological Measurement, 45(1). 143-146.

McGovern J. (1987). The measurement of stress, arousal and power: Alternate and expanded versions of the stress arousal checklist. Unpublished Masters Thesis. Saint Mary's University, Halifax, Nova Scotia.

McGrath, J. (1970). Social and psychological factors in stress. New York: Holt, Rinehart and Winston, Inc.

McGrath, J. (1976). Stress and behaviour in organizations. In M. Dunnett (Ed.), Handbook of industrial and organizational psychology. Chicago: Rand-McNally College Publishing Company.

McNair, D. M. and Lorr, M. (1964). An analysis of mood in neurotics. Journal of Abnormal and Social Psychology, 69, 620-627.

Meddis, R. (1969). The analysis of mood ratings. Unpublished PhD. thesis, University of London.

Meddis, R. (1972). Bipolar factors in mood adjective checklists. British Journal of Social and Clinical Psychology, 11, 178-184.

Monat, A. and Lazarus, R. (1970). Stress and coping: An anthology. New York. Columbia University Press.

Monat, A. and Lazarus, R. (1977). Introduction: stress and coping- some current issues and controversies. In A. Monat & R. Lazarus (Eds.), Stress and coping: An anthology. New York: Columbia University Press.

Moruzzi, G. and Magoun, H. W. (1949). Brainstem reticular formation and activation of the EEG. Electroenceph. Clinical Neurophysiology, 1,455.

Norusis, M. (1985). Advanced statistics guide to SPSSX. Chicago: SPSS Inc.

Nowlis, Vincent. (1970). Mood: behavior and experience. In Magda B. Arnold (Ed.), Feelings and emotions. New York: Academic Press.

Nowlis, V., & Nowlis, H. (1956). The description and analysis of mood. Annals, New York Academy of Science, 5, 345-355.

Pagano, R. R. (1986). Understanding statistics in the behavioral sciences. St. Paul, Mn.: West Publishing Company.

Ray, C., & Fitzgibbon, G. (1981). Stress, arousal and coping with surgery. Psychological Medicine, 11, 741-746.

Roget's II: The new thesaurus. (1984). New York: Berkley Books.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 80, (1, whole No. 609).

Ruff, G. E., & Korchin, S. J. (1964). Psychological responses on the Mercury astronauts. In G. H. Grosser, H. Wechsler & M. Greenblatt (Eds.), The threat of impending disaster. Cambridge, Mass.: M.I.T. Press.

Russell, J. A., & Mehrabian, A. (1977). Evidence for a three-factor theory of emotions. Journal of Research in Personality, 11, 273-294.

Sells, S. B. (1970). On the nature of stress. In J. E. McGrath (Ed.), Social and psychological factors in stress. New York: Holt, Rinehart and Winston.

Selye, H. (1956). The stress of life. New York: McGraw-Hill.

Selye, H. (1974). Stress without distress. Philadelphia: Lippincott Publishing Company.

Selye, H. (1983b). The stress concept: past, present and future. In C. Cooper (Ed.), Stress research: Issues for the eighties. New York: John Wiley and Sons.

Shaffer, M.S. (1982). Life after stress. New York: Plenum Press.

Symonds, C. (1947). Use and abuse of the term flying stress. In Air Ministry, Psychological disorders in flying personnel of the royal air force, investigated during the war, 1939-1945, H.M.S.O., London.

Taggart, P., & Carruthers, M. (1971). Endogenous hyperlipidaemia induced by emotional stress of racing driving. Lancet, 1, 363.

Thayer, R. (1967). Measurement of activation through self-report. Psychological Reports, 20, 663-678.

Thayer, R. (1978a). Factor analytic and reliability studies on the activation-deactivation adjective check list. Psychological Reports, 42, 747-756.

Weitz, J. (1970). Psychological research on the problems of human stress. In J. E. McGrath (Ed.), Social and psychological factors in stress. New York: Holt, Rinehart and Winston.

Welford, A. T. (1973). Stress and performance. Ergonomics, 16, 567.

Appendix A

The MACL

stimulated	++	+	?	-	apprehensive	++	+	?	-
nervous	++	+	?	-	bothered	++	+	?	-
drowsy	++	+	?	-	sluggish	++	+	?	-
distressed	++	+	?	-	energetic	++	+	?	-
tense	++	+	?	-	calm	++	+	?	-
alert	++	+	?	-	contented	++	+	?	-
up-tight	++	+	?	-	worried	++	+	?	-
sleepy	++	+	?	-	tired	++	+	?	-
lively	++	+	?	-	idle	++	+	?	-
jittery	++	+	?	-	activated	++	+	?	-
comfortable	++	+	?	-	uneasy	++	+	?	-
vigorous	++	+	?	-	restful	++	+	?	-
active	++	+	?	-	cheerful	++	+	?	-
dejected	++	+	?	-	pleasant	++	+	?	-
peaceful	++	+	?	-	relaxed	++	+	?	-

Appendix B

The SACL (Form A)

1.sleepy	++	+	-	--	?	16.uptight	++	+	-	--	?
2.jittery	++	+	-	--	?	17.restful	++	+	-	--	?
3.energetic	++	+	-	--	?	18.alert	++	+	-	--	?
4.calm	++	+	-	--	?	19.cheerful	++	+	-	--	?
5.tired	++	+	-	--	?	20.active	++	+	-	--	?
6.drowsy	++	+	-	--	?	21.apprehensive	++	+	-	--	?
7.lively	++	+	-	--	?	22.sluggish	++	+	-	--	?
8.idle	++	+	-	--	?	23.peaceful	++	+	-	--	?
9.distressed	++	+	-	--	?	24.dejected	++	+	-	--	?
10.relaxed	++	+	-	--	?	25.nervous	++	+	-	--	?
11.contented	++	+	-	--	?	26.bothered	++	+	-	--	?
12.tense	++	+	-	--	?	27.pleasant	++	+	-	--	?
13.uneasy	++	+	-	--	?	28.worried	++	+	-	--	?
14.vigorous	++	+	-	--	?	29.comfortable	++	+	-	--	?
15.activated	++	+	-	--	?	30.stimulated	++	+	-	--	?

Appendix C

The SACL (Form B)

1.stimulated	++	+	-	--	?	16.apprehensive	++	+	-	--	?
2nervous	++	+	-	--	?	17.bothered	++	+	-	--	?
3.drowsy	++	+	-	--	?	18.sluggish	++	+	-	--	?
4.distressed	++	+	-	--	?	19.energetic	++	+	-	--	?
5.tense	++	+	-	--	?	20.calm	++	+	-	--	?
6.alert	++	+	-	--	?	21.contented	++	+	-	--	?
7.uptight	++	+	-	--	?	22.worried	++	+	-	--	?
8.sleepy	++	+	-	--	?	23.tired	++	+	-	--	?
9.lively	++	+	-	--	?	24.idle	++	+	-	--	?
10.jittery	++	+	-	--	?	25.activated	++	+	-	--	?
11.comfortable	++	+	-	--	?	26.uneasy	++	+	-	--	?
12.vigorous	++	+	-	--	?	27.restful	++	+	-	--	?
13.active	++	+	-	--	?	28.cheerful	++	+	-	--	?
14.dejected	++	+	-	--	?	29.pleasant	++	+	-	--	?
15.peaceful	++	+	-	--	?	30.relaxed	++	+	-	--	?

Appendix D

Pilot CLASP-R (68-items)

1. half asleep	++	+	-	--	?
2. on edge	++	+	-	--	?
3. able to hold my own	++	+	-	--	?
4. full of energy	++	+	-	--	?
5. at peace	++	+	-	--	?
6. likely to succeed	++	+	-	--	?
7. really tired	++	+	-	--	?
8. worn out	++	+	-	--	?
9. going nowhere fast	++	+	-	--	?
10. full of life	++	+	-	--	?
11. wound down	++	+	-	--	?
12. self-confident	++	+	-	--	?
13. a bundle of nerves	++	+	-	--	?
14. taking it easy	++	+	-	--	?
15. in control	++	+	-	--	?
16. under a great strain	++	+	-	--	?
17. a lot on my mind	++	+	-	--	?
18. like a failure	++	+	-	--	?
19. full of vim and vigour	++	+	-	--	?
20. raring to go	++	+	-	--	?
21. self-assured	++	+	-	--	?
22. at the end of my rope	++	+	-	--	?
23. easy-going	++	+	-	--	?

Appendix D (continued)

24. wide awake	++	+	-	--	?
25. on top of things	++	+	-	--	?
26. light-hearted	++	+	-	--	?
27. full of pep	++	+	-	--	?
28. find it hard to make a decision	++	+	-	--	?
29. no get up and go	++	+	-	--	?
30. happy-go-lucky	++	+	-	--	?
31. not making any progress	++	+	-	--	?
32. down in the dumps	++	+	-	--	?
33. in over my head	++	+	-	--	?
34. can't make up my mind	++	+	-	--	?
35. content with myself	++	+	-	--	?
36. sure of myself	++	+	-	--	?
37. carrying the weight of the world	++	+	-	--	?
38. uneasy about many things	++	+	-	--	?
39. too many responsibilities	++	+	-	--	?
40. a go-getter	++	+	-	--	?
41. fearful of the unknown	++	+	-	--	?
42. pleased with the way things are	++	+	-	--	?
43. drained and listless	++	+	-	--	?
44. unable to assert myself	++	+	-	--	?
45. secure and at ease	++	+	-	--	?
46. hard to keep awake	++	+	-	--	?

Appendix D (continued)

47. heavy-hearted	++	+	-	--	?
48. lots of spirit	++	+	-	--	?
49. enjoying myself	++	+	-	--	?
50. on the verge of exhaustion	++	+	-	--	?
51. easily intimidated	++	+	-	--	?
52. keen to get involved	++	+	-	--	?
53. happy with the way things have turned out	++	+	-	--	?
54. at my wits end	++	+	-	--	?
55. lacking in resources	++	+	-	--	?
56. full of enthusiasm	++	+	-	--	?
57. have peace of mind	++	+	-	--	?
58. dominated by others	++	+	-	--	?
59. tensed up	++	+	-	--	?
60. my life is going smoothly	++	+	-	--	?
61. interested in what's going on	++	+	-	--	?
62. a born leader	++	+	-	--	?
63. ready to drop	++	+	-	--	?
64. talented and skillful	++	+	-	--	?
65. in a panic	++	+	-	--	?
66. strong and tough	++	+	-	--	?
67. nervous about what's going to happen next	++	+	-	--	?
68. vulnerable to things around me	++	+	-	--	?

Appendix E

Pilot SACL-P

1.sleepy	++	+	-	--	?	21.uptight	++	+	-	--	?
2.ambitious	++	+	-	--	?	22.industrious	++	+	-	--	?
3.jittery	++	+	-	--	?	23.restful	++	+	-	--	?
4.energetic	++	+	-	--	?	24.alert	++	+	-	--	?
5.helpless	++	+	-	--	?	25.unsuccessful	++	+	-	--	?
6.calm	++	+	-	--	?	26.cheerful	++	+	-	--	?
7.capable	++	+	-	--	?	27.resourceful	++	+	-	--	?
8.tired	++	+	-	--	?	28.active	++	+	-	--	?
9.drowsy	++	+	-	--	?	29.apprehensive	++	+	-	--	?
10.unproductive	++	+	-	--	?	30.powerful	++	+	-	--	?
11.lively	++	+	-	--	?	31.sluggish	++	+	-	--	?
12.competent	++	+	-	--	?	32.effective	++	+	-	--	?
13.idle	++	+	-	--	?	33.peaceful	++	+	-	--	?
14.confident	++	+	-	--	?	34.defenseless	++	+	-	--	?
15..distressed	++	+	-	--	?	35.dejected	++	+	-	--	?
16.relaxed	++	+	-	--	?	36.nervous	++	+	-	--	?
17.indecisive	++	+	-	--	?	37.overpowered	++	+	-	--	?
18.contented	++	+	-	--	?	38.bothered	++	+	-	--	?
19.informed	++	+	-	--	?	39.tough	++	+	-	--	?
20.tense	++	+	-	--	?	40.pleasant	++	+	-	--	?

Appendix E (continued)

41.weak	++	+	-	--	?	47.assertive	++	+	-	--	?
42.uneasy	++	+	-	--	?	48.worried	++	+	-	--	?
43.powerless	++	+	-	--	?	49.incompetent	++	+	-	--	?
44.vigorous	++	+	-	--	?	50.comfortable	++	+	-	--	?
45.activated	++	+	-	--	?	51.stimulated	++	+	-	--	?
46.vulnerable	++	+	-	--	?	52.defeated	++	+	-	--	?

Appendix F

Instructions for the SACL

Each of the following words describe feelings or moods. Please use the list to describe your feelings at this moment.

If the word definitely describes how you feel at the moment you read it, circle the double plus that is indicated as a ++ mark to the right of the word. For example, if the word is "relaxed" and you are definitely feeling relaxed at the moment, circle the ++ as follows:

(relaxed ++ + - -- ?).

If the word only likely applies to your feelings at the moment, circle the single plus indicated as a + mark as follows:

(relaxed ++ + - -- ?).

If the word does not particularly apply to your feelings at this moment, circle the single minus sign - as follows:

(relaxed ++ + - -- ?).

If you clearly decide that the word does not apply to your feelings at the moment circle the double minus -- as follows:

(relaxed ++ + - -- ?).

If the word is not clear to you circle the question mark ? to the right as follows:

(relaxed ++ + - -- ?).

First reactions are usually the most reliable. Therefore, do not spend long considering each word. However, try to be as accurate as possible.

Appendix G

Instructions for the SACL-P

Each of the following words describe feelings or moods. Please use the list to describe your feelings at this moment.

If the word definitely describes how you feel at the moment you read it, circle the double plus that is indicated as a ++ mark to the rightof the word. For example, if the word is "confident" and you are definitely feeling confident at the moment circle the ++ as follows:

(confident ++ + - -- ?)

If the word only likely applies to your feelings at the moment circle the single plus indicated as a + mark as follows:

(confident ++ + - -- ?)

If you decide that the word does not particularly apply to your feelings at this moment, circle the single minus sign as follows:

(confident ++ + - -- ?)

If you clearly decide that the word does not apply to your feelings at the moment circle the double minus sign as follows:

(confident ++ + - -- ?)

If the word is not clear to you circle the question mark to the right as follows:

(confident ++ + - -- ?)

First reactions are usually the most reliable. Therefore, do not spend long considering each word. However, do try to be as accurate as possible.

Appendix H

Instructions for the CLASP-R

Each of the following phrases describe feelings or moods. Please use the list to describe your feelings at this moment.

If the phrase definitely describes how you feel at the moment you read it, circle the double plus that is indicated as a ++ mark to the right of the phrase. For example, if the phrase is "in control" and you are definitely feeling in control at the moment circle the ++ as follows:

(in control ++ + - -- ?).

If the phrase only likely applies to your feelings at the moment circle the single plus indicated as a + mark as follows:

(in control ++ + - -- ?).

If you decide that the phrase does not particularly apply to your feelings at the moment, circle the single minus sign - as follows:

(in control ++ + - -- ?).

If you clearly decide that the phrase does not apply to your feelings at the moment, circle the double minus sign -- as follows:

(in control ++ + - -- ?).

If the phrase is not clear to you circle the question mark ? to the right as follows:

(in control ++ + - -- ?).

First reactions are usually the most reliable. Therefore, do not spend long considering each phrase. However, try to be as accurate as possible.

Appendix I

The SACL-P (48-item)

1.sleepy	++	+	-	--	?	21.uptight	++	+	-	--	?
2.ambitious	++	+	-	--	?	22.industrious	++	+	-	--	?
3.vulnerable	++	+	-	--	?	23.defeated	++	+	-	--	?
4.energetic	++	+	-	--	?	24.alert	++	+	-	--	?
5.helpless	++	+	-	--	?	25.unsuccessful	++	+	-	--	?
6.calm	++	+	-	--	?	26.cheerful	++	+	-	--	?
7.capable	++	+	-	--	?	27.resourceful	++	+	-	--	?
8.tired	++	+	-	--	?	28.active	++	+	-	--	?
9.drowsy	++	+	-	--	?	29.apprehensive	++	+	-	--	?
10.unproductive	++	+	-	--	?	30.powerful	++	+	-	--	?
11.lively	++	+	-	--	?	31.sluggish	++	+	-	--	?
12.competent	++	+	-	--	?	32.effective	++	+	-	--	?
13.activated	++	+	-	--	?	33.peaceful	++	+	-	--	?
14.confident	++	+	-	--	?	34.defenseless	++	+	-	--	?
15.distressed	++	+	-	--	?	35.dejected	++	+	-	--	?
16.relaxed	++	+	-	--	?	36.nervous	++	+	-	--	?
17.indecisive	++	+	-	--	?	37.overpowered	++	+	-	--	?
18.contented	++	+	-	--	?	38.bothered	++	+	-	--	?
19.stimulated	++	+	-	--	?	39.tough	++	+	-	--	?
20.tense	++	+	-	--	?	40.pleasant	++	+	-	--	?

Appendix I (continued)

41.weak	++	+	-	--	?	45.assertive	++	+	-	--	?
42.uneasy	++	+	-	--	?	46.worried	++	+	-	--	?
43.powerless	++	+	-	--	?	47.incompetent	++	+	-	--	?
44.vigorous	++	+	-	--	?	48.comfortable	++	+	-	--	?

Appendix J

The CLASP-R (48-item)

1. half asleep	++	+	-	--	?
2. full of energy	++	+	-	--	?
3. at peace	++	+	-	--	?
4. really tired	++	+	-	--	?
5. worn out	++	+	-	--	?
6. going nowhere fast	++	+	-	--	?
7. full of life	++	+	-	--	?
8. wound down	++	+	-	--	?
9. self-confident	++	+	-	--	?
10. a bundle of nerves	++	+	-	--	?
11. taking it easy	++	+	-	--	?
12. under a great strain	++	+	-	--	?
13. a lot on my mind	++	+	-	--	?
14. like a failure	++	+	-	--	?
15. full of vim and vigour	++	+	-	--	?
16. raring to go	++	+	-	--	?
17. self-assured	++	+	-	--	?
18. at the end of my rope	++	+	-	--	?
19. easy-going	++	+	-	--	?
20. wide awake	++	+	-	--	?
21. on top of things	++	+	-	--	?

Appendix J (continued)

22. light-hearted	++	+	-	--	?
23. full of pep	++	+	-	--	?
24. no get up and go	++	+	-	--	?
25. happy-go-lucky	++	+	-	--	?
26. not making any progress	++	+	-	--	?
27. down in the dumps	++	+	-	--	?
28. in over my head	++	+	-	--	?
29. can't make up my mind	++	+	-	--	?
30. content with myself	++	+	-	--	?
31. sure of myself	++	+	-	--	?
32. carrying the weight of the world	++	+	-	--	?
33. pleased with the way things are	++	+	-	--	?
34 drained and listless	++	+	-	--	?
35. unable to assert myself	++	+	-	--	?
36. secure and at ease	++	+	-	--	?
37. hard to keep awake	++	+	-	--	?
38. lots of spirit	++	+	-	--	?
39. enjoying myself	++	+	-	--	?
40. on the verge of exhaustion	++	+	-	--	?
41. happy with the way things have turned out	++	+	-	--	?
42. lacking in resources	++	+	-	--	?
43. full of enthusiasm	++	+	-	--	?
44. have peace of mind	++	+	-	--	?
45. my life is going smoothly	++	+	-	--	?

Appendix J (continued)

46. interested in what's going on	++	+	-	--	?
47. ready to drop	++	+	-	--	?
48. in a panic	++	+	-	--	?