

Interaction of Locus of Control and Problem- and
Emotion-Focused Stress Management Training with First-Year
University Students

by

Constance Anne Boutet

A Thesis
Submitted to the Faculty of Graduate Studies
in Partial Fulfillment of the Requirements
for the Degree of

DOCTOR OF PHILOSOPHY

Department of Psychology
University of Manitoba
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INTERACTION OF LOCUS OF CONTROL AND PROBLEM- AND EMOTION-FOCUSED
STRESS MANAGEMENT TRAINING WITH FIRST-YEAR UNIVERSITY STUDENTS

BY

CONSTANCE ANNE BOUTET

A Thesis submitted to the Faculty of Graduate Studies of the University of Manitoba in partial
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Abstract

Despite the continuing popularity of stress management training (SMT) programs, recent empirical reviews indicate only mildly encouraging results (e.g., Nicholson, Duncan, Hawkins, Belcastro, & Gold, 1988) and point to numerous limitations in stress management research. The present study incorporated recent recommendations for improving program development and evaluation in the construction of a stress management intervention for first year university students. One hundred and thirty-seven first year, full-time students at the University of Manitoba were randomly assigned to one of three SMT programs based on Lazarus and Folkman's (1984) two functions of coping behavior: (a) Problem-Focused SMT, (b) Emotion-Focused SMT and (c) Combined SMT which included a mix of both problem- and emotion-focused components. Subjects in the treatment conditions attended four two-hour weekly training sessions, supplemented by homework practice assignments. Session content focused on the primary stressors facing first year university students including academic stress, concern over career goals and future success, relationship difficulties, and feeling overwhelmed with life demands. Treatment subjects were evaluated on the Rotter Internal-External Locus of Control Scale, the College Adjustment Rating Scale, the Symptom Checklist-90-Revised, and the Social Adjustment Scale - Self-Report at three measurement times: two weeks prior to SMT, two weeks post SMT and four months following

SMT. Their results were compared to those of a randomly assigned waiting list control group and a non-participant control group which had no knowledge of the SMT. Results indicated significant improvements in stress level, psychological symptomatology and social adjustment for treatment subjects following SMT. Contrary to hypotheses, there were no significant differences in efficacy among the three SMT groups. There was also no support for the hypothesis that individual differences in belief about personal control would interact with different types of SMT to determine treatment efficacy. Significant sex differences were found, with women reporting more stress and psychological symptomatology. There was also a significant change in locus of control scores from pretest to posttest for subjects in the Emotion-Focused SMT condition. Recommendations for maximizing the effectiveness of SMT interventions in university settings are made, with specific implications for transition year programming. Suggestions for future research include investigation of interventions to increase subjects' internal locus of control, and the testing of specific hypotheses related to gender differences and SMT.

Interaction of Locus of Control and Problem- and Emotion-Focused Stress Management Training with First-Year University Students

Stress is a popular concept which appears in the professional literature from a variety of disciplines, as well as in our public media and everyday conversations. Professionals and laypersons alike have become well aware of the problems of stress.

Increased recognition of the role of stress in our daily lives, particularly the growing evidence of its toll on physical and mental health and overall social adjustment, have led to interest in teaching people how to cope effectively with stress. We are currently witnessing a proliferation of information and advice on how to manage stress through books and articles published in the professional literature and the popular press. There is also a plethora of courses, workshops, seminars and training programs for stress management being offered to both the general public and professionals in various occupations.

Despite the abundance of stress management training available, recent empirical reviews in this area indicate only "mildly encouraging results" (e.g., Nicholson, Duncan, Hawkins, Belcastro, & Gold, 1988) and point to numerous limitations in stress management research. Recent reviews call for the development of stress management training programs closely tied to stress theory (e.g., Ivancevich, Matteson, Freedman, & Phillips, 1990). It is also recommended that program development

be based on identification of the critical stressors confronting specific client groups (e.g., Auerbach, 1989) and that treatment planning include problem-focused coping strategies for managing the causes of stress, as well as emotion-focused strategies for controlling stress-related symptoms (e.g., Hillenberg & DiLorenzo, 1987). Examination of the role of individual differences as a moderating factor in the efficacy of stress management interventions is also recommended (e.g., Murphy, 1984), along with the suggestion that specific interventions be matched with the individual treatment needs or preferences of the client in order to maximize treatment efficacy (e.g., McLeroy, Green, Mullen, & Foshee, 1984).

The present study describes and evaluates a stress management training program for first year university students based on a theoretical model of stress and coping and taking into consideration the specific and primary stressors facing students in their first year of university study. This program included both problem-focused coping and emotion-focused coping training components. The present study also tested the hypothesis that individual differences in belief about personal control interact with different types of stress management training to determine treatment efficacy.

Theoretical Models of Stress and Coping

One of the major challenges facing the research area of stress and coping is the lack of a clear, generally accepted definition of stress. Historically, definitions and models of

stress have fallen into three general categories: (a) stimulus-based, (b) response-based, and (c) interactional and transactional.

Stimulus-based definitions describe stress in terms of certain types of stimulus events or characteristics of the environment that are disruptive or disturbing to an individual in some way. For instance, research on the adaptational impact of major life events is based on a stimulus-oriented theory of stress (e.g., Holmes & Rahe, 1967). Within the stimulus approach, stress is treated as an independent variable for study, with one of the primary research tasks being to specify which characteristics and conditions of the environment are stressful (e.g., major life events, daily hassles, or chronically unchanging situations). Normative statements about the degree of stressfulness associated with a particular environmental condition or event are typically made.

While some extreme environmental conditions or events are experienced as stressful by virtually everyone (e.g., a natural disaster or the sudden death of a loved one), other less extreme situations (e.g., moving to a different residence) are experienced as stressful by some people but not by others (Lazarus & Folkman, 1984). A major criticism of stimulus-based models of stress is their inability to account for individual differences among persons in the kinds of stimulus events experienced as stressful. Stimulus-based definitions also include no mechanism to explain individual variation in the

degree to which any particular environmental event is experienced as stressful (Cox, 1980).

Response-based definitions describe stress in terms of a response or pattern of responses in an individual which indicates that the person is experiencing some form of disturbance in his or her environment. The writings of Hans Selye (1978) provided the initial impetus for the response-based view, where stress is defined as the nonspecific response of the body to any demand made on it. Within the response-based approach, stress is treated as a dependent variable, as the psychological and physiological response to a stressor agent (Cox, 1980).

One of the primary criticisms of the response view of stress is that any stimulus which produces the particular stress response under consideration must be viewed as a stressor. For example, if increased heartrate is the index of stress, then being attacked by a stranger, winning a lottery and exercising must all be viewed as stressors, as they produce the same physiologically-defined stress response. Response-based definitions fail to acknowledge that situations which evoke similar responses are not experienced as equally stressful. In other words, they are not equally threatening because of factors such as differential implications of the event for one's well-being (Cox, 1980).

Interactional and transactional models of stress define stress in terms of a particular type of relationship between the person and his or her environment, where certain characteristics

of the individual are assumed to mediate between the stimulus properties of the environment and the response pattern evoked in the person by these stimulus properties (Cox, 1980).

Interactional models assume a linear and unidirectional relationship between person and environmental variables (i.e., individual characteristics mediate environmental stimuli to determine individual response), with the interacting variables retaining their separate characteristics. This relationship is also presumed to be static, capturing a moment in time when the person is responding to the environment (Lazarus & Folkman, 1984). In contrast, transactional models of stress view the person and the environment in a bidirectional, mutually reciprocal relationship (environment affects person and person affects environment), in which the separate person and environmental factors are integrated to form a new relational meaning. This relationship is also regarded as dynamic, with the transactional model focusing on process and change (Lazarus & Folkman, 1984).

Interactional and transactional models are the most comprehensive theories of stress to date. Not only do they draw from traditional stimulus- and response-based definitions, they also describe mediating psychological mechanisms and processes which account for individual differences in the experience of and response to stress (Cox, 1980).

Lazarus and Folkman's (1984) cognitive theory of psychological stress is a transactional model which has received

considerable research attention. Within this model, stress is conceptualized as a relationship between the person and the environment where environmental demands are appraised by the person as taxing or exceeding his or her adaptive resources and endangering well-being. In this approach, the word "environment" refers to the person's internal and external experiences (e.g., self-expectations, as well as demands imposed by others) and both the physical and psychosocial environments (Cox, 1980). These environmental demands are also commonly referred to in the literature as "stressors".

The cognitive theory of psychological stress identifies two critical processes that mediate the person-environment relationship: cognitive appraisal and coping. The concept of appraisal was developed in an attempt to understand variations among individuals in the type and degree of reaction experienced under comparable external conditions. Lazarus and Folkman (1984) argue that, in order to understand these variations, it is necessary to take into account the cognitive processes that intervene between the stressful encounter and the reaction, as well as the factors that affect the nature of this mediation.

Cognitive appraisal is defined as a process through which an individual evaluates the significance of a particular environmental encounter for his or her well-being. Two major kinds of cognitive appraisal are described: primary and secondary. In primary appraisal, the person evaluates whether he or she has anything at stake in the encounter and whether the

outcome of the encounter is expected to be beneficial or stressful. When an encounter with the environment carries no implication for a person's well-being, it is appraised as being irrelevant. "Benign-positive" appraisals occur if the outcome of an encounter is construed as preserving or enhancing well-being or promising to do so. "Stressful" appraisals include harm or loss, threat, and challenge. In harm or loss, some damage to the person has already been sustained, while appraisals of threat include anticipated harms or losses that have not yet occurred. Challenge, similar to threat, calls for the mobilization of coping resources. The main difference is that challenge appraisals focus on the potential for gain and growth and are characterized by pleasurable emotions such as excitement and exhilaration. Threat appraisals, on the other hand, focus on potential harm, and are characterized by negative emotions such as anxiety and fear.

Secondary appraisal occurs when an encounter is appraised as stressful and involves evaluating what can be done to manage the situation, taking into account the availability of coping options to the individual, the likelihood that a given coping option will accomplish what the person expects it to, and the likelihood that one can apply a particular strategy or set of strategies effectively. Lazarus and Folkman (1984) state that primary appraisals of significance for well-being and secondary appraisals of coping options interact with each other to determine the degree of stress experienced and the strength and

quality of the person's emotional reaction.

The second critical process believed to mediate the person-environment relationship is the individual's coping efforts. In Lazarus and Folkman's theory of stress, coping is defined as the person's constantly changing cognitive and behavioral efforts to manage (i.e., reduce, minimize, master or tolerate) specific external and internal demands that are appraised as taxing or exceeding the person's resources (Lazarus & Folkman, 1984). This conceptualization of coping is described as process-oriented, rather than trait-oriented, in that it focuses on what the person actually thinks and does in a specific stressful encounter and how this changes as the encounter unfolds. This is in contrast to the trait approach which is concerned with what the person usually does, emphasizing stability in coping rather than change. Coping is also viewed as being contextual in that person and situational variables are assumed to influence coping efforts in a given stressful encounter. Finally, coping efforts are distinguished from coping outcomes in that anything a person does to manage stressful demands, whether effective or not, is regarded as coping effort, while coping outcome implies an evaluative judgement of the efficacy of the coping behavior.

A major tenet of Lazarus and Folkman's theory of coping is their postulation of two distinct functions of coping behavior: (a) coping that is directed at managing or altering the actual problem causing the emotional distress, referred to as problem-focused coping, and (b) coping that is directed at regulating the

emotional response to a problem, referred to as emotion-focused coping. Problem-focused forms of coping include cognitive problem-solving efforts and behavioral strategies directed at changing one's own behaviors, environmental conditions, or both. This includes strategies such as developing an alternative plan to handle an environmental demand, taking some action to implement this plan, seeking further information or advice about a situation, and learning new skills to deal with a problem more effectively.

Emotion-focused forms of coping include cognitive and behavioral efforts directed at reducing or tolerating emotional distress. Cognitive strategies may involve efforts to avoid thinking in a realistic manner about a stressful situation and include such processes as denial, wishful thinking, distancing oneself from the problem and minimizing the impact of the problem. Cognitive strategies may also involve attempts to reduce threat by reappraising the meaning of a stressful situation such as focusing on the most positive aspects of the situation or comparing one's situation to the life conditions of others in order to feel better about one's own state. Behavioral strategies such as exercising, relaxing, meditating, venting feelings and seeking emotional support may also serve as mechanisms for emotional discharge and tension reduction.

In comparing problem- and emotion-focused coping, Lazarus and Folkman (1984) state that problem-focused strategies tend to be situation-specific (e.g., managing job-related demands), while

emotion-focused forms of coping (e.g., muscle relaxation) are more often applicable across diverse stressful encounters. Furthermore, it is postulated that these two forms of coping can facilitate or hinder each other in the coping process. An example of the former is when controlled breathing and calming self-talk allow a person to settle down to begin work on a difficult project. Alternatively, when continued information-seeking about a chronic medical condition serves to heighten feelings of anxiety and depression to an unmanageable level, this problem-focused form of coping is better abandoned in favor of more avoidance coping strategies.

In Lazarus and Folkman's theory, coping effectiveness depends on the fulfillment of both coping functions: problem management and emotional regulation. A person who solves a problem at great emotional cost is not coping effectively, since effective coping also includes the management of negative feelings. Similarly, a person who manages his or her emotional distress successfully, for instance through the use of alcohol, but does not attempt to handle the actual problem, is also not considered to be coping effectively. While the ideal outcome of a stressful encounter is one where the problem is resolved and there are no residual negative emotions, Lazarus and Folkman acknowledge that not every encounter holds the potential for being managed effectively, as defined by their theory.

Empirical support for Lazarus and Folkman's cognitive theory of psychological stress derives from a number of sources. In

their own line of research, Folkman and Lazarus (1980) have demonstrated the dual functions of coping. In a study of 100 adult community residents, each reporting an average of 14 stressful episodes over the course of one year, it was found that both problem- and emotion-focused coping strategies were used in virtually every stressful encounter. This finding is interpreted as support for the theoretical tenet that coping is a complex process involving both problem-solving and emotion-regulating functions.

Folkman, Lazarus and their colleagues have also studied the relationship between cognitive appraisal and coping processes. As predicted by their appraisal theory, coping behavior is related to secondary appraisal of coping options. Stressful encounters appraised as situations in which something could be done, or in which more information was needed, generated greater amounts of problem-focused coping in a community sample. In comparison, stressful situations appraised as having to be accepted, or in which the person had to hold back from acting, generated reports of greater use of emotion-focused coping (Folkman & Lazarus, 1980).

Primary appraisal of the stakes involved in a stressful encounter has also been shown to be related to coping processes. Individuals perceiving significant threats to self-esteem employed more confrontive, self-control, and escape-avoidance coping strategies, accepted more responsibility, and sought less social support compared to persons who perceived low threat to

self-esteem. Individuals perceiving significant threats to a loved one's well-being reported using more confrontive and escape-avoidance coping, and less planful problem-solving and distancing, compared to persons who were less concerned about this threat (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986).

Independent researchers have also provided empirical support for Lazarus and Folkman's transactional model of stress. Compas, Wagner, Slavin, and Vanatta (1986), for example, demonstrated the reciprocal influence of person and environment variables during a stressful encounter, as well as the changing nature of this relationship over time. In their prospective study of older adolescents during the transition from high school to college, negative life events and social support were found to predict psychological symptoms over time, while psychological symptoms and satisfaction with social support also predicted subsequent levels of negative life events. These relationships varied depending on the stage of the developmental transition. Compas et al. conclude that their results are more adequately explained by a transactional model of stress emphasizing bidirectional, mutually reciprocal relationships between person and environment factors, than by linear models in which unidirectional, static relationships are presumed.

Jerusalem (1993) similarly demonstrated the empirical validity of Lazarus's transactional stress theory in predicting the adaptational processes of East German migrants during the

nine months following their move to West Germany. Specifically, Jerusalem tested the hypothesized relations and mediating processes between personal resources (optimism, self-efficacy, helplessness), environmental constraints (employment status and housing conditions), stress appraisals (of threat and loss), coping strategies (limited to emotional coping), and health outcomes (physical complaints and subjective health ratings), as predicted by a transactional model of stress. Using a longitudinal design, with a nine-month interval between measurement periods, Jerusalem demonstrated that personal and environmental antecedents were significant predictors of stress appraisals, while stress appraisals proved to be strong predictors of emotional coping and subjective illness. Consistent with the transactional stress theory, stress appraisals were found to be the central mediators between person and environment factors on one side, and coping and health on the other. When tested against a simpler cause-effect model, which allowed only for direct influences of person and environment antecedents on stress appraisals, emotional coping and subjective illness, the transactional model of stress provided a better representation of the obtained empirical relationships.

Other researchers have provided mixed findings in their test of Lazarus and Folkman's theory. For example, Forsythe and Compas (1987) investigated the relationship between cognitive appraisals of the controllability of stressful events and the use of problem- and emotion-focused coping, for both major life

events and daily hassles. Consistent with the findings of Folkman and Lazarus (1980), Forsythe and Compas found greater use of problem-focused coping for major life events appraised as controllable by a college student sample. However, unlike Folkman and Lazarus's findings, use of emotion-focused coping did not differ according to control appraisals for major life events. Furthermore, neither problem-focused or emotion-focused coping were found to differ as a function of control appraisals for daily hassles.

In summary, Lazarus and Folkman's theoretical model of stress and coping has been the focus of considerable empirical investigation. Among stress researchers, there is general consensus that stress is cognitively-mediated and that Lazarus, together with his colleagues, is a leading theorist in this area (Pretzer, Beck, & Newman, 1989). While the results from empirical studies have not been completely consistent in supporting Lazarus and Folkman's model (e.g., Forsythe & Compas, 1987), and other recent stress theorists have pointed to some inadequacies of this model (e.g., Wong, 1993), many of the key concepts proposed by Lazarus and Folkman have proved useful in understanding the complex relationship between environmental demands and individual adaptational outcomes. Based on the theoretical rigor of Lazarus and Folkman's transactional model of stress and coping, as well as on its empirical support, this model served as the theoretical foundation for the present study.

Historical Review of Stress Management Training Programs

The evolution of stress management training can be traced from its beginnings in the early 1970s to its current popularity in the 1990s. Understanding the developmental phases of research on stress management programs is essential for formulating useful research questions and constructing valid research methodologies that will advance our knowledge in this field of applied study.

Many of the earliest studies of stress management were conducted in the area of job-related stress. In the first comprehensive review of stress management strategies, Newman and Beehr (1979) examined the results of 52 studies covering a wide range of personal and organizational approaches to handling job stress. Personal strategies referred to employees' attempts to manage job-related stress and included meditation, psychological withdrawal, planning ahead for potential stressors, adopting a healthy philosophy of life, desensitization to stressors, exercise, behavior modification, utilizing social supports, withdrawal behavior, and problem-solving. The authors noted that nearly all of the personal strategies were aimed at changing the person rather than the person's work environment. In contrast, organizational strategies for handling job stress were aimed primarily at changing some aspect of the organization and included changing the organizational structure; the reward system; the distribution of resources; selection, placement and training policies and programs; transfer policies; as well as developing better communication systems, using participative

decision-making, and developing employee health services.

While a variety of personal and organizational strategies for handling job-related stress were espoused, there was very little research evaluating the efficacy of these interventions. The majority of studies were anecdotal, relying on professional opinion based on theory or personal experience. The authors concluded that, while some good ideas existed on how to manage stress, valid and generalizable recommendations regarding effective strategies for handling job stress could not be made at that time. A model for future efficacy research was suggested which examines the role of individual and situational factors as moderating influences in determining the effectiveness of stress management interventions.

Stress management interventions for job-related stress continued to flourish in the late 1970s and early 1980s. This was due, in part, to corporate concern about the rising costs of employee medical and disability claims, and problems with lowered productivity, absenteeism, and turnover, which were expected to diminish with the implementation of employee health promotion programs (McLeroy et al., 1984; Murphy, 1984). Since Newman and Beehr's (1979) review, there was an increase in research evaluating the merits of worksite stress management programs. Murphy (1984) and McLeroy et al. (1984) reviewed these evaluative studies.

Murphy identified eight published and five unpublished evaluations of stress management programs, while McLeroy et al.

reviewed an additional seven studies published subsequent to Murphy's review. One of the major findings reported in both reviews was the considerable variation among studies along such characteristics as program participants, program format, techniques employed, and research design. Participants in the studies included nurses, company managers, school psychologists, police officers, highway maintenance workers, and mixed blue collar and white collar employees. The program formats varied from one to 15 instructional sessions, to employees' self-learning at home. Individual session length ranged from 40 minutes to two hours, with total contact time ranging from one to 16 hours. Many programs trained workers in groups, although some studies did not specify this variable. Most of the studies employed a combination of stress management techniques. Some form of muscle relaxation exercise was frequently included along with stress education, biofeedback, meditation, cognitive restructuring, or behavioral skills training. McLeroy et al. noted the specific evaluation designs employed. While six of the studies used pre-experimental designs with one-group pretest-posttest measurement, three were quasi-experimental with non-random assignment of subjects to groups. The remaining ten studies were true experiments with random assignment of subjects to treatment and control conditions.

Despite the diversity in stress management program characteristics, the authors stated that most studies reported positive effects. This finding was qualified somewhat in that

all of the pre-experimental evaluations and most of the quasi-experimental studies reported positive results, while findings from the true experiments were more ambiguous. For instance, a number of the evaluations using experimental designs reported positive changes in both treatment and control groups (e.g., Carrington et al., 1980; Murphy, 1984b).

Murphy and McLeroy et al. discussed several limitations of the evaluative research on worksite stress management programs. First, the considerable variation among studies, along key characteristics such as program format and content, hampered direct comparisons among studies, as well as attempts to formulate general conclusions. Another major difficulty was the confounding effect of non-specific program factors in the interpretation of efficacy findings. The authors argued that the demonstration of positive results across a variety of stress management techniques, and the finding of beneficial effects for several types of control groups, suggested that non-specific factors such as corporate concern about the health of its employees, and participants' expectations for program success, may account for some of the findings in stress program evaluations. A further problem was small sample sizes. Murphy noted that many of the studies which demonstrated significant effects in both treatment and control groups utilized small comparison groups which may have resulted in low statistical power for detecting group differences. Finally, McLeroy et al. commented on the limited generalizability of research findings

from worksite stress management programs which were based primarily on volunteer samples.

Recommendations to improve the quality of future evaluative research included: (a) the use of common outcome measures across studies to enhance comparability and to increase the generalizability of findings; (b) the use of nontreatment and nonparticipant controls to assess the influence of non-specific program factors on program outcomes; (c) the use of large sample sizes to ensure adequate statistical power to detect group differences; (d) the use of non-volunteer samples to extend the generalizability of findings, and (e) longer term follow-up to assess the durability of effects and the degree to which participants continue to use the training skills after program termination.

Several recommendations were also made to enhance the efficacy of stress management training programs. McLeroy et al. emphasized the need for investigators to focus more attention on the relationship between program development and theories of stress, in order to clarify the theoretical linkage between program inputs and program outcomes. Multicomponent treatment packages were also recommended rather than individual methods. It was also suggested that future studies compare the relative effectiveness of "stress management" techniques, which referred to strategies for managing individual reactions to the work environment, and "stress reduction" techniques which included strategies for effectively reducing work stressors. Murphy also

recommended assessment of individual differences among participants which predict success at selected stress management strategies. McLeroy et al. took this suggestion one step further and proposed that worker preference for particular stress management techniques be matched with specific training modules to increase the efficacy of stress management training. Finally, it was also recommended that long-term maintenance strategies be developed to ensure the continuation of post-training benefits over time.

Throughout the 1980s, stress management programs gained popularity in many fields including business and industry, psychology, medicine, nursing, education, dentistry, and public health. Nicholson et al. (1988) reviewed the methods and results of 62 published reports on stress management programs from a variety of disciplines. Participants in the programs included asymptomatic members of the general public, persons experiencing overt signs of stress such as tension headaches and sleep disturbances, and patients suffering from chronic stress-related disorders such as hypertension. Most of the programs were conducted in universities or medical centres, while others were located in worksites, prisons, community agencies and public schools. The median sample size was 33, described as small but typical for this type of research. Evaluation designs included case studies, pre-experiments, quasi-experiments and experimental studies. There was no standard or criterion measure of stress. Dependent variables included a wide range of physiological

indicators, subjective perceptions and behavioral responses.

Of the 62 programs, 56 were claimed by the investigator to be effective. There were several limitations, however, to the degree of efficacy. Some studies claimed only minimal or short-term improvements, while others found improvements on some but not all of the outcome measures. Eleven of the studies based their claims solely on the investigators' subjective perceptions. Inappropriate statistical analyses and questionable instrumentation also weakened some conclusions. Finally, the authors stated that inadequate precision of the conceptual models being tested also served to weaken conclusions about efficacy.

Nicholson et al. also conducted a meta-analysis of 18 studies providing the requisite data for this analysis. The mean effect size was 0.75, indicating an average improvement in the treatment groups equal to approximately three fourths of one standard deviation in the control group scores. The authors interpreted this finding as "mildly encouraging," particularly given the diversity of programs and measures involved in the analysis, and as providing some support for the positive effects of stress management programs. It was concluded, however, that there was currently insufficient evidence to verify the efficacy of stress management programs given the existing problems with weak research designs, questionable instrumentation, and inadequate data reporting. Thus, stress management interventions should continue to be regarded as experimental in nature and in need of further verification and refinement.

As stress management training programs continue their popularity in the 1990s, numerous authors have recommended future directions for stress management program development and research. Hillenberg and DiLorenzo (1987), for instance, state that traditionally, stress management interventions have focused primarily on controlling stress-related symptomatology through emotion-focused coping strategies such as relaxation training. There has been limited emphasis on the causes of stress and the use of problem-focused coping strategies for managing these causes. A major problem with a strictly palliative approach to stress management is the lack of attention to the etiological variability of individuals' stress-related symptoms. The limited emphasis on stress etiology in treatment planning can reduce the power and generalizability of the stress management intervention chosen. Furthermore, without attention to the causes of stress, there is little justification for the selection of certain stress management interventions over others.

The authors argue that, in order to enhance treatment efficacy, the development of stress management programs should match the treatment needs of the client. A framework is proposed in which assessment of client symptomatology and etiology of stress is closely tied to treatment planning. Examination of person and environmental moderating variables that influence the stress management process is also recommended. Examples of client moderating variables include motivation for treatment, coping resources and social supports. Environmental variables

may include length of time available to work with the client, opportunity to engage significant others in treatment and the location and time of treatment. By designing stress management interventions after a thorough assessment of client needs, treatment plans and goals can proceed beyond the control of stress-related symptomatology and include problem-focused coping mechanisms for managing or reducing the specific sources of stress in the client's life.

Auerbach (1989) argues similarly that studies of stress management have been insufficiently grounded in theory about the sources of stress facing an individual, and the demands for coping posed by these critical stressors. He proposes that stress management program development begin with identification of the critical stressful situations confronting the client, followed by analysis of the nature of the coping demands posed by these critical stressors. Stress management interventions are then designed to teach the problem-focused and emotion-focused coping skills that are most useful in dealing effectively with these critical stress situations.

Auerbach also emphasizes the importance of person factors as moderating variables in the efficacy of stress management programs. He recommends that intervention studies examine the interaction among specific interventions, individual differences in coping style, and the specific coping demands posed by a stressor complex. For instance, studies are cited which investigated the interaction of patient preference for

information (individual coping style) and different interventions varying in the level of pre-stress information provided for patients about to undergo oral surgery (e.g., Auerbach, Kendall, Cuttler, & Levitt, 1976; Martelli, Auerbach, Alexander & Mercuri, 1987). In general, people who are characterized as information-seekers respond more positively to high levels of pre-stress information than individuals who tend to distract themselves or avoid stress-relevant information (Auerbach, 1989).

In the latest published review of stress management interventions, many of the concerns and suggestions expressed in earlier reviews are reiterated. Ivancevich et al. (1990) maintain that one of the major deficits in the stress management intervention literature is the under-utilization of theoretical assumptions about the nature of stress in the development, implementation, and evaluation of stress management programs. The authors also point to needed improvements in research design and implementation including more rigorous designs with better controls, more representative samples, and longitudinal studies with repeated measurement. The development of strategies for reducing attrition and preventing post-treatment relapse are also recommended. Finally, Ivancevich et al. call for greater attention to the role of individual differences in the stress process, recognizing that such factors as gender, specific behavioral patterns, and coping styles may play a major moderating role in the efficacy of stress management interventions.

In summarizing the recommendations for improving stress management program development and research, there are five major points on which there is consensus among investigators. First, is the need for greater attention to theories of stress and coping in the development, implementation, and evaluation of stress management programs. Increased attention to theory will facilitate the development of effective interventions, as well as clarify the reasons for selection of particular stress management techniques and outcome measures (Auerbach, 1989; Hillenberg & DiLorenzo, 1987; Ivancevich et al., 1990; McLeroy et. al, 1984; Nicholson et al., 1988).

Second, it has also been recommended that the development of stress management programs be based on identification and analysis of the critical stressors confronting an individual or client group. A third recommendation is that treatment planning include both problem-focused coping strategies for managing the causes and sources of stress and emotion-focused strategies for controlling stress-related symptoms (Auerbach, 1989; Hillenberg & DiLorenzo, 1987; McLeroy et. al, 1984).

Fourth, investigators also agree on the importance of examining the potential moderating role of individual differences and situational factors in determining the effectiveness of stress management interventions (Auerbach, 1989; Hillenberg & DiLorenzo, 1987; Ivancevich et al., 1990; Murphy, 1984; Newman & Beehr, 1979). Finally, after the critical stressors facing the individual are identified, and the moderating role of individual

difference factors is considered, some investigators recommend that different stress management interventions be matched with the treatment needs or preferences of different clients to enhance the efficacy of stress management training (Auerbach, 1989; Hillenberg & DiLorenzo, 1987; McLeroy et al., 1984). The present study addressed each of the above five points.

The Role of Individual Differences in Stress and Coping

Theoretical considerations. Currently, there is general recognition among researchers and theorists of the importance of individual characteristics, also referred to as person factors, as mediating or moderating variables in the relationship between environmental demands and personal outcomes (e.g. Auerbach, 1989; Hillenberg & DiLorenzo, 1987; Ivancevich et al., 1990; Lazarus & Folkman, 1984). Within a transactional model of stress, person factors are believed to influence cognitive appraisals of environmental demands, the selection of coping behaviors in response to a stressful transaction, as well as individual adaptational outcomes to stressful encounters.

Lazarus and Folkman (1984) discuss two characteristics that contribute to individual differences in appraisal: commitments and beliefs. Commitments are described as expressions of what is important to a person and determine the risks involved in a specific encounter. Thus, any environmental encounter that involves a strongly held commitment will be appraised as having significance for well-being to the extent that the expected outcome harms or threatens the commitment or facilitates its

expression (Folkman, 1984). According to Lazarus and Folkman, commitments influence appraisal through a number of mechanisms. First, commitments are said to guide people into and away from certain situations that can challenge, threaten, benefit or harm them, depending on the relevance of the situation to their commitment. Commitments are also said to affect appraisal by shaping individuals' sensitivity to certain environmental cues that are potentially related to one's commitment. Finally, commitments are believed to determine appraisal through their impact on psychological vulnerability. The stronger a person's commitment, the greater the potential for appraisal of threat or challenge and, hence, vulnerability to psychological stress. It is also noted, however, that the strength of commitment that creates vulnerability can also serve to motivate a person toward constructive action, as well as help to sustain coping efforts in the event of obstacles to the satisfaction of one's commitment.

The second important person factor contributing to differences in cognitive appraisal is individual beliefs. Lazarus and Folkman define beliefs as "preexisting notions about reality which serve as a perceptual lens" in individuals' encounters with the environment (1984, p.63). In appraisal, beliefs are said to determine one's perception and understanding of what is happening in the environment. For instance, the extent to which people believe in their ability to exert power or control over the environment is believed to influence the degree to which an encounter is appraised as threatening or challenging

(Lazarus & Folkman, 1984). Generally, however, Lazarus and Folkman state that beliefs usually operate at a tacit level, shaping individuals' perceptions of their relationship to the environment. It is only when there is a dramatic change in beliefs that the influence on appraisal is most apparent.

The influence of person factors on the selection of coping responses is often discussed in terms of individual coping traits or styles. Lazarus and Folkman (1984) and others (e.g., Laux & Vossel, 1982) refer to the trait conceptualization as the traditional model of coping in which coping is assumed to be determined primarily by enduring personality characteristics that dispose individuals to think and act in certain ways independent of the situational context. It is expected, therefore, that individual coping patterns will be consistent across stressful transactions. Conversely, if coping behaviors were based primarily on situational cues, one would expect all individuals to react in a similar manner to a specific stressful episode.

Within a transactional model of stress, Lazarus and Folkman (1984) state that the assessment of coping traits has had only modest predictive value with respect to how people actually cope in a given stressful encounter. It is argued that traditional trait conceptualizations of coping, such as Goldstein's (1973) classification of sensitizers-avoiders, underestimate the complexity and variability of the coping process though their unidimensional nature. Alternatively, within the transactional framework, coping is viewed as a constantly shifting process

which is unlikely captured by a static measure of a general trait or personality disposition (Folkman & Lazarus, 1980).

Nevertheless, Folkman and Lazarus acknowledge the likely existence of individual coping styles. A remaining challenge is to develop a research method for describing characteristic ways of coping that does not compromise the multidimensional quality of coping processes needed to deal with stressful life situations (Folkman, Lazarus, Gruen, & DeLongis, 1986a). Intra-individual assessment of coping patterns over a sufficient number and range of stressful encounters may be a first step toward identifying individual differences in coping styles (Lazarus & Folkman, 1984).

Finally, person factors can also moderate adaptational outcomes for individuals. This concept is related to the notion of individual vulnerability to stress. Individual vulnerability to stress may be conceptualized in terms of the adequacy of a person's physical, psychological, and social resources for dealing with adaptive demands. Lazarus and Folkman (1984) identify several coping resources that may be available to individuals and that will influence a person's secondary appraisal of his or her coping options in a given stressful encounter. These coping resources include: physical health and energy, positive beliefs about oneself, problem-solving skills, social skills, social supports, and material resources. It is assumed that the greater the availability of these resources to an individual, the lower the person's vulnerability to threat,

and the greater the person's potential for effective coping (Lazarus & Folkman, 1984).

Individual vulnerability to stress can also be conceptualized in terms of certain personality characteristics that render a person more or less resistant to stress. A number of personality characteristics have been studied in this regard including: trait anxiety, self-esteem and self-denigration, hardiness, interpersonal trust, information seeking or avoiding, inflexibility, mastery, and self-efficacy (see Chan, 1977 for a review of this literature). Pearlin and Schooler (1978), for instance, studied the moderating impact of three personality characteristics on the relationship between the life strains (i.e., stressors) people experience and the emotional stress they feel. The investigators found that freedom from negative attitudes toward oneself (low self-denigration) was the most important personality dimension in reducing the relationship between strain and stress, followed by the possession of a sense that one is in control of the forces impinging on one's life (high mastery) and, finally, the presence of positive attitudes toward oneself (high self-esteem). While all three of these characteristics were considered to be effective barriers against the emotional consequences of life strains, they were found to be particularly helpful in situations over which people have little direct control.

Kobasa, Maddi, and Kahn (1982) examined the role of "hardiness" in attenuating the impact of stressful life events on

physical and mental health. Hardiness is defined as a constellation of personality characteristics believed to enhance resistance to stressful life events. The personality dispositions of commitment, control, and challenge compose the hardiness construct. The commitment disposition refers to a generalized tendency to be involved with and find purpose in one's relationship with oneself and the broader social environment. The control disposition refers to a tendency to feel and act as if one can exert influence on the various events and experiences of one's life. The challenge disposition refers to a belief that change in life is normal and that life change presents opportunities for growth rather than threats to stability and security. In their longitudinal study of 259 middle- and upper-level management personnel, Kobasa et al. (1982) demonstrated that hardiness functions prospectively in decreasing the likelihood of symptom onset. Hardiness was also found to interact with stressful life events, supporting the hypothesis that hardiness functions as a "resistance resource" in buffering the effects of stressful events.

As a final example, Folkman et al. (1986a) studied the contribution of personality factors, appraisal, and coping processes to somatic health status and psychological symptomatology in a sample of 75 community-residing married couples. Two personality factors were found to have a significant negative association with psychological symptoms: mastery, defined as the extent to which one regards one's life

chances as being under one's control rather than being fatalistically determined, and interpersonal trust, which refers to an individual's belief in the honesty and trustworthiness of people in various roles in society, as well as in the trustworthiness of public institutions such as the judiciary system. The personality variables accounted for 18% of the variance in the regression equation for psychological symptoms, while the primary appraisal variables accounted for an additional 17% and the coping variables accounted for an additional 9%. A positive correlation between mastery and somatic health status was also reported. However, the regression equation for somatic health using the four sets of predictor variables (i.e., personality variables, primary appraisal, secondary appraisal and coping) did not achieve significance.

A personality characteristic that has received considerable theoretical and research attention is belief about personal control. Folkman (1984) distinguishes between two types of beliefs about control: (a) a generalized belief about the extent to which an individual can control life events and outcomes of importance, and (b) an individual's situational appraisal of the possibilities for control in a specific stressful encounter.

Within a transactional framework of stress and coping, generalized beliefs about personal control are conceptualized as a stable personality disposition (i.e., a person factor) believed to influence the primary appraisal of what is at stake in an environmental encounter. According to Lazarus and Folkman

(1984), the best known formulation of this construct is Rotter's (1966) concept of internal versus external locus of control. Locus of control refers to "a generalized attitude, belief, or expectancy regarding the nature of the causal relationship between one's own behavior and its consequences" (Rotter, 1966, p.2). An internal locus of control is an individual's conviction that the occurrence of events is contingent upon his or her own behavior or characteristics. An external locus of control is an individual's conviction that the occurrence of events is not entirely contingent upon one's own behavior and, instead, is likely determined by luck, chance, fate, or control by powerful others. Lazarus and Folkman (1984) note that Rotter conceived of generalized control expectancies as having their greatest influence in ambiguous situations. As stated by Rotter (1966), the clearer the situational cues regarding the extent to which an outcome can be controlled, the lesser the role of generalized expectancies for control in determining individual differences in behavior (p.2).

Situational appraisals of control, on the other hand, are conceptualized as situation-specific judgements which are part of the secondary appraisal process. As stated by Folkman (1984), situational control appraisals are products of an individual's evaluation of the demands of the situation, his or her coping resources and options to meet those demands, and the individual's ability to implement the needed coping strategies. Lazarus and Folkman (1984) draw parallels between their construct of

situational appraisal of control and Bandura's (1977) self-efficacy construct, particularly his concepts of outcome expectancy and efficacy expectancy. Outcome expectancy refers to one's estimate that a given behavioral strategy will result in a particular outcome. Efficacy expectancy is the conviction that one can successfully implement the behavior required to produce the desired outcome. Folkman (1984) argues that situational appraisals of control are difficult to evaluate since the answer to the question, "Control over what?" is inevitably multifaceted in real life situations. Also, situational appraisals are expected to change as an encounter unfolds, based on new information from the environment or from the person's own reactions or coping efforts, further rendering situational appraisals of control complex and difficult to evaluate.

In general, within a transactional model of stress, beliefs about personal control are assumed to influence cognitive appraisals, coping activities and adaptational outcomes. With regard to the appraisal of environmental demands, the extent to which an individual perceives him or herself as having control or mastery over the environment is hypothesized to determine the degree to which an encounter is appraised as threatening or challenging (Lazarus & Folkman, 1984). Anderson (1977) provides support for this hypothesis in his study of the relationship between locus of control and coping behaviors among owner-managers of small businesses during the 3 1/2 year period following a flood. Individuals with an external locus of

control, measured by Rotter's (1966) Internal-External Locus of Control Scale, were more likely to perceive high stress in relation to the flooding incident compared to individuals with an internal locus of control who perceived less stress.

Parkes (1984), in her study of the relation between locus of control, cognitive appraisal, and coping processes in specific stressful episodes reported by female nursing students, demonstrated mixed findings regarding the influence of beliefs about control on cognitive appraisal. While significant differences were found among Internals and Externals in appraisals of the importance of the stressful episodes, with Externals using higher importance ratings more frequently than Internals, there were no significant differences between Externals and Internals in their appraisals of the degree of controllability of the specific stressful episodes reported. This finding was contradictory to the expectation that individual control orientations would influence perceptions of events, with Internals more likely to appraise situations as being amenable to control and Externals more likely to see themselves as powerless to influence significant events (p. 663). As an alternative explanation, Parkes relates this finding to the issue of congruency and incongruency between individual expectations for control and situational factors, arguing that, overall, congruent situations (i.e., situations which allow a degree of control consistent with an individual's locus of control expectations) are experienced as less stressful than incongruent situations.

Thus, "situations congruent with subjects' locus of control expectations would be expected to occur less often in the present data than would incongruent situations, because the latter would tend to be perceived as more stressful" (p. 664).

Vitthalano, Russo, and Maiuro (1987) investigated the relation between locus of control and cognitive appraisal of a major life stressor in terms of the extent to which the stressor poses a threat or a challenge for the individual, as well as the potential for change or need for acceptance of the situation among first- and second-year medical students. It was hypothesized that locus of control would be differentially related to appraisals depending on the specific situational stressor being appraised. While Internals and Externals did not differ in the type of stressors identified, overall, a higher proportion of Internals appraised their stressors as challenging, while significantly more Externals appraised their stressors as threatening. This relationship was particularly evident for those stressors involving personal performance or mastery situations, which present opportunities for change and control, in contrast to social and academic stressors which involve environmental factors and attitudes and behaviors of others that offer less opportunity for individual control. Similarly, with regard to appraisals of change or accept, Internals were much more likely to appraise their performance stressors as situations that could be changed and that did not have to be accepted. Externals, on the other hand, were more likely to appraise their

performance stressors as situations that could not be changed and that had to be accepted.

The majority of Internals and Externals appraised their academic environmental stressors as being primarily unchangeable. However, Internals were more accepting of this situation than Externals, who outnumbered Internals in the not change/not accept appraisal category. The authors interpret this finding as indicating that individuals with an internal locus of control may be more realistic and discriminating in their appraisals of the demands of stressful encounters. Overall, it is concluded that appraisal is better predicted by the interaction of person and situational factors than by either variable alone.

Generalized and situation-specific beliefs about control are also related to type of coping activity. Regarding generalized beliefs, Anderson (1977) found that individuals with an external locus of control used more defensive coping behaviors aimed at dealing with their emotional or anxiety reactions to the stressful stimulus (i.e., emotion-focused coping such as withdrawal). Internals, on the other hand, employed more problem-solving behaviors aimed at dealing with the objective stressful situation (i.e., problem-focused or task-centred coping).

Strickland (1978) cites similar findings in her review of the research on internal-external locus of control expectancies and health attitudes and behaviors. Internals who value their health seek more information about health maintenance and disease

processes when they are alerted to possible risks such as hypertension (e.g., Wallston, Maides, & Wallston, 1976). Internals are also more likely than externals to take precautionary or preventive action to improve their health habits, such as using seat belts to a greater extent (Williams, 1972a) and engaging in preventive dental care (Williams, 1972b). Internals are similarly more likely to take appropriate remedial action when experiencing a physical disorder and have been described as more compliant (Weaver, 1972) and cooperative in response to treatment demands (Cromwell, Butterfield, Brayfield, & Curry, 1977). Overall, individuals who hold internal as opposed to external expectancies are seen as more likely to assume responsibility for their health and to engage in more generally adaptive health responses. Strickland cautions, however, that the attempted mastery behavior engaged in by Internals is most appropriate when events are actually controllable. The same behaviors may serve to exacerbate difficulties when the stressful situation is essentially outside of their personal control.

Parkes (1984) argues that the apparently more effective coping behavior of Internals is related to the way in which Internals and Externals modify their coping attempts differently depending on their appraisal of the situation, rather than to generalized differences in coping style. In her study of stressful episodes reported by female nursing students, a small but significant negative correlation of locus of control and

direct coping was demonstrated, with Internals showing higher overall levels of direct coping. Direct coping included the use of rational task-oriented strategies, as well as the avoidance of maladaptive behaviors and cognitive distortions. This finding is consistent with Lazarus and Folkman's (1984) observation that the assessment of coping traits or styles has modest predictive value in determining how people actually cope in a stressful encounter.

Parkes also found that the relation between locus of control and coping is mediated by subjects' appraisals of their stressful encounters. This finding applied only to subjects with an internal locus of control orientation who reported higher levels of direct coping for situations appraised as changeable, and higher levels of suppression for situations appraised as having to be accepted. Suppression included attempts at suppressing thoughts about the situation and inhibition of action. In contrast, there was no significant relationship between appraisal and coping for subjects with an external locus of control.

Parkes suggests that Internals may be more discriminating in assessing the specific nature of situational coping demands and may be more able to focus their coping efforts appropriately. This is demonstrated most clearly in the different responses to situations appraised as amenable to change. In these situations, Internals reported high levels of direct coping and low levels of suppression, while Externals reported high levels of suppression and low levels of direct coping. Parkes concludes that Internals modify their coping responses in a potentially adaptive manner in

relation to their appraisal of a particular stressful episode, while Externals appear to show little alteration of coping efforts in relation to their appraisals, and demonstrate potentially maladaptive patterns of coping.

In addition to the influence of generalized beliefs about control on coping, Folkman and Lazarus (1980) demonstrate that situation-specific appraisals of control also affect coping activity. In their study of the stressful life events experienced by 100 community residents over a one-year period, higher levels of problem-focused coping were reported for those situations in which people believed something could be done or that required more information. In contrast, for those situations which people believed had to be accepted, or in which they had to hold back from acting, higher levels of emotion-focused coping behaviors were reported.

Finally, beliefs about personal control may also affect adaptational outcomes for individuals. In general terms, Strickland (1978) states that the reporting of life contentment is related to internality (e.g., Palmore & Luikart, 1972), whereas pathological difficulties, such as anxiety and mood disturbance, appear to be linked to external expectancies (e.g., Butterfield, 1964; Kilpatrick, Dubin, & Marcotte, 1974).

A number of researchers have investigated the relationship between locus of control and stressful life events, predicting that life change may have its most adverse effect on individuals who perceive themselves as having little or no control over such

events (e.g., Johnson & Sarason, 1978). While there is no consistent significant relationship between locus of control and the reporting of life events (Cole & Sapp, 1988; Lefcourt, Miller, Ware, & Sherck, 1981), Externals appear to be more psychologically vulnerable to the experience of negative life events, demonstrating more depression, tension, state and trait anxiety, and overall mood disturbance compared to Internals (Cole & Sapp, 1988; Johnson & Sarason, 1978; Lang & Markowitz, 1989; Lefcourt et al., 1981; Schoeneman, Reznikoff, & Bacon, 1983).

Folkman (1984) states that while most theory and research on the relationship between personal control and stress is based on the assumption that having control is stress-reducing and not having control is stress-inducing, sometimes the opposite is true. She discusses several instances in which the potential for control can heighten a sense of threat rather than reduce it. One of these instances is when exercising control in one life area results in costs in other areas. Such is the case when a patient must choose whether to undergo a severe medical treatment (e.g., chemotherapy) in order to control his or her disease, while at the same time risking cost or damage to other aspects of his or her physical and psychological well-being (e.g., nausea and depression).

Control can also have negative social consequences when the exercise of one's control results in strain to an important interpersonal relationship. Stress may similarly be heightened when exercising control requires material resources that may be

needed elsewhere. For example, spending the money which was put aside to pay for a much anticipated family vacation on repairs to the furnace may heighten the household stress level.

Finally, Folkman argues that having control can be stress-inducing when it opposes a preferred style such as when an individual prefers to avoid, rather than to seek out, relevant information that would allow him or her to potentially control a stressful encounter. A study by Miller and Mangan (1983) illustrates this point. They investigated the interaction of the amount of preparatory information received and individual preference for monitoring or distracting oneself from threat-relevant information among women about to undergo a stressful gynecologic procedure for diagnosis of cervical cancer. Psychophysiological arousal was lower when the amount of preparatory information was consistent with patients' preferred coping styles: information monitors were less aroused with a high level of information compared to low information, while information avoiders demonstrated less arousal in the low information condition.

Strickland (1978), in a similar argument, discusses the importance of congruence between locus of control expectancies and treatment interventions in enhancing therapeutic benefits to individuals. Persons who participate in health interventions that are consistent with their internal-external beliefs about health are more satisfied with treatment (e.g., Wallston, Wallston, Kaplan, & Maides, 1976), show better adjustment to

medical interventions (e.g. Auerbach, Kendall, Cutler, & Levitt, 1976), and demonstrate the most pervasive behavioral changes (e.g., Best & Steffy, 1975). Overall, Externals appear most responsive to treatment approaches in which structure is imposed from the outside. Internals, on the other hand, prefer situations in which they can assume responsibility for their treatment and work more independently.

Application to stress management program development. As noted earlier, individual characteristics play an important mediating role in the relationship between environmental demands and stress outcomes. These person factors contribute to individual differences in appraisals of environmental encounters, determine coping traits and styles, as well as influence individual adaptational outcomes in response to stressful transactions. Within a transactional model of stress and coping, individual difference factors affect all aspects of the dynamic relationship between the person and the environment.

Because of the pervasive and influential role of individual differences in the stress and coping process, the efficacy of stress management interventions may also be moderated by these individual factors. A number of investigators have suggested that matching particular types of interventions with different personality or coping styles may enhance treatment efficacy in stress management training programs (e.g. Auerbach, 1989; Hillenberg & DiLorenzo, 1987; McLeroy et al., 1984).

Martelli, Auerbach, Alexander, and Mercuri (1987) provide

empirical support for the matching hypothesis. They predicted that, in a stressful situation which does not pose a clear demand for a particular type of coping strategy, stress management interventions consistent in focus with individuals' preferred coping styles would be most effective. This prediction was confirmed in their study of adult patients facing a stressful oral surgery procedure. Subjects received either a problem-focused, emotion-focused, or mixed-focus stress management intervention. The problem-focused intervention provided information about the impending surgery, instructions for discriminating among physiological sensations and applying appropriate descriptors to these sensations, as well as instruction in the use of self-statements to facilitate rational analysis of the information provided. The emotion-focused intervention offered instruction in the use of relaxation, calming self-statements, and attention re-direction to reduce the emotional distress associated with the surgical procedure, independent of its objective features. The mixed-focus stress management intervention taught coping strategies directed at both the objective characteristics and the emotional aspects of the surgery experience in an abbreviated, combined format.

Overall, the mixed-focus intervention produced the best response to surgery, indicated by patients' state anxiety, pain levels, adjustment during surgery, and satisfaction with the surgery experience. This finding is consistent with Lazarus and Folkman's theoretical assumption that effective coping involves

both problem management and emotion regulation. There was also a significant interaction of patient preference for information (measure of individual coping style) and intervention type. Lower state anxiety and self-reported pain, as well as better adjustment and higher satisfaction, were obtained when high information preference patients received the problem-focused intervention and when low information preference patients received the emotion-focused intervention. Stress management interventions were less effective when mismatches occurred with individuals' preferred coping styles.

The individual difference variable that seems to hold the most promise for matching with stress management interventions is belief about personal control. As discussed previously, beliefs about control are regarded as a significant factor in the primary and secondary appraisal processes within a transactional model of stress (e.g., Folkman, 1984). Furthermore, Strickland (1978) presents evidence of the importance of congruence between locus of control expectancies and the structure of therapeutic interventions in enhancing treatment efficacy, similar to the matching hypothesis outlined above.

A study by Strentz and Auerbach (1988) provides preliminary support for the concept of matching stress management interventions with dispositional expectancies for control in order to reduce stress response levels. They investigated subjects' adjustment to the stress of simulated captivity following exposure to one of three pre-stress training programs

designed to facilitate participants' coping ability. It was hypothesized that a problem-focused stress preparation would be consistent with Internals' belief that important contingencies are under their control and would reinforce their disposition to engage in problem-focused coping, resulting in better adjustment. Externals, on the other hand, were expected to respond best to emotion-focused stress management training which should induce a coping set consistent with their belief that they cannot actively influence important outcomes.

Overall, subjects who received emotion-focused stress management training reported the lowest anxiety and emotional stress levels and were also rated as exhibiting the lowest level of behavioral disturbance during captivity. This finding is explained in terms of the nature of the coping demands posed by the stress of captivity which was described as presenting relatively few options for problem-focused coping. Some support was obtained for the matching hypothesis in that Externals who received problem-focused training responded the most poorly on all indices of stress.

The authors conclude that, overall, situational variables were the primary determinants of coping processes and anxiety and adjustment levels, although locus of control differences also contributed significantly to the variance in these measures. This finding was not unexpected given the highly stressful nature of the situation in which the coping demands were perceived as unambiguous and imposing. Furthermore, it is consistent with

Rotter's (1966) tenet that the clearer the situational cues regarding controllability of outcome, the lesser the role generalized expectancies for control are likely to play in determining individual differences in behavior.

While Strentz and Auerbach provide some support for the concept that the efficacy of different stress management interventions is enhanced when matched with internal-external expectancies for control, and reduced when mismatches occur, their study is limited by the imposing and unambiguous nature of the experimental stressor and, hence, the limited range of coping options. Research is needed which investigates further the interaction of problem-focused and emotion-focused components of stress management training and individual expectancies for control, and that takes into consideration the nature of the coping demands confronting individuals.

Situational Factors Influencing Stress and Coping

Theoretical considerations. In contrast to the trait conceptualization of coping discussed previously, in which coping is assumed to be determined primarily by enduring personality characteristics, the situational view claims that the particular demands and constraints associated with specific stressful encounters shape individuals' coping responses. Thus, coping behaviors are expected to vary across stressful encounters in response to different contextual demands and constraints. The situational view of coping is similar in focus to research on stressful life events which examines the characteristics of

situations which render them more or less stressful. In life events research, situations are assigned a normative weight assumed to reflect social consensus on the stressfulness of the event, based on a specific dimension such as the degree of adjustment required. For example, in Holmes and Rahe's (1967) Social Readjustment Rating Scale, "death of a spouse" is assigned a value of 100 life change units, reflecting the amount of change or adaptation required by an individual to accomodate to this life event. Person factors, resulting in individual variation in appraisals and experience of stress, are absent from the life events research model.

Folkman and Lazarus (1980) provide empirical support for the situational view of coping processes. In their analysis of the coping patterns of 100 middle-aged community residents, the majority of people were found to be more variable than consistent in their use of coping strategies across stressful episodes. If independent person factors, not a specific focus of this study, had been the primary determinant of coping patterns, a higher degree of consistency would have been expected. The situational context of the stressful episode was also found to influence the type of coping behaviors utilized. While work-related episodes were associated with higher levels of problem-focused coping, health concerns were associated with increased emotion-focused coping, suggesting that contextual demands and constraints are important in shaping the type of coping responses.

Overall, Folkman and Lazarus conclude that coping behaviors

are neither entirely determined by personal factors nor by situational factors. Within a transactional model of stress, person and situation factors together are seen as shaping coping responses (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). However, as a general rule, the greater the ambiguity of the situation, the more influence person factors are believed to have in determining the meaning of the environmental encounter (Lazarus & Folkman, 1984) and in shaping coping responses (Auerbach, 1989).

Person and situation factors are also assumed to influence appraisal processes interdependently (Lazarus & Folkman, 1984). While person factors confer meaning on an event, certain situational factors have the potential for creating threat. Lazarus and Folkman identify several properties of situations that create the potential for threat, harm or challenge. Among these formal properties are the novelty of the situation and the uncertainty of the event, as well as a number of temporal factors such as the imminence, duration and temporal uncertainty of the event. Ambiguous situations, where the information necessary for appraisal is unclear or insufficient, and events that occur "off time" in relation to the normal life cycle, are also regarded as potentially threatening or challenging.

Coping effectiveness has also been viewed from a trait-centred or dispositional perspective, as well as from a situational or environmental perspective (Lazarus & Folkman, 1984). The trait-centred approach to coping effectiveness is

concerned with person characteristics that define competence in individuals without reference to the particular situations a person must handle. The situational perspective, on the other hand, views the environment as providing a set of demands, constraints, and resources to be responded to or used by an individual when confronting a specific stressful encounter.

Lazarus and Folkman argue that neither a trait nor an environmental perspective alone is adequate to study effectiveness, since coping efficacy depends on the relationships among situational demands and the person's resources. Within this perspective then, no coping strategy is regarded as inherently good or bad. Much depends on the context of the situation and whether a particular coping strategy fits with both person and situational aspects of the stressful transaction.

Nevertheless, research and theory suggest that there are some environmental conditions under which certain forms of coping are more or less effective. Problem-focused coping strategies have been found to be most effective with stressors perceived as possibly being ameliorated by action, and in situations in which there are opportunities for control (e.g., Anderson, 1977; Auerbach, 1989). Emotion-focused coping strategies are useful in short-term, high threat situations that are appraised as having to be accepted and as holding few possibilities for control or beneficial change (Auerbach, 1989; Lazarus & Folkman, 1984; Strentz & Auerbach, 1988). Both problem- and emotion-focused coping in combination are most effective when a stressful

situation does not pose a clear demand for a particular type of coping activity (e.g., Martelli et al., 1987).

Lazarus and Folkman discuss further general principles regarding the effectiveness of coping strategies. Certain forms of coping may be more effective in the early stages of a crisis when emotional resources are limited, such as when denial and avoidance are used to manage the emotional distress resulting from the sudden death of a loved one, than in the later stages of the crisis when appropriate action must be taken. Also, different forms of coping may be adaptive to certain aspects of a stressful situation but not to the situation as a whole. For instance, it is more detrimental to deny that one potentially has a serious disease and not seek medical attention than to deny that the disease is necessarily fatal.

Application to stress management program development. A number of authors argue that the consideration of situational factors is important, if not essential, in the development of effective stress management training programs. Hillenberg and DiLorenzo (1987), for example, assert that stress management training must be appropriate to the unique context of the client's situation, following assessment of the specific causes and sources of stress confronting the individual. Auerbach (1989) argues similarly for the identification of critical stress situations confronting clients before development of stress management interventions. Furthermore, it is suggested that the formulation of stress management programs be based on an analysis

of the coping demands posed by these situations in terms of their relative "pull" for emotion-focused versus problem-focused coping. Auerbach advocates, as do Hillenberg and DiLorenzo, that stress management interventions need to be matched with the primary coping demands presented by critical life stressors in order to enhance treatment efficacy.

While some published research is available on matching stress management interventions with individual differences in coping style, there are no studies, to date, which test the matching hypothesis based on an analysis of situation-specific coping demands. Certainly, classifying specific stressors in terms of their coping demands poses a challenging research task. Auerbach suggests that such classification could be accomplished using rational analysis or subjective client appraisals. Nevertheless, there is consensus that, in order to develop effective stress management training programs for a specific target group, it is necessary to design the intervention to teach the coping strategies that will be most helpful in managing the demands of the critical stressors confronting that target group.

Present Research

This study assessed the comparative efficacy of three stress management training programs designed to meet the specific needs of first year university students. The first year of university is recognized as a period of major life transition for older adolescents that often involves heightened vulnerability to stress (Compas, Wagner, Slavin, & Vannatta, 1986). Compas et al.

describe life transitions as periods involving change, loss, or disruption of a prior structure or order in an individual's life, during which a person's coping resources may be taxed by their attempts to manage the demands of the transition (p. 243).

Furthermore, transitions may involve the loss of familiar social supports, leaving the person less able to cope with on-going stress. Thus, the normative transition from attending high school to attending university or college provides an optimal opportunity to study the relationships among stress and coping processes as students are faced with new academic and social demands, while possibly experiencing a loss of familiar social supports from their high school and family networks.

Several North American universities have recognized the stress associated with first year university and have responded with the development of transition programming designed to assist new students in adjusting successfully to university life, as well as to promote student retention beyond the first year of study. This programming is frequently offered in the form of a credit course open exclusively to first year students. Course content often includes an extended orientation to the university, academic survival skills, introduction to the institution's support services, career counselling, help with academic decision-making, and an introduction to extracurricular university activities (e.g., Shanley & Witten, 1990).

Interest in transition programming is a relatively recent phenomenon in Canadian universities. The University of Manitoba

recently developed a "University 101" course which was implemented as an elective beginning in September, 1992. This course was designed to enhance student survival skills and to improve the overall quality of the first year experience for new students, with the goal of increasing student retention (Hogan, 1991).

Results from student surveys and needs assessments identify the specific types of stressful situations facing university students, and also the kind of programming perceived as most helpful in handling these stressors. Archer and Lamnin (1985) investigated the personal and academic stressors experienced by undergraduate students at a large university. Using an open-ended survey approach, students were asked to describe two situations or conditions they found to be most stressful in both personal and academic categories. Various stressors were identified in both areas of students' lives. The major academic stressors experienced were tests and finals, reported by 52% of the sample, and grades and competition, reported by 28% of the sample. Other significant academic stressors included time demands (too many demands, not enough time), professors and classroom environment, career and future success, procrastination (getting behind, being unprepared), studying, problems with financial aid, papers and essays, and registration. The major personal stressors experienced were intimate relationships, reported by 37% of the sample, and parental conflicts and expectations, reported by 29% of the sample. Other significant

personal stressors included finances, conflicts with friends, judgement and acceptance by peers and peer pressure, goal-setting and personal achievement, roommmate conflicts, meeting other students, future and career plans, and not enough free time.

Roberts and White (1989) studied the academic and personal stressors experienced by undergraduate college students whose academic skills were below the average college entrance level. The most important academic stressors identified by this group of students were career and future goals, studying, tests and finals, finances, and procrastination. The most important personal stressors were living conditions, personal appearance, lack of free time, roommate conflicts, meeting others, parents, and intimacy.

Barrow, Cox, Sepich, and Spivak (1989) surveyed students regarding the personal importance of 51 developmental needs and the mode of service they would be most likely to use to address these needs. The survey sample consisted of two thirds undergraduate students and one third graduate students, with a mean age of 21 years. The five most important needs identified by the students were career planning; understanding interests, skills, values and personality; coping with stress; setting reasonable self-expectations; and communicating more effectively. While it was determined that students do not necessarily utilize the services they claim to need, programs focusing on stress management and time management were among the best attended at a

university counseling centre.

A 1988 report on the personal health practices and needs survey of students at the University of Manitoba (Prouten & Mirwaldt, 1988) indicated that 78% of students described their life as being fairly or very stressful. When asked, "What is the most important thing you could do to cope with stress you are experiencing this academic year?", 41% stated they needed to learn to relax more and worry less. The most frequent barrier reported to doing what was needed to cope with stress was lack of time, cited by 33% of the students surveyed. These results, specific to a local sample at the University of Manitoba, are consistent with the findings from other student needs assessment surveys and point to the importance of stress management and time management programming with university student populations.

A 1989 University of Manitoba Student Affairs Survey (Walker, 1989) provides further support for the need for programming in the areas of stress and time management. Undergraduate students were asked to evaluate the importance of 20 student service needs. While students perceived more job placement services as the most important student service needed, workshops on stress and time management were ranked fifth in importance. Other requests for specific services were consistent with the stressors and concerns discussed previously, including the need for workshops in financial planning (ranked 8th in importance) and workshops on effective communication (ranked 10th).

An informal survey of student needs was conducted with the student leaders of a residence program at the University of Manitoba as part of the planning process for an educational series on stress management (Student Leaders of St. John Residence, personal communication, January 19, 1988). The residence leaders identified several stressors facing undergraduate students including: difficulty handling relationships, particularly social pressure from peers; homesickness and missing significant others; family expectations; difficulty taking time out from academic demands; career decision anxiety; unrealistic self-expectations; financial difficulties, and problems with academic motivation. They requested help specifically with time management, problem-solving, identifying sources and symptoms of stress, and achieving a balanced lifestyle.

The preceeding discussion suggests that undergraduate university students experience a variety of stressful events, and that first year students may be particularly vulnerable as they struggle with the many challenging personal, academic and interpersonal demands of university life. Within this context, stress management programming will likely serve an important student need.

Utilizing a first year university student sample, the present study focused on two major research issues. The first issue concerned the development of stress management training programs. The present study developed three stress management

interventions for first year students based on Lazarus and Folkman's theoretical model of stress and coping which has received considerable empirical support. The three stress management interventions corresponded to Lazarus and Folkman's two functions of coping behavior and included: (1) problem-focused training, (2) emotion-focused training, and (3) a mixed intervention consisting of both problem- and emotion-focused training components. The efficacy of these three treatment programs was compared with each other and with a waiting list and a non-participant control group.

Careful consideration was given to the content and the format of the stress management interventions in the present study. The development of program content was based on a review of the research on the primary sources of stress reported by college and university students and the results of student needs assessments. As reviewed earlier (e.g., Archer & Lamnin, 1985; Barrow et al., 1989; Prouten & Mirwaldt, 1988; Robert & White, 1989; Walker, 1989), the most frequent personal and academic stressors experienced by students were targeted as content areas for the stress management training programs. General reports on stress management programming were also considered in developing the specific stress management interventions (e.g., Barrow, 1981; Stevens & Pfof, 1984).

With regard to the format of the stress management interventions in the present study, a number of key issues were considered including: (a) how much training is sufficient to

have a significant beneficial impact on participants and (b) what program components are best suited to meet the needs of a university undergraduate sample. Boutet (1987) examined the factors contributing to successful stress management training programs and found considerable variation in the format used among the 12 studies reviewed, despite the fact that all studies reported positive outcomes for participants. While most studies trained participants in groups, rather than individually, the number of training sessions ranged from a minimum of four sessions to as many as 10 training sessions, with an average number of eight sessions in total. In addition, the total number of hours of stress management instruction provided to participants ranged from six hours of training to as many as 30 hours, with an average of 15 hours of training. Based on Boutet's review, it appears that there is no standard format for stress management interventions which distinguishes effective training from ineffective programs. Thus, in constructing the format for the three stress management interventions in the present study, the existing research on stress management training with university and college students was considered (e.g., Kelly, Bradlyn, Dubbert, & St. Lawrence, 1982; Nicholson, Belcastro, & Duncan, 1989), along with a practical concern for subject attrition (e.g., Barrow, 1981; Cook & Campbell, 1979).

A second major research issue concerned the mediating role of individual person factors in determining the efficacy of stress management interventions. The present study provided a

further test of the hypothesis that individual differences in personality or coping style, specifically belief about personal control, interact with particular types or components of stress management interventions to determine treatment efficacy.

The following specific hypotheses were tested:

(1) Prior to stress management training, internal locus of control subjects will report less stress, less psychological symptomatology, and better social adjustment compared to external locus of control subjects.

(2) Following stress management training:

(a) all treatment subjects will report greater improvement in stress level, psychological symptomatology, and social adjustment compared to the control group subjects;

(b) subjects receiving Problem-Focused training will report greater improvement in stress level compared to subjects receiving Emotion-Focused training;

(c) subjects receiving Combined problem- and emotion-focused stress management training will report greater improvement in stress level, psychological symptomatology, and social adjustment than subjects receiving either Problem-Focused or Emotion-Focused training alone;

(d) Internals receiving Problem-Focused stress management training will report greater improvement in stress level, psychological symptomatology, and social adjustment than Internals receiving Emotion-Focused stress management training and Externals receiving Problem-Focused training, and

(e) Externals receiving Emotion-Focused stress management training will report greater improvement in psychological symptomatology and social adjustment than Externals receiving Problem-Focused stress management training and Internals receiving Emotion-Focused training.

(3) At follow-up assessment, the posttreatment improvements will be maintained. Treatment subjects' stress level, psychological symptomatology, and social adjustment will remain superior to that of control group subjects although lessened to some extent due to a likely drop-off in practice rates of the stress management techniques.

Method

Subjects

Participants in the present study were 241 (100 male and 141 female) first year, full-time students at the University of Manitoba who were admitted to the university directly from high school without taking time off in-between. To increase the homogeneity of the sample, older than average (mature) students and part-time students were excluded due to possible differences in their primary stressors compared to the above sample. Students who had previous experience with stress management training, those who were receiving treatment for a personal difficulty or major health problem, and students who were registered in the Faculty of Arts course 99:111 "Introduction to University" were also excluded because of the possible

confounding effects of these factors with treatment outcome.

Students were recruited through the Introductory Psychology Participant Pool at the University of Manitoba at the beginning of the 1992-93 regular academic year. Two independent samples of students were recruited: one to serve as participants in the stress management training study and the other to serve as a non-participant control group sample. Prospective stress management training participants were provided with a description of the rationale for the study (Appendix A) and also with information regarding the level of commitment required (i.e., number of sessions and total number of hours of participation) in order to allow for informed consent in their decision to participate. These students were also informed that they might be randomly assigned to a waiting list control group which would be offered stress management training at the end of the study. Prospective non-participant control subjects were also provided with a brief description of the study (Appendix B). These students, however, were not informed of the opportunity for stress management training. Instead, they were told that the study involved an investigation of the type and level of stress experienced by first year university students at three different times during the academic year.

At the time of recruitment, 220 students (96 males and 124 females) indicated their willingness to participate in the stress management study, while 84 students (37 males and 47 females) registered in the non-participant control group, for a total of

304 subjects. The drop-out rate between the recruitment phase of the study and the pretreatment assessment (a period of approximately one month) was 13% (17 stress management participants and 23 non-participant control subjects). Reasons given for leaving the study at this time included scheduling conflicts and an unwillingness to commit the time required for participation.

A total of 264 students completed pretreatment assessment measures. Following completion of pretreatment measures, 157 of the 203 stress management training participants were randomly assigned to the three training conditions (Problem-Focused, Emotion-Focused and Combined Problem- and Emotion-Focused stress management training) and 46 students were assigned to the waiting list control group. Sixty-one students remained in the non-participant control group.

Between pretreatment assessment and the beginning of stress management training (a period of approximately two weeks), there was a further drop-out of 23 subjects (20 stress management training participants and 3 non-participant control subjects), representing approximately 9% of the pre-treatment sample. Primary reasons given for leaving the study again included scheduling conflicts and an unwillingness to commit the time required for participation. Upon beginning the stress management training in October 1992, 137 students remained in the training conditions (34 students in the Problem-focused training groups, 54 students in the Emotion-focused groups, and 49 students in the

Combined training groups), 46 students remained as waiting list control subjects and 58 students continued in the non-participant control condition, for a total of 241 subjects.

All subjects received experimental credit toward their final course grade in Introductory Psychology for their participation. Students in the stress management training conditions received credit proportionate to their attendance at pretreatment, posttreatment and follow-up assessment sessions and training sessions. Waiting list control and non-participant control group subjects received credit for their completion of pretreatment, posttreatment and follow-up outcome measures.

Measures

Rotter Internal-External Locus of Control Scale. Rotter's (1966) I-E scale was used to measure subjects' generalized beliefs about personal control (Appendix C). The 29 item version of the scale, which includes six filler items designed to disguise the purpose of the test, was developed on college students (Rotter, 1975) making it suitable for use in the present study. The I-E scale utilizes a forced-choice response format and ranges in scores from 0, indicating extreme internality, to 23, indicating extreme externality. Subjects in the present study were designated as Internal or External based on a median split of the obtained scores.

Test-retest reliability of the Rotter I-E scale is adequate and is estimated at .72 for a one month period (Rotter, 1966) and .57 after 12 months (Layton, 1985). The I-E scale also

demonstrates reasonably high internal consistency, with correlations in the .70s (Marsh & Richards, 1987; Rotter, 1966). Support for construct validity is demonstrated through findings of substantial agreement among subjects' self-responses to three different forms of the Rotter instrument, as well as significant correlations between self-responses on the I-E scale and responses of external observers. The Rotter I-E scale also demonstrates sensitivity to change resulting from specific interventions designed to alter the I-E construct (Marsh & Richards, 1986).

College Adjustment Rating Scale. Zitzow's CARS (1984) was used to measure the type and level of stress experienced by students in the present study (Appendix D). This scale served as both a descriptive measure and a measure of adaptational outcome following stress management training.

The CARS is designed to assess students' self-perceptions of life stress in the academic, social, personal, and family-home environments. The 100-item version of the scale includes both major life events and daily hassles which are relevant to the experiences of college and university students. The CARS instructs students to select events they have experienced in their lifetime (e.g., cheating on a test) and to rank each event from 0 (no stress) to 9 (extreme stress), indicating the degree of stress currently felt in relation to the item. Subjects received a summary score for each of the four environments ranging from 0 to 225, as well as a total stress score, ranging

from 0 to 900.

Test-retest reliability for the CARS is estimated at .82 for the total instrument after a two-week period. Inter-item correlations within each of the four environments and the total instrument average .88. Face validity and content validity of the items were established through expert review by four psychologists from one of the sampled universities. Finally, to assess concurrent validity, responses on the CARS of those students referred for counselling and those not referred were compared. Results showed that students referred for counselling had significantly higher stress scores (Zitzow, 1984).

Symptom Checklist-90-Revised. The SCL-90-R (Derogatis, 1983) was used as a pre-post measure of adaptational outcome (Appendix E). This 90-item self-report inventory is designed to assess symptoms of psychological distress across a broad spectrum of individuals, with norms available for non-patient "normal" respondents, individuals with psychiatric disorders, and adolescents. Each item is rated on a 5-point scale ranging from 0 ("not at all") to 4 ("extremely") indicating the degree of distress experienced during the past seven days. The SCL-90-R yields nine symptom dimensions and three global indices of distress. The Global Severity Index (GSI) provides "the most sensitive, single numeric indicator of the respondent's psychological distress" (Derogatis, 1983, p. 27), combining information on numbers of symptoms and intensity of perceived distress. The GSI, based on non-patient norms, was used as a

measure of individual psychological adaptation in the present study.

High levels of internal consistency ($\alpha = .77$ to $.90$) and test-retest reliability ($r = .78$ to $.90$ after one week) are reported. The SCL-90-R also demonstrates factorial invariance of the nine primary symptom dimensions across sex of respondent. Convergent validity is demonstrated in relation to the MMPI. Factor analyses of the results from clinical studies confirm the theoretical structure of the instrument, contributing to its construct validity. The SCL-90-R is also sensitive to change in a broad variety of clinical and medical contexts including the assessment and treatment of stress-related conditions (e.g., Carrington et al., 1980).

Social Adjustment Scale - Self-Report. The SAS-SR (Weissman, 1990) was used as a pre-post measure of adaptational outcome (Appendix F). This self-report instrument is designed to assess social functioning and is derived from the Social Adjustment Scale Interview (Weissman & Paykel, 1974). The SAS-SR contains 54 questions that measure role performance over the past two weeks in seven major areas of functioning: work as an employee, housewife, or student; social and leisure activities; relationships with extended family; spousal role; parental role; membership in the family unit; and financial responsibility. In general, the questions in each area fall into four major categories: the respondent's performance at expected tasks, the amount of friction with others, other aspects of interpersonal

relations, and inner feelings and satisfactions. Each question is rated on a 5-point scale with a higher rating indicating impairment. The SAS-SR yields an overall adjustment score, as well as mean scores for each role area, with norms available for a community sample and three psychiatric outpatient populations. In the present study, subjects' overall adjustment scores on the SAS-SR, based on comparison with community sample norms, were used to indicate degree of social adaptation.

High internal consistency is reported for the SAS-SR ($\alpha = .74$). Test-retest stability is estimated at .80 across two time periods (Weissman, Prusoff, Thompson, Harding, & Myers, 1978). Concurrent validity is demonstrated through a number of findings: the SAS-SR differentiates psychiatric patients from community normals (Weissman et al., 1978); shows high agreement between patient self-report, interviewer's assessment, and close informant's rating of the patient (Weissman & Bothwell, 1976); and is sensitive to changes in patients' clinical status from acute to recovery phase (Weissman & Bothwell, 1976).

Stress Management Training Participant Diary. All subjects participating in the three stress management training conditions were required to complete weekly records of their stress management activities. The Stress Management Training Participant Diaries measured subjects' compliance with home practice assignments and their overall practice of stress management techniques. There were four separate diaries corresponding to the four weekly training themes (Appendix G).

Each diary listed the stress management techniques covered in the three training conditions for that week. Students were asked to record the amount of time they spent practicing the stress management techniques outside of the training sessions.

In the first training session of all three treatment conditions, students were provided with a sample diary and detailed instructions for completing the diary. The diaries were distributed to students at the end of each training session for completion during the week between training sessions. At the beginning of each subsequent training session, students were provided with an opportunity to review the accuracy of their completed diary or to complete their diary retroactively if they had failed to complete it over the course of the week or if they had forgotten to bring their completed diary to the training session. The group leader for the stress management training programs strongly encouraged and reinforced completion of the diaries to enhance subject compliance with this recording task.

Procedure

Pilot study and group leader training. The group leader for all of the stress management training programs was a female Ph.D. student in Clinical Psychology at the University of Manitoba who had previous experience with stress management techniques. Training of the group leader was provided by the primary investigator who is also a Ph.D. student in Clinical Psychology and has extensive experience in stress management training through the University of Manitoba Counselling Service and the

Faculty of Continuing Education at the University of Manitoba.

Training was accomplished through the assignment of relevant readings (e.g., Burka & Yuen, 1983; Davis, Eshelman, & McKay, 1982) and through the use of a detailed treatment manual outlining the verbal content to be used and the specific procedures to be followed for each of the stress management training sessions (see Appendix H). In order to provide the group leader with an opportunity to practice the stress management procedures prior to the main study, a pilot program of the Combined problem- and emotion-focused stress management intervention was offered through the University of Manitoba Counselling Service in July, 1992. Subjects for the pilot program were recruited through an Introductory Psychology course and an Abnormal Psychology course offered in the 1992 summer session at the University of Manitoba. Students from the Introductory Psychology course earned experimental credits toward their final course grade for their participation, while students from the Abnormal Psychology course participated out of personal interest. Students could attend up to four, one and one half-hour sessions, with each session having a different content theme (e.g., Academic Stressors). This approach was preferred to requiring subjects' attendance at all four training sessions, recognizing that summer students often have other time commitments.

A total of 26 students attended the four training sessions. The majority of these students were from the Introductory

Psychology course. Eleven students provided feedback on session one dealing with Academic Stressors. Three students attended the second training session focusing on Career Goals and Future Success. Ten students provided feedback on session three which dealt with Relationship Difficulties. Finally, two students attended the fourth session on Feeling Overwhelmed with Multiple Life Demands. Feedback from the pilot program was used to refine the stress management interventions for the main study and included suggestions such as allowing for a short break in the middle of each session, inviting more personal sharing and interactive discussion, and providing more examples of key concepts.

During the main study, the stress management training group leader met with the primary investigator prior to each training session to address any concerns or questions about program content or delivery. Following each training session, the group leader and primary investigator also met to debrief and problem-solve, as needed. The group leader remained blind to the hypotheses of the study and was not involved in data collection beyond her responsibility for the Stress Management Training Participant Diaries.

Pretreatment assessment and subject assignment.

Pretreatment assessment occurred two weeks prior to beginning stress management training. Due to the large number of treatment and control subjects, and to maximize accessibility to students, several pretreatment assessment sessions were offered at various

times over the course of one week. Sessions were conducted separately for stress management training participants and for non-participant control subjects to avoid confounding the non-participant control group sample. In order to maximize attendance at the pretreatment sessions, all subjects were telephoned a few days in advance by the primary investigator or a research assistant to remind students of their participation.

All pretreatment assessment sessions were conducted in a group format by the primary investigator and a research assistant, and lasted for approximately one hour. Stress management training participants began by signing a consent form reminding them of the participation requirements and confirming the subject inclusion criteria for the study (Appendix I). All subjects (including the non-participant control group) provided demographic information on age, gender, faculty, number of credit hours registered for, marital status, living arrangement, and grade 12 Mathematics and English scores (Appendix J). Subjects then completed pretreatment measures which were randomly ordered to vary across subjects and included Rotter's I-E Scale, the CARS, the SCL-90-R, and the SAS-SR.

Following completion of pretreatment measures, subjects who had registered to participate in the stress management training study were randomly assigned to the treatment or waiting list control condition. This was accomplished through a special marking on the back of the assessment booklets which were randomly distributed at the beginning of each pretreatment

session. Students assigned to the treatment condition were asked to select one of six time slots when they would be available to attend the stress management training program. The three stress management interventions (i.e., Problem-Focused, Emotion-Focused, and the Combined problem- and emotion-focused training program) had previously been randomly assigned to the time slots, allowing for two sections of each type of stress management program. Subjects were unaware of these designations when making their selection. Students assigned to the waiting list control condition and subjects in the non-participant control group selected one of several times available to attend a posttreatment assessment session in approximately seven weeks time.

Treatment implementation. Stress management training began in the third week of October, 1992. Due to scheduling difficulties, the location of the training sessions alternated weekly between two conference rooms, one on the second floor and one on the fourth floor of the University Centre building at the University of Manitoba. Due to subjects' self-selection into the most convenient time slot, there was considerable variation in the size of the training groups. Problem-focused stress management training was offered on Monday and Wednesday mornings with group sizes of 24 and 10, respectively. Emotion-focused training was conducted on Monday and Wednesday afternoons and involved 32 students and 22 students, respectively. Combined problem- and emotion-focused stress management training occurred on Tuesday mornings and Tuesday afternoons and included 13

subjects and 36 subjects, respectively. The decision was made to permit variation in the size of the training groups rather than risk further subject attrition amongst students who could not attend an alternate time slot.

The format for the stress management groups was four consecutive weekly training sessions lasting 1 1/2 to 2 hours, supplemented by weekly homework practice assignments. All training sessions were videotaped for later review. The content of the stress management interventions was organized around four major themes corresponding to the primary stressors facing first year university students. These four themes were as follows: Session 1 - Academic Stressors; Session 2 - Concern Over Career Goals and Future Success; Session 3 - Relationship Difficulties, and Session 4 - Feeling Overwhelmed with Life Demands.

Table 1 summarizes the problem-focused and emotion-focused training components that were included in the three stress management programs for each of the four training sessions.

Insert Table 1 about here

The selection of these particular stress management techniques was based primarily on the review of the research and program literature, as well as on the investigator's previous experience working with university students who are experiencing difficulties with academic, relationship, career, and lifestyle issues. There was an attempt to balance the number of stress

Table 1

Problem- and Emotion-Focused Training Components

Stress management training program				
Session	Theme	Problem-focused	Emotion-focused	Combined problem- & emotion-focused
1	Academic Stressors	1) Setting and Achieving Goals - breaking tasks down into their component parts - using self-reward	1) Reducing Physical Tension - body awareness - passive muscle relaxation	1) Setting and Achieving Goals - breaking tasks down into their component parts - using self-reward
		2) Effective Time Management - using the Unschedule - using daily lists and datebooks	2) Enhancing Mental Relaxation - guided imagery - return to alert state	2) Reducing Physical Tension - body awareness - passive muscle relaxation
		3) Homework Assignment: (i) Goal-setting exercise (ii) List of self-rewards (iii) Unschedule for the following week	3) Homework Assignment: (i) Relaxation tape for test anxiety	3) Homework Assignment: (i) Goal-setting exercise (ii) List of self-rewards (iii) Practice of relaxation exercise
2	Concern Over Career Goals and Future Success	1) Model of Career Development - four stages to developing a career - focus on Preparation stage - four steps in career planning	1) Developmental Perspective on Career Planning - normalizing this stage/process for beginning university students - reducing related distress through mutual sharing of similar struggles and group support	1) Developmental Perspective on Career Planning - normalizing this stage/process for beginning university students - reducing related distress through mutual sharing of similar struggles and group support

(table continues)

	Problem-focused	Emotion-focused	Combined problem- & emotion-focused
	2) University Services to Assist with Career Planning - Counselling Service - Career Resource Centre - Career Mentor Program - Career Planning and Placement Service	2) Translating Personal Interests to Occupational Choices - identifying people with whom you have common interests ("Party Exercise") - Holland's model of 6 personality types/ occupational environments	2) Model of Career Development - four stages to developing a career - focus on Preparation stage - four steps in career planning
	3) Homework Assignment: (i) Developing a personal career plan	3) Homework Assignment: (i) "Lotto 6/49" exercise (fantasy occupation)	3) Homework Assignment: (i) Career Planning Inventory
3	Relationship Difficulties 1) Meeting Others - importance of body language - beginning a conversation - getting to know someone through questions, active listening and self-disclosure	1) Overcoming Fear of Strangers ABC model: impact of thoughts and beliefs on feelings and behaviors - identifying negative self-statements - substituting more positive beliefs to reduce anxiety and increase approach behaviors	1) Overcoming Fear of Strangers ABC model: Impact of thoughts and beliefs on feelings and behaviors - identifying negative self-statements - substituting more positive beliefs to reduce anxiety and increase approach behaviors

(table continues)

	Problem-focused	Emotion-focused	Combined problem- & emotion-focused
	2) Resolving Interpersonal Conflict - Personal Bill of Rights - seven step model for solving interpersonal problems	2) Expressing Feelings - symptoms of unexpressed feelings - suggestions for feeling expression	2) Resolving Interpersonal Conflict - Personal Bill of Rights - seven step model for solving interpersonal problems
	3) Homework Assignment: (i) Interpersonal problem-solving exercise (ii) Practice of communication skills for meeting others	3) Homework Assignment: (i) ABC model exercise (ii) Practice of feeling expression guidelines	3) Homework Assignment: (i) Interpersonal problem-solving exercise (ii) Practice of ABC model to control negative feelings in stressful situations
4 Feeling Overwhelmed with Life Demands	1) Getting Control of Your Life and Your Time - setting personal priorities + exercise in session - tips for effective time management	1) Importance of Self-Care in Meeting Life Demands - good nutrition - exercise and physical activity - adequate sleep - rest and relaxation - time for fun - allow self not to be perfect	1) Getting Control of Your Life and Your Time - setting personal priorities + exercise in session - tips for effective time management
	2) Problem-Solving Skills to Reduce Life Demands - five step model for solving life problems + practice in session	2) Letting Go of the Past - relaxation/ visualization for "letting go" of painful memories and experiences accompanied by soothing music	2) Importance of Self-Care in Meeting Life Demands - good nutrition - exercise and physical activity - adequate sleep

(table continues)

Session Theme

Stress management training program

Problem-focused	Emotion-focused	Combined problem- & emotion-focused
		<ul style="list-style-type: none"> - rest and relaxation - time for fun - allow self not to be perfect
3) Homework Assignment: (No formal homework assigned in final training session)	3) Homework Assignment: (No formal homework assigned in final training session)	3) Homework Assignment: (No formal homework assigned in final training session)

management techniques covered in each training session to make the programs comparable in this way. In order to maintain this balance in the Combined problem- and emotion-focused intervention, it was necessary to select a limited number of the problem-focused and emotion-focused components for inclusion, rather than simply combining the techniques from the two programs. This selection was based on which training components were expected to be the most powerful interventions (i.e., the most useful and appealing to students). Those training components that introduced a technique before a more advanced application of the skill was presented were also selected for inclusion (e.g., general relaxation before test anxiety management). Table 1 also describes the homework practice assignments following each training session.

In order to maximize attendance at the stress management training programs, students received a telephone call a few days prior to the first training session from either the primary investigator or a research assistant to remind them of their participation. When students missed a training session, they were contacted by telephone by the primary investigator within a few days. Reasons for the missed session were elicited and an attempt was made to remedy any circumstances interfering with students' attendance at the stress management sessions. In order to make up for the missed session, subjects were encouraged to attend the same session in the alternate section of their treatment group (e.g., Problem-focused group participants were

invited to attend the Wednesday morning session if they missed the Monday morning session). If this was not possible, students were invited to view the videotape of the missed session. If neither of these options was convenient, handouts from the missed session were made available for students to review before the next training session. Subjects received experimental course credit for each training session attended and for viewing the videotape for each missed session.

Finally, to increase home practice of the stress management techniques, the importance of home practice was emphasized by the group leader at each training session. Students were encouraged to develop a regular practice time to facilitate the integration of home practice into their daily routine. Subjects were also provided each week with an 8x10 mini-poster featuring the stress management techniques discussed for that week (included in Appendix H). The posters were designed by a Fine Arts student at the University of Manitoba and were reproduced on colored paper for distribution. Students were instructed to hang the posters in a prominent place as a reminder to practice their stress management techniques between training sessions.

Posttreatment assessment. Posttreatment assessment occurred approximately two weeks following the final stress management training session, coinciding with the end of the first regular academic term. In order to accommodate the large number of respondents, several posttreatment sessions were offered at various times over the course of one week. Sessions were

conducted separately for stress management training participants and for non-participant control subjects to avoid confounding the non-participant control group sample. In order to maximize attendance, all subjects received telephone reminders a few days prior to their scheduled session.

Posttreatment assessment sessions were conducted in a group format by the primary investigator and lasted for approximately one hour. Subjects began by completing an information sheet (Appendix K) inquiring about any psychological or medical treatment received since the pretreatment assessment session. Students were also asked to provide information about their current academic status including any voluntary course withdrawals or failure of courses in the first term, as well as their intention to return for a second term of study at the University of Manitoba. All subjects then completed a booklet of posttreatment measures which were randomly ordered and included Rotter's I-E Scale, the CARS, the SCL-90-R, and the SAS-SR.

Subjects participating in the stress management training programs were also asked to complete an evaluation of their training experience (Appendix L). This questionnaire included three qualitative questions about subjects' perceived helpfulness of the training received and suggestions for improving the stress management programs. Students also provided quantitative ratings of treatment credibility (i.e., the appropriateness, quality and helpfulness of the training received), their expectations for benefit, and perceived confidence in the group leader's training

ability.

Stress Management Training Participant Diaries from the last training session were also collected at the posttreatment assessment sessions. Finally, before leaving, all subjects selected one of several times available to return for a follow-up assessment session in four months time.

Follow-up assessment. Follow-up assessment was conducted four months after the collection of posttreatment data and coincided with the end of the regular academic year. Several follow-up assessment sessions were offered at various times during the course of one week and were conducted separately for stress management training subjects and for non-participant control subjects. Students received telephone reminders several days before their scheduled session.

Follow-up assessment sessions were conducted in a group format by the primary investigator and lasted for approximately one hour. Subjects began by completing an information sheet (Appendix M) inquiring about any psychological or medical treatment received since the posttreatment assessment session. Students were also asked to provide information about their academic status including any course withdrawals or failures during the regular academic year, their intention to return for a second year of study at the University of Manitoba, and their expected grade point average for their first year of study. All subjects then completed a booklet of follow-up assessment measures which were randomly ordered and included the CARS, the

SCL-90-R, and the SAS-SR.

After completing follow-up measures, stress management training participants (treatment and waiting list control subjects) were invited to leave their name and address if they would like to receive a written summary of the study findings. The waiting list control subjects were also informed of the next stress management training program that would be offered by the primary investigator through the University of Manitoba Counselling Service in approximately three weeks time and were invited to participate.

Following completion of follow-up measures, the non-participant control subjects were debriefed regarding the actual purpose of the study and the importance of their contribution (see Appendix N). They were then invited to participate in the next stress management training program beginning in three weeks time. Non-participant control subjects were also invited to leave their name and address if they would like to receive a written summary of the study findings. A copy of the feedback letter sent to subjects is included in Appendix O.

Ethical Considerations and Referral of Students Experiencing Psychological Distress

At the time of subject recruitment, care was taken to provide students with sufficient information to allow for informed consent in their decision to participate. Stress management training participants were also advised that the leader for the stress management groups had relevant training and

experience in stress management to alleviate possible concerns regarding leader competence.

Subjects were informed that any information they provided would be confidential. Students were assured that questionnaires would be stored in a secure location and that any oral information disclosed in the context of the study would similarly be treated as confidential by the primary investigator and the leader of the stress management groups. Subjects were reassured further that access to their individual results would be limited to the primary investigator and her research supervisor and that students' participation would in no way impact their academic evaluation at the university. Students were also informed of their right to withdraw from the study at any time without academic penalty.

Following the pretreatment and posttreatment assessment sessions, subjects reporting high levels of psychological distress on the SCL-90-R, including symptoms of severe depression, suicidal ideation or psychosis, were contacted by the primary investigator to assess need for referral to appropriate treatment services. Subjects' responses to the CARS items dealing with anxiety, depression and contemplation of suicide on the Personal scale, and verbal, physical or sexual abuse on the Family and Home scale were also used to screen for students who might be experiencing significant personal difficulty.

Following pretreatment assessment, 57 students were identified as high risk for psychological difficulty using these

criteria, representing approximately 21% of the sample completing pretreatment measures. Thirty-two students were participants in the stress management training programs, 12 students were in the waiting list control condition and 13 students were non-participant controls. Follow-up telephone calls to the 57 students yielded three false-positive identifications among students who had reportedly misunderstood some of the questions. Among the valid identifications, one student opted for individual counselling and was referred to the University of Manitoba Counselling Service. This student was exempt from any further participation in the study although she was awarded full experimental credit. Two other students subsequently attended one session of individual counselling at the Counselling Service. As this was a very limited contact with a counsellor, primarily educational in focus, these students were permitted to continue in the study. Other students identified through the screening process were informed of the availability of treatment services at the University of Manitoba Counselling Service and were encouraged to access these services at any point during the academic year. Most students declined the referral, stating that they preferred to handle the problem on their own with the assistance of their existing support network.

Following posttreatment assessment, 23 students were identified as being at high risk for psychological difficulty. The screening criteria were applied more conservatively at this stage in the study since many of the students were known to the

group leader and the primary investigator, and most students had either been exposed to or fully informed of the availability of student counselling services through their previous contacts in the study. For similar reasons, only five of the 23 students identified as high risk received follow-up telephone calls from the primary investigator. These students had not been identified as high risk at any other point in the study. Referral to the University of Manitoba Counselling Service was made. All students declined, however, again stating they felt able to manage on their own at this time.

In addition to the pre and posttreatment screening for students at high risk for psychological difficulty, individual referrals to the Counselling Service were also made by the stress management program group leader during the course of subjects' participation in the treatment conditions. Two students were identified by the group leader as likely experiencing some form of psychological distress. One student was approached by the group leader and declined referral to counselling services, citing a recent upsetting event which was not expected to have a long-term impact. The other student, who appeared quite depressed during the training sessions, had been contacted by the primary investigator following pretreatment screening and had declined counselling service. This student eventually withdrew from the study and could not be reached for further intervention.

Results

Data Screening

Prior to analysis, the data set was examined through various SAS programs for accuracy of data entry, missing data values, outliers, and the fit between the distribution of variables and the assumptions of multivariate analysis. While the number of missing values was not high, and they were distributed fairly evenly across the different levels of stress management training and control conditions, a decision was made to repeat the primary analyses, once without the missing data using complete cases only, and a second time with replacement of missing values using group means for the affected variables, in order to assess the similarity of results. The results from this comparison are reported later.

Three cases with very high scores were identified as univariate outliers on the pretreatment College Adjustment Rating Scale. Two cases were similarly identified on the pretreatment Symptom Checklist 90-Revised, while one extremely high score was evident on the pretreatment Social Adjustment Scale Self-Report. Various SAS programs were run with and without the outliers. Examination of the means and standard deviations indicated no significant difference between the two sets of scores. Thus, a decision was made to conduct subsequent analyses with the original data set.

A test of the normality of the distributions of the dependent variables was performed through SAS UNIVARIATE using

the Shapiro-Wilk statistic (W). Values of W for the pre, post, and follow-up distributions for the CARS, SCL-90-R and the SAS-SR were consistent with the null hypothesis that the input data values were from a normal distribution.

Sample Characteristics and Group Equivalence at Pretest

The mean age of the first-year university student sample was 18.0 years. The majority of participants were registered in the Faculty of Arts (46.6%) or the Faculty of Science (34.1%). The number of credit hours registered for by students ranged from 18 to 37 ($M = 29.0$), with 18 credit hours being the minimum number required for full-time status. All students reported never having been married and most of them lived with their parents or another family member (75.0%). Twelve percent of the students lived in university residence, while an additional 12% shared a house or apartment with friends. The majority of study participants were from the city of Winnipeg (72.3%), while 23.8% identified their permanent residence in rural Manitoba. A small proportion of students were from a different area of Canada (1.6%) and 2.3% of students identified themselves as permanently residing outside of Canada. Reported grade 12 Mathematics scores ranged from 50% to 99% ($M = 75.6\%$). Reported grade 12 English scores were distributed similarly from 55% to 98% ($M = 77.3\%$).

Multivariate analysis of variance (MANOVA) and chi-square were used to test for pretreatment group equivalence on the demographic and dependent variables. Independent variables were stress management training group (Problem-Focused SMT, Emotion-

Focused SMT, Combined problem- and emotion-focused SMT, waiting list control and non-participant control) and locus of control (internal and external). Using Wilks' Lambda criterion, the MANOVA indicated no significant group or locus of control main effect, or a significant interaction effect, for the combined demographic variables of age, number of credit hours, grade 12 math score and grade 12 english score. Chi-square analysis for differences in frequency on the demographic variables of sex, faculty, living arrangement and permanent residence yielded a significant group by living arrangement effect, with proportionately more subjects in the non-participant control group sharing a house or apartment with friends compared to subjects in the other groups $\chi^2(20, N = 264) = 33.02, p < .05$.

Regarding the pretreatment dependent variables, there was a significant multivariate main effect for locus of control, $F(3, 248) = 3.64, p < .05$, consistent with the first hypothesis. Univariate ANOVAs suggested significant differences between Internals and Externals on the pretreatment CARS variable, $F(1, 250) = 5.59, p < .05$, and the pretreatment SCL-90-R variable, $F(1, 250) = 10.59, p < .01$,¹ with external locus of control subjects reporting greater stress and more symptoms of

¹While univariate analyses do not control for the correlation between multiple dependent variables, results are presented for univariate ANOVAs throughout this section to assist in the interpretation of significant multivariate effects.

psychological distress at pretreatment than internal locus of control subjects. Contrary to Hypothesis 1, however, there were no significant differences between Internals and Externals in their pretreatment social adjustment scores.

Comparison with Scale Norms

Rotter (1975) states that the mean score for college students on the Internal-External Locus of Control scale is between 10 and 12, with a standard deviation of approximately 4.00. Ashkanasy (1985) administered the Rotter I-E Scale to 178 first-year undergraduate Psychology students and obtained a mean of 12.67 with a standard deviation of 4.09. The pretreatment mean and standard deviation for the I-E scale in the present study fell within the expected range for college students ($M = 11.08$, $S.D. = 3.88$).

Zitzow (1984) administered the College Adjustment Rating Scale to 382 students attending a small public college in the northcentral region of the United States. Mean stress scores were compared for students referred for counselling within one month of completing the CARS and those students not referred for counselling. The mean of the counselling-referred sample was 320.10 ($S.D. = 73.10$), while the mean of the non-referred sample was 219.60 ($S.D. = 101.20$). The mean pretreatment total CARS score in the present study was 197.95 ($S.D. = 92.96$) which more closely resembles Zitzow's non-referred sample mean.

Derogatis (1983) provides mean Global Severity Index values for four normative samples on the Symptom Checklist 90-Revised.

The mean GSI for the non-patient adult cohort is 0.31 (S.D. = 0.31), while the mean GSI for the non-patient adolescent cohort is 0.76 (S.D. = 0.54). The mean GSI for the psychiatric outpatient cohort is 1.26 (S.D. = 0.68) and the mean GSI for the psychiatric inpatient cohort is 1.30 (S.D. = 0.82). In the present study, the mean pretreatment GSI for the total sample was 0.81 (S.D. = 0.52) which most closely approximates the obtained mean for the non-patient adolescent normative sample.

Weissman et al. (1978) provide mean overall adjustment scores on the Social Adjustment Rating Scale Self-Report for a randomly selected community sample and three diagnostic groups of psychiatric patients. The mean overall adjustment score for the community sample was 1.59 (S.D. = 0.33) compared to the pretreatment mean score in the present study which was 2.00 (S.D. = 0.38). Thus, the level of overall social adjustment among participants in the present study was lower than that reported for the community sample, and is more similar to the experience of respondents in the psychiatric patient sample (e.g., mean adjustment score for schizophrenic patients was 1.96, S.D. = 0.62). This finding is likely due to age differences between the community sample, where all of the respondents were over 25 years of age, and the present student sample with its mean age of 18 years. In comparison, the schizophrenic patient sample contained some respondents in the 18 to 24 age group.

Preliminary Analyses

Prior to beginning the main analyses, Pearson product-moment

correlation coefficients were computed between the demographic variables and the pretreatment dependent variables, in order to determine whether any of the demographic variables would be useful covariates in subsequent analyses. None of the coefficients obtained were of sufficient magnitude to warrant inclusion of any of the demographic variables as covariates.

Correlations among the dependent variables were also examined and indicated significant moderate associations between pretreatment scores on the CARS, the SCL-90-R and the SAS-SR. Because of this association, multivariate analyses were judged to be more appropriate than univariate analyses, in order to deal with the problem of inflated Type 1 error due to multiple tests of correlated dependent variables (Tabachnick & Fidell, 1989).

Because of the unequal numbers of observations for the different stress management training conditions and the levels of locus of control, Type III tests were used in the SAS GLM program to adjust for unequal cell sizes. This method of adjustment is regarded as the most appropriate and conservative procedure for dealing with unequal cell size in experimental research (Tabachnick & Fidell, 1989).

Students' scores on the Internal-External Locus of Control Scale were subjected to a median split before inclusion in the primary analyses. The median score for the pretreatment locus of control variable was 11. Students scoring 11 and below were designated as having an internal locus of control, while students who scored above 11 were designated as external locus of control

subjects.

Test for Treatment-Related Attrition

Chi-square and MANOVA were used to test for treatment-related attrition. Chi-square analysis indicated no significant difference among the stress management groups and the control groups in the frequency of subjects dropping out of the study from pretest to posttest and from posttest to follow-up. Furthermore, there were no significant differences between subjects remaining in the study and those dropping out of the study on the demographic variables of sex, faculty, living arrangement and permanent residence.

MANOVA was also used to test for treatment-related attrition using the procedure described by Flick (1988). A dummy variable was assigned to each subject designating attrition status (i.e., completer, drop-out before posttreatment assessment, drop-out before follow-up assessment). Attrition status and experimental treatment group (stress management training groups and control groups) served as the independent variables in the analysis, while the dependent variables chosen were those thought most likely to discriminate between drop-outs and completers.

Using Wilks' Lambda criterion, MANOVA indicated no significant experimental group main effect or significant interaction effect for the combined demographic variables of age, credit hours, grade 12 math score and grade 12 english score. The multivariate F for attrition status, however, was

significant, $F(12,625) = 1.89, p < .05$. Examination of the univariate F 's suggested a significant difference in grade 12 english scores for the different levels of attrition status, $F(3,239) = 2.67, p < .05$. Inspection of the relevant means revealed the highest mean score for subjects who dropped out of the study immediately after pretreatment assessment, and the lowest mean score for treatment subjects who completed the study but attended fewer than three training sessions. Scheffe's post-hoc comparisons, however, revealed no significant differences among levels of attrition status on the grade 12 english variable. This lack of significant findings is likely due to the conservative nature of the Scheffe test which adequately controls the Type 1 experiment-wise error rate for all pairwise comparisons, but generally has a higher rate of Type II error (Neter, Wasserman, Kutner, & Irwin, 1990).

There was no significant group or attrition main effect, or interaction effect, for the combined pretreatment dependent variables or the combined posttreatment dependent variables. Finally, MANOVA for the academic indicators of voluntary withdrawal from first term courses, anticipated failure of first term courses, voluntary withdrawal from courses during the (entire) academic year, retroactive withdrawal from courses during the year, failure of courses this year, and expected grade point average also yielded insignificant main effects and interaction effects.

Based on the findings from the chi-square analysis of no

significant difference among stress management training and control groups in the rate of drop-out from the study, as well as the MANOVA results indicating no significant interaction between attrition status and experimental treatment group on several possible discriminating variables, it was concluded that sample bias due to treatment-correlated attrition was not significant in the present study. Following Flick's (1988) recommendation, if the sample is shown to be unbiased by postinclusion attrition, completers-only analysis may be appropriate. Tests of the main hypotheses, therefore, proceeded using data only from those subjects who completed the study.

For subjects in the stress management training groups, "completer" was operationally defined as those students participating in at least three of the four treatment sessions and providing assessment data at all three measurement times. Two of the treatment sessions must have involved in-person attendance, while the remaining sessions may have involved viewing a videotape of the missed sessions. Subjects in the two control conditions must have provided pretest, posttest and follow-up data to be considered as having completed the study.

Tests of the Posttreatment and Follow-Up Hypotheses

Tables 2, 3 and 4 present the means and standard deviations for the combined treatment subjects and combined control subjects, the SMT groups and control groups considered separately, and the interaction of locus of control and stress management group, respectively. Table 5 provides the means and

standard deviations for the internal and external locus of control subjects. Tables 6 and 7 present the least squares means and standard deviations for the posttreatment hypotheses, while Tables 8 and 9 provide the corresponding data for the follow-up hypotheses.

Insert Tables 2 through 9 about here

In order to test for posttreatment differences between the combined SMT subjects and the combined control subjects (Hypothesis 2a), a multivariate analysis of covariance (MANCOVA) was performed, with pretreatment scores on the CARS, SCL-90-R and the SAS-SR as covariates. A significant multivariate main effect for treatment was found for the combined posttreatment dependent variables, $F(3,182) = 4.28, p < .01$. Univariate ANOVAs were significant for the post CARS variable, $F(1,184) = 10.19, p < .01$, the post SCL-90-R variable, $F(1,184) = 4.02, p < .05$, and the post SAS-SR variable, $F(1,184) = 5.49, p < .05$, with subjects from the stress management training condition reporting lower scores on all three indices. These results confirmed the hypothesis that treatment subjects would report greater improvement in stress level, psychological symptomatology and social adjustment following stress management training compared to control subjects.

MANCOVA was also used to evaluate differences in the effectiveness of the three stress management training groups

Table 2

Means and Standard Deviations for Combined Treatment Subjects
and Combined Control Subjects

Group	n	Measure								
		CARS			SCL-90-R			SAS-SR		
		Pre	Post	Fol	Pre	Post	Fol	Pre	Post	Fol
Treatment	101									
<u>M</u>		201.38	135.09	136.14	0.81	0.61	0.55	2.02	1.95	1.93
<u>SD</u>		101.78	71.82	73.93	0.57	0.50	0.44	0.37	0.36	0.35
Control	90									
<u>M</u>		193.74	160.34	147.11	0.82	0.70	0.54	1.95	1.97	1.91
<u>SD</u>		80.40	90.60	89.21	0.49	0.47	0.47	0.38	0.37	0.35

Note: Pre = pretreatment; Post = posttreatment; Fol = follow-up.

Table 3

Means and Standard Deviations for Stress Management Groups and Control Groups

Group	n	Measure								
		CARS			SCL-90-R			SAS-SR		
		Pre	Post	Fol	Pre	Post	Fol	Pre	Post	Fol
Problem-focused	24									
<u>M</u>		215.88	128.65	133.54	0.95	0.58	0.54	2.02	1.92	1.95
<u>SD</u>		123.25	61.67	60.99	0.76	0.56	0.51	0.48	0.40	0.40
Emotion-focused	42									
<u>M</u>		190.12	136.76	135.41	0.82	0.65	0.61	2.03	2.02	1.98
<u>SD</u>		104.15	79.15	79.67	0.56	0.53	0.45	0.37	0.37	0.35
Combined	35									
<u>M</u>		204.94	137.31	138.80	0.72	0.59	0.48	2.02	1.88	1.85
<u>SD</u>		82.43	70.47	76.77	0.42	0.43	0.37	0.29	0.32	0.31
Wait list	41									
<u>M</u>		212.29	186.44	171.37	0.89	0.84	0.73	2.03	1.98	1.98
<u>SD</u>		79.74	102.30	99.01	0.56	0.57	0.56	0.39	0.38	0.39
Non-participant	49									
<u>M</u>		177.90	138.51	126.82	0.76	0.58	0.37	1.88	1.97	1.86
<u>SD</u>		78.32	73.69	75.25	0.42	0.32	0.29	0.36	0.36	0.30

Note: Pre = pretreatment; Post = posttreatment; Fol = follow-up.

Table 5

Means and Standard Deviations for Internal and External Locus
of Control Subjects

Locus of Control	<u>n</u>	Measure								
		CARS			SCL-90-R			SAS-SR		
		Pre	Post	Fol	Pre	Post	Fol	Pre	Post	Fol
Internals	149									
<u>M</u>		187.76	145.22	136.78	0.75	0.63	0.53	1.97	1.95	1.91
<u>SD</u>		92.29	78.99	81.72	0.47	0.50	0.46	0.35	0.35	0.32
Externals	114									
<u>M</u>		211.11	153.65	145.20	0.88	0.70	0.57	2.03	1.99	1.94
<u>SD</u>		92.97	84.87	80.76	0.57	0.45	0.45	0.42	0.37	0.37

Note: Pre = pretreatment; Post = posttreatment; Fol = follow-up.

Table 6

Least Squares Means and Standard Deviations for Posttreatment
Hypotheses: Main Effects

Group	n	Measure					
		Post CARS		Post SCL-90-R		Post SAS-SR	
		<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Combined treatment	100	132.70	64.75	0.61	0.34	1.92	0.24
Combined Control	89	162.97	64.78	0.71	0.34	2.00	0.25
Problem-focused	24	113.09	64.49	0.49	0.34	1.89	0.24
Emotion-focused	42	131.01	67.08	0.61	0.36	1.98	0.25
Combined	35	136.23	64.01	0.64	0.34	1.85	0.24
Wait list	41	179.34	63.07	0.79	0.33	1.94	0.24
Non-participant	49	149.04	64.35	0.64	0.34	2.06	0.24
Internals	105	146.65	66.22	0.65	0.35	1.94	0.25
Externals	83	136.84	65.06	0.62	0.35	1.94	0.24

Note: Post = posttreatment.

Table 7

Least Squares Means and Standard Deviations for Posttreatment
Hypotheses: Interaction Effects

Group	LOC	<u>n</u>	Measure					
			Post CARS		Post SCL-90-R		Post SAS-SR	
			<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
P-F	In	11	126.01	62.70	0.54	0.33	1.91	0.24
P-F	Ex	12	100.16	63.85	0.44	0.34	1.87	0.24
E-F	In	27	152.69	63.03	0.72	0.33	2.00	0.23
E-F	Ex	14	109.34	63.05	0.50	0.33	1.95	0.24

Note: P-F = problem-focused; E-F = emotion-focused; In = internal; Ex = external; LOC = locus of control; Post = posttreatment.

Table 8

Least Squares Means and Standard Deviations for Follow-Up
Hypotheses: Main Effects

Group	n	Measure					
		Fol CARS		Fol SCL-90-R		Fol SAS-SR	
		<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Combined treatment	101	133.99	66.55	0.54	0.34	1.90	0.26
Combined Control	89	150.17	66.58	0.55	0.35	1.93	0.25
Problem-focused	24	122.24	66.94	0.47	0.34	1.93	0.25
Emotion-focused	42	133.53	71.30	0.59	0.36	1.95	0.27
Combined	35	136.96	68.06	0.51	0.35	1.82	0.26
Wait list	41	163.37	67.07	0.69	0.34	1.95	0.26
Non-participant	49	138.22	68.35	0.43	0.35	1.91	0.26
Internals	106	141.27	69.80	0.55	0.35	1.92	0.24
Externals	83	136.46	69.22	0.53	0.36	1.90	0.26

Note: Fol = follow-up.

Table 9

Least Squares Means and Standard Deviations for Follow-Up
Hypotheses: Interaction Effects

Group	LOC	n	Measure					
			Fol CARS		Fol SCL-90-R		Fol SAS-SR	
			M	SD	M	SD	M	SD
P-F	In	12	117.03	66.78	0.42	0.34	1.88	0.26
P-F	Ex	12	127.45	67.89	0.52	0.35	1.98	0.26
E-F	In	27	139.30	67.00	0.64	0.34	1.93	0.25
E-F	Ex	14	127.76	67.02	0.53	0.34	1.97	0.26

Note: P-F = problem-focused; E-F = emotion-focused; In = internal; Ex = external; LOC = locus of control; Fol = follow-up.

(Hypotheses 2b and 2c), as well as to assess the interaction between locus of control and type of stress management training (Hypotheses 2d and 2e). Pretreatment stress, psychological symptomatology and social adjustment scores served as covariates. The multivariate main effect for stress management training group was significant, $F(12,458) = 3.81, p = .0001$. The main effects for locus of control and the interaction between stress management group and locus of control were not significant. Univariate F 's for the group main effect were significant for all three posttreatment dependent measures; for post CARS, $F(4,175) = 5.23, p < .001$, for post SCL-90-R, $F(4,175) = 3.09, p < .05$, and for post SAS-SR, $F(4,175) = 4.15, p < .01$. Scheffe's test indicated significant differences between the waiting list control group and the non-participant control group, the Combined SMT group, the Emotion-Focused SMT group and the Problem-Focused SMT group on the posttreatment measure of stress. Significant differences were also found between the waiting list control group and the non-participant control group, as well as between the waiting list control group and the Combined SMT group, on the posttreatment measure of psychological symptomatology. There were no significant differences between groups on the posttreatment measure of social adjustment (see previous discussion of Scheffe test on page 94).

Thus, the hypothesis regarding the superiority of Problem-Focused SMT over Emotion-Focused SMT in reducing subjects' stress level (Hypothesis 2b) was not supported, although adjusted means

were in the predicted direction. Similarly, the Combined SMT program was not found to be more effective than the Problem-Focused or Emotion-Focused training alone (Hypothesis 2c). Finally, there was no support for the interaction hypothesis that Internals receiving Problem-Focused SMT would demonstrate greater improvement on all measures than Internals receiving Emotion-Focused SMT or Externals receiving Problem-Focused SMT (Hypothesis 2d). Similarly, the prediction that Externals receiving Emotion-Focused SMT would report greater improvements than Externals receiving Problem-Focused SMT or Internals receiving Emotion-Focused SMT was also not supported (Hypothesis 2e). It is noteworthy, however, that the ordering of the univariate means for the interaction hypotheses was in the predicted direction (see Table 4), with the "matches" reporting greater improvements at posttreatment than the "mismatches" on all three posttreatment dependent measures.

The follow-up hypothesis (Hypothesis 3) was also tested with MANCOVA, using pretreatment measures of stress, psychological symptomatology and social adjustment as covariates. There was no statistically significant main effect for treatment when the combined stress management training groups were compared with the combined control groups on follow-up measures. Inspection of the pretreatment, posttreatment, and follow-up means (Table 2) revealed that, while there was no relapse in treatment efficacy among the stress management training subjects from posttreatment to follow-up, the combined control group subjects continued to

improve during this time period, resulting in comparable levels of stress, psychological symptomatology and social adjustment at follow-up.

When the stress management training groups and control groups were considered separately, there was a significant multivariate main effect for treatment at follow-up, $F(12,460) = 2.06$, $p < .05$. Univariate ANOVA was significant for the follow-up SCL-90-R variable only, $F(4,176) = 3.49$, $p < .01$. Scheffe's test indicated a significant difference between the waiting list control group and the Combined SMT group, as well as between the waiting list group and the non-participant control group, with the waiting list group showing the poorest adjustment on this measure and the non-participant control group showing the best scores. There was also a significant difference between the non-participant control group and the Emotion-Focused SMT condition, with the non-participant control subjects again having the superior adjustment scores.

Repeat of Hypothesis Tests

Table 10 compares the results of the completers only analysis with the results obtained from two other analytic strategies: (1) using the entire data set, including completers and dropouts, without replacement of missing values, and (2) repeating the completers only analysis, with replacement of missing dependent variable values using group means for the affected variables.

Insert Table 10 about here

Based on this comparison, the completers only analyses, with and without replacement of missing values, provided the most powerful tests of the hypotheses and were virtually identical in their findings. The results based on the entire data set, including dropouts, provided a slightly less powerful test of the hypotheses. Overall, however, there was high consistency in the results across analyses, lending confidence to the statistical reliability of the obtained findings.

Repeated measures MANOVA was also computed for the completers only data set to further test the reliability of the obtained findings. There was a significant multivariate main effect for time, $F(2,177) = 56.34$, $p < .001$, indicating that subjects' combined scores on the dependent variables changed significantly over the three measurement periods. There was also a significant multivariate interaction effect for time and stress management training group, $F(8,354) = 2.08$, $p < .05$, confirming that the various stress management training conditions changed differentially across the three measurement periods. The time by group by "adapt" (representing the combined dependent variables) interaction effect was also significant, $F(16,535) = 2.56$, $p < .001$, suggesting that the change in stress management training groups over time varied according to the particular dependent variable measured. These findings, while not as specific as the

Table 10

Multivariate F Values for Hypothesis Tests from Three Analytic Strategies

Hypothesis	Analysis		
	CO-WO	TOTAL	CO-WI
Posttreatment differences between combined SMT groups and combined control groups	4.28**	3.35*	4.13**
Posttreatment differences between SMT groups and control groups considered separately	3.81**	2.65**	3.86**
Posttreatment interaction between LOC and SMT	.93	.70	1.01
Follow-up differences between combined SMT groups and combined control groups	1.27	1.41	1.35
Follow-up differences between SMT groups and control groups considered separately	2.06*	2.00*	2.23**

Note: CO-WO = completers only without replacement of missing values; TOTAL = entire data set without replacement of missing values; CO-WI = completers only with replacement of missing values. LOC = locus of control; SMT = stress management training.

* $p < .05$. ** $p < .01$.

results from the MANCOVA analyses, are consistent with the overall findings from the previous analyses.

Alternative Explanations for SMT Group Differences

Additional analyses were performed in order to understand further the pattern of obtained differences between the stress management training groups, as well as to identify possible reasons for the lack of empirical support for the hypothesized differences. Variables examined included: number of training sessions attended, number of make-up tapes viewed, total training received, amount of time spent practicing the stress management techniques, voluntary withdrawal from first and second term courses, anticipated failure of first and second term courses, retroactive withdrawal from courses, intention to return for a second term of university study, intention to return for a second year of university study, expected grade point average, perceived appropriateness of training received, perceived quality of training received, perceived helpfulness of training received, expectancy for benefit from training, and confidence in the group leader's ability.

Chi-square analysis, using the completers only data set, indicated significant differences among the Problem-Focused, Emotion-Focused and the Combined SMT groups in subjects' confidence in the group leader's training ability, $\chi^2(4, N = 88) = 18.56, p = .001$. Specifically, there was a higher proportion of subjects in the Emotion-Focused training group (61.54%) who rated themselves as very confident in the group leader's ability, while

the majority of subjects in the Combined training group (65.63%) indicated they were somewhat confident in the group leader's ability. In contrast, the Problem-Focused training group had the highest proportion of subjects indicating that they were not confident in the group leader's training ability (29.41%).

MANOVA, with practice rates and academic indicators as the dependent variables, resulted in a significant multivariate main effect for SMT group, $F(22,112) = 1.88, p < .05$. Univariate analyses suggested significant differences among the SMT groups in the amount of practice time reported by subjects for week two of the training program, $F(2,66) = 4.91, p < .05$. Scheffe post-hoc comparisons yielded a significant difference in practice rates between the Problem-Focused group and the Emotion-Focused training group, with subjects in the Emotion-Focused group reporting significantly more practice time at week two than subjects in the Problem-Focused training group.

Finally, Appendix P provides a list of comments submitted by subjects from the treatment conditions in response to three open-ended questions included in the posttreatment evaluation questionnaire (see also Appendix L). Table 11 presents the percentage of subjects from each training condition who: (a) indicated that they had found something helpful about the training program, (b) identified something they had found unhelpful about the training program, and (c) made suggestions for improving the stress management training program. The last column of Table 11 gives the percentage of subjects in each

Insert Table 11 about here

treatment condition who indicated that they would not recommend changing anything about the training program. While most subjects from all three treatment conditions were able to describe something helpful about their training experience, subjects participating in the Emotion-Focused treatment condition were least likely to identify something unhelpful from their training experience. Furthermore, subjects from both the Emotion-Focused SMT program and the Combined SMT program were more likely to recommend maintaining the training program as it exists than subjects participating in the Problem-Focused treatment condition, where a high proportion of participants recommended changes for improving the training experience.

Overall, the above findings predict that subjects in the Emotion-Focused training group would demonstrate greater improvement at posttreatment compared to subjects in the other SMT groups. In fact, as demonstrated in previous analyses, the Emotion-Focused training condition was not found to be superior to either of the other two training conditions.

Additional Analyses

Sex differences. Male and female subjects were compared on several possible discriminating variables. For the combined pretreatment dependent variables, the multivariate F for sex was significant, $F(3,259) = 6.69, p < .001$. Univariate ANOVAs

Table 11

Percentage of Subjects Responding to Questions about Stress
Management Training Experience

Treatment condition	Question			
	What was helpful?	What was unhelpful?	Suggestions for improvement	No change recommended
Problem-focused SMT	96.30	59.26	81.48	18.52
Emotion-focused SMT	97.96	46.94	69.39	30.61
Combined SMT	97.67	51.16	69.77	30.23

Note: SMT = stress management training.

indicated that women reported more stress, $F(1,261) = 5.29$, $p < .05$, and psychological symptomatology, $F(1,261) = 12.87$, $p < .001$, at pretreatment compared to men, although they did not differ significantly from men in their social adjustment scores. A similar trend was evident at posttreatment, $F(3,218) = 4.76$, $p < .01$, with female subjects again reporting significantly more stress, $F(1,220) = 9.68$, $p < .01$, and psychological symptomatology, $F(1,220) = 6.00$, $p < .05$ compared to the male subjects. At follow-up, the multivariate main effect for sex bordered on significance, $F(3,190) = 2.65$, $p = .05$, while the univariate F value was significant for the follow-up CARS variable only, $F(1,192) = 5.61$, $p < .05$. Thus, while women continued to report more stress at the time of follow-up assessment, they were no longer reporting significantly higher levels of psychological symptomatology and did not differ from men in their overall social adjustment.

During the stress management training, women participating in the treatment programs also reported practicing the stress management techniques significantly more than the male participants, $F(5,73) = 2.68$, $p < .05$. There were no significant differences between male and female subjects on the academic indicators assessed including: voluntary withdrawal from first and second term courses, anticipated failure of first and second term courses, retroactive withdrawal from courses and expected grade point average. There were also no significant differences between men and women in their locus of control scores at

pretreatment and at posttreatment or in the amount of training they received. Following stress management training, there was a significant gender difference in the perceived appropriateness of the training received, with a higher percentage of women rating the stress management training as very appropriate, $\chi^2(3, N = 88) = 13.31, p < .01$.

Tests of the main hypotheses were repeated, using sex of subject as an additional independent variable, in order to evaluate possible interaction effects with locus of control and stress management training group. None of the interaction effects for the pretreatment, posttreatment, or follow-up hypotheses achieved statistical significance.

Locus of control as a continuous variable. Pearson product-moment correlation coefficients were computed between subjects' scores on the Internal-External Locus of Control Scale and the pretreatment and posttreatment dependent variables. This analysis was performed in order to identify any significant associations which may have been missed through subjecting the locus of control variable to a median split in the previous analyses. Neither subjects' pretreatment or posttreatment scores on the I-E scale demonstrated a significant association with any of the pretreatment or posttreatment measures. This finding appears to be inconsistent with the previous multivariate results which demonstrated a significant relationship between locus of control and the pretreatment dependent measures (see p. 85). However, it is noteworthy that while MANOVA tests for significant

group differences, correlation coefficients analyze individual scores, and it is much more difficult to predict individual scores than to evaluate average group effects (L. Armstrong, personal communication, April 8, 1994).

Correlated t-tests were used to determine whether there was any significant change from pretest to posttest in subjects' locus of control scores. For the entire completers only sample (SMT participants and control subjects) there was a significant change from pretest to posttest, with subjects becoming more internal by the posttreatment assessment period, $t(189) = 2.09$, $p < .05$. When the combined stress management training participants were considered separately from the combined control group subjects, only the t value for the treatment subjects approached significance, $t(99) = 1.93$, $p = .06$. This finding suggests that participating in the stress management training programs may have effected subjects' locus of control in the direction of greater internality. When the three stress management training groups and two control groups were considered separately, only subjects in the Emotion-Focused SMT program demonstrated a significant change from pretest to posttest in their locus of control scores, $t(41) = 2.57$, $p < .05$. This change was also in the direction of strengthening subjects' internal locus of control.

Effect of amount of training received. Pearson correlation coefficients were also computed between various indices of the amount of training subjects received and posttreatment measures.

Training indices included: number of training sessions attended, number of make-up tapes viewed, total training received (sessions plus tapes), and total amount of practice time reported. While it was anticipated that there would be a significant negative correlation between amount of training received and subjects' scores on posttreatment measures, none of the coefficients obtained using the completers only data set were of sufficient magnitude to support this hypothesis.

Clinical Significance

In addition to assessing for statistically significant group differences, clinical significance was also evaluated for individual subjects using the two-fold criterion proposed by Jacobson, Follette, and Revenstorf (1984). Their first criterion is based on whether an individual demonstrates statistically reliable change from pretest to posttest (and from posttest to follow-up). The second criterion assesses whether the individual's posttest level of functioning places the client within the normal range of functioning with respect to the clinical problem.

Statistically reliable change is evaluated using a Reliable Change Index equivalent to the difference score (post-pre) divided by the standard error of measurement. The standard error of measurement describes the spread of the distribution of repeated observations that would be expected if no actual change had occurred. According to the authors, if the reliable change index exceeds ± 1.96 , it is likely that the posttest score is

reflecting real change ($p < .05$).

Clinical significance is indicated when the client demonstrates: (a) significant movement (at least one to two standard deviations) away from the pretreatment dysfunctional mean at posttest or (b) significant movement toward the mean of a well-functioning population at posttest, on whatever variable is being used to measure the clinical problem. When there are no available norms for a well-functioning population, recognizing that random samples often include a combination of well-functioning and dysfunctional people, criterion "a" is recommended.

Using this two-fold criterion, the proportion of treatment subjects demonstrating statistically reliable change was first calculated. Of this subset of clients, the proportion of subjects demonstrating clinically significant change was then determined.

The first calculation made was the standard error of measurement for the pretreatment CARS, SCL-90-R and SAS-SR variables. These figures were then used to compute a reliable change index (RC) for each subject on each of the three dependent measures. Table 12 presents the proportion of subjects in each of the training conditions who demonstrated posttreatment change of sufficient magnitude to rule out chance as a plausible competing explanation (i.e., $RC > \pm 1.96$).

Insert Table 12 about here

Using the pretreatment means for the CARS, the SCL-90-R and the SAS-SR, a cut-off point indicating clinically significant change was determined for each of the dependent measures, equal to one standard deviation below the pretreatment dysfunctional mean. Thus, in order to demonstrate clinically significant improvement, subjects' posttreatment scores must be less than 104.99 on the CARS, less than .29 on the SCL-90-R, and less than 1.62 on the SAS-SR. Table 13 presents the proportion of subjects in each of the training conditions who demonstrated statistically reliable change at posttest and who were either improved (i.e., their posttreatment score was low enough to meet the clinical significance cut-off point), unimproved (i.e., their posttreatment score was lower than their pretreatment score but did not reach the criterion for clinical significance) or deteriorated (i.e., their posttreatment score exceeded their pretreatment score indicating a deterioration in adaptational status from pretest to posttest).

Insert Table 13 about here

Similar calculations were performed for evaluating clinical significance at follow-up. Table 14 presents the proportion of subjects demonstrating statistically reliable change at follow-up

Table 12

Percentage of Treatment Subjects Demonstrating Statistically
Reliable Change at Posttest

SMT group	n	Changed			Unchanged		
		CARS	SCL-90-R	SAS-SR	CARS	SCL-90-R	SAS-SR
Problem-focused	24	33 (8)	29 (7)	21 (5)	67 (16)	71 (17)	79 (19)
Emotion-focused	42	24 (10)	14 (6)	17 (7)	76 (32)	86 (36)	83 (35)
Combined	35	37 (13)	11 (4)	23 (8)	63 (22)	89 (31)	77 (27)

Note: SMT = stress management training. Bracketed figures refer to the actual number of subjects.

Table 13

Percentage of Treatment Subjects Demonstrating Clinically Significant Improvement at Posttest

SMT group	Improved			Unimproved			Deteriorated		
	CARS	SCL-90-R	SAS-SR	CARS	SCL-90-R	SAS-SR	CARS	SCL-90-R	SAS-SR
Problem- focused	25 (2)	0 (0)	20 (1)	75 (6)	100 (7)	60 (3)	0 (0)	0 (0)	20 (1)
Emotion- focused	50 (5)	16 (1)	14 (1)	50 (5)	67 (4)	29 (2)	0 (0)	17 (1)	57 (4)
Combined	54 (7)	25 (1)	12.5 (1)	38 (5)	75 (3)	75 (6)	8 (1)	0 (0)	12.5 (1)

Note: SMT = stress management training. Bracketed figures refer to the actual number of subjects.

testing. Table 15 presents the proportion of subjects who demonstrated statistically reliable change at follow-up and who were either enhanced (i.e., follow-up score was lower than the posttreatment score and satisfied the clinical significance criterion), maintained (i.e., follow-up score was lower than the posttreatment score but did not reach the clinical significance cut-off point) or deteriorated (i.e., follow-up score exceeded the posttreatment score indicating some deterioration in adaptational status from posttest to follow-up), based on the same clinical significance cut-off scores applied at posttreatment assessment.

Insert Table 14 and Table 15 about here

In order to interpret the above findings, those subjects demonstrating clinically significant improvement on any of the three dependent measures at either posttreatment or follow-up assessment were identified. This constituted 17 subjects or 16.8% of the entire sample. Eight of these subjects were male and nine were female. Three of the students (17.6%) were from the Problem-Focused stress management training group, while six students (35.3%) were from the Emotion-Focused training group. Eight of the subjects demonstrating clinically significant improvement (47.1%) were from the Combined treatment condition.

One of the students from the Emotion-Focused training condition demonstrated clinically significant improvement on two

Table 14

Percentage of Treatment Subjects Demonstrating Statistically
Reliable Change at Follow-Up

SMT group	n	Changed			Unchanged		
		CARS	SCL-90-R	SAS-SR	CARS	SCL-90-R	SAS-SR
Problem-focused	24	4 (1)	0 (0)	17 (4)	96 (23)	100 (24)	83 (20)
Emotion-focused	42	5 (2)	7 (3)	14 (6)	95 (40)	93 (39)	86 (36)
Combined	35	6 (2)	9 (3)	17 (6)	94 (33)	91 (32)	83 (29)

Note: SMT = stress management training. Bracketed figures refer to the actual number of subjects.

Table 15

Percentage of Treatment Subjects Demonstrating Clinically
Significant Improvement at Follow-Up

SMT group	Enhanced			Maintained			Deteriorated		
	CARS	SCL-90-R	SAS-SR	CARS	SCL-90-R	SAS-SR	CARS	SCL-90-R	SAS-SR
Problem- focused	0 (0)	0 (0)	25 (1)	100 (1)	0 (0)	0 (0)	0 (0)	0 (0)	75 (3)
Emotion- focused	0 (0)	0 (0)	0 (0)	50 (1)	67 (2)	67 (4)	50 (1)	33 (1)	33 (2)
Combined	0 (0)	0 (0)	33 (2)	50 (1)	67 (2)	33 (2)	50 (1)	33 (1)	33 (2)

Note: SMT = stress management training. Bracketed figures refer to the actual number of subjects.

of the posttreatment measures, while one subject from the Combined group demonstrated clinically significant change on all three posttreatment dependent measures. The majority of students, however, demonstrated improvement on only one of the dependent measures. At posttreatment, this was most frequently the College Adjustment Rating Scale, while at follow-up more subjects demonstrated improvement on the Social Adjustment Scale. Only one subject, a female from the Combined SMT group, demonstrated improvement at both posttreatment and at follow-up, although the improvement was on different measures at the two different measurement times.

An almost equal number of treatment subjects ($n = 16$) demonstrated some deterioration in functioning either from pretest to posttest or from posttest to follow-up. Three students demonstrated both clinically significant improvement and deterioration on different measures or at different times of assessment. The majority of treatment subjects (67.3%) were unchanged and unimproved following stress management training.

To further aid in interpretation, chi-square and MANOVA were used to compare the subsets of clinically improved, deteriorated, and unimproved treatment subjects on several possible discriminating variables. Variables examined included: demographic and academic indicators, amount of training received, practice rates, measures of treatment credibility and expectancy for benefit from training, as well as pretest, posttest and follow-up scores on the dependent variables.

Chi-square analysis indicated a significant living arrangement effect, with proportionately more clinically improved subjects sharing a house or apartment with friends, or living in university residence, compared to the unimproved subjects, the majority of whom lived with their parents or another family member, $\chi^2(6, N = 101) = 16.95, p < .01$. There was also a significant multivariate main effect for the combined posttreatment dependent variables, $F(6,190) = 3.17, p < .01$, and for the combined follow-up dependent variables, $F(6,192) = 2.91, p < .01$, consistent with the previous calculations used to determine clinical significance.

In both the posttest and follow-up analyses, univariate ANOVAs were significant for the CARS and the SCL-90-R variables; for post CARS, $F(2,97) = 10.06, p = .0001$, for post SCL-90-R, $F(2,97) = 4.96, p < .01$; for follow-up CARS, $F(2,98) = 6.59, p < .01$, and for follow-up SCL-90-R, $F(2,98) = 7.90, p < .001$. Scheffe's post-hoc comparison tests indicated significant differences between the clinically improved subjects and the deteriorated subjects, as well as between the improved subjects and the unimproved subjects, on both the CARS and the SCL-90-R, with the clinically improved subjects demonstrating the lowest scores at both posttest and follow-up. None of the other multivariate analyses yielded significant main effects.

Clinical significance was also evaluated for the control group subjects. Table 16 presents the proportion of subjects in the treatment groups, the waiting list control group and the non-

participant control group who were either clinically improved, unimproved, or deteriorated on any of the three dependent measures at either posttreatment or follow-up assessment.

Insert Table 16 about here

Compared to the non-participant control group, the treatment group had a slightly higher percentage of subjects who demonstrated clinically significant improvement, as well as a slightly lower percentage of subjects who demonstrated deterioration. Of the three groups, however, the waiting list control had both the greatest proportion of subjects who were improved and those who were deteriorated at the time of posttreatment or follow-up assessment.

Statistical Power

Power analyses were conducted post hoc in order to determine the statistical power of the F tests for the main and interaction effects evaluated in the present study. The power calculations were based on a fixed effects ANOVA model with two independent factors namely, locus of control with two levels (Factor A), and stress management group with five levels (Factor B). A univariate model was employed due to the complexity of calculations associated with multivariate models. It is recognized, however, that univariate calculations will likely result in an overestimate of the actual power due to the presence of correlated dependent variables. The power estimates may also

Table 16

Percentage of Treatment and Control Subjects Demonstrating
Clinically Significant Improvement on any Dependent Measure at
Either Assessment Time

Group	Improved	Unimproved	Deteriorated
Stress management training	16.8	67.3	15.9
Wait list control	24.4	53.6	22.0
Non-participant control	14.3	67.3	18.4

be inflated due to unequal cell sizes. However, the use of covariates in the main analyses may have strengthened the statistical power. It is unknown to what degree these influences counteract each other in arriving at an accurate estimate of power.

At an alpha level of .05 and an overall sample size of 191, the statistical power to detect a small effect size ($f = .10$ according to Cohen, 1988) for Factor A is approximately 28%, which indicates the percent of tests carried out under the specified parameters which will result in rejection of the null hypothesis. For the Factor B main effect, and for the interaction of AB, the power estimate is approximately 16%.

The power to detect a medium effect size ($f = .25$) for Factor A is approximately 94%, while the power estimate for Factor B and the interaction of AB is approximately 79%. For a large effect size ($f = .40$), the power estimate for Factor A, Factor B, and the interaction of AB is approximately 99%.

Nicholson et. al. (1988), in their meta-analysis of 18 published studies of stress management programs, report a mean effect size of .75. This figure translates to an f value (in Cohen's terms) of .38 which approximates a large effect size. Viewed in this context, it appears that the present study had adequate statistical power to detect an effect size comparable to that reported in other evaluative studies of stress management training programs. In fact, the actual effect size obtained for all of the treatment groups combined, and averaged over the three

posttreatment dependent measures, was .47. This translates to an f value in Cohen's terms of .24 which corresponds to a medium effect size. As noted above, the statistical power to detect a treatment main effect or an interaction effect of medium size was 79%, suggesting that the present study may not have had adequate power to evaluate the main and interaction hypotheses.

Discussion

The purpose of the present study was two-fold: (a) to evaluate comparatively the effectiveness of three stress management training programs based on a sound theoretical model of stress and coping and on the identification of the critical (specific and primary) stressors facing a target population namely, first year university students; and (b) to investigate the role of individual factors in mediating the efficacy of stress management interventions by examining the interaction between personal beliefs about control and the type of stress management training received.

With regard to the first research issue, for a first year full-time university student sample, participating in a stress management training program designed specifically to address their primary stressors was beneficial compared to not receiving training. Treatment subjects demonstrated greater improvements in self-reported levels of stress, psychological symptomatology, and social adjustment following stress management training compared to control subjects. These improvements were maintained

amongst the treatment subjects over a four-month follow-up period. However, the control subjects also improved over the course of the study, likely due to maturational processes, resulting in comparable scores on the outcome measures at follow-up.

There were no significant differences in the effectiveness of the three stress management interventions evaluated, which were based on the two coping functions discussed by Lazarus and Folkman in their cognitive theory of psychological stress namely, problem-focused coping and emotion-focused coping. Contrary to Lazarus and Folkman's theoretical assumption that coping effectiveness depends on the fulfillment of both problem management and emotion regulation functions, the Combined problem- and emotion-focused stress management intervention was not found to be superior to either the Problem-Focused or Emotion-Focused training alone.

While MANCOVA analyses of the combined posttreatment dependent variables resulted in no statistically significant group differences among the three stress management programs, secondary analyses suggested that the Emotion-Focused stress management intervention may have had a more positive impact on participants. Compared to the other treatment conditions, significantly more subjects in the Emotion-Focused training group rated themselves as very confident in the group leader's ability. Subjects in the Emotion-Focused group also reported spending significantly more time practicing their stress management

techniques during week two of the training program compared to subjects who received Problem-Focused training. Furthermore, on the posttreatment evaluation questionnaire, subjects participating in the Emotion-Focused treatment condition were least likely to identify something unhelpful from their training experience and were more likely than the Problem-Focused training subjects to recommend maintaining the training program as it currently exists. A final interesting finding was that only participants in the Emotion-Focused SMT condition demonstrated a significant change from pretest to posttest in their locus of control scores, with subjects strengthening their internal locus of control following training.

One component of the Emotion-Focused stress management training program which may account for some of the observed positive findings was the provision of a relaxation audiotape at the end of the first training session. Only subjects in the Emotion-Focused treatment condition received this tape. Feedback from participants regarding the tape was generally very positive. In fact, on the posttreatment evaluation questionnaire, one female subject from the Combined treatment condition complained about not having received the relaxation tape to work with. Aside from the concern this student's comment evokes regarding possible (unwanted) diffusion of treatment, it appears that the relaxation tape was well-received by subjects and may account for the difference in practice rates during week two of the training program.

Regarding the second research issue, the hypothesis that individual differences in belief about personal control would interact with the type of stress management training in determining treatment efficacy was not supported. There was, however, a significant relationship demonstrated between locus of control and the reporting of life stress and psychological symptomatology. At pretreatment, external locus of control subjects reported significantly more stress and psychological symptoms than internal subjects, although they did not differ significantly in their social adjustment scores. While this finding was not replicated at posttreatment or at follow-up, it is consistent with previous research demonstrating significant differences between Internals and Externals in their perceptions of stressful events and their experience of psychological symptomatology (e.g., Anderson, 1977; Cole & Sapp, 1988; Lang & Markowitz, 1989; Schoeneman, Reznikoff, & Bacon, 1983).

Another interesting finding related to locus of control was the change in subjects' locus of control scores from pretest to posttest. This change was statistically significant only for subjects who participated in the Emotion-Focused treatment condition. Other studies have examined the effect of various types of interventions on participants' locus of control and report mixed findings. For example, Duckworth (1983) evaluated the impact of problem-solving training on male undergraduate students' locus of control and reported a significant increase in belief in internal control at one week and eight weeks following

training. Henderson, Kelbey, and Engebretson (1992) examined the effectiveness of stress management training in changing children's locus of control orientations and similarly demonstrated a significant increase in participants' internal locus of control compared to a control group. On the other hand, Reich and Zautra (1990) found that their experimental intervention aimed at enhancing personal control resulted in an increased sense of mastery and improved mental health only for those subjects who already had relatively high levels of control beliefs. Rose and Veiga (1984) and Smith (1989) reported no significant impact of their respective stress management intervention and coping skills training on subjects' locus of control.

A possible explanation for the change in locus of control scores in the present study is related to the earlier discussion of the training components included in the Emotion-Focused program. Several of the stress management techniques included in the Emotion-Focused treatment condition consisted of physical and mental relaxation exercises which provided for immediate relief and control of stress-related symptoms such as anxiety and physical tension. In contrast, subjects in the Problem-Focused and Combined treatment conditions received training in various problem-solving procedures which required time for application to real-life problems and did not allow for immediate stress reduction or a heightened sense of control of life demands. Additionally, some of the sources of stress reported by students

may not have been amenable to problem-solving techniques such as feeling discriminated against because of race, sex, or religion; having an alcoholic parent; and the death of a family member.

A further unintended bias of the Emotion-Focused treatment condition was a greater emphasis on practicing specific stress management techniques within training sessions which allowed for immediate feedback and reinforcement of coping efforts. On the other hand, subjects in the Problem-Focused and Combined programs received descriptions of various problem-solving models which they were then asked to practice outside of training sessions through the use of homework assignments. Feedback and reinforcement of coping efforts was then delayed until the following week when homework assignments were reviewed and discussed. Thus, it is possible that the Emotion-Focused subjects achieved a greater sense of personal control following training due to what they were taught (i.e., relaxation techniques for immediate control of anxiety and physical tension), as well as how they were taught it (i.e., through within-session experiential training allowing for immediate feedback and reinforcement of coping efforts).

Overall, the findings reported above were found to be statistically reliable based on several alternate data analysis procedures. Results from the repeated measures analysis, however, suggested there was significant variation in the study findings depending on the particular dependent variable measured. Nicholson et al. (1988) discussed a similar finding in the

studies they reviewed, noting that while most studies of stress management programs reported some positive findings, many found improvements on some, but not all, of the outcome measures.

With regard to the validity of the above findings, there were several difficulties encountered in conducting a moderately large-scale field experiment which may have compromised various aspects of validity. Regarding statistical conclusion validity, problems with the reliability of treatment implementation, random heterogeneity of respondents, and the reliability of measures may have weakened statistical inferences about the covariation between cause and effect variables. Inadequate statistical power may also have resulted in false, no significant difference conclusions.

Regarding the reliability of treatment implementation, there was uncontrollable variation in the number of sessions attended by subjects, how much they practiced the stress management techniques, whether they attended the make-up tape viewing for missed sessions, and whether they came late or left early from training sessions. In relation to random heterogeneity of respondents, there was also considerable variation among subjects regarding their motivational level and what they expected to gain from participating in a stress management training program. A significant proportion of participants appeared to be concerned primarily with accumulating the number of required experimental course credits and seemed to have little interest in any intrinsic benefits of the program.

Other problems affecting statistical conclusion validity included subjects' confusion in responding to the College Adjustment Rating Scale at pretreatment assessment. Although this may have affected the reliability of the CARS, students from all three stress management treatment conditions appeared to be affected equally. Some students also had difficulty interpreting certain aspects of the Stress Management Participant Diaries which may have compromised the reliability of this measure as well. The impact of all of these factors was a likely increase in error variance which may have decreased the probability of detecting significant differences in the present study. In fact, as noted in the Results section, the statistical power to detect a treatment effect of small or medium size was limited in the present study.

There were also several difficulties which arose that likely affected the internal validity of the experiment. Problems with uncontrollable events (i.e., history), diffusion of treatment across the experimental conditions, maturation, and possible resentful demoralization of the waiting list control subjects appear to have been the most influential factors.

Regarding history effects, a number of uncontrollable events occurred over the course of the study which affected participants in various ways. One occurrence of particular concern was a misunderstanding with one of the Introductory Psychology professors who instructed his students that this experiment was not providing them with the appropriate number of experimental

credits. This misunderstanding resulted in several drop-outs following the first treatment session, as well as some confusion and resentment among students who opted to continue in the study. There was also a snow storm during the third week of training which resulted in several no-shows for the third treatment session. It was also apparent that the various training sections (two sections for each of the three stress management programs) offered different experiences for the group members, contributing to local history effects. As evidence of this, the group leader clearly preferred some training groups over others due to differences in interest and participation among the group members.

Diffusion of treatment was also a concern in this experiment. As mentioned earlier, at least one subject complained about not having access to training resources provided to participants in the other stress management programs. It also appeared that some participants had friends in the other training groups, allowing for a possible sharing of information and resources across the different treatment conditions.

Maturation likely accounted for the lack of significant differences between the treatment and control subjects at follow-up. While participation in the stress management training programs facilitated students' adjustment to their first term of university study, it appeared that the control subjects also learned and benefited from their university experience, resulting in comparable levels of adaptation at the end of the academic

year.

A final concern affecting the internal validity of the present study was the possible resentful demoralization experienced by the waiting list control subjects. At posttreatment assessment, the waiting list control subjects' scores on the CARS and the SCL-90-R were significantly higher than those of the stress management training participants, as well as those of the non-participant control subjects. In fact, there were no significant differences between the non-participant control group subjects and the stress management training subjects on any of the posttreatment measures. Thus, it is possible that any significant differences found between the treatment and control conditions were due to feelings of resentment experienced by the waiting list control subjects who were aware of the stress management training program but were denied participation during the experimental period. These feelings of resentment may account for the higher posttreatment scores demonstrated by the waiting list control subjects who may, genuinely, have been experiencing more stress due to the denial of treatment, compared to the non-participant control subjects who were unaware of the stress management training programs. It is also noteworthy that in calculating the proportion of subjects clinically improved and deteriorated in the various experimental conditions, the waiting list control had both the highest number of subjects who were improved and those who were deteriorated at the time of posttreatment or follow-up. Consistent with the

discussion above, this finding suggests that the waiting list control condition was the most reactive of the experimental conditions in the present study.

Any or all of the above influences may have threatened the internal validity of the study. While the effects of history, diffusion of treatment, and maturation may have resulted in the possibility of false negative conclusions about causal hypotheses, resentful demoralization of the waiting list control subjects may have resulted in false positive conclusions about the impact of treatment.

Possible threats to construct validity included: (a) mono-method bias, as all of the dependent measures were self-report instruments; (b) a social desirability bias in subjects' responding due to wanting the experiment to appear effective after the large investment of time and resources, particularly for the stress management training participants; and (c) confounding constructs and levels of constructs. It is possible that the three stress management programs are effective interventions, but that the duration and intensity of program delivery in the present experiment were not sufficient to result in significant treatment effects.

Possible threats to external validity included a volunteer bias, as all of the subjects were self-selected as participants in the study. There may also have been a motivational bias operating by the end of the study, as many participants who acquired their experimental course credits before the end of the

experiment did not return for the follow-up assessment. Finally, another interesting finding was significant gender differences in some of the results. Female subjects reported more stress and psychological symptomatology at pretest, posttest and follow-up compared to the male subjects. Women in the present study also reported practicing the stress management techniques more than the men. Significantly more women than men also rated the stress management training as very appropriate. These findings suggest that the female participants may have perceived the stress management programs as more credible than their male counterparts, perhaps due, in part, to an interaction between sex of subject and group leader gender, since the group leader for all of the training conditions was also a female.

The finding of significant gender differences in the reporting of stress and psychological symptomatology is consistent with previous research in this area. In the gender and health literature, it is generally acknowledged that women report more stress and more symptoms of psychological distress than men (e.g., Allen & Hiebert, 1991; Baum & Grunberg, 1991; Blankstein & Flett, 1992; Cleary, 1987; Mallinckrodt & Leong, 1992; McDaniel and Richards, 1990; Ratliff-Crain and Baum, 1990). There is also evidence that women are more likely to engage in therapeutic health actions than men. For instance, Verbrugge (1985), in her review of the issues and evidence related to gender and health, reported significant gender differences in the utilization of health services, particularly for adults between

the ages of 17 and 44 years. Women also showed more persistence in caring for their health problems by purchasing prescribed medications, complying with treatment regimens, and making follow-up or recommended referral visits (p. 166). The greater likelihood of women engaging in therapeutic health behaviors may account for the significant difference in practice rates demonstrated by men and women in the present study.

One of the explanations posed for gender differences in health actions is that current sex roles make it more acceptable for women to acknowledge health-related problems and to use health services (Cleary, 1987). Women's greater willingness to label problems as health-related and to feel comfortable seeking professional help (Verbrugge, 1985) may account for the present study's finding that more women than men rated the stress management training as very appropriate.

In light of the various limitations discussed above, what general conclusions can be drawn from this study? First, with regard to stress management training program development and efficacy, it is clear that some students, albeit a small number, did benefit from the stress management training. Compared to the non-participant control group, which was the most valid and least reactive of the control conditions, the training groups contained a slightly higher percentage of subjects who were clinically improved following treatment, as well as a slightly lower percentage of subjects who demonstrated deterioration following training. These results are regarded as "mildly encouraging", to

echo Nicholson et al. (1988). It may be the nature of stress management programs, which are typically conducted in applied field settings where a wide variety of uncontrollable extraneous influences operate, that precludes finding large effect sizes for a majority of participants.

Recommendations for future use of stress management training programs with first year university students include limiting participation to students who identify themselves as needing or wanting to learn effective ways of managing stress. Opening the training programs to subjects seeking a convenient way of earning all of their experimental course credits from one experiment had several disadvantages. Most notably, those students who were genuinely interested in receiving stress management instruction felt inhibited to participate fully because of the presence of their less-interested peers. There were several complaints about subjects who talked or slept through the training sessions from students who were interested in the program content and procedures. Inclusion of subjects who had different motivational interests in the study had other significant effects. In examining the pretreatment scores on the CARS and the SCL-90-R, the subjects looked more like normal college students and non-patient adolescents than students in need of help for their stress-related concerns. This may have produced a ceiling effect in terms of how much improvement could be expected following stress management training given that the pretreatment means were already within the normal range of functioning.

Regarding stress management program content, it is recommended that future stress interventions with first year university students include a large component of experiential exercises designed to maximize subject participation in the training process and the learning of specific stress management procedures within training sessions. Also, despite finding that the Combined problem- and emotion-focused stress management condition was not superior to either the Problem-Focused or Emotion-Focused training alone, Lazarus and Folkman's tenet regarding the importance of both problem management and emotion regulation in maximizing coping effectiveness has great intuitive value. Thus, it is recommended further that future stress management training programs for first year students focus on both the problem-solving and emotion reduction functions of stress management procedures. Due to the unintended bias in the present study of including more within-session experiential training in self-control techniques in the Emotion-Focused treatment condition, it is possible that the Combined SMT program and the Problem-Focused training program did not receive a fair evaluation.

With regard to program format, while it is possible that four two-hour training sessions was not enough to have a significant effect on subjects, there are practical limitations to the amount of time university students are able and willing to commit to non-credit activities. While some students indicated in the posttreatment evaluation questionnaire that they would

have preferred a more intense and longer training experience, at least an equal number of subjects would have preferred less intense training sessions over a shorter period of time. The two-hour, four session format, supplemented by homework practice assignments, is regarded as a reasonable expectation given students' other various academic and non-academic commitments.

The results from the present study also have important implications for transition programming for first year university students. Clearly, there is a need for such programming. A significant proportion of students in this study, 21%, reported high levels of psychological distress during their first academic term, and several of these students were still experiencing considerable difficulty by the end of the second academic term. Transition year courses address some of the primary stressors experienced by first year students including academic demands, time management, and career planning. However, there appears to be less emphasis on more personal sources of stress which can impact students' academic performance, as well as their decision to remain in university. Personal stressors such as lack of peer or family support for university study, poor social skills, homesickness, family problems, and financial difficulties may function as possible barriers to successful university study. While transition programming attempts to improve student retention by enhancing academic survival skills and adjustment to the university environment, there are many other significant stressors experienced by first year students which are not

addressed by these programming efforts.

One of the secondary benefits associated with this study was an opportunity to normalize the experience of stress for students in their first year of university and to introduce them to the various student services available in the university setting. Several of the study participants took advantage of other support services including individual personal counselling, group therapy, and career consultation. A number of the participants also sought help from the primary investigator in resolving their personal and academic difficulties. Student surveys show that very few first year students are aware of the support services available to them. Knowledge of these services, and a feeling of connection with at least one support person in the university environment, can be very important in increasing student retention beyond their first year of study.

Second, regarding the potential moderating role of individual factors in determining the effectiveness of stress management programs, there was no empirical support for the interaction of belief about personal control and type of stress management training in the present study. Hence, there is no basis from this study's findings to recommend future matching of type of stress management intervention with belief about personal control in order to enhance treatment efficacy. It is noteworthy, however, that the obtained univariate means for the interaction hypotheses were in the predicted direction. Thus, it is possible that low statistical power accounts for the lack of

significant interaction effects, rather than a theoretical flaw in the interaction hypotheses, and that the potential mediating role of locus of control in determining the efficacy of stress management interventions is worth further investigation.

A second promising research direction is the development and evaluation of interventions to increase subjects' internal locus of control. Past research has demonstrated the benefits associated with an internal locus of control orientation (e.g., Kliever & Sandler, 1992; Petrosky & Birkimer, 1991). In the present study, the Emotion-Focused stress management program was effective in shifting participants toward a stronger internal locus of control. Further research is needed to identify more clearly the specific training components that are most important in effecting a person's belief about personal control. Supervised training experience in tension and anxiety reduction techniques may be one of these important components.

Finally, while not a specific focus of this study, gender differences in subjects' perceptions of and responses to the stress management interventions emerged as a significant finding. Future research in the area of stress management training programs should include the formulation and testing of specific hypotheses related to gender differences and stress, including the interaction between group facilitator gender and participant gender in determining treatment efficacy.

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Appendix A

Description of Study for Prospective Stress Management Training Participants

My name is Connie Boutet. I'm a Ph.D. student in Clinical Psychology. I also work part-time at the student Counselling Service here on campus. I'm here to recruit you for my dissertation research study which looks at stress management training for first year university students.

The first year of university can be a very stressful time for new students straight out of high school. Not only do you have a lot of new demands coming your way, but some of you may have also lost some of the supports you had in high school. If you're from out of town maybe your family isn't as available to help you as they were last year. Maybe some of your old friends chose not to go to university or, if they did, maybe they're in different faculties or taking different classes so you don't see much of them.

I wanted to develop a group program that helps first year students to better handle the stresses of being in university for the first time. I've researched what undergraduate students say are the primary stressors facing them in university. Basically, these include: academic stressors, such as completing assignments and studying for exams; difficulties with relationships, such as making new friends and resolving conflicts with roommates or other people you know; being worried about your career goals and how

university is going to help you succeed in life once you graduate, and generally feeling overwhelmed with trying to find the time to juggle all the demands that are made on you as a university student, as a son or a daughter, as a friend, as a boyfriend or girlfriend, in terms of all of the things that you're trying to accomplish in your life at this time.

With this information, I developed a group stress management training program that will address each of these four areas of stress. The goal of my dissertation research is to find out whether this type of program is helpful to first year university students in dealing with the various stresses you experience.

The other thing I want to mention is that my study is based on the stress that virtually all first year students experience. The kind of stress that I'm talking about is what you expect to see whenever someone experiences a major change in their life, like the transition from being a kid in high school to being a young adult in university. I'm interested in the normal stress that students experience when they first come to university. By participating in this study you won't be confessing that you have some deep psychological disturbance. In fact, if it turns out that some of you have problems that are more serious than what will be dealt with in the stress management group, I'll talk to you about other sources of help that would be more appropriate to help you with your problems.

Let me tell you what participating in this study involves. I am interested in those of you who are first-year, full-time

students at the University of Manitoba who were admitted to university directly from high school without taking a year or two off in between. Please do not sign up for this study if you are a part-time or mature student, if you have had previous experience with stress management training, if you are currently receiving treatment for a personal problem or a major health problem, or if you are currently registered in the Faculty of Arts course, 99:111, called "Introduction to University." If you've had stress management training before, or if you're involved in two treatments at the same time, it's hard to tell which treatment is responsible for any improvement you might experience and that would confuse the interpretation of the results from this study. There is also some overlap between my stress management training program and the Introduction to University course so you don't need to participate in both of these programs.

Participating in this study involves: (1) attending a pretreatment assessment session at the beginning of October. This will take approximately one hour and will involve filling out some questionnaires. (2) The stress management program will begin the third week of October. You will attend four two-hour training sessions, once a week for four weeks. You will also be given practice assignments of stress management techniques to do between sessions. (3) About two weeks after the stress management program is finished, at the end of November, there is another assessment session lasting about one hour where you will again fill out some questionnaires. (4) Finally, four months after completing the

stress management training, at the end of March - beginning of April, you will attend one more final assessment session where you will fill out the same set of questionnaires.

In total, your participation in this study will involve 11 hours over 7 different sessions; 3 one-hour assessment sessions where you fill out questionnaires, and 4 two-hour stress management training sessions. This does not include the time you will spend practicing the stress management techniques. For your participation, you will receive seven experimental credits toward your final course grade. This is the total number you need for your Introductory Psychology course. An advantage of this study is that you can earn all of your credits in one experiment and won't have to scramble at the last minute to find other experiments. A disadvantage of this study is that you will be working harder for your experimental credits. For 11 hours of your participation, you will receive 7 credits. However, I expect that for your extra time, you may experience some personal benefits from participating in a stress management training program namely, improved ability to manage the stress associated with being in university.

You can withdraw from the study at any time and you will receive credit for your attendance up to that point. The person who will be leading your stress management group is also a Ph.D. student in Clinical Psychology who has training and experience with stress management techniques and is competent to deliver the stress management program. Any information you provide as part of this study will be confidential. Your questionnaires will be stored in

a safe place. Anything you say to myself or your group leader will also be treated as confidential. No one other than myself and my research supervisor will have access to any of your individual results so your participation will in no way affect your academic evaluation at this university.

One final thing I need to mention is that if you sign up for this study, you may be assigned to a control group instead of the stress management training group. This assignment will occur randomly which means you have an equal chance of being in the treatment group or in the control group. If you are in the control group, you will attend the pretreatment, posttreatment, and follow-up assessment sessions with everyone else, and you will receive three experimental credits for this. However, you will be offered stress management training at the beginning of April instead of in October.

Any questions?

I will pass around the sign-up booklets now. You will notice that there are four different sign-up booklets: two for men and two for women. What I'm asking you to sign up for now is the first assessment session at the beginning of October. When you come to that session you will then sign up for the rest of the sessions. Please choose one of the six times in the booklet that best fits with your academic schedule.

Appendix B

Description of Study for Non-Participant Control Subjects

My name is Connie Boutet. I'm a Ph.D. student in Clinical Psychology. I also work part-time at the student Counselling Service here on campus. I'm here to recruit you for my dissertation research study which looks at the stress associated with first year university.

The first year of university can be a very stressful time for new students straight out of high school. Not only do you have a lot of new demands coming your way, but some of you may have also lost some of the supports you had in high school. If you're from out of town maybe your family isn't as available to help you as they were last year. Maybe some of your old friends chose not to go to university or, if they did, maybe they're in different faculties or taking different classes so you don't see much of them.

For my dissertation research, I want to look at the type and level of stress experienced by first year students. The kind of stress I'm talking about is what you expect to see whenever someone experiences a major change in their life, like the transition from being a kid in high school to being a young adult in university. I'm interested in the normal stress that students experience when they first come to university. By participating in my study you won't be confessing that you have some deep psychological disturbance. In fact, if it turns out that some of you have

problems that are more serious than those resulting from adjusting to university, I'll talk to you about sources of help here on campus that can assist you with your problems.

Let me tell you what participating in this study involves. I am interested in those of you who are first-year, full-time students at the University of Manitoba who were admitted to university directly from high school without taking a year or two off in between. Please do not sign up for this study if (a) you are a part-time or mature student, or (b) you have ever participated in any type of stress management program, or (c) you are currently receiving treatment for a personal problem or major health problem, or (d) you are currently registered in the Faculty of Arts course, 99:111, called "Introduction to University." If you've had any kind of stress management training before, or if you're receiving treatment for a personal or health problem, or if you're enrolled in the Arts course I mentioned, your experience of stress may not be typical for the average first year student. You may be coping better or worse than the average student and I'm interested in the stress typically experienced by first year university students.

Participating in this study involves completing a number of questionnaires, which will take you about an hour, at three different times during the academic year: once at the beginning of October, before mid-term exams; once at the end of November, just before your final exams for first term; and the last time at the end of March, just before your final exams for the second academic

term. For filling out these questionnaires at three different times you will receive three experimental credit points.

Any information you provide will be strictly confidential. No one will see your responses except me and my research supervisor so your participation will in no way affect your academic evaluation at this university. Finally, you can withdraw from the study at any time and you will receive experimental credit for your participation up to that point.

Any questions?

I will pass around the sign-up booklets now. You will notice that there is one for men and one for women. What I'm asking you to sign up for today is the first assessment session at the beginning of October. When you come to that session you'll sign up for the next two sessions then.

Appendix C

The Rotter Internal-External Locus of Control Scale

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternatives lettered a or b. Please select the one statement of each pair (and only one) which you more strongly BELIEVE to be the case as far as you're concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. This is a measure of personal belief; obviously there are no right or wrong answers.

Please answer these items CAREFULLY but do not spend too much time on any one item. Be sure to find an answer for EVERY choice. For each numbered question circle the alternative (a or b), whichever you choose as the statement most true.

In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the one you more strongly believe to be the case as far as you're concerned. Also try to respond to each item INDEPENDENTLY when making your choice; do not be influenced by your previous choices.

Remember:

Select that alternative which you PERSONALLY BELIEVE TO BE MORE TRUE.

I MORE STRONGLY BELIEVE THAT:

1. a. Children get into trouble because their parents punish them too much.
b. The trouble with most children nowadays is that their parents are too easy with them.
2. a. Many of the unhappy things in people's lives are partly due to bad luck.
b. People's misfortunes result from the mistakes they make.
3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.
b. There will always be wars, no matter how hard people try to prevent them.

I MORE STRONGLY BELIEVE THAT:

4. a. In the long run people get the respect they deserve in this world.
b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
5. a. The idea that teachers are unfair to students is nonsense.
b. Most students don't realize the extent to which their grades are influenced by accidental happenings.
6. a. Without the right breaks, one cannot be an effective leader.
b. Capable people who fail to become leaders have not taken advantage of their opportunities.
7. a. No matter how hard you try some people just don't like you.
b. People who can't get others to like them don't understand how to get along with others.
8. a. Heredity plays the major role in determining one's personality.
b. It is one's experiences in life which determine what they're like.
9. a. I have often found that what is going to happen will happen.
b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
10. a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

I MORE STRONGLY BELIEVE THAT:

11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
b. Getting a good job depends mainly on being in the right place at the right time.
12. a. The average citizen can have an influence in government decisions.
b. This world is run by the few people in power, and there is not much the little guy can do about it.
13. a. When I make plans, I am almost certain that I can make them work.
b. It is not always wise to plan too far ahead because many things turn out to be a matter of good luck or fortune anyhow.
14. a. There are certain people who are just no good.
b. There is some good in everybody.
15. a. In my case getting what I want has little or nothing to do with luck.
b. Many times we might just as well decide what to do by flipping a coin.
16. a. Who gets to be boss often depends on who was lucky enough to be in the right place first.
b. Getting people to do the right thing depends upon ability; luck has little or nothing to do with it.
17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
b. By taking an active part in political and social affairs the people can control world events.

I MORE STRONGLY BELIEVE THAT:

18.
 - a. Most people can't realize the extent to which their lives are controlled by accidental happenings.
 - b. There really is no such thing as "luck."
19.
 - a. One should always be willing to admit his mistakes.
 - b. It is usually best to cover up one's mistakes.
20.
 - a. It is hard to know whether or not a person really likes you.
 - b. How many friends you have depends upon how nice a person you are.
21.
 - a. In the long run the bad things that happen to us are balanced by the the good ones.
 - b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
22.
 - a. With enough effort we can wipe out political corruption.
 - b. It is difficult for people to have much control over the things politicians do in office.
23.
 - a. Sometimes I can't understand how teachers arrive at the grades they give.
 - b. There is a direct connection between how hard I study and the grades I get.
24.
 - a. A good leader expects people to decide for themselves what they should do.
 - b. A good leader makes it clear to everybody what their jobs are.
25.
 - a. Many times I feel that I have little influence over the things that happen to me.
 - b. It is impossible for me to believe that chance or luck plays an important role in my life.

I MORE STRONGLY BELIEVE THAT:

- 26. a. People are lonely because they don't try to be friendly.
 - b. There's not much use in trying too hard to please people, if they like you, they like you.
- 27. a. There is too much emphasis on athletics in high school.
 - b. Team sports are an excellent way to build character.
- 28. a. What happens to me is my own doing.
 - b. Sometimes I feel that I don't have enough control over the direction my life is taking.
- 29. a. Most of the time I can't understand why politicians behave the way they do.
 - b. In the long run the people are responsible for bad government on a national as well as on a local level.

Source:

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 80, 1-28.

Appendix D

The College Adjustment Rating Scale

COLLEGE ADJUSTMENT RATING SCALE

DIRECTIONS

Stress is experienced by people in varying degrees and could be described as "...any emotionally or physically disruptive influence." Frustrations, conflicts and pressures all cause stress. Sometimes the reactions we have to stress are emotional (anxiousness, depression) and sometimes they are physical (headaches, stomachaches, nervousness).

The following items indicate areas in which students have experienced stress both before and while attending post-secondary school. Please examine and select items from the lists which you have experienced in your lifetime. **If you have not experienced an item, leave it blank.** Rate the items you have experienced using a scale from zero to nine indicating the amount of stress you are **presently feeling**. A value of nine would indicate items offering the most intense stress. A value of one would indicate items offering minimal stress. A value of zero would indicate an item was experienced but no stress is **presently** felt. Consider the following examples:

1. _____ alcoholic parent
2. 3 pressure to get good grades from parents
3. 0 criticism of social life from parents
4. _____ fear of physical harm

In the above example, the student experienced only the 2nd and 3rd items. The stress felt was relatively minimal. The following example indicates the responses of a different individual.

1. 8 alcoholic parent
2. 1 pressure to get good grades from parents
3. _____ criticism of social life from parents
4. 8 fear of physical harm

In this example, different items and amounts of stress were experienced. Stress from an "alcoholic parent" and "fear of physical harm" were quite intense. **Remember**, we are unique individuals. The intensity to which we experience stress varies for each individual.

Please respond honestly to the following items regarding the way you feel stress right now.

Please rank the items listed, using 0-9. If you have any questions, please ask the individual administering the test. Thank you.

0	1	2	3	4	5	6	7	8	9
no stress		minimal stress		average stress		extreme stress			

ACADEMIC

1. _____ walking late into class
2. _____ skipping class and attending class after skipping
3. _____ failing to complete assignments
4. _____ receiving a D or F on a test
5. _____ taking a test in class
6. _____ studying for a test
7. _____ taking notes during a lecture
8. _____ seeking assistance from one of my instructors
9. _____ receiving a graded test back in class
10. _____ pressure to get an A or B in a course
11. _____ giving a class presentation
12. _____ completing a research paper
13. _____ conflict with my instructor(s)
14. _____ being suspended or placed on academic probation
15. _____ visiting or using the library
16. _____ experiencing confusion about my selected major/minor
17. _____ being called on in class
18. _____ requesting help from a tutor or other support personnel
19. _____ working while going to school (including workstudy, assistantships)
20. _____ completing reading or written assignments
21. _____ difficulty motivating myself for classwork
22. _____ falling behind in class(es) because of illness
23. _____ cheating on a test
24. _____ falling asleep during class
25. _____ dropping/adding a course

_____ ACADEMIC SUB SCALE RAW SCORE (Add up all numbers listed)

Please rank the items listed, using 0-9. If you have any questions, please ask the individual administering the test. Thank you.

0	1	2	3	4	5	6	7	8	9
no stress			minimal stress		average stress			extreme stress	

SOCIAL

1. _____ pressure from peers regarding my dating behavior
2. _____ lack of approval from peers
3. _____ death of a friend
4. _____ peer pressure involving sex
5. _____ peer pressure involving drugs or alcohol
6. _____ becoming a member of a campus organization or social fraternity/sorority
7. _____ concern over problems with friends
8. _____ meeting new people
9. _____ getting along with roommate
10. _____ socializing with members of same sex
11. _____ socializing with members of opposite sex
12. _____ peer pressure against getting good grades
13. _____ maintaining friendships
14. _____ lack of social activities
15. _____ being alone when others are socializing
16. _____ feeling of discrimination because of my race, sex, or religion
17. _____ peer pressure to marry/to become engaged to marry
18. _____ conflict with campus rules
19. _____ living in campus housing
20. _____ registering a complaint with Room Assistant
21. _____ conflict with Room Assistant/Head Resident
22. _____ competing on an athletic team
23. _____ visiting bar or night club with friends
24. _____ having something stolen
25. _____ pressure from upper classpersons

_____ SOCIAL SUB SCALE RAW SCORE (Add up all numbers listed)

Please rank the items listed, using 0-9. If you have any questions, please ask the individual administering the test. Thank you.

0	1	2	3	4	5	6	7	8	9
no stress		minimal stress			average stress			extreme stress	

PERSONAL

1. _____ personal pressure to get good grades
2. _____ responsibility for unwanted pregnancy
3. _____ difficulty in making vocational selection
4. _____ conflict with personal sexual morals
5. _____ conflict with religious values
6. _____ fear of pregnancy
7. _____ difficulty in budgeting money
8. _____ disliking personal physical appearance
9. _____ lack of assertiveness or ability to speak up for what I believe
10. _____ lack of ability to make decisions
11. _____ fear of being alone
12. _____ personal shyness
13. _____ my own use of alcohol or drugs
14. _____ feelings of anxiousness or general tension
15. _____ feeling depressed
16. _____ contemplation of suicide
17. _____ fear of failure
18. _____ difficulty in accepting homosexuality of peers
19. _____ change in personal habits (sleeping, eating, etc.)
20. _____ difficulty in resolving past military experiences
21. _____ fear of personal harm
22. _____ difficulty with personal sexuality or homosexuality
23. _____ concern over physical health
24. _____ lack of self-motivation
25. _____ lack of self-confidence

PERSONAL SUB SCALE RAW SCORE (Add up all numbers listed)

Please rank the items listed, using 0-9. If you have any questions, please ask the individual administering the test. Thank you.

0	1	2	3	4	5	6	7	8	9
no stress			minimal stress			average stress			extreme stress

FAMILY AND HOME

1. _____ having an alcoholic parent
2. _____ receiving mail, phone calls or visits from family members
3. _____ health concerns of an immediate family member
4. _____ lack of mail, phone calls, or visits from family members
5. _____ past/present verbal abuse in the home
6. _____ pressure from family regarding marriage
7. _____ concern over personal problems of a family member(s)
8. _____ feeling homesick
9. _____ parents fighting
10. _____ parental separation/divorce
11. _____ death of a parent
12. _____ death of a brother or sister
13. _____ death of a relative (check one or more) spouse _____ uncle _____ aunt _____ cousin _____ grandparent _____ other _____
14. _____ rivalry with a brother or sister
15. _____ criticism of my social life from parents
16. _____ conflicts between parental goals/values or morals and my own
17. _____ going home for visits or vacation
18. _____ difficulty with my own changing attitudes toward family and hometown
19. _____ past/present incestual relationship (any sexual contact between family members)
20. _____ gain of a new family member
21. _____ illness in my own children
22. _____ my own marital difficulties
23. _____ making child care arrangements for my children
24. _____ fear of failure to meet family expectations
25. _____ past/present physical abuse in the home

_____ FAMILY AND HOME SUB SCALE RAW SCORE (Add up all numbers listed)

Appendix E

The Symptom Checklist-90-Revised

INSTRUCTIONS:

Below is a list of problems people sometimes have. Please read each one carefully, and circle the number to the right that best describes HOW MUCH THAT PROBLEM HAS DISTRESSED OR BOTHERED YOU DURING THE PAST 7 DAYS INCLUDING TODAY. Circle only one number for each problem and do not skip any items. If you change your mind, erase your first mark carefully. Read the example below before beginning, and if you have any questions please ask about them.

SEX

MALE

☐

FEMALE

☐

NAME: _____

LOCATION: _____

EDUCATION: _____

MARITAL STATUS: MAR. _____ SEP. _____ DIV. _____ WID. _____ SING. _____

DATE

MO	DAY	YEAR

ID.

NUMBER

--	--	--	--

AGE

--	--

EXAMPLE

HOW MUCH WERE YOU DISTRESSED BY:

1. Bodyaches

0

1

2

3

4

HOW MUCH WERE YOU DISTRESSED BY:

1. Headaches
2. Nervousness or shakiness inside
3. Repeated unpleasant thoughts that won't leave your mind
4. Faintness or dizziness
5. Loss of sexual interest or pleasure
6. Feeling critical of others
7. The idea that someone else can control your thoughts
8. Feeling others are to blame for most of your troubles
9. Trouble remembering things
10. Worried about sloppiness or carelessness
11. Feeling easily annoyed or irritated
12. Pains in heart or chest
13. Feeling afraid in open spaces or on the streets
14. Feeling low in energy or slowed down
15. Thoughts of ending your life
16. Hearing voices that other people do not hear
17. Trembling
18. Feeling that most people cannot be trusted
19. Poor appetite
20. Crying easily
21. Feeling shy or uneasy with the opposite sex
22. Feelings of being trapped or caught
23. Suddenly scared for no reason
24. Temper outbursts that you could not control
25. Feeling afraid to go out of your house alone
26. Blaming yourself for things
27. Pains in lower back
28. Feeling blocked in getting things done
29. Feeling lonely
30. Feeling blue
31. Worrying too much about things
32. Feeling no interest in things
33. Feeling fearful
34. Your feelings being easily hurt
35. Other people being aware of your private thoughts

NOT AT ALL
A LITTLE BIT
MODERATELY
QUITE A BIT
EXTREMELY

1	0	1	2	3	4
2	0	1	2	3	4
3	0	1	2	3	4
4	0	1	2	3	4
5	0	1	2	3	4
6	0	1	2	3	4
7	0	1	2	3	4
8	0	1	2	3	4
9	0	1	2	3	4
10	0	1	2	3	4
11	0	1	2	3	4
12	0	1	2	3	4
13	0	1	2	3	4
14	0	1	2	3	4
15	0	1	2	3	4
16	0	1	2	3	4
17	0	1	2	3	4
18	0	1	2	3	4
19	0	1	2	3	4
20	0	1	2	3	4
21	0	1	2	3	4
22	0	1	2	3	4
23	0	1	2	3	4
24	0	1	2	3	4
25	0	1	2	3	4
26	0	1	2	3	4
27	0	1	2	3	4
28	0	1	2	3	4
29	0	1	2	3	4
30	0	1	2	3	4
31	0	1	2	3	4
32	0	1	2	3	4
33	0	1	2	3	4
34	0	1	2	3	4
35	0	1	2	3	4

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HOW MUCH WERE YOU DISTRESSED BY:

		NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	EXTREMELY	
36.	Feeling others do not understand you or are unsympathetic	36	0	1	2	3	4
37.	Feeling that people are unfriendly or dislike you	37	0	1	2	3	4
38.	Having to do things very slowly to insure correctness	38	0	1	2	3	4
39.	Heart pounding or racing	39	0	1	2	3	4
40.	Nausea or upset stomach	40	0	1	2	3	4
41.	Feeling inferior to others	41	0	1	2	3	4
42.	Soreness of your muscles	42	0	1	2	3	4
43.	Feeling that you are watched or talked about by others	43	0	1	2	3	4
44.	Trouble falling asleep	44	0	1	2	3	4
45.	Having to check and double-check what you do	45	0	1	2	3	4
46.	Difficulty making decisions	46	0	1	2	3	4
47.	Feeling afraid to travel on buses, subways, or trains	47	0	1	2	3	4
48.	Trouble getting your breath	48	0	1	2	3	4
49.	Hot or cold spells	49	0	1	2	3	4
50.	Having to avoid certain things, places, or activities because they frighten you	50	0	1	2	3	4
51.	Your mind going blank	51	0	1	2	3	4
52.	Numbness or tingling in parts of your body	52	0	1	2	3	4
53.	A lump in your throat	53	0	1	2	3	4
54.	Feeling hopeless about the future	54	0	1	2	3	4
55.	Trouble concentrating	55	0	1	2	3	4
56.	Feeling weak in parts of your body	56	0	1	2	3	4
57.	Feeling tense or keyed up	57	0	1	2	3	4
58.	Heavy feelings in your arms or legs	58	0	1	2	3	4
59.	Thoughts of death or dying	59	0	1	2	3	4
60.	Overeating	60	0	1	2	3	4
61.	Feeling uneasy when people are watching or talking about you	61	0	1	2	3	4
62.	Having thoughts that are not your own	62	0	1	2	3	4
63.	Having urges to beat, injure, or harm someone	63	0	1	2	3	4
64.	Awakening in the early morning	64	0	1	2	3	4
65.	Having to repeat the same actions such as touching, counting, or washing	65	0	1	2	3	4
66.	Sleep that is restless or disturbed	66	0	1	2	3	4
67.	Having urges to break or smash things	67	0	1	2	3	4
68.	Having ideas or beliefs that others do not share	68	0	1	2	3	4
69.	Feeling very self-conscious with others	69	0	1	2	3	4
70.	Feeling uneasy in crowds, such as shopping or at a movie	70	0	1	2	3	4
71.	Feeling everything is an effort	71	0	1	2	3	4
72.	Spells of terror or panic	72	0	1	2	3	4
73.	Feeling uncomfortable about eating or drinking in public	73	0	1	2	3	4
74.	Getting into frequent arguments	74	0	1	2	3	4
75.	Feeling nervous when you are left alone	75	0	1	2	3	4
76.	Others not giving you proper credit for your achievements	76	0	1	2	3	4
77.	Feeling lonely even when you are with people	77	0	1	2	3	4
78.	Feeling so restless you couldn't sit still	78	0	1	2	3	4
79.	Feelings of worthlessness	79	0	1	2	3	4
80.	The feeling that something bad is going to happen to you	80	0	1	2	3	4
81.	Shouting or throwing things	81	0	1	2	3	4
82.	Feeling afraid you will faint in public	82	0	1	2	3	4
83.	Feeling that people will take advantage of you if you let them	83	0	1	2	3	4
84.	Having thoughts about sex that bother you a lot	84	0	1	2	3	4
85.	The idea that you should be punished for your sins	85	0	1	2	3	4
86.	Thoughts and images of a frightening nature	86	0	1	2	3	4
87.	The idea that something serious is wrong with your body	87	0	1	2	3	4
88.	Never feeling close to another person	88	0	1	2	3	4
89.	Feelings of guilt	89	0	1	2	3	4
90.	The idea that something is wrong with your mind	90	0	1	2	3	4

Appendix F

The Social Adjustment Scale - Self-Report

Study	Patient Number			Patient Initials			21	SAS-SR-Patient	Page 1 of 6
cc 1	2	3	4	5	6	7	Depression Research Unit		

Date _____

Rater's Initials: Computer Date (8-13)**SOCIAL ADJUSTMENT SELF REPORT QUESTIONNAIRE**

We are interested in finding out how you have been doing in the last two weeks. We would like you to answer some questions about your work, spare time and your family life. There are no right or wrong answers to these questions. Check the answers that best describes how you have been in the last two weeks.

WORK OUTSIDE THE HOME

Please check the situation that best describes you.

- I am ☐ a worker for pay ☐ retired (14)
☐ a housewife ☐ unemployed
☐ a student

Do you usually work for pay more than 15 hours per week?

- ☐ YES ☐ NO (15)

Did you work any hours for pay in the last two weeks?

- ☐ YES ☐ NO (16)

Check the answer that best describes how you have been in the last two weeks.

1. How many days did you miss from work in the last two weeks?

- ☐ No days missed. (17)
☐ One day.
☐ I missed about half the time.
☐ Missed more than half the time but did make at least one day.
☐ I did not work any days.
☐ On vacation all of the last two weeks.

If you have not worked any days in the last two weeks, go on to Question 7.

2. Have you been able to do your work in the last 2 weeks?

- ☐ I did my work very well. (18)
☐ I did my work well but had some minor problems.
☐ I needed help with work and did not do well about half the time.
☐ I did my work poorly most of the time.
☐ I did my work poorly all the time.

3. Have you been ashamed of how you do your work in the last 2 weeks?

- ☐ I never felt ashamed. (19)
☐ Once or twice I felt a little ashamed.
☐ About half the time I felt ashamed.
☐ I felt ashamed most of the time.
☐ I felt ashamed all the time.

4. Have you had any arguments with people at work in the last 2 weeks?

- ☐ I had no arguments and got along very well. (20)
☐ I usually got along well but had minor arguments.
☐ I had more than one argument.
☐ I had many arguments.
☐ I was constantly in arguments.

5. Have you felt upset, worried, or uncomfortable while doing your work during the last 2 weeks?

- ☐ I never felt upset. (21)
☐ Once or twice I felt upset.
☐ Half the time I felt upset.
☐ I felt upset most of the time.
☐ I felt upset all of the time.

6. Have you found your work interesting these last two weeks?

- ☐ My work was almost always interesting. (22)
☐ Once or twice my work was not interesting.
☐ Half the time my work was uninteresting.
☐ Most of the time my work was uninteresting.
☐ My work was always uninteresting.

WORK AT HOME - HOUSEWIVES ANSWER QUESTIONS 7-12. OTHERWISE, GO ON TO QUESTION 13.

7. How many days did you do some housework during the last 2 weeks?

- ☐ Every day. (23)
☐ I did the housework almost every day.
☐ I did the housework about half the time.
☐ I usually did not do the housework.
☐ I was completely unable to do housework.
☐ I was away from home all of the last two weeks.

8. During the last two weeks, have you kept up with your housework? This includes cooking, cleaning, laundry, grocery shopping, and errands.

- ☐ I did my work very well. (24)
☐ I did my work well but had some minor problems.
☐ I needed help with my work and did not do it well about half the time.
☐ I did my work poorly most of the time.
☐ I did my work poorly all of the time.

9. Have you been ashamed of how you did your housework during the last 2 weeks?

- ☐ I never felt ashamed. (25)
☐ Once or twice I felt a little ashamed.
☐ About half the time I felt ashamed.
☐ I felt ashamed most of the time.
☐ I felt ashamed all the time.

Study	Patient Number	Patient Initials	21	SAS-SR-Patient	Page 2 of 6
				Depression Research Unit	

SOCIAL ADJUSTMENT SELF REPORT QUESTIONNAIRE (Page 2 of 6)

10. Have you had any arguments with salespeople, tradesmen or neighbors in the last 2 weeks?

- 1 ☐ I had no arguments and got along very well. (26)
 2 ☐ I usually got along well, but had minor arguments.
 3 ☐ I had more than one argument
 4 ☐ I had many arguments.
 5 ☐ I was constantly in arguments.

11. Have you felt upset while doing your housework during the last 2 weeks?

- 1 ☐ I never felt upset. (27)
 2 ☐ Once or twice I felt upset.
 3 ☐ Half the time I felt upset.
 4 ☐ I felt upset most of the time.
 5 ☐ I felt upset all of the time.

12. Have you found your housework interesting these last 2 weeks?

- 1 ☐ My work was almost always interesting. (28)
 2 ☐ Once or twice my work was not interesting.
 3 ☐ Half the time my work was uninteresting.
 4 ☐ Most of the time my work was uninteresting.
 5 ☐ My work was always uninteresting.

FOR STUDENTS

Answer Questions 13-18 if you go to school half time or more. Otherwise, go on to Question 19.

What best describes your school program? (Choose one)

- 1 ☐ Full Time (29)
 2 ☐ 3/4 Time
 3 ☐ Half Time

Check the answer that best describes how you have been the last 2 weeks.

13. How many days of classes did you miss in the last 2 weeks?

- 1 ☐ No days missed. (30)
 2 ☐ A few days missed.
 3 ☐ I missed about half the time.
 4 ☐ Missed more than half time but did make at least one day.
 5 ☐ I did not go to classes at all.
 8 ☐ I was on vacation all of the last two weeks.

14. Have you been able to keep up with your class work in the last 2 weeks?

- 1 ☐ I did my work very well. (31)
 2 ☐ I did my work well but had minor problems.
 3 ☐ I needed help with my work and did not do well about half the time.
 4 ☐ I did my work poorly most of the time.
 5 ☐ I did my work poorly all the time.

15. During the last 2 weeks, have you been ashamed of how you do your school work?

- 1 ☐ I never felt ashamed. (32)
 2 ☐ Once or twice I felt ashamed.
 3 ☐ About half the time I felt ashamed.
 4 ☐ I felt ashamed most of the time.
 5 ☐ I felt ashamed all of the time.

16. Have you had any arguments with people at school in the last 2 weeks?

- 1 ☐ I had no arguments and got along very well. (33)
 2 ☐ I usually got along well but had minor arguments.
 3 ☐ I had more than one argument.
 4 ☐ I had many arguments.
 5 ☐ I was constantly in arguments.
 8 ☐ Not applicable; I did not attend school.

17. Have you felt upset at school during the last 2 weeks?

- 1 ☐ I never felt upset. (34)
 2 ☐ Once or twice I felt upset.
 3 ☐ Half the time I felt upset.
 4 ☐ I felt upset most of the time.
 5 ☐ I felt upset all of the time.
 8 ☐ Not applicable; I did not attend school.

18. Have you found your school work interesting these last 2 weeks?

- 1 ☐ My work was almost always interesting. (35)
 2 ☐ Once or twice my work was not interesting.
 3 ☐ Half the time my work was uninteresting.
 4 ☐ Most of the time my work was uninteresting.
 5 ☐ My work was always uninteresting.

Study	Patient Number	Patient Initials	21	SAS-SR-Patient	Page 3 of 6
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SOCIAL ADJUSTMENT SELF REPORT QUESTIONNAIRE (Page 3 of 6)

SPARE TIME – EVERYONE ANSWER QUESTIONS 19-27.

Check the answer that best describes how you have been in the last 2 weeks.

19. How many friends have you seen or spoken to on the telephone in the last 2 weeks? (36)
- 1 ☐ Nine or more friends.
- 2 ☐ Five to eight friends.
- 3 ☐ Two to four friends.
- 4 ☐ One friend
- 5 ☐ No friends.
20. Have you been able to talk about your feelings and problems with at least one friend during the last 2 weeks? (37)
- 1 ☐ I can always talk about my innermost feelings.
- 2 ☐ I usually can talk about my feelings.
- 3 ☐ About half the time I felt able to talk about my feelings.
- 4 ☐ I usually was not able to talk about my feelings.
- 5 ☐ I was never able to talk about my feelings.
- 8 ☐ Not applicable; I have no friends.
21. How many times in the last two weeks have you gone out socially with other people? For example, visited friends, gone to movies, bowling, church, restaurants, invited friends to your home? (38)
- 1 ☐ More than 3 times.
- 2 ☐ Three times.
- 3 ☐ Twice.
- 4 ☐ Once.
- 5 ☐ None.
22. How much time have you spent on hobbies or spare time interests during the last 2 weeks? For example, bowling, sewing, gardening, sports, reading? (39)
- 1 ☐ I spent most of my spare time on hobbies almost every day.
- 2 ☐ I spent some spare time on hobbies some of the days.
- 3 ☐ I spent a little spare time on hobbies.
- 4 ☐ I usually did not spend any time on hobbies but did watch TV.
- 5 ☐ I did not spend any spare time on hobbies or watching TV.
23. Have you had open arguments with your friends in the last 2 weeks? (40)
- 1 ☐ I had no arguments and got along very well.
- 2 ☐ I usually got along well but had minor arguments.
- 3 ☐ I had more than one argument.
- 4 ☐ I had many arguments.
- 5 ☐ I was constantly in arguments.
- 8 ☐ Not applicable; I have no friends.
24. If your feelings were hurt or offended by a friend during the last two weeks, how badly did you take it? (41)
- 1 ☐ It did not affect me or it did not happen.
- 2 ☐ I got over it in a few hours.
- 3 ☐ I got over it in a few days.
- 4 ☐ I got over it in a week.
- 5 ☐ It will take me months to recover.
- 8 ☐ Not applicable; I have no friends.
25. Have you felt shy or uncomfortable with people in the last 2 weeks? (42)
- 1 ☐ I always felt comfortable.
- 2 ☐ Sometimes I felt uncomfortable but could relax after a while.
- 3 ☐ About half the time I felt uncomfortable.
- 4 ☐ I usually felt uncomfortable.
- 5 ☐ I always felt uncomfortable.
- 8 ☐ Not applicable; I was never with people.
26. Have you felt lonely and wished for more friends during the last 2 weeks? (43)
- 1 ☐ I have not felt lonely.
- 2 ☐ I have felt lonely a few times.
- 3 ☐ About half the time I felt lonely.
- 4 ☐ I usually felt lonely.
- 5 ☐ I always felt lonely and wished for more friends.
27. Have you felt bored in your spare time during the last 2 weeks? (44)
- 1 ☐ I never felt bored.
- 2 ☐ I usually did not feel bored.
- 3 ☐ About half the time I felt bored.
- 4 ☐ Most of the time I felt bored.
- 5 ☐ I was constantly bored.
- Are you a Single, Separated, or Divorced Person not living with a person of opposite sex; please answer below:*
- 1 ☐ YES, Answer questions 28 & 29. (45)
- 2 ☐ NO, go to question 30.
28. How many times have you been with a date these last 2 weeks? (46)
- 1 ☐ More than 3 times.
- 2 ☐ Three times.
- 3 ☐ Twice.
- 4 ☐ Once.
- 5 ☐ Never.

Study	Patient Number	Patient Initials	21	SAS-SR-Patient	Page 4 of 6
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SOCIAL ADJUSTMENT SELF REPORT QUESTIONNAIRE (Page 4 of 6)

29. Have you been interested in dating during the last 2 weeks. If you have not dated, would you have liked to?

- 1 ☐ I was always interested in dating. (47)
 2 ☐ Most of the time I was interested.
 3 ☐ About half of the time I was interested.
 4 ☐ Most of the time I was not interested.
 5 ☐ I was completely uninterested.

FAMILY

Answer Questions 30-37 about your parents, brothers, sisters, in laws, and children not living at home. Have you been in contact with any of them in the last two weeks?

- 1 ☐ YES, Answer questions 30-37.
 2 ☐ NO, Go to question 36

30. Have you had open arguments with your relatives in the last 2 weeks?

- 1 ☐ We always got along very well. (48)
 2 ☐ We usually got along very well but had some minor arguments.
 3 ☐ I had more than one argument with at least one relative.
 4 ☐ I had many arguments.
 5 ☐ I was constantly in arguments.

31. Have you been able to talk about your feelings and problems with at least one of your relatives in the last 2 weeks?

- 1 ☐ I can always talk about my feelings with at least one relative. (49)
 2 ☐ I usually can talk about my feelings.
 3 ☐ About half the time I felt able to talk about my feelings.
 4 ☐ I usually was not able to talk about my feelings.
 5 ☐ I was never able to talk about my feelings.

32. Have you avoided contacts with your relatives these last two weeks?

- 1 ☐ I have contacted relatives regularly. (50)
 2 ☐ I have contacted a relative at least once.
 3 ☐ I have waited for my relatives to contact me.
 4 ☐ I avoided my relatives, but they contacted me.
 5 ☐ I have no contacts with any relatives.

33. Did you depend on your relatives for help, advice, money or friendship during the last 2 weeks?

- 1 ☐ I never need to depend on them. (51)
 2 ☐ I usually did not need to depend on them.
 3 ☐ About half the time I needed to depend on them.
 4 ☐ Most of the time I depend on them.
 5 ☐ I depend completely on them.

34. Have you wanted to do the opposite of what your relatives wanted in order to make them angry during the last 2 weeks?

- 1 ☐ I never wanted to oppose them. (52)
 2 ☐ Once or twice I wanted to oppose them.
 3 ☐ About half the time I wanted to oppose them.
 4 ☐ Most of the time I wanted to oppose them.
 5 ☐ I always opposed them.

35. Have you been worried about things happening to your relatives without good reason in the last 2 weeks?

- 1 ☐ I have not worried without reason (53)
 2 ☐ Once or twice I worried.
 3 ☐ About half the time I worried.
 4 ☐ Most of the time I worried.
 5 ☐ I have worried the entire time.
 8 ☐ Not applicable; my relatives are no longer living.

EVERYONE answer Questions 36 and 37, even if your relatives are not living.

36. During the last two weeks, have you been thinking that you have let any of your relatives down or have been unfair to them at any time?

- 1 ☐ I did not feel that I let them down at all. (54)
 2 ☐ I usually did not feel that I let them down.
 3 ☐ About half the time I felt that I let them down.
 4 ☐ Most of the time I have felt that I let them down.
 5 ☐ I always felt that I let them down.

37. During the last two weeks, have you been thinking that any of your relatives have let you down or have been unfair to you at any time?

- 1 ☐ I never felt that they let me down. (55)
 2 ☐ I felt that they usually did not let me down.
 3 ☐ About half the time I felt they let me down.
 4 ☐ I usually have felt that they let me down.
 5 ☐ I am very bitter that they let me down.

Are you living with your spouse or have been living with a person of the opposite sex in a permanent relationship?

- 1 ☐ YES, Please answer questions 38-46. (56)
 2 ☐ NO, Go to question 47.

38. Have you had open arguments with your partner in the last 2 weeks?

- 1 ☐ We had no arguments and we got along well. (57)
 2 ☐ We usually got along well but had minor arguments.
 3 ☐ We had more than one argument.
 4 ☐ We had many arguments.
 5 ☐ We were constantly in arguments.

Study	Patient Number	Patient Initials	21	SAS-SR-Patient	Page 5 of 6
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SOCIAL ADJUSTMENT SELF REPORT QUESTIONNAIRE (Page 5 of 6)

39. Have you been able to talk about your feelings and problems with your partner during the last 2 weeks?

- 1 ☐ I could always talk freely about my feelings. (58)
 2 ☐ I usually could talk about my feelings.
 3 ☐ About half the time I felt able to talk about my feelings.
 4 ☐ I usually was not able to talk about my feelings.
 5 ☐ I was never able to talk about my feelings.

40. Have you been demanding to have your own way at home during the last 2 weeks?

- 1 ☐ I have not insisted on always having my own way. (59)
 2 ☐ I usually have not insisted on having my own way.
 3 ☐ About half the time I insisted on having my own way.
 4 ☐ I usually insisted on having my own way.
 5 ☐ I always insisted on having my own way.

41. Have you been bossed around by your partner these last 2 weeks?

- 1 ☐ Almost never. (60)
 2 ☐ Once in a while.
 3 ☐ About half the time.
 4 ☐ Most of the time.
 5 ☐ Always.

42. How much have you felt dependent on your partner these last 2 weeks?

- 1 ☐ I was independent. (61)
 2 ☐ I was usually independent.
 3 ☐ I was somewhat dependent.
 4 ☐ I was usually dependent.
 5 ☐ I depended on my partner for everything.

43. How have you felt about your partner during the last 2 weeks?

- 1 ☐ I always felt affection. (62)
 2 ☐ I usually felt affection.
 3 ☐ About half the time I felt dislike and half the time affection.
 4 ☐ I usually felt dislike.
 5 ☐ I always felt dislike.

44. How many times have you and your partner had intercourse?

- 1 ☐ More than twice a week. (63)
 2 ☐ Once or twice a week.
 3 ☐ Once every two weeks.
 4 ☐ Less than once every two weeks but at least once in the last month.
 5 ☐ Not at all in a month or longer.

45. Have you had any problems during intercourse, such as pain these last two weeks?

- 1 ☐ None. (64)
 2 ☐ Once or twice.
 3 ☐ About half the time.
 4 ☐ Most of the time.
 5 ☐ Always.
 8 ☐ Not applicable; no intercourse in the last two weeks.

46. How have you felt about intercourse during the last 2 weeks?

- 1 ☐ I always enjoyed it. (65)
 2 ☐ I usually enjoyed it.
 3 ☐ About half the time I did and half the time I did not enjoy it.
 4 ☐ I usually did not enjoy it.
 5 ☐ I never enjoyed it.

QUESTIONS 47-54 On Next Page.

Study	Patient Number			Patient Initials			21	SAS-SR-Patient	Page 6 of 6
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SOCIAL ADJUSTMENT SELF REPORT QUESTIONNAIRE (Page 6 of 6)

CHILDREN

Have you had unmarried children, stepchildren, or foster children living at home during the last two weeks?

- 1 ☐ YES, Answer questions 47-50. (66)
 2 ☐ NO, Go to question 51.

47. Have you been interested in what your children are doing – school, play or hobbies during the last 2 weeks?

- 1 ☐ I was always interested and actively involved. (67)
 2 ☐ I usually was interested and involved.
 3 ☐ About half the time interested and half the time not interested.
 4 ☐ I usually was disinterested.
 5 ☐ I was always disinterested.

48. Have you been able to talk and listen to your children during the last 2 weeks? Include only children over the age of 2.

- 1 ☐ I always was able to communicate with them. (68)
 2 ☐ I usually was able to communicate with them.
 3 ☐ About half the time I could communicate.
 4 ☐ I usually was not able to communicate.
 5 ☐ I was completely unable to communicate.
 8 ☐ Not applicable; no children over the age of 2.

49. How have you been getting along with the children during the last 2 weeks?

- 1 ☐ I had no arguments and got along very well. (69)
 2 ☐ I usually got along well but had minor arguments.
 3 ☐ I had more than one argument.
 4 ☐ I had many arguments.
 5 ☐ I was constantly in arguments.

50. How have you felt toward your children these last 2 weeks?

- 1 ☐ I always felt affection. (70)
 2 ☐ I mostly felt affection.
 3 ☐ About half the time I felt affection.
 4 ☐ Most of the time I did not feel affection.
 5 ☐ I never felt affection toward them.

FAMILY UNIT

Have you ever been married, ever lived with a person of the opposite sex, or ever had children? Please check

- 1 ☐ YES, Please answer questions 51-53. (71)
 2 ☐ NO, Go to question 54.

51. Have you worried about your partner or any of your children without any reason during the last 2 weeks, even if you are not living together now?

- 1 ☐ I never worried. (72)
 2 ☐ Once or twice I worried.
 3 ☐ About half the time I worried.
 4 ☐ Most of the time I worried.
 5 ☐ I always worried.
 8 ☐ Not applicable; partner and children not living.

52. During the last 2 weeks have you been thinking that you have let down your partner or any of your children at any time?

- 1 ☐ I did not feel I let them down at all. (73)
 2 ☐ I usually did not feel that I let them down.
 3 ☐ About half the time I felt I let them down.
 4 ☐ Most of the time I have felt that I let them down.
 5 ☐ I let them down completely.

53. During the last 2 weeks, have you been thinking that your partner or any of your children have let you down at any time?

- 1 ☐ I never felt that they let me down. (74)
 2 ☐ I felt they usually did not let me down.
 3 ☐ About half the time I felt they let me down.
 4 ☐ I usually felt they let me down.
 5 ☐ I feel bitter that they have let me down.

FINANCIAL – EVERYONE PLEASE ANSWER QUESTION 54.

54. Have you had enough money to take care of your own and your family's financial needs during the last 2 weeks?

- 1 ☐ I had enough money for needs. (75)
 2 ☐ I usually had enough money with minor problems.
 3 ☐ About half the time I did not have enough money but did not have to borrow money.
 4 ☐ I usually did not have enough money and had to borrow from others.
 5 ☐ I had great financial difficulty.

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VISIT

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FORM CARD

(76-80)

Appendix G

Stress Management Training Participant Diaries

STRESS MANAGEMENT TRAINING PARTICIPANT DIARY

Name: _____

Week of: October 19

Please record the amount of time you spend practicing stress management techniques outside of your stress management training sessions. This includes the time you spend working on homework assignments. Please note that some of the techniques have not been discussed in your training sessions and may be unfamiliar to you.

Session 1: Academic Stressors

<u>Technique</u>	<u>Hours</u>	<u>Minutes</u>
Goal-setting	_____	_____
Using self-reward	_____	_____
Using the "Unschedule"	_____	_____
Body awareness/ body scanning	_____	_____
Muscle relaxation	_____	_____
Mental relaxation/ imaginary holiday	_____	_____
Relaxation tape for test anxiety	_____	_____
Relaxation script	_____	_____
Other: (please describe)	_____	

STRESS MANAGEMENT TRAINING PARTICIPANT DIARY

Name: _____

Week of: October 26

Please record the amount of time you spend practicing stress management techniques outside of your stress management training sessions. This includes the time you spend working on homework assignments. Please note that some of the techniques have not been discussed in your training sessions and may be unfamiliar to you.

Session 2: Concern Over Career Goals and Future Success

<u>Technique</u>	<u>Hours</u>	<u>Minutes</u>
Share concerns with others/ get support	_____	_____
Lotto 6/49 exercise	_____	_____
Career Planning Inventory	_____	_____
Seek help of University career services	_____	_____
Develop a career plan	_____	_____

Other: (please describe; may include stress management techniques from Week 1)

STRESS MANAGEMENT TRAINING PARTICIPANT DIARY

Name: _____

Week of: November 2

Please record the amount of time you spend practicing stress management techniques outside of your stress management training sessions. This includes the time you spend working on homework assignments. Please note that some of the techniques have not been discussed in your training sessions and may be unfamiliar to you.

Session 3: Relationship Difficulties

<u>Technique</u>	<u>Hours</u>	<u>Minutes</u>
Communication skills for meeting new people	_____	_____
Interpersonal problem-solving	_____	_____
ABC model for overcoming fear of strangers	_____	_____
Expressing feelings	_____	_____
(describe which strategies you used)		

Other: (please describe; may include stress management techniques from Week 1 & 2)

STRESS MANAGEMENT TRAINING PARTICIPANT DIARY

Name: _____

Week of: November 9

Please record the amount of time you spend practicing stress management techniques outside of your stress management training sessions. This includes the time you spend working on homework assignments. Please note that some of the techniques have not been discussed in your training sessions and may be unfamiliar to you.

Session 4: Feeling Overwhelmed with Life Demands

<u>Technique</u>	<u>Hours</u>	<u>Minutes</u>
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Self-care	_____	_____
-----------	-------	-------

(describe which strategies you used)

Letting go of the past	_____	_____
---------------------------	-------	-------

(describe how you did this)

Setting priorities	_____	_____
--------------------	-------	-------

Creating time	_____	_____
---------------	-------	-------

(describe which strategies you used)

Problem-solving	_____	_____
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Other: (please describe; may include techniques from
 Week 1 - Academic Stressors
 Week 2 - Concern Over Career Goals and Future Success
 Week 3 - Relationship Difficulties)

Appendix H

Stress Management Training Manual

(Due to the large volume of the training manual, it is only available by request from the author).

Appendix I

Consent Form for Stress Management Training Participants

Consent Form for Study Participants

In agreeing to participate in this study, I am aware that:

- 1) the study involves 11 hours of my time plus additional time spent practicing the stress management techniques at home for which I will receive 7 hours of experimental credit;
- 2) I may be assigned to a waiting list control group and will be offered stress management training at the completion of the study although I will attend all assessment sessions;
- 3) I may withdraw from the study at any time without academic penalty and will receive experimental credit equal to my participation (i.e., 1 experimental credit for each session attended);
- 4) any information I provide (oral or written) will be treated as strictly confidential.

I confirm that I am a first-year, full-time student at the University of Manitoba and that I was admitted to university directly from high school.

Furthermore,

- (a) I have no previous experience with stress management training;
- (b) I am not currently receiving counselling or treatment for a personal problem or major health difficulty;
- (c) I am not registered in 99:111 Introduction to University.

Date _____

Name (print) _____

Signature _____

Appendix J

Demographic Information

DEMOGRAPHIC INFORMATION

We would appreciate you providing the following information about yourself. This information will remain confidential.

1. Name: _____
2. Age: _____ years
3. Gender: Male _____ Female _____
4. Faculty: _____
5. Number of credit hours registered for this year: _____
6. Marital status: Single - never married _____
Married _____
Common-law _____
Separated _____
Divorced _____
7. Current living arrangement:
Alone in house or apartment _____
Sharing house or apartment with friend(s) _____
University residence _____
With parents or other family member _____
Other (please specify) _____
8. Address while attending university:

9. Permanent address (may be same as above):

10. Grade 12 Mathematics average score: _____ %
11. Grade 12 English average score: _____ %

Appendix K

Post-Treatment Information Sheet

STUDENT INFORMATION

We would appreciate you providing the following information about yourself. This information will remain confidential.

1. Name: _____
2. Did you receive any counselling or psychotherapy since the first assessment session you attended in October, 1992?
Yes ____ No ____
If yes, please describe: _____

3. Did you receive treatment for a major health problem since the first assessment session you attended in October, 1992?
Yes ____ No ____
If yes, please describe: _____

4. Did you voluntarily withdraw from any of your courses during your first term at the University of Manitoba?
Yes ____ No ____
If yes, how many credit hours did you withdraw from? _____
How many credit hours are you currently registered for? _____
5. To the best of your knowledge, will you fail any of your courses this term?
Yes ____ No ____
If yes, how many credit hours will you fail? _____
6. Are you intending to return to the University of Manitoba in January, 1993 to begin your second term of studies?
Yes ____ No ____
If no, what is the primary reason for your decision to withdraw at this time? _____

Appendix L

Stress Management Training Participants

Evaluation Questionnaire

STRESS MANAGEMENT TRAINING PARTICIPANTS
EVALUATION QUESTIONNAIRE

203

Please answer the following questions about your experience in the stress management training program.

Name: _____

Weekday and time you attended training sessions:
(e.g. Monday at 2:30)

1. What did you find helpful about the training program?
(Answering in point form is fine)

2. What did you find unhelpful about the training program?

3. What would you change about the stress management training program to improve it in the future?

4. Considering your experience of stress this year, how appropriate was the training you received?
 1. Very appropriate
 2. Generally appropriate
 3. Generally inappropriate
 4. Very inappropriate

5. Overall, how would you rate the quality of the training you received?
 1. Excellent
 2. Good
 3. Fair
 4. Poor

6. Has the training you received helped you to manage your stress more effectively?
 1. Yes, it helped a great deal.
 2. Yes, it helped somewhat.
 3. No, it didn't help.
 4. No, it seemed to make things worse.

7. To what extent did you expect to benefit from receiving the stress management training?
 1. I expected to benefit a great deal.
 2. I expected to benefit somewhat.
 3. I did not expect to benefit at all.
 4. I expected it might make things worse.

8. How confident were you in the group leader's ability to train you to manage your stress more effectively?
 1. I was very confident in the group leader's ability.
 2. I was somewhat confident in the group leader's ability.
 3. I was not confident in the group leader's ability.
 4. I felt the group leader might make things worse.

Thank you very much for your cooperation and your participation in the stress management training program!

Appendix M

Follow-Up Information Sheet

FOLLOW-UP INFORMATION

We would appreciate you providing the following information about yourself. This information will remain confidential.

1. Name: _____
2. Have you received any counselling or psychotherapy since the last assessment session you attended in November, 1992?
Yes ____ No ____
If yes, please describe: _____

3. Have you received treatment for a major health problem since the last assessment session you attended in November, 1992?
Yes ____ No ____
If yes, please describe: _____

4. Did you voluntarily withdraw from any of your courses during this academic year (first or second term)?
Yes ____ No ____
If yes, how many credit hours did you withdraw from? _____
5. Did you receive any retroactive withdrawals from any of your courses this year?
Yes ____ No ____
If yes, how many credit hours were retroactively withdrawn? _____
6. To the best of your knowledge, will you fail any of your courses this year?
Yes ____ No ____
If yes, how many credit hours will you fail? _____
7. Do you intend to return to the University of Manitoba in September, 1993 to begin your second year of study?
Yes ____ No ____
If no, what is the primary reason for your decision not to return? _____

8. To the best of your knowledge, what is your expected G.P.A. for this year? _____

Appendix N

Debriefing of Non-Participant Control Subjects

DEBRIEFING OF NON-PARTICIPANT CONTROL SUBJECTS

Thank you for participating in the ESTEVAN study.

Your participation was actually part of a broader study which looked at stress management training for first year university students. There were three groups of students who participated in this study:

(1) Treatment Group

This group received four sessions of stress management training. The first session focused on academic stressors; the second session dealt with career indecision; the third session looked at relationship difficulties; and the fourth session helped students to deal with their feelings of being overwhelmed with life demands. Students in this group also completed the assessment booklets at three times during the academic year.

(2) Waiting List Control Group

This group of students knew about the stress management training but were randomly chosen to wait for treatment until the study was over. The reason for having this group was to be able to compare students who were receiving treatment with students who weren't receiving treatment in order to determine whether the stress management training made any difference in their experience of stress during the academic year. These students also completed the assessment booklets at three different times during the academic year and were promised the stress management training at the end of the study.

** (3) Non-Participant Control Group

You were in the third group of students, referred to as the NON-PARTICIPANT CONTROL GROUP. You had no knowledge of the stress management training that was being offered and thought that I was interested in investigating the type and level of stress experienced by first year university students at different times during the academic year. You were similar to the waiting list control subjects in that you both completed the assessment booklets at the same times during the year. However, you were also different from the waiting list control subjects in that you did not know that there was a stress management training program being offered. **Your participation in this group was very important to my study.** Sometimes students feel less stressed because they know they will be receiving stress management training at some point in the future. So it was very important to have a group of students who did not have this expectation. This allowed me to compare the students receiving stress management training with students who expected to receive it later and with students who had no

expectation that they would receive stress management training.

(please turn over)

Now that the study is over, I can offer you two things:

1. There is another stress management training program beginning in approximately three weeks that you can sign up for. This program will be very similar to the one offered during the ESTEVAN study. There is no credit offered for your participation but you may develop some skills that will help you manage your stress more effectively when you return to university this summer or this fall.
2. I also want to invite you to leave your name and address if you would like to receive a summary of the findings of my study once I have finished analyzing all the data.

There are two sign-up sheets at the front table - one for the stress management training program and one for receiving a summary of the study results.

Please sign-up before you leave today.

Please also leave this sheet with me before you go.

If you have any questions, feel free to ask me.

Thank you again for your participation!

Appendix O

Feedback Letter to Subjects

August 20, 1993

Dear Student:

Many thanks for your participation in my study on stress management training with first year university students. I have finished analyzing the results and can now share my findings with you.

There were three primary goals for the study you participated in. The first goal was to demonstrate that participating in a stress management training program which targets the specific and primary stressors facing first year university students has a positive effect on students' stress level, psychological well-being and social adjustment. The second goal was to compare the effectiveness of three different stress management interventions which concentrated on different types of coping behavior namely, problem-focused coping which attempts to reduce the source of your stress, emotion-focused coping which attempts to manage your stress-related symptoms, and a mixed intervention consisting of both problem-solving and emotional control. You either participated in one of these three stress management interventions or served as a control subject for comparison purposes. The final goal of my study was to investigate how a particular personality characteristic namely, a person's belief about the extent to which he or she has control over significant events in his or her life, interacts with different types of stress management training to influence the effectiveness of the program.

With regard to the first goal, my findings indicated that participating in a stress management training program did have positive effects for students. Those students who received the stress management training reported greater improvement in stress level, psychological symptoms and social adjustment following training compared to students who did not receive the stress management program.

Regarding the second goal, I did not find significant differences in the effectiveness of the three stress management interventions. I predicted that the mixed program which taught both problem-solving and strategies for controlling your emotional symptoms would be more effective than either the problem-focused program or the emotion-focused program alone. This hypothesis, however, was not supported by the data.

Finally, for the third goal of my study I predicted that the degree to which a person believes he or she has control over his or her life would determine which of the stress management interventions he or she would find most helpful. For example, if you believe that you have a great deal of control over what happens in your life, I predicted that you would benefit from the problem-

focused training more, which concentrated on changing the events in your life which were causing you stress. On the other hand, if you believe that things often happen to you because of luck or chance, you might find the emotion-focused intervention more helpful in dealing with your anxiety and worry over what may happen in your life. This hypothesis, however, was also not supported by the data.

One of the reasons why I did not get some of the results I predicted may be because, as a group, the students in my study were not that stressed to begin with. Many of you participated not because you were feeling particularly stressed or overwhelmed, but maybe because you were interested in the study or felt you might learn something useful from it. Perhaps if I had started with a group of students who had volunteered to participate because they were experiencing considerable stress in their lives, my results may have been more consistent with my hypotheses.

Another reason why I did not obtain some of the results I predicted may be due to something called statistical power. If you don't have a large enough number of subjects in your study, it may be that your study is not sensitive enough to detect the effects you have hypothesized. While you can try to recruit an adequate number of subjects at the beginning of a study, you can't always control how many students actually finish the study. It may be that my study did not have adequate statistical power to detect differences between the three stress management interventions, or to find a significant interaction between the personality characteristic I looked at and the different types of training.

Nevertheless, I enjoyed conducting the research study and learned a lot from you. Thank you, again, very much for your participation and your cooperation at the different stages of the research project. If you have any questions about this feedback or about the study, please call me at the University of Manitoba Counselling Service (474-8592). If I am not there, please leave a message which they will pass on to me.

Sincerely,

Connie A. Boutet, M.A.
Ph.D. Candidate, Clinical Psychology
University of Manitoba

Marvin J. Brodsky, Ph.D. C.Psych.
Research Supervisor and Faculty Advisor
Department of Psychology
University of Manitoba

Appendix P

Stress Management Training ParticipantsQualitative Feedback

1. What did you find helpful about the training program?

Problem-Focused SMT

- help with organizing and managing my time
- knowledge about stress and how to prepare for it
- indirectly helped with personal problems and conflicts; learned how to have a less stressful life
- learned self-discipline for studying
- strategies for meeting new people
- helped me understand myself better
- introduction to career planning services at U of M
- goal-setting
- the Unschedule
- methods for relieving tension
- creating time and setting priorities
- career planning steps
- strategies for resolving relationship stress

Emotion-Focused SMT

- relaxation exercises
- how to meet new people
- career ideas
- relaxation tape

- learned how to look forward and not dwell on the past
- goal-setting
- priority-setting
- helped to cope with everyday stress and problems
- more understanding of stressful situations
- able to confront problems better
- hearing about other people's problems helped me feel less different
- helped to understand my anxieties
- learned different ways to relieve stress
- pointers on having a healthy lifestyle and taking care of yourself
- handling relationship stress and academic stress
- ABC model for positive thoughts
- causes of stress
- reassuring that everyone experiences stress and it can be managed
- group discussion
- learned that stress affects the mind and the whole body
- having the opportunity to talk about problems
- didn't have to take notes or write a test
- calm, quiet atmosphere
- leader knew what she was talking about

Combined SMT

- goal-setting
- dealing with relationship difficulties
- builds confidence in yourself

- the caring instructors
- the ABC model
- helped me relax, get things done and worry less
- helped me get better organized
- made me realize what services the university has to help me
- simplified my problems by helping me to break tasks down
- relaxation techniques
- career planning
- dealing with academic stress
- time management/creating time
- learned that other people have problems too/are experiencing the same sources of stress that I am
- confirmed that the stress management strategies I already use are recommended
- different ways to deal with stress
- setting priorities
- suggestions for dealing with all kinds of problems
- helped me cope with my first year at university a lot better
- learned how to study better
- helped me solve problems quickly
- learned to praise myself more and punish myself less
- learned that I don't have to be perfect
- opportunity to talk about upsetting things
- learned to shrug off things I can't change
- stress management training participant diaries
- helped put stressful situations into perspective
- felt better about myself

2. What did you find unhelpful about the training program?

Problem-Focused SMT

- exercises were slightly boring
- sessions were a little boring
- the reminder posters
- 2-hour sessions were too long
- diaries were useless
- didn't get to know anyone
- some sessions were not relevant to my concerns
- the Unschedule

Emotion-Focused SMT

- diaries
- did not change the anxiety I felt before a test or exam
- too long on certain areas
- sometimes boring
- sometimes discussing things that cause stress made me feel even more stressed
- the amount of time needed to devote to stress management
- some techniques/sessions were irrelevant to my concerns
- relaxation tape - no time to practice
- hard to find the time to come
- lecture format
- career information was too general
- discussion about personal issues
- taught you how to relax but not how to solve the problem of stress

- could have used the time for more studying

Combined SMT

- the length of time
- some of content was irrelevant to me
- filling out forms
- already knew a alot of the information presented
- too busy to practice the techniques
- too many steps in handling things
- interpersonal problem-solving
- career information was too general
- uncooperative, distracting participants
- some lectures were repetitive and boring
- group was too large; no one want to express personal views
- diaries
- some people were too shy to talk/not enough talking
- program was too short

3. What would you change about the stress management training program to improve it in the future?

Problem-Focused SMT

- more practical exercises
- offer program to people who are actually stressed
- try to get participants to talk more during the sessions; more participation
- make it more interesting
- view films about people's problems and discuss them
- no diaries

- more interaction between people
- more on relationship stress
- increase pace of sessions
- more help with juggling school and personal commitments
- less handouts
- shorter sessions (one hour)
- opportunity to talk about personal problems
- more group discussion
- more sharing by group leader of personal examples
- more small group interaction
- longer program and more involved on one aspect of stress

Emotion-Focused SMT

- more time on academic stress management particularly test preparation
- more time on career decision stress
- more detailed discussion of relationship stress
- smaller groups of students
- more focus on learning about self/more talking about self
- more discussion/interaction between students
- more practice of stress management techniques during sessions
- more concentrated, shorter program
- more opportunity to get to know group members before revealing personal thoughts/feelings
- more time for relaxation techniques
- more on stress avoidance strategies and tips for effective studying
- more sessions and go into more detail

- more handouts/photocopies of lecture material
- offer during more time slots
- less lecture presentation
- more explanation of different techniques
- add music to relaxation tape
- individual assessment of each person's stress level
- more examples
- more depth; more one-on-one interaction
- make it last a couple of weeks longer
- help with time management and preparing for exams
- make it more like group therapy
- more sessions but shorter

Combined SMT

- make it less monotonous/more interesting
- encourage more discussion/more interaction between people
- make the environment less tense, more friendly and easy-going
- offer a more personal experience suited to specific groups
e.g. time slot A for unmarried males
- more small group projects and discussions
- eliminate the breaks to make it go faster
- meet every 2 weeks
- more on new and less common stress management techniques
- more class participation
- give more information on overheads
- shorter sessions
- ask students what topics they want

- make it more personal; have students introduce themselves
- more hands-on exercises
- more on career planning and time management
- have people sit in a circle instead of behind tables
- smaller groups