STRATEGIES FOR MANAGING STRESS:

TREATMENT EFFECTS AND PREVENTIVE POTENTIAL

OF

SOCIAL SUPPORT AND COGNITIVE RESTRUCTURING INTERVENTIONS

by

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Table of Contents

List of Tables

List of Figures

INTRODUCTION

After nearly four decades of extensive study devoted to the concept of stress, its conceptual status still remains global and poorly defined. Inspection of the literature reveals different focal points in the definition of stress, including: 1) stress in terms of environmental stimuli (Wolff, 1953); 2) stress as a relatively nonspecific physiological response (Selye, 1974); and 3) stress as an interactional process between environmental stimuli and the individual's reactions (Lazarus and Launier, 1978). In order to encompass such varied perspectives in the literature, it is necessary to resort to a broad, general definition. Stokols (1979) provides a succinct example of the latter by defining stress as "a state of imbalance within an organism that (a) is elicited by an actual or perceived disparity between environmental demands and the organism's capacity to cope with these demands, and (b) is manifested through a variety of physiological, emotional, and behavioral responses" (p. 27). Other authors, (e.g. Burchfield, 1979) in attempting to arrive at a global encompassing definition of stress manifest essential agreement with Stokols, but frequently couch their definitions in the more traditional term of disruption of homeostasis, both physical and psychological.

The impetus for research on stress derives from its value as an explanatory concept in the onset of physical illness and psychological disturbance. Research has consistently demonstrated that exposure to high levels of stress (variously defined) bears relationship to increased incidence of a multitude of health problems within a given population, including: chronic headaches (Bakal, 1977), hypertension (Weyer and

Hodapp, 1979); schizophrenia (Brown and Birley, 1968); anxiety, depression, cardiovascular disease, and cancer (Hurst, Jenkins, and Rose, 1976). The latter listing is far from inclusive, as it has been estimated that between 50-80% of all physical and psychological disorders bear at least some relationship to the experience of stress (Selye, 1976).

A substantial portion of the literature on stress is devoted to the relationship between stressful life events and subsequent illness. Investigations of this type typically employ the Social Readjustment Rating Scale (SRRS, Holmes and Rahe, 1967), or a variant thereof, as the measure of stressful life events. The SRRS is a 43-item self-report checklist, with each item representing a life event which requires some adaptive or coping behavior on the part of the individual experiencing it (e.g. death of spouse, financial obligations, change in residence). Subjects are instructed to indicate which events they have experienced in the recent past (i.e. six months - two years). Each item in the SRRS is assigned a weight, which was originally derived from the ratings of a standardization sample of judges who rated each event according to the relative degree of readjustment necessary to accomodate the event into one's life (Holmes and Rahe, 1967). A given individual's score on the SRRS is the sum of the checked item's weights, which are referred to as life change units (LCU's). Rahe (1972) has maintained that a score of 100 LCU's or greater is predictive of physical illness within the subsequent year.

Both retrospective and prospective investigations have confirmed the relationship between increasing amounts of life change and a variety

of subsequent physical and psychological disorders (see review by Rabkin and Struening, 1976; Rahe and Arthur, 1978). Across investigations, however, the magnitude of the latter relationship, while statistically significant, is generally weak (usually in the area of .30; Rabkin and Struening, 1976). Thus, while stressful life events are clearly a contributing factor, in and of themselves they account for only a small percentage of the variance in health disorder.

In order to account for the above findings, as well as others which have demonstrated inconsistencies between individuals in response to the same set of circumstances, a number of moderator variables have been suggested in the literature. These include: the individual's social learning history (e.g. past experience with a given stressor); various personality characteristics (e.g. Type A vs. Type B behavior); assorted health-related behaviors (e.g. smoking, diet, exercise habits); and the individual's social support network (Burchfield, 1979; Jenkins, 1970; McMichael, 1978; Rabkin and Struening, 1976). As one of the primary foci of the present investigation concerns the relationship between social support and stress, a review of the latter area follows.

Social Support as a Moderator of Stress

The variable of social support is comparable to the concept of stress in being amorphous and ill-defined. Ostensibly due to this state of affairs, most authors who address the importance of social support do not even make an attempt at definition. The few definitions that are available in the literature are couched in very general, nonspecific terms, due to the lack of any refined theory of social support.

Support is obtained from the individual's social network, which in

its most global sense, is the set of significant others with whom the individual has social interactions (Hirsch, 1979). The essence of what is implied by "social support" in the literature appears to have been aptly captured by Cobb (1976), who defines social support as information, which belongs to one or more of the following three classes, which leads the individual to believe: 1) s/he is cared for and loved; 2) s/he is esteemed and valued; 3) s/he belongs to a network of communication and mutual obligation.

In the stress-health disorder relationship, social support is hypothesized to perform a "buffering" function, with high levels of social support serving to moderate or nullify the potential health problems (both physical and psychological) resulting from high levels of stress (cf. Cassel, 1976; Cobb, 1976; Dean & Lin, 1977). Several authors (Cohen & McKay, Note 1; Dean & Lin, 1977; Heller, 1979) have further suggested that social support may additionally serve a reverse function, and increase the experience of stress for some individuals. However, there is currently no empirical evidence in the literature to support this latter hypothesis.

How social support serves to moderate the effects of stress is not clearly understood at the present stage of research. Measurement is a fundamental problem in this area of investigation, with virtually no two studies employing the same measure(s) of social support. At present, there exists no measure of social support with either known or acceptable psychometric properties (Dean & Lin, 1977). However, discussions in the literature of the hypothesized functions of social support provide the researcher with a base for developing a measurement scheme.

Weiss (1974), for example, suggests that social support provides individuals with: intimacy; social integration through shared concerns; the opportunity for nurturant behavior of others; reassurance of self-worth; a sense of reliable alliance; and guidance. In a similar listing, Dean and Lin (1977) additionally note that social support functions to put emphasis on the person as a unique individual, rather than upon his instrumental accomplishments. LaRocco, House, and French (1980) have postulated that there are many potential types of social support, including: instrumental assistance; emotional empathy and understanding, and provision of information.

The diversity of measures of social support across investigations can be seen in the following review of selected studies. A host of further investigations exists which do not directly address social support, but rather infer its presence or absence on the basis of epidemiological data. In this vein, it has been demonstrated that: among males whose mothers have recently died, the unmarried men are significantly more likely to commit suicide than the married men (Burch, 1972); mothers who reported wanting a baby at the time it was conceived experienced significantly fewer low birth weights relative to mothers who reported not wanting a child (Morris, Udry, & Chase, 1973); and frequency of deaths in the general population is reduced in the six months preceding the individuals' birthdays, and increased in the succeeding six months (Phillips & Feldman, 1973). While investigations of this nature provide suggestive evidence for the stress-buffering effects of social support, the lack of direct measurement leaves the findings open to alternative explanations. As these, and related studies, have been

reviewed in detail elsewhere (cf. Cassel, 1976; Cobb, 1976; Kiritz & Moos, 1974), they will not be further addressed in the present review.

Several investigations have focused upon populations under stress. Robertson and Suinn (1968), in a study of hospitalized stroke victims, defined social support in terms of mutual understanding, or empathy, on the part of the patients and their immediate families. As measured by a Q-sort technique, the authors found levels of empathy to be positively related to the patients' rates of rehabilitation. In a sample of recent widows, Madison and Walker (1967) found that health in the year following widowhood was significantly related to the degree that each widow rated her social environment as being supportive. A group of elderly individuals who had recently experienced widowhood and/or retirement was the sample of Lowenthal and Haven (1968). These authors found that individuals who reported having a personal confidant were less likely to experience depression relative to those who reported not having a confidant. The possession of a confidant, however, did not moderate depression in those individuals who experienced physical illness.

Jenkins (1979) reported on the relationship between the "social coping resources" and life stress of air traffic controllers in the context of a large prospective study on this population. Social coping resources were defined in terms of whether the subjects reported: seeking out social contact in times of stress; if they felt helped by talking out problems with people; or if they preferred to work things out by themselves. Life stress was restricted to five categories: subjective distress; impulse control; alcohol abuse; problems with work

role; and problems with marital role. Jenkins found that those subjects who were below average in social coping resources demonstrated more disorder in terms of the life stress measures.

The effects of involuntary unemployment (as a result of plant closings) on the physical and mental health of a group of 100 males was the focus of Gore's (1978) investigation. During periodic interviews, the author measured stress in terms of weeks unemployed and economic deprivation. The dependent health measures were depression, physical illness symptoms, and serum cholesterol and serum uric acid levels. Social support was measured via a 13-item index which assessed the subject's: perception of his wife, friends, and relatives as supportive or unsupportive; frequency of activities outside the home with the same classes of relationships; and perceived opportunity for engaging in social activities deemed satisfying and which allow for discussion of personal problems. Gore found no relationship between social support and weeks unemployed and economic deprivation following unemployment. On the health measures, however, she found that the men with low levels of social support manifested higher serum cholesterol and serum uric acid levels, more reported physical illness symptoms, and more depressive symptoms, relative to the men with high levels of social support.

Another group of studies has focused attention on normal populations not experiencing any extraordinary type of stress. Myers, Lindenthal, and Pepper (1975) investigated the role of "Social Integration" in the relationship between stressful life events and reported psychiatric symptoms. Social integration was defined in terms of a

number of sociodemographic variables and the individual's expressive and instrumental role performance (e.g. marital and employment status; job satisfaction; organizational membership). The authors found that the subjects with high LCU scores and high social integration scores reported fewer psychiatric symptoms relative to subjects scoring low on both LCU's and social integration. In a similar study on a female population, Brown, Bhrolchain, and Harris (1975) discovered that in the group of women who experienced several stressful life events, the strongest predictor of increased incidence of psychiatric disorder was the lack of an intimate, confiding relationship.

Nuckolls, Cassel, and Kaplan (1972) investigated "psychosocial assets", stressful life events, and subsequent birth complications in a cohort study of 170 pregnant women. Psychosocial assets were measured in terms of the subject's feelings or perceptions of herself, and the amount of support she received or expected to receive from her husband, extended family, and immediate community. Significantly more birth complications occurred in the group of women with high LCU scores and low social support scores.

A small sample (N=34) of adults in London who had consulted a general practitioner during a seven-day period was compared with a like number of matched controls who had not sought medical consultation by Miller, Ingham, and Davidson (1976). These researchers measured a number of physical and psychological symptoms, the number of stressful life events experienced in the previous three months, and social support, defined as whether or not the subject had a close confidant, and the number of acquaintences the subject had at work and in his/her neighbor-

hood. The authors found that those who reported having no confidant and few acquaintences had higher reported levels of physical and psychological symptoms. While significant for both sexes, this relationship was stronger for females. A nonsignificant tendancy was found for subjects who consulted a physician to have experienced more stressful life events in the three months prior. Number of stressful life events was not related to symptom levels. The social support measures did not discriminate between consulters and non-consulters.

An Australian sample of 863 adults was the focus of an investigation by Andrews, Tennant, Hewson, and Vaillant (1978). The authors sought to determine the relationships between psychological impairment (as measured by a 20-item questionnaire) and stressful life events, coping style, and social support. Life events were measured by an expanded version of the SRRS, consisting of 63 items. Coping style was assessed via standardized interview questions, having the interviewers judge the type of psychoanalytic defense mechanism(s) favored by the subjects. Presence vs. absence of social support was assessed by three interview questions, asking the subject if s/he received: support from others in times of crisis; indirect support from participation in social organizations; and indirect support from interactions within the neighborhood. Scores on the life events scale were found to be positively related to degree of psychological impairment. The former scores demonstrated no relationship with any of the social support indices. Of the latter, only one of the three, viz., support in time of crises, was related to psychological impairment. As would be predicted by the buffering hypothesis, absence of crisis support was positively related

to higher degrees of psychological impairment.

Lin, Ensel, Simeone, and Kuo (1979) studied a sample of 170 Chinese Americans living in the Washington, D.C. area. During individual interviews with the subjects, the investigators assessed: stressful life events in the previous six months (via a modified version of the SRRS); psychiatric symptoms experienced in the previous six months (with a self-report scale developed for the study); and social support (in terms of a self-report instrument which tapped the subject's frequency of interactions and involvement with friends and neighbors, as well as the subject's feelings about his/her neighborhood and place of work). Life events scores were found to be positively related to psychiatric symptoms, while the inverse relationship was found between the latter and social support scores. No relationship was found between life events and social support. In a multiple regression analysis, the author found social support to account for a greater percentage of the variance in psychiatric symptoms than life events (correlations of -.36 and +.21, respectively).

In an investigation which varied in format from those presented above, and which may well prove to be a forerunner of subsequent research on social support, Hirsch (1980) sought to ascertain the characteristics of social networks which serve to enhance coping with major life changes. His subject sample consisted of 20 recent widows and 14 mature women who had recently returned to college. During an initial interview, the author obtained measures of life events (SRRS), psychological symptoms, mood, and self-esteem. Two characteristics of each individual's social network were also assessed during the interview:

density and multidimensionality. Density of a social network is defined as the number of relationships that exist between members of the network as a function of the total possible number of such relationships. For example, if all of an individual's social contacts were acquainted with each other, the density of this network would be equal to 1.0. Multidimensionality refers to a characteristic of a single dyadic relationship, with the latter being defined as multidimensional if it involves engaging in at least two different kinds of behaviors or activities.

For a period of 14 days following the initial interview, the author had subjects make daily Satisfaction ratings on five types of interaction they may have engaged in: 1) Cognitive Guidance (i.e. provision of information or advice, or explanation of something troubling); 2) Social Reinforcement; 3) Tangible Assistance; 4) Socializing; and 5) Emotional Support (i.e. an interaction which made one feel better or worse when one had already been feeling upset or under pressure).

Hirsch found that the subjects who gave greater satisfaction ratings to Cognitive Guidance interactions reported significantly fewer psychological symptoms as well as better mood. Social networks with relatively higher densities were found to be significantly associated with lower satisfaction ratings of interactions involving socializing, social reinforcement, emotional support, and cognitive guidance, as well as poorer mood and lower self-esteem. Denser social networks were also found to be significantly related to having fewer multidimensional relationships, and a smaller overall network.

Rather than investigating the relationship between social support and already existing health disorder, Langlie (1977), studied the relationship between social support and preventive health behaviors. The population studied was a random sample of 383 adults living in the state of Illinois. Social support was assessed via several social network variables which included: neighborhood and family socioeconomic status; frequency of interactions with kin and non-kin; and conjugal structure. Preventive health behaviors consisted of two different categories: Indirect Risk, including seat belt use, exercise and nutrition behavior, medical checkups, dental care, immunizations, and various screening exams; and Direct Risk, which tapped driving and pedestrian behavior, personal hygiene, and smoking behavior. All of the above were assessed via self-report questionnaires.

Langlie found that subjects who were significantly more likely to engage in Indirect Risk preventive health behaviors were above the sample mean in socioeconomic status and frequency of non-kin interactions. Subjects who engaged in Direct Risk preventive health behaviors were significantly more likely to be older and female.

Due to the different subject populations, methods of measuring social support, and data analyses employed across the above investigations, comparisons between them are difficult to make. As such, none of the above studies taken individually can be said to represent impressive evidence for the stress-buffering role of social support. Taken together, however, the above studies have consistently found social support to be linked to positive physical health and psychological well-being. Indeed, in a review of the literature, not a single

study was located which found null effects for social support.

However, many methodological flaws persist in research on social support (cf. reviews by Cohen & McKay, Note 1; Heller, 1979), which prevent this area of investigation from advancing. One frequently noted problem is the lack of consistent measurement of social support across studies. Indeed, it is difficult to find any two studies which employ identical measures of social support. On closer inspection, however, many investigations appear to tap common areas with a variety of different measures. A common thread which appears to be tapped by most studies is interactions with others and discussion of personal problems.

Another commonly noted difficulty concerns the lack of evidence which allows for the attribution of a causal role to social support. While several authors (e.g. Chan, 1977; Dean & Lin, 1977) have suggested that social support systems be mobilized at the community level for therapeutic purposes, very few studies have attempted to manipulate social support on even a small scale.

Social Support as a Therapeutic Intervention

A review of the literature revealed several reports which employed social support as an intervention. The scope of the empirical evaluations in these investigations, however, varies considerably. Among the most comprehensive investigations is the study by Egbert, Battit, Welch, and Bartlett (1964). Working with two comparable groups of surgical patients, the authors trained the anesthetists assigned to one group in providing "special supportive care". The latter was described as consisting of information giving and encouragement. The other group

of patients was provided with standard hospital care by the assigned anesthetists. Following surgery, the group of patients provided with special supportive care made fewer requests for pain medication relative to the standard care patients, and were discharged from the hospital an average of 2.7 days earlier.

Another study of this genre, by Skipper and Leonard (1968), focused on children who were hospitalized for tonsellectomies. The mothers of children in the experimental group engaged in social interactions with nursing personnel, designed to provide the mothers with information and emotional support for their fears, doubts, etc., regarding their child's surgery. The authors hypothesized that if a mother's stress was reduced by such interactions, her child's stress regarding the hospitalization would in turn be reduced. Results showed that, relative to a control group of children and mothers, the experimental children had lower levels of temperature, pulse rate, and blood pressure; fewer incidents of post-operative emesis and disturbed sleep; and a shorter recovery period.

While the above studies are noteable for their demonstration of the effects of social support, both failed to clearly specify the content of the social support intervention. Other reports can be found in the literature which provide a more precise delineation of a social support intervention (e.g. Erickson, 1975; Speck and Attneave, 1973). The latter, however, lack any empirical evidence as to their efficacy.

One treatment modality in which social support appears to be the primary therapeutic component is self-help groups (Caplan, 1974). A self-help group is defined (Lieberman & Borman, 1979; Levy, 1976, 1979)

as a group of individuals who share a common core of life experiences and problems, whose primary purpose is to provide help and support for its members. The origin and sanction for existence of self-help groups generally lies with the members themselves, who also control the groups' structure and mode of operation. Professional involvement is shunned by most self-help groups, except for occasional consultation in regard to theoretical and philosophical frameworks (Levy, 1976). Over the past thirty years, self-help groups have been developed in response to a number of problem areas, including: alcoholism, obesity, opiate addiction, child abuse, and social isolation (Caplan, 1974; Levy, 1974; Lieberman & Borman, 1979).

The evidence for the effectiveness of self-help groups is based largely on testimonials from each group's respective members (Levy, 1976). The latter author lists the problems involved in evaluating the efficacy of self-help groups, including: lack of record-keeping by the groups; self-selected memberships; frequently ephemeral existence of groups; and variable functioning across different chapters of the same self-help organization. Due to boundaries such as the above, it is virtually impossible to assess the effectiveness of a given self-help organization in achieving its stated goal.

Investigations have been made, however, of the processes and activities of self-help groups (Levy, 1976; 1979). The data were obtained by attending several meetings of different self-help organizations. The author attempted to gain a representative sample by visiting a wide variety of self-help organizations, as well as different chapters within the same organization. Following each meeting, Levy and a colleague

who accompanied him prepared a narrative description of the meeting and a speculative report of the processes operative during the meeting. (This retrospective strategy was necessitated by the objection of most groups to recordings of any kind during the meetings.) Levy divided the processes thus derived into two categories: cognitively-oriented and behaviorally-oriented.

The cognitively-oriented processes noted by Levy bear striking similarity to the hypothesized functions of social support mentioned previously in this paper. The former include: provision of normative and instrumental information and advice; expansion of alternative perceptions of problems and solutions to them; support for changes in attitudes toward oneself, one's behavior, and society; social comparison and consensual validation; provision of an alternative or substitute culture and social structure; and removal of mystification and increase of expectancy for help by provision of a rationale for difficulties. Levy lists the behaviorally-oriented processes as: direct and vicarious social reinforcement for desirable behaviors and elimination or control of problem behaviors; training, indoctrination, and support in the use of self-control behaviors; modeling of methods of coping with stresses and changing behavior; and providing members with an agenda of activities they can engage in.

The nature of the activities of self-help groups was ascertained by Levy (1979) by means of questionnaires filled out by members of the groups studied. He notes the nine most frequently occurring activities at a self-help group meeting as being: empathy; mutual affirmation; explanation; sharing; morale building; self-disclosure; positive rein-

forcement; personal goal setting; and catharsis. The least frequent occurring activities are: confrontation; punishment; requesting feedback; behavioral rehearsal; offering feedback; extinction; modeling; reference to group's norms; and behavioral proscription. In view of the above, Levy noted that self-help groups appear to operate within the same norms that govern behavior in natural social situations, as opposed to the norms operative in a professional therapeutic relationship. While no other empirical investigations of self-help groups were located in the literature, other speculative analyses (Caplan, 1974; Gartner & Riessman, 1977) are in accord with Levy's formulations.

While the above studies cannot answer the question of whether self-help groups are effective in achieving their stated goals, the evidence does indicate that a self-help group shares many of the characteristics of a naturally-occurring social network. As such, the self-help group format would appear to be a viable means of manipulating social support in experimental investigations.

Coping Skills Training

The past decade of psychological research has witnessed the birth and substantial development of the coping skills therapies, a group of techniques that have demonstrated great promise in training individuals to manage stress in an adaptive fashion (Barrios & Shigetomi, 1979). The central goal of coping skills training is to provide the individual with an active skill, or set of skills, for dealing with a variety of stressful situations (Goldfried & Merbaum, 1973; Meichenbaum, 1977). A heterogeneous array of procedures is subsumed under the rubric of coping skills, including such components as: relaxation training; use of imag-

ery; self-monitoring; problem-solving; modeling; cognitive restructuring; and behavioral rehearsal. The major extant coping skill "packages" include the following:

Anxiety management training (AMT) developed by Suinn and Richardson (1971), consists of three basic phases: 1) educating the client about the purpose and goals of AMT and training in muscle relaxation; 2) a period of imagery training in which the client visualizes scenes associated with anxiety arousal, relaxation, and competency; and 3) a period of anxiety induction and subsequent control.

Goldfried's (1971) self-control desensitization is a modification of Wolpe's (1969) technique of systematic desensitization. This generalized form of desensitization consists of four primary components: 1) a therapeutic rationale in terms of generalizable skills training; 2) training in muscle relaxation; 3) the use of multiple-theme anxiety hierarchies; and 4) practice in relaxing away anxiety induced by imagined scenes.

A third procedure which relies heavily on relaxation techniques is Russell and Sipich's (1973) cue-controlled relaxation. Three basic phases are involved: 1) training in muscle relaxation; 2) repeated association of the relaxed state with a self-produced cue word such as "calm" or "control"; and 3) practice in producing the relaxed state when confronted with stressful situations.

The most elaborate of the coping skill packages is Meichenbaum's (1975) stress-inoculation training. This consists of three phases: 1) Educational, in which the client is provided with a rationale for his difficulties, generally focusing on the role of cognitions (self-state-

ments) in eliciting physiological and emotional arousal; 2) Rehearsal, in which the client is taught muscle relaxation and self-statement modification (the use of maladaptive cognitions as cues for engaging in coping is reinforced); and 3) Application, in which the client practices the coping skills in response to a graded series of laboratory stressors (e.g. electric shock, cold pressure test, stressful films), which theoretically "inoculates" the individual for enhanced coping with subsequent stress.

Coping skills training has been successfully applied to a number of different populations and specific problem areas. These include: speech anxious individuals (Meichenbaum, Gilmore, & Fedoravicius, 1971); test anxious college students (Sarason, 1973); anger control in individuals with chronic anger problems (Novaco, 1975); self-referred individuals under stress (Frederiksen, Solomon, McClaren, & Bosmanjian, 1979); social competence (Christensen, 1974; Glass, Note 2); laboratory and clinical pain (Turk, Note 3); and the reduction of postsurgical distress in surgery patients (Langer, Janis, & Wolper, 1975).

While all of the above studies have demonstrated that coping skills training is effective in the reduction of stress and anxiety, the data on the relative efficacy of the various packages are equivocal, and the relative contribution to outcome of the separate components in each package is unknown (Barrios & Shigetomi, 1979). Additionally, while stress and anxiety outcome measures have been assessed through behavioral self-report, and physiological modes, whether the outcomes are a result of the techniques taught in treatment is unknown. That is, whether

the subjects learn the specific techniques taught in treatment has not been systematically assessed.

A further unanswered question regarding coping skills training is the generalizability of the skills taught in treatment. Most of the investigations of coping skills have focused on specific stressors and/or anxieties, and have not assessed treatment effects beyond the areas targeted. The few that have assessed generalizability of the skills have obtained equivocal results (cf. Barrios & Shigetomi, 1979).

The question of generalizability as well as maintenance of treatment effects is important in view of the enthusiastic suggestions in the literature (Goldfried & Merbaum, 1973; Meichenbaum, 1975; Stuart, 1977) that coping skills be utilized for both remedial and preventive purposes. Very few investigations have assessed the preventive potential of coping skills training (Barrios & Shigetomi, 1980). A notable exception to this is the study by Langer et al. (1975). These authors trained a group of patients about to undergo surgery in the use of a variety of cognitive coping skills (i.e. reappraisal of anxiety-provoking events; calming self-talk; and selective attention). Following surgery, these patients made fewer requests for sedatives and were discharged from the hospital sooner, relative to a group of control patients. Further investigations of this nature are necessary in order to ascertain whether the recipients of coping skills training are utilizing the skills at the appropriate times.

The present investigation attempted to address many of the above questions regarding coping skills, with Social Support and Cognitive Restructuring as both separate and combined treatment strategies. Cog-

nitive Restructuring was chosen from among the other aforementioned cognitively-based coping skills due to its comprehensive scope (i.e. overlaps with many of the other techniques and is applicable to a wide variety of stressors).

Stress in the University Environment

College undergraduates experiencing a high degree of stress served as the target population for the present investigation. The literature contains a great deal of descriptive references to the number and type of stressors that college students frequently encounter. These include: adjustment to a new environment; separation from family and friends; increased work load; examinations; public speaking; and interpersonal difficulties. However, investigations on the latter stressors have frequently focused on populations other than college students, which limits the generalizability of the conclusions. In fact, only one of the aforementioned stressors, viz. examinations, has an extensive body of knowledge focused primarily on college students. The stress of examinations, or test anxiety, has been investigated extensively for over two decades. As the conclusions which can be drawn on this specific type of stress, as related to college students, appear to be fairly robust, a brief review of the nature and treatment of test anxiety follows.

An estimated 25% of college students are test anxious (Suinn, 1969). Test anxious individuals, or those who are classified as high in test anxiety on the basis of self-report questionnaires such as the Test Anxiety Scale (TAS; Sarason, 1972), typically manifest decrements in performance in evaluative situations (Spielberger, Anton, & Bedell, 1976). Information regarding the components of high test anxiety has been

gleaned from factor analytic studies of the Test Anxiety Questionnaire (the precursor of the TAS; Liebert & Morris, 1967). The latter authors derived two factors: worry and emotionality. The worry factor is described as cognitive concern about the consequences of failure, and lack of confidence. The emotionality factor refers to autonomic reactions which are evoked by evaluative situations.

Subsequent research (Doctor & Altman, 1969; Morris & Liebert, 1969; 1970) revealed that the worry component exhibited greater temporal stability than the emotionality component, which showed fluctuations as a function of impending examinations. These same investigations demonstrated that worry, but not emotionality, adversely affected performance on several intellectual and cognitive tasks.

Contemporary theories of test anxiety have thus focused primarily on cognitive components. Wine (1971), for example, conceptualizes test anxiety in terms of an attentional deficit, stating that "the highly test anxious person responds to evaluative testing conditions with ruminative, self-evaluative worry, and, thus, cannot direct adequate attention to task-relevant variables" (p. 99). A similar formulation is offered by Sarason (1972): "Whereas the less test-anxious person plunges into a task when he thinks he is being evaluated, the highly test-anxious individual plunges inward. He either (1) neglects or misinterprets informational cues that may be readily available to him or (2) experiences attentional blocks." (p. 393). The conclusions drawn by Spielberger et al., (1976) are also in accord with those of the above authors. Virtually no data exist, however, on the performance and characteristics

of high test anxious individuals in situations apart from test-taking (Spielberger et al., 1976).

Historically, systematic desensitization has been the most commonly employed treatment for test anxiety (cf. Spielberger et al., 1976; Allen, 1980). Other treatments which have been employed include: training in study skills; anxiety management training; cue controlled relaxation; cognitive restructuring; and various combinations of two or more of the aforementioned treatments (cf. review by Allen, 1980). In a comprehensive review of the literature, the latter author concluded that cognitive restructuring treatments appeared to be the most effective in alleviating test anxiety when self-report was the outcome measure. However, all treatments investigated, including attention placebos, are capable of producing reductions in self-reported levels of test anxiety (Allen, 1980; Spielberger et al., 1976). When performance indices (e.g. grade point average; course grades) are employed as outcome measures, the combination treatments emerge as superior (Allen, 1980). The author notes that the most commonly investigated combination treatment is systematic desensitization in conjunction with study skills.

Purpose of the Present Study

The present research attempted to provide college undergraduates experiencing high levels of stress with a strategy for coping with the stress of university life. Two treatment strategies were assessed as to their relative and combined effects: the provision of social support; and cognitive restructuring. The social support intervention was developed on the basis of the literature on the parameters of social support (as well as a piloted delivery attempt), and was delivered in the format

of a self-help group. The cognitive restructuring intervention consisted of a straightforward application of extant techniques in this area (e.g. Meichenbaum, 1977).

In contrast to previous investigations of this nature, which have assessed only the general efficacy of the treatment(s) administered, the present investigation also assessed the preventive potential of the treatments. This was accomplished via a post-treatment probe held just prior to the final examination period. Additionally, the extent to which subjects were learning and utilizing the strategies presented in treatment was assessed.

No specific hypotheses were forwarded regarding the relative efficacy of the treatments administered, as the current body of literature offers scant basis for such prediction. The literature does suggest, however, that each of the interventions would likely have beneficial effects. Evidence for the efficacy of the social support intervention is indirect, due to the previously noted paucity of research in this area. Studies of college students' social networks, however, reveal that intervention in this area could prove beneficial. Atta, Lipson, and Glad (1977), for example, demonstrated that the majority of college students attribute their "psychological discomfort" to social alienation and lack of supportive peer and heterosexual relationships. Another study by Liem and Liem (Note 4), cited by Lieberman (1979), found that the proportion of network members providing emotional support and the frequency of contact with network members were inversely related to "psychological distress" among college students. Evidence for the efficacy of the Cognitive Restructuring intervention is apparent in

the previously noted research on Coping Skills Training.

Pilot Study

A pilot of the present investigation was conducted during the Fall academic quarter of 1980 in order to determine the feasibility of the Social Support intervention and the appropriateness of the proposed measurement scheme. The Social Support intervention in the pilot study consisted of training the group participants in various communication skills (e.g. listening skills; empathy; providing feedback), and practicing the same in several team-building exercises (e.g. group problem-solving). This intervention was compared against a Cognitive Restructuring group, a combined treatment group, and a No Treatment Control. Multiple dependent measures were taken at pretest, posttest, and at a four week probe period. Graphic depictions of the dependent measures revealed no appreciable between-group differences. Hence, the results were not subjected to further statistical analysis. On the basis of the pilot results, several modifications were made in the experimental design, treatment formats, and dependent measures, employed in the final study. An outline of these changes can be found in Appendix A.

METHOD

Subjects

Subjects were recruited from the Introductory Psychology subject pool. Announcements were made in each of the Introductory Psychology discussion sections that experimental Stress-Management workshops were being held for students having difficulty coping with the stress of university life. A similar announcement was also posted on a sign-up sheet in the Psychology Department.

All respondents were screened with the following three measures: 1) the Social Readjustment Rating Scale (SRRS; Holmes & Rahe, 1967); 2) the Trait portion of the State Trait Anxiety Inventory (STAI - trait; Spielberger, Gorsuch, & Lushene, 1970); and 3) a short form of the F scale (Adams & Horn, 1965) from the MMPI. The latter instrument measures a subject's tendency to "fake bad" (i.e. to endorse more pathological symptoms than s/he may actually possess). This measure was included to help eliminate subjects whose motivation to participate was based on obtaining experimental credit points (toward their grades in Introductory Psychology), rather than relief of stress. The short form (33 items) was employed due to the time constraints which would have been imposed by requiring all subjects to complete the entire 66-item F scale.

The total subjects screened in the above manner numbered 96, evenly divided between males and females. Three criteria had to be met for inclusion in the study: 1) a score greater than 100 on the SRRS; 2) a score on the STAI-trait which exceeded the fiftieth percentile on Spielberger et al.'s (1970) norms for college undergraduates (i.e.

36 for males, 37 for females); and 3) a score less than seven on the F-scale.

A total of 63 of the screened respondents met the above criteria (33 females; 30 males). These individuals were then contacted by telephone and asked to participate in the study. The screening forms were separated according to sex of respondent, and each of the sexes was assigned randomly to one of four groups, making an attempt to balance each group for sex. Precautions were taken (by noting phone numbers) to not assign two roommates to alternate treatments, due to the potential confounding which would result. Four groups with N=14 each resulted, with 8 females and 6 males per group. All subjects received 5 experimental credit points toward their grades in Introductory Psychology for completing the dependent measures. No experimental credits were assigned for attending the treatment sessions administered in the three treatment groups.

Dependent Measures

One week prior to the first treatment session (Pretest), the following demographic indices were recorded on each subject: name and address; age; sex; academic level and major; hometown population; whether their hometown is an urban or rural area; and marital status. All subjects also responded to the following questions regarding their social networks: whether they currently have a steady dating partner; the number of close friends they have (close friends defined as individuals they can confide in whom they speak to at least weekly); whether they have more or fewer close friends now relative to prior to coming to VPI; and the degree of gratification/sense of well-being they obtain

from their present social relationships rated on a 1 (none at all) to 10 (a great deal) scale (see Appendix B).

The following measures were completed by all subjects on three occasions: 1) at the above-noted Pretest; 2) immediately following the final treatment session (Posttest); and 3) a few days prior to the Winter final examination period (Probe - approximately two weeks subsequent to Posttest).

State Trait Anxiety Inventory (STAI - trait; Spielberger et al., 1970) A standardized psychometric inventory of anxiety. On the basis of extant research on anxiety with this and other measures, Spielberger (1972) has noted that individuals high in trait anxiety tend to be self-deprecatory and fear failure. In Spielberger's view, these individuals react most strongly to situations which involve psychological threats rather than physical danger. The opposite relationship is postulated to hold for individuals low in trait anxiety.

Test Anxiety Scale (TAS; Sarason, 1972) A 37-item, true-false scale with demonstrated psychometric properties. A factor analysis performed on this scale by Richardson, O'Neil, Whitmore, and Judd (1977) yielded factors reflecting: 1) cognitive concerns about test performance and the debilitating consequences of such worry; and 2) unpleasant emotional experiences (i.e. physiological arousal) in testing situations.

Health Locus of Control (HLC) Scale (Wallston, Wallston, Kaplan, & Maides, 1976) An 11-item inventory, with adequate psychometric characteristics, which measures an individual's perceived control over his/her own health. Higher scores on this scale reflect a relative lack of such perceived control.

Rosenberg Self-Esteem (RSE) Scale (Rosenberg, 1965) A ten-item scale, with adequate psychometric properties, which measures three theoretical components of self-esteem: 1) depressive affect; 2) anxiety; and 3) peer-group reputation. High scores on this measure correspond to relatively low levels of self-esteem.

Self-Control Schedule (SCS; Rosenbaum, 1980) A 36-item inventory designed to assess individual differences in the tendency to employ cognitive self-control methods. The behaviors measured by the scale are categorized by its author as: 1) use of cognitions and "self statements" to control emotional and physiological responses; 2) application of problem solving strategies; 3) ability to delay immediate gratification; and 4) perceived self-efficacy (Rosenbaum, 1980). The scale possesses adequate test-retest reliability, and preliminary validity studies on it appear promising. However, most of the data on this scale to date has been obtained with non-English speaking Israeli populations. SCS score distributions in the latter, however, are similar to those found by Silber (Note 5), among the target population of the present investigation (i.e. undergraduates enrolled in Introductory Psychology).

Self Efficacy Scale A five-item scale, developed by the present author, designed to assess the subject's expectations of self-efficacy in coping with stressful situations (see Appendix C). Perceived self-efficacy, a theoretical construct originated by Bandura (1977), is defined as an individual's conviction that s/he can engage in and successfully execute given deeds. While the psychometric properties of the present instrument are not known, other investigations have employed

similar scales (cf. Bandura, Adams, Hardy, & Howells, 1980), and have found them acceptable in regard to psychometric criteria.

Stress Information Questionnaire A ten-item multiple-choice quiz (modified from an earlier version employed by Frederiksen et al., 1976) designed to assess knowledge of the information presented in the treatment groups. The version of this questionnaire that was employed in the pilot study was modified in order to enhance its discriminative capability. A copy of the questionnaire employed in the present study can be found in Appendix D. (This measure was administered at Pretest and Posttest only.)

Stress Scenarios Subjects were also provided with verbal narratives of five stressful situations (related to college life and taking exams), and were instructed to write down how they would most likely respond to each situation, including what they would do, how they would go about doing it, and what their thoughts and feelings while doing it would be. Emphasis was placed in the instructions on the subjects relating how they would actually respond, based on their own self-assessment; not to relate the best way they could think of to respond.

The five stressful situations referred to above were derived from the subjects in the pilot study. At the Probe period, these subjects were requested to write down a description of a situation related to college life and/or taking exams which they used to or still do find stressful. Subjects were requested to provide detail in terms of what and who the situation involved, and what their thoughts and feelings about the situation were. A total of 22 non-redundant situations were thus obtained. The situations were then rewritten by the present author

to provide for correct and consistent grammar, and were presented (on typed sheets) to four graduate students and six undergraduate students enrolled in the Psychology Department. These individuals were instructed to rate each situation in terms of how stressful they perceived it to be, on a 1 (not at all) to 10 (extremely) scale. The situations which were consistently given ratings between 8-10 by the majority of both of the above groups of students were selected for use in the present study (see Appendix E).

Due to the volume of data generated from all subjects' written responses to all five scenarios, only the data from scenarios 1 and 2 in Appendix E were utilized. These two were chosen on the basis of their ability to best discriminate between the subjects (i.e. resulting scores were widely dispersed). The discriminative capability of the scenarios was determined by scoring the responses to all five scenarios from a random sample of three subjects per group.

A variant of Goldfried and D'Zurilla's (1969) behavioral-analytic model for assessing competence was employed in scoring subjects' responses to the above situations. Two advanced Clinical Psychology graduate students served as judges. Each judge was provided with typed transcripts of all subjects' responses to each scenario. The responses were presented in random order on the transcripts, providing no information as to sex of respondent, group membership, or time of measurement. The judges' task was to independently rate each response in terms of Effectiveness, employing a five-point scale, with 5 = superior, 3 = average, and 1 = inferior, and to note the types of coping strategies employed according to 11 predetermined categories. (More

detailed instructions to the judges can be found in Appendix F). Across both scenarios, interrater reliability for the Effectiveness scores was .79 (Pearson Correlation Coefficient). Interrater reliability for type of coping strategy was calculated with the equation: number of agreements/number of agreements plus disagreements. Calculated as such, interrater reliability for types of coping strategies averaged .87 across both scenarios.

Daily Measures

Subjects also completed a number of daily measures during three one-week periods: 1) the week prior to the first treatment session (Pretest); 2) the week subsequent to the last treatment session (Posttest); and 3) the week prior to final exams (Probe). Subjects were instructed to complete one form each night before they went to bed on the above days. A space on the form was provided for subjects to indicate if they had forgotten to fill it out that day. Subjects were informed that their experimental credits would not be affected by forgetting to fill out the form. The daily form (see Appendix G) contained the following measures:

Physical Symptom Checklist - A checklist index of twelve common physical symptoms and a severity rating for each (1=very mild - 10=very severe). Subjects were instructed to check each symptom they had experienced that day and to indicate the severity of each checked symptom.

Adjective Checklist for Anxiety - the 21 adjectives which constitute the anxiety scale of the Multiple Affect Adjective Check List (MAACL; Zuckerman, 1960). Subjects were instructed to check off each adjective

that described how they felt in general that day.

Social Contacts Record - The subjects were instructed to record the number of interactions they had that day in which they discussed a problem they were experiencing, and to rate the degree of positive and/or negative feelings that the combined interactions provided them with on a 1 (slight degree) to 10 (great degree) scale.

Cognitions Record - The subjects were instructed to indicate both the frequency and duration of discomforting thoughts and worries they experienced that day, as well as the number of times they were successful in substituting discomforting thoughts and worries. Ranges for the latter frequency and duration measures were provided for the subjects to check off. The appropriateness of the ranges employed was determined on the basis of the results on a similar measure employed in the pilot study.

Daily Examinations - A space was also provided on the daily form for subjects to indicate the number of exams they had that day.

Manipulation Checks

At Posttest, subjects in all three treatment groups made ratings on the number of questions designed to assess: 1) Group Cohesion; and 2) Perceptions of the utility of the administered treatment and of the therapist's performance (see Appendix H). As no treatment was administered to the Control group, these measures were not collected on the latter.

Procedure

All groups met separately during the last week of January to complete the Pretest measures. The three treatment groups met for five sessions

each (four (4) 1½ hr. sessions and one (1) 45 minute session) during the month of February. Finally, all groups met separately again during the second week of March to complete the Probe measures.

The present author served as the sole therapist in all treatment groups. Apart from the specific treatments, a stress education component was common to all treatment groups. The education component consisted of: definition of stress; effects of stress on performance and its role in illness; why stress perseverates; how to identify situational sources of stress; and how to identify physiological, behavioral, and cognitive signs of stress. More detailed descriptions of the above, as well as the treatments administered, can be found in the session outlines in Appendix I.

Following is a brief description of each group employed in the present investigation.

Social Support Group - This group was conducted in the format of a self-help group for individuals experiencing a great deal of stress related to attending college. Subjects were initially provided with a rationale for the efficacy of self-help groups in dealing with problems of living (see Appendix I). The therapist's primary role in this group was as a facilitator of group interaction. The educational component referred to earlier served as the primary core around which the group interactions were developed. Participants were encouraged to relate their own idiosyncratic experiences, reactions, and perceptions related to stress. This was achieved in the context of interaction exercises which required input from each participant. These exercises were alternately conducted with the entire group and with the group split into

two halves (each small group performing the same exercise). The therapist offered no suggestions or instructions regarding coping strategies throughout all sessions in this group. Input from the therapist was limited to addressing and changing topics as necessary, keeping the group's interactions focused on the exercises, and drawing relatively silent participants into the interactions.

Cognitive Restructuring Group - Two commonly employed cognitive restructuring techniques were administered to this group: 1) self-statement modification (Meichenbaum & Cameron, 1974), and 2) rationale restructuring (Goldfried, Decenteceo, & Weinberg, 1974). Both techniques are very similar procedurally, but differ in terms of the contexts to which they are applied. Rationale restructuring focuses on eradicating irrational belief systems, which theoretically affect behavior in a wide variety of situations. Alternatively, self-statement modification is most frequently utilized for coping with situation-specific stressors, although the technique itself is applicable to a wide variety of situations.

The basic procedure for both of the above techniques involves the following steps: 1) presenting the subjects with a rationale for the mediating role of cognitions in overt behavior and emotional arousal; 2) instructions on recognition of maladaptive cognitions in stressful situations; 3) instructions on developing more adaptive cognitions which are incompatible with the maladaptive cognitions; and 4) instructions and rehearsal in replacing maladaptive cognitions with incompatible adaptive cognitions.

Subjects were given instructions on self-monitoring of cognitions

and were directed to perform the self-monitoring between sessions. During treatment sessions, the therapist devoted an equivalent amount of time to each subject in applying the above procedures to problems chosen by the subject. The didactic portion of the procedures was delivered to the group as a whole.

Social Support/Cognitive Restructuring Group - All treatment groups were balanced for time in treatment. Hence, this group received only the essential components of the above two treatments. The primary modification was in the emphasis of a cognitive-restructuring focus in several of the group interaction exercises (See Appendix I for details).

No Treatment Control - Upon the initial phone contact, subjects in this group were informed that due to a random selection process, they were not chosen for inclusion in the experimental workshop. They were then offered the alternative of earning experimental credit for simply filling out a number of forms at several points during the academic quarter.

Subjects in this group met only at the previously noted Pretest, Posttest, and Probe periods in order to complete the dependent measures. These subjects also completed the daily measures during the aforementioned intervals.

Results

Four of the original 56 subjects did not complete the experiment. Three of the non-completers were males in the Social Support group: the first never showed up following the initial telephone contact; the second never returned after completing the Pretest measures; and the third missed two of the five treatment sessions. The fourth non-completer was a female in the Control group, who never returned following completion of the Pretest measures. These four subjects were thus dropped from the following analyses. The remaining 52 subjects attended all scheduled treatment sessions and completed all dependent measures at the designated intervals. The final sample size in each group was: Social Support N=11; Cognitive Restructuring N=14; Social Support/Cognitive Restructuring N=14; Control N=13.

Characteristics of the Sample

All groups were initially compared for differences on the previously noted demographic variables (i.e. age; sex; academic level; rural or urban hometown; hometown population; marital status), social network variables (i.e. present number of close friends; whether they have More or Fewer close friends presently relative to before coming to Virginia Tech; whether they presently have a Steady dating partner; degree of Gratification/Sense of well-being they obtain from present social relationships), and on scores on the F scale and SRRS (Life Change Units - LCU's).

No statistical comparisons were made for between-group differences on Academic Level, Age, and Marital Status. The Academic Level of all but three of the subjects was Freshman, and each of the latter

three was in a different group. These same three subjects were the only ones not 18 years of age, the oldest of the three being 21. The Marital Status of all subjects in the experiment was Single.

Chi-square tests were employed to assess group differences on the above noted variables which were categorical. Although females outnumbered males in all four groups, the difference was not significant ($\chi^2(3) = 1.04$, $p > .79$). A significant difference was found in the proportion of subjects reporting an Urban vs. Rural background ($\chi^2(3) = 13.15$, $p < .005$), with the majority of subjects in the Social Support (SS) and Social Support/Cognitive Restructuring (SS/CR) groups hailing from urban environments. This same difference was found in subjects' Hometown Populations ($\chi^2(12) = 56.09$, $p < .0001$), with subjects in the latter two groups reporting relatively higher hometown populations.

No significant differences were found for the proportion of subjects having vs. not having a Steady dating partner ($\chi^2(3) = .17$, $p > .98$), or for subjects having fewer vs. more close friends presently relative to before coming to college ($\chi^2(3) = 3.03$, $p > .38$).

One-way analyses of variance were performed to assess between-group differences on the continuous variables. No significant between-group differences were found for the reported number of Close Friends ($F(3,48) = 1.11$, $p > .35$), or for the degree of Gratification/Sense of well-being obtained from present social relationships ($F(3,48) = .62$, $p > .6$). Nor were any significant differences found between groups on F scale scores ($F(3,48) = .34$, $p > .79$) and LCU's ($F(3,48) = 0.5$, $p > .68$).

Data Analysis and Modification

An 11-way multivariate analysis of covariance (MANOCOVA) was performed on the data, testing for the independent effects of Treatment, Time, the Treatment x Time interaction, as well as the independent effects of the aforementioned demographic variables, social network variables, and scores on the F scale and SRRS. The demographic variables, social network variables, and scores on the F scale and SRRS also served as covariates in order to control for any relationships between the former and the dependent measures.

Several modifications were made among the dependent measures in order to incorporate the majority of them into the above analysis. In order to make the Daily Measures compatible with the measures collected at single time periods, individual subject means were calculated for each Daily Measure at each time period (i.e. Pretest, Posttest, Probe). Thus, each 7-day measurement period yielded a single score on each Daily Measure for each subject. While this strategy may be said to minimize the explanatory value of this segment of the data, the use of statistical techniques such as Trend Analysis was obviated by the fact that the majority of subjects did not complete the Daily Measures on at least one day of each of the three 7-day measurement periods.

Two additional dependent measures were created by combining some of the Daily Measures, as follows:

Severity Index - the ratio of Physical Symptom Frequency/mean Symptom Severity rating.

Cognitive Success Rate - the ratio of Frequency of disturbing

cognitions/Frequency of successful substitutions of disturbing cognitions

Two further dependent measures were derived from the judges' ratings of subjects' responses to the Stress Scenarios. On the basis of the types of coping strategies noted by the judges (as classified in Appendix F), the two measures created were:

Number of Adaptive Coping Strategies employed - the number of "Positive Coping Strategies" noted in each response.

Number of Maladaptive Coping Strategies employed - the number of "Negative Coping Strategies" noted in each response.

Lastly, each subject's ratings on the five Self-Efficacy questions were subsumed into one measure by computing a mean rating across all five. All remaining dependent measures retained the form specified in the Methods section.

Thus, a total of 19 dependent measures were included in the main analysis. Three remaining measures were analyzed separately. Subjects' scores on the Stress Information Questionnaire were excluded from the main analysis as this measure was only administered at Pretest and Posttest. Also, subjects' daily ratings of the degree of Positive and/or Negative feelings that their daily interactions provided them were deleted from the main analysis. This was due to infrequent completion of these measures by many of the subjects.

Main Effects for the Multivariate Analysis of Covariance

Treatment, Time, and Treatment x Time As can be noted on Table 1, a significant main effect was found for Treatment ($F(51,50) = 1.6$, $p < .05$), and a highly significant main effect was found for Time

Table 1

Main Effects for Multivariate Analysis of Covariance

Variable[a]	F[b]	df	p
Treatment	1.6	(57,50)	.05
Time	17.25	(38,154)	.0001
Treatment X Time	1.19	(114,458)	n.s.*
Sex	0.64	(19,18)	n.s.
Rural vs. Urban	1.31	(19,18)	n.s.
Hometown Population	1.42	(76,66)	n.s.
Steady Dating Partner	1.13	(19,18)	n.s.
No. of Close Friends	.95	(19,18)	n.s.
More or Fewer Close Friends	.81	(19,18)	n.s.
Degree of Reported Gratification Obtained from Social Relationships	1.0	(19,18)	n.s.
F Scale Score	2.35	(19,18)	.04
LCU's	1.19	(19,18)	n.s.

[a] see text for description of variables

[b] all values are F approximations derived via the Hotelling-Lawley Trace

* $p > .05$

($F(38,154) = 17.25$, $p < .0001$). The Treatment x Time interaction was not significant ($F(114,458) = 1.19$, $p > 0.1$).

Demographic Variables No significant main effects were found for Sex, Rural vs. Urban background, or Hometown Population (see Table 1).

Social Network Variables No significant main effects were found for any of the aforementioned social network variables, as can be noted from inspection of Table 1.

Pre-Screening Measures While no significant main effect was found for LCU scores (Table 1), the main effect for F scale scores was found to be significant ($F(19,18) = 2.35$, $p < .04$).

Univariate Analyses and Simple Effects

Due to the large number of independent effects and dependent measures, only the significant results are reported herein. A complete listing of the significant effects found in the univariate analyses can be found in Table 2.

Treatment, Time, and Treatment x Time

Significant effects for Treatment were found on three of the dependent measures included in the main analysis. As can be seen from inspection of Fig. 1, a significant effect for Treatment was found on Number of Adaptive Coping Strategies employed (as derived from the judges' ratings of subjects' responses to the Stress Scenarios; $F(3,36) = 3.82$, $p < .02$). Simple effects analyses conducted via one-way analysis of variance (ANOVA's) on scores at each time period, revealed that significant between-group differences existed only at Posttest. Post hoc analyses with Duncan's Multiple-Range Test revealed that the Control group scored significantly higher than the Cognitive Restructuring (CR)

Table 2

Significant Main Effects in Univariate Analyses

Independent Effect[a]	Dependent Variable(s)[a]	F	df	p
Treatment	Physical Symptom Frequency	2.94	(3,36)	.05
	Severity Index	3.21	(3,36)	.03
	No. Adaptive Coping Strategies	3.82	(3,36)	.02
Time	Test Anxiety Scale	7.98	(2,96)	.0006
	Self-Control Schedule	5.60	(2,96)	.005
	Self-Efficacy Scale	20.86	(2,96)	.0001
	Self-Esteem Scale	6.69	(2,96)	.002
	Trait Anxiety (STAI)	13.50	(2,96)	.0001
	Physical Symptom Frequency	6.46	(2,96)	.002
	Effectiveness in Coping	12.34	(2,96)	.0001
	No. Adaptive Coping Strategies	290.99	(2,96)	.0001
Treatment x Time	Test Anxiety Scale	2.77	(6,96)	.02
	Health Locus of Control	2.91	(6,96)	.02
	No Adaptive Coping Strategies	5.44	(6,96)	.0001
F Scale	Trait Anxiety (STAI)	8.37	(1,36)	.007
	Physical Symptom Frequency	17.84	(1,36)	.0002
	Severity Index	4.39	(1,36)	.05
	Anxiety (daily ratings)	4.97	(1,36)	.04
	Duration of Disturbing Cognitions (daily ratings)	8.55	(1,36)	.006
	Cognitive Success Rate	7.67	(1,36)	.009
LCU's	No. Adaptive Coping Strategies	4.43	(1,36)	.05

Table 2 (cont.)

Significant Main Effects in Univariate Analyses

Independent Effect[a]	Dependent Variable(s)[a]	F	df	p
Steady Dating Parnter	Test Anxiety Scale	7.28	(1,36)	.01
	Trait Anxiety (STAI)	5.46	(1,36)	.03
No. of Close Friends	Self-Esteem Scale	8.40	(1,36)	.007
	Trait Anxiety	6.54	(1,36)	.02
	Anxiety (daily ratings)	7.48	(1,36)	.01

[a] see text for description of variables

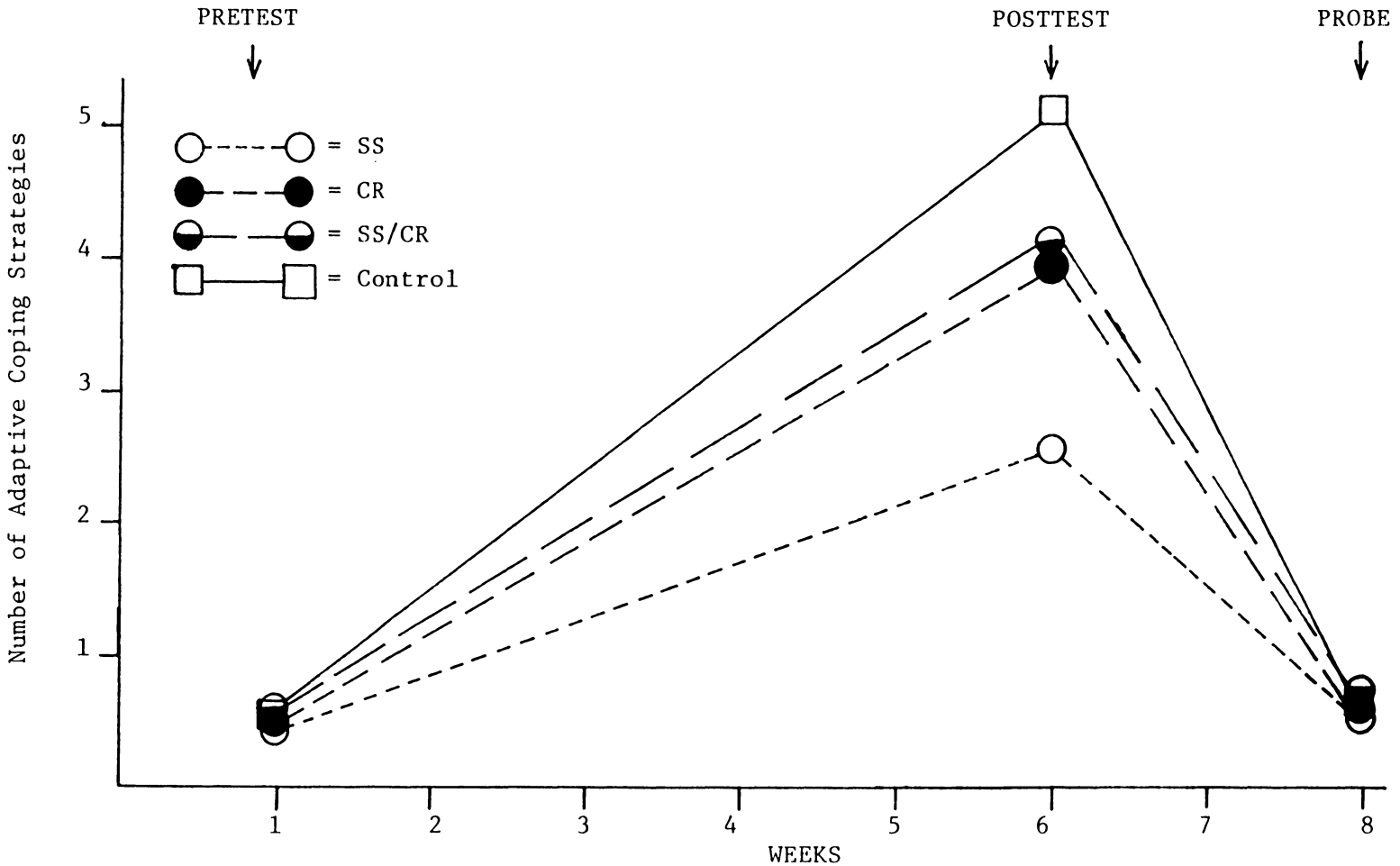

Figure 1. Mean number of Adaptive Coping Strategies (from responses to Stress Scenarios), by group, at Pretest, Posttest, and Probe.

and Social Support (SS) groups (df=48, $p < .05$). Differences between the Control and Social Support/Cognitive Restructuring (SS/CR) group, and the SS/CR and CR groups, respectively, were not significant. The SS group's score on this measure was significantly lower than all other groups at Posttest. A significant effect of Time was also found on this measure ($F(2,96) = 290.99$, $p < .0001$), with all groups manifesting significantly more Adaptive Coping Strategies at Posttest relative to Pretest and Probe, which in turn did not differ significantly. The Treatment x Time interaction was also found to be significant ($F(6,96) = 5.44$, $p < .0001$).

The remaining two significant Treatment effects were found to be due to between-group differences extant at Pretest. As can be seen on Fig. 2, the effect of Treatment on the Severity Index ($F(3,36) = 3.21$, $p < .03$) was due to the higher score of the CR group relative to the SS/CR and SS groups at Pretest (Duncan df=48, $p < .05$). The Pretest score of the CR group did not differ significantly from that of the Control, which in turn was not significantly different from the SS/CR and SS groups.

A similar case was found for the effects of Treatment on Physical Symptom Frequency ($F(3,36) = 2.94$, $p < .05$). Simple effects analyses revealed again that this result was due to between-group differences at Pretest only, with the CR group reporting significantly more Physical Symptoms than the SS/CR group (Duncan, df=48, $p < .05$). The former group did not differ significantly from the Control and SS groups, which in turn did not differ significantly from the SS/CR groups (see Fig. 3).

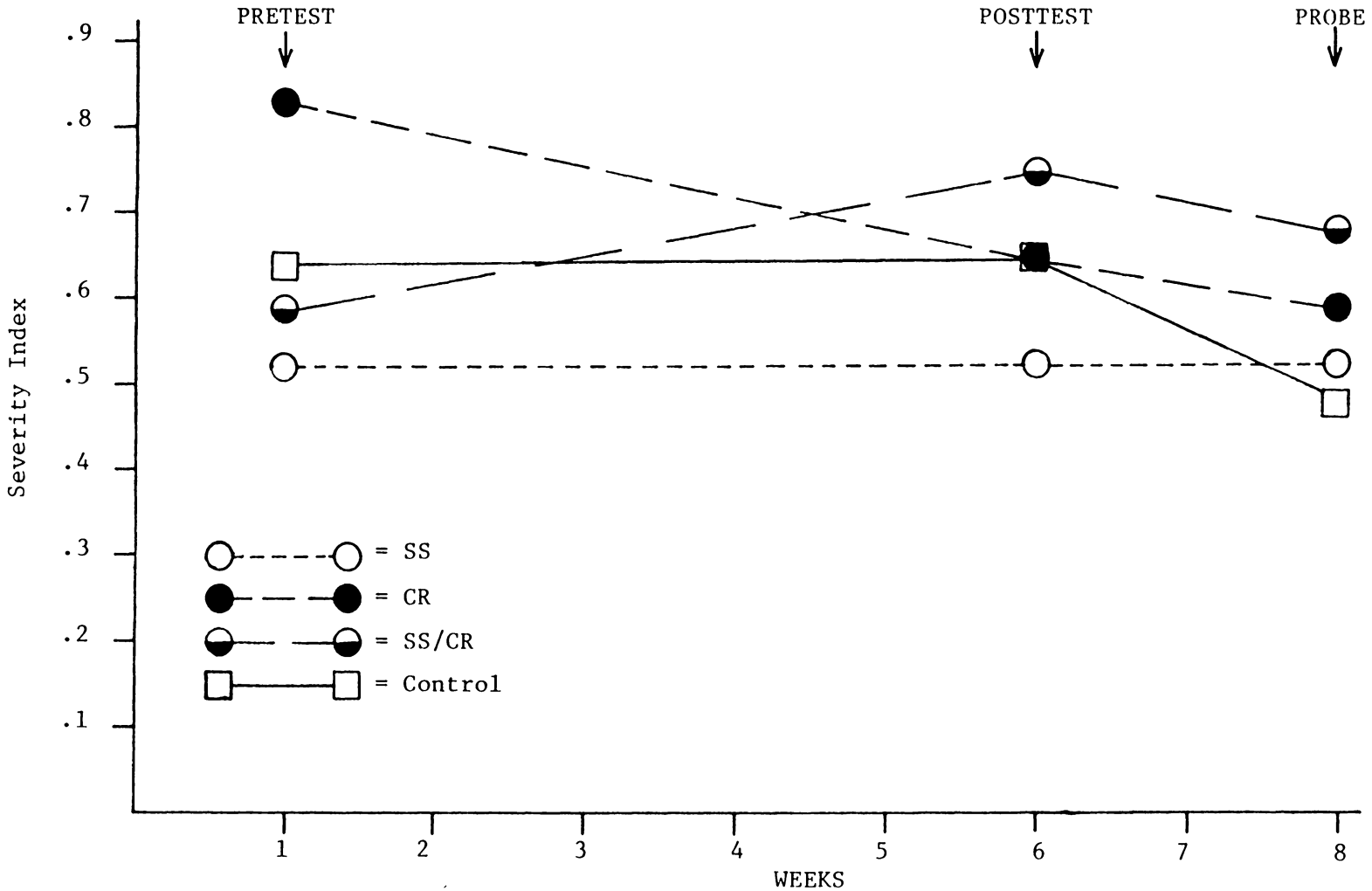

Figure 2. Mean Severity Index score, by group, at Pretest, Posttest, and Probe

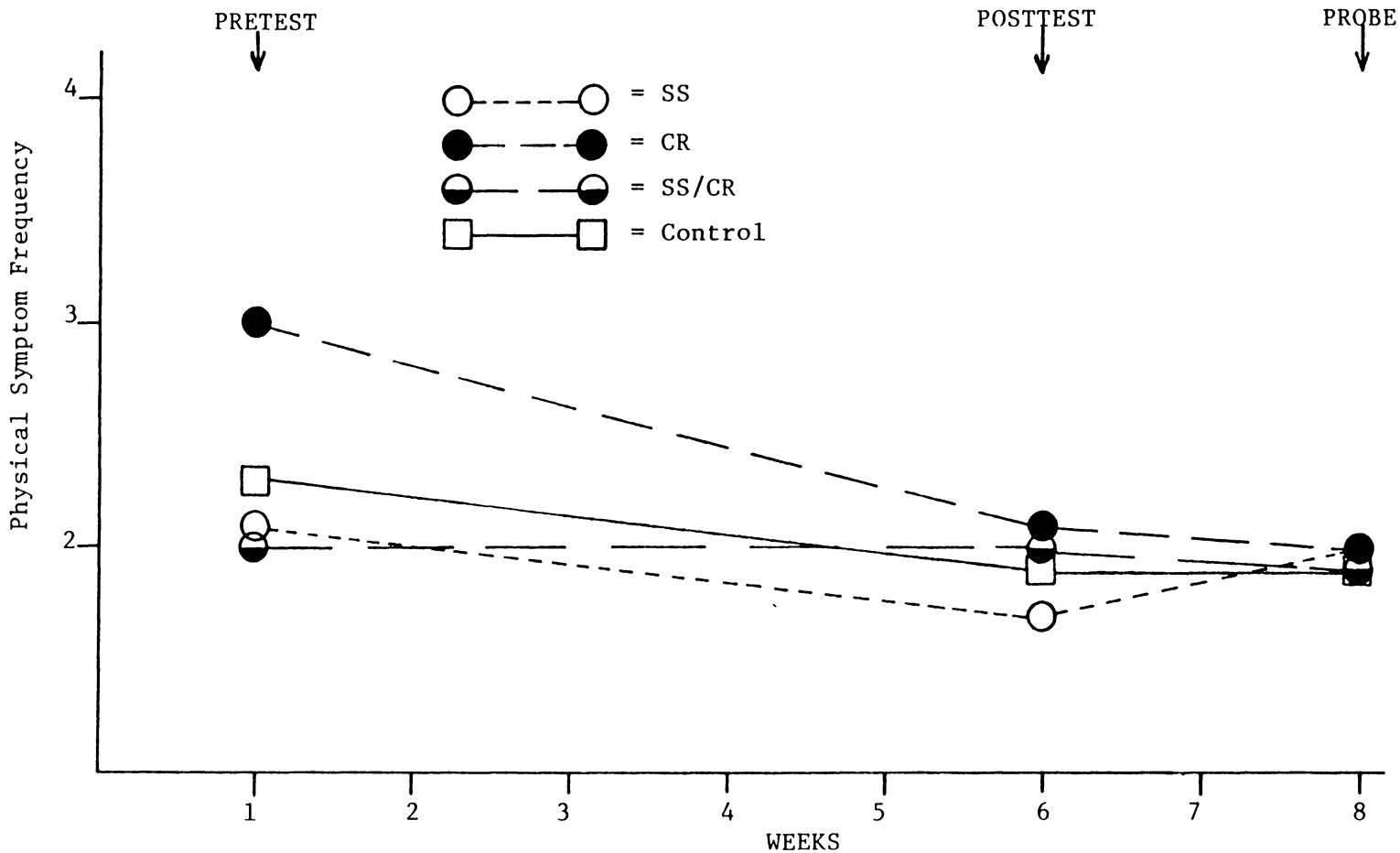

Figure 3. Mean frequency of reported Physical Symptoms, by group, at Pretest, Posttest, and Probe.

A number of other results were found which, while not revealing statistically significant between-group differences, did show differences between the Control and Treatment groups. On the Test Anxiety Scale (TAS; Fig. 4), for example, a significant effect for Time was found ($F(2,96) = 7.98$, $p < .0006$). While simple effect analyses for within-group changes across time revealed no significant differences, collapsed across groups, TAS scores were found to be significantly higher at Pretest relative to Posttest and Probe (Duncan df=96, $p < .05$). Inspection of Figure 4 reveals, however, that all three treatment groups showed decreases in Test Anxiety over time, while the Control actually experienced a slight increase from Pretest to Posttest.

Similar findings were obtained on a number of other measures, as outlined below.

On the Health Locus of Control (HLC) scale, a significant effect for the Treatment x Time interaction was found ($F(6,96) = 2.91$, $p < .02$). Simple effects analyses revealed no significant within-group differences across time or between group-differences at each time period. Figure 5 demonstrates, however, that subjects in the Control group manifested an increase in HLC scores over time (indicating less perceived control over physical health). Conversely, all three Treatment groups showed decreases in HLC scores from Pretest to Posttest, with the CR and SS/CR groups decreasing further from Posttest to Probe.

Although the graphic differences are not as apparent as in the above, the results for the Self-Efficacy ratings (Fig. 6) were analogous. Simple effects analyses for the obtained main effect of Time ($F(2,96) = 20.86$, $p < .0001$) revealed no significant within-group

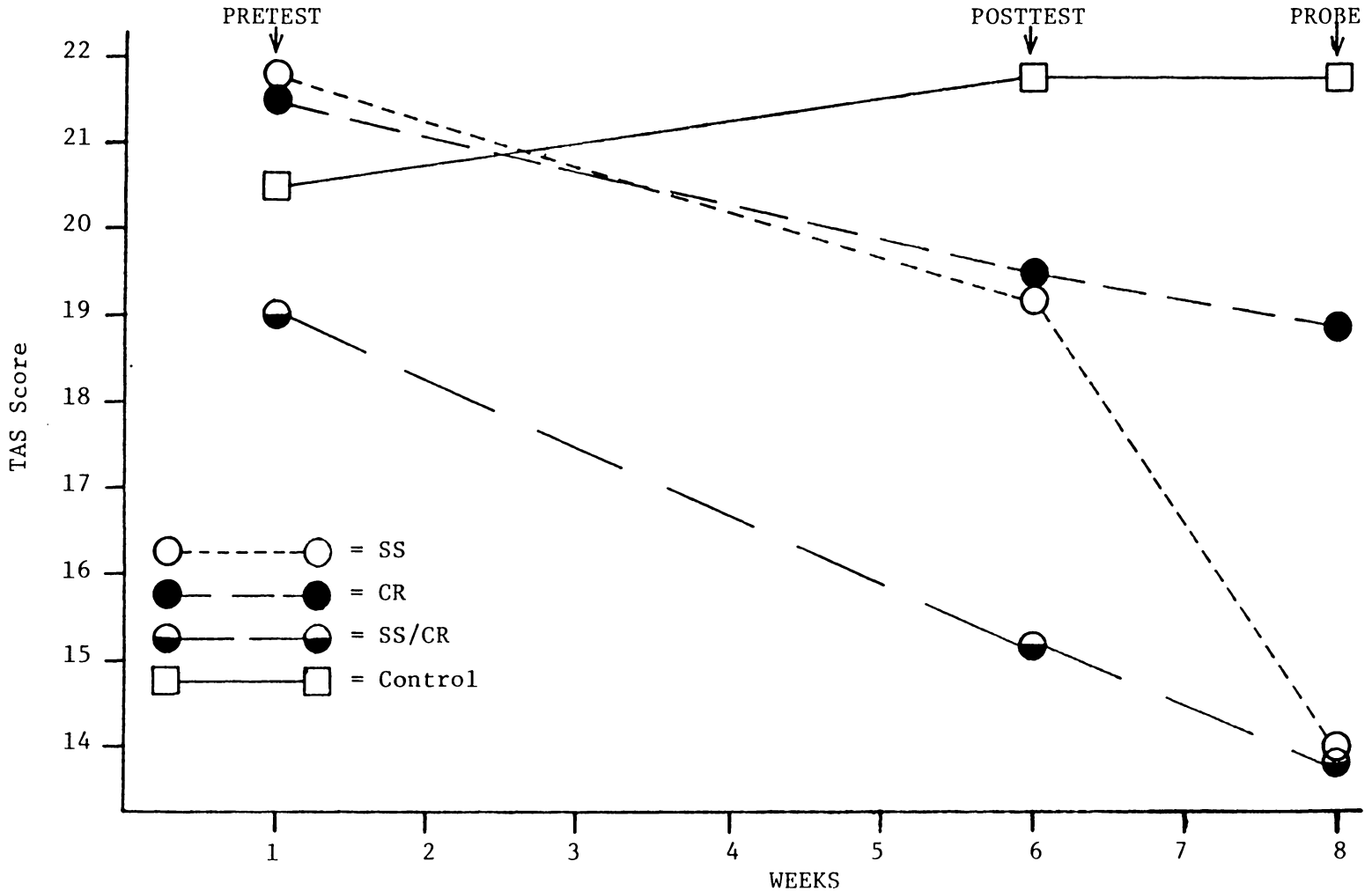

Figure 4. Mean Test Anxiety Scale (TAS) scores, by group, at Pretest, Posttest, and Probe.

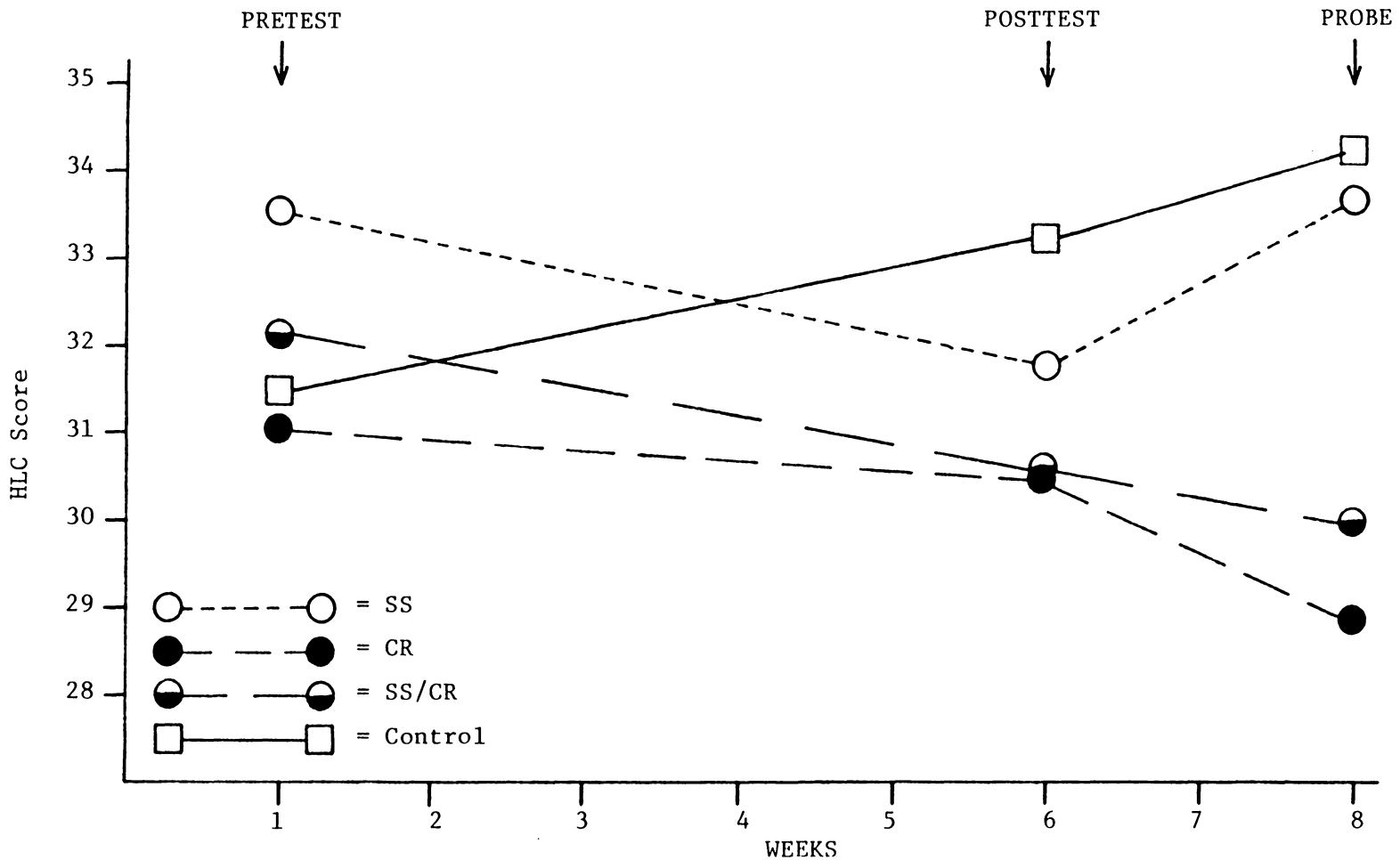

Figure 5. Mean Health Locus of Control (HLC) scores, by group, at Pretest, Posttest, and Probe.

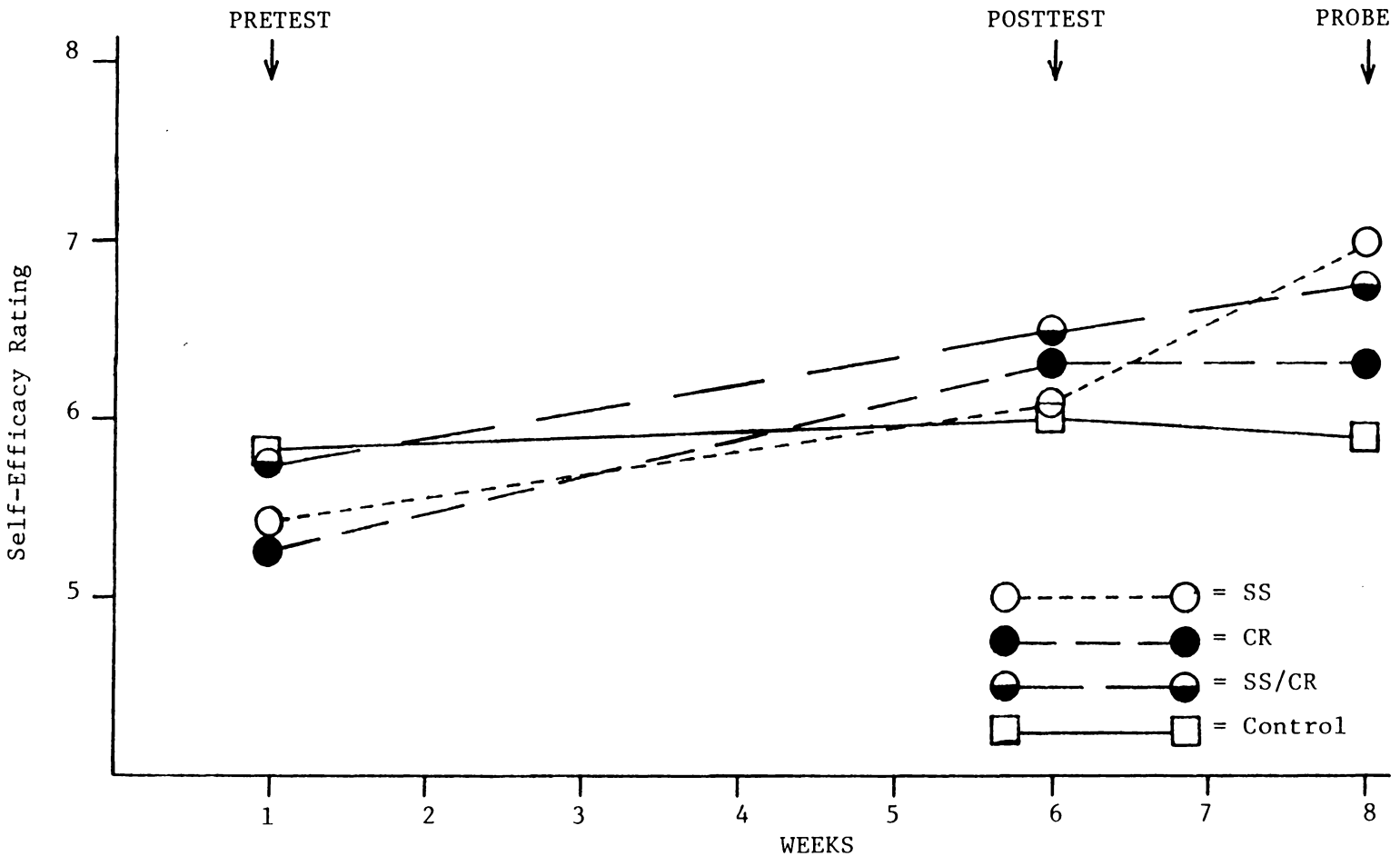

Figure 6. Mean Self-Efficacy Rating across all 5 questions, by group, at Pretest, Posttest, and Probe.

changes across time. Collapsed across groups, however, Self-Efficacy Ratings at Pretest were found to be significantly lower than at the Posttest and Probe periods, which did not differ significantly from each other (Duncan, df=96, $p < .05$). As can be seen on Fig. 6, however, all three Treatment groups showed progressive increases in Self-Efficacy over time, while the Control group stayed relatively the same.

A significant main effect of Time was also found on the Self-Control Schedule (SCS; $F(2,96) = 5.6$, $p < .005$). Collapsed across groups, SCS scores were significantly higher at the Probe period relative to Posttest and Pretest (Duncan df=96, $p < .05$). As Fig. 7 shows, all groups (with the exception of SS) showed little change in SCS scores from Pretest to Posttest. From Posttest to Probe, however, all three Treatment groups showed increases in SCS scores, while a slight decrease was found in the Control group.

Still another group of dependent measures reflected comparable degrees of change across all groups, not allowing distinctions to be drawn between the Treatment groups and Control. Figure 8 illustrates scores obtained on the Trait Anxiety (STAI) measure, for which a significant main effect of Time was found ($F(2,96) = 13.5$, $p < .0001$). Within-group differences across Time were not significant. Across all groups, STAI scores at Pretest were significantly higher relative to Posttest and Probe (Duncan df=96, $p < .05$), which in turn were not significantly different from each other.

A significant main effect of Time was also found on the Self-Esteem measure ($F(2,96) = 6.69$, $p < .002$). As with the above measure,

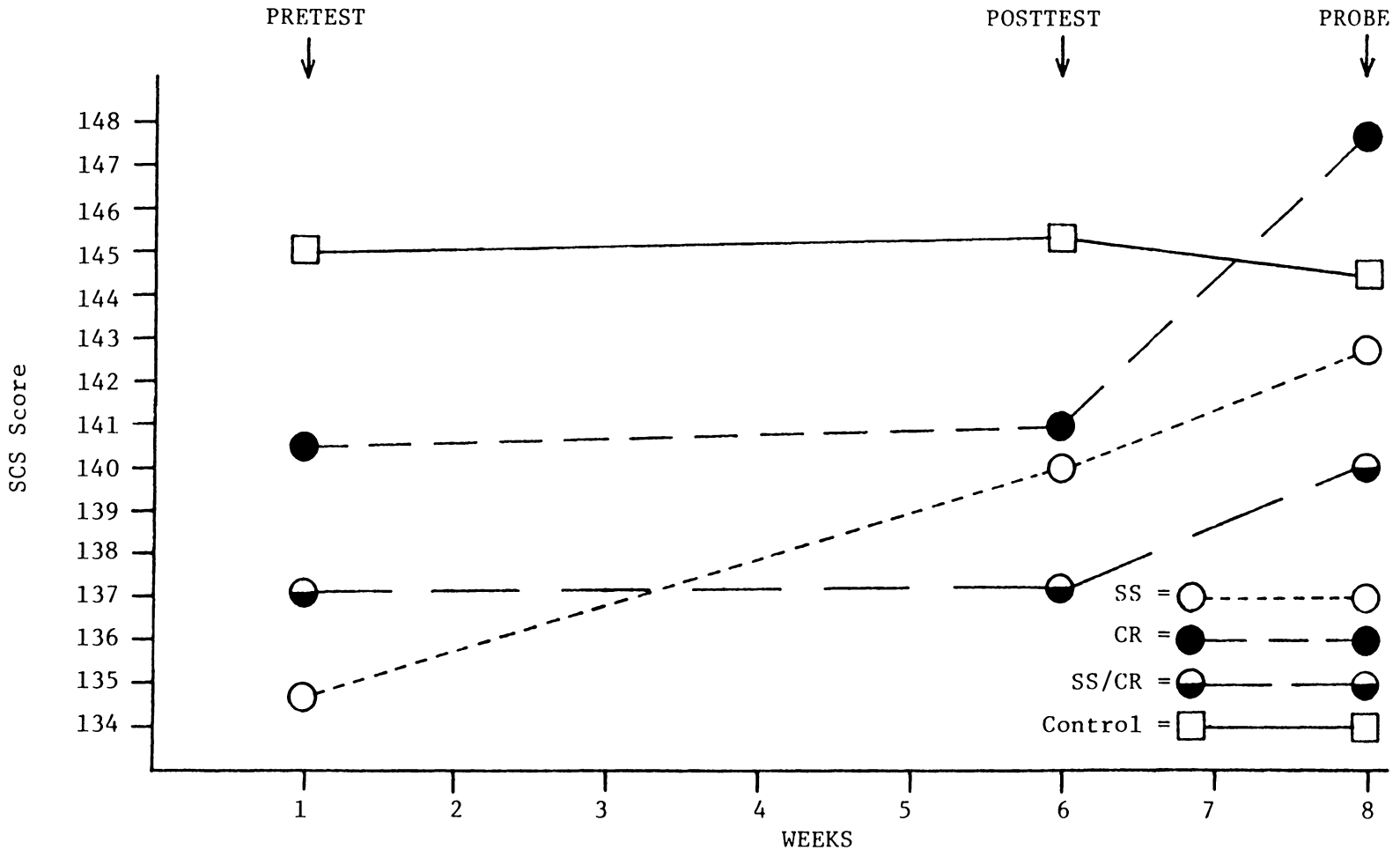

Figure 7. Mean Self Control Schedule (SCS) scores, by group, at Pretest, Posttest, and Probe.

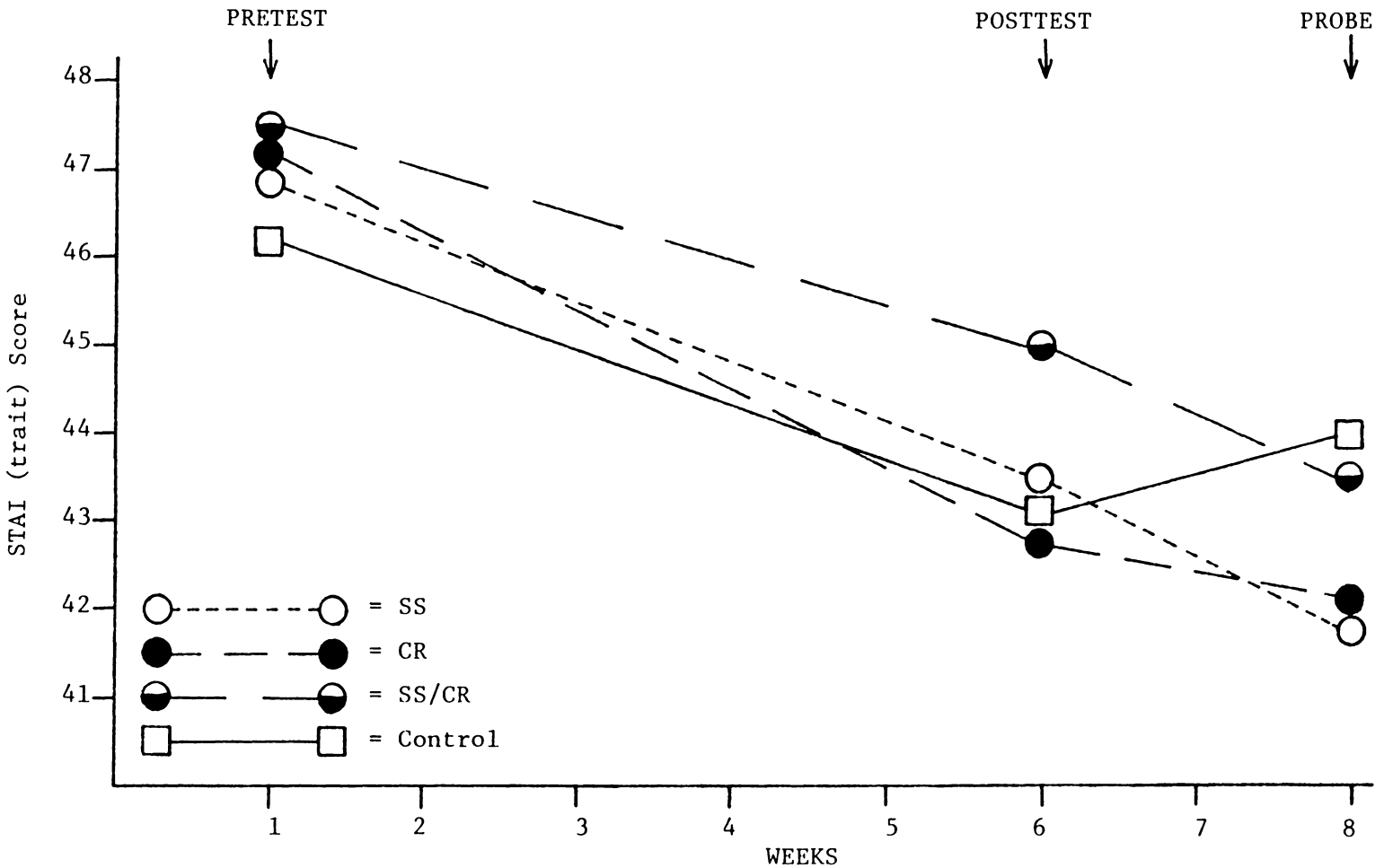

Figure 8. Mean STAI (trait) scores, by group, at Pretest, Posttest, and Probe.

within-group differences across Time were not significant and the across group comparison showed Pretest scores to be significantly higher than Posttest and Probe (Duncan df=96, $p < .05$). As figure 9 shows, few between-group differences are apparent. While the smallest degree of change is seen in the CR group, this finding may be due to the fact that this group had the highest level of Self-Esteem at Pretest. (Note: Scores on this measure are inversely related to levels of Self-Esteem).

No significant between group differences were found for Coping Effectiveness scores (obtained from judges' ratings of subjects' responses to the Stress Scenarios), for which a significant main effect of Time was found ($F(2,96) = 12,34$, $p < .0001$). Collapsed across groups, Pretest scores were found to be significantly lower than Posttest and Probe scores (Duncan df=96, $p < .05$). As can be seen on Fig. 10, "improvement" on this measure was not specific as to group.

Pre-Screening Measures - Continuous Variables

The main effects reported in Table 2 for F Scale scores, LCU's, and No. of Close Friends, were not amenable to traditional simple effects analyses using ANOVA, as the latter three variables are continuous. Hence, Pearson Product Moment Correlations were computed in order to determine the degree of relationship between the independent effects and their attendant dependent measures, collapsing across Groups and Time.

As can be noted on Table 2, a significant main effect of F Scale Scores was found on: Trait Anxiety (STAI; $F(1,36) = 8.37$, $p < .007$);

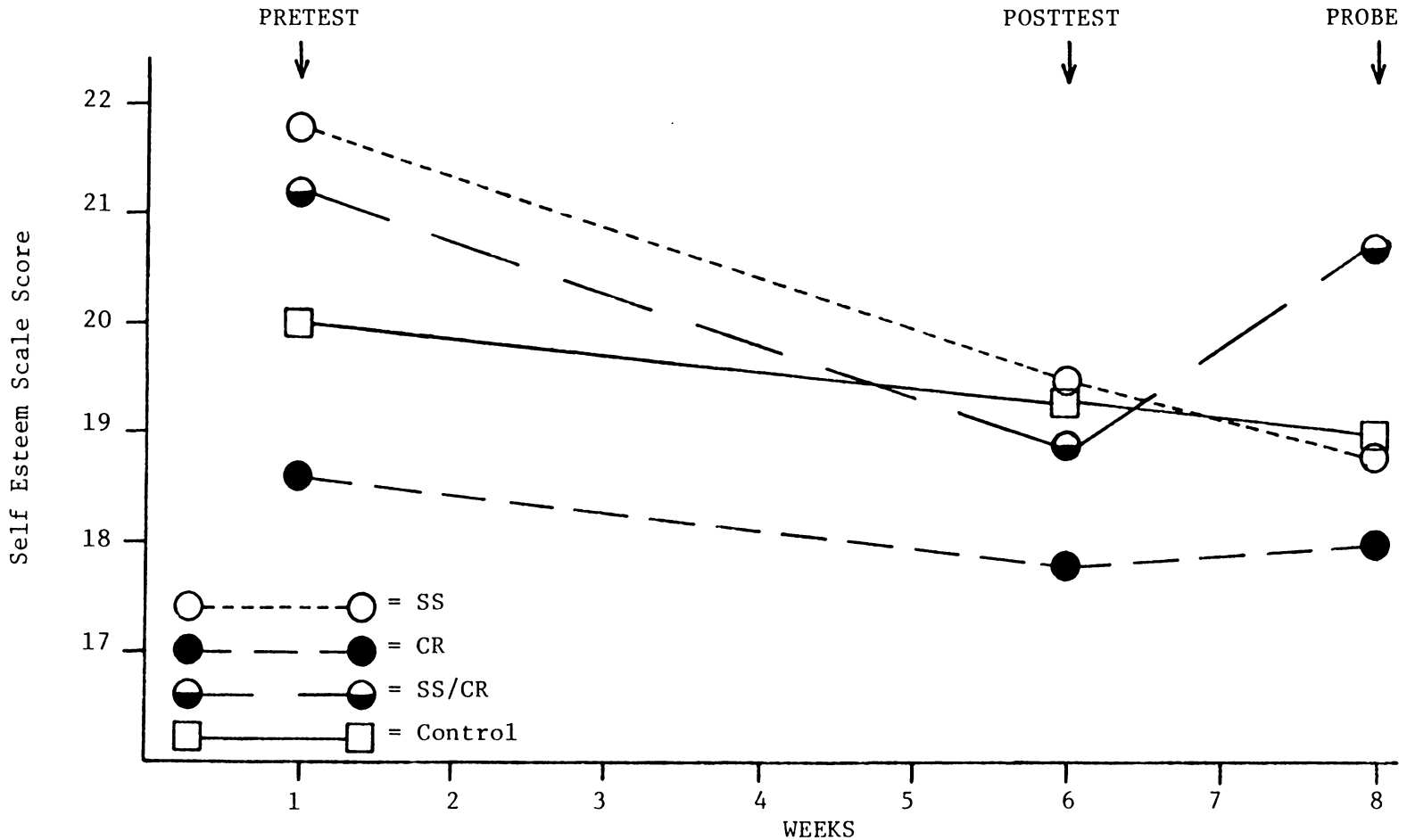

Figure 9. Mean Self Esteem scale scores, by group, at Pretest, Posttest, and Probe. (higher scores denote lower levels of self-esteem).

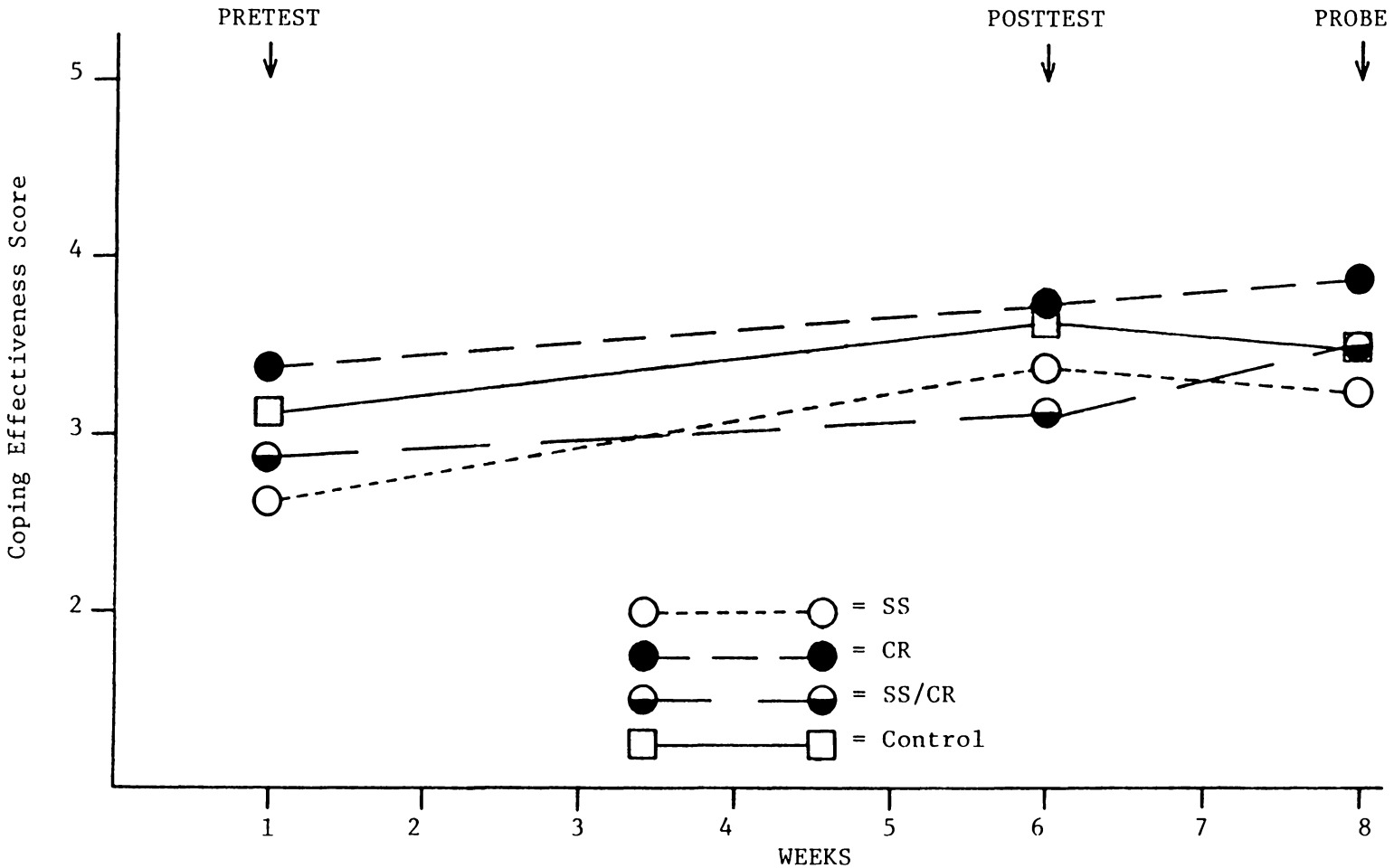

Figure 10. Mean Coping Effectiveness scores, by group, at Pretest, Posttest, and Probe.

Physical Symptom Severity ($F(1,36) = 17.84$, $p < .0002$); the Severity Index ($F(1,36) = 4.39$, $p < .05$); Anxiety ($F(1,36) = 4.97$, $p < .04$); Duration of disturbing cognitions ($F(1,36) = 8.55$, $p < .006$); and Cognitive Success Rate ($F(1,36) = 7.67$, $p < .009$). The correlational simple effects analyses for the above can be seen in the top portion of Table 3. A significant positive linear relationship was found between F Scale Scores and all of the above-noted dependent measures except Anxiety, for which a non-significant coefficient was obtained.

Inspection of Table 2 also reveals a significant main effect of LCU scores on No. of Adaptive Coping Strategies ($F(1,36) = 4.43$, $p < .05$). The Pearson r between these variables was not significant ($r = -.18$, $p > .2$), thus demonstrating a non-linear relationship between the pair.

One of the Social Network variables, viz. No. of Close Friends, showed a significant main effect on Self Esteem ($F(1,36) = 8.40$, $p < .007$); Trait Anxiety (STAI; $F(1,36) = 6.54$, $p < .02$); and Anxiety ($F(1,36) = 7.48$, $p < .01$) (Table 2). A significant negative relationship between No. of Close Friends and each of the above measures was found (bottom portion, Table 3). Thus, subjects who reported having relatively more close friends tended to have relatively higher levels of Self-Esteem, and lower levels of both Trait Anxiety and daily Anxiety ratings.

Pre-Screening Measures - Discrete Variables A significant main effect of having a Steady Dating Partner was found on scores in the Test Anxiety Scale ($F(1,36) = 7.28$, $p < .01$) and Trait Anxiety (STAI) ($F(1,36) = 5.46$, $p < .03$) (Table 2). Simple effects analyses were

Table 3. Pearson Product Moment Correlations between continuous Independent effects from Table 2 and their respective dependent measures. (All measures were collapsed across Groups and Time in obtaining the correlation coefficients).

Independent Effect	Dependent Measure	r	p
F Scale Scores	STAI (Trait)	.33	.02
	Physical Symptom Frequency	.39	.005
	Severity Index	.28	.05
	Anxiety (daily ratings)	.23	n.s.*
	Duration of Distrubing Cognitions	.31	.03
	Cognitive Success Rate	.32	.02
LCU's	No. of Adaptive Coping Strategies	-.18	n.s.
No. of Close Friends	Self-Esteem	-.34	.01
	STAI (Trait)	-.31	.02
	Anxiety (daily ratings)	-.40	.004

*$p > .05$

conducted by performing separate 2 (having vs. not having a Steady) X 4 (Treatment) X 3 (Time) ANOVA's on each of the above measures.

On the Trait Anxiety (STAI) measure, the Steady X Treatment, Steady X Time, and Steady X Treatment X Time interactions were all non-significant. Post Hoc analyses were thus conducted by collapsing Trait Anxiety scores across Groups and Time. It was found that subjects who reported having a Steady dating partner had significantly higher Trait Anxiety scores ($\bar{X}$ = 46.2) relative to subjects who reported not having a steady dating partner ($\bar{X}$ = 43.1) (Duncan, df=104, $p < .05$).

The ANOVA on the Test Anxiety Scale revealed significant interactions of Steady X Time ($F(2,88) = 3.22$, $p < .05$) and Steady X Treatment X Time ($F(12,88) = 1.93$, $p < .04$). Collapsed across groups, subjects who reported having a Steady dating partner had significantly higher scores on the TAS relative to subjects without a steady at both Posttest (Duncan, df=50, $p < .05$) and Probe, (Duncan, df=50, $p < .05$). In order to assess the higher order interaction, within-group differences at each Time period were compared. While the general tendency in all groups was for subjects with a Steady dating partner to have higher levels of Test Anxiety, the only statistically significant differences were found in the SS group at both Posttest and Probe (Duncan, df=9, $p < .05$).

Subjects' Ratings of Daily Interactions

As noted earlier, on the Daily Measures form, subjects rated the degree of Positive and/or Negative feelings that certain interactions provided them with. These measures were analyzed separately, as sub-

jects frequently neglected to rate them. The missing values thus generated would have also deleted much of the above data from the main analysis (a function of the computer program which was employed).

Separate 4 (Treatment) X 3 (Time) ANOVA's were performed on the subjects' ratings of Positive and Negative feelings. In both cases, none of the obtained effects were statistically significant. Thus, Treatment did not differentially effect the ratings that subjects made of these interactions.

Manipulation Checks

A one-way analysis of variance (ANOVA) was performed on subjects' ratings on each question in the Manipulation Checks (i.e. tapping Group Cohesion, perceptions of the utility of treatment, and the therapist's performance). No significant between-group differences were found for ratings on any of the questions. All ratings were in the desired direction. The mean ratings for each question, by group, can be found in Appendix J.

Learning and Utilization of Stress-Management Strategies Taught in Treatment

Two fundamental questions which the present study was designed to address were: 1) Do the subjects learn the strategies conveyed in treatment?; and 2) If so, do the subjects utilize the strategies at the times they most need to?

One measure which was designed to answer the first question, in part, was the Stress Information Questionnaire. Figure 11 illustrates the Pretest to Posttest differences obtained on this measure by each group. A 4 (Treatment) X 2 (Time) ANOVA performed on the

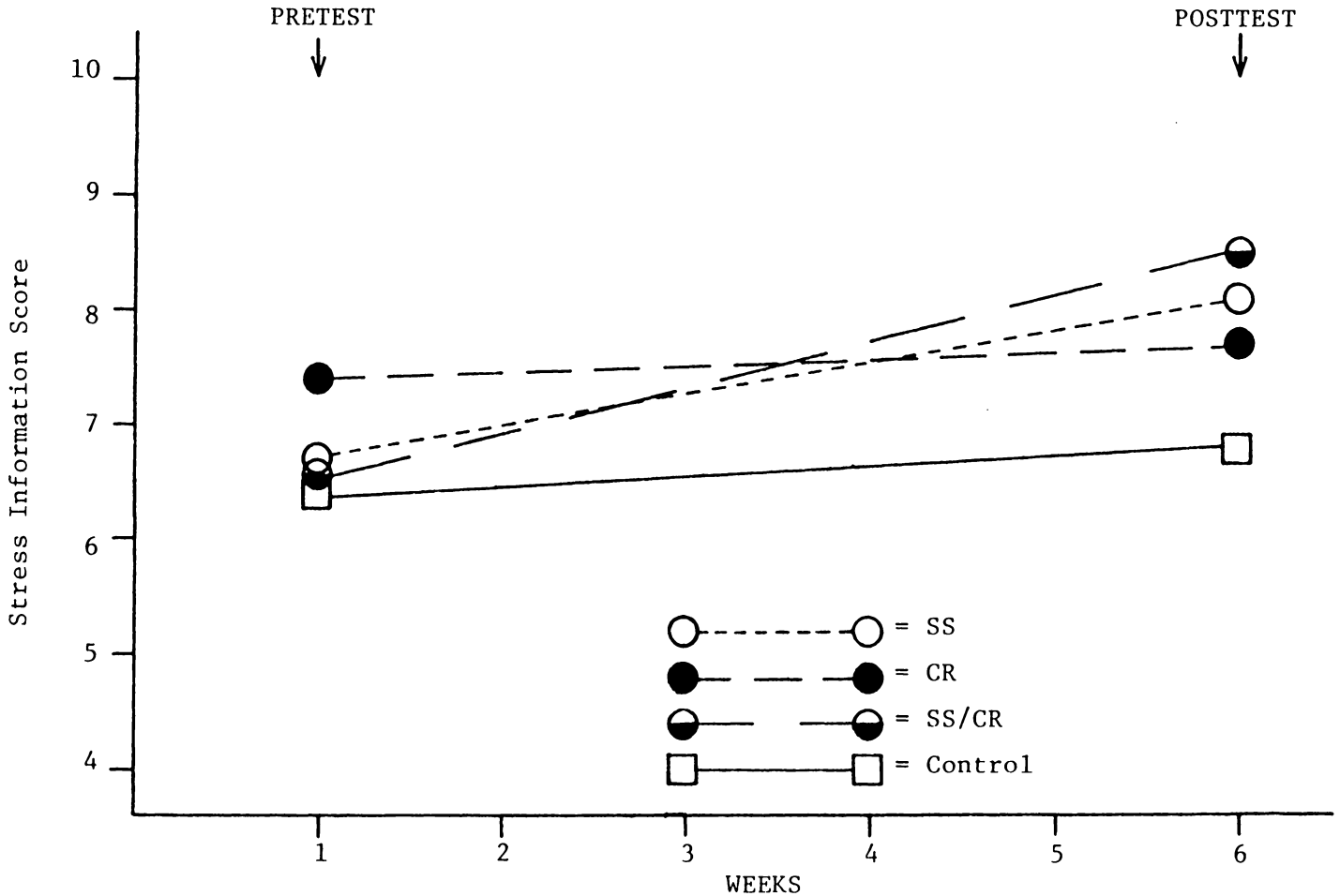

Figure 11. Mean score on the Stress Information Questionnaire, by group, at Pretest and Posttest.

Stress Information Questionnaire scores revealed a significant effect of Time ($F(1,48) = 26.81$, $p < .0001$) and a significant Treatment X Time interaction ($F(3,48) = 4.81$, $p < .006$). Simple effects analyses revealed no significant between-group differences at Pretest. At Posttest, both the SS and SS/CR groups obtained significantly higher scores relative to the Control (Duncan df=48, $p < .05$). The Posttest scores of the CR group were not significantly different from any of the other groups. Simple effects analyses of within-group differences across time demonstrated that only the SS (Duncan df=20, $p < .05$) and SS/CR (Duncan df=26, $p < .05$) groups showed significant increases from Pretest to Posttest. Thus, in both the SS and SS/CR groups, the subjects did appear to learn the information presented in treatment.

A number of the Daily Measures that subjects completed were designed to assess utilization of the coping strategies taught in treatment. To assess utilization of social support, subjects noted the Number of Interactions they had that day in which they discussed a problem they were experiencing. Use of cognitive restructuring was assessed with four measures: Frequency and Duration of disturbing cognitions; Number of Successful Substitutions of disturbing cognitions, and the previously described Cognitive Success Rate. Unfortunately, as could be noted in above sections, no significant effects of Treatment, Time or the Treatment X Time interaction were found on any of these measures. Thus, on the basis of this portion of the data, it must be concluded that the Treatment did not differentially effect the type of strategies subjects employed to manage stress.

One further source of data on subjects' utilization of stress-management strategies was that obtained from judges' rating of responses to the Stress Scenarios. As noted earlier, the judges gave each response a numerical Effectiveness rating, and noted the types of coping strategies employed in each response, utilizing the categories specified in Appendix F. For the present purpose, the categories of primary interest are Positive and Negative Self-Talk, and Social Support. Figure 12 shows the mean percentage of subjects who engage in each type of Adaptive Coping Strategy, collapsed across subjects' responses to the two Stress Scenarios. As can be noted from inspection of the percentages in the Social Support and Positive Self-Talk categories, the majority of within-group differences across time were not substantial. The most notable result was in the Positive Self-Talk category for the SS/CR group. In the latter at Pretest, only 4% of the subjects employed Positive Self-Talk. At Posttest, 15% of the subjects employed this coping strategy.

The percentage of subjects engaging in Maladaptive Coping Strategies is illustrated in Fig. 13. In the Negative Self-Talk category, the two groups which received the Cognitive Restructuring intervention demonstrated negligible differences across time.

Hence, in subjects' responses to the Stress Scenarios, the coping strategies which were specific to the administered treatments did not appear to be differentially utilized in the majority of cases. In the SS/CR group, however, there did appear to be an increase in the use of Positive Self-Talk following treatment. Taking the coping strategies data as a whole, however, there did appear to be a general

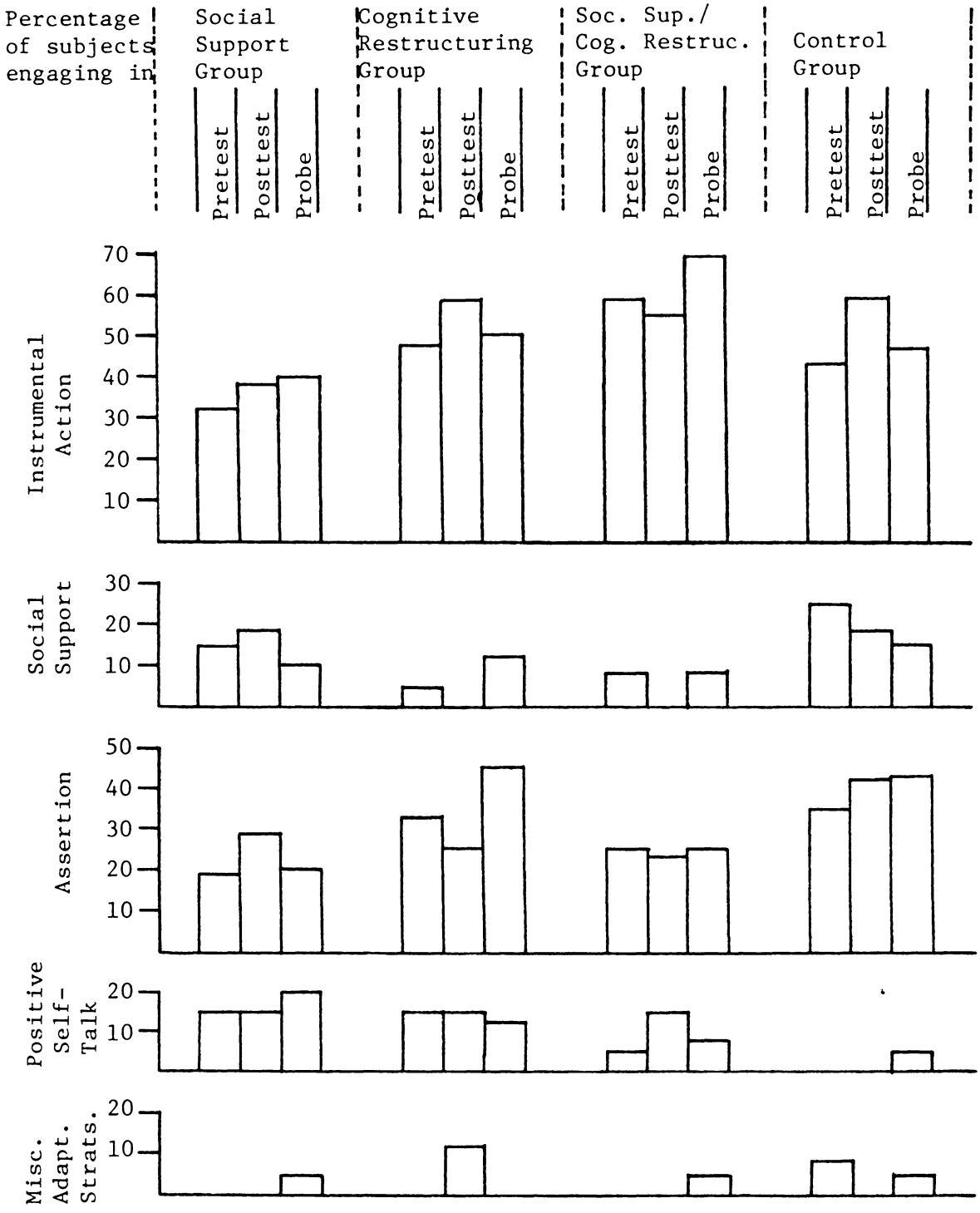

Figure 12. Percentage of subjects engaging in each Adaptive Coping Strategy in responses to the stress scenarios, by group, at Pretest, Posttest, and Probe.

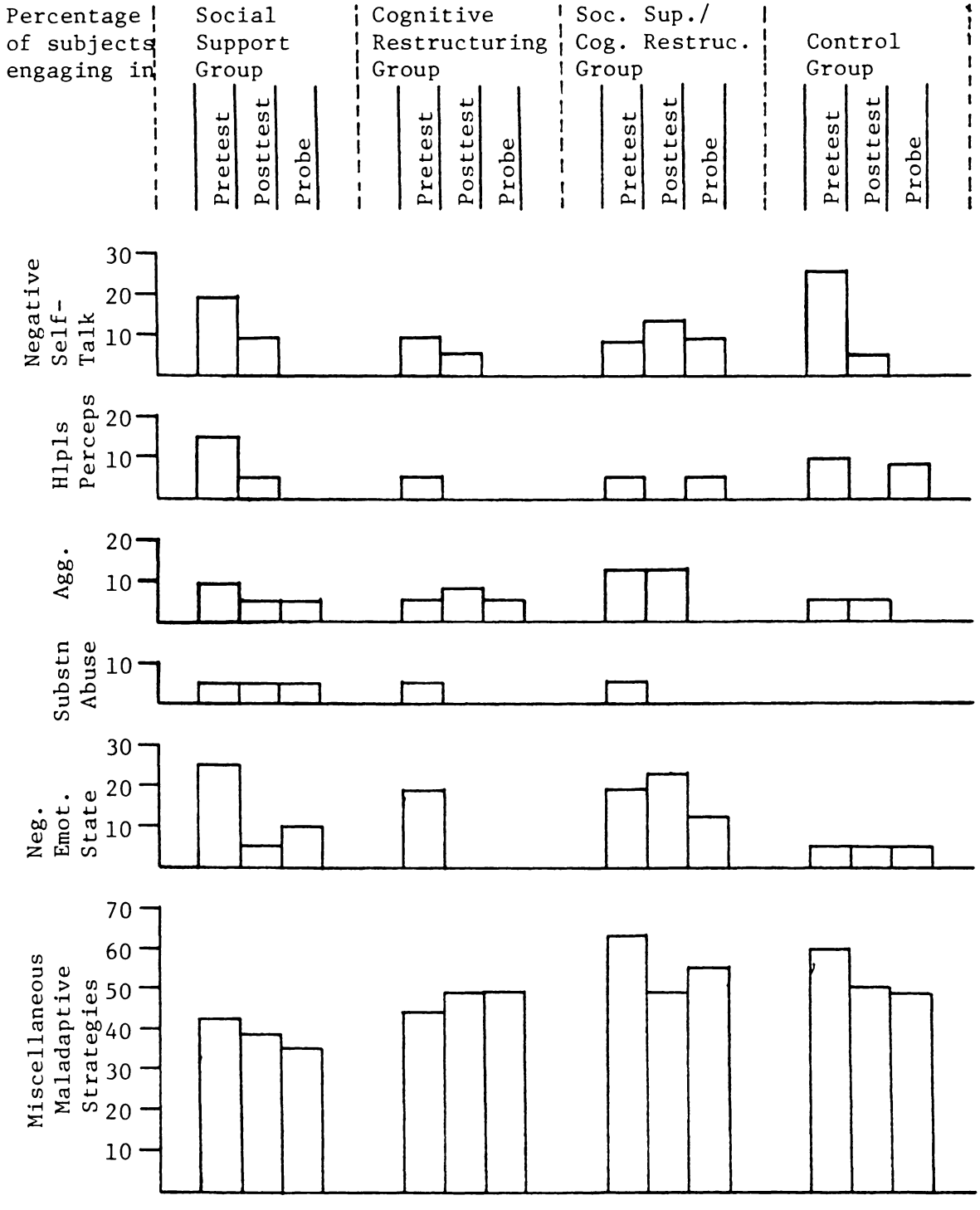

Figure 13. Percentage of subjects engaging in each Maladaptive Coping Strategy in responses to the stress scenarios, by group, at Pretest, Posttest, and Probe.

increase in the use of Adaptive Coping Strategies over time (Fig. 12), with a concomitant decrease in the use of Maladaptive Coping Strategies (Fig. 13).

Factor Analysis of the Multiple Measures

In order to abstract the results obtained in the multivariate analysis of covariance, a factor analysis was performed on the Pretest scores of the 19 dependent measures employed in the previously outlined analysis. Utilizing the principle-axis method, a total of six factors were extracted. An orthogonal rotation was performed using the varimax method. Table 4 contains the rotated factor pattern.

The six extracted factors accounted for a total of 71.1% of the common variance. The percentage of common variance accounted for by each of the individual factors was as follows: Factor 1, Transient Worry and Anxiety - 17.7%; Factor 2, General Anxiousness and Helplessness - 16.2%; Factor 3, Somatic Complaints and Faulty Responding - 9.4%; Factor 4, Adaptive Responding - 9.7%; Factor 5, General Physical Discomfort - 9.7%; and Factor 6, Low Self-Regard - 8.4%.

Factor scores were computed for each subject at the Pretest, Posttest, and Probe intervals, using the scoring coefficients derived from the factor pattern in Table 4 for calculating the factor scores at each time interval. Thus, each subject received a score on Factors 1-6 at each time period, in effect subsuming the 19 dependent measures (employed in the previous analysis) into six.

Analysis of Factor Score Data

A second 11-way multivariate analysis of covariance (MANOCOVA) was performed, substituting the six sets of factors scores for the

Table 4 - Rotated Factor Pattern from Factor Analysis Performed on Pretest Scores. (Primary Factor Loadings are Those Underscored).

	FACTORS					
Dependent Measures:	Transient Worry & Anxiety	General Anxiousness And Helplessness	Somatic Complaints And Faulty Responding	Adaptive Responding	General Physical Discomfort	Low Self-Regard
Test Anxiety Scale	0.18298	0.57846	-0.03773	-0.26867	0.32964	0.09253
Self-Control Schedule	-0.05717	-0.72471	0.04604	0.20098	0.02566	-0.10604
Health Locus of Control	-0.10651	0.43402	-0.04785	0.04394	0.34451	0.59339
Self-Efficacy Rating	-0.07875	-0.72960	-0.05352	0.18614	0.11464	0.18517
Self-Esteem	0.23054	0.47908	-0.13826	-0.07005	-0.17108	0.56471
Trait Anxiety	0.31849	0.76379	0.06327	0.23706	-0.05411	0.17460
Physical Symptom Frequency	0.05736	0.25029	0.82998	-0.09771	0.12425	-0.02288
Physical Symptom Severity	0.13666	0.10411	0.06015	-0.08296	0.89214	0.00764
Severity Index	-0.15054	0.14030	0.62077	-0.11561	-0.62128	0.09969
Daily Anxiety Rating	0.68293	9.33247	0.14200	0.06935	0.18004	0.24681
No. of Daily Interactions	0.29819	-0.26934	-0.07456	0.07605	0.36600	0.12263
Frequency of Disturbing Cognitions	0.93184	-0.04390	0.01162	-0.10927	0.06354	0.22184
Duration of Disturbing Cognitions	0.85663	0.21055	0.00021	-0.06777	0.13849	0.11268
No. of Successful Substitutions	0.47457	-0.29065	-0.03243	-0.15171	-0.06148	0.72598
Cognitive Success Rate	0.78612	0.25060	0.01755	-0.01552	0.13750	-0.35626
No. of Daily Exams	0.30164	-0.32071	0.36481	-0.01850	0.39893	-0.10191
Coping Effectiveness Score	0.02041	-0.17179	0.19264	0.85954	-0.04886	-0.16776
No. of Adaptive Coping Strategies	-0.11326	-0.10922	-0.19824	0.88837	0.02551	0.07532
Maladaptive Coping Strat.	0.03978	-0.27510	0.66092	0.13344	-0.08211	-0.09840

19 dependent measures employed in the previous analysis. Aside from the latter change, the analysis was identical in all other respects. A listing of the obtained effects can be seen in Table 5.

A significant main effect was found for Treatment ($F(18,89) = 2.41$, $p < .004$); Time ($F(12,180) = 47.75$, $p < .0001$); and the Treatment X Time interaction ($F(36,536) - 2.03$, $p < .0005$). Additionally, a significant main effect was found for two of the Pre-screening measures: F Scale scores ($F(6,31) = 3.60$, $p < .008$); and LCU's ($F(6,31) = 2.92$, $p < .03$).

Univariate Analyses and Simple Effects

A complete listing of the significant effects obtained in the univariate analyses can be seen in Table 6.

Treatment, Time and Treatment X Time

A significant main effect of Treatment was found on Factor 3, Somatic Complaints and Faulty Responding ($F(3,36) = 8.39$, $p < .0002$). One-way ANOVA's on scores at each time period revealed that significant between-group differences existed only at the Pretest interval (see Fig. 14). At Pretest, the CR group reported significantly more somatic complaints and faulty responding relative to the remaining groups, who did not differ significantly (Duncan df=48, $p < .05$). Figure 14 further illustrates the significant main effect of Time ($F(2,96) = 63.65$, $p < .0001$). One-way ANOVA's on each Group's scores over the three time periods revealed a significant decrease in scores from Pre-test to Posttest in the SS/CR, CR, and Control Groups. While all groups showed an increase in scores from Posttest to Probe, only the increase of the CR group was statistically significant (Duncan df=39,

Table 5

Main Effects for Multivariate Analysis of Covariance on Factor Scores

Variable[a]	F[b]	df	p
Treatment	2.41	(18,89)	.004
Time	47.75	(12,180)	.0001
Treatment X Time	2.03	(36,536)	.0005
Sex	0.28	(6,31)	n.s.*
Rural vs. Urban	1.02	(6,31)	n.s.
Hometown Population	0.82	(24,118)	n.s.
Steady Dating Partner	1.66	(6,31)	n.s.
No. of Close Friends	1.27	(6,31)	n.s.
More or Fewer Close Friends	0.30	(6,31)	n.s.
Degree of Reported Gratification Obtained from Social Relationships	1.09	(6,31)	n.s.
F Scale Score	3.60	(6,31)	.008
LCU's	2.92	(6,31)	.03

[a]see text for description of variables

[b]all values are F approximations derived via the Hotelling-Lawley Trace

*$p > .05$

Table 6

Significant Main Effects in Univariate Analyses on Factor Data

Independent Effect[a]	Factor	F	df	p
Treatment	3-Somatic Complaints and Faulty Responding	8.39	(3,36)	.0002
Time	1-Transient Worry and Anxiety	13.42	(2,96)	.0001
	2-General Anxiousness and Helplessness	31.12	(2,96)	.0001
	3-Somatic Complaints and Faulty Responding	63.65	(2,96)	.0001
	4-Adaptive Responding	262.12	(2,96)	.0001
	6-Low Self-Regard	6.03	(2,96)	.004
Treatment x Time	2-General Anxiousness and Helplessness	2.20	(6,96)	.05
	3-Somatic Complaints and Faulty Responding	3.49	(6,96)	.004
	4-Adaptive Responding	4.44	(6,96)	.0005
F Scale	1-Transient Worry and Anxiety	4.43	(1,36)	.05
	2-General Anxiousness and Helplessness	6.64	(1,36)	.02
	3-Somatic Complaints and Faulty Responding	13.57	(1,36)	.0008
LCU's	3-Somatic Complaints and Faulty Responding	6.00	(1,36)	.02
No. of Close Friends	6-Low Self Regard	5.85	(1,36)	.02

[a]see text for description of variables

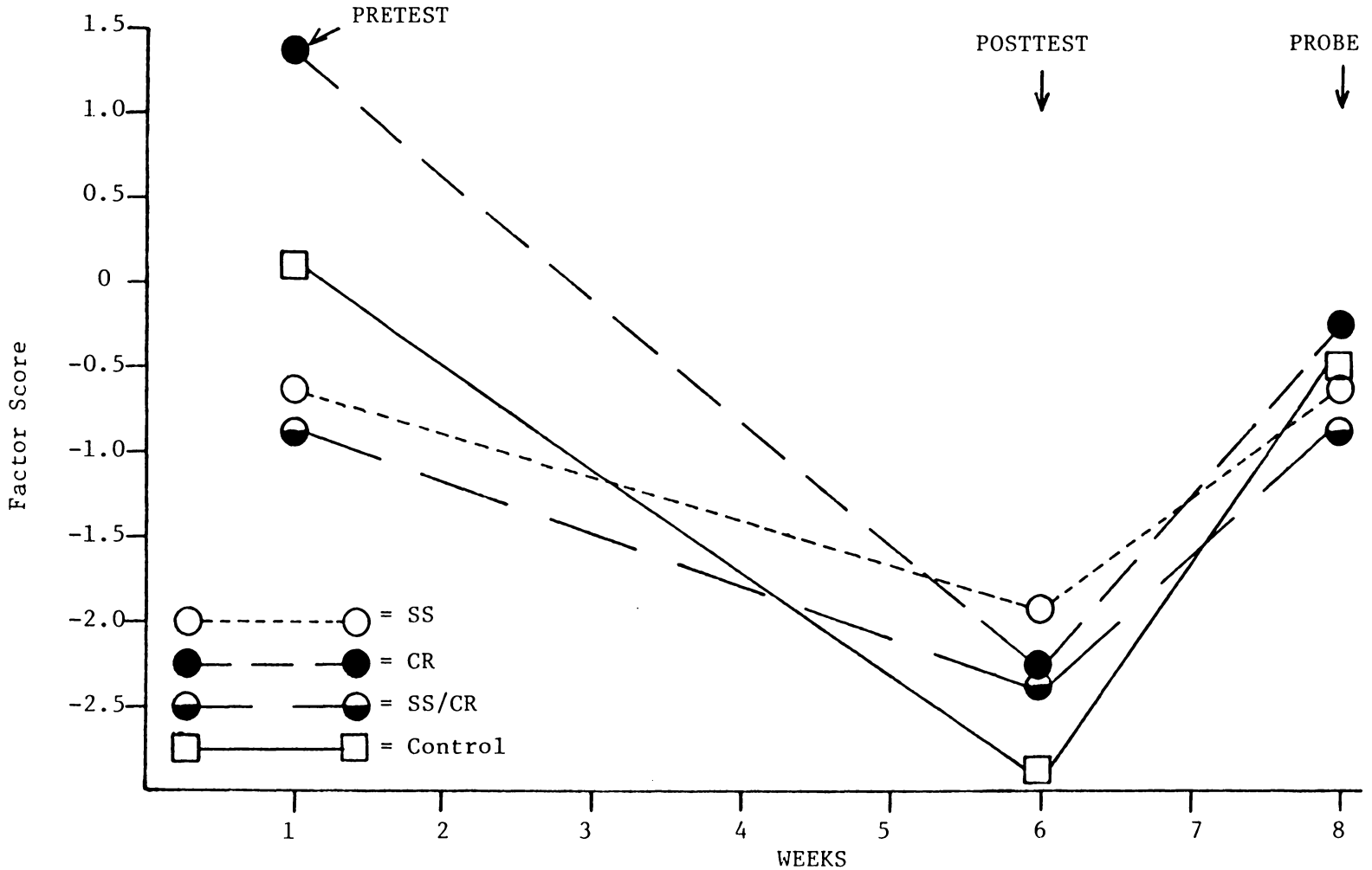

Figure 14. Mean Somatic Complaints and Faulty Responding factor scores, by group, at Pretest, Posttest, and Probe.

$p < .05$). The change in scores over time of the SS group was not significant for any of the comparisons.

A significant main effect of Time was also found on Factor 1, Transient Worry and Anxiety ($F(2,96) = 13.42$, $p < .0001$). As can be seen on Fig. 15, all groups demonstrated a decrease in score on this Factor from Pretest to Posttest. One-way ANOVA's on each Group's scores over time revealed no significant within-group differences. Thus, scores were collapsed across groups, revealing a significant overall decrease in Transient Worry and Anxiety from Pretest to Posttest (Duncan df=96, $p < .05$). Scores on this factor at the Probe period were not significantly different from those at Posttest. However, Fig. 15 reveals that while all three treatment groups showed minimal changes from Posttest to Probe, the Control group showed a sizeable increase in Transient Worry and Anxiety just prior to final examinations (i.e. the Probe period).

All groups showed a decrease in score on Factor 2, General Anxiousness and Helplessness, from Pretest to Posttest (Fig. 16). The obtained main effect of Time on this factor ($F(2,96) = 31.12$, $p < .0001$) was not attributable to individual within-group differences, as all of the latter were non-significant. Collapsed across groups, however, the Pretest to Posttest decrease was significant (Duncan df=96, $p < .05$), with Probe scores not differing significantly from those at Posttest. Again, it is notable that the Control group demonstrated the largest increase in scores from Posttest to Probe, reflecting a relatively greater degree of General Anxiousness and Helplessness in the Control subjects at the stressful Probe period.

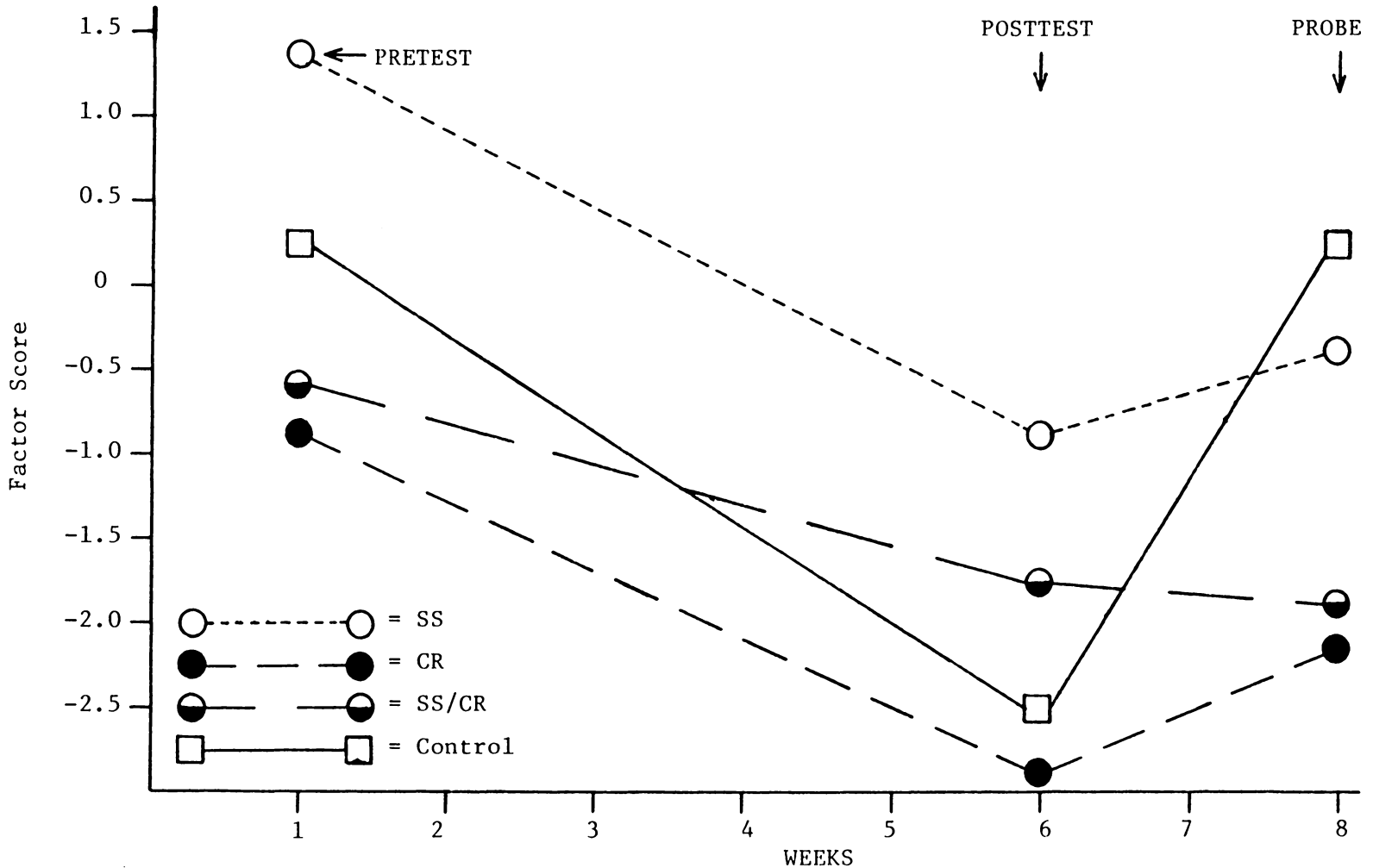

Figure 15. Mean Transient Worry and Anxiety factor scores, by group, at Pretest, Posttest, and Probe.

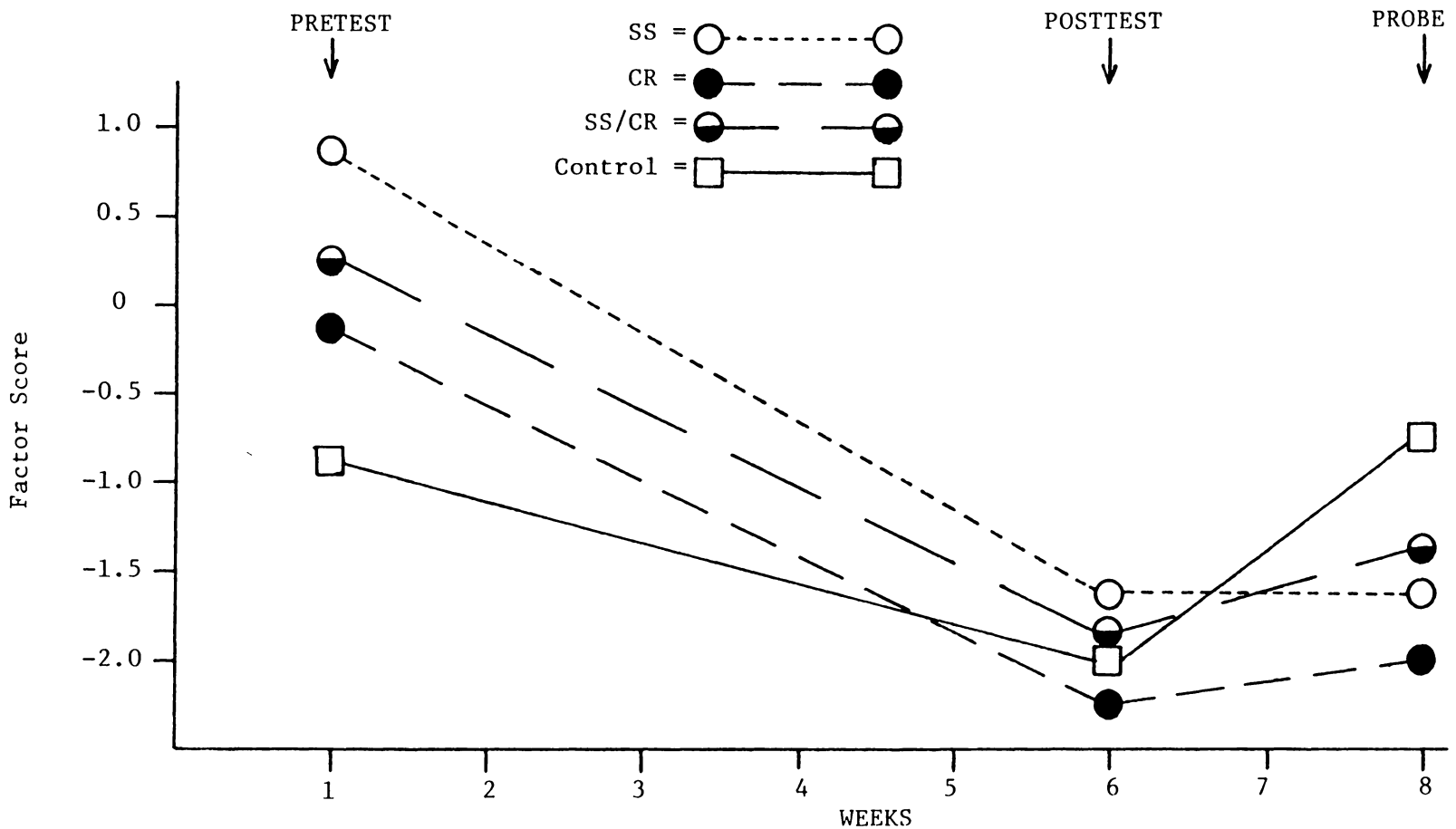

Figure 16. Mean General Anxiousness and Helplessness factor scores, by group, at Pretest, Posttest, and Probe.

A surprising finding was obtained for scores on Factor 4, Adaptive Responding, on which a significant main effect of Time was found ($F(2,96) = 262.12$, $p < .0001$). As can be seen on Fig. 17, all groups showed a significant increase in adaptive responding from Pretest to Posttest (Duncan df=48, $p < .05$), with the Control group manifesting the largest increase. The between-group differences at Posttest, however, were not significant. The improvement demonstrated at Posttest for all Groups was not retained at the Probe period, as shown by the large Posttest to Probe decrease on Fig. 17. Scores at the Probe period were not significantly different from those obtained at Pretest.

A significant effect of Time was also found on Factor 6, Low Self-Regard ($F(2,96) = 6.03$, $p < .004$) (Fig. 18). While none of the within-group changes over time were significant, collapsed across groups, the overall decrease in scores from Posttest to Probe was significant (Duncan df=96, $p < .05$). Scores at Pretest and Posttest were not significantly different.

No significant main effects were found on Factor 5, General Physical Discomfort (Fig. 19). However, a Treatment vs. Control difference was apparent at the Probe period. As Fig. 19 shows, the Control group demonstrated an increase in General Physical Discomfort at the Probe, relative to Posttest. Scores of the SS group stayed relatively stable, while those of the CR and SS/CR groups showed a decrease.

Pre-Screening Measures

As shown in the bottom portion of Table 6, three of the prescreening measures had significant main effects on a number of the dependent factor measures. The univariate analyses revealed a significant main

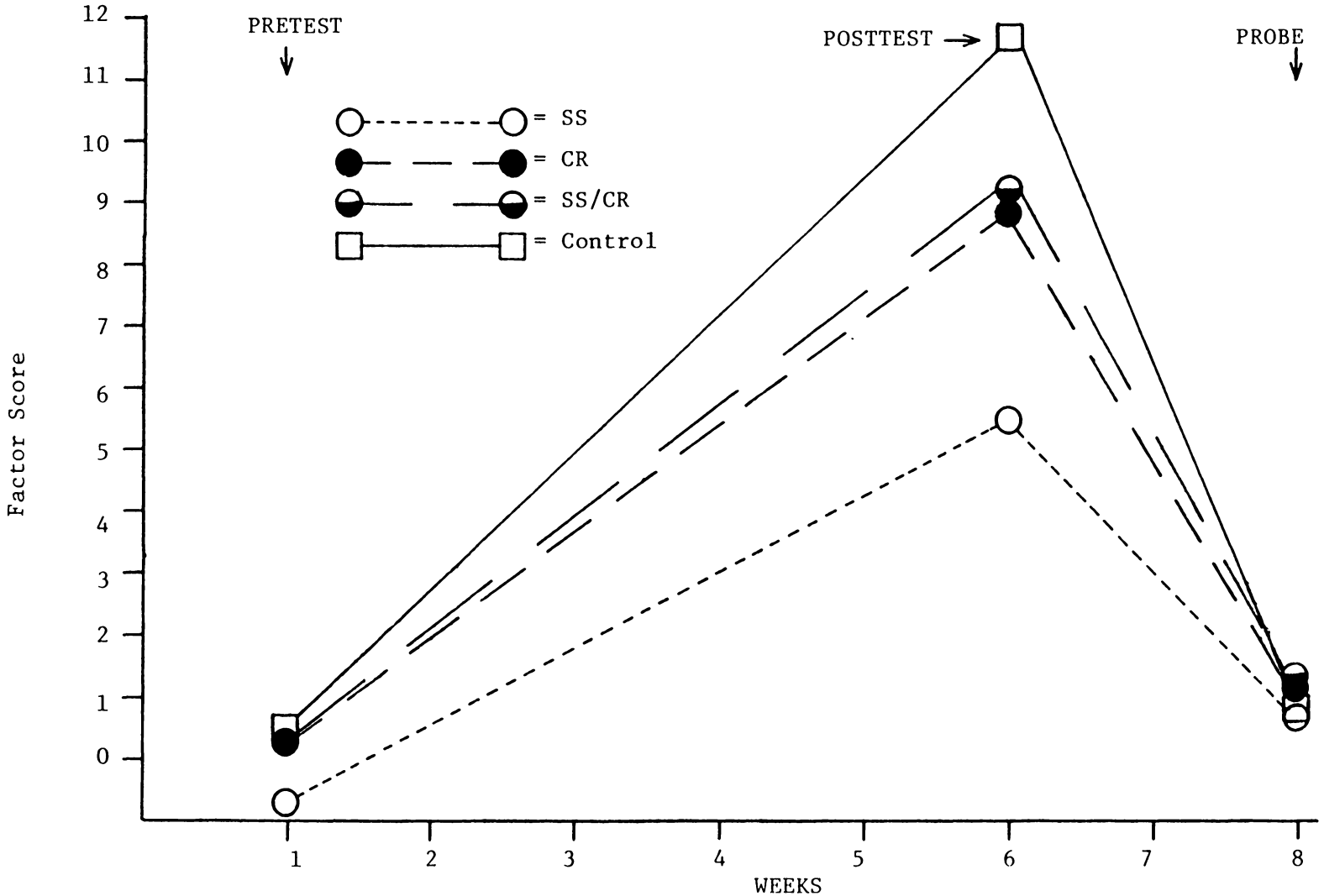

Figure 17. Mean Adaptive Responding factor scores, by group, at Pretest, Posttest, and Probe.

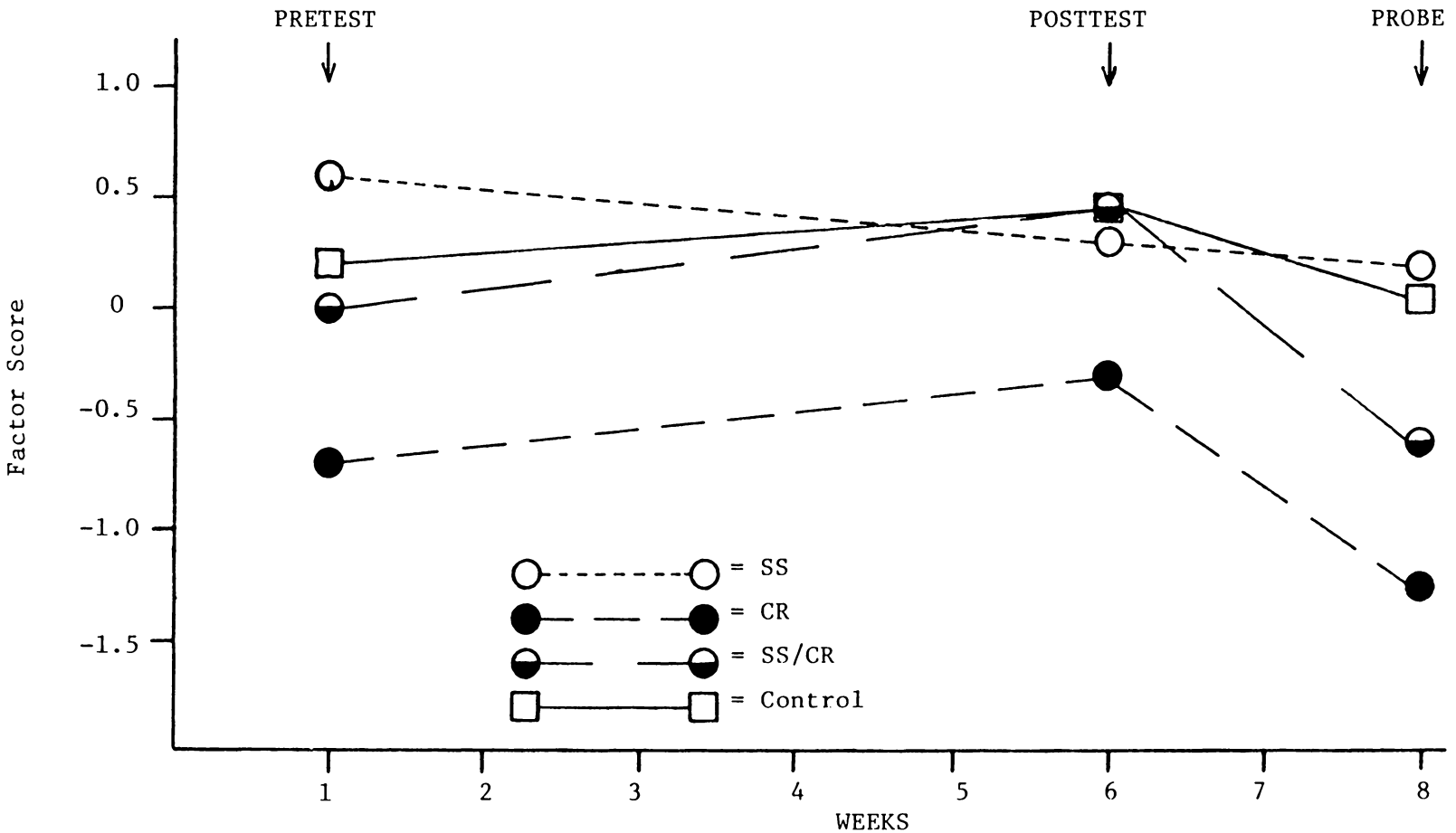

Figure 18. Mean Low Self-Regard factor scores, by group, at Pretest, Posttest and Probe.

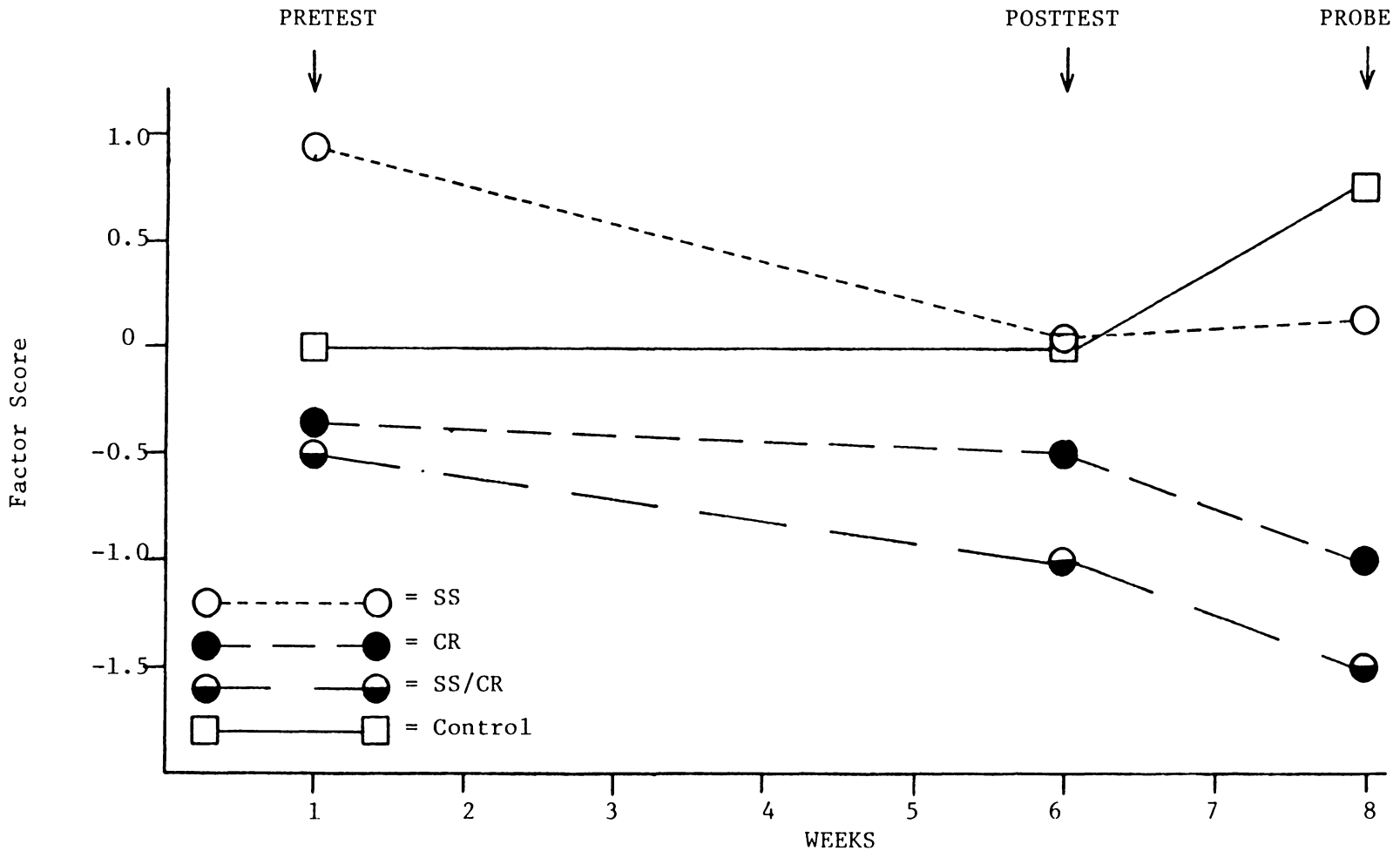

Figure 19. Mean General Physical Discomfort factor scores, by group, at Pretest, Posttest, and Probe.

effect of F Scale scores on: Factor 1, Transient Worry and Anxiety ($F(1,36) = 4.43$, $p<.05$); Factor 2, General Anxiousness and Helplessness ($F(1,36) = 6.64$, $p<.02$); and Factor 3, Somatic Complaints and Faulty Responding ($F(1,36) = 13.57$, $p<.0008$). A significant main effect of LCU's was found only on Factor 3, Somatic Complaints and Faulty Responding ($F(1,36) = 6.0$, $p<.02$). Lastly, the Number of Close Friends reported by subjects had a significant effect on Factor 6, Low Self-Regard ($F(1,36) = 5.85$, $p<.02$).

As all of the above pre-screening measures were continuous variables, post hoc analyses were performed as in the previous analysis (i.e. by computing correlation coefficients). The obtained correlations can be seen in Table 7.

A significant positive linear relationship was found between F Scale scores and scores on Factor 2, General Anxiousness and Helplessness, and Factor 3, Somatic Complaints and Faulty Responding. The correlations between F Scale scores and Scores on Factor 1, Transient Worry and Anxiety, and between LCU's and scores on Factor 3, were not significant. The bottom portion of Table 7 shows a significant negative relationship between the Number of Close Friends reported by subjects and scores on Factor 6, Low Self-Regard. Thus, those subjects who reported having relatively fewer close friends also tended to have lower degrees of self-regard.

Extent of Individual Subject Improvement

In order to determine the degree of post-treatment change among individual subjects, an "Improvement Index" was calculated for each subject, as follows: A change score was calculated for each subject

Table 7. Pearson Product Moment Correlations between continuous Independent effects from Table 6 and their respective dependent measures (from factor data). (All measures were collapsed across Groups and Time in obtaining the correlation coefficients).

Independent Effect	Dependent Measure	r	p
F Scale Scores	1-Transient Worry and Anxiety	.21	n.s.*
	2-General Anxiousness and Helplessness	.28	.05
	3-Somatic Complaints and Faulty Responding	.39	.005
LCU's	3-Somatic Complaints and Faulty Responding	.14	n.s.
No. of Close Friends	6-Low Self-Regard	-.32	.03

* $p > .05$

on each of the six factors by subtracting the Pretest factor score from the Posttest factor score. The Improvement Index was then calculated by summing the resulting six change scores, adjusting the valence on each score according to the expected direction of change for improvement. For example, improvement on Factors 1, 2, 3, 5, and 6, would be reflected by a negative change from Pretest to Posttest. Alternatively, improvement on Factor 4 was indicated by a positive Pretest to Posttest change. Thus, each change score that was in the direction of improvement was given a positive valence and added to the improvement index, while change scores in the opposite direction of improvement were assigned a negative valence and subtracted from the improvement index.

The Improvement Indices thus obtained are depicted graphically in Fig. 20, separated by group and subject. The individual indices ranged from a low of -3.25 to a high of 39.98. The mean within-group Improvement Index, in decreasing order, was: Control, $\bar{x}$ = 18.37; Cognitive Restructuring, $\bar{x}$ = 15.1; Social Support, $\bar{x}$ = 13.6; and Social Support/Cognitive Restructuring, $\bar{x}$ = 13.5.

Comparison of Most vs. Least Improved Subjects

Due to the wide within-group variability on the Improvement Index, group membership provided little explanatory value in terms of the characteristics of subjects manifesting the most vs. the least improvement. Hence, the 25% of subjects who obtained the highest Improvement Index scores (N=13, range = 20.06 - 31.98) were compared against the 25% of subjects who obtained the lowest Improvement Index

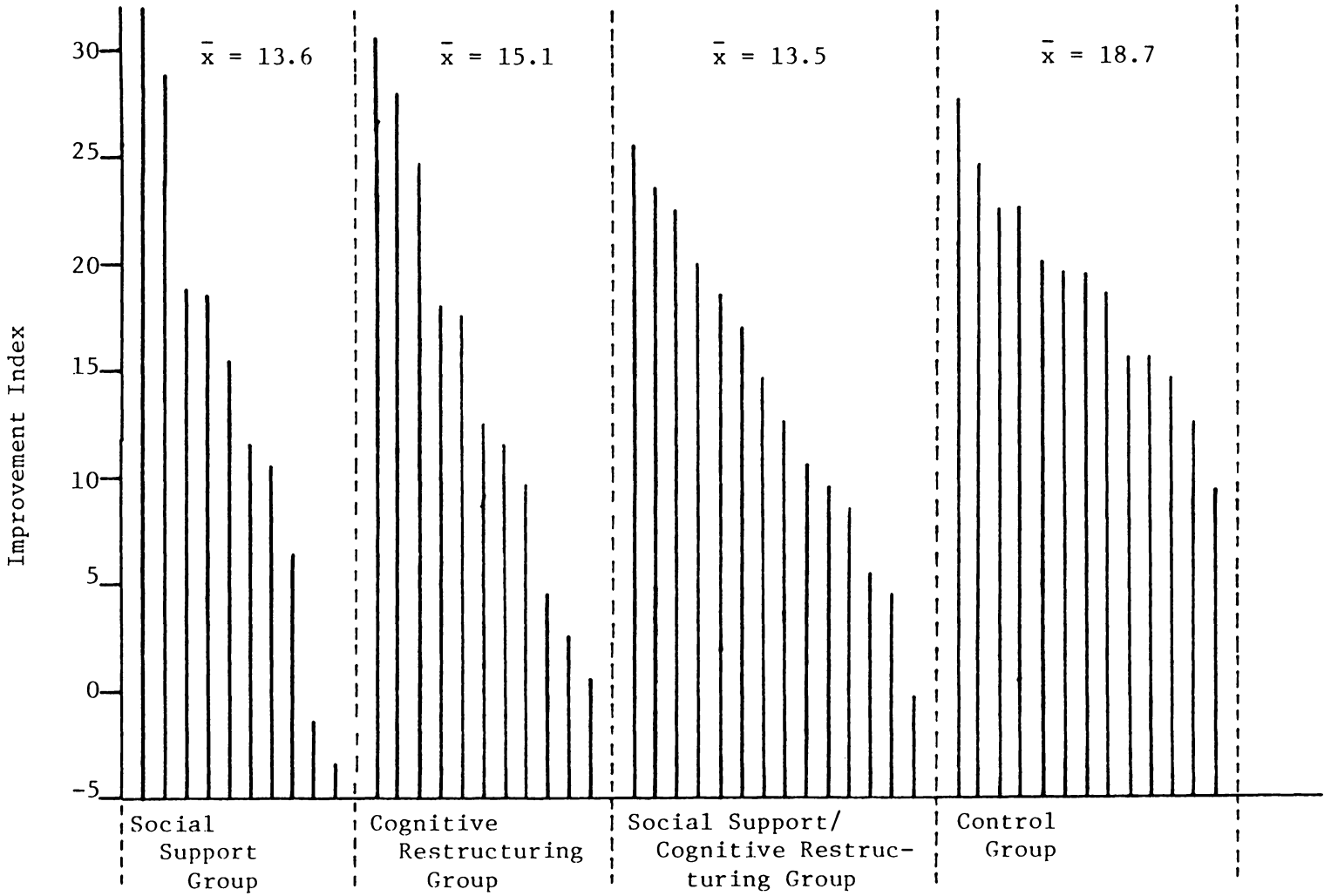

Figure 20. Relative post-treatment improvement of individual subjects, by group. (Each data point represents an individual subject.)

scores (N=13, range = -3.24 - 9.54) on all of the pre-screening and Pretest measures.

Chi-square tests were employed to assess for differences between the Most vs. Least Improved subjects on the categorical pre-screening measures. No significant differences were found for Sex of subject ($\chi^2(1) = 0.16$, p .75); Rural vs. Urban background ($\chi^2(1) = 0.19$, $p > .75$); reported Hometown Population ($\chi^2(4) = 6.88$, $p > .15$); having vs. not having a Steady dating partner ($\chi^2(1) = 0.14$, $p > .75$); and for having Fewer vs. More close friends presently relative to before coming to college ($\chi^2(1) = 0.15$, $p > .75$).

A one-way ANOVA was performed on the remaining measures, the results of which can be seen in Table 8. Significant differences between Most and Least improved subjects were found on three of the measures: Degree of Gratification obtained from present social relationships ($F(1,24) = 5.75$, $p < .03$); Frequency of Disturbing Cognitions ($F(1,24) = 9.05$, $p < .007$); and No. of Successful Substitutions ($F(1,24) = 5.82$, $p < .03$). Post hoc analyses revealed that at Pretest, the Most Improved subjects reported significantly less gratification with their social relationships relative to the Least Improved subjects (means of 5.8 and 7.2, respectively, on a 1 (none at all) to 10 (a great deal) scale) (Duncan df=24, $p < .05$). The Most Improved subjects also reported a significantly higher Frequency of Disturbing Cognitions at Pretest (Duncan df=24, $p < .05$), and significantly more Successful Substitutions of disturbing cognitions (Duncan df=24, $p < .05$), relative to the Least Improved group.

Table 8 - Results of one-way ANOVA on pre-screening and Pretest scores of Most vs. Least Improved subjects

Dependent Measure	F	df	p
LCU's	0.44	(1,24)	.52
F Scale Score	0.05	(1,24)	.83
No. of Close Friends	2.33	(1,24)	.14
Gratification from Present Social Relationships	5.75	(1,24)	.03*
Stress Information Questionnaire	0.55	(1,24)	.47
Test Anxiety Scale	0.81	(1,24)	.38
Self Control Schedule	0.51	(1,24)	.49
Health Locus of Control	0.48	(1,24)	.50
Self Efficacy	0.01	(1,24)	.95
Self Esteem	0.77	(1,24)	.39
STAI (Trait)	0.46	(1,24)	.51
Physical Symptom Frequency	0.01	(1,24)	.95
Physical Symptom Severity	0.81	(1,24)	.38
Severity Index	2.34	(1,24)	.14
Anxiety (daily ratings)	1.24	(1,24)	.28
No. of Daily Interactions	2.84	(1,24)	.11
Frequency of Disturbing Cognitions	9.05	(1,24)	.007*
Duration of Disturbing Cognitions	3.69	(1,24)	.07
No. of Successful Substitutions	5.82	(1,24)	.03*
Cognitive Success Rate	1.47	(1,24)	.24
Coping Effectiveness Score	0.05	(1,24)	.84
No. of Adaptive Coping Strategies	0.07	(1,24)	
No. of Maladaptive Coping Strategies	0.41	(1,24)	.53

* significant F ratios

In summary, few differences were found between subjects categorized as Most vs. Least Improved. Subjects who demonstrated the greatest improvement could be distinguished at Pretest via the following indicators: a relatively lower degree of reported gratification from social relationships; relatively more frequent disturbing cognitions; and having a relatively greater degree of success in substituting disturbing cognitions.

Discussion

The above findings preclude any conclusions regarding the relative efficacy of the treatments administered. As was shown, the results varied considerably across measures, with no single group consistently demonstrating a superior outcome. Indeed, in view of the Control group's performance on many of the measures, the reader may be tempted to conclude that the administered treatments had no effect. While such a conclusion may be justified on a statistical basis, a closer inspection of the data reveals that alternative conclusions may be warranted.

Treatment Effects

Several treatment vs. control differences were apparently clouded by the relatively small number of subjects in each group; resulting in many of the visually apparent between-group differences being statistically non-significant. This was particularly evident in the Pretest to Posttest differences on the measures of Test Anxiety (Fig. 4), Health Locus of Control (Fig. 5), and Self-Efficacy (Fig. 6). The three treatment groups showed favorable Pretest to Posttest changes on all of the latter measures, while the Control group demonstrated either minimal or unfavorable change. On the remaining measures, the Pretest to Posttest performance of the Control group closely mirrored that of the three treatment groups. Hence, it could be concluded that the three treatments, while not differentially effective, had their primary impact by attenuating test anxiety, enhancing the subjects' perceived degree of personal control over their health, and enhancing the subjects' perceived self-efficacy.

However, the primary concern of the present study was not limited to treatment changes alone. Rather, the more fundamental question was whether the subjects were utilizing the strategies taught in treatment at the appropriate times, i.e. what was the preventive potential of the treatments? The preventive effect of the treatments was based on the Posttest to Probe changes on the various measures. The Probe measurements, it will be recalled, were taken a few days prior to the final examination period, a time which was inferred to be highly stressful for the subjects in the present study.

Preventive Potential of the Treatments

Several segments of the data converged to suggest that the preventive effect of the treatments had a wider impact than did the treatment effect. For example, all three treatment groups showed further decreases in Test Anxiety (Fig. 4) from Posttest to Probe, while the Control group's Test Anxiety at Probe stayed at the same elevated level that was measured at Posttest. A similar finding was obtained on the Health Locus of Control measure (Fig. 5). As can be seen, both the CR and SS/CR groups manifested a more internal health locus of control at Probe, relative to Posttest. The SS group, however, did not maintain the relatively more internal orientation which they demonstrated at Posttest, as their Probe levels on this measure returned to the same level obtained at Pretest - indicating a relatively more external orientation. The worst performance was demonstrated by the Control group, which reflected a relatively more external orientation over time. Thus, on this measure, only two of the three treatment groups demonstrated a preventive benefit. This may have been due to the Cognitive

Restructuring treatment, which could have helped the subjects in the latter two groups to alter their expectancies regarding control over their own health.

The preventive benefit of the treatments was also reflected on the Self Control Schedule (Fig. 7). All three treatment groups demonstrated increases in self-control from Posttest to Probe, while the Control group showed a slight decrease during the same time period. A less dramatic effect was seen on the STAI(trait) measure (Fig. 8). All groups, including the Control, demonstrated decreased levels of trait anxiety at Posttest. At the stressful Probe period, however, the Control group's trait anxiety increased relative to Posttest levels, while the three treatment groups manifested further decreases.

A heightened degree of anxiety on the part of the Control group during the Probe period was also indicated on two of the factor measures. The Control group showed a large increase in Transient Worry and Anxiety (Fig. 15) from Posttest to Probe, while changes in the three treatment groups' levels on this measure were minimal during the same time period. Although not as large as the latter, an analogous increase on the part of the Control group was seen on the General Anxiousness and Helplessness factor (Fig. 16). Again, the three treatment groups showed minimal changes from their Posttest levels.

The final measure which reflected the preventive potential of the treatments was the General Physical Discomfort factor (Fig. 19). From Posttest to Probe, the Control was the only group which demonstrated an increase in general physical discomfort, with the three treatment groups either maintaining their Posttest levels or showing further decreases.

As was the case with the previously noted treatment effects, the above data allows no statement regarding the relative efficacy of the three treatments. However, the above outlined Posttest to Probe differences provide highly suggestive evidence that subjects who received treatment were prepared to cope more efficiently, relative to untreated subjects, during a subsequent stressful period. Unfortunately, the lack of statistical support for the latter evidence prevents the drawing of any robust conclusions. The factors which hindered interpretation of the present study, as well as other limitations of the present research, are addressed in a subsequent section of this discussion.

Social Support Findings

The results of the present investigation did not permit any conclusions to be made regarding treatment-related changes in either the tangible components of the subjects' social support networks (e.g. behaviors related to obtaining social support; social network variables), or the subjects' perceptions of their social support networks (e.g. satisfaction vs. dissatisfaction). However, some interesting findings were yielded in terms of concomitants of some social support parameters. In the post hoc analyses reported in Tables 3 and 7, for example, it was shown that the subjects' reported number of close friends was inversely related to low self-esteem, trait anxiety, daily ratings of anxiety, and low self-regard. Thus, in a college undergraduate population, it appears that a relatively greater number of close friends contributes to a number of components of psychological well-being.

The remaining findings on concomitants of social support parameters appear somewhat anomolous. As was previously noted, subjects who reported having a steady dating partner tended to have higher levels of both trait and test anxiety. As both of the latter measures are designed to tap trait characteristics, this finding may reflect the notion that college students who are relatively more anxious tend to seek the security of a steady relationship. Alternatively, it could be the case that the requirements of maintaining a steady relationship foster a chronic high level of anxiety among college students. The second finding referred to above involved the ratings of Gratification obtained from present social relationships. In the comparison of most vs. least improved subjects, those subjects categorized as Most Improved at Posttest gave relatively lower Gratification ratings at Pretest. Unfortunately, the gratification rating was not employed as a repeated measure, and thus it could not be determined whether these subjects' ratings improved subsequently.

Limitations of the Present Research

A major area of difficulty in the present research involved measurement. As was evident in the data analysis, many of the visually apparent differences proved to be non-significant when subjected to statistical comparison. In several instances, this appeared to be due to the relatively small number of subjects in each group. However, due to the nature of the measures employed, the clinical, as opposed to statistical, significance of the observed changes could not be determined.

The sheer volume of dependent measures employed raises another question. On several measures, the performance of the Control group closely mirrored that of the three treatment groups, with the former subjects apparently "improving" to the same degree as the treated subjects. While this may have simply been a function of time, it is equally likely to be indicative of a reactive effect of measurement. That is, the requirement of completing so many dependent measures may have sensitized the subjects to respond in the desired direction on some measures and/or may have facilitated real improvement.

In terms of the individual instruments employed, a weak link was apparent in several of the daily measures. On the daily social support measures, for example, the subjects were requested to rate the degree of positive and/or negative feelings that certain daily interactions provided them with. This measure was designed to tap a facet of the subjects' perceptions of their daily social support. However, as was previously noted, many subjects frequently bypassed these ratings entirely, and the resulting data made no contribution to the explanatory network. Clearly, this measure lacked the operationalization necessary to result in meaningful data.

The daily cognitive measures, which assessed frequency, duration, and number of successful substitutions of disturbing cognitions, are questionable in terms of accuracy. In many investigations of cognitive restructuring, subjects are required to monitor their cognitions at several points during each day, generally in close proximity to disturbing events. This tactic was not required of all the subjects

in the present investigation in order to minimize subjects' recording time. Whether the sensitivity of such cognitive measures is compromised by having the subjects make a retrospective account at day's end is an empirical question, as to the present author's knowledge, this topic has not been addressed in the literature.

The remaining major shortcoming of the present investigation concerns the scope of the targeted problem, i.e. the stress of university life. As was alluded to earlier, college students are faced with a vast complex of stressors in the university environment, some of which are common to all students, and others which are idiosyncratic. With many individuals, the current treatment regimen of five group sessions may not have constituted an adequate intervention. Indeed, it is questionable as to whether any such broad-based area of difficulty can be adequately addressed in a brief time-limited format.

Directions for Future Research

With the paucity of existing research on social support, subsequent research in this area can take any number of directions. There is clearly a need for further investigations which directly manipulate social support. The development and maintenance of social support networks could have wide-ranging implications for both the individual and the community. A potentially fruitful focus in future research in this area involves the relationship between objective social support indices (e.g. number of friends, number of interactions) and subjective social support indices (e.g. perceived satisfaction). While most extant studies have attempted to measure both aspects, no research to date has conclusively demonstrated how one may influence

the other. As most definitions of social support conceptualize it in terms of "information", or a cognitive variable, the most productive inquiry may result from attempts to alter subjective appraisal of social supports.

In regard to targeted problem areas, investigations which employ a brief time-limited format would likely benefit from focusing on more circumscribed stressors than that targeted in the present study. Not only would such a strategy likely enhance treatment effects, but it would also allow for the use of more objective, performance-based measures. In order to more adequately evaluate attempts to intervene on problem areas with broader scope, a more longitudinal design would be better suited. It appears intuitively reasonable that any treatment intervention which is purported to produce effects generalizable to a large number of behaviors and situations would require a relatively longer temporal interval for both treatment and measurement.

The potential costs involved in targeting broad-based stressors will hopefully not dissuade subsequent research from doing so. While limiting treatment to more circumscribed stressors is undoubtedly more cost-efficient in the short-term, current research indicates that the generalizability of the treatment effects to untargeted areas is questionable. Over time, personal stress-management strategies with a relatively broader scope could prove to be far more economical. Additionally, if such strategies were disseminated to various segments of the community and utilized as a primary prevention vehicle, the number of individuals reaping benefit could be increased geometrically.

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APPENDIX A

Changes from Pilot to Final Study

	Pilot	Final Study
Design:		
No. of sessions	3 over 2 wk. period	5 over 1 mo. period
No. of subjects	8 per group	14 per group
Baseline measures	taken during first treatment session	taken 1 week prior to onset of treatment
Treatment Formats:		
Social Support	training and practice in use of communications skills	self-help group; structured interactions focused on common stressors and modes of responding
Cognitive Restructuring	didactic presentations of cognitive intervention; optional self-monitoring	didactic presentation plus individual application within the group, required self-monitoring
Dependent Measures:		
F Scale	not utilized	included as screening device
Test Anxiety Scale	21-item version	36-item version
Stress Scenarios and Judges' ratings	scenarios intuitively derived; judges' ratings more subjective	empirically-derived scenarios, judges ratings operationalized and judges received scoring training
Self-Esteem Scale	written by author; unknown psychometric properties	Rosenberg Self-Esteem Scale; known psychometric properties
Daily Measures	subjects required to complete 2-pg. form every day of the study	subjects required to complete only at designated intervals; form revised to 1-pg. on basis of pilot results

APPENDIX B

Personal History

Name _____ Soc. Sec. No. _____

Campus Address _____ Phone No. _____

Age _____ Sex M ___ F ___

Academic Major _____

Population of your home town: (please check)

Less than 1,000	___
1,000 - 10,000	___
10,000 - 25,000	___
25,000 - 100,000	___
Greater than 100,000	___

Is your home town area (please check) Urban ___ Rural ___

1. Are you Married ___ Single ___ (please check)

2. Do you presently have a steady dating partner? Yes ___ No ___

3. How many close friends (i.e. individuals you speak with at least weekly about nonschool-related matters, and whom you can confide in) do you now have? ___ (fill in number).

4. Do you now have more or fewer (please circle) close friends than you did prior to coming to VPI?

5. How much gratification/sense of well-being do you obtain from your present social relationships?

1	2	3	4	5	6	7	8	9	10
/	/	/	/	/	/	/	/	/	/
None At All				A Moderate Amount					A Great Deal

APPENDIX C

Please indicate the amount of certainty you would have, using the following scale, in making each of the following statements about yourself. (simply place your rating in the blank next to each statement).

1	2	3	4	5	6	7	8	9	10
/	/	/	/	/	/	/	/	/	/

Not at all certain — Moderately Certain — Completely Certain

___ 1. I feel capable of handling the stress of exam week.

___ 2. I feel capable of switching to more adaptive thoughts when I find discomforting thoughts are causing me to feel stressed during exam week.

___ 3. I feel capable of calling on a friend or a group of friends to help me when I feel stressed during exam week.

___ 4. I feel capable of handling all types of stress related to university life.

___ 5. I feel capable of handling any type of stress that I might encounter.

APPENDIX D

Stress Information Questionnaire

Name: _____ Date: _____

1. What is stress?

   A. It is a reaction to a physical threat to the body.
   B. It is a reaction to a psychological threat to the body.
   C. It is a struggle to adjust to a life change.
   D. All of the above.

2. Why doesn't stress go away?

   A. We each have within us an unconscious tendency to want to feel stressed.
   B. We frequently increase the likelihood of feeling stressed in the future because of the ways we attempt to handle stress in the present.
   C. We allow ourselves to feel stressed in order to fight off depression.
   D. All of the above.

3. Research indicates that ____ of all diseases are stress related.

   A. 10-20%
   B. 20-50%
   C. 50-80%
   D. 80-100%

4. Which of the following is a common stress related disorder?

   A. Cardiovascular disease
   B. Cancer
   C. Increased susceptibility to infectious diseases
   D. All of the above

5. What is the stress reaction?

   A. It is an automatic, integrated response that can be set off in the body when a stressor is encountered.
   B. It is the response of another person to an individual who is stressed.
   C. It is the response in your body after you have calmed down from a stressful experience.
   D. It is another name for high blood pressure.

6. Which of the following is <u>not</u> a source of stress?

   A. Lack of exercise

Stress Information Questionnaire (cont.)

B. Pollution
C. Smoking
D. None of the above

7. What is a self-defeating belief?

A. It is a belief we hold that we cannot possibly live up to.
B. It is a potential source of stress
C. It is an irrational belief that we learned over a number of years.
D. All of the above.

8. Seeking social support for a problem can help you:

A. Validate your view of the situation.
B. Discover alternate solutions to the problem.
C. Find out that others are experiencing the same problem.
D. All of the above.

9. What we say to ourselves, or our "internal dialogue", can affect:

A. Our day-to-day performance in many activities.
B. Absolutely nothing. The body is stronger than the mind.
C. What we attribute our behavior to.
D. A and C.

10. Which of the following statements is false?

A. It is necessary to seek professional help to learn to cope with stress most efficiently.
B. A group of stressed individuals can help each other learn to cope with stress.
C. It is impossible to cope with stress adequately if one's daily schedule is very full.
D. B and C.

APPENDIX E

1. You're taking a class this quarter in which the prof expects a lot of "student participation". It wouldn't be so bad if he let people volunteer, but he constantly picks out people and puts them on the spot. Lately, it seems as though he's been calling on you more often. He never asks a simple single question - instead, it seems like he interrogates you by asking several questions and even questioning your answers. It has reached the point where you're so anxious when he calls on you that you can't even answer the questions that you're sure you know the answers to.

2. You wake up Monday morning with a pounding headache, 15 minutes after the start of your class in which the instructor was supposed to review the key points for the upcoming exam. You run into the bathroom for a quick shower and discover there's nothing but cold water. As you're getting dressed, you try to ignore your growling stomach because you know there's no time for breakfast. You trot out the door, slip on the pavement, and watch your notebook land in the middle of a puddle.

3. It's finals week and the exam in your toughest class is scheduled front to back with two other exams. Though you tried, it was impossible to arrange a satisfactory rescheduling. You have to do well in this particular course as it's part of your major, and your grade point depends on it. However, whenever you pick up the notes and textbook you get so anxious you can't even concentrate.

4. It's Thursday night of finals week. Most of the students have finished exams and are out partying or have left campus. You're feeling envious and frustrated because you have a big exam Friday morning for which you have a lot to study. You sit down at 8 o'clock, telling yourself that you have to stay up most of the night in order to get a decent grade. At midnight, you become very sleepy, and decide to take a short nap. You set your alarm for 1 o'clock, and lie down. The next time you open your eyes, you're staring at your alarm clock - which reads 7 a.m. - just 45 minutes before your big exam.

5. The push is on. That term paper that was assigned earlier in the quarter is due in two days and you're still not even set on a topic. The very thought of sitting down to it repulses you - besides, you really haven't had the time with the work in your other classes. The instructor has specifically stated that late papers won't be accepted - and you know you'll bomb the course if you take an F for the paper.

APPENDIX F

Attached are the transcripts of two empirically-derived "stressful situations" and the responses of a number of undergraduate students to each situation. Each situation was presented verbally to the students, and they were asked to write down how they would actually respond to each situation in terms of: what they would do; how they would go about doing it; and what their thoughts and feelings while doing it would be.

As a judge, your task is to rate each response for "effectiveness in coping with the situation", on a 1 - 5 scale, utilizing the following anchor points:

1 = poor
3 = average
5 = superior

Assume that each response is average (i.e. score of 3) initially. Use the following general categories to classify components of each response which contribute to a relatively higher or lower rating.

Positive response components

- positive self-talk (i.e. focused on providing a rational and/or positive appraisal of self and/or situation)
- assertion (without aggression)
- instrumental actions that contribute to resolution of the problematic situation (**see bottom of situation transcripts for specific examples)
- seeking out others to validate perceptions, ventilate frustrations, or solicit suggestions

Negative response components

- aggression toward others
- negative self-talk
- doing nothing or perceiving oneself as being helpless
- activities that would likely perseverate the stress in the situation or have no potential modifying impact (see bottom of situation transcripts for examples)
- experiencing negative emotional states which perseverate throughout the response (i.e. negative emotional state isn't resolved in the context of the response)
- substance abuse (e.g. smoking, drinking, overeating or use of drugs in response to the situation)

The following general guidelines are provided to assist you in assigning a rating to each response on the basis of the configuration of positive and negative components.

Effectiveness rating:

5 = Two (2) or more positive components, and no negative
4 = positive components outnumber negatives
3 = even balance between positives and negatives or response components cannot be classified according to the above categories.
2 = negative component outnumber positives
1 = two or more negative components and no positives

Response components which are not scored:

- "praying or variants thereof
- global descriptions which are not explained (e.g. "calm myself down"; "do something else"; "think of something else")
- any response which cannot be reasonably classified according to the above categories.

In responses where several alternative courses of action are noted (e.g. "I would go _____ or _____ or _____) score each alternative as a separate response component.

Also, please note each coping strategy employed in the response by means of the following codes:

IA - instrumental actions which reflect use of effective problem-solving

SS - social support

AS - assertion

ST+ - positive self-talk

MP - miscellaneous positive coping strategy

ST - negative self-talk

HL - perceiving oneself as helpless

AG - aggression toward others

SA - substance abuse

NE - lapsing into a negative emotional state

MN - miscellaneous negative coping strategy

You're taking a class this quarter in which the prof expects a lot of "student participation". It wouldn't be so bad if he let people volunteer, but he constantly picks out people and puts them on the spot. Lately, it seems as though he's been calling on you more often. He never asks a simple single question - instead it seems like he interrogates you by asking several questions and even questioning your answers. It has reached the point where you are so anxious when he calls on you that you can't even answer the questions that you're sure you know the answers to.

Specific positive components:

- study harder or prepare more for class
- preperformance rehearsal of anticipated questions
- go speak to the prof (in a non-aggressive manner)
- talk to other students to ascertain their perceptions, ventilate frustration, or elicit suggestions.

Specific negative components:

- skip or drop the class
- embarrass prof in front of class
- angrily accuse prof of selective treatment
- threaten prof
- saying, "I don't know" to prof's questions, ignoring prof, staring at the desk, or other similar means of avoidance.

You wake up Monday morning with a pounding headache, 15 minutes after the start of your class in which the instructor was supposed to review the key points for the upcoming exam. You run into the bathroom for a quick shower, and discover there's nothing but cold water. As you're getting dressed, you try to ignore your growling stomach because you know there's no time for breakfast. You trot out the door, slip on the pavement, and watch your notebook land in the middle of a puddle.

Specific positive components

- pick up notebook, get up, and go on to class (this group of response, and variants thereof, is scored as 1 response component).
- get notes from someone later on
- any explained means of relaxation (scored as positive only if appears in conjunction with 1 or 2 above.)
- eat breakfast (scored as positive only if appears with 1 or 2 above)

Specific negative components

- go back to bed or not go to class
- no mention of getting missed notes
- purposely leaving notebook in puddle or further damaging of notebook
- no indication of overcoming the frustration evoked by the incident (i.e. remains angry, upset, etc., throughout response).

APPENDIX G

Name: _____ Date: _____ No. Exams Today: _____

_____ I forgot to fill out this form

Of the symptoms listed below, please put a check by the ones you experienced today and indicate the severity of each checked symptom by circling one of the numbers on the 10-point scale.

	Very Mild									Very Severe
___fatigue	1	2	3	4	5	6	7	8	9	10
___insomnia	1	2	3	4	5	6	7	8	9	10
___headache	1	2	3	4	5	6	7	8	9	10
___backache	1	2	3	4	5	6	7	8	9	10
___muscle pain	1	2	3	4	5	6	7	8	9	10
___skin disorder	1	2	3	4	5	6	7	8	9	10
___gastrointestinal disorder	1	2	3	4	5	6	7	8	9	10
___flu and/or cold	1	2	3	4	5	6	7	8	9	10
___accident	1	2	3	4	5	6	7	8	9	10
___sexual dysfunction	1	2	3	4	5	6	7	8	9	10
___menstrual distress	1	2	3	4	5	6	7	8	9	10
___other (specify)	1	2	3	4	5	6	7	8	9	10

Check each of the words below that describes how you felt in general today

___ Afraid
___ Calm
___ Cheerful
___ Contented
___ Desperate
___ Fearful
___ Frightened
___ Happy
___ Joyful
___ Loving
___ Nervous
___ Panicky
___ Pleasant
___ Secure
___ Shakey
___ Steady
___ Tense
___ Terrified
___ Thoughtful
___ Upset
___ Worrying

How many interactions did you have today in which you discussed a problem you're experiencing? ___ (Please fill in number)

Please rate the degree of positive and/or negative feelings these interactions provided you with:

	Slight Degree			Moderate Degree					Great Degree
POS.	1	2	3	4	5	6	7	8	9	10
NEG.	1	2	3	4	5	6	7	8	9	10

How often and for how long, did you experience discomforting thoughts or worries today? (Please check each column)

0 times	___	not at all	___
1-3 times	___	less than an hour	___
4-7 times	___	more than an hour	___
8-10 times	___	several hours	___
more than 10	___	constantly	___

How many times were you successful in substituting discomforting thoughts and worries?

0 times ___
1-3 times ___
4-7 times ___
8-10 times ___
more than 10 ___

APPENDIX H

GROUP EVALUATION QUESTIONNAIRE

Please rate the following statements by circling the number which best describes your opinion of the Stress-Management group.

1. The Stress-Management group was useful in teaching me how to cope with the stress of university life.

1	2	3	4	5	6	7	8	9	10
strongly disagree				neutral					strongly agree

2. The Stress-Management group was a worthwhile learning experience in general.

1 2 3 4 5 6 7 8 9 10

3. As a result of the Stress-Management group, I now feel better equipped to cope with the oncoming stress of exams.

1 2 3 4 5 6 7 8 9 10

4. I would recommend Stress-Management to friends who are having difficulty coping with stress.

1 2 3 4 5 6 7 8 9 10

5. The group leader was well organized throughout all five sessions.

1 2 3 4 5 6 7 8 9 10

6. The group leader had a firm understanding of the material he presented to the group.

1 2 3 4 5 6 7 8 9 10

7. The group leader was capable of keeping me interested in and attentive to the information presented in the group.

1 2 3 4 5 6 7 8 9 10

Comments:

Please answer each of the following questions by circling the appropriate rating.

1. How much do you feel that the other group members value your membership in the group?

1	2	3	4	5	6	7	8	9	10
not at all				an average amount					a great deal

2. To what extent do you share common interests, experiences, and feelings with other members of the group?

1	2	3	4	5	6	7	8	9	10

3. To what extent do you feel an obligation to help other members of the group when they are in need?

1	2	3	4	5	6	7	8	9	10

4. How certain do you feel that other members of the group would help you if you were in need?

1	2	3	4	5	6	7	8	9	10

5. How well do you feel you know the other members of the group?

1	2	3	4	5	6	7	8	9	10
not at all				moderately well					extremely well

6. How effective do you think interacting with other members of the group is in helping you cope with stress?

1	2	3	4	5	6	7	8	9	10
not at all				moderately effective					very effective

APPENDIX I

Session I

(All sections common to all treatment groups unless otherwise noted)

I. Welcome

A. Introduction of leader

B. Purpose of group

C. Statement on confidentiality

D. Self-introduction of members

E. (SS & SS/CR group only) Members statement of why enrolled in Stress Management group

II. Educational information about stress

A. Definition of stress (Reaction to a threat or danger to the body; threat can be physical or psychological. Struggle to adjust to a life change.)

B. Short and long-term effects of stress

1. Positive aspects (increased motivation, performance, excitement)

2. Too much stress can result in poorer performance, discomfort, desire to avoid or leave the situation

3. Long-term effects of chronic stress include many physical problems (research suggests that between 50 to 80% of all diseases may be stress related).

a. fatigue

b. insomnia

c. headaches

d. backaches

e. muscle pain

f. skin disorders

g. gastrointestinal dysfunctions

h. increased probability of accidents

i. increased susceptibility to infectious diseases

j. sexual dysfunction

k. psychiatric disorders

l. ulcers

m. hypertension

n. cardiovascular disease

o. stroke

p. cancer

q. more rapid aging

r. heart attacks

C. Explanation of why stress does not tend to go away. (Reinforcement principles as well as the long-term effects of substance abuse.)

III. Identification of Stress

A. Rationale for Identification stage

B. Physiological signs of stress

1. Definition of stress reaction

2. Note changes in the body

a. muscle tension

b. increased heart rate

c. increased rapid shallow breathing

d. sweating

e. circulatory changes

f. increased metabolism

g. decreased digestion

h. changes in blood chemistry

C. Behavioral signs of stress

1. Interpersonal

a. increase in number of arguments

b. enhanced irritability

c. increased impatience

d. frequent bouts of crying

2. Frequent physical-risk behaviors that indicate stress

a. drinking

b. medications

c. smoking

d. change in eating habits

e. change in sleeping habits

3. Frequent school related signs of stress

a. absence from school

b. poor school performance

D. Cognitive signs of stress

1. Difficulty concentrating

a. interfering thoughts

b. distractibility

c. rumination

2. Negative self-statements

a. I am worthless

b. I am going to fail

c. Nobody cares about me

d. I can't do this

IV. & V. (Refer to separate Treatment groups' outlines)

VI. Closing

A. Brief reiteration of main points covered

B. Collection of Pretest daily monitoring sheets

C. (SS and SS/CR groups only) Formation of small groups, based on dorm locations, for ostensible security precautions while walking home.

Session II

I. Sources of Stress

A. Explanation of the term "stressor"

B. Rationale for determining the source of stress

C. Personal vs. broad-based stressors

D. Classification of common sources of stress

1. Environmental/Social

a. Family

1. Marital/relationship problems

2. Financial problems

3. Health problems in family members

4. Problems with behavior of the children

5. Death of a family member

6. Member of family leaving home

7. Change in family residence

b. School

1. Going to a new school

2. Graduating

3. Assignment overload

4. Uncertainty about grading criteria

5. Poor relations with professors/students

6. Deadlines for papers, projects, presentations

7. Curtailing recreation

8. Red tape during registration

9. Choosing a major

c. Societal (broad-based)

1. Pollution

2. Threat of war

3. Natural disaster

4. Economic changes

2. Cognitive sources of stress

a. Self-defeating beliefs (explain)

1. Examples

a. One should be liked or approved of by almost everyone

b. To be worthwhile, one must be competent in all respects

c. It is absolutely terrible if things don't go the way they are planned.

d. If there is some possibility that something can go wrong, one should worry about it a great deal.

b. Negative self-statements (these can be signs or sources of stress)

1. Examples

a. I am going to fail

b. I know I'm going to blow it

c. I am totally worthless

3. Physical sources of stress

a. Poor diet

b. Inappropriate use of medication

c. Smoking

d. Lack of exercise

e. Lack of sleep

f. Caffeine

Social Support Group

Session I

I. - III. See common group outline

IV. Explanation of Self-Help format of group

A. Rationale for efficacy of self-help groups

1. Encounter others experiencing similar difficulties

2. Validate your view of the situation

3. Discover alternate solutions to problems

B. Range of difficulties that Self-Help groups have been employed for.

V. Group exercise - Each individual relates to group common signs of stress they notice in themselves - individuals with similar reactions requested to respond subsequently until receive input from all members.

VI. Closing (see common group outline)

- -

Session II

I. Welcome

II. Sources of Stress (see common group outline; Sess. II, A-C)

III. Group exercise: Compile list of stressors encountered as a result of attending college. Discuss stressors common to all vs. personalized stressors.

IV. Classification of common sources of stress (see common group outline; Sess. II, D).

V. Group exercise: Each group member discloses how s/he perseverates effects of stress via physical sources. Followed

by group discussion of short vs. long-term effects of the various strategies; leader highlights contrasting viewpoints in group.

VI. Closing

A. Formation of security groups for walking across campus

- -

Session III

I. Welcome

II. Methods of managing stress

A. Group exercises: Each individual relates the most common way s/he relaxes, "lets off steam" after a stressful encounter. Subsequent individual relates whether the strategy would work for them, and what they do.

III. Academic Stressors

A. Instructions for specificity in identifying stressors

1. Eliminate vague, ambiguous terms
2. General description of the situation
3. Who is involved
4. How you feel about it and why

B. Group Exercise: Entire group divided in half on basis of academic majors (i.e. "hard" vs. "soft" sciences). Each resulting group then independently compiles a list of stressors commonly encountered within their field of study. Both groups then reconvene and relate results to group as a whole

IV. Closing

A. Instructions to retain results from last exercise; brief preview of subsequent session.

B. Formation of security groups for walk across campus

- -

Session IV

I. Welcome

II. Choosing an effective method of coping

A. Generate alternative methods of coping via rules of "brainstorming"

1. criticism is ruled out
2. freewheeling is welcome - the wilder the better
3. quantity breeds quality
4. combine and improve ideas as list of alternatives grows
5. select coping method on basis of individual's ability to implement it and probable success of method in alleviating stress

B. Group exercise: Divide into two groups as in previous session. Select a stressor from developed lists and generate alternative methods of coping with. Decide on which method is most likely to be effective.

C. Group discussion: Both groups convene, relate their results to group as a whole, including methods rejected and reasons for rejection. Leader solicits comments and contrasting opinions from relatively silent members.

III. Developing a personal stress-management plan

A. Group exercise: Divide into same two previously determined groups. Each individual relates to subgroup the source of stress that is currently of most concern to him/her. Subgroup brainstorms alternative methods of coping for each individual.

B. Reconvene: Each individual given assignment of considering the alternatives presented to them, trying out best one between sessions.

IV. Closing

A. Formation of security groups

Session V

I. Welcome

II. Group exercise: Divide into two previously determined groups. Each individual relates to subgroup the relative success or lack of success in implementing their chosen coping strategy. Depending on individual need, subgroup addresses problems encountered and potential alternative strategies, or additional sources of stress for the individual.

III. Completion of posttest measures

IV. Close

Cognitive Restructuring Group

Session I

I. - III. see common group outline

IV. Introduction to Cognitive Restructuring

A. Rationale - effects of thoughts, beliefs on performance

1. Example scenarios

a. Studying for an exam which feel apprehensive about

b. Giving a presentation or speech to a class

V. Member participation - Each member relates to group leader a school-related situation in which they frequently find themselves engaging in negative self-statements.

VI. Closing (see common group outline)

- -

Session II

I. Welcome

A. Brief reiteration of major points of previous session

II. Sources of Stress (see common group outline)

III. Self-defeating beliefs (overhead list of common self-defeating beliefs with contrasting adaptive counter-beliefs)

A. Steps to follow in changing self-defeating beliefs

1. Identify the self-defeating belief

2. Develop a realistic alternative or counter belief

3. Systematically substitute the realistic alternative for the self-defeating belief

B. Identifying self-defeating beliefs

1. Instructions on self-monitoring

2. Use of physiological cues, changes in mood or behavior, to help identify beliefs

3. Each group member is requested to note the belief on overhead which they are most "guilty" of utilizing

IV. Closing

A. Assignment - Self-monitor instances of engaging in self-defeating beliefs; bring monitoring data to next session

- -

Session III

I. Welcome

II. Changing self-defeating beliefs

A. Developing counter beliefs (use of overhead of self-defeating beliefs with contrasting counter beliefs)

1. Goal is to objectively reinterpret self and/or situation

2. Difficult to develop counter beliefs in the midst of an upsetting situation, or other times when we are emotionally charged

3. Importance of "personalizing" the counter belief

B. Substituting alternative beliefs for self-defeating beliefs

1. Practice repeating alternative belief when recognize self-defeating belief

2. Helpful to write on card, carry on person
3. Not just Peale's "positive thinking"; reiterate importance of personalizing

III. Review of self-monitoring data; individual application
   A. Approximately five minutes devoted to each group member in identifying beliefs from self-monitoring data, applying above noted procedures

IV. Closing
   A. Assignment to continue self-monitoring between sessions

- -

Session IV

I. Welcome

II. Self-Statement Modification
   A. Distinction between thoughts and beliefs
   B. Rationale for how repeated thoughts can convert into beliefs.
      1. Effect of thoughts on performance, perceived ability in specific situations.
   C. Relabeling situations (examples on overhead of coping self-statements for each of the following categories)
      1. Before the situation (preparing for a stressor)
      2. During the situation (confronting and handling a stressor)
      3. Crises during the situation (coping with the feeling of being overwhelmed)
      4. After the situation (reinforcing self-statements)

III. Individual application

A. Approximately five minutes devoted to each individual in applying above procedure to situation(s) from individual's self-monitoring data.

IV. Closing

A. Assignment to continue self-monitoring through to final session

- -

Session V

I. Welcome

II. Individual review of progress, problems encountered

III. Completion of Posttest measures

IV. Close

Social Support/Cognitive Restructuring Group

Session I

I. - III. See Common Group outline

IV. Overview of Cognitive Restructuring/Self-Help

A. Rationale - effects of thoughts, beliefs on performance

B. Rationale - efficacy of self-help groups

V. Group Exercise - Each member sequentially relates to group the cognitive sign(s) of stress they commonly notice in themselves. Other group members encouraged to comment and question during each individual's dialogue.

VI. Closing (see common group outline)

- -

Session II

I. Welcome

II. Sources of Stress (see common group outline)

III. Self-defeating beliefs (overhead list of common self-defeating beliefs with contrasting adaptive counter-beliefs)

IV. Group exercise: Group members comment on beliefs on overhead which they recognize themselves engaging in. With leader's prompting, each participant relates a situation they have experienced in which they harbored one of the beliefs on overhead.

V. Steps to follow in changing self-defeating beliefs

A. Identify the self-defeating belief

1. Instructions on self-monitoring

2. Use of physiological cues, changes in mood or behavior, to help identify beliefs.

VI. Closing

A. Assignment - Self-monitor instances of engaging in self-defeating beliefs; bring monitoring data to next session

B. Formation of security groups for walking across campus

- -

Session III

I. Welcome

II. Changing self-defeating beliefs

A. Steps involved

1. Identify the self-defeating belief
2. Develop a realistic alternative or counter belief (use overhead of self-defeating beliefs with contrasting counter beliefs)
3. Systematically substitute the realistic alternative for the self-defeating belief.

B. Developing counter beliefs

1. Goal is to objectively reinterpret self and/or situation
2. Difficult to develop counter beliefs in the midst of an upsetting situation, or other times which are emotionally charged.
3. Importance of "personalizing" the counter belief

C. Substituting alternative beliefs for self-defeating beliefs

1. Practice repeating alternative belief when recognize self-defeating belief
2. Helpful to write on card, carry on person
3. Not just Peale's "positive thinking"; reiterate importance of personalizing.

III. Group exercise: Entire group divided in half on basis of academic majors (i.e. "hard" vs. "soft" sciences). One of the resulting subgroups is then instructed to review their self-monitoring data together and identify prominent self-defeating beliefs for each individual. Leader stays with remaining subgroup and demonstrates application of above procedures. After half of time interval has elapsed, each group's assignment is switched.

IV. Closing

A. Assignment to continue self-monitoring between sessions

B. Formation of security groups for walk across campus

- -

Session IV

I. Welcome

II. Group discussion: Group members relate relative success they have had in applying procedures since last session. Leader encourages interactions among members in terms of questions, suggestions, common experiences.

III. Self-Statement Modification

A. Distinction between thoughts and beliefs

B. Rationale for how repeated thoughts can convert into beliefs

1. Effect of thoughts on performance, perceived ability in specific situations

C. Relabeling situations (examples on overhead of coping self-statements for each of the following categories)

1. Before the situation (preparing for a stressor)

2. During the situation (confronting and handling a stressor)

3. Crises during the situation (coping with the feeling of being overwhelmed)

4. After the situation (reinforcing self-statements)

IV. Group exercise: Divide into two groups as in previous sessions. Members of one subgroup given assignment of choosing a stressful situation they have experienced in college, and compiling, as a group, a list of the negative self-statements that they have used at each step in the above sequence. Leader circulates among remaining subgroup, demonstrating application of self-statement modification to situations gleaned from individual's self-monitoring. Subgroups switch assignments after half of allotted time has elapsed.

V. Closing

A. Instructed to continue self-monitoring through last session

B. Formation of security groups for walk across campus

- -

Session V

I. Welcome

II. Group exercise: Divide into two previously determined groups. One subgroup chooses a common "catastrophe" related to finals week, applies self-statement modification at each stage. Leader reviews progress, problems encountered with remaining subgroup. Subgroups switch assignments at half-time.

III. Completion of Posttest measures

IV. Close

APPENDIX J

Mean Ratings on Group Evaluation Questions, by Group

Question #:	GROUP SS	SS/CR	CR
1.	7.9	7.4	7.6
2.	8.6	7.9	8.4
3.	7.9	7.1	6.9
4.	8.3	8.3	8.8
5.	9.0	8.3	9.2
6.	9.1	8.7	9.4
7.	8.8	8.2	8.7

Mean Ratings on Group Cohesion Questions, by Group

	GROUP		
Question #:	SS	SS/CR	CR
1.	7.0	6.9	6.2
2.	8.5	7.8	7.4
3.	8.5	7.8	7.7
4.	7.8	6.8	7.0
5.	6.4	6.3	5.1
6.	8.1	8.0	8.2

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STRATEGIES FOR MANAGING STRESS: TREATMENT EFFECT AND PREVENTIVE POTENTIAL OF SOCIAL SUPPORT AND COGNITIVE RESTRUCTURING INTERVENTIONS

by

Timothy Andrew Koltuniak

(ABSTRACT)

This study examines the treatment effects and preventive potential of Social Support and Cognitive Restructuring interventions for stress management. A group of 56 highly stressed college undergraduates was selected from a screened population of students who self-referred for difficulty in coping with the general stress of university life. The former subjects were randomly assigned to one of four groups: Social Support; Cognitive Restructuring; Social Support/Cognitive Restructuring (combined treatment); and No Treatment Control. Subjects in each of the three treatment groups attended a total of 5 treatment sessions conducted over a one-month period. Control subjects only completed the dependent measures at the designated intervals. A multiple measurement strategy was employed. Few statistically significant between-group differences were found at post-treatment. The preventive potential of the treatments was examined via a post-treatment Probe assessment, held a few days prior to the final examination period. Results again indicated no differences between the three treatments, and few differences between the treatment groups and Control. The data indicated that the preventive effect of the treatments had a wider impact than did the treatment effect. Difficulties in implementation and interpretation of the present study are discussed, as well as directions for future research in this area.