Self-management: a nursing mode of therapeutic influence

The use of self-management training as a mode of nursing action capitalizes on the current participative response of consumers of health. Self-management training offers guidance to alter physiological processes, cognitions, behavioral habits, and emotions by self-regulation. Especially responsive are patients with symptoms of stress disorders. Evaluation of this mode of nursing action focuses on the amount of reduction of stress responses and retention of training. The outcome for 322 patients demonstrates highly significant changes on multiple measures ($P = .0001$). Furthermore, at 6-month follow-up, the status of 182 patients was maintained or improved ($P = .001$). A comparison group, tested prior to and after a waiting period, showed no improvement.

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TOFFLER'S BOOK, *The Third Wave*, calls for a revised meaning for the social architecture of civilization.[1] New social movements are hampered by old social goals. Old orientations, values, and emotional responses attached to new social forms only dramatize the chaos portended for the future.

A case in point is the ever-burgeoning computerization, forcing more attention to television (TV) monitors for receiving and giving directions. Are Americans to be computerized robots, dependent on TV screens for control of their lives? Is this microprocessed existence to be viewed as replacement by computers for person-to-person contact?

Toffler notes that to use a linear expansion of the present meanings is to misperceive the hidden blueprint; rather, computers and videogames represent a new way of interfacing with TV. Instead of

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passively watching the TV set, young and old people are learning to manipulate it, talk back to it, and interact with it. A seeming social craze represents a new wave of social learning, preparatory training for life in the electronic age of tomorrow.[1]

A second example of the need for new meanings strikes at the very heart of nursing. What is happening to services? Are consumers increasingly captive to an almost infinite number of specialized services, increasingly helpless to keep their households, cars, and bodies in good repair without them? "No," reports Toffler. A slow but advancing change in life style is transforming individuals from *consumers* to "*prosumers*." From the time when products were evolved in the home by consumers themselves, an era was entered in which producers and consumers were clearly demarcated and goods and services were marketed. Now emerging is a loss of the defined line between producers and consumers. Consumers are asking for involvement in producing and servicing. In the marketplace are packages for "do-it-yourselfers": "how to get your own divorce"; "how to build your own hi-fi"; "how to fix your own car"; and "how to return yourself to health."

The involvement of the consumer is being extended from choosing and even pricing goods in the supermarket to putting together Christmas toys, pumping gasoline, and withdrawing money through the bank machine. Toffler reports on Whirlpool's "Cool-line," an 800 number telephone call. A customer with a service problem dials directly to a mechanic who can call up the appliance model diagram on a TV set and instruct the consumer step by step how to take the appliance apart, what to look for, and the item number of the part to replace. In 1978, Whirlpool handled 150,000 such calls.[1(p271)]

The prosumer movement is a very important concern for nursing. Critical to clients' future existence is the way in which nursing care services are structured to capitalize on this trend. Very pertinent to the nursing image are the ways in which one guides the nurse-patient relationship with the prosumer thrust in mind.

Some cogent examples of marketed services in the health field are diet plans and self-diagnosis pregnancy kits. There are abundant self-help groups for recent widows/widowers, former mental patients, child abusers, smokers, stutterers, overeaters, and depressed, addicted, or divorced persons. Frank Riessman and Alan Gartner, codirectors of the New Human Services Institute, report that there are more than 500,000 such groups.[2] These organizations mark a significant shift from passive consumer to active prosumer. Is nursing practice determined to remain aloof from this prosumer movement?

TRENDS IN NURSING PRACTICE

Modes of nursing influence

Modes in nursing practice are used here as a heuristic device to describe the dominant postures of clinicians. Each of these modes depicts a gestalt, composed of a philosophy of care and a repertoire of intervention strategies. Selection of modes of care are likely to be influenced by the clinician's orientation to the nurse-patient relationship, assessment of the health situa-

tion, and the properties of the environment, the patient, and the family. To paint a broad picture, the following modes have been chosen: direct care, self-management training, and self-care. A mode could be depicted by a single activity or, in larger scope, a mode could represent categories along a care-cure dimension. Fig 1 depicts a scheme of the modes or categories of care.

Care characteristics that help to discriminate the modes of nursing influence are based on such questions as the following.

- Who maintains dominant control over decisions?
- What is the direction of transactions (one way or symmetrical)?
- Where is locus of responsibility for maintenance of therapeutic regimen?
- What stance is required of the patient (active/passive or receptive/nonreceptive)?

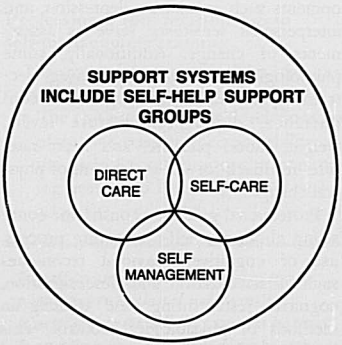

Fig 1. Schematic representation of relations between categories of hypothesized care-cure typology.

- How much problem awareness is needed by the patient?
- How much problem assessment is needed from the patient?
- How much participation is required by the patient in goal setting?
- Whose efforts are most likely to produce change?
- How much investment is needed from the patient?
- Where is the nexus of information on health status?
- What are the norms of power, authority, and potency?

Table 1 gives the characteristics of direct care and self-management training.

Genesis of self-management training

Self-management training derives its theoretical base from social learning and cognitive and psychophysiological theory. Inherent in self-management training are the concepts of regulation and "disregulation."[3] The concept of regulation implies a bodily homeostatic state, and disregulation is the breakdown of those self-regulation mechanisms. Thus, the heart of self-management training is a combination of psychophysiology and social learning theory (the theory that reregulation can be learned by systematic reinforcement).

An example of a disregulated state is neck bracing, a common neuromuscular response following a whiplash injury. Bracing is a defensive act for protection, but the pain that ensues delivers negative feedback, resulting in further bracing. Ordinarily, positive feedback during a regulated state renews and controls the body. Negative feedback is normally reflexively restorative. Schwartz's concept of disregulation[3]

Table 1. Contrast of direct care and self-management training according to care characteristics

	Direct care	Self-management training
Locus of control	Professional dominance	Dominantly patient, but profession takes responsibility for imparting knowledge, skills, and feedback
Problem awareness and assessment	Usually depends on clinical observations and judgment of professionals	Self-awareness and self-assessment
Goal setting	Most care based on end goal determined by professional	Negotiation of goals of both patient and professional
Change agent	Action of professional is medium by which changes are generated	Predominantly patient action or skills to achieve changes
Knowledge	Dominantly professional Knowledge is premise for care	Knowledge is transmitted to patient to use for developing skills to generate change
Feedback	Not central for effectiveness of care	Crucial for effectiveness of training and promoting change

applies when negative feedback fails to produce a reparative response, and the body responds with further disregulation.

A self-management training program identifies the behavior, cognitions, emotional responses, and physical signs that are to be the targets for self-regulation. The assessment makes clear the changes that must be made, and the protocol stipulates the activities that must be undertaken and the skills that must be acquired to reduce the disorder and restore a regulated state. For example, in a self-management program, a patient with neck bracing is expected to assess pain throughout the day over the course of weeks. Furthermore, the circumstances and body status surrounding the pain experience must be documented. Thereafter, counteracting relaxation techniques would be taught to and implemented by the patient.

Behavioral habits are focal issues in all self-management training interventions. Therefore, self-monitoring is basic to self-management training. Self-monitoring provides the baseline characteristics of a person and often heightens awareness. Having the baseline awareness of the frequency of habits or symptoms, a patient will have definable measures by which to determine change and success. Psychological developments such as anxiety, depression, and interpersonal sensitivity serve as assessments of change. Additionally, some physiological feedback indicators (eg, electromyogram [EMG] readings, skin conductance, digital temperature levels, weight, blood pressure, and heart rate) offer feedback for self-assessment of physical changes.

Professional guidance consists of counseling about the self-monitoring process, use of cognitive/behavioral techniques such as sensitization and desensitization, cognitive restructuring, and training in methods of physiological control. This latter training may be accomplished through feedback via biofeedback instruments or through exercises aiming for control of bodily functions. Control over

body functions as diverse as blood pressure, temperature, muscle tension, and heart rate can be attempted.

Contrast with self-care

The following differences exist between self-management training and self-care.

- Self-management training addresses those physical and psychosocial states that may be in episodic or chronic disregulation; eg, obesity, stress response disorders, and anxiety states. Care consists of programmed reregulation using self-monitoring and feedback protocols.
- Self-care addresses the problems of bodily maintenance of health habits during recovery from episodic health deviation; eg, problems of elimination, nutrition, and immobility. Care includes resocialization in self-care of body health habits to assist the person to return to independence.

Professional role relationship in self-management training

The following are principles for the nurse–patient relationship.

- The patient–professional relationship places the burden of responsibility on the patient for setting goals, monitoring health and illness signs, and evaluating the success of the change program. Extrinsic rewards are under patient control, and internal rewards (eg, change of behavior and approval of others) demand patient motivation and commitment to monitor signs, sharpen perception, and produce change.
- The professional's role is to provide careful feedback and to shape the direction of behavior that has been modified.
- Transfer of behavior modification from the therapist-guided laboratory setting to daily life is a strong emphasis.

In self-management training, the patient–professional relationship places the responsibility on the patient for setting goals, monitoring health and illness signs, and evaluating the success of the change program.

Elements of self-management training

According to Kanfer,[4] the characteristic elements of a change program are those processes normally involved in usual self-regulatory behavior. In a change program in which some modification of behavior is desired, these processes must be translated into the following programmatic events:

- a self-monitoring or self-observation period in which the patient is assisted in defining the behavior to be measured or altered, counting the frequency, and noting circumstances of occurrence;
- establishment of a set of criteria or standards by which to develop goals and measure success;
- acquisition of self-awareness and discrimination of functioning levels for self-evaluation, based on careful feedback and documentation of changes in behavior; and
- administration of self-reinforcement, basing rewards on successful changes in behavior. Prior establishment of extrinsic rewards helps to bolster the

intrinsic reward derived from behavior modification.

The biofeedback protocol incorporates psychophysiological training to alter pathophysiological arousal states. A second aspect of the protocol is cognitive restructuring to link cognitive events to the pathophysiological responses. Meichenbaum[5] notes that persons may fail to define cognitive events, derive appropriate solutions, or carry through on behavior that would resolve a pathophysiological problem. Cognitive awareness helps to provide focus for self-management training.

Fig 2[6] shows the elements of biofeedback training and the means whereby the instrumentation amplifies, displays, and feeds back peripheral autonomic nervous system signals for use by patients. This paradigm illustrates concomitant behavioral/cognitive processes occurring as a patient progresses through a change program.

Self-management training may appear to be a small step from self-care. In self-care, home education programs and the hospice movement define some of the more exciting organizational elements. But self-care and self-management training are fundamentally different in regard to the origin and action of the therapeutic mechanisms. In self-management training, individuals are in the position of responsibly regulating health and illness mechanisms. Self-management training requires close therapeutic guidance for the acquisition of physiological and cognitive awareness and self-change. Like self-care, self-management training requires careful cultivation of self-motivation; thus, self-management training clearly promotes a prosumer stance in nursing.

STRESS RESPONSE DISORDERS AS A TARGET

The rationale for using self-management training in stress response disorders is fairly

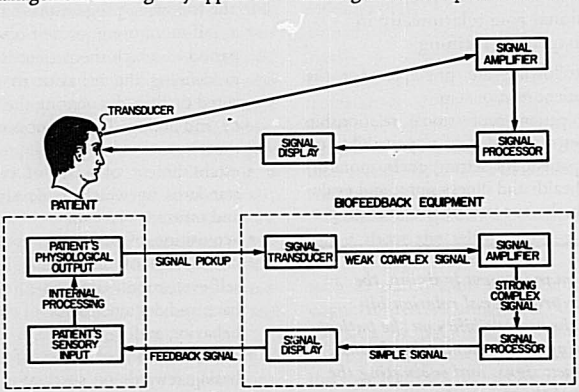

Fig 2. Elements of biofeedback training. Reprinted with permission from Gaarder KR, Montgomery P: *Clinical Biofeedback: A Procedural Manual.* Baltimore, Williams & Wilkens, 1977.

straightforward. Disregulatory stress responses such as muscle tension pain, body arousal, headaches, anxiety, and insomnia have been found to be responsive to self-regulatory management techniques. Self-management training addresses the control of physical indicators, behavioral habits, and cognitive-attitudinal features.

The term *stress response* is used here to refer to the reaction of an organism, and *stressors* refers to events that produce arousal. Early stress theorists borrowed the terms stress and strain from physiology and structural engineering and collapsed the terms. In their early writings, stress referred to the causative agent and, at the same time, the response. By labeling the "general adaptive syndrome" as stress, Selye[7] further compounded the confusion between stress and strain.

Selye's work gave early renown to the physiological features of the stress response. Further research, however, has refuted the finding that the generalized adaptive syndrome is consistently evoked; rather, response to stressors can be functionally specific, organ specific, or both. In part, specificity of response refers to idiosyncratic responses of a group of people to a variety of stimuli. For example, a group of hypertensive patients react to various types of stimuli with increased blood pressure, whereas a group of patients with Raynaud's disease respond with characteristic peripheral circulatory construction.

Psychophysiological bases

Growing understanding of the anatomical and biochemical interrelationships of the neocortex, limbic system, and hypothalamus has formed the basis for understanding the relationship between both physical and psychosocial stimuli and psychophysiological stress responses. Mason[8] conceptualized the interplay between internal and external environments in terms of three effector systems: the autonomic nervous system, the endocrine system, and the skeletal muscle system.

External stimuli consist of both physical factors such as heat, cold, and oxygen and psychosocial stimuli factors, such as interactions with others. Internal stimuli include the impulses from the viscera, kinesthetic and proprioceptive sensations, and thoughts and emotions. These stimuli are processed by the reticular activating system through the brain stem to produce general arousal; in specific cortical areas to activate cognitive function; and in the limbic cortex to stimulate basic survival functions and primitive emotion. The limbic system has direct frontal cortical connections as well as connections to the hypothalamus. Therefore, endocrine and autonomic effector systems and the sensory motor cortex are also activated. Thus, the limbic system as identified by Papez[9] and elaborated by MacLean[10] undoubtedly constitutes the key link between cognitive perceptions of psychosocial stimuli, emotional response, and the physiological stress response.

Pathophysiological stress responses develop as a consequence of a consistently heightened arousal state. Arousal, which initially performs a self-regulatory role, will readapt at altered levels under constant stressor stimulation. Cognitive and behavioral stress responses consolidate into a patterned way of life. Together, they constitute the pathophysiological state.

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Some of the peripheral measures of psychophysiological activity have reliability in demonstrating levels of arousal reflected in muscular tension, the cardiovascular system, and electrical conductance of the skin.

demonstrating levels of arousal. Measures of muscle potential (EMG readings) provide an index of muscular tension; measures of the cardiovascular system (heart rate, blood pressure, and peripheral temperature) indicate the increase or decrease in sympathetic nervous system stimulation; and measures of the electrical conductance of the skin (through galvanic skin response) correspond to the sweat gland activity and sympathetic arousal in the individual.

Cognitive-behavioral bases

A major theoretical task is to amalgamate neurophysiology with cognitive-behavioral theories. In the literature on the physiology of emotions, the emotion is often treated as an arousal agent or stressor for physiological indices. The present authors' interest lies in emotion as reflected in behavior, and in viewing behavioral indices as part of a stress response, rather than as an arousal agent. Such a view is more congruent with the authors' conception of human functioning. The nature of human behavior is composed of an amalgamated physiological-emotional-cognitive interaction having a non-unidirectional flow.

Although behavior and physiological responses are initiated by internal deficit signals such as thirst, hunger, and fatigue, external signals such as water and food provide equal stimuli for eating and drinking behavior. Moreover, in adults the cortical input for cueing behavior suppresses and surpasses the simple internal and external stimuli. Thinking about food can activate a cephalic insulin response, which activates eating behavior. Experience and cognitive efforts (memory, learning, and perception) contribute to guiding behavior in a major way.

Thus, one source of variability in stress response indices is the cognitive appraisal of the event. Cognitive appraisal of threat is reported by Lazarus[11] as a determinant of whether a person would prepare for arousal. Moreover, repeated appraisals of threat may establish a cognitive style of arousal by which an individual's life is oriented. This cognitive style includes an affective response (eg, depression or optimism) and coping behavior for perceived threat (eg, direct or palliative action). Direct action implies direct confrontation of the stimulus with the possible end of altering it; palliative action implies skills such as altering the response to the stimulus, including denial, avoidance, or training in self-management techniques.

The self-regulatory process extends beyond the physiological mechanism. Much of self-regulation is by way of either intrapsychic coping (denial or anticipatory preparation), active problem solving, or palliative coping. These self-regulatory processes are omnipresent features of living and adaptation.

There is disagreement about the indices that could be profiled as cognitive-behavioral manifestations of the stress response. Measures of affective responses (depres-

sion or anxiety), expressions of somatic discomfort (pain or excessive diaphoresis), and tests of cognitive functioning and/or coping have been used. The use of few psychometric measures, such as anxiety, depression, and pain, has been relatively universal.

EVALUATION OF PATIENT OUTCOMES

Clinical sample

Of the 401 patients who entered the study, 17% ($n = 79$) completed fewer than eight training sessions and were not evaluable; hence, the total patient population was 322, except where some missing data further reduced the sample size.

A prospective study was required because a symptom-focused physical examination was necessary prior to entry into the training program. Based on intake screening interviews that focused on primary presenting problems, patients reported having sought treatment for a variety of stress-related disorders, including tension headache (24%), chronic muscle tension (18%), anxiety (9%), insomnia (7%), hypertension (10%), and migraine headache (9%). Of these patients, 70% reported a second stress-related symptom, and 40% reported three or more symptoms. Demographically, 72% of these patients were female; they ranged in age from 16 to 79 years (median, 36). Occupationally, 20% of the patients were highly educated, "white collar" professionals; 40% were employed in sales or as skilled/unskilled labor; 20% were students; and 20% were retired or unemployed or were housewives or househusbands. Nearly 83% of the sample were Caucasian.

Clinical protocol

The sequence of the program for patients is detailed in Fig 3, which shows the types of assessments performed, the modalities offered, and the successive contacts made with patients. These periodic measurements and the within-session data constitute the data bank by which feedback is provided for patients and data are retrieved for use in evaluation.

Outcome measures can be partially described as follows.

Cost of stress. The cost of stress interview schedule, properly administered, obtains a general survey of common medical conditions, infectious diseases, and self-reports of the primary (stress-related) presenting problem. Beaton and Thompson[7] have indicated that this tool has adequate reliability and content validity for clients with stress response disorders.

Symptoms of stress self-assessment (SOS). Adapted from the Cornell Medical Index, the SOS inventory was designed to quantify self-perception of behavioral, cognitive, and physiological components of the stress response. It consists of 88 items divided into 9 subscales delineating symptoms such as muscle tension, gastrointestinal distress, depression, and cognitive disorganization. Patients are requested to indicate the frequency with which they have experienced the various symptoms during the past week. Data were collected from 561 comparison subjects external to the program for the purpose of establishing norms; analysis of the data indicated a high level of internal consistency for the total SOS inventory (Cronbach's $\alpha = .96$). Subscale reliability coefficients varied from .71 to .87. Factor analysis of the

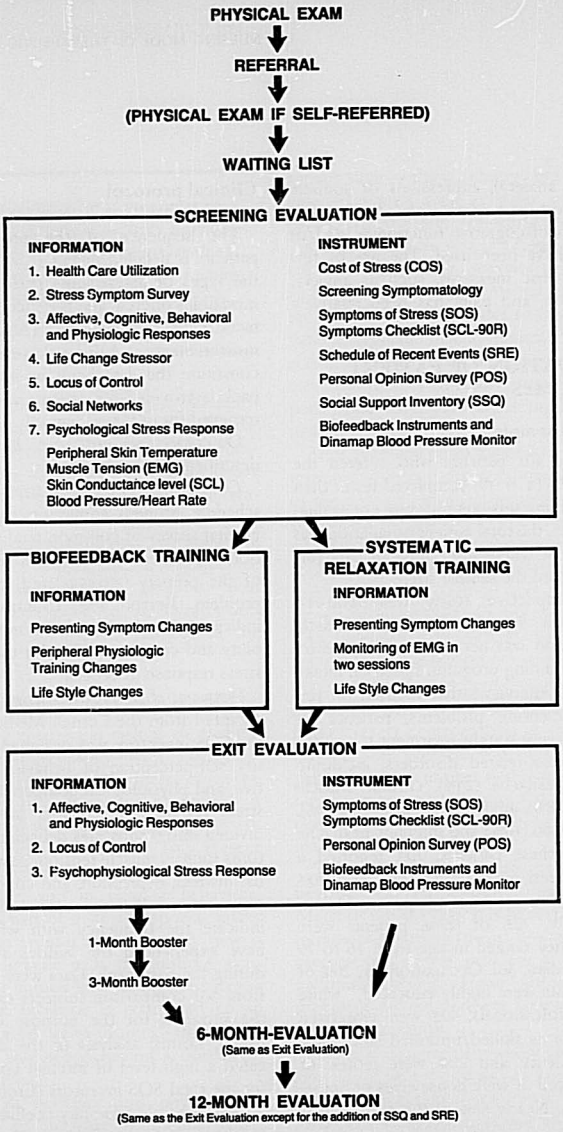

Fig 3. Flow of activities in management of stress response patients.

data gave support to the empirically determined subscales. Using factor scores, these same control data revealed significant differences related to gender, health status, and smoking habits, as well as significant interaction effects involving combined status on these variables.

Psychophysiological stress assessment. This assessment, also obtained on the day of screening, was comprised of peripheral autonomic indicators and EMG recordings obtained from the trapezius and frontalis musculature. EMG electrode impedances were generally in the range of 5 to 12 K; bandwidth was set at 100 to 200 Hz. All EMG readings were in integrated microvolts. Skin conductance levels were monitored from the first and second fingers of the dominant hand, and peripheral skin temperature was recorded from the middle finger of the nondominant hand. The measurements were taken during a number of rest periods in which patients were asked to relax and sit quietly, as well as during a mental task (unscrambling anagrams) and while they were asked to focus on some presumably distressing emotional imagery. During this latter period, patients were instructed to imagine their presenting problem and to reexperience how they feel when their symptom is at its worst. All rest and stressor conditions were two minutes in duration, and data presented were based on averages over this time. No psychophysiological feedback was given to the clients during this screening protocol.

Success in self-management training

The data presented here directly address the successful acquisition of skills in self-management training for the 322 patients with stress response disorders. Data for all modalities are combined, and screening and exit measures are compared by psychometric data (SOS) and psychophysio-

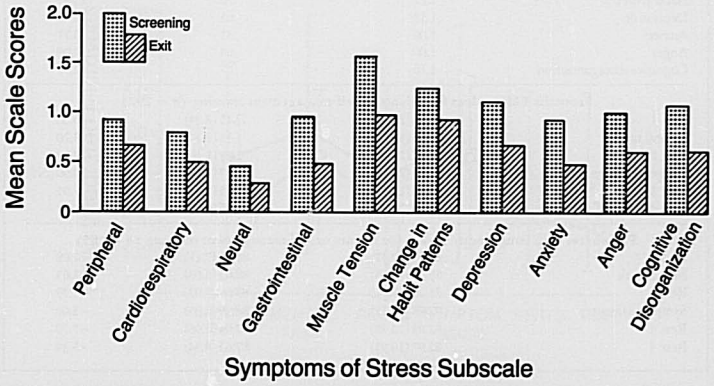

Fig 4. SOS screening and exit mean scale self-report levels for total clinical sample (n = 322). Mean scale score = self-reported total/No. of items.

logical data (frontalis EMG and digital temperature).

Fig 4 shows the mean scores at screening and exit on the SOS self-assessment inventory. Table 2 lists the relevant mean and correlated t test values with their significance. Differences between scores before and after self-management were significant at $P = .0001$. All were in the predicted direction of reduced symptoms. The use of multiple regression was rejected because of the sample size needed for so many variables. To justify the use of multiple t tests, a Bonferroni correction was performed to examine the level of significance necessary for confidence. It was found that the level of significance needed was $P = .005$.

The psychophysiological data were gathered during screening and exit by using two laboratory stressor conditions to measure the reactivity of clients. The first test in the sequence was a mental task using anagrams such as SACUEL (clause) or MAGPORR (program), which clients were asked to unscramble in a limited time. The other stressor condition involved instruct-

Table 2. Comparison of screening and exit data

	Screening mean (*SD*)	Exit mean (*SD*)	*t*-Value*
SOS inventory for clients in self-management training ($n = 322$)			
Peripheral skin	.93	.68	6.91
Cardiorespiratory	.77	.54	8.03
Neural	.58	.25	6.38
Gastrointestinal	.82	.53	8.40
Muscle tension	1.51	1.00	9.71
Habit patterns	1.21	.76	13.83
Depression	1.12	.65	11.03
Anxiety	1.00	.55	13.71
Anger	1.06	.64	11.08
Cognitive disorganization	1.16	.67	12.58
Frontalis EMG values for clients in self-management training ($n = 292$)			
Rest 1	3.26 (2.90)	2.15 (2.24)	6.36
Mental task	4.00 (3.12)	3.33 (2.14)	3.70
Rest 2	2.94 (2.56)	1.88 (1.16)	7.22
Symptom imagery	3.74 (2.67)	3.37 (2.72)	2.00 (*NS*)
Rest 3	2.89 (2.31)	1.95 (1.11)	7.05
Rest 4	2.87 (2.62)	1.76 (0.92)	7.24
Peripheral skin temperature means for clients in self-management training ($n = 285$)			
Rest 1	83.90 (9.47)	88.19 (7.11)	−7.08
Mental task	83.08 (10.45)	88.05 (6.68)	−7.65
Rest 2	83.26 (10.75)	88.08 (7.02)	−7.29
Symptom imagery	82.98 (10.71)	88.20 (6.95)	−8.06
Rest 3	82.88 (10.78)	87.99 (6.96)	−7.79
Rest 4	82.97 (10.95)	87.65 (8.34)	−6.30

*Significant at $P = .0001$ level.
NS = Not significant.

ing the clients to imagine their stress symptoms in the most severe state. The resting levels were recorded before and after these stressor probes.

Fig 5 shows the mean and SD of frontalis EMG determinations at screening and exit for 292 clients. There is considerable decrease in muscle tension (EMG) between screening and exit during all the rest periods for both muscles. The reactivity of the frontalis musculature continues during the stress test, but the total microvolt pattern remains similar, albeit at a lower level. Comparison of EMG levels between screening and exit on symptom imagery showed no significant differences. (See Table 2.) Apparently, the neuromuscular stress response is the same regardless of this laboratory stressor. The mental task remains a stressor at exit, but EMG levels are lower than at screening. The change in EMG reactivity during the mental task was significant at $P = .0001$. All resting EMG levels were significantly decreased between screening and exit, at $P = .0001$.

The peripheral skin temperature measuring constrictions of circulation should theoretically increase with self-management of the stress response. This autonomic index measure is slow in reactivity, with less immediate response and a lag in effects. Fig 6 and Table 2 show the increases in skin temperature from screening to exit, which do not vary considerably during the stressor tests. The data show that these changes are highly significant at $P = .0001$.

Retention of self-management training

Effects of self-management training have often been attributed to desire for social approval and short-term placebo

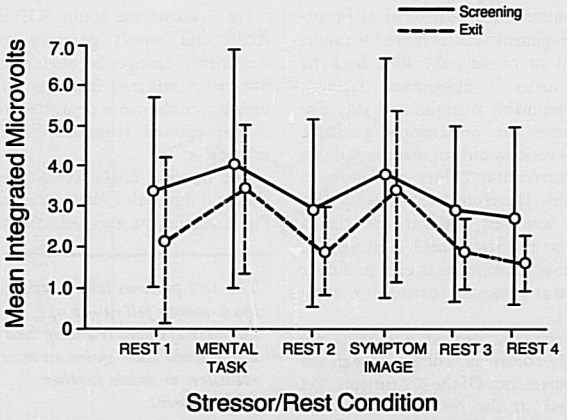

Fig 5. EMG values on frontalis during stress test at screening and exit ($n = 292$).

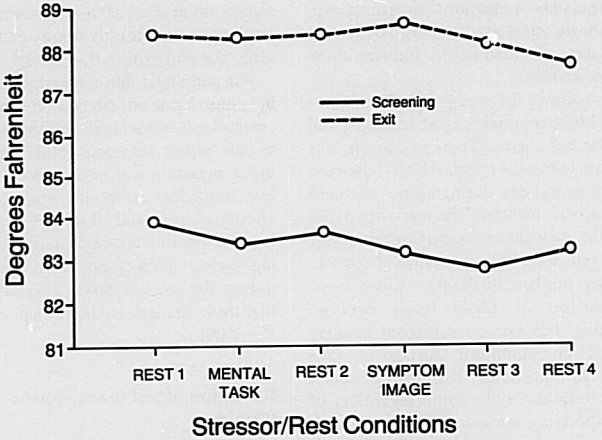

Fig 6. Peripheral skin temperatures during stress test at screening and exit (n = 285).

effects. Regression to a prior status after the active training program has ended is not uncommon. As with other self-management regimens such as those for smoking habits or obesity, the slide back to baseline status is ubiquitous. Training effects presumably diminish and may disappear when the professional guidance ends. A skeptic would say that the real test of an intervention comes at follow-up assessments. Therefore, the follow-up data reported here test whether the clients returned to the status held at screening, whether they remained as at exit, or if their health status advanced toward new criterion levels.

In general, the data at 6 months are remarkably consistent, compared with the exit measurements. Of the 322 patients, 182 participated in the 6-month follow-up. These patients had clearly maintained their gains on most measures or made further improvement.

Fig 7 shows the mean SOS inventory scores and reveals generally small but incremental changes between exit and follow-up. A repeated measures analysis of variance confirmed a continued reduction in self-reported symptomatology on all scales, $P < .001$.

The frontalis EMG levels at screening, exit, and 6-month follow-up are shown in Fig 8. Again, the exit reductions are sus-

The 182 patients who participated in the 6-month follow-up of self-management training had maintained their gains on most measures or made further improvement.

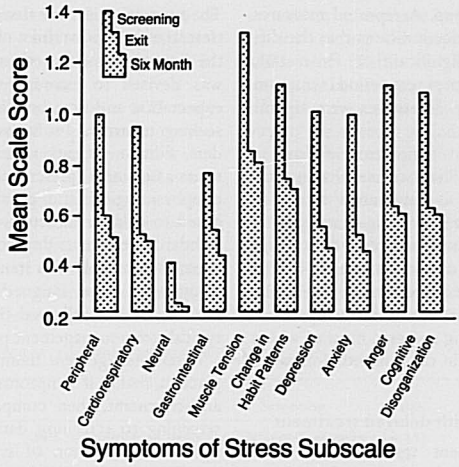

Fig 7. Mean SOS inventory scores in 6-mo follow-up (n = 182). Mean scale score = self-reported total/No. of items.

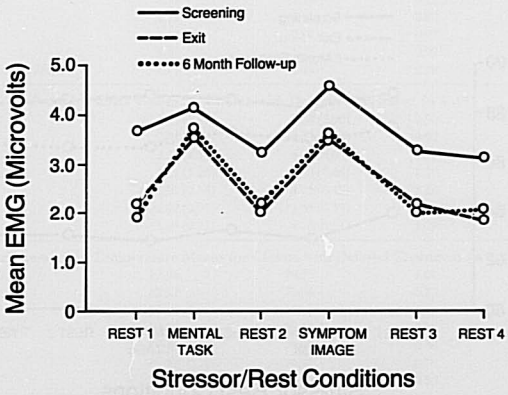

Fig 8. Mean frontalis EMG levels in 6-mo follow-up (n = 182).

tained at follow-up. A repeated measures analysis of variance indicates that the differences were significant at $P = .001$, except for one stress test period (symptom image) when the differences were significant at $P = .01$.

Peripheral skin temperature follows a similar pattern. The increase in skin temperature at exit is maintained at the 6-month follow-up (Fig 9). Again, a repeated measures analysis of variance indicates significant changes on all measures, $P < .001$. This significance reflects most heavily the dramatic increase in skin temperature between screening and exit, most of which was maintained in the 6-month follow-up period.

Comparison with delayed treatment

Self-management training and other cognitive therapies have often been assailed for being a temporary placebo. The suggestion is made that expectation of treatment is as powerful a change agent as the treatment itself. A comparison group was devised to examine the effects of expectation and time on clients who were seeking treatment for stress-related disorders. Fifteen patients were given a total stress assessment (prescreening), both psychophysiological and psychometric, and asked to delay treatment for 8 weeks, the standard treatment duration. These patients then completed a standard screening assessment, were assigned to treatment modalities, and followed the course of a typical stress-management patient.

If self-management training is merely a placebo, that is, if symptoms abate without any treatment, then comparison of prescreening to screening data would show significant reduction of symptoms. This possibility was explored by using the SOS inventory to assess changes in the psycho-

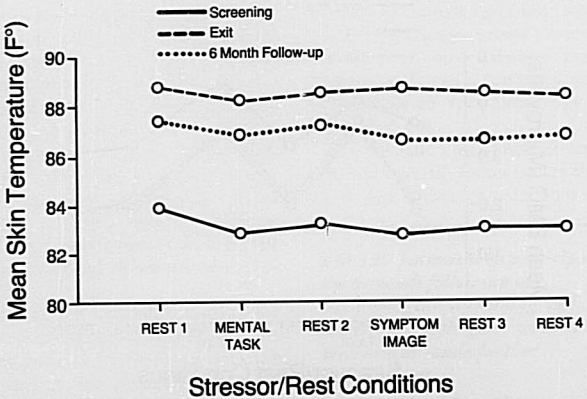

Fig 9. Mean peripheral skin temperature in 6-mo follow-up ($n = 164$).

logical symptoms and using measures of frontalis muscle tension and peripheral skin temperature to evaluate changes in physiological symptoms.

Table 3 shows the mean SOS scale scores and reveals that patients improved on six scales, had no change on two scales, and had an increase in self-reported symptoms on two scales. Although patients improved on some scales, the improvements were not significant and are in the range of random or chance improvement.

There was a significant self-reported increase in muscle tension, which is documented by an increase in frontalis muscle tension during the psychophysiological assessment (Table 3). Muscle tension increased in all test periods, and clients showed an increased variability in responsivity to the stressor periods. Although the increases were not significant, there was a striking pattern of increased frontalis muscle tension while treatment was delayed.

The pattern of peripheral skin temperature (Table 3) was similar to the muscle tension pattern. Patients had decreased peripheral skin temperature, indicating increased autonomic activity while treat-

Table 3. Comparison of prescreening and screening data

	Prescreening	Screening	*t*-value	Probability
SOS Inventory for Clients with Delayed Treatment ($n = 15$)				
Peripheral skin	0.85	0.85	0.06	*NS*
Cardiovascular	0.74	0.71	0.19	*NS*
Neurological	0.51	0.54	0.22	*NS*
Gastrointestinal	0.76	0.76	0.06	*NS*
Muscle tension	1.56	1.97	2.53	0.01
Habit pattern	1.19	1.16	0.21	*NS*
Depression	1.32	1.11	0.82	*NS*
Anxiety	1.12	0.97	0.95	*NS*
Anger	1.42	1.23	0.99	*NS*
Cognitive disorganization	1.13	1.29	0.98	*NS*
Frontalis EMG Values for Clients with Delayed Treatment ($n = 15$)				
Rest 1	2.43 (1.12)	3.64 (4.90)	0.90	*NS*
Mental task	2.84 (1.81)	4.59 (6.09)	0.92	*NS*
Rest 2	2.27 (1.15)	4.26 (6.65)	1.05	*NS*
Symptom imagery	3.01 (1.28)	5.35 (7.46)	1.27	*NS*
Rest 3	1.97 (0.76)	4.75 (6.48)	1.52	*NS*
Rest 4	1.97 (0.93)	4.55 (6.53)	1.43	*NS*
Rest 5	1.97 (0.72)	4.16 (6.21)	1.29	*NS*
Peripheral Skin Temperature Means for Clients with Delayed Treatment ($n = 15$)				
Rest 1	82.96	79.75	1.01	*NS*
Mental task	82.17	79.86	0.83	*NS*
Rest 2	82.14	80.11	0.76	*NS*
Symptom imagery	82.38	80.14	0.85	*NS*
Rest 3	82.16	79.92	0.88	*NS*
Rest 4	81.92	79.92	0.78	*NS*
Rest 5	81.07	79.70	0.59	*NS*

NS = Not significant.

ment was delayed, but the changes in skin temperature were not significant.

Comparison of the screening and exit data for these patients shows a pattern similar to that of the general clinic population: significantly decreased psychometrics and psychophysiology after self-management treatment. If the changes after self-management training were equivalent to changes resulting from expectation of treatment or placebo effects, then significant changes would have been exhibited between prescreening and screening. Because there were no significant changes in patients awaiting treatment, it appears that self-management training is the critical factor in facilitating the reduction of symptoms and healthier functioning.

DISCUSSION

The move to align nursing practice to the prosumer orientation, as described by Toffler,[1] demands high participation of patients in treatment interventions. Self-management training in which patients learn to regulate certain body processes captures that participative mode. This evaluation tests the therapeutic influence of self-management training.

All of the patients in this study had similar counseling and monitoring but with differing psychophysiological modalities (systematic relaxation training or EMG/temperature biofeedback). The investigation was designed to answer two questions: (1) As a mode of nursing action, what is the efficacy of self-management training? and (2) What is the retention of training at 6-month follow-up?

Self-management training was exceedingly successful in reducing symptoms, and it holds great promise for nursing practice. This mode of therapeutic action capitalizes on the most current and potentially revolutionary research in biobehavioral medicine. Psychophysiological research is potentially revolutionary because of its focus on the internal mechanisms of disregulated states. Few advances have been made in treatment of psychophysiological disorders, since there has been little specification about the healing process. With self-management training, many breakthroughs involving reregulation are emerging.

The philosophic orientation of this training is modern and compatible with the current trends of society, but just as Toffler's analysis of the sociotechnological movement is not palatable to many, neither is self-management training. We propose this mode of therapeutic influence, not as a panacea, but as a supplement to our present repertoire of nursing actions.

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