Psychosomatics 2012:xx:xxx

Original Research Reports

The Development of a Patient-Centered Program Based on the Relaxation Response: The Relaxation Response Resiliency Program (3RP)

Elyse R. Park, Ph.D., M.P.H., Lara Traeger, Ph.D., Ana-Maria Vranceanu, Ph.D., Matthew Scult, B.S., Jonathan A. Lerner, Ph.D., Herbert Benson, M.D., John Denninger, M.D., Ph.D., Gregory L. Fricchione, M.D.

Background: *Chronic daily stress has significant physical, emotional, and financial implications; levels of stress are increasing in the US. Dr. Benson highlighted how the mind and body function together in one's experience of the stress response and proposed the existence of the relaxation response (RR).* **Objective:** *The current paper describes the foundation and development of an 8-session multimodal treatment program for coping with chronic stress: the Relaxation Response Resiliency Program (3RP).* **Methods:** *We review the past decades of RR research, outline the development of the 3RP treatment, and provide an overview of the program's theory and content.* **Results:** *Extensive research and clinical work have examined how eliciting the RR may combat stress through down-regulation of the sympathetic nervous system. Related to this work are the multidimensional constructs of resiliency and allostatic load. The 3RP is based on principles from the fields of stress management, cognitive-behavioral therapy, and positive psychology, and has three core target areas: (1) elicitation of the RR; (2) stress appraisal and coping; and (3) growth enhancement. An 8-week patient-centered treatment program has been developed, with the purpose of assisting patients with a variety of psychological and medical issues to better cope with chronic stress.* **Conclusions:** *Mastery of the RR is theorized to maximize one's ability to benefit from multimodal mind body strategies. The goal of the 3RP is to enhance individuals' adaptive responses to chronic stress through increasing awareness and decreasing the physiological, emotional, cognitive, and behavioral effects of the stress response, while simultaneously promoting the effects of being in the RR.*

(Psychosomatics 2012; xx:xxx)

Chronic daily stress has significant physical, emotional, and financial implications, and levels of stress are increasing in the US. The 2012 American Psychological Association report, *Stress in America*, documented that approximately one-fourth of Americans surveyed experience extremely high stress, and almost half of Americans reported that their stress levels have increased over the past 5 years.[1] There is significant need for interventions that combat the negative effects of stress. The Relaxation Response Resiliency Program (3RP) is a comprehensive, multimodal treatment that was designed to promote adaptation to stress and enhance resiliency. This program is rooted in the elicitation of the relaxation response (RR). Four decades of empirical studies by Herbert

Received April 30, 2012; revised September 6, 2012; accepted September 10, 2012. From the Massachusetts General Hospital Benson-Henry Institute for Mind Body Medicine, Boston, MA (ERP, LT, AMV, MS, JAL, HB, JD, GF); Department of Psychiatry, Harvard Medical School, Boston, MA (ERP, LT, AMV, JAL, HB, JD, GLF). Send correspondence and reprint requests to Elyse R. Park, Ph.D., M.P.H., Massachusetts General Hospital, 907, Boston, Massachusetts 02114; e-mail: epark@partners.org

AQ: 4 Relaxation Response Resiliency Program

Benson and other researchers have characterized the effects of eliciting the RR on genomic, structural, physiological, psychological, and functional outcomes.[2–18] Together with advances in our understanding of stress, coping, and post-traumatic growth, this work has contributed to an integrative intervention model for promoting resiliency.

THE STRESS RESPONSE AND THE RELAXATION RESPONSE

Stress is the process through which environmental demands tax or exceed the adaptive capacity of an organism, resulting in distress. Distress may manifest as psychological and/or biological changes that place individuals at risk for disease. Hans Selye defined stress as "the nonspecific response of the body to any demand,"[19] and stated that distress occurs when stress is overwhelming or persistent and not dealt with in a positive manner. Related to stress is the stress response, described by Walter B. Cannon as the "fight-or-flight" response,[20] which is a cascade of coordinated physiological changes that occur when animals, including humans, perceive threat. These changes involve several structures within the brain and a redirection of neural activity from the "self-regulating center" to lower regions within the limbic system, which causes an increase in stress hormones and a resulting increase in metabolism, blood pressure, and heart rate. Researchers studying the long-term effects of a prolonged or severe stress response have concluded that it may lead to harmful physiological changes such as increasing the risk for heart disease or diabetes.[21]

A converse to the stress response, the RR is a physiological state characterized by decreased arousal of the sympathetic nervous system[22] (Figure 1). The term "relaxation response" was first described in humans as a "wakeful hypometabolic state."[23] This state, the foundation of the 3RP model, is used to combat maladaptive responses to stress and guide an individual's attainment of an optimal stress level. The rationale for eliciting the RR

FIGURE 1. Stress Response and Relaxation Response. ***Dusek and Benson (2009) Minnesota Medicine.***

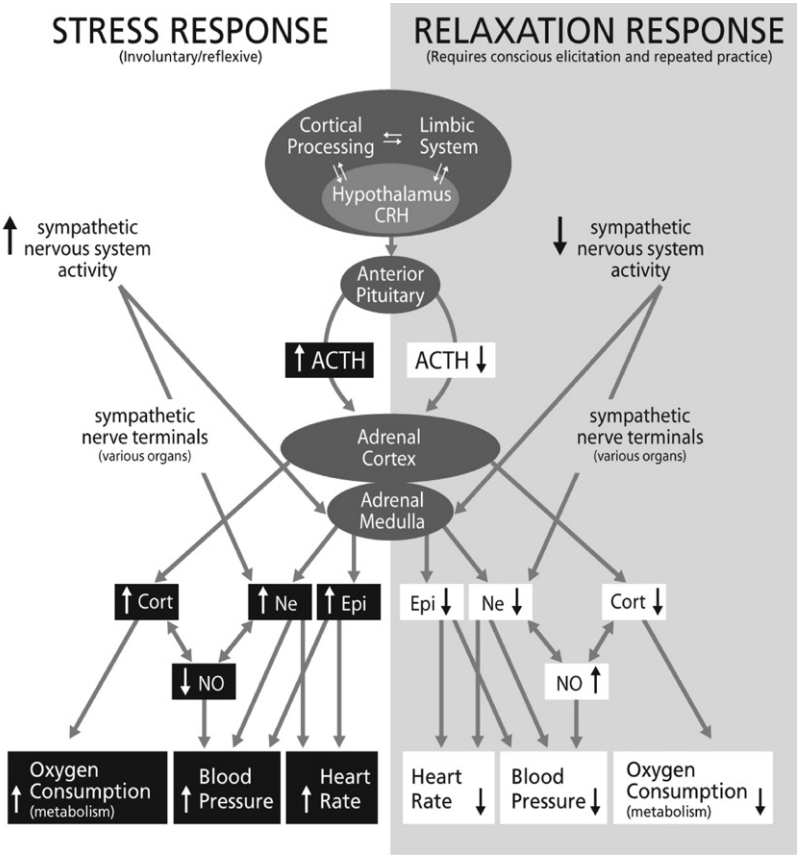


TABLE 1. Example Techniques for Eliciting the Relaxation Response

Technique	Concept	Mechanism
Breath awareness	Shift from shallow breathing to abdominal breathing. Draw air deep into lungs using even breath.	Improve ability of respiratory system to produce energy from oxygen and remove waste.
Self-hypnosis	Narrow consciousness without completely losing awareness, to allow suspension of disbelief and experience of thoughts and images as real.	Facilitates both focused, intense mental activity and state of relaxation simultaneously.
Guided imagery	Use imagination to refocus mind on positive, healing images.	Negative thoughts influence feelings and behavior, and exacerbate physical symptoms. Thoughts become reality (i.e., you are what you think you are). Therefore, use imagination to reduce subjective stress and to treat physical symptoms.
Autogenic training	Use verbal commands that suggest bodily warmth and heaviness in limbs.	Word phrases suggest relaxation to the unconscious mind, which manifests the desired responses in the body. Aims to reverse "flight or flight" response during physical or emotional stress by promoting relaxation of the voluntary arm and leg muscles, inducing peripheral vasodilation, and normalizing cardiac activity.
Progressive muscle relaxation	Alternately tense and relax different muscle groups, to better distinguish between these two states.	Based on premise that the body responds to anxiety-provoking phenomena with muscle tension that increases subjective anxiety. Muscle relaxation reduces physiologic tension and, therefore, blocks the subjective anxious response.
Transcendental meditation	Engage in attempting to anchor attention nonjudgmentally on a silent mantra.	Negative emotion cannot persist when focusing on something other than the target of the emotion. Habitual thought patterns lose influence when brought to conscious awareness. Present focus reduces emotional extremes. Meditation also slows sympathetic nervous system activity.
Mindful awareness	Observation or attention to phenomena in the moment nonjudgmentally as they enter awareness	Strong emotions become manageable by focusing on sensations rather than the content of emotional thoughts.
Yoga	Movement meditation correlated with the breath.	Yoga is a comprehensive system of practices for physical and psychological health and well-being, and incorporates multiple techniques including physical postures/exercises, breathing exercises, and meditation/concentration techniques. As an integrative discipline, yoga takes advantage of the simultaneous application of its component techniques, all of which contribute to eliciting the relaxation response.

among individuals facing a chronic stressor in particular is that the changes associated with this response (e.g., decreases in oxygen consumption and carbon dioxide elimination and in heart rate, respiratory rate, and blood pressure)[2,6] are the opposite of changes that occur during the stress response.

As described above, a central tenet of Benson's work is that the RR is a state rather than a specific technique. It has been demonstrated that many different techniques can elicit the RR[24] (see Table 1). In an early review of studies conducted before 1974, Benson concluded that several techniques led to similar physiological changes. For instance, the techniques of transcendental meditation, autogenic hypnosis, Zen and yoga, contention, sentic cycles, and progressive muscle relaxation were all found to decrease sympathetic arousal as evidenced by decreased oxygen consumption, respiratory rate, and heart rate as well as increased alpha waves and skin resistance.[3] This response was also found to be elicited by a simple technique—the repetition of a word, sound, or phrase—developed by Beary, Benson, and Klemchuck in 1974.[2] In later studies of the RR, investigators found that it could also be elicited during exercise,[25] leading to decreased oxygen consumption for a given heart-rate. Taken together, the literature highlights that the RR may be elicited when an individual engages in a repetitive or sustained mental or physical action while passively disregarding other distracting thoughts.[26] The essential component of RR-inducing techniques is to break the chain of everyday thinking, creating a sense of "quieting" of the mind and body.

RESILIENCY AND ALLOSTATIC LOAD

Resiliency is a multidimensional construct that refers to the ability to maintain adaptation and effective functioning under significant adversity or challenging life conditions. Resiliency provides a framework for understanding the adjustment to stress as a dynamic process. A related physiological concept is that of allostasis. Allostasis refers to the capacity of the brain to maintain stability of physiological systems in the face of environmental change.[27] When the environment is found to be distressing, the brain expends a great deal of energy attempting to maintain allostasis, and this can lead to the metabolic wear and tear, known as allostatic load. Allostatic load taxes the body's ability to respond adaptively to the stress response, due to excessive or persistent stress or the inability to efficiently respond to stress. In the normal allostatic response, a stressor is presented, a physiological response is initiated and sustained, and then there is a return to the baseline state. However, chronic or severe exposure to a heightened metabolic state can impair the neural network, resulting in an inability to initiate, sustain, or contain an appropriate response. Allostatic load increases vulnerability to illness, and this relationship is likely mediated by the interplay between biological processes and unhealthy behaviors (e.g., lack of sleep, inactivity, unhealthy eating).

In contrast, elicitation of the RR and other resiliency factors may reduce allostatic load through buffering the heightened metabolic state of the stress response. Randomized-controlled trials have found that elicitation of the RR may reduce adrenergic end organ responsivity, suggesting that individuals eliciting the RR may be less responsive to stress.[10,28] These findings have led us to develop a "propensity to health" equation represented by the sum of resiliency factors, including the RR, divided by allostatic load (resiliency/allostatic load = propensity to health).[29] Based on this equation, individuals who develop a greater number of resiliency factors, relative to their allostatic load, will be more likely to remain healthy.

VALUE OF REDUCING STRESS AND PROMOTING RESILIENCY IN CLINICAL PRACTICE

In current medicine, chronic diseases result in longstanding patient suffering that challenges and confounds primary care providers and specialists alike.[30] These patients will be challenging to future affordable care organizations, given their high utilization of services.[31] As indicated above, stress and lack of resiliency can worsen or perpetuate chronic disease.[32–34] If psychosomatic medicine is to help relieve chronic disease-related suffering and also fulfill its potential as a link between clinical medicine and public health, the use of mind-body medicine approaches that reduce stress and enhance resiliency will be increasingly important. Physicians who practice psychosomatic medicine can use or recommend mind-body approaches for primary, secondary, and tertiary prevention.[35–39] Consider the following case: A consultant psychiatrist is called to a coronary care unit to see a patient who is status post-myocardial infarction and who is experiencing anxiety. While on the unit, the psychiatrist also meets the patient's visiting son who is obese and excuses himself from the unit to smoke a cigarette. This scenario lends itself to the teaching of stress reduction and resiliency enhancement as tertiary prevention in the patient and a recommendation for secondary prevention in the son. The following sections summarize RR research and the 3RP as a model for a psychosomatic approach to preventive care.

USE OF RR IN CLINICAL RESEARCH AND PRACTICE

RR-elicitation was first integrated into a cardiac rehabilitation program, as a secondary prevention, to promote healing among patients who had suffered a cardiac event.[40] Since then, numerous randomized-controlled trials have utilized RR interventions. Research conducted by Benson and colleagues is summarized in Table 2; this literature includes small numbers of participants, varied control groups, and different outcomes measures. Mandle and colleagues, in 1996, reviewed 37 studies of the efficacy of RR interventions in various health populations (e.g., cardiac, orthopedic, chronic pain, premenstrual syndrome and cardiac rehabilitation).[41] The RR-elicitation methods included progressive muscle relaxation, rhythmic breathing, imagery, autogenic training, transcendental meditation and yoga. Results suggested that RR interventions were effective in reducing hypertension, insomnia, anxiety, pain and medication use for a variety of conditions and in multiple settings.[41]

Following the initial integration of RR-elicitation training into cardiac rehabilitation, Benson and colleagues developed two multimodal RR interventions through the Mind Body Institute at Beth Israel Deaconess Medical Center, now the Benson-Henry Institute (BHI) for Mind Body Medicine at the Massachusetts General Hospital. The programs are the Cardiac Wellness Program and the Medical Symptom Reduction Program. The Cardiac Well-

TABLE 2. Randomized Controlled Trials of Relaxation Response Interventions Conducted by Colleagues Associated with BHI

Author (Year)	Participants	Intervention	Control	Outcome Measures	Findings
Carrington et al. (1980)[50]	154 employees self-selected for stress management.	Clinically standardized meditation vs. respiratory one method meditation vs. PMR.	Waitlist control.	−SCL-90R	−Intervention groups had improvement in self-reported stress symptoms (SCL-90R) −CSM and ROM (but not PMR) had significantly more symptom reduction compared with control.
Domar et al. (1987)[51]	49 skin cancer patients prior to surgery.	Listening to RR tape 20 min/day.	Attention control-reading 20 min/day.	−BSI (The Brief Symptom Index) −STAI (State and Trait Anxiety Inventory).	−Decrease in perceived anxiety
Leserman et al. (1989)[15]	27 cardiac patients prior to surgery.	Practice RR twice daily 2-7 days before surgery.	Educational information	−POMS (Profile of Mood States) −Incidence of postsurgical complications.	−Decrease in perceived anxiety, anger and tension −Fewer postsurgical complications.
Goodale et al. (1990)[8]	46 PMS patients	RR instructions and daily practice.	Charting symptoms vs.reading.	−Premenstrual Assessment Form Daily Rating Form	−Reduction in physical and emotional premenstrual symptoms.
Irvin et al. (1996)[52]	33 women with hot flashes.	Listening to RR tape 20 min/day.	Reading vs.no intervention.	−STAI (State and Trait Anxiety Inventory) −POMS (Profile of Mood States) −Daily hot flash symptom diary.	−Decrease in hot flash intensity, tension, anxiety and depression.

BHI: Benson-Henry Institute; PMS: premenstrual syndrome; PMR: progressive muscle relaxation; SXS: symptoms; CSM: clinically standardized meditation; ROM: respiratory one-method meditation.

ness program focuses on reducing cardiac risk through behavior change and group support and adheres to the American Heart Association diet and one-on-one health contracting and assessment. It is a 13-session, 3-hour program, which includes weekly supervised exercise, nutrition counseling, RR-elicitation, and stress reduction training. The Centers for Medicare and Medicaid Services (CMS) Office of Research, Development, and Information studied the efficacy and cost-effectiveness of this program among 442 Medicare beneficiaries with moderate to severe coronary artery disease (Medicare Lifestyle Modification Program Demonstration). At 3-year follow-up, participants had a lower all-cause mortality rate relative to matched controls who had undergone standard cardiac rehabilitation (2.7% vs. 10.4%). Participants were also less likely to be hospitalized for cardiovascular or other reasons and had lower Medicare payments (difference: $2710 US) compared with the control group.[42]

The Medical Symptom Reduction Program targets decreasing stress reactivity among patients with a chronic illness. It is a 12-week, 2.5 h/wk intervention, which includes mind-body principles training for patients with a broad range of chronic medical conditions that may be exacerbated by stress. This RR treatment model integrates RR-elicitation with the promotion of health behaviors and the use of cognitive therapy elements (e.g., cognitive restructuring; Table 3). Samuelson and colleagues evaluated program outcomes, using the Medical Symptom Checklist (MSCL)[43] to assess somatic symptoms and the SCL-90[44,45] to assess psychological symptoms. Results indicated decreases in physical symptoms, anxiety, and depression among 331 adults who completed the program.[38] Since then, an 8-week, 1.5 h/wk version of this program has been developed. Recent analyses from participant evaluations suggest that this version may reduce medical and psychological symptoms as well as increase health behaviors in patients with a variety of medical and psychiatric conditions. No differences in outcomes have been observed across patients with different conditions (Vranceanu and Gonzalez, personal communication, August 2012).

3RP PROGRAM OVERVIEW

The current core RR-based program evolved into the 3RP, a structured 8-week, 1.5 h/wk program, which targets ad-

TABLE 3. Studies of Relaxation Response Multicomponent Interventions

Lead Author (Y)	Design	Intervention	Participants	Control	Outcome Measures	Findings
Nakao et al. (2001)[53]	Single arm	−RR-elicitation −Health education −Cognitive therapy	1148 participants with physical symptoms	No control	−MSCL (medical symptoms checklist) −SCL-90R −Stress Perception Scale	−Decrease in medical symptoms, anxiety, distress and stress
Jacobs (2001)[54]	Review	−RR-elicitation −Cognitive therapy	Patients with headache, insomnia or CVD	n/a	n/a	−Decrease in BP and headache symptoms, improved sleep
Dusek et al. (2008)[55]	RCT	−RR-elicitation −Health education −CBT skills	121 patients with SBP 140–159 mm Hg, DBP <90 mm Hg	Lifestyle modification	−Blood pressure medication	−Medication decrease while maintaining BP
Samuelson et al. (2010)[38]	Single arm	−RR-elicitation −Nutrition −Physical activity −Cognitive therapy	331 patients with medical and mental health symptoms	No control	−SCL-90R −HPLP-II (Health Promoting lifestyle profile) −MSCL (medical symptom checklist)	−Decreases in depression, anxiety, and physical symptoms −Increases in health-promoting behaviors

RCT: randomized control trial; CVD: cardiovascular disease; SBP: systolic blood pressure; DBP: diastolic blood pressure; BP: blood pressure.

aptation to chronic stress. This program is based on some of the initial multimodal programs with the addition of elements of positive psychology and an emphasis on blending the program's core components. The 3RP is thus grounded upon stress management principles from RR research, cognitive-behavioral therapy and positive psychology, and has three core components: (1) RR-elicitation strategies; (2) stress appraisal and coping; and (3) growth enhancement.

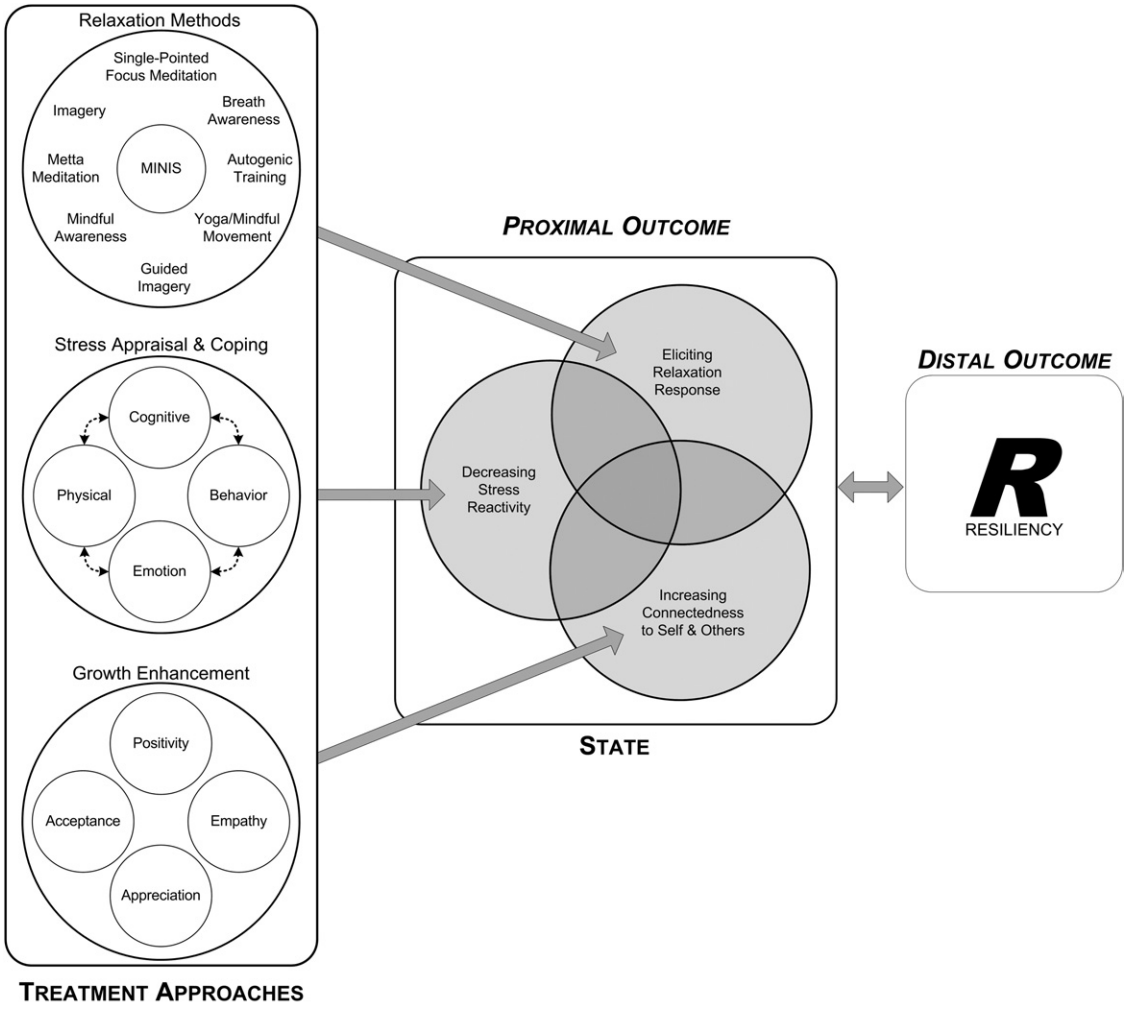
The blending of these three core elements creates an adaptive strategy to manage stress and increase resiliency (see Figure 2). Recently, Feder and colleagues defined human resiliency as consisting of five capacities: (1) the capacity to circumscribe fear responsiveness so that one can continue to be effective through active coping strategies despite fear; (2) the capacity to use adaptive social behaviors to secure support through bonding and teamwork and to provide support through altruism; (3) the ability to use cognitive skills to reinterpret the meaning of negative stimuli in a more positive light; (4) the capacity to experience reward and motivation nested in dispositional optimism and high positive emotionality; and (5) the integration of a sense of purpose in life along with a moral compass, meaning and spiritual connectedness.[38,46] The BHI 3RP is designed to target these five resiliency capacities. Hence, the 3RP enhances the ability to (1) adapt to stress and circumscribe fear responses by eliciting the RR and participating in lifestyle behaviors that buffer against the stress response and promote the RR; (2) engage sources of social support and increase opportunities to be pro-social; 3) generate cognitive habits of adaptive thinking to counter negative, stress-activating thoughts; (4) experience appreciation of life and its joys and cultivate optimism and positive thinking in daily pursuits; and (5) engage in meaningful social, empathic, and altruistic activities that foster a sense of spiritual connectedness.

COMPONENT THEORY AND GOALS

The goal of the first program component, RR elicitation, is for patients to achieve an ongoing RR practice; determine which RR strategy is best for him or her and/or best for different situations; and feel skillful at eliciting the RR. An important experience is the "opening" effect, which helps patients to focus and feel more receptive to the other components of the program.

The goal of the second component, stress appraisal and coping, is to increase patients' awareness of both positive and negative states. This component was shaped by the transactional model of stress and coping by Lazarus and Folkman, which suggests that the extent to which an individual experiences a situation as stressful depends on the interplay between the situation and the individual's appraisal of the situation.[47] Effective coping, in turn, depends on the match between the situation and the strategies used to manage it. A main focus of this program component is to raise awareness in identifying the negative effects of stress and to contrast this with an awareness of the positive effects of relaxation. The 3RP teaches patients to decrease their stress reactivity through identifying stress warning signs; building stress coping re-

FIGURE 2. 3RP Model Overview.



sources (e.g., social support); and proactively generating positive cognitions, pleasant emotions, and health-promoting behaviors.

The goal of the third component, growth enhancement, is to enhance connectedness to oneself and others. This component was influenced by the concept of "post-traumatic growth," in which recent socio-behavioral models and empirical work support the idea that stressors can lead to personal growth in areas such as self-efficacy, spirituality, appreciation for life, and ability to relate to others.[48,49] Studies based on the Lazarus and Folkman model have shown that the interplay of existing personal resources, event appraisals, and event coping strategies can influence whether an individual experiences stress-related growth (otherwise known as positive growth or post-traumatic growth). Positive growth is not an inevitable result of a stressful event, but is determined by how an individual copes with the event and whether the individual adapts a more positive world view.[48] Positive coping outcomes may be associated with specific personality traits (optimism and hope), benefit-finding and meaning-making processes, and positive coping mechanisms (positive reappraisal, religious coping, and problem-based coping). The 3RP promotes this coping by enhancing a sense of appreciation, promoting acceptance, teaching empathic listening, and building humor response strategies.

3RP TREATMENT STRUCTURE

The 3RP uses a multimodal approach to introduce and reinforce new skills and capacities, including didactics,

TABLE 4. Relaxation Response Resiliency Program Chapters and Goals

Chapter Title	Goals
Chapter 1 The Relaxation Response Resiliency Program	○ Introduce the Relaxation Response Resiliency Program (3RP) and its 3 components ○ Discuss how to elicit the RR ○ Introduce RR-elicitation method: single pointed focus meditation ○ Introduce the concept of appreciation ○ Establish program and weekly goals ○ Identify individual's sources of stress and coping
Chapter 2 The Relaxation Response	○ Introduce RR-elicitation method: breath awareness ○ Describe the relationship between the RR, health, and wellness ○ Introduce 'Minis' as a method to reduce tension and anxiety through the day ○ Assess recuperative sleep
Chapter 3 The Four Components of Stress: Emotional and Behavioral	○ Introduce RR-elicitation method: autogenic training ○ Learn the four component model of stress ○ Identify individual's emotional and behavioral components of stress
Chapter 4 The Four Components of Stress: Physical and Cognitive	○ Introduce new RR-elicitation method: chair yoga ○ Describe cognitive and physical components of stress ○ Describe automatic, self-defeating thoughts ○ Define different types of cognitive distortions, and learn how to identify them
Chapter 5 Building a Positive Perspective	○ Introduce new RR-elicitation method: joyful place imagery ○ Use cognitive reappraisal as a way to build adaption ○ Identify how positivity can increase resiliency in the long term ○ Learn concepts and strategies for enhancing positivity
Chapter 6 Mindful Awareness and Acceptance	○ Introduce RR-elicitation method: mindful awareness ○ Use strategies for applying mindful awareness in daily living ○ Learn about different coping styles: problem-solving and acceptance-based coping ○ Explore the development of acceptance, an essential quality of acceptance-based coping
Chapter 7 Healing States of Mind	○ Introduce RR-elicitation method: loving-kindness meditation ○ Introduce and evaluate types of social support ○ Learn how to select coping strategies: problem-solving and acceptance ○ Practice using humor to enhance processes of appreciation and acceptance ○ Introduce RR-elicitation method: idealized self
Chapter 8 Staying Resilient	○ Identify how empathy can increase resiliency in the long term ○ Review 3RP strategies learned ○ Develop a plan for continuing to use program strategies ○ Set goals for the future

in-session activities, discussions, and weekly practice assignments. An overview of the chapter focus and goals is presented in Table 4. Each session includes repetition of patient-centered core elements. First, there is a brief assessment of the recent level of stress experienced as well as the ability to cope with this stress. Second, there is a check-in of the previous week's goal progress, RR home practice, and skill utilization. Third, patients are introduced to RR-elicitation and "mini" strategies, with an emphasis on identifying which strategies work best for themselves. For experiential exercises, each session includes an introduction to a new RR-elicitation strategy and a "mini" relaxation technique (a 1- to 5-minute exercise for momentary stress relief). Fourth, each session closes with negotiated goal setting. Fifth, between sessions, patients are asked to keep a daily RR log to monitor frequency, type of practice, and self-reported changes in stress experienced.

The 3RP format is an 8-week program with 1.5-hour weekly sessions that begin with the practice of a new exercise to elicit the RR. It is believed that by quieting the mind and reducing distracting thoughts, the participant may increase absorption and retention of other skills that are introduced in the remainder of the session. This structure is reinforced throughout the 3RP program. The RR-eliciting method is then coordinated with the remaining session content. For instance, the clinician may introduce imagery of a peaceful place as an RR-eliciting method, and then transition to didactics and exercises that focus on cognitive and behavioral skills for building a positive perspective.

The 3RP approach supports delivery in group settings to facilitate pro-social activities. However, the program can also be tailored for individual delivery to meet patient needs. Indeed, the patient-centered nature of the program structure lends itself to individual treatment as well.

FUTURE RESEARCH AND SUMMARY

Data from previous RR research support the claim that multimodal RR treatment programs are accessible to patients with a variety of medical and psychological issues. In the 3RP, we incorporated a standardized yet flexible approach to address patient diversity with respect to both health and stress reduction goals. This model will facilitate the conduct of rigorous randomized-controlled trials that are needed to establish treatment effects. Future efforts will allow us to examine treatment components (mediators) and individual patient factors (moderators) that may influence proposed treatment outcomes. This work will also focus on testing mechanisms (e.g., RR-elicitation) of treatment outcomes.

In summary, we present a new treatment model, the 3RP, which has emerged from decades of RR clinical work and research. This program addresses and promotes patient resiliency as an outcome of adaptive coping with chronic stressors. The program is unique in its arrangement and integration of three distinct, yet integral, components (elicitation of the RR; stress appraisal and coping; and growth enhancement). This treatment program is designed as evidence-based, protocolized, and patient-centered; all three of these factors will facilitate its dissemination to practitioners treating patients with chronic medical conditions. Research is underway to examine the efficacy of the 3RP, and its underlying mechanisms, on psychological, physiological, biological, and genomic outcomes.

Acknowledgments: There are many people whom we would like to thank for their contributions to the 3RP. First, we would like to thank the BHI clinicians, Peg Baim, Leslee Kagan, Ellen Slawsby, Ann Webster. Marilyn Wilcher, Laura Malloy, Rana Chudnofsky, and Darshan Mehta for their decades of clinical work and expertise in advising on the 3RP program. We also want to express gratitude to Susan Sprich, Sarah Rastegar, Marissa Alert, Vivian Haime, and Halsey Niles for their contributions to the manual development.

Disclosure: The authors disclosed no proprietary or commercial interest in any product mentioned or concept discussed in this article.

This work was supported by the Center for Disease Control and Prevention (Grant R01DP000339).

References

1. Anderson N, Johnson S, Belar C, Breckler S, Nordal K, Ballard D, et al: Stress in America: Our Health at Risk. American Psychological Association 2012 Jan 11, 2012
2. Beary JF, Benson H: A simple psychophysiologic technique, which elicits the hypometabolic changes of the relaxation response. Psychosom Med 1974; 36:115–120
3. Benson H, Beary JF, Carol MP: The relaxation response. Psychiatry 1974; 37:37–46
4. Benson H, Klemchuk HP, Graham JR: The usefulness of the relaxation response in the therapy of headache. Headache 1974; 14:49–52
5. Benson H, Rosner BA, Marzetta BR, Klemchuk HM: Decreased blood-pressure in pharmacologically treated hypertensive patients who regularly elicited the relaxation response. Lancet 1974; 1:289–291
6. Benson H, Steinert RF, Greenwood MM, Klemchuk HM, Peterson NH: Continuous measurement of O_2 consumption and CO_2 elimination during a wakeful hypometabolic state. J Hum Stress 1975; 1:37–44
7. Dusek JA, Otu HH, Wohlhueter AL, Bhasin M, Zerbini LF, Joseph MG, et al: Genomic counter-stress changes induced by the relaxation response. PLoS ONE 2008; 3:e2576
8. Goodale IL, Domar AD, Benson H: Alleviation of premenstrual syndrome symptoms with the relaxation response. Obstet Gynecol 1990; 75:649–655
9. Greenwood MM, Benson H: The efficacy of progressive relaxation in systematic desensitization and a proposal for an alternative competitive response—the relaxation response. Behav Res Ther 1977; 15:337–343
10. Hoffman JW, Benson H, Arns PA, Stainbrook GL, Landsberg GL, Young JB, et al: Reduced sympathetic nervous system responsivity associated with the relaxation response. Science 1982; 215:190–192
11. Jacobs GD, Benson H, Friedman R: Topographic EEG mapping of the relaxation response. Biofeedback Self Regul 1996; 21: 121–129
12. Jacobs GD, Rosenberg PA, Friedman R, Matheson J, Peavy GM, Domar AD, et al: Multifactor behavioral treatment of chronic sleep-onset insomnia using stimulus control and the relaxation response. A preliminary study. Behav Modif 1993; 17:498–509
13. Jemmott JB III, Borysenko JZ, Borysenko M, McClelland DC, Chapman R, Meyer D, et al: Academic stress, power motivation, and decrease in secretion rate of salivary secretory immunoglobulin A. Lancet 1983; 1:1400–1402
14. Lazar SW, Bush G, Gollub RL, Fricchione GL, Khalsa G, Benson H: Functional brain mapping of the relaxation response and meditation. Neuroreport 2000; 11:1581–1585
15. Leserman J, Stuart EM, Mamish ME, Benson H: The efficacy of the relaxation response in preparing for cardiac surgery. Behav Med 1989; 15:111–117

16. Peng CK, Henry IC, Mietus JE, Hausdorff JM, Khalsa G, Benson H, et al: Heart rate dynamics during three forms of meditation. Int J Cardiol 2004; 95:19–27
17. Peters RK, Benson H, Porter D: Daily relaxation response breaks in a working population: I. Effects on self-reported measures of health, performance, and well-being. Am J Public Health 1977; 67:946–953
18. Rosenblatt LE, Gorantla S, Torres JA, Yarmush RS, Rao S, Park ER, et al: Relaxation response-based yoga improves functioning in young children with autism: a pilot study. J Altern Complement Med 2011; 17:1029–1035
19. Selye H: Stress without distress 1976/10/23 ed. Philadelphia, and New York: J.B. Lippincott; 1974; p. 718
20. Canon WB: The wisdom of the body. New York: Norton 1932
21. McEwen BS: Protective and damaging effects of stress mediators. N Engl J Med 1998; 338:171–179
22. Dusek JA, Benson H: Mind-body medicine: a model of the comparative clinical impact of the acute stress and relaxation responses. Minn Med 2009; 92:47–50
23. Wallace RK, Benson H, Wilson AF: A wakeful hypometabolic physiologic state. Am J Physiol 1971; 221:795–799
24. Benson H: The relaxation response: its subjective and objective historical precedents and physiology. Trends Neurosci 1983; 6:281–284
25. Benson H, Dryer T, Hartley LH: Decreased VO_2 consumption during exercise with elicitation of the relaxation response. J Human Stress 1978; 4:38–42
26. Benson H: The relaxation response. New York: Morrow 1975
27. McEwen BS, Stellar E: Stress and the individual. Mechanisms leading to disease. Arch Intern Med 1993; 153:2093–2101
28. Esch T, Fricchione GL, Stefano GB: The therapeutic use of the relaxation response in stress-related diseases. Med Sci Monit 2003; 9:RA23–34
29. Fricchione G: Compassion and Healing in Medicine and Society: On the Nature and Uses of Attachment Solutions to Separation Challenges. Baltimore: Johns Hopkins, 2011
30. Smith SM, Soubhi H, Fortin M, Hudon C, O'Dowd T: Interventions for improving outcomes in patients with multimorbidity in primary care and community settings. Cochrane Database Syst Rev 2012; 4:CD006560
31. Von Korff, M, Ormel J, Katon W, Lin, EH: Disability and depression among high utilizers of health care. A longitudinal analysis. Arch Gen Psychiatry 1992; 49:91–100
32. Charney DS: Psychobiological mechanisms of resilience and vulnerability: implications for successful adaptation to extreme stress. Am J Psychiatry 2004; 161:195–216
33. McEwen BS, Seeman T: Protective and damaging effects of mediators of stress. Elaborating and testing the concepts of allostasis and allostatic load. Ann NY Acad Sci 1999; 896: 30–47
34. Seeman TE, Singer BH, Rowe JW, Horwitz RI, McEwen BS: Price of adaptation—allostatic load and its health consequences. MacArthur studies of successful aging. Arch Intern Med 1997; 157:2259–2268
35. Astin JA, Shapiro SL, Eisenberg DM, Forys KL: Mind-body medicine: state of the science, implications for practice. J Am Board Fam Pract 2003; 16(2):131–147
36. Nakao M, Myers P, Fricchione G, Zuttermeister PC, Barsky AJ, Benson H: Somatization and symptom reduction through a behavioral medicine intervention in a mind/body medicine clinic. Behav Med 2001; 26:169–176
37. Pelletier KR: Mind-body medicine in ambulatory care: an evidence-based assessment. J Ambul Care Manage 2004; 27:25–42
38. Samuelson M, Foret M, Baim M, Lerner J, Fricchione G, Benson H, et al: Exploring the effectiveness of a comprehensive mind-body intervention for medical symptom relief. J Altern Complement Med 2010; 16:187–192
39. Sobel DS: The cost-effectiveness of mind-body medicine interventions. Prog Brain Res 2000; 122:393–412
40. Casey A, Benson H: Mind Your Heart. New York: Free Press 2004
41. Mandle CL, Jacobs SC, Arcari PM, Domar AD: The efficacy of relaxation response interventions with adult patients: a review of the literature. J Cardiovasc Nurs 1996; 10:4–26
42. Details for demonstration project name: Medicare preventive Services - Medicare Lifestyle Modification Program Demonstration. Centers for Medicare and Medicaid Services 1999; Available from: http://www.cms.gov/Medicare/Demonstration-Projects/DemoProjectsEvalRpts/Medicare-Demonstrations-Items/CMS1192588.html. Accessed October 2, 2012
43. Borysenko J: Minding the Body Mending the Mind. New York: Bantam 1988
44. Derogatis LR. SCL-90-R Manual I Baltimore: Johns Hopkins University School of Medicine 1977
45. Derogatis LR:SCL-90-R: Administration, scoring II for the revised version. Towson, MD: Clinical Psychometric Research 1992
46. Feder A, Nestler EJ, Charney DS: Psychobiology and molecular genetics of resilience. Nat Rev Neurosci 2009; 10:446–457
47. Lazarus RS, Folkman S: Transactional theory and research on emotions and coping. Eur J Pers 1987; 1:141–169
48. Tedeschi RG, Calhoun LG: The Posttraumatic Growth Inventory: measuring the positive legacy of trauma. J Trauma Stress 1996; 9:455–471
49. Schaefer JA, Moos RH: Effects of work stressors and work climate on long-term care staff's job morale and functioning. Res Nurs Health 1996; 19:63–73
50. Carrington P, Collings GH Jr., Benson H, Robinson H, Wood LW, Lehrer PM, et al: The use of meditation—relaxation techniques for the management of stress in a working population. J Occup Med 1980; 22:221–231
51. Domar AD, Noe JM, Benson H: The preoperative use of the relaxation response with ambulatory surgery patients. J Hum Stress 1987; 13:101–107
52. Irvin JH, Domar AD, Clark C, Zuttermeister PC, Friedman R: The effects of relaxation response training on menopausal symptoms. J Psychosom Obstet Gynaecol 1996; 17:202–207
53. Nakao M, Fricchione G, Myers P, Zuttermeister PC, Baim M, Mandle CL, et al: Anxiety is a good indicator for somatic symptom reduction through behavioral medicine intervention in a mind/body medicine clinic. Psychother Psychosom 2001; 70: 50–57
54. Jacobs GD: Clinical applications of the relaxation response and mind-body interventions. J Altern Complement Med 2001; 7(Suppl 1):S93–S101
55. Dusek JA, Hibberd PL, Buczynski B, Chang BH, Dusek KC, Johnston JM, et al: Stress management versus lifestyle modification on systolic hypertension and medication elimination: a randomized trial. J Altern Complement Med 2008; 14:129–138