Center for Mindfulness
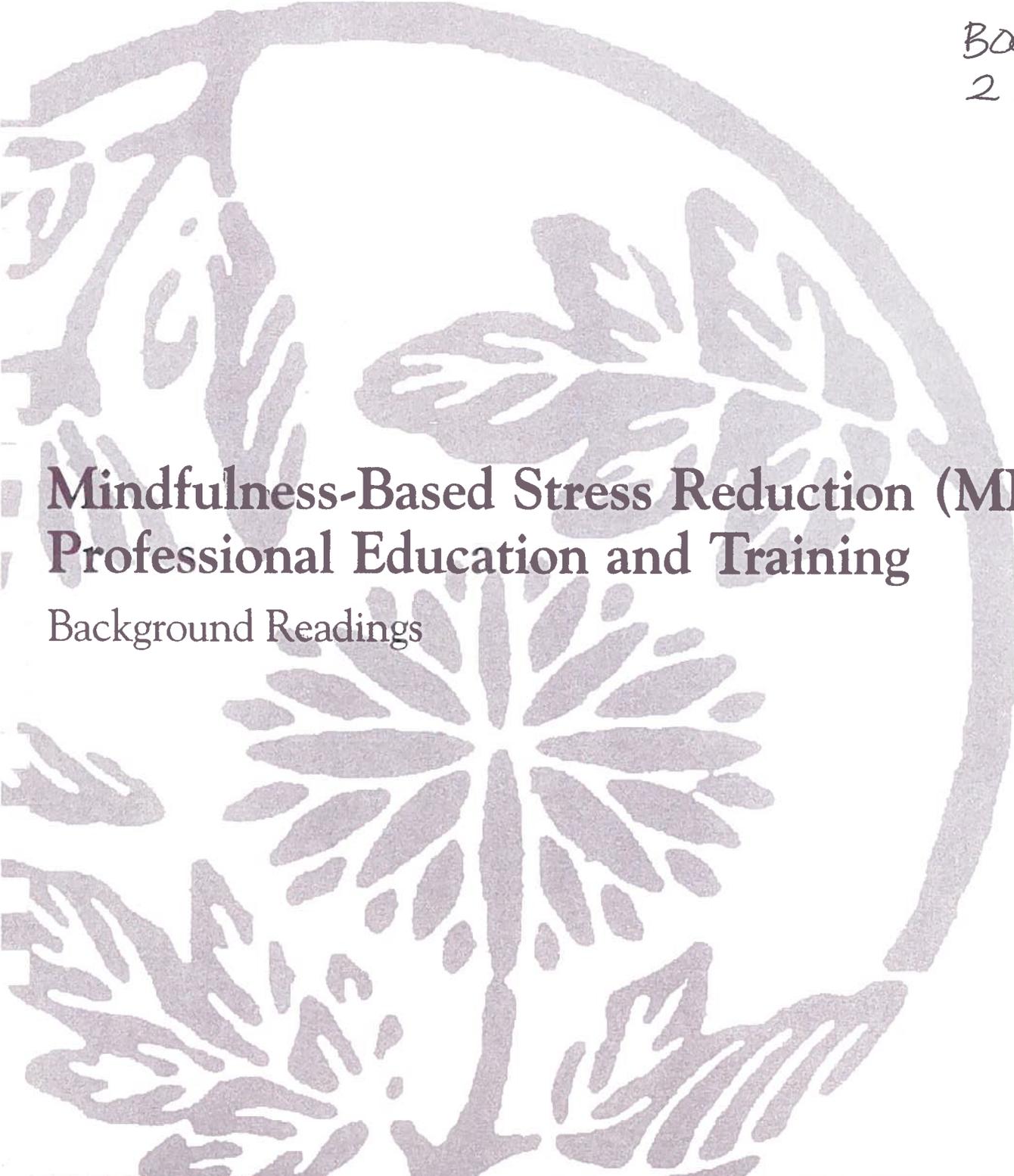in Medicine, Health Care, and Society

Mindfulness-Based Stress Reduction (MBSR)
Professional Education and Training

Background Readings

University of Massachusetts Medical School
Division of Preventive and Behavioral Medicine
Department of Medicine
508-856-2656
www.umassmed.edu/cfm

Holistic Health
And Healing

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Meditation

Melissa Blacker

Melissa Blacker, MA, is an instructor in the Stress Reduction Program at the University of Massachusetts Medical School in Worcester, Massachusetts. She is also the coordinator of the Teacher Development Intensive Program, which is a part of the Professional Education Program at the Center for Mindfulness in Medicine, Health Care and Society at the University of Massachusetts. She has been a meditator since 1981 and guides meditation groups in Worcester and surrounding areas.

Imagine a life in which what is actually happening in the moment is what really counts. Whatever is present, whether painful or joyful, is experienced fully, without distractions. Worries about the future and regrets about the past have no power over you. Entering into the moment in this way, everything falls into perspective, and problems become manageable, no longer overwhelming. Calmness and alertness exist together. You are truly alive and awake. This state of mind can result from the practice of meditation, a healing modality that people have used ever since they first discovered the joy of sitting quietly and contemplating their inner and outer worlds.

The word *meditation* can be used to describe many different methods of quiet contemplation or observation. According to one definition, meditation means "to dwell on anything in thought; to contemplate deeply and continuously; to ponder; to ruminate; to reflect."[1] In this chapter, however, we will use the word to mean a certain kind of paying attention to something either real or imagined.

Just as the words *healing, holy,* and *whole* share a common root and meaning from the Old English word *hal,* meaning "healthy, whole, hale,"[2] the word *meditate* shares a root in Latin with the word *medical.* Both words derive from the word *mederi,* meaning "to cure." But *mederi* itself comes from an older Indo-European root, *med,* which means "to measure."[3] As Jon Kabat-Zinn, PhD, founder of the Stress Reduction Clinic at the University of Massachusetts Medical School in Worcester, Massachusetts, points out, both medicine and meditation are concerned with measuring. In meditation, we measure, or observe, our own internal state of mind and body, with an attitude of attentiveness and curiosity, checking to see if we are in balance. Kabat-Zinn calls this taking our "right inward measure." Medicine, he writes, is "the means by which right inward measure is restored when it is disturbed by disease or illness or injury." Meditation is "the process of perceiving directly the right inward measure of one's own being through careful, nonjudgmental self-observation."[4] We might say that the ideal practice of medicine as well as of meditation allows us to perceive things as they actually are, by taking a careful and accurate measure.

Categories of Meditation

All forms of meditation can be said to fall into two major categories: concentration meditation and mindfulness mediation. The two types are distinguished by their relationship to the object of meditation. Meditation can be practiced alone or with the assistance of an experienced practitioner who guides the process.

Concentration Meditation

In concentration meditation, the meditator focuses on something specific in the external environment or on something internal. Any object or stimulus in the external environment – a candle flame, a picture, music, or other sounds – can be used to focus the mind in meditation. Alternatively, the meditator can focus on an internal physical sensation, such as the breath, pulse, or heartbeat, or any other sensations present in the body. Emotions and thoughts can also be used as a focus.

In another form of concentration meditation, sometimes called "visualization," the person is guided to focus on something imaginary, such as a peaceful landscape inhabited by make-believe people. Sometimes a guide instructs the person to envision performing a difficult task, encouraging the meditator to feel a sense of ease in the performance that can then later be experienced in reality. For example, a student could imagine the successful completion of a difficult course of study. By seeing oneself in an enjoyable nursing practice, a student could better manage the anxiety of a rigorous nursing program.

Meditators can also focus on single words, phrases, or prayers, which are repeated internally. A word or phrase is often linked with a physical sensation, such as the breath. In some meditation traditions, the individual counts while inhaling and exhaling as a method of focusing awareness.

Mindfulness Meditation

When the object of attention is broad and/or continually changing, we speak of "mindfulness meditation."[5] In this form, the meditator directs awareness to whatever presents itself, whether an external object or sound, or an internal sensation, emotion, or thought. The meditator directs awareness to whatever presents itself, whether an external object or sound, or an internal sensation, emotion, or thought. The meditator is instructed to notice the passing object of awareness but not to follow it or to attach to it. This form of meditation evokes a sense of resting in the present moment; one is awake and aware of whatever may come.

Awakening to Reality

Meditators can learn to see everything in their world as a means of awakening to the true nature of reality. Concentration meditation facilitates the development of a keenly focused awareness, whereas mindfulness meditation develops one that is broad and flexible, sometimes called a choiceless awareness. These meditation methods allow the meditator to experience the world directly, without judgment or ideas intervening between the observer and what is observed. The two forms of meditation complement and reinforce each other, leading to a condition of awareness that is not the everyday mental state of human beings. This state of alertness can lead to a feeling of being alive, healthy, and vibrant, no matter what the mental or physical condition of the body. (See boxes 7-1 and 7-2)

BOX 7-1
Mind-Body Medicine

In Eastern thought, and especially in the teachings of Buddhism, the mind and body are not considered as separate entities, with the mind influencing the body or the body influencing the mind. The influence of mediation on the body-mind, as it is often called, is assumed to be naturally beneficial. A new branch of Western medicine, sometimes called mind-body medicine, is related to this concept. Both Herbert Benson's and Jon Kabat-Zinn's work have influenced the development of this new field.

The theoretical split between mind and body first described by René Descartes in the 18th century has led to certain practices in Western medicine that overlook the mind's influence on the body and the body's influence on

the mind. Mind-body medicine suggests a more integrated approach, in which the physiological component of an emotional illness is presupposed, and vice versa. Anything that influences the mind "or" body can have an impact on disease, regardless of the category, physical or mental, into which the disease falls.

One effect of using meditation to heal an illness is the recognition that the split between physical and mental illnesses is an illusion and that the condition of the body-mind involves a complex interaction of so-called physical and mental processes. Even the idea of healing an illness may be "seen through" as an illusion.

The concept of "healing" is not easily defined. In medicine, there is often an expectation of curing a disease, which usually means eradicating it, and returning to "normal" healthy functioning. "Healing," however, may not necessarily involve curing the disease, but rather returning the entire organism to wholeness, rebalancing the body-mind. This can mean that the disease process itself has not been stopped or destroyed, but that certain attitudes toward the disease, and ways of relating to it, have shifted. This process gives the ill person new resources upon which to draw, thus making his or her life fulfilling and satisfying. An end to the illness is also possible as a result of the rebalancing and new sense of wholeness, but it is not necessarily the goal.

BOX 7-2

Meditation as a Religious Practice

Meditation is a central or peripheral part of most religions, often used to enter into states of mind that facilitate spiritual awakening. The contemplative components of Judaism (Cabalistic mediation), Islam (Sufism), and Christianity (Eastern Orthodoxy's Philokalia and Roman Catholicism's Centering Prayer) often take the form of a concentration practice such as the inward recitation of words and prayers.

Meditation also plays a major role in Hinduism. The Sanskrit term for meditation, *dhyana*, describes "any absorbed state of mind brought about through concentration,"[1] and many traditional Hindu meditation practices emphasize focusing on an internal or external object.

Buddhist meditation, which arose in India 2500 years ago, was initially derived from Hindu practices. As this meditation practice spread from India to China, Tibet, and Southeast Asia, it mixed with indigenous practices and adopted some of the character of the cultures it encountered. There are therefore many forms of Buddhist meditation, some of which can be characterized as concentration meditation and some of which as mindfulness meditation. Chinese Taoism and Indian Buddhism blended to create the sect known as *Ch'an* in China and *Zen* in Japan, Korea, and Vietnam. Ch'an or Zen practices include both concentration and mindfulness.

Southeast Asian Buddhist meditation, which developed in Burma (Myanmar), Thailand, and Ceylon (Sri Lanka), produced many refinements of both concentration and mindfulness meditation, as did the mixture of Tibetan *Bon* and Indian Buddhism.

Both Western and Eastern forms of religious meditation have recently become popular in the West. One of the most well-known Hindu-based practices is Transcendental Meditation (TM), but there are also many other schools of meditation derived from the Hindu yogic tradition. Various Buddhist meditation traditions have taken root as well, especially Central Asian forms such as Ch'an and Zen practices, Southeast Asian *Vipassana* or insight meditation, and Tibetan Buddhist practices.

These Eastern forms of meditation have captured the interest of medical researchers, who have studied the effects of these practices on both mind and body. A number of studies (see the References and Bibliography) have shown that meditation has a significant and measurable impact on both mental and physical health. In addition, some Western practitioners of meditation have explored the effects of teaching meditation to people with illnesses, with the intent of relieving mental and physical woes. The relief of mental and physical symptoms has often been noted as a "side effect" of meditation. Such qualities as compassion for others, peacefulness and equanimity, and a deep wisdom are also thought to arise out of the practice of meditation.

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Research

In 1979, at the University of Massachusetts Medical Center in Worcester, Massachusetts, Jon Kabat-Zinn, a professor of medicine, started a research-and education-focused program. Kabat-Zinn, founding executive director of the Center for Mindfulness in Medicine, Health Care, and Society, and his associates teach a combination of concentration and mindfulness meditation derived from Buddhist meditation methods, which they call "Mindfulness-Based Stress

Reduction." Currently, the Stress Reduction Program operates as a part of the Center for Mindfulness at the University of Massachusetts Medical School.

In 1980 Herbert Benson, a Massachusetts physician, founded the Mind-Body Medical Institute in Boston, affiliated with Deaconess Hospital and Harvard Medical School. Benson and his associates teach and do research on his adaptation of Transcendental Medication, which he calls the "Relaxation Response."[6] This is primarily a concentration practice. Kabat-Zinn's and Benson's pioneering research have generated widespread interest in the study of meditation and its effect on health and healing.

Research studies on meditation and healing have two general focuses: the physiological and mental effects and the impact on the disease process. The earliest studies of the effects of meditation, conducted in the 1930s, focused on the physiological changes in Indian practitioners of yoga and yoga meditation, primarily a concentration practice. Replications of these early studies continued until the 1970s and documented measurable changes in heart and pulse rates, brain waves, blood pressure, skin temperature, and respiration.[7] Beginning in 1957 and continuing into the 1960s, Kasamatsu and Hirai published a series of studies on Zen Buddhist practitioners. A significant finding of this research was that accomplished Zen meditators were able to maintain a spontaneity and freshness of perception in daily life.[8,9] Deikman, in a 1966 study, described the results of this kind of meditation as "a manipulation of attention that produces deautomatization—an increased flexibility of perceptual and emotional responses to the environment."[10]

In addition to these perceptual and attitudinal findings, a great number of studies, some building on the early yoga studies, have linked meditation to improvements in physiological conditions. More than a thousand studies sponsored by the Transcendental Meditation Society, including some by Herbert Benson and his associate Keith Wallace in the 1970s, showed cardiovascular, cortical, hormonal and metabolic changes, as well as behavioral effects and alterations of consciousness.[11] Later studies duplicated these results, demonstrating changes in the cardiovascular system, lowered blood pressure, and changes in brain-wave patterns.[12]

Other physiological studies have linked meditation with positive effects on various states of disease: diabetes, asthma, fibromyalgia, premenstrual syndrome, Crohn's disease, psoriasis, and cancer.[13] Jon Kabat-Zinn and associates, in a number of studies in the 1980s indicated that when patients with chronic pain practice meditation, their pain diminishes.[14-16]

A small number of studies have linked meditation to a lowering of stress-induced adrenal hormone levels, and others have shown a similar reduction in blood lactate, which is associated with anxiety and high blood pressure.[17] In a 1992 study, Kabat-Zinn and associates[18-20] showed reductions in anxiety and depression, and other research[21] has pointed to reductions in addictive behaviors and sleep disorders. Studies have shown that meditation, in addition to alleviating disease, has also been effective in promoting health, well-being, and enhanced states of sports performance.[22]

A recent study by Richard Davidson, Jon Kabat-Zinn, and associates[23] compared people taking an 8-week Mindfulness-Based Stress Reduction training course with a control group. In comparison with the control group, the experimental group showed significant increases in activation of a region of the brain associated with effective processing "negative" emotions under stress, as well as significant increases in antibody titers to an in vivo immune system challenge. These results provide strong evidence that training in meditation and its application to daily living have profound and measurable effects on biological factors influencing both emotional and physical health. (See Box 7-3).

BOX 7-3
Stress Reduction in Action

The Stress Reduction Program at the Center for Mindfulness at the University of Massachusetts Medical School offers an 8-week program designed to help people manage stress and lead more productive and fulfilling lives.

The story of one participant in the program, who will go by the name of Rose, illustrates the process of change one experiences when taking the program. Rose's problems were initially related to work and had begun 6 months prior to her interview for the program. A responsible and self-motivated worker in a large retail outlet, she was highly regarded by her employer. When the company began experiencing financial difficulties, Rose's workload increased as fellow workers were laid off. She began to show symptoms of the overload, sleeping poorly and feeling exhausted during the day.

Rose's blood pressure increased, and she became anxious in any situation away from home, afraid that people would harm her. She had frequent, severe headaches and recurrent indigestion. Her doctor prescribed medication for her anxiety and for her high blood pressure, but she felt no relief. Finally, unable to work or even to leave the house, she notified her company that she had to take a medical leave. She was advised to see a psychiatrist, who referred her to the Stress Reduction Program.

The program consists of eight weekly classes, each lasting about 2 ½ hours. During the sixth week, there is an additional all-day class. During interviews conducted before and after the program, data are collected on each participant's medical and psychological symptoms and behaviors. Goals are set in the intake interview and evaluated during the final interview. During the 8-week period, participants are expected to practice the skills of concentration and mindfulness meditation each day.

During the intake interview, Rose reported being unable to concentrate, feeling depressed, worrying a lot, and having frightening dreams. She described headaches and digestive problems, as well as extreme anxiety about being with other people. She was concerned about attending a class with 20 to 40 other participants.

By taking the class, Rose hoped to gain more control over her emotions and body sensations, eliminate her fear afraid of going out in public, and feel good about herself. Her biggest concern was that she would feel better and go back to work at her company, only to find that "everything would go back the way it was."

In the first class, Rose explained she was taking the class to deal with her anxiety. She mentioned nothing about her work life, her physical problems, or her fears of public places and strangers. She did add that she had always been a good, dutiful person, helpful to other people when she could be. This last statement became the source of her own personal revelation in class.

In the weeks that followed, Rose—like all the class participants—learned the skills of concentration and mindfulness meditation through various exercises designed to increase awareness of the body and the mind. In an exercise called the "body scan," participants were trained to notice feelings in their bodies without trying to change them in anyway. Students were then instructed to perform this exercise at home each day, using a 45-minute tape for guidance.

Eventually, mindful yoga exercises were added to the daily routine, as well as quiet sitting with attention to the process of breathing. After the fourth week, participants practiced mindfulness meditation on a daily basis, using the body scan, breath meditation, and yoga as supplementary practices. Discussions in class focused on the experience of performing these mindful practices, the nature and mechanics of stress, and mindful communication and nutrition. Everything was presented and discussed within the frame of increased awareness.

Rose said very little during the first few weeks of class, except to report that she was having difficulty concentrating and that her anxiety seemed to be increasing. She also found herself falling asleep during meditation practice at home. These are typical experience for many in the program, and other participants supported her by sharing their own similar difficulties.

Rose began to participate more in class discussions and often mentioned noticing how little attention she paid to herself and her own needs. Her desire to be "good" was beginning to be toxic to her. During the fifth class Rose revealed that she had been able to stay awake during a body scan meditation at home and had experienced being awake and relaxed at the same time. This was a completely new experience for her. When she attended the all-day class—in which more than 80 people participated, including ones from other classes running concurrently with hers—she reported feeling relaxed and comfortable in the large crowd, at home and with herself.

During the last class, participants were encouraged to talk about what they had learned from the course. Rose spoke movingly about how all her life she had placed others before herself, trying hard to be good. She had been a good mother, wife, daughter, sister, and worker, but she had ignored her own needs. Through the practice of meditation, Rose had come to know herself, her own body and mind. She now believed that by knowing herself in this new way, she could change her life.

As Rose revealed in her final interview, she was also surprised to notice an improvement in her physical health. Her headaches had disappeared, her digestion had improved, and her blood pressure had returned to normal. With her doctor's permission, Rose had stopped taking medication. She felt somewhat more at ease in public, although going out still challenged her. She had come a long way in meeting her goal of being able to control her emotions and physical sensations.

Rose's scores on medical symptom checklists had improved dramatically as well, in one case by 50 percent. In her own words, Rose had learned to "focus on calming my anxiety to the point where I could control it instead of it controlling me. . . .When I feel anxiety building, I immediately stop, breathe, respond. I look at situations differently and choose the best response for me. . . .In the past [before the stress reduction program] my reactions were almost automatic. Now I am more able to accept my thoughts and feelings without allowing them to trap me and frighten me."

Summary

As Rose's story in Box 7-3 demonstrates, meditation seems to affect the entire mind-body. Rose reported changes in physical symptoms as well as positive changes in attitudes and behaviors. Her new ability to observe herself and her own life with greater awareness influenced her thoughts and feelings – and even her medical symptoms.

The ability to choose different attitudes and behaviors often accompanies increased mindfulness. Certain personality traits that researchers have traditionally believed to be unchangeable—such as self-esteem, feelings of competence, and the ability to withstand stress—can shift in positive directions through the practice of meditation.

The healing that occurs through meditation exists on all levels, although not everyone experiences Rose's dramatic reduction in symptoms. Patients with potentially fatal diseases often find that their health continues to deteriorate. However, these patients report that the quality of their life changes as a result of meditating. The life that remains, with all its pain and suffering, becomes more accessible, richer, and more appreciated. Chronic pain can diminish, but even if it does not, patients sometimes report that their relationship to the pain changes: it is no longer the enemy. Using the practice of mindful awareness, one can choose to engage with pain—or with anything else, for that matter—with a sense of curiosity and attentiveness. Paradoxically, when this mindful attending is engaged, pain may diminish.

Graduates of the Stress Reduction Clinic often report that their lives have changed in ways they had not initially expected. Mostly, they find that the new self they may have wanted—healthy and whole—and the new life—filled with joy and peace—were always available to them. All they had to do was learn to stay still and pay attention. Through these simple but powerful means, lives become healed.

Resources
Stress Reduction Program
Shaw Building
University of Massachusetts Medical School
55 Lake Avenue North
Worcester, MA 01655
Phone: (508) 856-2656
www.umassmed.edu/cfm
The clinic, founded by Jon Kabat-Zinn, offers classes in Mindfulness-Based Stress Reduction as well as professional education programs.

The Mind/Body Institute
Division of Behavioral Medicine
New England Deaconess Hospital
185 Pilgrim Road
Boston, MA 02215
(617) 732-9530
Herbert Benson's clinic

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Section 11-8
Interview with Saki Santorelli, Stress Reduction Clinic, Massachusetts Memorial Medical Center

Saki Santorelli, EdD, is Director of the Stress Reduction Clinic (SRC) at University of Massachusetts Memorial Medical Center (formerly the University of Massachusetts Medical Center); Director of Clinical and Educational Services at the Center for Mindfulness in Medicine, Health Care, and Society; and Assistant Professor of Medicine at the University of Massachusetts Medical School in Worcester, Massachusetts. As noted by John Kabat-Zin, the program's founder, "Saki is a master teacher and mentor." The primary orientation of the clinic is relatively intensive training in mindfulness meditation and mindful Hatha yoga. This well-researched approach, now termed mindfulness-based stress reduction (MBSR), is offered in 240 medical centers, clinics, and educational settings worldwide. MBSR offers individuals suffering from a variety of chronic and acute medical conditions the possibility of cultivating a range of inner resources. These resources then can be directed toward learning, growing, and healing in ways that increase their capacity to cope more effectively with both short- and long-term stressful situations and live their lives more consciously and fully.

Dr. Santorelli has been associated with the SRC for 20 years, beginning as the clinic's first intern. Because of the complexity of the conditions of patients served by this program, the level of commitment and unique skills required of its instructors are profound. In the following interview, Dr. Santorelli speaks about how clinic instructors are selected and what is required for an individual to transform himself or herself into an exceptional teacher.

Question: Tell me about the training for your MBSR instructors.

Santorelli: Since meditative practice is the heart of work, our instructors have been meditating for the average length of about 16 years. However, this is not a rigid standard. We have had people with less practice time who have been wonderful instructors. As we see it, there is an interesting balance between life experience, academic training, and meditation practice that we take into consideration when selecting instructors. We have had instructors and interns with less meditation practice who have had strong academic and "life" training that has created within them the possibility of understanding some things that you can't get any other way but by being alive. In this sense, one's experience of living "the full catastrophe" can be a tremendous field of learning and a foundational dimension of working with others, if one takes advantage of it by being present to it.

This intention to being present to the challenges and ups and downs of everyday life creates a vehicle of attention that expresses itself as presence—as an authentic embodiment of this commitment to be awake to one's life no matter what is occurring. That being said, of course, most of us are not present to each moment of our lives. Perhaps this is impossible, although I don't really know. However, the intention and commitment themselves—in the face of the seemingly impossible—creates a kind of freedom and aliveness. Since it is nearly impossible, what have any of us to lose by intending and enacting such a possibility? What might be discovered in the process? How might our commitment to the process of being alive to

CENTER FOR MINDFULNESS IN MEDICINE, HEALTH CARE, AND SOCIETY

Type of Organization:

The Center for Mindfulness in Medicine, Health Care, and Society (CFM) is a nonprofit health care organization affiliated with the University of Massachusetts Medical School (UMMS). The center developed the Stress Reduction Clinic and Mindfulness-Based Stress Reduction Clinic (MBSR) and offers this intervention to physician-referred patients suffering from a wide variety of medical and psychologic conditions. The primary goal of the program is to help patients learn how to live well with long-term health problems, and the primary work of the center is to provide intensive training in mindfulness meditation. The center provides ongoing classes at two sites: the Stress Reduction Clinic (SRC) in Worcester, and the City Campus Stress Reduction Clinic (CCSRC), in the inner city of Worcester. The CCSRC program is offered in both Spanish and English and is free of charge, with transportation and childcare services provided.

Founded:

The Stress Reduction and Relaxation Program was founded by Jon Kabat-Zinn in 1979 and was housed at the University of Massachusetts Medical Center.

Sources of Funding:

Funding is provided by insurance submittals, private pay by patients, income from educational classes, research grants, and donations. Fees for education classes:

Professional Internship Program:	$1800 per intern
Teacher Development Training:	$2800 per teacher
Patient Fees for MBSR Program:	$672 per patient

Organizational Goals:

Current organizational goals are divided into four categories: (1) clinical care, (2) research, (3) networking/outreach, and (4) education. Clinical care refers to delivery of the MBSR program to referred patients in UMMC's SRC, and in the CCSRC. Clinical goals related to the delivery of care include:

- ◆ Broader insurance and HMO coverage of the MBSR program, locally and nationally, accomplished by successful advocacy for program reimbursement
- ◆ Expanded physician referral base
- ◆ Increased physician-participation in continuing medical education Mindfulness programs
- ◆ Increased numbers of MBSR instructor staff
- ◆ Established MBSR clinics and programs at affiliated hospital settings
- ◆ Established long-term funding for the CCSRC clinic

Education refers to internship programs, regional supervision seminars, teacher development programs, and mindfulness training for persons with no medical conditions (see educational section). Research is defined as mindfulness studies that assess patient outcomes and the cost-effectiveness of MBSR as medical support. Networking/outreach includes, but is not limited to, professional network development, corporate programs, HMO involvement, media coverage of MBSR programs, and community lectures.

Faculty, Staff, Medical Personnel Qualifications:

MBRS instructors at SRC and CCRSC have a master's degree or higher level of education, or its equivalent, in social sciences, health sciences, education, or a related field. Potential instructors must have maintained an ongoing mindfulness meditation practice before application. Individuals teaching in the Worcester MBSR program averaged 16 years of personal mindfulness meditation practice before becoming employed as an instructor. In addition to education and experience, the ability to translate mindfulness practice into practical and readily accessible language must be demonstrated. The capacity for patient empathy without becoming lost or overwhelmed by patient emotion and experience is also required. Those chosen as instructors of the clinic must practice mindfulness as a lifestyle choice and commit, long-term, to the practice and expression of mindfulness in their own lives. For detailed provider qualifications and recommended guidelines, see Chapter 8.

Model of Integrative Care:

MBSR is an outpatient behavioral medicine program in the form of an 8-week course to complement ongoing conventional medical treatment. The program consists of two individualized evaluation interviews and 30 hours of direct classroom instruction

CENTER FOR MINDFULNESS IN MEDICINE, HEALTH CARE, AND SOCIETY—cont.

(eight weekly 2½- to 3-hour sessions and one all-day weekend session). Additionally, patients must commit to practice various forms of mindfulness (e.g., body scan, yoga postures, sitting or walking meditation) for a minimum of 45 minutes a day, 6 days a week. Patients must be referred by a physician. The program fits the model of integrative care (i.e., the combined and concurrent use of both conventional and nonconventional medical care). The MBSR program is the oldest and largest hospital-based stress reduction clinic in the country. Referred patients have been diagnosed with conditions such as heart disease, chronic pain, gastrointestinal distress, high blood pressure, headache pain, anxiety and pain, cancer, sleep disturbances, job or family stress, HIV infection, AIDS, Type A behavior, fatigue, and skin disorders. The majority of patients report both physical and psychologic symptoms. Program participation typically results in long-term reductions in both physical and psychologic symptoms and an increased ability to copy more effectively with short- and long-term stressful situations, including the capacity to cope with long-term illness and disability.

Currently, there are over 240 MBSR programs operating in the United States and abroad. Most are housed in academic medical centers, hospitals, or large HMO networks, or function as stand-alone clinics. Modeled on MBSR, none of the programs are officially affiliated with the Center for Mindfulness.

Educational Offerings:

Educational offerings through the Center for Mindfulness include (1) MBSR professional training and development programs, (2) the medical student stress reduction program (MSSRP), (3) the MBSR Corporate Program, and (4) residential MBSR retreats for nonpatient populations.

1. *MBSR Professional Training and Development Programs.* The professional internship program is 10 weeks and 11 sessions in length and is designed specifically for health professionals interested in learning more about the use of mindfulness in a clinical setting. Each internship section is limited to between five and seven participants, and teaching cycles begin in the Fall, Winter, and Spring. The completion of a Vipassana retreat of at least 9 days or equivalent is strongly recommended before beginning the internship program. Once accepted into the program, interns attend the 8-week outpatient programs in the role of participant and observer. The time commitment is no less than 5 hours, 1 day per week. At the end of each class, interns meet for 2½ hours with the class instructor to discuss, in depth, the session, their own practice of mindfulness meditation, their impressions from the class experience, and the contextual background of the work. Interns also sit in on postprogram patient evaluation interviews and discuss with instructors all professional, institutional, and research aspects relevant to the background and career paths of the individual intern. The internship program has been ongoing since 1982, with more than 1,000 professionals completing the program. Drop-out rate for the program is less than 1%. The program is offered in both English and Spanish. After successfully completing the internship program, physicians receive 79 Category I credit hours, nurses receive 79 contact hours, and educators receive 79 professional development points; other professionals are eligible for 79 CEUs. Application has been made for CEU credit for social workers and licensed mental health counselors.

   MBSR Teacher Development Intensive (TDI) is offered to individuals already teaching MBSR in other settings in three, 4-day week-end sessions. The course is interactive, participatory, and collaborative. Meditation practice, simulated classroom situations, role plays, videotaped clips from actual classes, and Socratic discussion are all used as tools for expression and learning. Homework outside of program hours is required. Instructors are given the opportunity to:

   ◆ Discuss personal practices with their inherent challenges and gifts
   ◆ Share examples of "getting stuck" in classes combined with group problem-solving suggestions
   ◆ Share teaching materials, stories, quotes, handouts, and poems; explore content developed by other instructors
   ◆ Review logistics of advertising, funding, and research
   ◆ Give attention to instructor well-being, including the financial, business, and personal integrity components

   The TDI program was first held in the Spring of 1997 and is now an ongoing event. CECs are available to physicians (80 category I credits), nurses (96 contact hours), psychologists (83.5 credit hours), and educators (80 professional development points). Application for CECs have been made for social workers and licensed mental health counselors. Other professionals will be eligible for 102.5 CEUs from the University of Massachusetts Medical School.

   ◆ Residential Professional Training Programs consist of 5- and 7-day professional training retreats offered in various locations around the country. They are sponsored by the Omega Institute and the CFM.
   ◆ Regional MBSR professional programs are weekend teaching seminars, sponsored by regional groups of MBSR instructors. The first was conducted in Los Angeles in the Spring of 1997 and are now ongoing events.

CENTER FOR MINDFULNESS IN MEDICINE, HEALTH CARE, AND SOCIETY—cont.

2. *Medical Student Stress Reduction Program (MSSRP)*. This course, entitled "The Contemplative Mind in Medicine," provides an in-depth and experiential introduction to mindfulness meditation and is an optimal part of the student's medical education. Offered in the first and second years of medical school, this course includes a research component to encourage evaluation of the medical benefits of mindfulness practice for oneself and for patient care. This program has been offered for more than 12 years.

3. *MBSR Corporate Program*. First offered in 1996 to employees in an international biotechnology corporation, this program is now offered twice a year for beginners and once a year as follow-up for graduates. Programs targeting specific populations within organizations will be developed in the coming year.

4. *Residential MBSR Retreats for Nonpatient Populations*. This program, originally a 5-day residential offering held for persons with medical programs, has now been modified as training for persons with no overt medical conditions who wish to learn how to manage stress. Class format includes a large group session in the morning and small group sessions targeted to specific topics in the afternoon.

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all aspects of life transform our views of self, other, and the world? Our willingness to enter into this "mystery" allows instructors to resonate with and feel connected to the people they are serving. This resonance arises out of a deepening sense of empathy and compassion that honors the entire scope of the human condition because we are familiar with the universal dimensions of this within ourselves. When patients feel this unspoken connection with their instructor, it offers them the possibility of feeling the same kind of warm connection with themselves. This warm and open-handed friendliness with self is the foundation of the meditation practice. Without it, the possibility of entering into stillness and silence and seeing into one's life more clearly and nakedly is seriously impoverished. So, although a long-term meditation practice is an invaluable part of our teacher selection criteria, it is not sufficient in itself to ensure a certain quality of presence required to skillfully teach MBSR.

Importantly, the unfolding of meditation practice does not appear to be a rigid linear process, nor is it based primarily on the chronology of "time on the cushion." This doesn't mean having a good deal of formal practice under one's belt isn't important. However, we take care to make sure people understand that it is not a rigid criterion. We have had instructors with 5 or 6 years of meditation experience who do very well in the classroom. Conversely, we have met people seeking jobs who have 20 or more years of meditation practice in their background who we did not feel at the time were capable of teaching in the classroom. Our work is very much based on knowing

how to meditate; how to work with everyday people [who are] not particularly interested in stepping into a particular meditative tradition with all the trappings of the tradition; and transmitting the heart of the practice in a way that is grounded, commonsensical, and well-suited to application in everyday life. Certainly this requires a strong measure of clarity and precision that goes a long way toward creating an atmosphere in which people can understand the essential elements of practice and apply those principles in a manner that brings about a palpable sense of relief of suffering. When linked, the practice itself, the skill of the instructor to make it readily available and accessible to the patient, and the commitment and dedication of the patient make for the creation of a vehicle that offers both practitioner and patient the opportunity to tap deep inner resources for growing and healing that they [the patients] may not have previously imaged or touched within themselves.

Question: So, it is all really based on the quality of the instructor?

Santorelli: It isn't all the instructor. It is based on the relationship between the patient and the instructor. Part is absolutely the skill of the instructor, and part is absolutely the dedication and attention of the patient or client who participates in the program. In my experience, good teaching is always symbiotic and bi-directional. This bi-directional, mutually transforming process between student and teacher or patient and practitioner is a critical aspect of MBSR. We pay a lot of attention to it, recognizing over and over again that the role of the teacher requires one to

be a "master learner." In our experience, even if a new instructor comes into the clinic with "the right stuff," it seems to take about 5 years for someone to become a flexible, fluid, highly competent MBSR instructor. As you can imagine, the willingness to be a "learner" plays a large part in this process of development. In essence, teaching MBSR asks one to become the practice rather than to simply "teach" the practice. Rather than "modeling" MBSR, one becomes an embodiment of mindfulness. For me and for all of us at the clinic, this is nothing less than a lifetime's work. This makes it interesting, curiosity-provoking, and life-giving, rather than an onerous task or career trajectory.

Question: Do you mean that even when an individual has the right stuff, it still takes 5 years to become a good instructor?

Santorelli: Yes. It doesn't mean that our instructors are not capable from day one, because they are. But, the enrichment of that capability takes time, because you get exposed to a diversity of people and a variability of situations that perhaps you would not be exposed to if you were a meditation instructor in a meditation center of one kind or another. In this situation, let's face it, hospitals are magnets for suffering. People don't come to hospitals because they feel good. They come to hospitals because they are not feeling well, and they are coming for some kind of treatment, or [they] are referred to our clinic by their physician for treatment, because they are not quite right, and they know it.

On one level, this is a very strong motivational factor, but on another level, it means that, as instructors, we are faced with enormous variability. We each teach on our own, have classes of 25 to 30 people in size, and, in our case, the classes are generic rather than homogenous. This means that we have people with a wide range of diagnoses and conditions coming together for the common purpose of learning the "how" of taking care of themselves and living well with what they've got. Of course, as instructors, we are in the same boat! It is not unusual in such a class to have five or six different people with different forms of cancer, at different stages of cancer; some people recently diagnosed, some people at post-diagnosis and others in remission; other people in an ongoing process of treatment. [There are] people with heart disease, people with headaches, people with migraines or a range of other kinds of chronic pain; people with autoimmune conditions, such as Lupus, and people with hypertension and arthritis and gastrointestinal conditions; people with an array of situational stresses, such as the death of a loved one, sickness in the family, loss of jobs, moving from one place to the next and feeling isolated. All of those kinds of situations can have a powerful impact in our lives, and, in turn, on our bodies and our health and well-being. So, there is a very wide range of

reasons why people come. But, largely people come because they have medical problems and their physicians refer them as a complement to their ongoing medical care. So, that is an intensely interesting and variable situation to be in, because we can't just say to someone in that situation, "just keep practicing." We have to be translators standing, so it appears at first, in two worlds simultaneously—the world of the meditation practice and instruction and the world of health care. Of course, there is really only one world; and the more the instructor and the patient can enter this one world of being alive in this moment, the more possibilities unfold concerning how one might meet this moment against the backdrop of mindfulness practice as it is lived and breathed moment to moment.

The sense of "translation" I am speaking about is a movement away from the cultural trappings and language through which most of us as instructors initially encountered practice. Thirty years ago, most of us learned practice from Eastern teachers. Now, what we are called to do is to distill the essential ingredients of meditation practice and transmit these methods without watering or "dumbing down" the essential. This is a central feature of our work, and we put a lot of effort into the development of language that is accurate, precise, welcoming, and American. We do so because we value what we have learned from these teachers; because we are intent on understanding how practice is currently expressing itself in our own lives and experience; because we are committed to practice becoming accessible in our twenty-first century culture; and because evidence is everywhere that our fast-paced, reductionist culture tends to push people toward imagining that the easiest, most "efficient" way to teach meditation or anything else for that matter is to water it down. But, if we water it down, then we betray the beauty and depth of practice and lose the essence of it. What's left is a form that is vacuous and insubstantial. Such a form doesn't really serve people over the long haul because it doesn't serve people well.

So during those first 5 years—and as far as I can tell the rest of one's life—this is the growth process we all go through as instructors-in-training; and, of course, there are landmarks along the way to learn from. For instance, we have to learn how to help people [patients] remain engaged in the process, especially early on when they are not getting any relief. Often, early on, people feel they are becoming worse off because they are beginning to see and experience directly a lot of the physical and emotional and psychological consequences of what is happening in their lives that they have previously been blind to. In most cases, people come to understand, in their own time and in their own ways, that they have, unconsciously or out of fear or a sense of helplessness, turned away from themselves and their predicaments. The way

they have coped with it is by staying busy, diverting, and distracting the thousand and one things we all do. As soon as we are invited to stop and be still, we see. It is automatic. It isn't like the instructor has to tell someone to see. It just begins to happen. In my book, I've attempted to describe in detail the 8-week clinic course in terms of the emotional view and tenor of what happens to people and also what happens to the instructor, me, in my case.[1]

Question: Exactly what is it that happens?

Santorelli: Well, it's relational. Our work is very relationship oriented–this clinic. It is a very collaborative, participative process, because the instructors are doing exactly (and more of) what they ask of their clients. We never ask people to do anything we aren't doing ourselves–at least as much–and usually more so in the sense of not only the formal practice, but being committed to the breath-by-breath spirit of practice as it plays itself out in our everyday lives. This requires what the meditation teacher, Corrado Pensa, calls "affectionate attention." We are continually asking and wondering and looking. I don't really see it as a process of digging but a process of uncovering, dissolving, and allowing what is there to finally be held in a way that asks for gentleness but that isn't necessarily painless. It's not a painless process, but it can be both revealing and in many ways a very healing kind of process in a sense of making whole. This becomes a way of learning to inhabit all of one's life rather than portions of one's life. So to be an MBSR instructor is a very interesting process. On one level, I think we understand a great deal about it; and on another level, it is an enormous mystery, and quite frankly, I think it is a "mystery" in the best sense of the word. Not mystery in the sense of ignorance but in the sense that we can never predict what is going to happen to another human being and how they are going to take to this. Let's not forget that people are geniuses. People have enormous capacities that are largely untapped for a thousand and one reasons. Rarely have people had the opportunity as adults to be exposed to a learning environment where there is the invitation to really work with yourself–not on yourself. Rarely are we invited to work with ourselves individually and yet to do so in an engaging, collaborative, and very lively community enterprise over a 2-month period of time. We see people eleven times over those 2 months. This gives everyone a real opportunity, week by week, to try on these methods, see how they fit, talk about it in class, tailor it to their lives, and then go back out and work with it. At the same time, the extended duration of the course allows room for a steady and systematic expanding and deepening of the foundational ground of the meditation practices people are learning so that when they leave the course, they have a wide repertoire of methods that can be individually tailored to their current and unforeseen life situations.

For example, some people discover that the yoga is an enormous doorway into a kind of ease and stability that they would have never guessed, and that this is an easier door for them to go through than stillness in the sitting meditation. We teach people a spectrum of methods. They are all expressions of mindfulness. So, invariably as the course unfolds, people begin gravitating toward the methods that suit their needs. This is the intention and, as we see it, the way it ought to be. People have different learning styles–multiple intelligences that resonate more so with a particular method. You might say the whole pedagogy is not only based on what we are teaching and how we are teaching–those are important, of course. But, rarely is much investigation or time in educational learning endeavors dedicated to exploring, "Who is the teacher?" Who is the teacher? So, the whole capacity for self-reflection is often given short-rift. I think the content winds up running the show and taking center stage rather than the person who is embodying the content being the central focus of attention. In the education of our instructors and other health care professionals, we devote a good deal of attention to this question: "Who is the teacher?"

Question: How many instructors do you have at the clinic?

Santorelli: Currently, there are nine.

Question: But don't you have many other instructors at other locations?

Santorelli: We don't have any others. These nine instructors include those at our inner-city clinic, where the program is taught in Spanish and English to low-income, inner-city populations. As I stated earlier, there are about 240 other locations using this method. They are not our clinics. We don't franchise them. We have no formal relationship with them other than the fact that, for the most part, Jon Kabat-Zinn and I have had some interaction with those persons through our 5-, 7-, or 9-day professional training programs. Other instructors of ours have had more sustained contact with these persons through a range of other professional education and development programs offered through the Center for Mindfulness–through our Internship Program, through our Teacher Development Intensive, and through a variety of regional training programs. My colleagues, Ferris Urbanowski, Elana Rosenbaum, Florence Meyer, and Melissa Blacker, have major responsibility for these programs, which happen on a regular basis at U Mass and at other sites in the United States and Europe. However, we have not had personal contact with the people conducting MBSR programs at all of those sites. Many of these folks have been long-time meditators and/or health care professionals who have read our books and papers, and this approach makes absolute sense to them. So, they start

from where they are. We haven't franchised nor do we have those clinics under our aegis.

Up until now, there is a reason for this; and we, as the clinic of origin, are a case in point. Founded by Jon Kabat-Zinn, MBSR started as an idea. Mindfulness practice has been around for at least 2,500 years, and it has evolved through many cultures. It is not unrelated to our own Western mystical traditions. Buddhism has been a force in articulating mindfulness in a way that has an extraordinarily systematic methodology suggesting via a scientific method that one could purposefully cultivate certain capacities and skills by following a method, observing the results, and developing understanding.

We decided years ago that we needed to let the innate creativity of human beings interested in teaching in this way unfold on its own for a while, just as it did for us. In the beginning, no one gave Jon a curriculum or a blueprint for how to do this. It arose out of the situation itself; out of the life he was living and a longing he felt compelled to follow. Without inflation, this sense of longing to manifest what strikes us most deeply is what got all of us to this work; we were (are) all interested in making what we love that which we do. It is as simple, unvarnished, and direct as that. ·

Quite frankly, there are people in this country and Europe who are health professionals who have been very well trained in their field and have felt that they didn't want their [mindfulness] practice to be separate from the rest of their lives. We didn't want to put the lid on creativity but instead [chose] to give it the space to unfold in a thousand and one ways that we couldn't possibly conceive of.

Question: Are you concerned about quality control issues?

Santorelli: People have said to us for years, "The quality can go down if you don't control it. Because you do it the way you do—you have the gold standard. And if someone does it by the iron standard, it reflects on you." They may be correct, but we can't control that.

We can have some control over the educational process, and that's the side we've come down on. We are becoming more serious about entertaining the process of doing some kind of certification, but not in the usual sense of certification. Not certifying the person, but certifying the training, because we are confident that we can develop the right kind of educational process. But, we don't imagine that we can ever vouch for the person on the other end. They will do what they will do, and their actions will speak for themselves.

Question: Then, you are considering some form of certification?

Santorelli: Yes. We are becoming more concerned, not because any of us are feeling old but because we are aging, that this needs to be passed on. Both Jon and I have been engaged in meditation-based interventions in medicine for more than 20 years. The sense of generativity that Erik Ericson spoke about—for passing on what you understand to others—even as your own capacity for understanding continues to grow—is important to us. We're thinking more seriously about it or, perhaps more accurately, the call of this human impulse is speaking more loudly to us and we are beginning to heed what it is saying.

Question: What would that entail?

Santorelli: I know what we already have. We have several training programs in place. We are taking a look at all of them and reconceptualizing the whole thing. We're asking ourselves, "If we were to start over today, what would the whole teacher development learning trajectory look like? How might we contribute more thoroughly to the process? What is ours to do and not to do? I think it is important to ask these questions and inquire into possible responses. How would we use the resources around us in a better way? We have teachers' meetings every week for 2 hours. They involve some form of our business, but by and large, the intention of these meetings is to really inquire with one another about what is happening in our teaching. We are consistently asking ourselves and one another: "What are we discovering?" "What are the tough places for us?" "What happened today when we encountered a challenging patient?" "What did we perceive to be difficult when they pushed our buttons, and how did we react or respond?" Instead of putting it off on the patient, or some difficult diagnosis: What is happening for us as instructors? What is the interface here? How can we begin to negotiate the separation we notice, and how does it relate to our practice in the most fundamental sense of the word? In essence, how does one bring mindfulness to those moments, and what does one discover over time if we are willing to take risks and walk in territory we haven't previously walked in? In that sense, the intention over time is to elevate the whole discussion and elevate the whole corpus, the body of teachers, at the clinic. We do that for one another. We go on silent- and dialogue-oriented retreats together and look at the very core issues that might be arising. It is simply part of the way we attempt to be with one another. Likewise, we attempt to inquire into the content of our curriculum in the same manner.

Question: So, it's your own growth you must attend to as well.

Santorelli: Yes it is, but in a way that has a much larger container around it. That larger container is critically important. Our work together as teachers is like being in a crucible. It isn't a crucible where anyone is turning up

the heat on another unknowingly. Rather, we have a fundamental agreement between us—a living intention—that says, "Yes, this is part of what I care about." When you get eight or nine people with that kind of manifest intention, it isn't anyone doing anything to you. What is arising is in the service of growing ourselves, growing the body of teachers, the Center for Mindfulness, and our relationships with those who seek our care and with our fellow health care professionals. So you can say we are involved in a deliberate attempt to grow ourselves.

Mindfulness is not only about seeing, it is also about being seen. One can become increasingly comfortable with these interdependent aspects of practice. It is liberating to get undone—undone from preconceptions about who I am, what I am supposed to be doing, and what my identity is in the face of my peers. It's a powerful process. Most of us tend not to leave the clinic; and we've been together for a long time. We feel like an ensemble in the best sense of the word. And, in many ways, we are attempting to undermine our psychological cleverness so that we can become emancipated and unfettered from our habitual behaviors and patterns of thinking.

Question: Like a chorus.

Santorelli: Yes.

Question: Tell me about the internship program and how it evolved.

Santorelli: I was the first intern in the clinic in 1981, before there was such a term. I am grateful for that. About 10 years ago we began to develop a range of professional education programs. One of my hats is Director of Clinical and Educational Services at the Center for Mindfulness. My background is in education. Formally speaking, I've taught at every level from preschool to graduate education. So, I am concerned about and care about it.

One form of professional education we offer is the Professional Internship Program at MBSR. It is a 10-week program. For the first 8 to 10 years, the internship was free of charge. Over time, we began to charge a fee for the program in order to keep ourselves financially solvent. To date, about 1,000 health care professionals have completed the internship. The cost of the program is $1,800. Interns have an opportunity to attend the outpatient clinic classes for 2.5 hours with patients—just like a patient—and then immediately following their class they participate in a 2.5-hour seminar with fellow interns and their instructor to discuss what they have just been a part of and witnessed. In this sense, interns are participant observers. In this sense, they begin to cultivate skills that are inherent in the meditation practice—the capacity to touch and fully participate in whatever is arising in the mind and body and simultaneously to learn to witness the arising and passing of phenomena. Interns are asked to do everything the patients do, no matter whether they have been meditating 20 or 30 years—whether they are physicians, psychiatrists, surgeons, or social workers, it doesn't matter. Then, following that class, they have a 2½-hour seminar, which looks more closely at what has actually gone on in class—what is the teacher actually working with—what is unfolding over time. There are readings that people have on a weekly basis. So, we are attempting to develop a pedagogy in terms of the professional side that probably has three classic elements to it. There is a knowledge base to it; there is a reflective base to it; and there is a contemplative base to it. All three of these factors need to be worked with deliberately in an educational process, at least as we conceive of education. So, the interns don't teach the patients. Rather, it is an opportunity for professionals to get as close to doing so as possible without teaching. We don't teach people how to teach in the Internship Program. However, it is meant to offer participants a first-hand experiential taste of the methods, the skills, the theoretical base, and the pedagogical approach of MBSR. We accept between 60 to 70 interns per year. Many come from within a 5-hour driving radius, others come from more distant points in the United States and abroad. Those that live in residence also have an opportunity to learn about and participate in other aspects of the clinical programs.

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Mindfulness-Based Interventions in Context:

Past, Present, and Future

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for
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1945-2001

Abstract

Baer's review suggests that mindfulness-based interventions are clinically efficacious, but that better designed studies are now needed to substantiate the field and place it on a firm foundation for future growth. Her review, coupled with other lines of evidence, suggests that interest in incorporating mindfulness in one way or another into clinical interventions in medicine and psychology is growing. It is thus important that those coming to this field understand some of the unique factors associated with the delivery of mindfulness-based interventions and the potential conceptual and practical pitfalls of not recognizing the features of this broadly unfamiliar landscape. This commentary aims to highlight and contextualize: (1) what exactly mindfulness is, (2) where it came from, (3) how it came to be introduced into medicine and health care, (4) issues of cross-cultural sensitivity and understanding in the study of meditative practices stemming from other cultures and their applications in novel settings, (5) why it is important for people who are teaching mindfulness to practice themselves, (6) results from three recent studies from the Center for Mindfulness in Medicine, Health Care, and Society not reviewed by Baer but which raise a number of key questions about clinical applicability, study design, and mechanism of action, and (7) current opportunities for professional training and development in mindfulness and its clinical applications.

Key words: mindfulness, meditation, mind/body medicine, cognitive behavior therapy, mindfulness-based stress reduction (MBSR), mindfulness-based cognitive therapy (MBCT)

I appreciate the opportunity to comment on the review of Baer on Mindfulness training as clinical intervention (this issue), and add my own reflections on the emergence of mindfulness in a clinical context, especially in a journal explicitly devoted to both science and practice. The universe of mindfulness[1] brings with it a whole new meaning and thrust to the word "practice," one which I believe has the potential to contribute profoundly to the further development of the field of clinical psychology and its allied disciplines, behavioral medicine, psychosomatic medicine, and health psychology, through both a broadening of research approaches to mind/body interactions and the developing of new classes of clinical interventions.

The growing interest in mindfulness

I find the Baer review to be evenhanded, cogent, and perceptive in its description and evaluation of the work that has been published through the middle of 2001, work that features mindfulness training as the primary element in various clinical interventions. It complements nicely the recent review by Bishop (Bishop, 2002) which to my mind ignored some of the most important, if difficult to define, features of such interventions in its emphasis on the perceived need to reduce to a clinical algorithm the complexity of the practice and the nuanced delivery of mindfulness-based stress reduction (MBSR).

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[1] Following Baer, I will not discuss the social-psychological construct that Langer (1989) has termed "mindfulness," but focus on the traditional usage stemming from Buddhist meditation practices that have been adapted to one degree or another and integrated within the mainstream of medicine over the past twenty plus years.

Nevertheless, both Baer and Bishop pose important questions that require addressing if we are ultimately to understand mindfulness and its clinical utility. Both reviews agree that the scientific study of mindfulness and MBSR to date suffers from a range of methodological problems, a view with which I concur. When a field is in its infancy, it is not uncommon for the first generation of studies to be more descriptive of the phenomenon rather than definitive demonstrations of efficacy. Attempts at the latter tend to evolve over time after the potential value of a new approach has been at least tentatively established. This now appears to be the case with mindfulness-based interventions. Both Baer and Bishop conclude that enough evidence has now accumulated to warrant the development of more methodologically rigorous investigations of both the clinical efficacy of mindfulness training in various specific disorders, and also of the possible mechanisms and pathways through which it might exert characteristic effects within those specific disorders. The very fact that an increasing number of studies on mindfulness and its clinical applications are being funded and published and that an increasing number of doctoral theses on mindfulness are appearing in Dissertation Abstracts suggests that this is an area that is presently sparking considerable interest, perhaps driven primarily by the intuition that new dimensions of therapeutic benefit and novel insights into mind/body interactions might accrue through its exploration. Since interest in mindfulness and its applications to specific affective conditions is likely to increase even further, particularly within the cognitive therapy community with the development of mindfulness-based cognitive therapy (MBCT) (Segal, Williams, & Teasdale, 2002) and the use of mindfulness within dialectical behavior therapy (DBT) (Linehan, 1993), it becomes critically important that

those coming to the field with professional interest and enthusiasm are cognizant of the unique qualities and characteristics of mindfulness as a meditative practice, with all that that implies, so that mindfulness is not simply seized upon as the next promising cognitive behavioral technique or exercise, decontextualized, and "plugged" into a behaviorist paradigm with the aim of driving desirable change, or of fixing what is broken.

What exactly is mindfulness and where does it come from?

As pointed out by Baer, mindfulness has to do with particular qualities of attention and awareness that can be cultivated and developed through meditation. An operational working definition of mindfulness is: the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment. Historically, mindfulness has been called "the heart" of Buddhist meditation (Thera, 1962), and resides at the core of the teachings of the Buddha (Nanamoli and Bodhi, 1995; Hanh, 1999; Gunaratana, 1992), traditionally described by the Sanskrit word "dharma," which also carries the meaning of "lawfulness" as per "the laws of physics" or simply "the way things are" as in the Chinese notion of *Tao*. One might think of the historical Buddha as, among other things, a born scientist and physician who had nothing in the way of instrumentation other than his own mind and body and experience, and yet used those native resources to great effect to delve into the nature of suffering and the human condition and come up with a series of profound insights, a comprehensive view of human nature, and a formal "medicine" for treating its fundamental ailments, typically characterized as the three "poisons": greed, hatred

(aversion), and ignorance/delusion (unawareness). Of course, the Buddha himself was not a Buddhist. One might think of the dharma as elucidated by the Buddha's teaching as a sort of universal generative grammar (Chomsky, 1965), an empirical and testable internally consistent description of the relationship of mind/body experience to human suffering. In that sense, dharma is truly universal rather than exclusively Buddhist, not merely a belief or ideology, nor a philosophy or a nice idea. Rather, it is a coherent description of the nature of mind, emotion, and suffering and its potential release, based on highly refined practices aimed at training and cultivating various aspects of mind and heart via the faculty of mindful attention (the words for mind and heart are the same in Asian languages; "mindfulness" carries with it elements of openhearted friendly presence, an affectionate, compassionate quality within the attending). And mindfulness, it should also be noted, being about attention, is also of necessity universal. We are all mindful to one degree or another, moment by moment. It is an inherent human capacity. The contribution of the Buddhist traditions was in part to emphasize simple and effective ways to cultivate and refine mindfulness and bring it to all aspects of life, and in this regard, mindfulness certainly received its most explicit and systematic articulation and development within the Buddhist tradition over the past 2,500 years, although it lies at the heart of other traditions and teachings as well, both ancient and contemporary, that can be of great value in refining one's own practice, insight, and teaching (see, for example, Lao-tsu, 1988; Chuang Tsu, 1964; Maharaj, 1973; Krishnamurti, 1973; Thakar, 1972; Maharshi, 1959; Tolle, 1999).

Mindfulness is the fundamental underlying attentional stance in all the various streams of Buddhist meditative practice: the Theravada tradition of the countries of southeast Asia (Thailand, Burma, Cambodia, Vietnam), the Mahayana (Zen) schools of Vietnam, China, Japan, and Korea, and the Vajrayana tradition of Tibetan Buddhism found in Tibet itself, Mongolia, and now, large parts of India in the Tibetan community in exile. It should be noted that these traditions all have various schools, sub-traditions, and certain texts that they revere more than others, and so the actual practices and emphases regarding mindfulness can vary considerably, even within one tradition, such as Theravada or Zen. Nevertheless, mindfulness, as elucidated by the Buddha in two discourses, the Anapanasati Sutra (Rosenberg, 1999) and the Satipathana Sutra (Thera, 1962), is the core teaching and constitutes the foundation upon which all of these various forms and traditions rest. In these traditions, the actual practice of mindfulness is, however, always nested within a larger conceptual and practice-based framework oriented towards a skillful understanding of how unexamined behaviors and what Buddhists would call an untrained mind can significantly contribute directly to human suffering, one's own and that of others, and the potential transmutation of that suffering through a refining of attention and action through meditative practices that calm and clarify the mind and open the heart. Over the past forty years or so, all of these Buddhist traditions have taken root in the West to one degree or another, and have by this time been taken up by several generations of Westerners, who practice these methods in their own lives on a daily basis as well as through participation in periodic teacher-led intensive meditation retreats which can last from a weekend to three months or more (see, for example, Goldstein, 1987, Goldstein and Kornfield, 1987, Walsh, 1977, 1978). This phenomenon represents a

cultural shift that may be only in its infancy. Nevertheless, it provides a range of rich resources for personal practice and dialogue that can contribute toward the training and development of a cohort of highly competent teachers with a wide variety of professional backgrounds committed to the effective delivery of authentic mindfulness-based interventions in various settings.

Mindfulness is often spoken of synonymously as "insight" meditation, which means a deep penetrative non-conceptual seeing into the nature of mind and world. This requires a spirit of perpetual and persistent inquiry, as in "what is this?" toward whatever arises in awareness, and to "who is attending", "who is seeing," "who is meditating?" Its role in deep inquiry and the cultivation of insight have led some to argue that that mindfulness provides a unique perspective which can inform critical issues in cognitive science, neurophenomenology, and attempts to understand the cognitive underpinnings of the nature of human experience itself (Varela, Thompson, and Roach, 1991).

Cross-cultural and paradigm issues in working with the consciousness disciplines

From the perspective of the behavioral sciences, mindfulness can be thought of as a "consciousness discipline" as described by Walsh in a seminal paper (Walsh, 1980) that attempts to explicate the generic paradigm of the meditative traditions and their associated disciplines and show how such disciplines might be approached empirically by the behavioral sciences without falling into paradigm clash or a range of category errors which could unwittingly ignore or dismiss the deepest and most subtle features of such practices, thereby predisposing investigators to draw erroneous conclusions. Thus, in

encountering the consciousness disciplines and the question of their possible adaptation and application in secular clinical or medical contexts, it is important to treat mindfulness and the traditions that have articulated it much as a respectful anthropologist would treat an encounter with an indigenous culture (Davis, 1998) or a different epistemology (Zajonc, 2000).

It should be noted in this regard that in the cross-cultural context of scientific studies of Tibetan monks practicing meditation, sensitivity to differences in orientation and motivation between scientists and meditators around both the meditation practices and the set and setting in which they are investigated is essential for the investigation to have integrity and to be interpretable from the perspective of both the scientists and the meditators (Houshmound, Harrington, Saron, and Davidson, 2002). In another "cross-cultural" development of note, recent EEG, fMRI, and PET studies of brain activity in the evocation of specific meditative practices and qualities of mind/heart in a highly trained long-term monastic practitioner (a Western Lama in the Tibetan tradition who formerly trained in the basic sciences and received a doctorate in molecular biology from the Pasteur Institute) have engaged the meditator not merely as subject but as a full collaborator in the design and interpretation of these investigations with his scientific counterparts, investigations which have shown stable and highly replicable patterns of brain activity that have interesting implications for affective neuroscience and the expression of emotion (Goleman, 2002). Such observations take on a practical relevance in light of brain changes reflecting shifts in the processing of negative emotion under

stress seen in novice meditators following training in MBSR in a worksite intervention (Davidson, Kabat-Zinn, Schumacher, et al, 2003, see below).

The meaning of "practice" in the context of mindfulness meditation

It thus behooves us to examine the use of the word "practice" and its meaning as it refers to the meditative traditions and the consciousness disciplines that form their core. We speak of the "practice" of meditation, and the "practice" of mindfulness, meaning the actual engagement in the discipline, the inward gesture that invites and embodies it (Depraz, Varela, and Vermersch, 1999). It is not used in the common sense of "rehearsal" for some future performance. The "performance" is always this moment unfolding (Kabat-Zinn, 1994). This engagement takes a variety of forms, from a range of formal practices that are undertaken for varying periods of time on a regular basis to informal practices that are aimed at cultivating a continuity of awareness in all activities of daily living. However, mindfulness meditation practice, whether within the various Buddhist traditions or within the context of MBSR, for instance, is not limited to the operationalization of particular techniques, which, however important and essential, which they are, are also merely launching platforms or particular kinds of scaffolding to invite cultivation and sustaining of attention in particular ways. They are the menu so to speak, and not the meal, the map rather than the territory, the traditional admonition being not to mistake the fingering pointing at the moon for the moon.

In a recent commentary in this journal on the subject of mindfulness and generalized anxiety disorder, Borkovec (2002) describes in whimsical but cogent and insightful detail

the emotional consequences of living with a trust that "allows me to let go of the illusory future and past and to focus on the nonillusory present." Using examples of washing the dishes and of writing an NIMH grant, he unpacks various cognitive sets that either create anxiety about future outcomes or keep him grounded in the process itself (present moment) and its intrinsic meaning and pleasures. He states: "If a focus on the outcome and the extrinsic aspects of an activity are conducive to anxiety and depression, then the objective quality of my work, whether washing dishes or writing grant proposals, will likely be lowered, given what we know about the adverse effects of negative emotion on performance. So seeking the extrinsic outcome makes the failure to achieve that outcome more likely. A focus on the process and intrinsic qualities of an activity reduce the likelihood of anxiety and depression (thus eliminating their negative impact on performance), increase the pleasure of joy during the process, and thus increase the likelihood of achieving the extrinsic outcome. I have to let go of the desired outcome in order to acquire it. What a paradoxical and strange way to live."

I would add only that it is perhaps a sane way to live that may not be so strange once one begins to inhabit that landscape in a more regular way. Perhaps it is only strange in a society that persists in devaluating the present moment in favor of perpetual distraction, self-absorption, and addiction to a feeling of "progress." While Borkovec's descriptions of his inner process are compelling, it is unlikely that they would be sustained or developed over time in most of us without some element of intentional practice (it is not enough as a rule to simply remind oneself to "just let go", especially when one is little aware of how attached one may be, and also, how blind to being caught up in habitual

patterns of thinking and emotional expression) and it is here that the cultivation of the inner orientation of which Borkovec speaks is so important. As noted, mindfulness is not merely a good idea such that, upon hearing about it, one can immediately decide to live in the present moment, with the promise of reduced anxiety and depression and heightened performance and life satisfaction, and then instantly and reliably realize that state of being. Rather, it is more akin to an art form that one develops over time, and is greatly enhanced through regular disciplined practice, both formally and informally, on a daily basis. This is the challenge we pose to our patients in the Stress Reduction Clinic at the very beginning, and with the introduction of the body scan meditation, or even the process of eating one raisin mindfully: namely to let go of their expectations, goals, and aspirations for coming, even though they are very real and valid, to let go momentarily at least even of their goal to feel better or to be relaxed in the body scan, or their ideas about what raisins taste like, and simply drop in on the actuality of their lived experience, and then to sustain it as best they can moment by moment, with intentional openhearted presence and the suspension of judgment and distraction to whatever degree is possible. Mindfulness develops and deepens over time, but invariably requires an on-going commitment to its practice and cultivation in any and every moment.

In fact, the term "practice" used in this way is better understood as a way of being, a way of seeing, which is embodied, inhabited, grown into through the implementation of the methods and techniques that comprise the discipline. There is a role for paradox here, so Borkovec's noting of it is hardly surprising. Indeed, paradox is built in, since the ultimate understanding we encounter through paying attention transcends even conventional

subject-object duality. From the outset of practice, we are reminded that mindfulness is not about getting anywhere else or fixing anything. Rather, it is an invitation to allow oneself to be where one already is and to know the inner and outer landscape of the direct experience of it in each moment. This implies waking up to the full spectrum of our experience in the present moment, which, as we engage in mindfulness practice, we rapidly discover is severely edited and often distorted through the routinized, habitual, and unexamined activity of our thoughts and emotions, and often involves alienation from direct experience of the sensory world and the body. An understanding of these considerations is critical, both to the development of clinical interventions that authentically nurture mindfulness and speak with compelling and sustained relevance to the lives and needs of potential participants, and to the scientific paradigm for its study. This emphasis on non-attachment to outcome is a radical departure from most clinical interventions. Yet, it lies at the heart of Jacobson's pioneering work (1938) which emphasized learning to recognize and trust the direct proprioceptive experience of the landscape of sensation within tension rather than a striving to achieve a more desirable state, such as relaxation. It was only when his method was condensed into PMR in the service of systematic desensitization (Wolpe, 1958) that the non-striving, slow, mindful element was, ironically, abandoned, probably unwittingly, in favor of time efficiency, and with it, the primacy of the experiencing of the sensations themselves, without judgment or editing (see Woolfolk and Lehrer, 1984).

Original vision and rationale for MBSR

The intention in developing MBSR in 1979 and offering it through an outpatient stress reduction clinic at the University of Massachusetts Medical Center was two-fold:

1) To see if it were possible to create a vehicle for the effective training of medical patients in relatively intensive mindfulness meditation (including mindful hatha yoga) and its immediate applications to the stress, pain, and illness people were grappling with in their lives. The intervention needed to be free of the cultural, religious, and ideological factors associated with the Buddhist origins of mindfulness, since the objective was not to teach Buddhism or "to make great meditators" out of people, but to offer an environment within which to experiment with a range of novel and potentially effective methods for facing, exploring, and relieving suffering and understanding the potential power of the mind/body connection in doing so. At the same time, the program needed to remain faithful in both spirit and substance to the universal dharma dimension alluded to earlier, which as noted, lies at the very core of the gesture of mindfulness. The task, which is always on-going and immediate for the MBSR instructor, is to translate the meditative challenges and context into a vernacular idiom, vocabulary, methods, and forms without denaturing the dharma dimension. This requires some degree of understanding of that dimension, which can only come about through exposure and personal engagement in practice – learned or deepened either though meditation retreats at Buddhist centers or through professional training programs in MBSR with teachers who have themselves trained in that way, or, ideally, both (see below). We require extensive grounding in mindfulness practice

as one criteria in hiring new teachers in our own clinic, and these criteria are

outlined in a series of recommendations for assessing teacher readiness and

competency in MBSR instructors in general (Santorelli, 2001; also, see Resources

and Recommendations below). The clinic, embedded within a department of

medicine and a division of preventive and behavioral medicine, was originally

designed to serve as a referral service for physicians and other health providers, to

which they could send medical patients with a wide range of diagnoses and

conditions who were not responding completely to more traditional treatments, or

who were falling through the cracks in the health care system and not feeling

completely satisfied with their medical treatments and outcomes. MBSR was thus

framed from the beginning as a generic challenge to each patient to train in

ancient and potentially transformative meditative practices *as a complement* to

one's medical treatments (Kabat-Zinn, 1993). The clinic, in the form of an eight

week outpatient program, was meant to serve as an educational (in the sense of

inviting to come forth what is already present) vehicle through which people

could assume a degree of responsibility for their own well-being and participate

more fully in their own unique movement towards greater levels of health through

cultivating and refining our innate capacity for paying attention and for a deep,

penetrative seeing/sensing of the interconnectedness of apparently separate

aspects of experience, many of which tend to hover beneath our ordinary level of

awareness regarding both inner and outer experience (Kabat-Zinn, 1990,

Santorelli, 1999).

2) If the experience was "successful" in terms of acceptability of the process to the participants and the referring physicians, and in terms of attaining measurable outcomes of clinical significance, it was felt that the program might serve as a model for other hospitals and medical centers, which indeed has proved to be the case, and would be adaptable to other contexts in which stress, emotional and physical pain, or illness and disease were primary concerns. To this end, we eventually developed a range of professional training programs in MBSR. Mindfulness-based programs are now offered in hospitals and clinics around the world, as well as in workplaces, corporate offices, law schools, adult and juvenile prisons, inner city health centers, and a range of other settings.

Some challenges associated with teaching mindfulness-based interventions

It should be clear from what has been said that mindfulness cannot be taught to others in an authentic way without practicing it in one's own life. Mindfulness meditation is not simply a method that one experiences for a brief time at a professional seminar and then passes on to others for use prn when tense or stressed. It is a way of being that takes on-going effort to develop and refine, in TS Eliot's apt phrase, "A condition of complete simplicity/(Costing not less than everything)" (Eliot, 1943). It is both the work of a lifetime and, paradoxically, the work of no time at all – because its field is always this present moment in its fullness. This paradox can only be understood and embodied through personal practice over days, weeks, months, and years.

Recall that practice as we have been utilizing the word is not a mechanical self-repetition of meditation instructions (although it can sometimes subtly feel that way) but a commitment to reside as best one can from moment to moment in awareness with an open heart, a spacious, non-judging, non-reactive mind, and without trying to get anywhere, achieve anything, reject anything, or fall into either the stream of conceptual thought or what the Dalai Lama calls "afflictive" or "unwholesome" emotions" (Goleman, 1997, Goleman, 2002). Since it is virtually inevitable that we will fall into both the stream of conceptual thought and afflictive emotions over and over again, the practice involves working intimately and compassionately with whatever arises in the field of awareness, so that whatever arises is seen and known (recognized) in the field of awareness as it arises (or as soon as one can). Thus, mindfulness can always be large enough to include whatever arises if it can be seen, felt, and known non-conceptually, through direct recognition through the five senses (including proprioception) and through the mind, which in Buddhism is considered another sense door. However, it takes personal commitment and perseverance in formal practice gradually to establish a degree of stability in one's capacity to attend, especially to stressful or aversive objects, including severe emotional turbulence or enduring dysphoria, and to see beneath the surface of the phenomena themselves as they arise in the field of experience. Classes and periodic retreats form a supportive group environment within which practice can develop and deepen over time for both teachers and students of mindfulness. A working principle for MBSR teachers is that we never ask more of our patients in terms of practice than we ask of ourselves on a daily basis. Another is that we are all students of mindfulness.

The decision to teach mindfulness, even among those with many years of personal

meditation practice, whether they be trained as psychologists, physicians, surgeons, or

other health professionals, can be both intimidating and humbling, and understandably so.

Unless the instructor's experience of mindfulness is based in extensive personal practice,

the teaching and guidance one might bring to the clinical context will have little energy,

meaning, or relevance and that deficit will soon be felt by program participants. For how

can one ask someone else to look deeply into their own mind and body and the nature of

who they are in a systematic and disciplined way if one is unwilling (or too busy or not

interested enough) to engage in this great and challenging adventure oneself, at least to

the degree that one is asking it of one's patients or clients? How will one know how to

respond appropriately and specifically to their questions if one cannot draw on one's own

lived experience, not just on book knowledge and concepts, when the practice itself is all

about seeing clearly and transcending (not getting caught up in and blinded by) the

limitations of the conceptual mind (while of course not rejecting the conceptual mind or

the power and utility of thought within the larger context of awareness)? Since people

with stress, pain, and medical conditions of all sorts invariably and quite naturally come

to stress reduction or to various forms of therapy with agendas and goals (and in fact, are

encouraged to define realistic goals for themselves in MBSR), how will a teacher

skillfully reconcile their motivation to achieve those perfectly sensible goals with the

orientation of non-striving and non-doing and of letting go that must inform the

meditation practice and the entire program if it is to be mindfulness? It can only be done

if one feels a deep first-person confidence in the practice, and an equally deep humility in

offering it to others, developed through one's own intimate engagement and struggles

with the it. Ultimately, one teaches out of one's own practice, keeping things grounded in the actuality of present-moment experience. Of course, a skillful teacher will bring in any number of things as appropriate to inform and round out the teaching, dialogue, and practice itself, drawing on his or her professional and personal knowledge base. However, without the foundation of personal practice, and the embodying (not modeling) of what it is one is teaching, attempts at mindfulness-based intervention run the risk of becoming caricatures of mindfulness, missing the radical essence and becoming caught perhaps by important but not necessarily fundamental and often only superficial similarities between mindfulness practices and relaxation strategies, cognitive-behavioral exercises, and self-monitoring tasks.

Over the past ten years, many health professionals have taken on the teaching of mindfulness-based stress reduction programs, and many programs are very well established. While there is no formal mechanism for credentialing nor for professional assessment of teachers at this time, the feedback from their students, when we have occasion to meet them, is almost always enthusiastic and positive. There is a sense among those of us teaching mindfulness that we continue to be nurtured by the work itself and by the practice. That, and a sense of connectedness with local and global communities of colleagues who do this work, are constant reminders of the importance of staying true to the spirit of the practice.

Recent results from the Center for Mindfulness and their implications for the science of the mind/body connection and further studies

From a research perspective, work at the Center for Mindfulness and the Stress Reduction Clinic has attempted to provide various platforms upon which increasingly rigorous explorations of aspects of mindfulness and its clinical and social applications could ultimately be built. A number of early descriptive studies attempted to establish the validity and short and long-term clinical effectiveness of the MBSR intervention in patients with a wide range of medical conditions. The major focus of these studies was the response of patients with various chronic pain conditions (Kabat-Zinn, 1982; Kabat-Zinn, Lipworth, and Burney, 1985; Kabat-Zinn et al, 1986) in terms of physical and psychological symptom reduction and adherence with various aspects of the intervention, especially program completion (Kabat-Zinn and Chapman-Waldrop, 1988; Salmon, Santorelli, and Kabat-Zinn, 1998), the response of medical patients with secondary GAD and panic disorder diagnoses (Kabat-Zinn, Massion, Kristeller, et al, 1992; Miller, Fletcher, and Kabat-Zinn, 1995; Kabat-Zinn, Chapman, and Salmon, 1997), and global change in trait-based psychological indicators of psychological hardiness and coherence (Kabat-Zinn, 1996; Kabat-Zinn, Skillings, and Salmon, unpublished study). This work eventually led us to undertake several small randomized trials, one with patients with moderate to severe psoriasis undergoing ultraviolet phototherapy treatments (Kabat-Zinn, Wheeler, Light, et al, 1998), the other a worksite intervention in which we delivered the eight week MBSR program to company employees and monitored quantitative EEG and immune responsivity at various times as well as a range of psychosocial measures (Davidson, Kabat-Zinn, Schumacher, et al, 2003, in press). These studies demonstrated

clinical effectiveness with two very different mindfulness-based interventions, one delivered in isolation solely by a tape, the other in the group context of MBSR. Their designs may serve as models in the design of further and larger studies of the potential healing and restorative effects of mindfulness and MBSR for different classes of individuals with different life situations.

Skin clearing in psoriasis

In the psoriasis study, we asked if mindfulness could influence a healing process that we could see and photograph in people with a skin disease that has a strong relationship with psychological stress, namely psoriasis. Thirty-seven patients with moderate to severe psoriasis who were candidates for treatment with phototherapy or photochemotherapy were randomized into two groups. One group (meditators) followed guided mindfulness meditation instructions delivered by audiotape during their UV treatments (either PUVA or UVB) on a three-times per week protocol. (For full study design and methods, see Kabat-Zinn, Wheeler, Light, et al, 1998). This tape included a guided visualization in which the subject visualized the ultraviolet light slowing down and then stopping the rapidly growing cells in the epidermis. The other group (usual care) received the light treatments (either PUVA or UVB) without listening to a tape. The status of each patient was monitored by clinic nurses, and also documented periodically by photography. The photographs were rated in terms of skin status by dermatologists blind to the identity and group assignment of the patient. These ratings were then used to validate or invalidate the nurses' necessarily unblinded ratings. A Cox proportional hazards analysis of the photographically validated data showed that the meditators' skin cleared at about four

times the rate of the non-meditators (usual care group) during the twelve-week study

period (p=.033). An earlier and smaller study (Bernhard, Kristeller, and Kabat-Zinn,

1988) also found that the meditators' skin cleared more rapidly than that of the non-

meditators.

While both psoriasis studies suffer from a small sample size, the replicability of the

finding suggests that the effect is real and merits further study. The finding leads to a

number of potentially important, if presently tentative conclusions: (1) That the mind can

positively influence a healing process in a specific disease. (2) That psychological

participation of this sort on the part of the patient during the light treatments can lead to

reduced time to clearing in at least some patients, and thus to fewer treatments, and thus

to potential cost savings. (3) That the need for fewer light treatments also reduces the risk

of basal cell carcinoma associated with ultraviolet light treatment. (4) That psychological

support, minimal in this intervention since the patient is isolated in the light box, there is

no group experience, and all the instruction in the meditation is via audiotape, cannot be a

major factor in the observed outcome. (5) That the experimental design itself is well-

suited for studying the role of the mind (intention, attention, belief, expectation,

psychological conditioning, visualization) in a specific and readily observable healing

process with a specific disease down to the level of gene expression, including concurrent

investigation of appropriate biological mediators associated with psoriasis, such as

cytokines, transforming growth factor (TGF-α), and Bcl-x protein. (7) That since

psoriasis is an uncontrolled cell proliferation, although not oncogenic, such investigations

may shed light on the potential for positive psychological involvement in oncogenic

processes, such as basal cell carcinoma, which shares some molecular characteristics with psoriasis. (8) That this design is an example of both integrative (Snyderman and Weil, 2002) and participatory medicine (Kabat-Zinn, 2000), integrative because the meditative (unconventional) intervention is co-extensive in time and place with the allopathic treatment, and participatory because the full engagement of the patient's mind and body is a critical part of the psychological intervention. All of these areas are suggestive of further studies which might illuminate critical issues in mind/body medicine and adjunctive psychological approaches with specific diseases.

The psoriasis study was criticized by Relman on various grounds which were refuted point by point (Relman, Riley, Kabat-Zinn and Hosmer, 2001). The interchange highlights the controversy occasionally surrounding questions regarding the quality of the evidence for conclusions about mind/body phenomena, even from well-designed clinical trials and even from large epidemiological studies (see "The Great Debate": Relman and Angell, 2002; Williams and Schneiderman, 2002). While debates of this kind do underscore the importance of larger and better designed studies to further establish or dispute the nascent field of mindfulness-based clinical interventions and their potential effects in people with specific medical and psychological conditions, they also illuminate the degree to which well-trained scientists can and should disagree about the status of evidence underpinning even the most widely accepted of phenomena, at least in the behavioral and human sciences.

Brain, immune changes, and emotional processing in a worksite MBSR program

In the worksite study (Davidson, Kabat-Zinn, Schumacher, et al, 2003, in press), 41 employees of a biotechnology company were randomized to either an MBSR condition (N=25) or a wait-list condition (N=16). The MBSR subjects participated in an eight-week program during working hours. All subjects underwent extensive laboratory testing on three occasions, pre and post the eight-week intervention period and at four-month follow-up using EEG to measure brain electrical activity in response to various emotional challenges. All subjects were also vaccinated with influenza vaccine at the end of the eight-week intervention period, and subsequently tested for antibody titer. As originally hypothesized, we found significant increases in left-sided activation in the anterior cortical area in the subjects who had undergone MBSR training as compared with the wait-list controls. Left-sided activation in several anterior regions has been observed during certain forms of positive emotion and in subjects with more dispositional positive affect (Davidson, 1999; Davidson, Ekman, Saron, et al, 1990; Goleman, 2002) and right-sided activation in response to negative emotional challenges (Davidson & Irwin, 1999; Davidson, 2000; Goleman, 2002). We also found that the meditators displayed a significantly greater rise in antibody titers from the four-week post-vaccination to the eight-week blood draw compared to control subjects. Moreover, among the subjects in the MBSR group, those who showed the greatest pre to post increase in left-sided activation displayed a significantly larger rise in antibody titers while there was no significant relationship for control subjects. This study suggests that the MBSR training can lead to brain changes consistent with more effective handling of negative emotion under stress. These changes endured for at least four months following the intervention.

To our knowledge, it is the first study to demonstrate a reliable effect of meditation on an in vivo measure of immune function and on anterior activation asymmetry in the brain. The results suggest that there may be multiple biological consequences of mindfulness training relevant to emotional and physical health, and that such an intervention can be delivered effectively in a work setting to a broad spectrum of employees and influence psychological and emotional health under stressful conditions. In light of the findings of Teasdale et al (Teasdale, Segal, Williams, et al, 2000) and the development of MBCT for relapse prevention in the treatment of depression (Segal, Williams, and Teasdale, 2001), mindfulness/acceptance-based treatments for GAD (Roemer and Orsillo, 2002), DBT for borderline personality disorder (Linehan, 1993), and mindfulness-based therapy for OCD (Schwartz, 1996), these results suggest that it would be fruitful to explore mindfulness-based interventions in various affective disorders using an approach that combines analysis of potentially relevant underlying neurobiological mechanisms and pathways in combination with affective behavior change indicators, taking advantage of the intrinsic flexibility of mindfulness-based approaches to different situations in the study design.

A new prostate cancer intervention combining MBSR and dietary intervention

In addition to these studies, a recent uncontrolled pilot study (Saxe, Hebert, Carmody, et al, 2001) combined and expanded MBSR training with a low-fat vegetarian dietary intervention to explore the effectiveness of this new 12-week intervention, which included spouses and significant others, in slowing, arresting, or reversing PSA velocity in men with prostate cancer who had previously received prostatectomies and who subsequently proved to have rising PSA levels, indicating metatstatic spread. In a series

of ten patients, we found that the rate of PSA increase decreased in 8 of the 10 subjects, while 3 had a decrease in absolute PSA (signed rank test $p = 0.01$). Estimated median PSA doubling time increased from 6.5 months before the intervention to 17.7 months following the intervention. This study demonstrates the potential feasibility and utility of using the cultivation of mindfulness within the context of MBSR to achieve behavior changes such as dietary compliance that are frequently difficult to attain and maintain using strictly behavioral motivators. In this case, the mindfulness training and application was extended to include bringing mindfulness to shopping and food selection, cooking, and eating in ways that can enhance dietary adherence. This remains an area of on-going investigation.

Summary

Baer's conceptual and empirical review of mindfulness-based interventions points towards the potential promise of further and increasingly methodologically rigorous studies in this area. This commentary is meant to highlight as well as contextualize some of the fundamental opportunities and challenges facing both clinicians and researchers alike, in the design, delivery, and evaluation of such a deceptively simple yet highly complex intervention approach and its effective integration with other therapies and practices in medicine and psychology.

Resources and Recommendations

This commentary necessarily glosses over or leaves undescribed much of the spirit, substance, and detail of the curriculum of mindfulness-based interventions, the inherent flexibility of its content and delivery coupled with an invariant reliance on core practices

and on silence, stillness, self-inquiry, embodiment, emotional sensitivity and acceptance of the full gamut of its expression, as well as the universal longing in people for happiness, well-being, resilience, and peace of mind, body, and soul and how it might be effectively met and honored among participants (Kabat-Zinn, 1990; Santorelli, 1999). It has perforce also ignored the poetry of mindfulness, and the appropriate uses of the poetic imagination within mindfulness-based interventions.

Further information on MBSR and its professional training opportunities, standards of practice, guidelines for providers, background bibliographies on mindfulness, and ongoing projects can be obtained by contacting the Center for Mindfulness in Medicine, Health Care, and Society at UMass Memorial Medical Center, Shaw Building, Worcester, MA 01655-0267, or via the website: www.umassmed.edu/cfm. There are also training opportunities in mindfulness-based cognitive therapy. Information for these can be obtained by contacting Dr. Zindel Segal, Center for Addiction and Mental Health, Clarke Division, University of Toronto for training programs in North America, and Dr. John Teasdale, Medical Research Council, Cognition and Brain Sciences Unit, Cambridge, UK for training programs in Europe. For mindfulness meditation retreats in the Buddhist Theravada tradition (vipassana), see the website: www.dharma.org. The Center for Mindfulness requires that prospective interns have experienced at least one and preferably two teacher-led ten-day vipassana retreats (or an equivalent) before enrollment.

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Mindfulness Training as a Clinical Intervention: A Conceptual and Empirical Review

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Interventions based on training in mindfulness skills are becoming increasingly popular. Mindfulness involves intentionally bringing one's attention to the internal and external experiences occurring in the present moment, and is often taught through a variety of meditation exercises. This review summarizes conceptual approaches to mindfulness and empirical research on the utility of mindfulness-based interventions. Meta-analytic techniques were incorporated to facilitate quantification of findings and comparison across studies. Although the current empirical literature includes many methodological flaws, findings suggest that mindfulness-based interventions may be helpful in the treatment of several disorders. Methodologically sound investigations are recommended in order to clarify the utility of these interventions.

Key words: mindfulness, meditation, meta-analysis, treatment outcome. [Clin Psychol Sci Prac 10: 125–143, 2003]

Mindfulness is a way of paying attention that originated in Eastern meditation practices. It has been described as "bringing one's complete attention to the present experience on a moment-to-moment basis" (Marlatt & Kristeller, 1999, p. 68) and as "paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally" (Kabat-Zinn, 1994, p. 4). The ability to direct one's attention in this way can be developed through the practice of meditation, which is defined as the intentional self-regulation of attention from moment to moment

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(Goleman & Schwartz, 1976; Kabat-Zinn, 1982). The current mindfulness literature describes numerous meditation exercises designed to develop mindfulness skills (Hanh, 1976; Kabat-Zinn, 1990, 1994; Linehan, 1993b). Many encourage individuals to attend to the internal experiences occurring in each moment, such as bodily sensations, thoughts, and emotions. Others encourage attention to aspects of the environment, such as sights and sounds (Kabat-Zinn, 1994; Linehan, 1993b). All suggest that mindfulness should be practiced with an attitude of non-judgmental acceptance. That is, phenomena that enter the individual's awareness during mindfulness practice, such as perceptions, cognitions, emotions, or sensations, are observed carefully but are not evaluated as good or bad, true or false, healthy or sick, or important or trivial (Marlatt & Kristeller, 1999). Thus, mindfulness is the nonjudgmental observation of the ongoing stream of internal and external stimuli as they arise.

Until recently, mindfulness has been a relatively unfamiliar concept in much of our culture (Kabat-Zinn, 1982), perhaps because of its origins in Buddhism. Kabat-Zinn (2000) suggests that mindfulness practice may be beneficial to many people in Western society who might be unwilling to adopt Buddhist traditions or vocabulary. Thus, Western researchers and clinicians who have introduced mindfulness practice into mental health treatment programs usually teach these skills independently of the religious and cultural traditions of their origins (Kabat-Zinn, 1982; Linehan, 1993b). In the current empirical literature, clinical interventions based on training in mindfulness skills are described with increasing frequency, and their popularity appears to be growing rapidly. According to Salmon, Santorelli, and Kabat-Zinn (1998), over 240 hospitals and clinics in the United States and abroad were offering stress reduction programs based on mindfulness training as of

1997. Mindfulness training is also a central component of dialectical behavior therapy (Linehan, 1993a, 1993b), an increasingly popular approach to the treatment of borderline personality disorder. The empirical literature on the effects of mindfulness training contains many methodological weaknesses, but it suggests that mindfulness interventions may lead to reductions in a variety of problematic conditions, including pain, stress, anxiety, depressive relapse, and disordered eating (e.g., Kabat-Zinn, 1982; Kabat-Zinn et al., 1992; Kristeller & Hallett, 1999; Shapiro, Schwartz, & Bonner, 1998; Teasdale et al., 2000).

This review summarizes the recent literature on mindfulness training as a clinical intervention. First, current methods for teaching mindfulness skills are described. Next, conceptual approaches that articulate how mindfulness skills may be helpful in treating clinical conditions are summarized. Finally, the empirical literature on the effects of mindfulness training is reviewed.

This review does not address transcendental meditation (TM) and other concentration-based approaches, which have been reviewed elsewhere (Delmonte, 1985; Smith, 1975). Concentration-based approaches train participants to restrict the focus of attention to a single stimulus, such as a word (e.g., a mantra), sound, object, or sensation. When attention wanders, it is redirected to the object of meditation. No attention is paid to the nature of the distraction. Mindfulness meditation, in contrast, involves observation of constantly changing internal and external stimuli as they arise.

This review also does not address Langer's (1989, 1997) cognitive model of mindfulness, which includes alertness to distinctions, context, and multiple perspectives, openness to novelty, and orientation in the present (Sternberg, 2000). Mindfulness interventions studied by Langer and colleagues (e.g., Langer, 1989; Langer & Moldoveanu, 2000) often include teaching participants to consider information or situations from multiple perspectives or within new contexts in order to increase learning or creativity. Although this concept of mindfulness shares with meditative approaches an emphasis on flexible awareness in the present, several important differences can be noted. Langer's (1989) mindfulness interventions usually involve working with material external to the participants, such as information to be learned or manipulated, and often include active, goal-oriented cognitive tasks, such as solving problems. In contrast, the meditation-based approaches described in this review often are directed toward the inner experiences of the individual (e.g., thoughts, emotions) and emphasize a less goal-directed, nonjudgmental observation. Langer (1989) has cautioned against drawing unwarranted parallels between the two forms of mindfulness, noting that they are derived from very different historical and cultural backgrounds.

INTERVENTIONS BASED ON MINDFULNESS TRAINING
Mindfulness-Based Stress Reduction

The most frequently cited method of mindfulness training is the mindfulness-based stress reduction (MBSR) program, formerly known as the stress reduction and relaxation program (SR-RP; Kabat-Zinn, 1982, 1990). It was developed in a behavioral medicine setting for populations with a wide range of chronic pain and stress-related disorders. The program is conducted as an 8- to 10-week course for groups of up to 30 participants who meet weekly for 2–2.5 hr for instruction and practice in mindfulness meditation skills, together with discussion of stress, coping, and homework assignments. An all-day (7–8-hr) intensive mindfulness session usually is held around the sixth week. Several mindfulness meditation skills are taught. For example, the body scan is a 45-min exercise in which attention is directed sequentially to numerous areas of the body while the participant is lying down with eyes closed. Sensations in each area are carefully observed. In sitting meditation, participants are instructed to sit in a relaxed and wakeful posture with eyes closed and to direct attention to the sensations of breathing. Hatha yoga postures are used to teach mindfulness of bodily sensations during gentle movements and stretching. Participants also practice mindfulness during ordinary activities like walking, standing, and eating.

Participants in MBSR are instructed to practice these skills outside group meetings for at least 45 min per day, six days per week. Audiotapes are used early in treatment, but participants are encouraged to practice without tapes after a few weeks. For all mindfulness exercises, participants are instructed to focus attention on the target of observation (e.g., breathing or walking) and to be aware of it in each moment. When emotions, sensations, or cognitions arise, they are observed nonjudgmentally. When the participant notices that the mind has wandered into thoughts, memories, or fantasies, the nature or content of them is briefly noted, if possible, and then attention is returned to the

present moment. Thus, participants are instructed to notice their thoughts and feelings but not to become absorbed in their content (Kabat-Zinn, 1982). Even judgmental thoughts (e.g., "this is a foolish waste of time") are to be observed nonjudgmentally. Upon noticing such a thought, the participant might label it as a judgmental thought, or simply as "thinking," and then return attention to the present moment. An important consequence of mindfulness practice is the realization that most sensations, thoughts, and emotions fluctuate, or are transient, passing by "like waves in the sea" (Linehan, 1993b, p. 87).

Mindfulness-Based Cognitive Therapy

Teasdale, Segal, and Williams (1995) proposed that the skills of attentional control taught in mindfulness meditation could be helpful in preventing relapse of major depressive episodes. Their information-processing theory of depressive relapse suggests that individuals who have experienced major depressive episodes are vulnerable to recurrences whenever mild dysphoric states are encountered, because these states may reactivate the depressive thinking patterns present during the previous episode, or episodes, thus precipitating a new episode. Mindfulness-based cognitive therapy (MBCT) is a manualized (Segal, Williams, & Teasdale, 2002) 8-week group intervention based largely on Kabat-Zinn's (1990) MBSR program. It incorporates elements of cognitive therapy that facilitate a detached or decentered view of one's thoughts, including statements such as "thoughts are not facts" and "I am not my thoughts." This decentered approach also is applied to emotions and bodily sensations. MBCT is designed to prevent depressive relapse by teaching formerly depressed individuals to observe their thoughts and feelings nonjudgmentally, and to view them simply as mental events that come and go, rather than as aspects of themselves, or as necessarily accurate reflections of reality. This attitude toward depression-related cognitions is believed to prevent the escalation of negative thoughts into ruminative patterns (Teasdale et al., 1995).

INTERVENTIONS INCORPORATING MINDFULNESS TRAINING
Dialectical Behavior Therapy

Dialectical behavior therapy (DBT) is a multifaceted approach to the treatment of borderline personality disorder (Linehan, 1993a, 1993b). It is based on a dialectical world-

view, which postulates that reality consists of opposing forces. The synthesis of these forces leads to a new reality, which in turn consists of opposing forces, in a continual process of change. In DBT, the most central dialectic is the relationship between acceptance and change. Clients are encouraged to accept themselves, their histories, and their current situations exactly as they are, while working intensively to change their behaviors and environments in order to build a better life. The synthesis of this apparent contradiction is a central goal of DBT.

DBT includes a wide range of cognitive and behavioral treatment procedures, most of which are designed to change thoughts, emotions, or behaviors. Mindfulness skills are taught in DBT within the context of synthesizing acceptance and change. Although the skills taught are similar to those targeted in MBSR, including nonjudgmental observation of thoughts, emotions, sensations, and environmental stimuli, the concepts are organized somewhat differently. For example, Linehan (1993a, 1993b) describes three mindfulness "what" skills (observe, describe, participate) and three mindfulness "how" skills (nonjudgmentally, one-mindfully, effectively). DBT clients learn mindfulness skills in a year-long weekly skills group, which also covers interpersonal effectiveness, emotion regulation, and distress tolerance skills. Clients work with their individual therapists on applying skills learned in group to their daily lives.

Linehan (1994) notes that some severely impaired individuals may be unable or unwilling to meditate as extensively as Kabat-Zinn's (1990) MBSR program recommends. Thus, DBT does not prescribe a specific frequency or duration of mindfulness practice. Instead, goals for mindfulness practice are established by individual clients and their therapists. DBT offers numerous mindfulness exercises from which clients may choose (some adapted from Hanh, 1976). In one example, clients imagine that the mind is a conveyor belt. Thoughts, feelings, and sensations that come down the belt are observed, labeled, and categorized. In another exercise, clients imagine that the mind is the sky, and that thoughts, feelings, and sensations are clouds that they watch passing by. Several variations on observing the breath are taught, including following the breath in and out, counting breaths, coordinating breathing with footsteps while walking, and following the breath while listening to music. Some exercises encourage mindful awareness during everyday activities,

such as making tea, washing dishes or clothes, cleaning house, or taking a bath.

Acceptance and Commitment Therapy

Acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999) is theoretically based in contemporary behavior analysis (Hayes & Wilson, 1993). Although ACT does not describe its treatment methods in terms of mindfulness or meditation, it is included here because several of its strategies are consistent with the mindfulness approaches described. Clients in ACT are taught to recognize an observing self who is capable of watching his or her own bodily sensations, thoughts, and emotions. They are encouraged to see these phenomena as separate from the person having them. For example, they are taught to say, "I'm having the thought that I'm a bad person," rather than "I'm a bad person" (Kohlenberg, Hayes, & Tsai, 1993, p. 588). They also are encouraged to experience thoughts and emotions as they arise, without judging, evaluating, or attempting to change or avoid them. Hayes (1987) describes an exercise in which the client imagines that his or her thoughts are written on signs carried by parading soldiers. The client's task is to observe the parade of thoughts without becoming absorbed in any of them. ACT explicitly teaches clients to abandon attempts to control thoughts and feelings, but instead to observe them non-judgmentally and accept them as they are, while changing their behaviors in constructive ways to improve their lives (Hayes, 1994).

Relapse Prevention

Relapse prevention (RP; Marlatt & Gordon, 1985) is a cognitive-behavioral treatment package designed to forestall relapses in individuals treated for substance abuse. Mindfulness skills are included as a technique for coping with urges to engage in substance use. Marlatt (1994) notes that mindfulness involves acceptance of the constantly changing experiences of the present moment, whereas addiction is an inability to accept the present moment and a persistent seeking of the next "high" associated with the addiction. The metaphor of "urge surfing" encourages clients to imagine that urges are ocean waves that grow gradually until they crest and subside. The client "rides" the waves without giving in to the urges, thus learning that urges will pass. However, the client also learns that new urges will appear and that these urges cannot easily be eliminated. Instead, urges must be accepted as normal responses to appetitive cues. Mindfulness skills enable the client to observe the urges as they appear, accept them non-judgmentally, and cope with them in adaptive ways.

CONCEPTUAL APPROACHES: HOW MINDFULNESS SKILLS MAY HELP

The authors of these treatment strategies have suggested several mechanisms that may explain how mindfulness skills can lead to symptom reduction and behavior change.

Exposure

The first published study of the effects of MBSR (Kabat-Zinn, 1982) described its application in patients with chronic pain. MBSR is based, in part, on traditional meditation practices, which often include extended periods of motionless sitting. Although a relaxed posture typically is adopted, prolonged motionlessness can lead to pain in muscles and joints. Mindfulness meditation instructors often encourage students not to shift position to relieve the pain, but instead to focus careful attention directly on the pain sensations, and to assume a nonjudgmental attitude toward these sensations, as well as toward the various cognitions ("this is unbearable") emotions (anxiety, anger), and urges (to shift position) that often accompany pain sensations. The ability to observe pain sensations non-judgmentally is believed to reduce the distress associated with pain.

Kabat-Zinn (1982) suggests that application of this strategy by chronic pain patients might serve several functions. For example, prolonged exposure to the sensations of chronic pain, in the absence of catastrophic consequences, might lead to desensitization, with a reduction over time in the emotional responses elicited by the pain sensations. Thus, the practice of mindfulness skills could lead to the ability to experience pain sensations without excessive emotional reactivity. Even if pain sensations were not reduced, suffering and distress might be alleviated.

Kabat-Zinn et al. (1992) describe a similar mechanism for the potential effects of mindfulness training on anxiety and panic. Sustained, nonjudgmental observation of anxiety-related sensations, without attempts to escape or avoid them, may lead to reductions in the emotional reactivity typically elicited by anxiety symptoms. This approach is similar to the interoceptive exposure strategy described by Barlow and Craske (2000), who instruct clients to in-

duce symptoms of panic through exercises such as hyperventilation and aerobic activity, and to practice tolerating these sensations until they subside. In contrast, however, mindfulness training does not include the deliberate induction of panic symptoms. Instead, participants are instructed to observe these sensations nonjudgmentally when they naturally arise.

Linehan (1993a, 1993b) describes individuals with borderline personality disorder as emotion phobic. That is, they are often afraid of experiencing strong negative affective states. This fear is understandable, because their negative affective states typically are very intense. However, their attempts to avoid these states often have maladaptive consequences. Linehan (1993a, 1993b) suggests that prolonged observation of current thoughts and emotions, without trying to avoid or escape them, can be seen as an example of exposure, which should encourage the extinction of fear responses and avoidance behaviors previously elicited by these stimuli. Thus, the practice of mindfulness skills may improve patients' ability to tolerate negative emotional states and ability to cope with them effectively.

Cognitive Change

Several authors have noted that the practice of mindfulness may lead to changes in thought patterns, or in attitudes about one's thoughts. For example, Kabat-Zinn (1982, 1990) suggests that nonjudgmental observation of pain and anxiety-related thoughts may lead to the understanding that they are "just thoughts," rather than reflections of truth or reality, and do not necessitate escape or avoidance behavior. Similarly, Linehan (1993a, 1993b) notes that observing one's thoughts and feelings and applying descriptive labels to them encourages the understanding that they are not always accurate reflections of reality. For example, feeling afraid does not necessarily mean that danger is imminent, and thinking "I am a failure" does not make it true. Kristeller and Hallett (1999), in a study of MBSR in patients with binge eating disorder, cite Heatherton and Baumeister's (1991) theory of binge eating as an escape from self-awareness and suggest that mindfulness training might develop nonjudgmental acceptance of the aversive cognitions that binge-eaters are thought to be avoiding, such as unfavorable comparisons of self to others and perceived inability to meet others' demands.

Teasdale (1999) and Teasdale et al. (1995), in their discussion of MBCT, suggest that the nonjudgmental,

decentered view of one's thoughts encouraged by mindfulness training may interfere with ruminative patterns believed to be characteristic of depressive episodes (Nolen-Hoeksema, 1991). That is, mindfulness training may enable formerly depressed individuals to notice depressogenic thoughts and to redirect attention to other aspects of the present moment, such as breathing, walking, or environmental sounds, thus avoiding rumination. Teasdale has described this perspective on one's thoughts as "metacognitive insight." Teasdale et al. (1995) also note that a practical advantage of mindfulness skills in encouraging cognitive change is that they can be practiced at any time, including during periods of remission, when depressogenic thinking may be occurring too rarely to permit regular practice of traditional cognitive therapy exercises, such as identification and disputing of cognitive distortions. That is, a mindful perspective about one's thoughts can be applied to all thoughts.

Self-Management

Several authors have noted that improved self-observation resulting from mindfulness training may promote use of a range of coping skills. For example, Kabat-Zinn (1982) suggests that increased awareness of pain sensations and stress responses as they occur may enable individuals to engage in a variety of coping responses, including skills not included in their treatment program. Kristeller and Hallett (1999) suggest that the self-observation skills developed through mindfulness training might lead to improved recognition of satiety cues in binge eaters, as well as increased ability to observe urges to binge without yielding to them. Marlatt (1994) suggests a similar effect in patients recovering from addictions. Teasdale et al. (1995) note that mindfulness training encourages awareness of all cognitive and emotional events as they occur, including those that may be early signs of potential depressive relapse. Thus, mindfulness training may promote recognition of early signs of a problem, at a time when application of previously learned skills will be most likely to be effective in preventing the problem. Linehan (1993b) suggests that nonjudgmental observation and description permits recognition of the consequences of behaviors (e.g., irritating one's boss with frequent lateness) in place of global judgments about the self (e.g., "I am a bad employee"). This recognition may lead to more effective behavior change, including reduction of impulsive, maladaptive behaviors. Linehan

(1993b) also suggests that learning to focus "one-mindfully" on the present moment develops control of attention, a useful skill for individuals who have difficulty completing important tasks because they are distracted by worries, memories, or negative moods.

Relaxation

The relationship between meditation and relaxation is somewhat complex. Several authors (Goldenberg et al., 1994; Kabat-Zinn et al., 1998; Kaplan, Goldenberg, & Galvin-Nadeau, 1993) have suggested that mindfulness-based stress reduction may be applicable to stress-related medical disorders, including psoriasis and fibromyalgia. These authors note that meditation often induces relaxation, which may contribute to the management of these disorders. The induction of relaxation through various meditation strategies has been well documented (Benson, 1975; Orme-Johnson, 1984; Wallace, Benson, & Wilson, 1984). However, the purpose of mindfulness training is not to induce relaxation, but instead to teach nonjudgmental observation of current conditions, which might include autonomic arousal, racing thoughts, muscle tension, and other phenomena incompatible with relaxation. In addition, evidence suggests that relaxation effects are not unique to meditation, but are common to many relaxation strategies (Shapiro, 1982). Thus, although practice of mindfulness exercises may lead to relaxation, this outcome may not be a primary reason for engaging in mindfulness skills.

Acceptance

The relationship between acceptance and change is a central concept in current discussions of psychotherapy (Hayes, Jacobsen, Follette, & Dougher, 1994). Hayes (1994) suggests that acceptance involves "experiencing events fully and without defense, as they are" (p. 30), and notes that empirically oriented clinicians may have overemphasized the importance of changing all unpleasant symptoms, without recognizing the importance of acceptance. For example, an individual who experiences panic attacks may engage in numerous maladaptive behaviors in an attempt to prevent future attacks, including drug and alcohol abuse, avoidance of important activities, and excessive anxious vigilance toward bodily states. If the individual could accept that panic attacks may occasionally occur and that they are time-limited and not dangerous, panic attacks would become unpleasant but brief experiences to be tol-

erated, rather than fearsome and dangerous experiences to be avoided, even at the cost of significant maladaptive behavior.

All of the treatment programs reviewed here include acceptance of pain, thoughts, feelings, urges, or other bodily, cognitive, and emotional phenomena, without trying to change, escape, or avoid them. Kabat-Zinn (1990) describes acceptance as one of several foundations of mindfulness practice. DBT provides explicit training in several mindfulness techniques designed to promote acceptance of reality. Thus, it appears that mindfulness training may provide a method for teaching acceptance skills.

Relationship Between Mindfulness Training and Cognitive-Behavioral Approaches

This discussion suggests that mindfulness training is consistent with cognitive-behavioral treatment procedures in several ways. Training in self-directed attention can result in sustained exposure to sensations, thoughts, and emotions, resulting in desensitization of conditioned responses and reduction of avoidance behavior. Cognitive change appears to result from viewing one's thoughts as temporary phenomena without inherent worth or meaning, rather than as necessarily accurate reflections of reality, health, adjustment, or worthiness. Practice of meditation also may lead to relaxation and improved self-management.

However, mindfulness training differs from traditional cognitive-behavioral treatment in important ways. For example, mindfulness training does not include the evaluation of thoughts as rational or distorted, or systematic attempts to change thoughts judged to be irrational. Instead, participants are taught to observe their thoughts, to note their impermanence, and to refrain from evaluating them. Another important difference is that traditional cognitive-behavioral procedures usually have a clear goal, such as to change a behavior or thinking pattern. In contrast, mindfulness meditation is practiced with a seemingly paradoxical attitude of nonstriving. That is, although a task is prescribed (e.g., sit still, close your eyes, and pay attention), no specific goal is adopted. Participants are not to strive to relax, reduce their pain, or change their thoughts or emotions, although they may have sought treatment for these purposes. They are simply to observe whatever is happening in each moment without judging it. Finally, mindfulness researchers have suggested that effective teaching of mindfulness skills by mental health professionals requires that they engage in their own regular mindfulness

practice (Segal et al., 2002). Professionals using more traditional cognitive-behavioral strategies generally are not expected to engage in regular practice of the skills they are teaching.

Although the practice of mindfulness generally involves acceptance of current reality, rather than systematic attempts to change reality, individuals who practice these skills may experience reductions in a variety of symptoms. The empirical literature addressing this issue is reviewed next.

EMPIRICAL RESEARCH ON MINDFULNESS-BASED INTERVENTIONS

The empirical literature investigating the effects of mindfulness-based interventions is reviewed here. Meta-analytic procedures were incorporated to facilitate quantification of findings and comparisons across studies. To locate relevant studies, a computer search (using PsycInfo and Medline databases) was conducted of articles and chapters including the terms *mindfulness* or *meditation*. Reference lists of all articles were searched for additional articles. Studies were included if they were published in English and compared a group of participants trained in mindfulness with a group not trained, or a group who provided data before and after mindfulness training. Unpublished dissertations and conference papers were excluded, as were studies addressing nonmindfulness forms of meditation, such as transcendental meditation (TM). Studies of mindfulness as defined by Langer (1989, 1997) also were excluded, for reasons described earlier. Twenty-one studies meeting these criteria were found.

For each study, several demographic and methodological variables were coded, including number, type, and characteristics of participants, research design, the nature of the mindfulness intervention, type of comparison group, whether participants were randomly assigned to intervention or comparison groups, the dependent variables reported, and follow-up intervals and data.

Effect sizes (Cohen's *d*) were calculated for all studies that provided sufficient data. Cohen's *d* expresses effect size in standard deviation units; thus, an effect size of 1.0 on a given dependent measure indicates that the treatment group scored one standard deviation better, on average, than the comparison group on that measure. For studies using between-groups designs, effect sizes were calculated with the following formula: $d = (M_t - M_c)/SD_p$, in which M_t = the mean of the treatment group on a specific measure, M_c = the mean of the comparison group on that measure, and SD_p = the pooled standard deviation of the two groups. If means or standard deviations were not provided, effect sizes were calculated from the significance level (*p*). For studies using within-groups designs, effect sizes were calculated from *t* or F (1 *df*), or from the significance level when *t* or *F* were not reported. Calculations of effect sizes relied on methods described by Rosenthal (1984).

Overview of Treatment Literature

Studies examining the effects of mindfulness-based interventions are summarized in Table 1. The studies are grouped by participant population, beginning with studies of chronic pain patients. Next are studies of patients with other Axis I disorders (anxiety, eating, and major depressive disorders), followed by studies of patients with other medical problems (fibromyalgia, psoriasis, and cancer). Next are studies with mixed populations, including psychotherapy and medical patients. The last group includes studies of nonclinical populations (students and other volunteers). Within each group studies are listed in order of publication date.

Sample sizes in these studies have ranged from 16 to 142. Mean age of participants has ranged from 38–50 years, with a mean of 45 years. Gender ratio of the samples has ranged from 0 to 46% male. Education and race/ethnicity were rarely reported.

Nine studies used pre-post designs with no control group. Nine used between-groups designs with Treatment As Usual (TAU) or waiting-list control groups. Most studies used the 8–10 week MBSR group intervention (Kabat-Zinn,1982, 1990), or a variation of this intervention tailored to the population under study. Two studies (Teasdale et al., 2000; Williams, Teasdale, Segal, & Soulsby, 2000) examined MBCT. Dependent variables have included a variety of self-report measures of pain, other medical symptoms, anxiety, depression, eating behaviors, and general psychological functioning, as well as objective measures such as analysis of urine chemistry.

For each study effect sizes were calculated separately for each dependent measure completed at the conclusion of treatment and at all reported follow-up intervals. Posttreatment effect sizes then were averaged across dependent measures within studies, yielding a single posttreatment effect size for each study. Similarly, effect sizes for all dependent measures completed at all follow-up intervals were averaged, yielding a single follow-up effect size for each

Table 1. Empirical studies of effects of mindfulness-based interventions

Study	N	Type Participant	Mean Age	% Male	Research Design	Treatment Group	Control Group	Rand Assn	% Att	Dependent Variables	d Post	d Foll (Months)
Kabat-Zinn (1982)	51	Chronic pain patients	46	35	Pre-post	MBSR	None	No	12	Pain Rtg Index Body Parts PA Interfere rtg MSCL POMS total	0.70	0.35 (2-7)
Kabat-Zinn et al. (1985) Part 1	90	Chronic pain patients[a]	44	33	Pre-post	MBSR	None	No	15	SCL-90-R GSI Same as above	0.36	0.51 (2-15)
Kabat-Zinn et al. (1985) Part 2	42	Chronic pain patients[b]	48	24	Between group	MBSR (n = 21)	TAU (n = 21)	No	—	Same as above	0.26	—
Kabat-Zinn et al. (1987)	30–142	Chronic pain patients[c]	—	31	Series of follow-ups 2.5–48 months post-MBSR	MBSR	None	No	—	Pain Rtg Index Body Parts PA MSCL	—	0.53 (6-48)
Randolph et al. (1999)	78	Chronic pain patients	50	31	Pre-post	MBSR	None	No	—	SCL-90-R GSI Pain rtgs BSI-GSI POMS total Pain beliefs	0.15	0.08 (2-12)
Kabat-Zinn et al. (1992)	22	Anxiety patients	38	23	Pre-post	MBSR	None	No	8	Hamilton Anx Hamilton Dep BDI; BAI; FSS Mobility Inv	0.88	1.35 (3)
Miller et al. (1995)	18	Anxiety patients from Kabat-Zinn et al., 1992	—	—	3-year follow-up (patients from Kabat-Zinn et al., 1992)	MBSR	None	No	—	Hamilton Anx Hamilton Dep BDI; BAI; FSS Mobility Inv	—	1.10 (36)
Kristeller & Hallett (1999)	18	Binge eating disorder	46	0	Pre-post	Variant of MBSR	None	No	14	Binge freq Binge Eat Sc BDI; BAI	1.65	—
Teasdale et al. (2000)	132	Remitted MDD after medicn tx	44	24	Between group	MBCT (n = 63)	TAU (n = 69)	Yes	17	Eating rtgs MDD relapse	0.60	—
Williams et al. (2000)	41	Remitted MDD after medicn tx[d]	43	27	Between group	MBCT (n = 21)	TAU (n = 20)	Yes	—	Autobiog Memory test	0.71	—
Kaplan et al. (1993)	59	Fibro-myalgia patients	46	10	Pre-post	Variant of MBSR	None	No	23	VAS's pain, sleep, etc. MSCL SCL-90-R GSI Coping Strat Q Fibro Impact Q	—	—

Study	N	Population			Design	Treatment	Comparison	Rand assn	Att	Measures		
Goldenberg et al. (1994)	121	Fibro-myalgia patients	46	7	Between group	MBSR (n = 79)	Wait list (n = 18; declined MBSR (n = 24)	No	9	Vas's pain, sleep, etc. Fibro Impact Q SCL-90-R GSI	0.42	—
Kabat-Zinn et al. (1998)	37	Psoriasis patients receiving light therapy	43	46	Between group	Mindfulness tapes during light tx	TAU	Yes	—	Days to clearing of psoriasis	0.63	—
Speca et al. (2000)	90	Cancer patients	51	19	Between group	Variant of MBSR	Wait list	Yes	13	POMS SOSI	0.60	NS (6)
Carlson et al. (2000)	54	Cancer patients	51	19	6-month follow-up in Speca et al. (2000)	Variant of MBSR	None	No	—	POMS SOSI	—	0.52 (6)
Kutz et al. (1985)	20	Long-term dynamic therapy clients	38	—	Pre-post	MBSR	None	No	—	SCL-90-R POMS Interfere rtg Thera rtg	0.72	—
Roth & Creaser (1997)	86	Outpatients inner city Latino/Latina Mixed dx	43	16	Pre-post	MBSR	None	NO	40	SCL-90-R BAI MSCL	0.69	—
Reibel et al. (2001)	121	Medical patients, Mixed dx	47	29	Pre-post	MBSR	None	No	11	Self-esteem SF-36 MSCL	0.56	NS (12)
Massion et al. (1995)	16	Healthy women	42	0	Between group	Regular mediators	Non-mediators	No	—	SCL-90-R GSI Melatonin metabolite in urine	0.98	—
Astin (1997)	19	College students	—	5	Between group	MBSR (n = 12)	Wait list (n = 7)	Yes	14	SCL-90-R GSI Control Inv INSPIRIT	1.51	—
Shapiro et al. (1998)	73	Premed and med students	—	44	Between group	MBSR	Wait list	Yes	3	SCL-90-R GSI SCL-90-R Dep STAI Empathy rtg INSPIRIT	0.50	—
Williams et al. (2001)	75	Community volunteers	43	28	Between group	MBSR	Wait list and info	Yes	15	DSI SCL-90-R GSI MSCL	0.67	0.67 (3)

Notes: rand assn = random assignment; att = attrition from treatment group; post = posttreatment; foll = follow-up; MDD = major depressive disorder; medicn = medication; tx = treatment; dx = diagnosis; MBSR = Mindfulness-Based Stress Reduction; MBCT = Mindfulness-Based Cognitive Therapy; TAU = Treatment As Usual; rtg = rating; PA = problem assessment; MSCL = Medical Symptom Checklist; POMS = Profile of Mood States; SCL-90-R = Symptom Checklist-90 Revised; GSI = General Severity Index; Anx = anxiety; Dep = depression; BDI = Beck Depression Inventory; BAI = Beck Anxiety Inventory; FSS = Fear Survey Schedule; Inv = Inventory; Autoblog = autobiographical; VAS = visual analog scale; Strat = strategies; Q = questionnaire; fibro = fibromyalgia; SOSI = Symptoms of Stress Inventory; SF-36 = Short Form 36; INSPIRIT = Index of Core Spiritual Experience; STAI = State-Trait Anxiety Inventory; DSI = Daily Stress Inventory; NS = no significant difference between posttest and follow-up.
[a] Includes 51 patients from Kabat-Zinn (1982).
[b] Includes 21 patients from Part 1 of this study.
[c] Includes patients from Kabat-Zinn (1982) and Kabat-Zinn et al. (1985).
[d] Subset of patients in Teasdale et al. (2000).
[e] Insufficient data to calculate.
[f] Subset of patients in Speca et al. (2000).

study that reported follow-up data. Mean posttreatment and follow-up effect sizes are presented in the final two columns of Table 1.

No studies of DBT, ACT, or RP were included, because none were found that examined the mindfulness component independently of the behavior change strategies also included in these treatment approaches. Thus, although empirical studies support the efficacy of these treatments (Curry, Marlatt, Gordon, & Baer, 1988; Ito, Donovan, & Hall, 1988; Koons et al., 2001; Linehan, Armstrong, Suarez, Allmon, & Heard, 1991; Linehan, Heard, & Armstrong, 1993; Linehan, Tutek, Heard, & Armstrong, 1994; Strosahl, Hayes, Bergan, & Romano, 1998; Zettle & Raines, 1989), the relative contribution of mindfulness training to these treatment effects has not been investigated. In contrast, studies of MBCT were included, because mindfulness training appears to be the central focus of this approach, although some cognitive techniques have been incorporated.

General Findings

Chronic Pain. Four studies have examined the effects of MBSR on patients with chronic pain. The first study (Kabat-Zinn, 1982) describes pre-post data for 51 patients. The second study (Kabat-Zinn, Lipworth, & Burney, 1985), has two parts. Part 1 presents pre-post data for a sample of 90 patients, including the 51 patients from Kabat-Zinn (1982). In Part 2, 21 of these 90 patients are compared to 21 other pain patients who had received TAU in the pain clinic but had not participated in MBSR. Parts 1 and 2 of this study are entered separately in Table 1. The third study (Kabat-Zinn, Lipworth, Burney, & Sellers, 1987) is an extensive series of follow-up evaluations of chronic pain patients who had completed MBSR over the preceding several years, including patients in the previous two studies. Thus, the first four entries in Table 1 are derived from three published articles with overlapping participant samples. Finally, Randolph, Caldera, Tacone, and Greak (1999) investigated the effects of MBSR in an independent sample of 78 chronic pain patients.

In general, findings for chronic pain patients show statistically significant improvements in ratings of pain, other medical symptoms, and general psychological symptoms. Many of these changes were maintained at follow-up evaluations. Most of these comparisons used pre-post designs with no control group.

Axis I Disorders. Kabat-Zinn et al. (1992) examined a sample of 22 patients with generalized anxiety and panic disorders, and found significant improvements in several measures of anxiety and depression, both at posttreatment and at 3-month follow-up. A no-treatment control group was not included. Miller, Fletcher, and Kabat-Zinn (1995) reported a 3-year follow-up of the same participants and found that treatment gains had been maintained.

Kristeller and Hallett (1999) examined the effects of MBSR on binge eating disorder. In a pre-post design with no control group, 18 female patients showed statistically significant improvements in several measures of eating and mood.

Teasdale et al. (2000) examined the effects of MBCT on rates of depressive relapse in a large sample of patients whose major depressive disorder (MDD) had remitted after treatment with medication. All participants had discontinued their medications at least 12 weeks before the study began. Patients were randomly assigned to either MBCT (8-week manualized group treatment) or TAU and then followed for 1 year. For patients with three or more previous depressive episodes, results showed much lower relapse rates for MBCT patients (37% of patients relapsed) than for the TAU group (66% of patients relapsed) during the 1-year follow-up period. However, relapse rates for the MBCT and TAU groups did not differ for patients with only one or two previous episodes.

Using a subset of the participants from Teasdale et al. (2000), J. M. G. Williams et al. (2000) found that those who had completed MBCT produced fewer general and more specific memories when asked to recall events from their pasts in response to cue words. The authors speculate that mindfulness training may modify the overgeneral autobiographical memory believed to be characteristic of individuals with depression (Kuyken & Brewin, 1995).

Other Medical Disorders. Two studies have investigated effects of MBSR on fibromyalgia. Both reported improvements in a variety of symptoms. In a study of psoriasis patients, Kabat-Zinn et al. (1998) found that patients who listened to mindfulness audiotapes during individual light-therapy sessions showed quicker clearing of their skin ($Mdn = 65$ days) than did patients who received light therapy alone ($Mdn = 97$ days). Speca, Carlson, Goodey, and Angen (2000) examined the effects of MBSR in a group of cancer patients and reported significant reductions in

mood disturbance and stress levels. Carlson, Ursuliak, Goodey, Angen, and Speca (2001) reported that these changes were maintained at 6-month follow-up.

Mixed Clinical Populations. Kutz et al. (1985) studied a sample of long-term psychodynamic therapy patients with diagnoses including anxiety and obsessive neuroses, and narcissistic and borderline personality disorders. They completed a 10-week MBSR program while continuing with their individual psychotherapy and showed statistically significant improvements in a variety of self- and therapist-rated symptoms. Roth and Creasor (1997) studied outpatients from a low-income, primarily Latino population attending an inner city health clinic and showed statistically significant improvements on several measures of medical and psychological functioning. Reibel, Greeson, Brainard, and Rosenzweig (2001) studied medical patients with a variety of medical and psychiatric diagnoses and found significant improvements in medical and psychological symptoms. None of these studies used control groups.

Nonclinical Populations. Massion, Teas, Hebert, Wertheimer, and Kabat-Zinn (1995) analyzed urine levels of a melatonin metabolite in two groups of women. Levels were significantly higher in women previously trained in MBSR who continued to meditate regularly than in women who had never been trained and did not meditate. The authors cite previous findings suggesting that melatonin level may be related to immune function (Bartsch et al., 1992; Guerrero & Reiter, 1992), and suggest that mindfulness meditation may influence health status through its effects on melatonin. Astin (1997) and Shapiro et al. (1998) studied student populations who completed group MBSR, reporting significant effects on psychological symptoms, empathy ratings, and spiritual experiences. Both of these studies used waiting-list control groups. Williams, Kolar, Reger, and Pearson (2001) studied community volunteers who completed MBSR to reduce their stress levels, reporting significant improvements in medical and psychological symptoms.

Mean Effect Size at Posttreatment

Posttreatment effect sizes ranged from 0.15 to 1.65. An overall mean of these effect sizes, collapsed across studies, was calculated. In order to include only independent mean effect sizes in this calculation, the effect sizes obtained from Kabat-Zinn (1982) and Parts 1 and 2 of Kabat-Zinn et al. (1985) first were averaged, because these comparisons have overlapping participant samples. Similarly, the mean effect sizes obtained for Teasdale et al. (2000) and J. M. G. Williams et al. (2000) were averaged, because these two studies also have overlapping participant samples. After these preliminary calculations, 15 independent posttreatment mean effect sizes, each from a separate sample, were available for analysis. Their mean was 0.74 (SD = 0.39). When each of these 15 effect sizes was weighted by sample size, overall mean effect size was 0.59.

Mean Effect Size at Follow-Up

Follow-up data were reported less often. Effect sizes at follow-up ranged from 0.08 to 1.35. Before an overall mean of these effect sizes was calculated, mean effect sizes obtained from studies with overlapping participant samples were averaged. The overall mean of these independent follow-up effect sizes was 0.59 (SD = 0.41).

Cohen (1977) has described effect sizes of $d = 0.2$, $d = 0.5$, and $d = 0.8$ as small, medium, and large, respectively. Thus, on the average, the literature reviewed here suggests that mindfulness-based interventions have yielded at least medium-sized effects, with some effect sizes falling within the large range. Many of the effect sizes calculated for these studies are probably conservative, because several studies did not present means, standard deviations, or t values, making it necessary to calculate d from the p value. In many cases exact p values were not reported. Instead, for example, a p value between .01 and .05 might have been reported as .05, which was then used to compute d. Larger ps yield smaller ds. In addition, when findings were reported only as nonsignificant, effect sizes of zero were recorded. If means, SDs, or t values had been reported in these cases, the calculated effect size might have been larger than zero.

Relationships Between Mean Effect Size at Posttreatment and Study Characteristics

Relationships between mean effect sizes at posttreatment and selected methodological variables can be seen in Table 2. (Follow-up effect sizes are not included in this table.) The small number of studies available and the nonindependence of some of the effect sizes make statistical analyses of these differences impractical. Thus, these findings

Table 2. Mean effect size at posttreatment and methodological variables

Variable	N	Mean d	SD
Research design			
Pre-post	8	0.71	0.44
Between group	10	0.69	0.34
Random assignment (between group)			
Yes	7	0.75	0.34
No	3	0.55	0.38
Type of control group			
Wait list	5	0.74	0.44
TAU	4	0.55	0.20
Participant population			
Chronic pain	4	0.37	0.24
Other Axis I[a]	4	0.96	0.47
Medical[b]	4	0.55	0.09
Nonclinical[c]	4	0.92	0.44
Dependent measure			
Pain	17	0.31	0.30
Other medical (self-rated)[d]	11	0.44	0.26
Anxiety	8	0.70	0.41
Depression	5	0.86	0.30
Stress	2	0.63	0.02
Global psychological[e]	18	0.64	0.42
Objective medical[f]	2	0.80	0.25
Method of Calculating d			
Using Ms and SDs, or t	10	0.87	0.40
Using p	8	0.48	0.22

[a]Includes anxiety, depression, and binge eating.
[b]Includes fibromyalgia, psoriasis, and cancer.
[c]Includes students and nonclinical volunteers.
[d]Includes fatigue and sleep ratings, and medical symptom checklist.
[e]Includes POMS total mood disturbance, SCL-90-R GSI.
[f]Includes urine and skin analysis.

should be interpreted cautiously, as differences may not be significant. Mean effect sizes were similar for studies using pre-post and between-groups designs. Mean effect size was somewhat larger when participants had been randomly assigned to groups. Studies using waiting-list control groups yielded slightly larger effect sizes than those using TAU. When organized by type of participant, mean effect sizes appear somewhat larger for comparisons using nonclinical populations or patients with selected Axis I problems than for those with chronic pain or medical problems. When organized by the type of dependent variable, mean effect sizes ranged from 0.31 for pain measures to 0.86 for measures of depression.

Finally, effect sizes derived from means and SDs or t values were somewhat larger, on average (0.87) than those derived from p values (0.48). This finding illustrates the importance of including means, standard deviations, and t values in future research. Given the small number of available studies, examination of interactions between method of calculating d and other methodological variables is not feasible. However, because none of the chronic pain stud-

ies reported means, SDs, or t values, effect sizes for these studies were calculated from p values. It is possible that mean effect size for chronic pain patients might have been larger if these studies had provided additional data.

Clinical Significance of Findings

The clinical significance of the changes reported in these studies is difficult to assess. Several studies reported only raw scores on dependent measures, whereas others reported percentage change in scores or the statistical significance of the change in scores. In these cases the severity of participants' problems before treatment, or their proximity to the normal range of functioning afterwards, cannot readily be determined.

In order to assess the clinical significance of some of the findings reviewed here, reported raw scores for more frequently used dependent measures were converted to T-score equivalents or ranges of functioning, with use of the instruments' published manuals or profile sheets. For example, several studies reported pre- and posttreatment raw scores for the Global Severity Index (GSI) of the Symptom Checklist 90-Revised (SCL-90-R) (Derogatis, 1983). These scores were converted to T scores (T-score equivalents for males and females were averaged) and then averaged across studies. This procedure yielded a mean pretest T score for the GSI of 67, with a mean posttest T score of 60. Because T scores have a mean of 50 and a SD of 10, this finding suggests that patients scored nearly 2 SDs above the mean before treatment and 1 SD above the mean after treatment. Several studies using the GSI could not be included in this procedure because they did not report scores, instead reporting only percentage decrease in scores, or the statistical significance of the change in scores.

Similar procedures were followed for the Beck Depression Inventory (BDI) and the Beck Anxiety Inventory (BAI) with use of ranges of functioning described in the manuals (Beck & Steer, 1987, 1993). On the BDI raw scores of 0-9 are considered asymptomatic, whereas scores of 10-18 indicate mild to moderate depression. For two studies reporting BDI scores, the mean pretreatment score was 16.82 (mild-moderate), and the mean posttreatment score was 8.64 (asymptomatic). For two studies reporting BAI scores, the mean pretreatment score was 20.43 (moderate) and the mean posttreatment score was 7.94 (minimal to mild).

These indications of clinical significance must be considered tentative, because they are based on very few stud-

ies, some of which used uncontrolled pre-post designs. However, they suggest that mindfulness training, on average, may bring participants with mild to moderate psychological distress into or close to the normal range.

Attrition, Adherence, and Maintenance of Mindfulness Practice

Thirteen studies reported both the number of individuals who agreed to participate in mindfulness training and the number who completed it. Program completion usually was defined as attendance at a minimum number of sessions, or was undefined. Percentage of enrolled participants who completed treatment ranged from 60 to 97, with a mean of 85% (SD = 8.91). The lowest completion rate (60%) was noted by Roth & Creasor (1997), who studied an inner city health clinic population. The highest completion rate (97%) was reported by Shapiro et al. (1998), whose participants were premedical and medical students.

The most extensive analysis of program completion was provided by Kabat-Zinn and Chapman-Waldrop (1988), who reported completion rates for the MBSR program (at that time known as the Stress Reduction and Relaxation Program) at the University of Massachusetts Medical Center. (This study is not included in Table 1, because it did not examine treatment effects.) During the 2-year period examined (1982–1984), 1,155 patients were referred to the program, mostly by their physicians. Of these patients, 75% completed an intake interview, and 90% of those interviewed enrolled in the program. Of the 784 patients who enrolled, 76% completed the program, whereas 15% dropped out after beginning and 9% never attended a session. Regression analyses showed that patients with stress-related problems (hypertension, anxiety, sleep disorders, etc.) were significantly more likely to complete the program than those with chronic pain complaints (lower back, headache, etc.). Completers also had somewhat higher pretreatment scores than noncompleters on the GSI and the Obsessive-Compulsive (OC) scales of the SCL-90-R. Within the chronic pain group, women were slightly more likely than men to complete the program.

Only three studies reported the extent to which participants completed their assigned home practice during the course of the mindfulness intervention. Kristeller and Hallett (1999), in a sample of women with binge eating disorder, noted that participants reported engaging in a mean of 15.82 hr of meditation (SD = 3.15) across the 6-week intervention program. Reported practice time was significantly correlated with improvements in Binge Eating Scale

scores (r = .66) and in BDI scores (r = .59). Astin (1997), in a sample of college students, reported that participants practiced meditation for an average of 30 min per day, 3.5 days per week. Reported practice time and improvement on the GSI of the SCL-90-R were not significantly correlated. Reibel et al. (2001) reported that 90% of their mixed sample of medical patients practiced three times per week or more and 57% practiced nearly every day, most for 15–30 min each time.

Four studies reported the extent to which participants trained in mindfulness skills continued to practice these skills after treatment had ended. In a series of follow-up studies of former MBSR patients, Kabat-Zinn et al. (1987) noted that 75% of former patients reported that they still practiced meditation (averaged across follow-up intervals of 6–48 months). Of these patients, 43% meditated regularly ($\geq$ three times weekly, $\geq$ 15 min each time), whereas 19% meditated sporadically (one or two times weekly, $\geq$ 15 min each time, or $\geq$ three times weekly, $\leq$ 15 min each time), and 38% were classified as marginal meditators (< one time weekly for any length of time, or < three times weekly, < 15 min each time). Practice of yoga two or more times per week was reported by 31% of respondents, and 49% reported using awareness of breathing in daily life *often*.

Kabat-Zinn et al. (1992), at 3-month follow-up of 22 patients with anxiety disorders, found that 84% reported practicing meditation or yoga three or more times per week, for 15–45 min each time. Mindfulness of breathing in daily life was practiced by 95% (77% *often* and 18% *sometimes*). Miller et al (1995) contacted 18 of these patients for a 3-year follow-up evaluation and reported that 10 (56%) still practiced meditation: 4 regularly, 3 sporadically, and 3 marginally (as defined above). Sixteen of 18 (89%) reported that they used awareness of breathing in daily life (4 *often*, 11 *sometimes*, and 1 *rarely*).

K. A. Williams et al. (2001), in a sample of community volunteers self-identified as "stressed out," reported that at 3-month follow-up 81% of MBSR participants were practicing either meditation, yoga, or awareness of breathing in daily life.

Patients' Reactions to Treatment

In their follow-up study of former MBSR patients, Kabat-Zinn et al (1987) found that the majority of those who considered themselves improved since completing MBSR attributed 50–100% of their improvement to the MSBR

program. The majority gave ratings of 8–10 on a 10-point rating of the importance of completing the program (1 = *not at all important;* 10 = *very important*), and 86% reported that they "got something of lasting value" from the program. Most commonly reported changes included a "new outlook on life" and improved ability to control, understand, and cope with pain and stress.

Miller et al. (1995), in their 3-year follow-up of patients with anxiety disorders, asked participants to rate the importance of the MBSR program on a 1–10 scale (1 = *no importance;* 10 = *very important*). The majority gave ratings of 7 or higher, and 89% reported that the program had "lasting value" for them.

Astin (1997) asked undergraduate participants to rate the extent to which their mindfulness program had "lasting value and importance." On a 10-point scale, participants gave a mean rating of 9.3. Randolph et al. (1999) reported that 98% of their patients with chronic pain reported benefits of "lasting value" and rated the program's importance at 8.3 on a 10-point scale. Reibel et al. (2001) reported that their mixed sample of medical patients rated their satisfaction with MBSR at 4.90 on a 5-point scale.

Although these findings suggest that participants in mindfulness-based interventions rate these programs highly, they should be interpreted cautiously. They are derived only from participants who completed their treatment programs. Participants who dropped out might have given lower ratings. Kazdin (1994) notes that client satisfaction measures may not correlate with measures of dysfunction, and Brock, Green, Reich, and Evans (1996) suggest that participants who have invested substantial time and effort in a treatment program may be unwilling to evaluate it negatively. However, Kazdin (1994) also notes that client satisfaction is an important consideration when one is choosing among treatment alternatives, and these results suggest that many clients find mindfulness interventions beneficial.

Methodological Issues

As noted in Table 1, the published literature on the effects of mindfulness training reports changes in the therapeutic direction in several populations on a variety of dependent measures. However, many studies have significant methodological weaknesses that make it difficult to draw strong conclusions about the effects of mindfulness-based interventions. These issues are summarized below.

Control Groups. Several of the studies reviewed examined the effects of MBSR with pre-post design and no control group. Although most of these studies reported statistically significant improvements in a wide range of dependent variables, none controlled for passage of time, demand characteristics, or placebo effects, or compared MBSR to other treatments.

Several studies used between-groups designs with waiting-list or TAU control groups. The latter studies provide better controls for demand characteristics and placebo effects, and permit comparisons with alternative treatments. However, in the studies reviewed here, TAU consisted of medical approaches or unspecified mental health approaches. For example, in Kabat-Zinn et al. (1985, Part 2), TAU included medical approaches to chronic pain, such as nerve blocks, physical therapy, analgesics, and antidepressants. In Kabat-Zinn et al. (1998), TAU consisted of phototherapy for psoriasis. For Teasdale et al. (2000) and J. M. G. Williams et al. (2000), TAU included depression-related visits to a general practitioner, psychiatric treatment, counseling, psychotherapy, and other mental health contacts. Thus, these studies do not allow comparison of mindfulness training with other specific psychological approaches.

Sample Sizes. Some of the studies reviewed here report small sample sizes. According to Cohen (1977), an 80% chance of detecting a medium-to-large treatment effect ($d = 0.70$) with a two-tailed t test at alpha = .05 requires 33 participants per sample. Future research should include sample sizes adequate to detect medium-to-large treatment effects.

Evaluation of Integrity of Treatment. Evaluation of the effects of any treatment requires that it be adequately administered (Kazdin, 1994). Integrity of treatment implementation can be enhanced through rigorous training and regular supervision of therapists, with procedures such as direct observation, review of audio- or videotapes of sessions, and feedback. The studies reviewed here do not describe the procedures used to train therapists or to evaluate their delivery of mindfulness treatment. Teasdale et al. (2000) report that MBCT sessions were video- or audiotaped to allow monitoring of treatment integrity, but analysis of these tapes is not described. In several studies therapists are described as "experienced," but the term is

not well defined. Many of the studies reviewed here were conducted in the program developed by the originator of MBSR (Kabat-Zinn, 1982, 1990). Similarly, the MBCT groups in Teasdale et al. (2000) were led by the developers of the treatment. In these cases it seems likely that therapists conducted the treatment competently. However, because mindfulness-based interventions are relatively new and may be less familiar than more established cognitive-behavioral interventions, descriptions of the training and supervision of the therapists conducting the mindfulness treatment might increase confidence in the findings from future studies.

Clinical Significance. The clinical significance of the effects of an intervention can be evaluated in several ways (Jacobson & Revensdorf, 1988; Jacobson & Truax, 1991; Kazdin, 1994). For example, after patients have completed the experimental treatment, the extent to which they fall within the normal range on relevant dependent measures can be examined. Alternatively, their diagnostic status can be reevaluated to determine whether they continue to meet criteria for the disorder for which they sought treatment. The studies reviewed here do not explicitly address the clinical significance of their findings in either of these ways. Increased attention to the issue of clinical significance would contribute substantially to the utility of future studies.

CONCLUSION

In spite of significant methodological flaws, the current literature suggests that mindfulness-based interventions may help to alleviate a variety of mental health problems and improve psychological functioning. These studies also suggest that many patients who enroll in mindfulness-based programs will complete them, in spite of high demands for homework practice, and that a substantial subset will continue to practice mindfulness skills long after the treatment program has ended. Mindfulness-based interventions appear to be conceptually consistent with many other empirically supported treatment approaches and may provide a technology of acceptance to complement the technology of change exemplified by most cognitive-behavioral procedures (Linehan, 1993a).

Thus, it appears that methodologically sound studies of mindfulness-based interventions would be very informative. Randomized clinical trials are needed to clarify whether observed effects are due to mindfulness training or to confounding factors such as placebo effects or passage of time (Chambless & Hollon, 1998). Outcome studies using waiting-list or no-treatment controls might shed more light on the effects of mindfulness training as a treatment package, but more rigorous tests would compare mindfulness-based interventions to established treatments. Dismantling studies of treatment packages that include both mindfulness and behavior change strategies, such as DBT, ACT, and RP, could clarify the relative contributions of acceptance-based and change-based strategies in these packages. Whether the effectiveness of established treatment programs may be increased by adding mindfulness training is also an important question. Additional research could investigate the effects of mindfulness practice on a broader range of outcomes, such as subjective well-being and quality of life, as well as symptom reduction. The mechanisms through which mindfulness training may create clinical change, such as exposure, relaxation, and cognitive change, also should be examined.

The Division 12 Task Force on Promotion and Dissemination of Psychological Procedures (1995) proposed definitions for well-established and probably efficacious treatments. Well-established treatments have been shown to be superior to a placebo or alternative treatment, or equivalent to an already established treatment, in group-design studies with adequate sample sizes and conducted by different investigators. Alternatively, they have demonstrated efficacy in a large series of single case designs that compare the intervention to another treatment. In all cases, well-established treatments have been investigated for specific disorders, with use of treatment manuals and well-specified samples.

Designation as "probably efficacious" requires two studies showing the treatment to be more effective than a waiting-list control group, or than another treatment (but conducted by the same investigator), or two studies demonstrating effectiveness in heterogeneous client samples.

Five studies of MBSR using group designs with random assignment are reviewed here (Astin, 1997; Kabat-Zinn et al., 1998; Shapiro et al., 1998; Speca et al., 2000; K. A. Williams et al., 2001). All show MBSR to be more effective than a waiting-list or TAU control group. Samples include students (two studies), psoriasis patients, cancer patients, and community volunteers complaining of high stress levels. Thus, MBSR may meet criteria for the "prob-

ably efficacious" designation in that it has been shown to be more effective than waiting-list or TAU control groups in several studies using heterogeneous samples.

MBCT may be approaching the "probably efficacious" designation for the prevention of depressive relapse. Teasdale et al. (2000) is among the strongest of the studies reviewed here. It shows MBCT to be superior to TAU in preventing relapse, using a treatment manual (Segal et al., 2002) and a large and clearly specified sample of formerly depressed patients. Additional studies conducted by independent investigators confirming this finding, or showing MBCT to be equivalent or superior to another treatment in preventing depressive relapse, would qualify MBCT for the "well established" designation.

Two issues may complicate the empirical validation of mindfulness-based interventions. The empirical evaluation of any intervention requires clear operational definitions of concepts and procedures, and the identification of conceptually sound mechanisms that may account for changes produced by the intervention. The preceding discussion illustrates that mindfulness-based interventions can be rigorously operationalized, conceptualized, and empirically evaluated. However, to do so risks overlooking important elements of the long tradition from which mindfulness meditation originates. As described by Kabat-Zinn (2000), the practice of mindfulness meditation is concerned with the cultivation of awareness, insight, wisdom, and compassion, concepts that may be appreciated and valued by many people yet difficult to evaluate empirically. Thus, although methodologically rigorous investigations of the effects of MBSR are both possible and necessary, perhaps researchers should consider ways to incorporate these other concepts, in addition to more readily measured constructs such as symptom reduction.

In addition, unlike many empirically supported treatments, MBSR was not developed to treat any specific disorder. Although the initial publications examined its effects in chronic pain patients, it is generally taught in groups of people with a wide range of complaints. As the term *stress reduction* implies, it is designed to reduce suffering and improve health and well-being, and to be broadly applicable to many problems. Thus, evaluation of its effectiveness with specific disorders, although necessary for empirical validation, may not be entirely consistent with current methods of application in many settings. When studies are conducted with mixed populations, thorough diagnostic

assessment of participants would help clarify effects on specific conditions.

Although the empirical literature supporting its efficacy is small, MBSR programs are widely available. Scheel (2000) and Swenson (2000) have described a similar proliferation of DBT programs, of which mindfulness training is an important component. Given the potential benefits and increasing popularity of mindfulness training, it seems critically important to conduct methodologically sound empirical evaluations of the effects of mindfulness interventions for a range of problems, both in comparison to other well-established interventions and as a component of treatment packages.

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Prevention of Relapse/Recurrence in Major Depression by Mindfulness-Based Cognitive Therapy

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The present study evaluated mindfulness-based cognitive therapy (MBCT), a group intervention designed to train recovered recurrently depressed patients to disengage from dysphoria-activated depressogenic thinking that may mediate relapse/recurrence. Recovered recurrently depressed patients (145) were randomized to continue with treatment-as-usual, or, in addition, to receive MBCT. Relapse / recurrence to major depression was assessed over a 60-week study period. For patients with ≥3 previous episodes of depression (77% sample), MBCT significantly reduced risk of relapse/recurrence. For patients with only two previous episodes, MBCT did not reduce relapse/recurrence. MBCT offers a promising cost-efficient psychological approach to preventing relapse/recurrence in recovered recurrently depressed patients.

Relapse and recurrence following successful treatment of major depressive disorder is common

and often carries massive social cost (Mintz, Mintz, Imber, Arruda, & Hwang, 1992). Reviewing studies of lifetime course of depression, a recent commentary concluded "it has been established that unipolar major depressive disorder is a chronic, lifelong illness, the risk for repeated episodes exceeds 80%, patients will experience an average of 4 lifetime major depressive episodes of 20 weeks duration each" (Judd, 1997, p. 990). Such data suggest that the prevention of relapse and recurrence poses a central challenge in the overall management of major depressive disorder. Currently, maintenance pharmacotherapy is the best validated and most widely used approach to prophylaxis in depression, the lowest rates of recurrence occurring when patients are continued at the dosage of antidepressant medication used to achieve remission (Kupfer et al., 1992).

Maintenance psychotherapy may also be helpful. The pioneering work of Frank, Kupfer and colleagues (Frank et al., 1990; Frank, Kupfer, Wagner, McEachran, & Cornes, 1991; Kupfer et al., 1992) has shown that continuation of a psychological treatment (interpersonal psychotherapy) in maintenance form can also significantly extend survival time following recovery. Cognitive behavior therapy (CBT) for depression (Beck, Rush, Shaw, & Emery, 1979), administered during depressive episodes, appears to be effective in reducing subsequent rates of relapse and recurrence. Studies comparing the long-term outcome of patients who recovered following treatment of acute depression by CBT with the outcome of patients who recovered following treatment with antidepressant medication and were then withdrawn from medication, consistently find less relapse or need for further treatment in the CBT group (Blackburn, Eunson, &

Bishop, 1986; Evans et al., 1992; Shea et al., 1992; Simons, Murphy, Levine, & Wetzel, 1986). Such findings suggest that CBT may be a treatment for acute depression that has long-term effects in reducing risk of future relapse and recurrence, presumably through patients acquiring skills, or changes in thinking, that confer some degree of protection against future onsets.

A recent novel approach to the prevention of relapse and recurrence in depression, for which there is encouraging preliminary evidence, is to combine pharmacotherapy for the acute episode with psychological prophylactic interventions administered following recovery. Fava and colleagues (Fava, Grandi, Zielezny, Canestrari, & Morphy, 1994; Fava, Grandi, Zielezny, Rafanelli, & Canestrari, 1996; Fava, Rafanelli, Grandi, Conti, & Belluardo, 1998) have reported successful use of such an approach, combining treatment of the acute episode by antidepressant medication with provision of CBT, following recovery, while antidepressant medication is gradually withdrawn. For example, Fava et al. (1998) described the results of a trial comparing the long-term outcome of 40 patients with recurrent major depression (three or more episodes) successfully treated with antidepressant medication and then randomized to clinical management or a combination of (a) CBT for residual symptoms, (b) lifestyle modification, and (c) well-being therapy, while antidepressant medication was withdrawn. Over a two-year follow-up, the CBT group showed significantly less relapse/recurrence (25%) than the clinical management group (80%).

The strategy of combining acute pharmacotherapy with psychological prophylaxis offers the possibility of (a) capitalising on the cost-efficiency of antidepressant medication to reduce acute symptomatology; while, (b) avoiding the need for patients to remain indefinitely on maintenance medication to reduce future relapse and recurrence. We describe a multi-centre trial evaluating the effectiveness of this strategy using a novel, theory-driven approach to psychological prophylaxis, Mindfulness-Based Cognitive Therapy (MBCT). To increase the potential cost-efficiency of this strategy, MBCT was designed as a group skills-training approach, rather than as an individual psychological therapy. In contrast to Fava et al. (1998), we (a) focused on a group rather than an individual intervention, (b) studied more than a single therapist, (c) used a larger sample size, and (d) administered the psychological intervention at least three months after, rather than during, withdrawal of antidepressant medication.

The theoretical background to MBCT (referred to previously (Teasdale, Segal, & Williams, 1995) as attentional control (mindfulness) training) has been described in detail elsewhere (Segal, Williams, Teasdale, & Gemar, 1996; Teasdale et al., 1995). It is assumed that vulnerability to relapse and recurrence of depression arises from repeated associations between depressed mood and patterns of negative, self-devaluative, hopeless thinking during episodes of major depression, leading to changes at both cognitive and neuronal levels. As a result, individuals who have recovered from major depression differ from individuals who have never

experienced major depression in the patterns of thinking subsequently activated by dysphoria.

Specifically, it is suggested that, in recovered depressed patients, the thinking activated by dysphoria will show similarities to the thinking patterns previously present in episode. These reactivated patterns of thinking can act to maintain and intensify the dysphoric state through escalating and self-perpetuating cycles of ruminative cognitive-affective processing (Teasdale, 1988, 1997). In this way, in those with a history of major depression, states of mild dysphoria will be more likely to progress to more intense and persistent states, so increasing risk of further onsets of episodes of major depression.

Studies that have compared the patterns of thinking activated by mild dysphoria in those with and without a history of major depression support this account (Ingram, Miranda, & Segal, 1998; Segal, Gemar & Williams, 1999). This analysis provides a parallel explanation, at the cognitive level, to more biological accounts of episode sensitisation and kindling in recurrent affective disorder (Post, 1992). Accounts at both biological and cognitive levels are consistent with the finding that, with repeated experiences of episodes of major depression, less environmental stress is required to provoke relapse/recurrence .(Post, 1992). That is, the processes mediating relapse/recurrence appear to become progressively more autonomous with increasing experience of episodes of depression.

The above account suggests that risk of relapse and recurrence will be reduced if patients who have recovered from episodes of major depression can learn, first, to be more aware of negative thoughts and feelings at times of potential relapse/recurrence, and, second, to respond to those thoughts and feelings in ways that allow them to disengage from ruminative depressive processing (Nolen-Hoeksema, 1991). MBCT was designed to achieve those aims (Teasdale et al., 1995). MBCT is based on an integration of aspects of cognitive behavior therapy for depression (CBT) (Beck et al., 1979) with components of the mindfulness-based stress reduction programme (MBSR) developed by Kabat-Zinn and colleagues (Kabat-Zinn, 1990). There is preliminary evidence for the effectiveness of MBSR in the treatment of generalised anxiety disorder and panic (Kabat-Zinn et al., 1992) and chronic pain (Kabat-Zinn, Lipworth, Burney, & Sellers, 1986). Unlike CBT, there is little emphasis in MBCT on changing the *content* of thoughts; rather, the emphasis is on changing *awareness of* and *relationship to* thoughts. Aspects of CBT included in MBCT are primarily those designed to facilitate "decentered" views such as "Thoughts are not facts" and "I am not my thoughts".

The focus of MBCT is to teach individuals to become more aware of thoughts and feelings, and to relate to them in a wider "decentered" perspective as "mental events," rather than as aspects of the self, or as necessarily accurate reflections of reality. It is assumed that the cultivation of a detached, decentered, relationship to depression-related thoughts and feelings is central in providing individuals with skills to prevent the escalation of negative thinking patterns at times of potential relapse/recurrence (Teasdale, 1997; Teasdale et al., 1995). Because, unlike CBT, there is little explicit emphasis in MBCT on changing the content or specific meanings of negative automatic thoughts, in MBCT, training can occur in the remitted state, using everyday experience as the object of training.

We report an initial multi-center randomized clinical trial evaluating the efficacy of MBCT in reducing relapse and recurrence in patients with recurrent depressive disorder. Patients entered the trial in remission, following treatment of previous episodes by antidepressant medication. Choice of an appropriate design for the initial evaluation of a novel intervention, such as MBCT, is influenced by a number of factors. At the time this trial was planned, there was no published evidence that any psychological intervention, initially administered in the recovered state could, prospectively, reduce risk of future recurrence in major depression. Given this situation, the first priority for research was to evaluate whether MBCT was of any benefit in reducing relapse/recurrence; if benefits were observed, subsequent research could compare MBCT with other psychological interventions, including controls for attention-placebo factors, and with alternative approaches to prevention, such as maintenance pharmacotherapy.

We used a design in which patients who continued with treatment-as-usual (TAU) were compared with patients who, additionally, received training in MBCT. Such a design does not aim to compare MBCT with the best available alternative preventive intervention. Nor does it allow any reduction in rates of relapse and recurrence for patients receiving MBCT to be attributed unambiguously to the specific components of MBCT, rather than to non-specific factors, such as therapeutic attention or group participation. However, this design is the most appropriate to answer the question that was of primary interest in this initial evaluation of MBCT: does this intervention, when offered in addition to treatment-as-usual, reduce rates of relapse and recurrence compared to treatment-as-usual alone?

Method
Design

At three treatment sites, 145 patients, currently in remission or recovery from major depression at the time of the baseline assessment, were randomized to continue with treatment-as-usual (TAU), or, additionally, to receive mindfulness-based cognitive therapy training (MBCT). Following an initial treatment phase, patients entered a one year follow up phase; a period of one year was selected as it has been a follow up reported in earlier studies (e.g. Simons et al., 1986), and it was not considered appropriate to defer the possibility for patients allocated to. TAU to participate in the MBCT program for a longer time (all patients initially allocated to TAU were offered the possibility of MBCT on completion of the follow up year). Thus, the total 60 week study period comprised an initial 8-week treatment phase followed by a 52-week follow up phase.

Randomization involved treatment sites faxing patient initials, date of birth, gender, date of assessment and details of number and recency of previous episodes of depression to a central independent allocator. Information was sent for groups of eligible patients at a time. The central allocator randomly allocated patients to treatment condition, gave each a study number, and faxed the

allocations and study numbers back to treatment sites.

Patients were stratified on two baseline variables (recency of recovery from last episode of depression: within 0-12 months prior to randomization *versus* within 13-24 months prior to randomization; and number of previous episodes of major depressive disorder: 2 *versus* >2), and randomized by strata within each site. Both these variables have been found to be related to risk of relapse/recurrence in previous studies (e.g. see Evans et al., 1992; Post, 1992). A one year cut-off for recency of recovery meant that all those in the less recent stratum were clearly recovered from their last episode, and all those who satisfied criteria for remission from episode, but did not yet satisfy criteria for recovery, fell in the more recent stratum (Frank, Prien, et al., 1991). A cut between those with only two episodes and those with more than two episodes meant that those in the latter stratum were broadly comparable to patient samples studied in other trials of psychological treatments for recurrent depression (e.g. Frank et al., 1990; Fava et al., 1998).

Sample size was calculated on the basis that a sample of 120 patients (60 per group), would have 80% power to detect at $p<.05$ a reduction in relapse/recurrence rates from 50% in the TAU group to 28% in MBCT on a directional hypothesis (Cohen, 1988).

Participants

Patients were recruited from community health care facilities, and by media announcements at three different sites; a predominantly rural, Welsh-speaking, area of North Wales centred on the small city of Bangor (population 20,000); an area centred on and including the city of Cambridge, England (population, 110,000), together with surrounding small towns, villages, and rural area; and the metropolitan area of Toronto, Ontario, Canada (population three million). Although Cambridge is a well known university city, no participants at that site were actually academic staff or students of the University of Cambridge.

Inclusion criteria were: 1) age 18-65 years; 2) meeting enhanced DSM-III-R criteria (American Psychiatric Association, 1987) for a history of Recurrent Major Depression - these normally require a history of two or more previous episodes of DSM-III-R major depression in the absence of a history of mania or hypomania- we required, further, a) that at least two episodes of major depression occurred within the last five years, b) at least one of those episodes was within the last two years; 3) a history of treatment by a recognised antidepressant medication, but off antidepressant medication, and in recovery/remission, at the time of baseline assessment and for at least the preceding 12 weeks (it was not possible to determine the adequacy of treatment by antidepressant medication; rather, this criterion was used as an indicator that, in the naturalistic course of service delivery, patients had been judged as appropriate for pharmacotherapy by a treating physician); 4) at baseline assessment, a 17-item Hamilton Rating Scale for Depression (HAM-D (Hamilton, 1960) score <10. Exclusion criteria were : history of schizophrenia or schizoaffective disorder; current substance abuse, eating disorder, obsessive compulsive disorder; organic mental disorder, pervasive developmental delay, or borderline personality disorder; dysthymia before age 20; >4 sessions of cognitive behavioral treatment ever; current

psychotherapy or counselling more frequently than once per month; current practice of meditation more than once per week or yoga more than twice per week. Patients with eating disorders were excluded because they frequently experience depression secondary to those disorders and the MBCT program was not designed to deal with the primary eating disorder. Patients with obsessive compulsive disorder were excluded because the obsessional quality of their thoughts might have rendered the implementation of mindfulness strategies particularly difficult. Patients with dysthymia before the age of 20 were excluded because of the possible characterological nature of their depression. Patients who currently practised yoga more than twice a week were excluded because yoga overlaps considerably with mindfulness training, and is, indeed, a component of the MBCT program.

Informed Consent

Patients meeting inclusion criteria, and willing to participate in the study after it had been explained to them, gave written informed consent on forms approved by Local Research Ethics Committees, prior to randomization.

Measures

Hamilton Rating Scale for Depression (HAM-D). As part of the assessment of inclusion criteria, the baseline assessment interview included the 17-item Hamilton Rating Scale for Depression (HAM-D, Hamilton, 1960), a widely used interview based measure of severity of depressive symptomatology that covers a range of affective, behavioral and biological symptoms. Scores can range from 0 to 52. This measure, administered by doctoral level psychologists or an experienced psychiatric social worker, was also repeated at each subsequent follow up assessment. The HAM-D has acceptable psychometric properties that have been reviewed elsewhere (see Rabkin & Klein, 1987). A sample of 41 interviews from the follow up period were second-rated for Hamilton Rating Scale for Depression (HAM-D) by an independent psychiatric rater to yield an inter-rater correlation of r (df 39) = .963 (p<.001).

Beck Depression Inventory (BDI). The Beck Depression Inventory (BDI, Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), a widely used 21-item self-report measure of severity of depressive symptoms, was completed by patients at the baseline assessment and at each follow up assessment. The BDI covers affective, cognitive, motivational, behavioral and biological symptoms of depression, and yields scores ranging from 0 to 63. The BDI has acceptable psychometric properties that have been reviewed elsewhere (Rabkin & Klein, 1987).

Relapse/recurrence. The primary outcome variable was the occurrence of relapse or recurrence meeting DSM-IIIR criteria for major depressive episode (American Psychiatric Association, 1987), as assessed by Structured Clinical Interview for Diagnosis (SCID, Spitzer, Williams, Gibbon, & First, 1992) administered at bimonthly assessments through the follow up period and covering the period from the previous assessment. Assessments were made by doctoral

level psychologists and an experienced psychiatric social worker. In order to maintain blindness of assessors to treatment condition patients were instructed not to reveal whether they were receiving MBCT or any details which might prejudice blindness. Nonetheless, assessors occasionally became aware of a patient's treatment condition. In order to overcome such occasional unblinding, and to examine inter-rater reliability, interviews were audio-taped and all 133 occasions on which patients met screening criteria for major depression were evaluated by an independent, blind, experienced research psychiatrist (any information potentially revealing patients' treatment allocation was excluded from the taped interview presented to the blind assessor). Only patients responding positively to the screening question were included in this analysis. The kappa for inter-rater agreement on categorisation of presence/absence of major depression was 0.74 indicative of good/excellent agreement. Some of the disagreements arose from the fact that the first raters had wider knowledge of the patients that they were rating and so were more able to place the specific information elicited in the SCID interview in a wider context that sometimes altered the significance of that specific information. Also, of course, the second rater did not have access to the non-auditory information that was available to the rater making the live rating. In cases of disagreement, the blind ratings of the independent psychiatric rater were used for analysis.

Following baseline assessment, interviews were scheduled at points corresponding to the completion of the initial eight MBCT training sessions, and bimonthly thereafter over the course of the follow up year.

Treatment

Treatment-as-usual (TAU). Patients were instructed to seek help from their family doctor, or other sources, as they normally would, should they encounter symptomatic deterioration or other difficulties over the course of the study. The treatment patients in both the TAU and MBCT groups actually received was monitored at the bimonthly assessment sessions and is described in the Results section below.

Mindfulness-based cognitive therapy (MBCT). Mindfulness-based cognitive therapy (MBCT) is a manualised group skills training programme (Segal, Teasdale, & Williams, in preparation). MBCT is based on an integration of aspects of cognitive behavior therapy for depression (CBT) (Beck et al., 1979) with components of the mindfulness-based stress reduction programme (MBSR) developed by Kabat-Zinn and colleagues (Kabat-Zinn, 1990). It is designed to teach patients in remission from recurrent major depression to become more aware of, and to relate differently to, their thoughts, feelings, and bodily sensations, e.g., relating to thoughts and feelings as passing events in the mind, rather than identifying with them or treating them as necessarily accurate read-outs on reality. The programme teaches skills that allow individuals to disengage from habitual ("automatic") dysfunctional cognitive routines, in particular depression-related ruminative thought patterns, as a way to reduce future risk of relapse and recurrence of depression.

After an initial individual orientation session, the MBCT programme is delivered by an instructor in eight weekly two-hour group training sessions involving up

to 12 recovered recurrently depressed patients. During that period, the programme includes daily homework exercises. Homework invariably includes some form of guided (taped) or unguided awareness exercises, directed at increasing moment-by-moment non-judgmental awareness of bodily sensations, thoughts and feelings, together with exercises designed to integrate application of awareness skills into daily life. Key themes of the programme include empowerment of participants and a focus on awareness of experience in the moment. Participants are helped to cultivate an open and acceptant mode of response, in which they intentionally face and move in to difficulties and discomfort, and to develop a "decentered" perspective on thoughts and feelings, in which these are viewed as passing events in the mind.

A core feature of the programme involves facilitation of an aware mode of being, characterised by freedom and choice, in contrast to a mode dominated by habitual, overlearned "automatic" patterns of cognitive-affective processing. For patients, this distinction is often illustrated by reference to the common experience, when driving on a familiar route, of suddenly realising that one has been driving for miles "on automatic pilot," unaware of the road or other vehicles, preoccupied with planning future activities or ruminating on a current concern. By contrast "mindful" driving is associated with being fully present in each moment, consciously aware of sights, sounds, thoughts and body sensations as they arise. When mindful, the mind responds afresh to the unique pattern of experience in each moment, rather than reacting "mindlessly" to fragments of a total experience with old, relatively stereotyped, habitual patterns of mind .

Increased mindfulness is relevant to the prevention of relapse/recurrence of depression as it allows early detection of relapse-related patterns of negative thinking, feelings, and body sensations, so allowing them to be "nipped in the bud" at a stage when this may be much easier than if such warning signs are not noticed or are ignored. Further, entering a mindful mode of processing at such times allows disengagement from the relatively "automatic" ruminative thought patterns that would otherwise fuel the relapse process. Formulation of specific relapse/recurrence prevention strategies (such as involving family members in an "early warning" system, keeping written suggestions to engage in activities that are helpful in interrupting relapse-engendering processes, or to look out for habitual negative thoughts) are also included in the later stages of the initial eight week phase.

Following the initial phase of weekly group meetings, four follow-up meetings are scheduled at intervals of one, two, three and four months.

MBCT sessions were video- or audio-taped, with patients' permission, to allow monitoring of treatment integrity.

Instructors

The three instructors were all experienced cognitive therapists who had, jointly, developed the MBCT programme. Each had previously led at least one cohort of recovered depressed patients through the MBCT programme.

Results

Intent-to-Treat and Per Protocol Samples

Results were analyzed separately for an Intent-to-Treat sample, comprising all patients included in the random allocation (n=145), and a Per Protocol sample (n=132), comprising 1) all patients allocated to the TAU condition (n= 69), and 2) those patients allocated to MBCT who received a predetermined "minimum effective dose" of MBCT (at least four of the eight weekly MBCT sessions) (n=63). The results from these two samples are complementary: the intent-to-treat sample provides a stringent test of whether the MBCT and TAU groups differed in outcome, reducing possible artifactual selective effects of differential attrition from the two treatment conditions; the per protocol sample provides an estimate of the benefits of MBCT among those that actually experienced at least a minimally adequate exposure to that treatment programme.

Patient Flow

One hundred and forty-nine patients met inclusion criteria at a baseline screening interview and were invited to participate in the study. Of these, four declined, leaving 145 patients to be randomized. Of the 13 patients allocated to MBCT not included in the per protocol sample, six failed to attend any training sessions, the remaining seven patients (9% of all allocated to MBCT) dropping out after attending less than four sessions.

Complete data on relapse or recurrence were available for 137 (95%) of the 145 patients in the intent-to-treat sample, and 128 (97%) of the 132 patients in the per protocol sample, data being incomplete for three TAU patients, four "insufficient treatment" MBCT patients, and one "adequate treatment" MBCT patient.

Patient Characteristics

Baseline characteristics of the Intent-to-Treat sample are given in Table 1.

The TAU and MBCT treatment groups were closely similar on each of the baseline variables, with the exception of age. Given the size of this difference in means in relation to SDs, age was included as a covariate in all comparisons of treatment group outcome. For the sample as a whole, social class distribution (Office of Population Censuses and Surveys, 1991) was as follows (percentages for the general population of England and Wales are given in brackets for comparison): class 1 (e.g. general managers of large corporations): 5% (4%); class 2: 40% (21%); class 3: 45% (46%); class 4: 7% (17%); class 5 (e.g. road sweepers): 3% (8%); armed services/unclassified: 0% (5%). Class distribution was very similar in the TAU (mean 2.7, SD 0.9) and MBCT (mean 2.6, SD 0.8) groups. Basic patient characteristics across the three sites were: Bangor: n= 45, mean age 44.0 (SD 9.5), 73% female; Cambridge: n= 54, mean age 44.5 (SD 10.6), 78% female; Toronto: n= 46, mean age 41.3 (10.6), 76% female.

Table 1

Baseline Characteristics of Treatment-as-usual (TAU) and Mindfulness-based Cognitive Therapy (MBCT) samples

	TAU (n = 69)		MBCT (n = 76)	
Female	54	(78%)	56	(74%)
White	69	(100%)	74	(97%)
Age (mean, SD)	46.2	(9.6)	40.7	(10.3)
Marital status				
Single	8	(12%)	14	(18%)
Married/co-habiting	39	(57%)	42	(55%)
Divorced/separated/widowed	22	(32%)	20	(26%)
Years of education (mean, SD)	14.3	(3.3)	14.9	(3.1)
Depression				
HAM-D (median, IQR[1])	3.0	(4.3)	4.0	(5.0)
BDI (median, IQR[1])	10.0	(10.0)	10.0	(10.0)
Previous episodes (median, IQR[1])	3.0	(3.8)	3.5	(2.0)
Age of first onset (mean, SD)	28.1	(10.4)	25.7	(9.9)
Duration of episodes:				
Last, weeks (median, IQR[1])	15.0	(19.0)	17.5	(16.3)
Penultimate, weeks (median, IQR[1])	22.0	(32.0)	16.0	(22.0)
Previous treatment for depression				
Antidepressant medication	100%		100%	
Hospitalisation	17%		11%	
Psychotherapy/counselling	68%		73%	

Note. [1] IQR = interquartile range.

Comparison of the 13 "insufficient treatment" patients in the MBCT group, who either attended no treatment sessions or dropped out before completing at least four sessions, with the 63 patients who completed four or more sessions, revealed no statistically significant differences between these groups on baseline characteristics (smallest p = .17).

Treatment-as-usual (TAU)

The treatment for depression actually received by patients in the TAU condition was monitored at the bimonthly assessment interviews over the follow up period, and is summarised in Table 2. The corresponding data for patients in the MBCT condition is also shown for comparison. There were no statistically significant differences between the TAU and MBCT conditions for any of these measures of treatment received (all p's > .10).

Outcome Analysis: Relapse/Recurrence to Major Depression

Time to onset of relapse or recurrence (in weeks) was compared between treatment groups using Cox proportional hazards regression models (SPSS Inc., 1994, pp. 291-328), with treatment condition as a categorical (indicator) variable, and TAU as the reference condition. 95% confidence intervals (CI) for hazard ratios are shown in brackets, following Wald and hazard ratio statistics.

To examine whether effects of treatment condition were moderated by either of the stratifying variables used in randomization, it was necessary to conduct preliminary Cox regression analyses that included, separately, each of these variables (recency of last episode of depression: 0-12 months *versus* 13-24 months; and number of previous episodes of major depressive disorder: 2 *versus* >2), and its interaction with treatment condition, as covariates, together with treatment condition (MBCT *versus* TAU). These analyses revealed a significant effect of the interaction of number of previous episodes and treatment condition in both the intent-to-treat sample (Wald = 4.318, df 1, p <.05) and the per protocol sample (Wald = 4.316, df 1, p <.05). That is, differences in outcome between treatment conditions were not the same in participants with three or more previous episodes as in participants with only two previous episodes, so mandating separate analyses for these two groups.

Figure 1 shows survival (i.e., non-relapse/recurrence) curves comparing relapse/recurrence over the 60 week study period for MBCT and TAU in participants with a history of three or more episodes of depression. These participants comprised 77% (105/137) of the intent-to-treat sample for whom relapse/recurrence data were available, and 77% (99/128) of the per protocol sample for whom relapse/recurrence data were available. Cox regression analyses showed significantly less hazard of relapse/recurrence in MBCT participants, compared to TAU participants, for both the intent-to-treat sample (Wald = 6.645, df 1, p<.01, hazard ratio = .473, CI .267-.836) and the per protocol sample (Wald = 7.967, df 1, p <.005, hazard ratio = .419, CI .229-.766). These treatment effects remained significant when baseline values of HAM-D or BDI were also entered as covariates. Over the total study period, in the intent-to-treat sample, 40% (22/55) of MBCT participants experienced relapse/recurrence compared to 66%

Table 2

Treatment for depression from other sources received by patients in Treatment-as-usual (TAU) and Mindfulness-based Cognitive Therapy (MBCT) over 60 week study period

	TAU	MBCT
One or more depression-related visits to general practitioner	52%	58%
Out-patient psychiatric treatment	8%	10%
Day-patient psychiatric treatment	2%	0%
In-patient psychiatric treatment	2%	0%
Counselling/psychotherapy/professional mental health support[1]	34%	49%
Other mental health contacts[2]	21%	17%
Medication for depression (ADM)	40%	45%
If ADM, mean (SD) duration (weeks)	32.7 (21.2)	23.3 (17.9)
If ADM, mean (SD) reported dosage SSRI[3]	20.1 (8.6)	18.2 (3.8)

Notes.

[1] Includes: Psychiatric social worker, community psychiatric nurse, community mental health team worker, counsellor, psychotherapist, group therapy/support, marital/family therapy

[2] Includes: voluntary mental health organisations (e.g. Samaritans), health visitor

[3] SSRI – selective serotonin reuptake inhibitors were the most commonly prescribed antidepressants. Reported dosage is expressed in mg fluoxetine daily dose equivalents
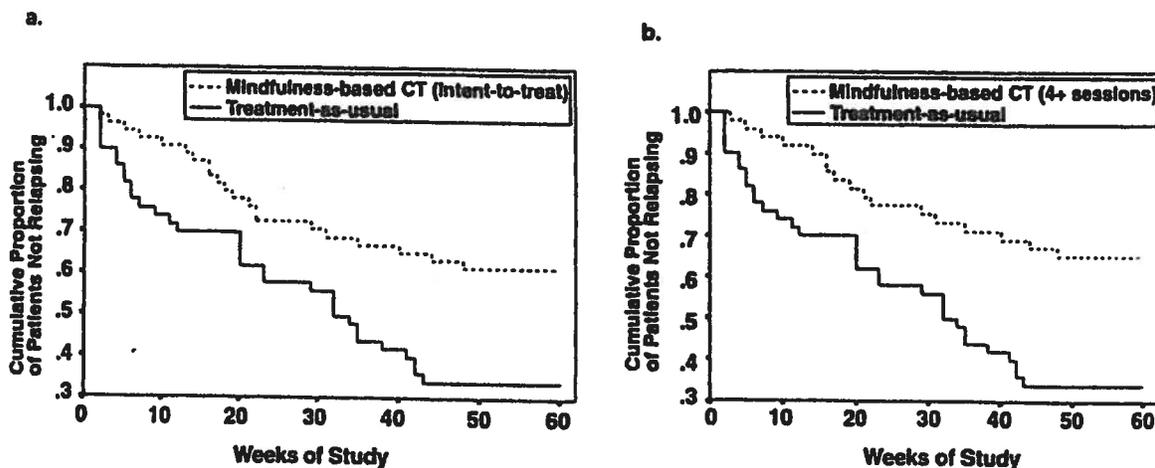

Figure 1. Survival (non-relapse/recurrence) curves comparing relapse/recurrence to DSM-III-R major depression for treatment-as-usual and mindfulness-based cognitive therapy, in patients with three or more previous episodes of major depression, (a) intent-to-treat sample, and (b) per protocol sample.

(33/50) of TAU participants (chi-square = 7.098, df 1, p <.01), a 39% reduction in risk of relapse/recurrence in the MBCT condition. The difference between 66% relapse/recurrence and 40% relapse/recurrence yields an h value of .53, which Cohen (1988, p. 185) describes as indicating a medium effect size. In the per protocol sample, corresponding figures were 37% (18/49) relapse/recurrence for the MBCT group and 66% (33/50) relapse/recurrence for the TAU group (chi-square = 8.486, df 1, p <.005), a 44% reduction in risk of relapse/recurrence in the MBCT condition. The difference between 66% relapse/recurrence and 37% relapse/recurrence yields an h value of .59, which Cohen (1988, p. 185) describes as indicating a medium effect size.

The data from the per protocol sample displayed in Figure 1 yield the following cumulative relapse rates (the TAU figure is presented first, the MBCT figure second): 10 weeks: 28%, 8%; 20 weeks: 38%, 20%; 30 weeks: 44%, 26%; 40 weeks: 60%, 31%; 50 weeks: 66%, 35%. These data appear to suggest that the differences in relapse rates between TAU and MBCT become established within the first ten weeks of the study period, remain much the same until 30 weeks and then increase again. However, these apparent trends should be interpreted with caution: 1) the relapses from the TAU group are from smaller surviving populations than in the MBCT group, so that numerical relapse underestimates probability of relapse in the TAU group; 2) the sample sizes in the two groups mean that estimates of risk have appreciable margins of error.

Participants with a history of two episodes of depression comprised 23% (32/137) of the intent-to-treat sample for whom relapse/recurrence data were available, and 23% (29/128) of the per protocol sample for whom relapse/recurrence data were available. Cox regression analyses showed no significant differences in hazard of relapse/recurrence between MBCT participants and TAU participants, for either the intent-to-treat sample (Wald = .821, df 1, p>.1) or the per protocol sample (Wald = .670, df 1, p >.1). Over the total study period, in the intent-to-treat sample, 56% (9/16) of MBCT participants experienced relapse/recurrence compared to 31% (5/16) of TAU participants (chi-square = 2.03, df 1, p >.1). In the per protocol sample, corresponding figures were 54% (7/13) relapse/recurrence for the MBCT group and 31% (5/16) relapse/recurrence for the TAU group (chi-square = 1.509, df 1, p >.1).

To examine further the effects of number of previous episodes on differential response to TAU and MBCT, the relationship between number of previous episodes (2 *versus* >2) and hazard of relapse/recurrence was examined by separate Cox regression analyses in the TAU and MBCT groups. In the TAU group, there was a significant relationship between number of previous episodes and relapse/recurrence (Wald = 4.079, df 1, p <.05). Further examination revealed a positive linear relationship between number of previous episodes and risk of relapse/recurrence over the follow-up period: 2 episodes, 31% relapse/recurrence (5/16); 3 episodes, 56% relapse/recurrence (10/18); and 4 or more episodes 72% relapse/recurrence (23/32) (Mantel-Haenszel test for linear association, chi-square = 7.057, df 1, p<.025). In the MBCT group,

there was no significant relationship between number of previous episodes and hazard of relapse/recurrence in either the intent-to-treat sample (Wald = .380, df 1, p >.1; 9/16 (56%) relapsed in the <3 episodes group; 22/55 (40%) relapsed in the >2 episodes group), or the per protocol sample (Wald = .525, df 1, p >.1; 7/13 (54%) relapsed in the <3 episodes group; 18/49 (37%) relapsed in the >2 episodes group).

In summary, the main finding was that, in participants with three or more previous episodes of depression (who comprised 77% of the sample), an "adequate dose" of MBCT almost halved relapse/recurrence rates over the follow up period, compared to treatment-as-usual.

Clinical Significance of Outcomes. The observed reduction in rates of relapse/recurrence for patients with more than two previous episodes of major depression was statistically significant, but was it clinically significant? Kendall, Marrs-Garcia, Nath and Sheldrick (1999) have recently described the use of normative comparisons as a method to evaluate the clinical significance of the changes produced by therapeutic interventions. This approach is particularly useful when applied to patient populations that begin treatment with abnormally elevated symptom scores and are reassessed on those measures following treatment. In this situation, comparison of patients' post-treatment scores with those from normative samples provides a valuable indicator of the clinical significance of the extent of therapeutic gains achieved.

Unfortunately, this elegant method is not applicable in the current study. Unusually among clinical treatment trials, the key outcome of interest in this study was the prevention of a future event (relapse/recurrence) rather than reduction of symptoms present at baseline assessment. Indeed, because it was assumed that depression-related difficulties in concentration would interfere with the implementation of MBCT, selection criteria for the trial were deliberately chosen to exclude patients who were not largely recovered or remitted. For example, at baseline assessment 86% of patients fell in the asymptomatic range on the HAM-D (Frank, Prien, et al., 1991). In this situation, it is clearly inappropriate to assess clinical significance of the outcomes in terms of the numbers of patients falling in the asymptomatic range on post-treatment assessments of severity of depressive symptomatology.

The relapse/recurrence rate in patients with three or more previous episodes treated with "adequate" MBCT (37%) was clearly substantially above the expected annual incidence rate of major depressive disorder amongst those with no prior history of major depression in general population samples. On this basis, it is clear that the intervention did not reduce risks of major depression to the "normal" range. Nonetheless, the halving of relapse/recurrence rates in a group at high risk for relapse/recurrence would appear to be a clinically useful outcome. On this basis, we suggest, the benefits of MBCT to patients with three or more previous episodes were both statistically and clinically significant.

Use of Medication for Depression

To examine whether the reduction in relapse and recurrence in patients with three or more episodes receiving MBCT was secondary to increased use of medications for depression, the proportions of patients

in the two treatment groups using such medications at any time over the follow up period were compared. This showed no significant differences between groups: intent-to-treat sample: MBCT 40% (19/47), TAU 46% (20/44) (chi-square, df 1, = .24, p>.1); per protocol sample: MBCT 33% (14/42), TAU 46% (20/44) (chi-square, df 1, = 1.32, p>.1). (These figures differ from those in Table 2: the table shows figures for the total TAU and MBCT samples; these figures are for patients with more than two previous episodes of depression.) The lack of significant differences between TAU and MBCT groups in use of medications for depression or other forms of treatment (Table 2) in the presence of significantly less relapse/recurrence in MBCT is open to a number of possible explanations. The most parsimonious explanation is that these other treatments contributed equally to the outcomes in the MBCT and TAU conditions, the lower relapse in MBCT being attributable to the effects of the MBCT intervention. Alternatively, it is conceivable that MBCT may have made patients more responsive to the effects of other treatments.

Comparison of Patients with Two Previous Episodes with Patients with Three or More Previous Episodes

Exploratory analyses compared patients with two previous episodes of major depressive disorder with those with three or more episodes on a range of background variables. The only significant differences observed were on two age-related variables. Those with three episodes or more were older: age at admission to study (means (±SD): two episodes, 38.88 (±9.84); three+ episodes, 44.58 (±10.11); t (df 143) = 2.83, p<.01); and were younger when they experienced their first episode (means (±SD): two episodes, 33.38 (±8.65); three+ episodes, 25.00 (±9.84); t (df 143) = 4.36, p<.001). The difference in age of onset of first episode suggests that these two groups may not simply represent younger and older samples from essentially the same population, but may represent distinct populations of patients. Combining these two age-related variables into a single variable ("history") reflecting the total duration of patients' experience with depression ('history' = age at admission to study minus age of first onset), yielded a mean for those with three + episodes approximately four times as great as that for patients with two episodes (means (±SD): two episodes, 5.50 (±4.79); three+ episodes, 19.58 (±10.33); t (unequal variances) (df 113) = 10.92, p<.001).

Discussion

For patients with recurrent major depression who had experienced three or more previous episodes, mindfulness-based cognitive therapy (MBCT) approximately halved rates of relapse and recurrence over the follow up period, compared to patients who continued with treatment-as-usual. This prophylactic effect could not be accounted for in terms of patients who received MBCT being more likely to use antidepressant medication. The preventative effect of MBCT was achieved for an average investment of less than · five hours of instructor time per patient, suggesting that offering a group skills-based training programme to recovered depressed patients may be a cost-efficient strategy for prevention. It is important to note that MBCT was specifically designed for remitted patients and is unlikely to be effective in the treatment of acute depression, where factors such as difficulties in concentration and the intensity of negative thinking may preclude acquisition of the attentional control skills central to the programme. To our knowledge, the results of the present trial provide the first demonstration that a group-based psychological intervention, initially administered in the recovered state, can significantly reduce risk of future relapse/recurrence in patients with recurrent major depression.

The finding that MBCT prevented relapse and recurrence in patients with a history of three or more episodes of depression, but not in patients with only two previous episodes, is of particular interest with respect to the theoretical background to MBCT (Segal et al., 1996; Teasdale et al., 1995). This programme was specifically designed to reduce the contribution of patterns of depressive thinking re-activated by dysphoria to the processes mediating relapse and recurrence. Such dysphoria-linked thinking, it was assumed, resulted from repeated associations between the depressed state and characteristic negative thinking patterns, within each depressive episode. The strengthening of these associations with repeated episodes was assumed to contribute to the increased risk of subsequent episodes following each episode experienced. In particular, it was assumed that negative thinking reactivated by dysphoria contributed to the increasingly autonomous nature of the relapse/recurrence process with multiple episodes, reflected in the observation that environmental provoking events appear to play a progressively less important role in onset with increasing number of episodes (Post, 1992).

The above account suggests the possibility that, in the present study, (a) the greater risk of relapse/recurrence in those with three or more episodes than in those with only two episodes (apparent in the treatment-as-usual group), was to a large extent attributable to autonomous relapse/recurrence processes involving re-activation of depressogenic thinking patterns by dysphoria, and (b) the prophylactic effects of MBCT arose, specifically, from disruption of those processes at times of potential relapse/recurrence. Consistent with this analysis, MBCT appeared to have no prophylactic effects in those with only two previous episodes, and the rate to which relapse/recurrence was reduced by adequate MBCT in those with three and more episodes (37%) was similar to the rate of relapse/recurrence in those with only two episodes receiving treatment-as-usual (31%).

The present findings add to a growing body of evidence (Frank, Kupfer, et al., 1991; Fava et al., 1996, 1998) that psychological interventions administered after recovery from the acute symptoms of a depressive episode can substantially alter the future course of major depressive disorder. These findings have considerable potential relevance for our understanding of the cognitive and biological processes that mediate the increased vulnerability to subsequent episodes of those who have already experienced depressive episodes. An effective prophylactic intervention offers an opportunity to investigate controlled changes in

vulnerability processes, with all the consequent interpretative advantages conferred by experimental, as compared with correlational, designs. However, the design of the present study does not allow us to attribute the benefits of MBCT to the specific skills taught by the programme, rather than to non-specific factors such as therapeutic attention and group participation. Equally, the present study provides no evidence of the extent to which similar prophylactic effects would be obtained by instructors who had not been actively involved in the development of the programme, or in samples with different ethnic or educational backgrounds.

To our knowledge, this is the first multi-centre randomized clinical trial evaluating a mindfulness-based clinical intervention. Taken with the results from smaller, or less controlled, evaluations suggesting the effectiveness of the generic mindfulness-based stress reduction (MBSR) programme in treating chronic pain, generalised anxiety and panic (Kabat-Zinn et al., 1986, 1992), and the effectiveness of a cognitive-behavioral programme incorporating a substantial mindfulness component in reducing self-harm in borderline personality disorder (Linehan, Armstrong, Suarez, Allmon, & Heard, 1991), the present findings suggest that mindfulness-based clinical interventions may hold considerable therapeutic promise, either alone, or in combination with other forms of intervention.

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What Do We Really Know About Mindfulness-Based Stress Reduction?

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Objective: Mindfulness-Based Stress Reduction (MBSR) is a clinical program, developed to facilitate adaptation to medical illness, which provides systematic training in mindfulness meditation as a self-regulatory approach to stress reduction and emotion management. There has been widespread and growing use of this approach within medical settings in the last 20 years, and many claims have been made regarding its efficacy. This article will provide a critical evaluation of the available state of knowledge regarding MBSR and suggestions for future research. Methods: A review of the current literature available within the medical and social sciences was undertaken to provide an evaluation regarding what we know about the construct of mindfulness, the effectiveness of MBSR, and mechanisms of action. Results: There has been a paucity of research and what has been published has been rife with methodological problems. At present, we know very little about the effectiveness of this approach. However, there is some evidence that suggests that it may hold some promise. Conclusions: The available evidence does not support a strong endorsement of this approach at present. However, serious investigation is warranted and strongly recommended. Key words: Mindfulness-Based Stress Reduction, adaptation, chronic illness, psychiatric illness, review.

BAI = Beck Anxiety Inventory; BDI = Beck Depression Inventory; BES = Binge Eating Scale; CSQ = Coping Strategies Questionnaire; FIQ = Fibromyalgia Attitudes Questionnaire; FFS = Fear Survey Schedule; HRSD = Hamilton Rating Scale: Depression; MBSR = Mindfulness-Based Stress Reduction; MIA = Mobility Inventory for Agoraphobia; POMS = Profile of Mood States; SCID = Structured Clinical Interview for DSM-IV; SCL-90-R = Symptom Checklist; SCL-90-R GSI = Symptom Checklist Global of Severity Index; SOSI = Symptoms of Stress Inventory.

Mindfulness–Based Stress Reduction (MBSR) is a clinical program originally developed to facilitate adaptation to medical illness that provides systematic training in mindfulness meditation as a self-regulation approach to stress reduction and emotion management. Interest in MBSR has grown exponentially since its introduction approximately 20 years ago (1). There are an estimated 240 MBSR programs in North America and Europe with new programs being established each year (2). With the introduction of a residential professional training program in MBSR now offered by the Center for Mindfulness in Medicine, Health Care and Society at the University of Massachusetts Medical Center (3), the use of this approach will likely become even more widespread.

The primary goal of MBSR is to provide patients with training in meditation techniques to foster the quality of "mindfulness." Mindfulness has been broadly conceptualized as a state in which one is highly aware and focused on the reality of the present moment, accepting and acknowledging it, without getting caught up in thoughts that are about the situation or in emotional reactions to the situation (1, 4). MBSR aims to teach people to approach stressful situations "mindfully" so they may respond to the situation instead of automatically reacting to it.

MBSR is now being used widely to teach patients to self-manage the stress and emotional distress commonly associated with a range of chronic illnesses and as a psychosocial treatment approach to some psychiatric disorders (2, 4). However, the popularity of this approach has grown in the absence of rigorous scientific evaluation. Although there is some preliminary evidence that suggests that MBSR may hold promise as an effective approach with applications in psychosomatic medicine and general psychiatry, there is a lot that we do not know about this treatment modality. This article will provide a comprehensive critical evaluation of MBSR as a relatively new treatment approach.

DESCRIPTION OF THE INTERVENTION

The primary focus of MBSR is on training participants in various meditation techniques that ostensibly result in the development of mindfulness. Although these various mindfulness training techniques differ somewhat in terms of procedures, they share the same goal of teaching participants to become more aware of thoughts and feelings and to change their relationship to them. The meditation techniques are used to develop a perspective on thoughts and feelings so that they are recognized as mental events rather than as aspects of the self or as necessarily accurate reflections of reality (1, 5). With repeated practice, mindfulness allows the participant to develop the ability to calmly

step back from thoughts and feelings during stressful situations, rather than engaging in anxious worry or other negative-thinking patterns that might otherwise escalate a cycle of stress reactivity and contribute to heightened emotional distress.

A description of sitting meditation will illustrate the basic mindfulness training technique. The participant maintains an upright sitting posture, either in a chair or cross-legged on the floor, and attempts to sustain attention to the breath. Whenever attention wanders to inevitable thoughts and emotions as they arise, the participant simply acknowledges and accepts each thought and feeling, then lets go of them as attention is directed back to the breath. This process is repeated each time that attention wanders to thoughts and feelings. As sitting meditation is practiced, there is an emphasis on simply observing and accepting each thought or feeling without making judgments about it, elaborating on its implications, additional meanings, or need for action (1, 5). Thus, sitting meditation aims to teach participants to passively observe thoughts and feelings simply as mental events with no inherent value of their own. Other techniques (eg, body scan, yoga) are taught after the same basic procedure, although with a different object of focus to sustain attention.

MBSR typically consists of 8 to 10 weekly group sessions, with one session being a full day "retreat." (3) The format is largely skill-based and psychoeducational. There is considerable in-session experience and discussion of the various mindfulness-training techniques. Patients are educated about the psychophysiology of stress and emotions and provided with ways of approaching specific situations using the mindfulness skills. There is a program of homework exercises that largely involves practice of the mindfulness techniques, both formally as a daily meditation practice, and informally as participants bring mindfulness to thoughts, emotions, and behaviors in their daily lives, particularly during times of stress. Participants are provided with audiocassettes that guide them through the mindfulness meditation exercises.

REVIEW OF OUTCOME STUDIES

There has been a paucity of controlled studies in clinical populations (6–9) and only a few uncontrolled studies (10–16). Beyond obvious limitations of uncontrolled designs, the research has suffered from methodological problems that seriously limits the kinds of conclusions that can be drawn. These include inappropriate or inadequate use of statistics, the use of unvalidated measures, failure to control for concurrent treatments that might effect the outcome variables, and

arbitrary determination of clinical response. All of the published studies to date relevant to the self-management of stress and mood symptoms associated with chronic illness, with comments regarding strengths and limitations, are described in detail in the Appendix. Because major depression and anxiety disorders commonly are associated with chronic illness and often warrant specific treatment as part of the overall psychosocial management of an illness, these studies are presented as well. The order of the review begins with controlled studies, followed by uncontrolled studies. A summary of these studies highlighting the main findings and the conclusions that can be drawn follows.

Controlled Studies

Two studies in nonclinical samples have shown that MBSR may be effective in mitigating stress, anxiety, and dysphoria in the general population (8, 9). The strength of these studies is in the use of randomization to groups, and in the case of Shapiro et al. (9), matched randomization for important potential confounding variables (eg, ethnicity). Also, the decision to attempt replication by having the control group participate in an MBSR program after the end of the randomized controlled trial in the latter study provides an additional test of efficacy. These studies are limited however in the use of an inactive control group. Since nonspecific factors, such as therapists' attention, social support, and positive expectancy can improve outcome (17–19) it is difficult to attribute the changes to the specifics of MBSR. A better design would include an additional active control group (ie, with therapeutic attention, social support, and positive expectancy) in a three-arm trial. Any differences in postintervention scores in favor of MBSR can then be attributed to the specifics of the interventions. These studies also have questionable generalizability to clinical populations.

Only two randomized, controlled trials have been reported in clinical populations. Speca et al. (6) provide the only rigorous test of MBSR in a medical population—a mixed sample of cancer patients. The results are impressive with 65% and 35% reductions in total mood disturbance and stress symptoms, respectively. Also, time spent practicing meditation correlated with reductions in mood disturbance. This provides compelling evidence that the techniques had a therapeutic effect. However, it is not possible to rule out social desirability effects that may have been operative in patients' reports of mood and stress changes or their reports of treatment compliance. A measure of social desirability should be included in future controlled trials as a control variable. Also, posttreatment

follow-up is needed to fully evaluate the long benefits of this approach.

Teasdale et al. (7) provide the only other randomized controlled trial of an MBSR-based treatment in a clinical sample; recently recovered depressed patients. This rigorously designed study yielded impressive results. MBSR combined with cognitive therapy resulted in half the rate of relapse of depression over a 60-week period for individuals who had three or more previous episodes. If replicated, this combined approach would represent an important prophylactic treatment of recurrent depression. Unfortunately, because a combined treatment modality was used, it is not possible to make strong statements regarding the effectiveness of MBSR per se for the prevention of depressive relapse. Furthermore, its application for the treatment of major depression is yet unknown.

Uncontrolled Studies

The remaining studies are seriously limited by the reliance on uncontrolled repeated measures designs. Although the rigor of this design can be greatly improved with the inclusion of a nontreatment comparison group to control for regression toward the mean, only one study uses this approach (10). Unfortunately, that study did not match participants on potentially important variables that might have otherwise differentiated the groups in a way that would affect outcome. Although the available evidence does not currently support a strong endorsement of this intervention in any of the following clinical populations, some general statements can be made about the available evidence regarding the suggested efficacy of MBSR that awaits rigorous testing via randomized controlled trials.

In chronic pain, there is preliminary evidence that MBSR may assist patients with psychosocial adaptation as evidenced by reductions on self-report measures of emotional distress, psychiatric symptoms, and functional disability (10). More importantly, these gains may remain for up to 4 years posttreatment (11). However, the impact of MBSR on psychosocial adaptation to pain may be more robust than lasting impact on pain symptoms. Although MBSR resulted in some mitigation of pain, it returned to preintervention levels within 6 months after treatment. It is possible that continued regular practice of mindfulness mediation may prove to be an effective long-term strategy for pain management but this remains an empirical question. It is important to note that the majority of the patients who participated in the MBSR program had a long history of medical treatment with little or no improvement in either their pain status or emotional-behav-

ioral status. Despite the methodological limitations of the studies, the fact that these "treatment resistant" patients improved at all is indeed impressive.

In terms of fibromyalgia, the one study published (12) has serious methodological limitations including lack of a comparison group, failure to report descriptive and inferential statistics, and arbitrary determination of clinical response. In terms of the latter, patients were identified as responsive to treatment if they showed at least a 25% improvement on at least half of the measures. There may be significant difficulties with giving each of the measures equal weights in defining clinical significance. Furthermore, using arbitrary criteria regarding clinical response is unnecessary. Clinical improvement can be determined objectively by using established cut-off scores on the measures included in the study. Also, the investigators combine illness symptoms with markers of adaptation when defining clinical response. Since psychosocial interventions frequently facilitate adaptation without impact on illness severity, it is important to consider these separately. While methodological limitations preclude strong statements regarding efficacy, it does seem that MBSR may have been associated with a significant reduction (39%) in severity of psychiatric symptoms.

In generalized anxiety and panic disorder, MBSR was associated with significant reductions in the severity of symptoms from pretreatment to posttreatment with mean reductions to the nonclinical or subclinical range on all clinician-ratings and self-report measures (13). The study used rigorous assessment procedures, including structured clinical interviewing (DSM-III-R criteria) to select eligible patients and established psychometric instruments. Unfortunately, half of patients (55%) were also being treated pharmacologically during the MBSR program. It is unclear if the intervention had any significant therapeutic effect beyond medication. It seems that patients maintained their gains at a 3-year follow-up, but half of the participants had received additional treatment for their anxiety disorder since ending the MBSR program (14).

One study has examined the efficacy of MBSR in binge eating disorder (15). The investigators excluded participants who were concurrently involved in a weight-loss program or psychotherapy, which obviously increases confidence in attributing change in symptoms to the MBSR. However, the lack of a comparison group is a major limitation. Although preliminary, the results suggest that MBSR may be a promising approach to both binge eating symptoms and the anxiety and depression that is frequently associated with binge eating disorder.

Although suffering similar methodological limita-

tions as the other clinical investigations, the study by Roth (16) is important in that it examines the efficacy of MBSR in a sample of patients within a low socioeconomic cohort and includes two samples from different ethnic backgrounds (ie, English-speaking Americans and Spanish-speaking Latin Americans). Unfortunately, differences between groups in terms of treatment response were not examined statistically. Observation of completion rates for the program suggested that they were much lower than previously reported (53% of the English patients and 64% of the Latin American patients). Despite limits, this study highlights the importance of examining level of acceptability and compliance of this intervention approach in different populations.

In summary, there is some preliminary evidence that MBSR may be effective in various medical and psychiatric populations. The evidence is stronger in the efficacy of MBSR as a general stress reduction approach in nonclinical populations than clinical populations. Although replication is needed, MBSR seems to hold promise as a highly effective psychosocial approach for the management of stress and mood disturbance in cancer. The evidence in other medical and psychiatric conditions is less compelling although preliminary evidence supports the argument that MBSR should be evaluated via randomized controlled trials.

OPERATIONAL DEFINITIONS, VALIDATION, AND MEASUREMENT

MBSR was adapted from traditional mindfulness meditation practices originating in Theravada and Mahayana Buddhism in India approximately 2500 years ago (20). The construct of "mindfulness," therefore, has its roots in Buddhism. The Abhibdhamma (21) represents a compilation of the Buddhist psychology and philosophy and includes detailed descriptions of states of consciousness said to be attainable through meditative techniques. In the fifth century, the portion of the Abhibdhamma that deals with meditation was summarized in a collection known as the Visuddhimagga, or the "path of purification." (22) Within these texts are descriptions of the qualities of mindfulness that are said to be attained through vipassana, or mindfulness meditation practice. For the most part, modern Western descriptions of the construct in the scientific literature have been consistent with the traditional Buddhist conceptualizations of mindfulness.

Unfortunately, the defining criteria for mindfulness have not been elaborated substantially beyond nonspecific descriptions of the construct. For example, mindfulness has been described as a state in which one is "fully present in the moment, focused on the reality of the situation," while "acknowledging and accepting it for what it is" (1, 4, 5). There have been no attempts to operationalize these qualities. However, each of the three dimensions emphasized in the literature seems to involve an aspect of attention regulation.

First, this seems to involve maintaining one's attention to a single point of awareness whereas disengaging from thoughts or feelings about the object being observed or from irrelevant discursive thoughts. This ability is hypothesized to develop during meditation as the individual sustains attention to the breath to "anchor" it to the present moment and repeatedly disengages attention from thoughts and emotions as they inevitably arise. This is said to allow the individual to be "fully present in the moment." At a behavioral level, maintaining awareness to an object or situation over time would involve sustained attention (23, 24). To disengage from mental activity that might arise and focus back on the object or situation being observed would involve attention-switching (25).

Secondly, to "observe the reality of the present moment" the practitioner attends to the objective qualities of experience or a situation without immediately resorting to an active process of making judgments about it, elaborating on its implications, further meanings, or need for action. This is referred to as "bare attention." (1) During meditation, thoughts and emotions that spontaneously come into conscious awareness are observed as they are, although the practitioner attempts to inhibit the regular tendency to judge, interpret, or otherwise elaborate on them. This inhibition of elaborative secondary processing would require the ability to control attention to terminate thinking about, or otherwise elaborating on, the primary mental event so that it can be simply observed (26, 27).

Third, the practitioner is said to remain open to experience as all available information is intentionally observed without attachment to any particular point of view or outcome. This is thought to allow the person to "acknowledge and accept the situation for what it is." In meditation, thoughts and emotions that inevitably arise are simply accepted and observed; there are no attempts to change or escape from anything, nor are there attempts to hold on to or prolong anything. Instead, the practitioner remains open to observing the presence of each thought and emotion that arises, as well as its dissolution. In terms of implicated psychological processes, this seems to involve reliance less on preconceived ideas, beliefs, and biases and more on paying attention to all available information (28).

Mindfulness seems to reflect a kind of meta-cognitive ability (29) in which the participant has the capacity to observe his or her own mental processes. This process of "stepping back" and observing the flow

of consciousness is thought to result in the recognition that each thought and feeling reflects a mental event with no more inherent value or importance other than what the practitioner affords them. There seems to be a shift in perspective from automatically accepting the validity or relevance of each thought, to the suspension of commitment to any one thought or perspective. Thoughts are therefore treated as potentialities pending further evidence. Similarly, affect states are not inherently "pleasant" or "unpleasant" but are merely observed as mental events. This would be expected to improve affect tolerance and decreased reactivity in the presence of emotional states. Situations are approached with the same objective awareness; they consist of the unfolding of events with no inherent value other than what one affords them.

The shift in perspective on one's own experience seems to be further facilitated by a set of attitudes that are emphasized during MBSR. These attitudes involve a way of attending to experience and are practiced during the various mindfulness meditation techniques and applied more generally to real-life situations (2, 4). Two of the more salient and related attitudes include "nonstriving," which has been described as a kind of surrendering to the moment, acknowledging and facing one's experience instead of fighting it or trying to make it something else, and "acceptance" of the situation. Also, the importance of dealing with the immediacy of the current situation, rather than possible futures or the past, is emphasized. The voluntary deployment of attention, in combination with these attitudes, is thought to result in a heightened state of awareness in which one is conscious of a particular situation and one's cognitive, emotional, and somatic experience in that situation in a way that fosters a greater sense of equanimity. Thus, in addition to attention regulation skills, mindfulness can be conceptualized in terms of a core set of attitudes and a general approach-orientation to experience.

At a conceptual level, mindfulness seems to share a number of features with other psychological constructs. Mindfulness seems to be related to absorption, an individual's proclivity toward complete attentional involvement in one's perceptual, imaginative, and ideational experience (30). Both share a number of similar features including an attentional focus on current experience and awareness of available stimuli. Unlike absorption, however, mindfulness does not involve a complete immersion in experience. In mindfulness, the person remains able to observe experience in a detached way, as if somewhat removed from the experience (5). Mindfulness may also be related to the personality trait of openness (31, 32). Both constructs involve a reflective and contemplative approach to

situations, open-mindedness, and a tendency toward curious introspection (5, 32). However, unlike openness to experience mindfulness does not involve an effort to seek out novel experience or engage in active imagination. Instead, mindfulness involves directing attention to whatever happens to be within current experience. Mindfulness can also be differentiated from other attentional states such as dissociation, which involves an altered state of awareness that is typically characterized by restricted attention (33). Unlike dissociative states, mindfulness involves an effort to direct attention to all available information.

There is currently no evidence that can be cited in support of the validity of the construct of mindfulness. However, operationalizing the construct does allow for investigators to test the validity. For example, convincing evidence in support of construct validity would be obtained if experience with mindfulness meditation were to produce enhanced performance on cognitive tasks that require sustained attention and attention-switching, termination of elaborative processing, and awareness of stimuli. There are a number of standardized attention vigilance (that require sustained attention) and attention-switching tasks can be adapted from cognitive neuroscience (25, 34). Similarly, the ability to inhibit elaborative processing can be measured with such attention control tasks as the "stop signal paradigm," which measures the speed that one can disengage from a cognitive operation (26). Attitudes and beliefs thought to be associated with mindfulness can be readily measured with self-report questionnaires. Convergent validity can be established by examining whether scores on the mindfulness measure correlate positively with measures of absorption and openness to experience. Discriminate validity can be established by examining whether scores on the mindfulness measure correlate with measures of dissociation and social desirability; they should not correlated if these constructs are orthogonal. Since mindfulness is theoretically predicted to mitigate stress and mood symptoms, criterion-related validation can be established by testing whether an increase in mindfulness corresponds with decreased scores on measures of stress and mood symptoms.

MECHANISMS OF ACTION AND CLINICAL ISSUES

Questions concerning the operational definitions and validation of the construct of mindfulness are highly relevant to identifying the mechanism of action of this approach. MBSR was developed to assist individuals in mastering meditation techniques and to become skillful in producing a state of mindfulness (1),

the hypothesized primary active component (3, 4). There is no evidence, however, that MBSR actually enhances one's ability to produce a state of mindfulness. In addition to the substantive significance of this gap in our knowledge, it also raises practical considerations. MBSR is a demanding clinical program, requiring participants to practice meditation for a minimum eight-week course of daily 45-minute sessions, ostensibly to develop the skill of cultivating mindfulness (3). MBSR may merely produce nonspecific benefits, such as increased self-efficacy or social support, common mediators of many group interventions (35–37). If MBSR does not induce mindfulness, or mindfulness is not the primary therapeutic component, then it becomes difficult to justify such a demanding program. Even if mindfulness meditation proves to be a major therapeutic component, it may have nothing to do with "mindfulness;" it may simply produce deep relaxation (38, 39). Research needs to clarify whether mindfulness meditation produces some kind of altered awareness such as "mindfulness" or whether it simply reflects another relaxation technique. The next logical step for the field is thus to investigate the mediating role of mindfulness. However, "mindfulness" must first be conceptually defined, an appropriate measurement procedure must then be developed, and its construct validity tested.

It is also important to evaluate the efficacy of this approach against other treatments developed or adapted to facilitate adjustment to illness. For example, cognitive therapy has been demonstrated as an effective treatment for many chronic illnesses, and it is generally accepted as the psychosocial treatment of choice for major depressive and anxiety disorders (35, 40–42). If MBSR were to be adopted as a psychosocial approach, than it would be important that the efficacy of this approach meets or exceeds that of other validated treatments. Furthermore, it cannot be assumed that because MBSR is effective for the management of stress and emotional distress associated with one type of chronic illness (eg, cancer) that it will be effective for other illnesses (eg, chronic pain).

There are also important questions concerning who might benefit from MBSR. Preexisting personality traits may influence recruitment and compliance. This issue is particularly relevant to this approach considering the demands and somewhat unusual nature of the program. Also, pretreatment personality traits or differences in attention control skills may also influence the ability to use meditation to develop mindfulness and mitigate stress and mood symptoms (43). Indeed, it is entirely possible that the efficacy of this approach has more to do with the kinds of people who gravitate to the program than the approach itself. This

needs to be investigated. Pretreatment levels of emotional distress and/or severity of psychiatric symptoms may influence efficacy as well. For example, severe stress or mood symptoms may impede the development or use of mindfulness to mitigate distress reactions. Also, there needs to be some clarification regarding what types of mood states or psychopathology is responsive to this approach. These questions have important implications for the identification of potential patients who would be expected to benefit from this approach.

DISCUSSION

Group-based psychosocial interventions that facilitate adaptation and adjustment to chronic illness are both effective and time-efficient and cost-efficient. Consistent with the recognized goal to improve the quality of life of patients with chronic medical disorders, the integration of group-based psychosocial interventions into standard care is strongly recommended. A psychosocial treatment approach that can effectively assist patients to self-manage their stress and emotional distress, and/or treat mood and anxiety disorders commonly associated with chronic illness, would be highly valued in most treatment settings.

Although MBSR has been presented as such an approach, there is insufficient evidence based on rigorous scientific methods to strongly recommend it at this time. However, there is some preliminary evidence that suggests that this approach should be evaluated. Certainly, with the current and growing popularity, both among the increasing number of health professionals who are using this approach and health consumers who are demanding it, this is enough of a reason alone to subject it to scientific scrutiny. In an era of increased accountability to demonstrate that our psychosocial interventions are indeed safe and effective, the issue regarding the paucity of empirical study is not a minor one.

Although preliminary evidence is promising, controlled studies are clearly needed. Although the efficacy of MBSR to self-manage stress and mood symptoms associated with cancer seems particularly promising, it would be difficult based on a single randomized controlled trial to strongly recommend it at this time. The study is significant however as it represents the first rigorous test of the efficacy of this approach to foster adaptation to a medical illness. Replication is clearly needed to firmly establish its efficacy in this population. Clinicians are cautioned further against generalizing the efficacy of this approach based on this study to other chronic illnesses. The efficacy of MBSR should be investigated in each

illness that it was adapted for until it has been shown that the treatment effects can generalize across illnesses. Finally, clinicians are cautioned against attempting to use this approach as a "cure all" for any problematic mood-state or psychiatric disorder that presents with chronic illness. Substantial clarification regarding the specific markers of psychosocial distress or psychopathology associated with chronic illness that are amenable to this approach is needed.

The next logical step within future randomized controlled trials is to investigate questions concerning the mediating role of mindfulness. However, "mindfulness" needs to be operationalized and its construct validity tested, and a method of assessment needs to be developed, before researchers are able to investigate its mediating role. The current paper has presented an operational definition of the construct in a manner that outlines specific testable hypotheses for its validation. This should allow for the development of a method of measurement that can be included in future controlled studies. A systematic investigation of questions regarding the therapeutic mechanisms of MBSR raised in this paper would then be possible.

It is time to subject this approach to serious scientific inquiry. MBSR seems to hold promise as a potentially effective treatment option that may assist some patients to self-manage stress and mood symptoms in the face of their illness. Scientist-practitioners who see value in the approach are urged to adopt rigorous methods of investigation so that its efficacy, indications, and limits of application within psychosomatic medicine can be clearly established. In the same vein, skeptics are cautioned that absence of evidence does not necessarily indicate absence of efficacy. It is hoped that this review will foster cautious optimism about the potential of this approach and direct investigators toward addressing relevant research questions that will result in an empirical base that can guide clinical practice.

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APPENDIX

Review: Mindfulness-Based Stress Reduction

Study	Condition	Participants	Design	Measures	Results	Comments
Controlled studies						
Speca et al. (6) (2000)	Cancer	90 outpatients	Randomized wait-list control trial; 7-week MBSR program	Profile of Mood States Symptoms of Stress Inventory	Posttest POMS; lower total mood disturbance, anxiety, depression, anger, and confusion and higher vigor scores for the treatment group. Posttest SOSI; fewer overall symptoms of stress. Also presents change scores from pretreatment to posttreatment which showed even greater differences in favor of the treatment group. Best predictor of improvement in total mood disturbance was average time spent meditating; best predictor of stress reduction was number of sessions attended.	Standardized measures and design a strength. Also, examined relation between compliance (attendance and time spent meditating) and outcome; allows for some inferences regarding mediating role of the mindfulness techniques. Change scores can be associated with decreased reliability. Effects of social desirability as a potential factor that might bias self-report data not controlled. Long-term benefit needs to be investigated via follow-up.
Teasdale et al. (7) (2000)	Major depressive disorder; recurrent	145 recently recovered depressed patients	Randomized controlled trial assessed at 52 weeks following an eight-week program	Blind assessment with the Structured Clinical Interview for DSM-IV (SCID) Hamilton Rating Scale: Depression (HRSD); Beck Depression Inventory (BDI)	For patients with three or more previous episodes, the treatment halved the rate of relapse of depression. For patients with only two previous episodes, no decrease in relapse.	Combined MBSR with cognitive therapy; how much is mindfulness training vs cognitive therapy? Very well-designed study with high level of rigor. Relevant only to the prevention of relapse; can this be generalized to the treatment of depression?
Astin (8) (1997)	Non-clinical sample	28 university undergraduates	Randomized wait-list controlled trial; eight-week MBSR versus control	SCL-90-R Shapiro Control Inventory	MBSR group demonstrated statistically significant lower postintervention scores on the GSI on the SCL-90-R (65% average reduction), as well as subscale scores for depression, anxiety, obsessive-compulsive symptoms, interpersonal sensitivity, psychoticism, and paranoid ideation than participants in the control. Also demonstrated statistically significant greater adaptive changes in overall sense of control, sense of self as source of control, greater capacity to accept or yield control in uncontrollable situations, and satisfaction with level of control.	Randomization to groups, standardized measures strengths. Questionable generalizability to clinical populations.

APPENDIX (Continued)

Study	Condition	Participants	Design	Measures	Results	Comments
Shapiro et al. (9) (1998)	Nonclinical sample	70 premedical and 130 medical students	Randomized controlled trial; eight-week MBSR versus waiting-list control Control group participated in a second MBSR group in a repeated measures design after the initial trial	SCL-90-R State-Trait Anxiety Inventory Empathy Construct Rating Scale	MBSR group demonstrated statistically significant lower postintervention scores on the SCL-90-R GSI and depression subscale and state anxiety scores than participants in the control. Also demonstrated statistically significantly greater scores on the empathy scale. Control participants reported statistically significant reductions in GSI and depression subscale scores on the SCL-90-R and lower state anxiety and greater empathy following the MBSR program.	Participants were matched within randomization for gender, ethnicity, and medical school status (premedical vs. medical student). Study was designed to coincide with students exams (high stress period). Attempt at replication is strength; lack of comparison to control for regression toward the mean is a limit. Same methodological limitations noted for Astin (8).
Uncontrolled studies Kabat-Zinn et al. (10) (1985; Study 1)	Chronic pain; mostly muscle-skeletal	90 outpatients mostly referred from a pain clinic. Most patients had long history of medical treatment with little change in pain or psychosocial status.	Pre/post repeated measures; participated in ten-week MBSR program	SCL-90-R McGill Pain Questionnaire Profile of Mood States Questionnaire regarding functional impact	There was a 50% statistically significant reduction in pain intensity with 72% of the participants reporting at least a 33.3% reduction in pain and 61% reporting at least a 50% reduction. In terms of functional impairment, there was a 30% statistically significant reduction in the mean. On the POMS, there was a 55% statistically significant reduction in the mean for total mood disturbance. The mean for the SCL-90-R GSI was reduced by 35% with 59% of patients reporting at least a 33.3% reduction and 39% reporting at least a 50% reduction.	Standardized measures used except for disability measure, which has no reliability or validity data. No comparison to control for regression toward the mean. Statistics are appropriate but not adequately reported; only the means and probability of significance are provided. Without providing the variance around the means and inferential statistics (t-values, degrees of freedom) it is difficult for the reader to gain a full understanding of the data.

APPENDIX (Continued)

Study	Condition	Participants	Design	Measures	Results	Comments
Kabat-Zinn et al. (10) (1985; Study 2)	Same as Study 1.	Chronic pain; 21 outpatients participated in a ten-week MBSR program and 21 nonintervention comparison patients	Pre/post repeated measures comparison control; treatment group participated in ten-week MBSR	SCL-90-R McGill Pain Questionnaire Profile of Mood States Questionnaire regarding functional impact	The comparison participants did not report a statistically significant change on any of the measures. Statistically significant reduction in pain intensity; 71% of the MBSR participants reported at least a 33.3% reduction in pain intensity scores and 57% reported a 50% reduction. The reduction in functional disability also was not statistically significant. Statistically significant reductions in SCL-90-R GSI and POMS total mood disturbance scores; 73% reported at least a 33.3% reduction in GSI scores with 40% reporting at least a 50% reduction. 55% change in the mean for the POMS total mood disturbance score.	Inclusion of comparison to control for regression toward the mean. Standardized measures used except for disability measure, which has no reliability or validity data. Comparison unmatched for potential important differences in medical, psychosocial and sociodemographic variables. Baseline scores were not analyzed; examination of the means suggests that the comparison group had 25% more pain and 20% high emotional distress.
Kabat-Zinn et al. (10) (1985; Study 3)	Same as Studies 1 and 2	56 chronic pain patients who had previously completed a ten-week MBSR program	Uncontrolled follow-up; patients contacted from 2.5 to 15 months post-MBSR	SCL-90-R McGill Pain Questionnaire Profile of Mood States Questionnaire regarding functional impact	A statistically significant reduction on all measures (pain, disability and emotional distress) from preintervention to postintervention. Mood disturbance and severity of psychiatric symptoms remained at postintervention levels. Pain intensity returned to preintervention levels.	Standardized measures used except for disability measure, which has no reliability or validity data. No comparison to control for regression toward the mean. Statistics were appropriate by not adequately reported (same comments as for Study 1).
Kabat-Zinn et al. (11) (1987)	Chronic pain; mostly muscle skeletal	225 previous participants in a ten-week MBSR program	Uncontrolled follow-up; patients contacted from 2.5 to 48 months	SCL-90-R McGill Pain Questionnaire Profile of Mood States Questionnaire about functional impact	A statistically significant reduction on all measures from preintervention to postintervention. Follow-up scores on measures of emotional distress, severity of psychiatric symptoms and level of disability were statistically significantly lower than preintervention scores. Follow-up pain returned to preintervention levels.	Standardized measures used except for disability measure, which has no reliability or validity data. No comparison to control for regression toward the mean. Regression is not an appropriate statistical test of postintervention and follow-up scores due to lack of independence of data points; repeated measures analysis of variance would have been more appropriate.

APPENDIX (Continued)

Study	Condition	Participants	Design	Measures	Results	Comments
Kaplan et al. (12) (1993)	Fibromyalgia	77 self-selected patients participated in a ten-week MBSR program	Pre/post repeated measures	SCID interview SCL-90-R Coping Strategies Questionnaire Fibromyalgia Impact Questionnaire Fibromyalgia Attitudes Questionnaire Visual analog scales for pain, fatigue, sleep	Mean reduction of 6.4% and 6.8% on the FIQ and FIA, respectively. In terms of the visual analog scales, participants reported a mean improvement of 7.9% for global well-being, 8% for pain, 2.6% for sleep, 8.8% for fatigue and 8.5% for feeling rested on waking. Mean reduction of 37% in SCL-90-R GSI scores. Approximately 50% of the participants were identified as responders defined as 25% improvement on at least half of the measures.	Comprehensive assessment including standardized measures and structured interview. No comparison to control for regression toward the mean; descriptive and inferential statistics not reported; inappropriate use of CSQ and FIQ. Also, arbitrary categorization of participants into those who responded/did not respond to treatment, improvement defined as 50% improvement in half of the measures. Not necessary since investigators had objective measures to estimate clinical significance.
Kabat-Zinn et al. (13) (1992)	Generalized Anxiety and Pain Disorder	24 outpatients referred to the hospital stress clinic	Pre/post repeated measures; three-month follow-up	Hamilton Rating Scales (anxiety and depression) Beck Inventories (depression and anxiety) Fear Survey Schedule Mobility Inventory for Agoraphobia	Clinician ratings and self-report measures of anxiety and depression showed statistically significant reductions from preintervention to postintervention. Further, there was maintenance of these changes from postintervention to three-month follow-up. Thirteen of the patients had reported at least one panic attack during the week previous to treatment, at posttreatment, five reported experiencing a panic attack in the last week. There were statistically significant reductions in scores on the FFS and MIA from preintervention to postintervention to follow-up.	Use of DSM-III-R criteria for subject selection and combined uses of clinician ratings with self-report measures are strengths. Lack of comparison to control for regression to the mean; 15 patients were concurrently on antidepressants and 3 were taking anxiolytics during the MBSR program; possible rating bias in knowing which patients participated in a treatment.
Miller et al. (14) (1995)	Generalized Anxiety and Pain Disorder	22 outpatients from the Kabat-Zinn et al. (13) study	Three-year follow-up to 10-week MBSR program	Same as Kabat-Zinn et al. (1992)	Eighteen participants responded. No significant difference in anxiety or depression scores, either by clinician rating or self-report, from postintervention assessment to three year follow-up suggesting that patients maintained their gains from the MBSR program.	Same strengths and limitations as Kabat-Zinn et al. (13). Additionally, 10 patients reported that they received additional treatment of anxiety disorder since participating in the MBSR program.

APPENDIX (Continued)

Study	Condition	Participants	Design	Measures	Results	Comments
Kristeller et al. (15) (1999)	Binge Eating Disorder	21 women not currently receiving treatment for binge eating disorder	Pre/post repeated measures; six-week MBSR program	Binge Eating Scale Beck Inventories (anxiety and depression) Telephone assessments of binge eating episodes.	Statistically significant reductions in binge eating from four to 1.5 per week; reductions in BES scores (50% reduction in the mean); reductions in anxiety and depression.	Uses of DSM-IV criteria for binge eating disorder and telephone assessments to compliment self-report measures of binge eating are strengths. Lack of comparison to control for regression to the mean; rater bias in knowing that participants were in a treatment.
Roth (16) (1997)	Mixed medical conditions; mostly chronic pain, anxiety, depression, diabetes, and hypertension	Outpatients at an inner city clinic; 21 English-speaking and 51 Spanish-speaking (Latin American)	Pre/post repeated measures	SCL-90-R for English patients Beck Anxiety Inventory of Spanish patients Coopersmith Self-Esteem Inventory Rosenberg Self-Esteem Inventory Medical Symptom Check-List	In the English sample, there was a statistically significant change in SCL-90-R GSI scores with a 50% mean reduction from preintervention to postintervention. There was also a statistically significant increase in self-esteem on one of the measures. In the Spanish sample, there was a statistically significant change in HAI scores with a mean 70% decrease in anxiety. There was also a statistically significant increase in self-esteem on both measures. Both groups also reported statistically significant change in the frequency of self-reported medical symptoms with a 47% reduction for the English patients and 41% reduction for the Spanish patients.	Inclusion of two different cultural samples is strength. No comparison to control for regression to the mean; statistics were not adequately reported; investor did not compare two samples.

ERRATUM

Dr. Lipsitt reports that two errors appeared in his article: Lipsitt DR. Consultation-Liaison Psychiatry and Psychosomatic Medicine: The Company They Keep. Psychosom Med 2001;63:896–909. The first sentence of the abstract should read:

Objective: The objectives of this review are 1) to briefly describe the parallel historical developments of consultation-liaison (C-L) psychiatry and psychosomatic medicine; 2) to analyze the extent to which the literature of C-L psychiatry and psychosomatic medicine relate to each other, given that both fields have evolved simultaneously in the history of psychiatry; and 3) to propose possible explanations for observed publication patterns in selected C-L resources and the journal *Psychosomatic Medicine*.

Also, the footnote on page 900 should read:

[1]Numbers of C-L psychiatrists in the American Psychosomatic Society have significantly decreased since the 1986 survey (D. Drossman, personal communication, March 2001).

ANNOUNCEMENT

Academy of Psychosomatic Medicine 49th Annual Meeting

"Consultation-Liaison Psychiatry: Humane and Scientific" will be the topic of the annual meeting, which will be held November 21 to 24, 2002 at the Loews Ventana Canyon Resort, Tucson, Arizona.

Physical illness intensifies and changes the profound challenges all of us experience about meaning and value in our lives. As psychiatrists of the medically ill, we share the opportunity to confront basic questions about living and dying well. We know that emotional distress and psychiatric illness arise in response to this confrontation, and, as well, shape the experience of our patients in dealing with illness and the problems of recovery, disability, and death. The scientific revolution in psychiatry—the renaissance of a biomedical model emphasizing molecular genetics, neurobiology, and psychopharmacology—provides us with new models of understanding and intervention which complement, but may also exist in dynamic tension with, old paradigms in psychiatry that emphasize a complex and humane psychological understanding of the plight of our patients. The 2002 Annual Meeting of the Academy of Psychosomatic Medicine will focus on the progress we have made toward integration of new scientific understanding and evidenced-based interventions with the humane care of our patients. We hope that this meeting will allow us to review these many developments and to unify the humane and scientific aspects of our work. Accordingly, we encourage submission of workshops and symposia that bring together multiple viewpoints, as well as papers on specific issues of interest to consultation-liaison psychiatry. **Abstracts Due: April 6, 2002.**

Preliminary program and registration materials available August, 2002. For further information or to receive an abstract submission form contact: Executive Director, A.P.M., 5824 N. Magnolia, Chicago, IL 60660.

HEALING TRAUMA WITH MEDITATION

ALTHOUGH SILENT MEDITATION CAN REAWAKEN PAST TRAUMA, IT CAN ALSO WORK TO HEAL IT. VIPASSANA TEACHER AMY SCHMIDT AND PSYCHIATRIST JOHN J. MILLER TELL US HOW.

MANY BUDDHIST PRACTITIONERS who have experienced trauma seek relief, consciously or unconsciously, in their meditation practice. The range of traumatic experiences is broad and can include being the victim of or witness to violence, such as sexual or physical abuse, rape, assault, torture, or military combat. Trauma can also occur following a serious illness or accident. Victims of trauma may experience feelings of powerlessness, low self-esteem, and self-blame. Trauma can also affect the ability to trust, form intimate relationships, and find motivation and meaning in life.

According to clinical psychiatrist Paul J. Fink, one out of every four girls and one out of every six boys worldwide suffer significant trauma before the age of eighteen. The National Comorbidity Survey of 1992 found that 8 percent of all Americans will experience a traumatic incident at some point in their lives that will result in a condition known as Post-Traumatic Stress Disorder (PTSD). PTSD is characterized by significant distress and psychological impairment.

At first, symptoms may arise as prolonged feelings of panic while meditating. One practitioner recalls, "Initially, I felt an inexplicable terror. I would sit in the meditation hall, and all the hair would stand up on my body. I described it as 'terror from another planet' because there was no story, but it was still completely debilitating." Following this, the practitioner experienced a series of kinesthetic flashbacks, including involuntary physical contortions related to acts of sexual abuse. Later, visual flashbacks surfaced. Family members eventually verified the traumatic experience that had spurred these flashbacks, and the meditator was able to heal significantly through therapy and meditation practice.

When flashbacks of memories arise, they tend to occur spontaneously during periods of concentration. They can be experienced through any sensation, and are commonly visual or kinesthetic. For some, a whole scene is played out moment by moment, while others experience only broken images. When a meditator experiences a flashback, often the intrusion of these painful memories into conscious awareness can be an indication that the meditator needs to stop practice and address the trauma through psychotherapy; a teacher is usually the best person to make this determination.

Survivors need to consider the potential effects the silence of a retreat environment might have on the resurfacing of traumatic experiences. On the one hand, it can reenact the feeling of being isolated and silenced by the perpetrator, the family, or society. But a retreat can also provide a stable and safe space in which they can begin to relax—often for the first time. There is a predictable schedule, no intrusions from the outside world, and a communal agreement to follow basic ethical rules. One practitioner noted that a retreat was "the first time in my life I felt without fear."

In addition to the safety of the retreat environment, the practice of meditation offers a variety of effective tools for healing trauma. While the suggestions here are aimed at meditators with trauma histories, they can apply to any practitioner coping with difficult emotions. The following are five mindfulness tools that can help practitioners navigate traumatic experiences.

1. AWARENESS OF BODY AND BREATH
The body and breath are anchors for awareness that can be returned to again and again. Mindfulness of the

"Untitled, 1983," by Martin Disler, courtesy of Gallery Elisabeth Kaufmann, Zürich. Chalk and acrylic on paper.

breath is especially useful for trauma survivors, who tend to hold their breath as a way of not connecting with the present moment. Holding the breath is an unconscious response to anxiety, and may also be part of the process of dissociating from the experience. If, however, the trauma was related to the act of breathing (such as choking or oral sexual abuse), then the breath is obviously not the best meditation anchor. In these cases, during "sitting" periods, try listening meditation, body sweeping, mantras, or touch points (for example, notice the sitting bones touching the cushion, the hands touching the legs or each other, and the feet touching the mat, and rotate your attention among these points).

Body awareness needs to begin gradually. One way to start is by observing the body during times when it feels comfortable. One woman found that the only safe place in her body was her hands, and she would mindfully watch every sensation in each hand for hours at a time. Feeling comfort is a simple thing that trauma survivors often overlook—or sometimes aren't even aware can exist. These practices can be done for five minutes in bed, right before sleep:

• Notice the sensation of gravity. Feel the weight of your body on the bed. How does gravity feel?

• Scan your body for a place that feels relaxed and even a little bit comfortable. Perhaps it is a finger, a toe, or somewhere deep in your body. Focus on that place. Notice what "comfortable" feels like. See if you can describe it.

2. REVERSE-WARRIOR TEACHINGS
People with trauma histories often have a tendency to push themselves to extremes; they are more than willing to stay up all night, fast for days, or sit for many hours without moving. Unfortunately, practices that override the body's natural signals of discomfort can end up creating further trauma. One therapist explains, "The way trauma folks survived was that they taught themselves to persevere and to be driven. It's what they learned worked. They didn't learn about kindness to themselves or their internal signals. There wasn't the sense that internal signals could be a support or were worth trusting. It takes survivors a long time to come to listen to internal, intuitive messages and believe them." One practitioner

discovered, "The difficulty with trauma as it unfolded was how compelling the story was and how I was driven by the thought, 'I'm going to work through this.' I had to watch this combination of fascination and drivenness and remind myself to back off."

As a result of this overzealousness, it can be helpful for survivors to practice in a way that seems contrary to the traditional Buddhist teachings. In the sutras, the Buddha advocated a warrior-style practice: "Let only my skin and sinews and bones remain and let the flesh and blood in my body dry up; I shall not permit the course of my effort to stop until the end is reached." Instead, trauma survivors need to learn what one teacher calls the "reverse-warrior" practice:

• Practice for shorter periods of time.

• Get plenty of sleep and eat regularly.

• Focus on balance and equanimity rather than effort and progress.

• Build in breaks, and remember that it's not a weakness to be gradual.

• Working with trauma is like having two jobs: You're doing the practice of meditation and the practice of healing at the same time. In this regard, the meditative focus needs to be on simple, small steps. One therapist notes: "Trauma survivors always feel they are not working hard enough and that's why they are stuck. But this isn't true. It's okay to relax and stop constantly trying to change."

"Untitled, 1990," by Martin Disler, courtesy of Gallery Elisabeth Kaufmann, Zürich. Woodcut.

"My mind enters a state outside my body, captive in some dimension where it is at least safe and alive, ye also powerless and terrified. To settle on the breath i impossible. To get up or move in any way is impossi ble. After some time, my mind returns enough so th I am able to pull my blanket around me, draw my knees up, and just sit."

How does a meditator learn t feel strong emotions and bodily sensations without dissociating from them?

• When a difficult emotion, sensation, or memory arises, lea to touch up against the pain in small increments. To do this, bring your attention to a place i your body that feels comfortabl neutral (see "Awareness of Body and Breath," above). Feel this cc fortable place for a few minutes. Then slowly move the attention the difficult emotion. Feel that f a minute, then move back to the comfortable place again. Keep moving the attention patiently back and forth between these tw areas. This gradual re-experienci can modulate the intensity of th emotion and create a sense of ma tery over the feeling.

• Train the mind to listen to the body with tenderness and intimac Throughout the day, when you are engaged in activities, check in with your body, asking yor self, "Does my body like this or not? What does my body want? Is it okay to keep going, or do I need to stop now?"

3. EXPERIENCING STRONG EMOTIONS

The core practice in healing trauma is learning how to feel strong emotions without becoming overwhelmed by them. During meditation practice, survivors often respond to overwhelming emotions by dissociating, a relic of the psychological defense they used to remove their awareness from the trauma while it was occurring. One meditator described dissociation this way:

4. AWARENESS OF MIND

One of the characteristics of severe trauma is that past emotions and experiences invade the present and become overwhelming. A Vietnam veteran recalls, "When the memories hit, they literally knocked me o my cushion. Through meditation, I eventually found balance with them." The practice of mindfulness deve ops the ability to observe these memories in a way tha

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facilitates equanimity and balance by learning that all thoughts come and go.

- Notice "trauma mind," the habit of always looking over one's shoulder, expecting the worst to happen. When fearful memories arise, ask yourself: "Am I okay in this moment? And this moment?" Remember, you have resources and choices now. Try breathing in compassion and breathing out fear.

- Take a day to observe positive emotions as they occur. When did you feel joy today? Curiosity? Humor? Because healing from trauma can involve repeated focus on difficult emotions, it's important to train the mind to notice the positive emotions that exist.

- Try microlabeling stressful thoughts and feelings: When they arise, meticulously note your reactions as "thinking," "imagining," "fear," and so on.

- Question self-judgments and negative beliefs: "Can I absolutely know this is true? Who would I be without this thought?"

- It's also useful to identify neutral moments. Were there moments today when you didn't feel difficult emotions? When you were brushing your teeth? Drinking a glass of water? Reading? Sleeping?

- If you feel completely overwhelmed, try distraction. One meditator went to a 24-hour Wal-Mart and walked the aisles at 2 a.m. The noise, the lights, and the stimulation shifted his focus away from self-hatred.

5. LEARNING TO LOVE AGAIN

Metta (lovingkindness) and compassion practices offer essential ways to mend the heart after trauma. Trauma survivors are often plagued by a sense that they are unworthy or inherently flawed. They may have trouble doing the "normal" meditation practices or fear that they are not mindful, diligent, or concentrated enough, which can lead to self-hatred and shame.

Trauma victims have had their trust and sense of connection shattered, and often have a hard time feeling kindness toward themselves and others. Metta practice can slowly rebuild these connections.

- An image from Buddhist textst that one can use to generate metta is that of a mother cow looking at her newborn calf. Imagine a young animal or pet and try extending lovingkindness toward it.

- Feel your heart center and breathe from this. Gently offer metta phrases to yourself such as: "May I love myself just as I am," or "May I be happy, may I be peaceful, may I be safe, may I be free of suffering." Some people find it useful to bring to mind an image of themselves as a young child when saying these phrases.

It's important not to force the metta. At certain points, working with the metta can feel like silencing the pain. In this case, try the following compassion practices instead.

- When difficult emotions arise, try holding each one as you would a crying child.

- One trauma survivor uses a form of *tonglen* (the Tibetan practice of giving and receiving): "In tonglen I was taught to breathe in the heavy, dark air and breathe out the light, clear air. When I meditate, as the memories come I breathe in the silence and terror of the mute six-year-old. I breathe in her inability to speak and her terror. On the out-breaths I send the aspiration that one day she will be able to tell her story in her own words, and I send her a feeling of my holding her—safely, protectively. She is so little that it takes feelings, not words, to reach most of her, and this takes time."

THROUGH STEADY PATIENCE, facing trauma can become part of the awakening process itself, and difficult emotions can become workable. Healing trauma is a day-by-day journey requiring courage, persistence, and faith. Buddhist meditation practices offer positive ways to transform trauma. Although not a substitute for psychotherapy, meditation can be a crucial support in the journey from trauma to wholeness.▼

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NOETIC SCIENCES REVIEW # 37, PAGE 24
SPRING 1996

In the Service of Life

By Rachel Naomi Remen

In recent years the question *how can I help?* has become meaningful to many people. But perhaps there is a deeper question we might consider. Perhaps the real question is not *how can I help?* but *how can I serve?*

Serving is different from helping. Helping is based on inequality; it is not a relationship between equals. When you help you use your own strength to help those of lesser strength. If I'm attentive to what's going on inside of me when I'm helping, I find that I'm always helping someone who's not as strong as I am, who is needier than I am. People feel this inequality. When we help we may inadvertently take away from people more than we could ever give them; we may diminish their self-esteem, their sense of worth, integrity and wholeness. When I help I am very aware of my own strength. But we don't serve with our strength, we serve with ourselves. We draw from all of our experiences. Our limitations serve, our wounds serve, even our darkness can serve. The wholeness in us serves the wholeness in others and the wholeness in life. The wholeness in you is the same as the wholeness in me. Service is a relationship between equals.

Helping incurs debt. When you help someone they owe you one. But serving, like healing, is mutual. There is no debt. I am as served as the person I am serving. When I help I have a feeling of satisfaction. When I serve I have a feeling of gratitude. These are very different things.

Serving is also different from fixing. When I fix a person I perceive them as broken, and their brokenness requires me to act. When I fix I do not see the wholeness in the other person or trust the integrity of the life in them. When I serve I see and trust that wholeness. It is what I am responding to and collaborating with.

There is distance between ourselves and whatever or whomever we are fixing. Fixing is a form of judgment. All judgment creates distance, a disconnection, an experience of difference. In fixing there is an inequality of expertise that can easily become a moral distance. We cannot serve at a distance. We can only serve that to which we are profoundly connected, that which we are willing to touch. This is Mother Teresa's basic message. We serve life not because it is broken but because it is holy.

If helping is an experience of strength, fixing is an experience of mastery and expertise. Service, on the other hand, is an experience of mystery, surrender, and awe. A fixer has the illusion of being causal. A server knows that he or she is being used and has a willingness to be used in the service of something greater, something essentially unknown. Fixing and helping are very personal; they are very particular, concrete, and specific. We fix and help many different things in our lifetimes, but when we serve we are always serving the same thing. Everyone who has ever served through the history of time serves the same thing. We are servers of the wholeness and mystery in life.

The bottom line, of course, is that we can fix without serving. And we can help without serving. And we can serve without fixing or helping. I think I would go so far as to say that fixing and helping may often be the work of the ego, and service the work of the soul. They may look similar if you're watching from the outside, but the inner experience is different. The outcome is often different, too.

Our service serves us as well as others. That which uses us strengthens us. Over time, fixing and helping are draining, depleting. Over time we burn out. Service is renewing. When we serve, our work itself will sustain us.

Service rests on the basic premise that the nature of life is sacred, that life is a holy mystery which has an unknown purpose. When we serve, we know that we belong to life and to that purpose. Fundamentally, helping, fixing, and service are ways of seeing life. When you help you see life as weak, when you fix, you see life as broken. When you serve, you see life as whole. From the perspective of service, we are all connected: All suffering is like my suffering and all joy is like my joy. The impulse to serve emerges naturally and inevitably from this way of seeing.

Lastly, fixing and helping are the basis of curing, but not of healing. In 40 years of chronic illness I have been helped by many people and fixed by a great many others who did not recognize my wholeness. All that fixing and helping left me wounded in some important and fundamental ways. Only service heals.

Adapted from a talk given at IONS fourth annual conference, "Open Heart, Open Mind" in San Diego, California, July 1995.

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