The Autogenic Training Method of J. H. Schultz

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The History of Autogenic Training

In the practice of stress management, autogenic training (AT) is and remains a ‘classic’. It is one of the oldest bio-behavioral techniques known and used. Although widely practiced all over Europe, in Russia, and in Japan, AT is less popular in North America, and may - undeservedly - have lost some of its luster given current advances and enthusiasm about mindfulness therapies (Davidson, Kabat-Zinn, Schumacher et al., 2003) which in many ways have overlapping rationales with AT. The objective of this chapter is to describe AT, its rationale, practice and outcomes but also to place AT within the current trends of self-regulation therapies.

The German neurologist Johannes Heinrich Schultz (1884-1970) is credited with the development and promulgation of AT, which is considered a self-hypnotic procedure. During his medical training in dermatology and neurology, Schultz became fascinated with heterohypnosis, which, however, had a dubious image to many of his medical supervisors and peers at that time. Initially, Schultz worked with hypnosis only on his own time, outside of his regular clinic duties. The dominant therapeutic approach then for mental and psychosomatic problems was psychoanalysis but Schultz rejected analysis as a promising treatment for psychosomatic disturbances. In a brief biography, Schaefgen (1984) cites Schultz as having said that "it is complete nonsense to shoot with psychoanalytic guns after symptom-sparrows."

The breakthrough of AT came after Schultz opened his own medical practice in neurology and psychiatry in Berlin in 1924, where he promulgated AT without the constraints of medical superiors who did not share his vision. His first formal presentation of his experiences with AT was in 1926, in front of his colleagues in the Medical Society; his first book followed 6 years later (Schultz, 1932). In all he is accredited with over 400 publications, numerous books, and translations of these into six languages. His ground-breaking book on AT had seen 18 editions by 1984.

The development of AT has two sources: Schultz's own experiences with clinical hypnosis, and Oskar Vogt's observations in brain research. Schultz himself noted that
his hypnotized patients regularly reported two distinct sensations—a strange heaviness, especially in the limbs, and a similarly unfamiliar sensation of warmth. He was convinced that hypnosis was not something that the hypnotist actively did to the learner but that individuals did to themselves. For the patient to enter this state, there had to be a "switch," a point of change. Activating this switch—placing the control in the hands of the patient—was what Schultz wanted to achieve. Oskar Vogt's experiences further strengthened Schultz's belief that it was possible to reliably trigger an autogenic state, because Vogt, a brain researcher, had observed that his patients could volitionally produce the sensations of heaviness and warmth and could switch into self-hypnotic trance. Herein lay the seed for autogenic formulas which represent a set of mental self-instructions to seek out particular physical sensations. Over several years, Schultz further developed the idea of formulas to reliably achieve deep relaxation and its accompanying sensations in various parts of the body. The publication of his 1932 book on AT was the culmination of his efforts to standardize the procedure.

AT remained unknown on the other side of the Atlantic Ocean until one of Schultz's followers, Wolfgang Luthe, a physician, emigrated to Canada and began clinical work, teaching, and research about AT in English. A benchmark paper appeared in the American Journal of Psychotherapy (Luthe, 1963); and this was later followed by a hefty six-volume book series that Luthe coauthored with Schultz (Luthe, 1970a, 1970b, 1970c; Luthe & Schultz, 1969a, 1969b; Schultz & Luthe, 1969). These volumes provide extensive descriptions of supporting experimental research, case studies, and clinical success reports of AT for a wide range of clinical problems. For the reader with a strong empiricist bent, however, reading the original works will likely be a frustrating task because in the ultimate evaluation of AT's effectiveness no distinction is made by Schultz and Luthe among opinions, single-case reports, and controlled studies (of which there were precious few at the time). For a more detailed description of the background research and applications, I refer the reader to my book Autogenic Training: A Clinical Guide (Linden, 1990), and for diligent reports on outcome the reader may want to peruse Stetter and Kupper's (2002) work or Grossman et al's (2004) excellent meta-analysis, or a detailed review paper that combines a narrative with a meta-analytic review approach (Linden, 1994).
Theoretical Underpinnings

Given the apparent similarities among meditation, hypnosis, biofeedback, muscular relaxation training, and AT (Benson, 1975), it requires a fine-grained analysis to reveal differences in underlying rationale, technique, and—possibly—outcome. Among the many descriptors used AT is "a psychophysiological self-control therapy" (Pikoff, 1984, p. 620) The emphasis is on "self-control" and "which the patient carries out". This also explains why AT manuals do not come with a CD that the patient can (or should !) take home. In contrast, the popular progressive muscular relaxation (PMR) approach as described by Bernstein and Borkovec (1973) combines the written manual with a record to facilitate relaxation practice.

The term "autogenic" is derived from the Greek words *autos* and *genos*, and can aptly be translated as "self-exercise" or "self-induction therapy." It is furthermore important to present in detail how in AT a conceptually sensible, physiological rationale and self-hypnotic suggestions are woven into a type of intervention linking "mind" and "body."

Schultz, was a firm believer in the self-regulatory capacities if only the body was left alone to do its work. Homeostatic models (Cannon, 1933) and more recent formulations of biological self-regulation theory (Linden, 1988) were foreshadowed by Schultz when he conceptualized AT (Schultz, 1932). Although the most typical application of AT is to reduce excessive autonomic arousal (i.e., it serves as a relaxation technique), the AT rationale embraces a bidirectional homeostatic model, suggesting that AT should be equally useful in also raising dysfunctionally low levels of an autonomic function (e.g., low heart rate variability).

The objective of AT is to permit self-regulation in either direction (i.e., deep relaxation or augmentation of a physiological activity) through "passive concentration," also described as "self-hypnosis." The trainee) concentrates on his or her body sensations in a passive manner, without trying to directly or volitionally bring about change. "Passive concentration" may sound paradoxical, in that "concentration" usually suggests effort. What it means in AT is that the trainee is instructed to concentrate on inner sensations rather than environmental stimuli, and this is indeed somewhat effortful especially for the novice. When this concentration does not come
easily, the trainee is told to let thoughts wander for a while, or to rearrange the body position for more comfort, rather than to force inner concentration. Not forcing, allowing sensations to happen, and being an observer rather than a manipulator are what "passive" refers to. The AT trainee is warned that trying too hard is counterproductive: It may lead to negative reactions like muscle spasms, and it stands in the way of acquiring the necessary self-regulatory attitude.

The principle of passive concentration clearly differentiates AT from Jacobson's (1938) PMR and biofeedback (Schwartz & Andrasik, 2003, in which patients actively attempt to acquire control over physiological functions. A feature that AT shares with biofeedback, however, is the assumption that bidirectional change (increase or decrease of a physiological activity) is possible and, in some instances, desirable as well. Although AT is considered self-hypnotic, the differences between self-hypnosis and heterohypnosis need to be stressed. In heterohypnosis, the hypnotic trance is induced by another individual (i.e., the hypnotist), who will typically make relaxation and trance suggestions, followed by suggestions for behavioral changes such as stopping smoking or feeling release from pain (see Barber, Chapter 6, this volume). The key differences are self- versus other-control, and dependence versus independence from a therapist. AT is designed to strengthen independence and to give control back to the learner, thus eliminating the need for either physiological feedback devices (as in biofeedback) or a hypnotherapist.

The claimed uniqueness of AT is supported by (1) experimental studies showing that biobehavioral methods have differential effects on a variety of clinical problems (a summary is provided later in this chapter), and (2) basic experimental findings that relaxation and hypnosis can be psychophysiological distinguished from autogenic states. Diehl et al. (1989) investigated regional cerebral blood flow in 12 healthy male volunteers during autogenic training and during hypnosis. Hypnotic states were verified via successfully performed arm levitation and persistent catalepsy of the right arm. These researchers observed that global hemispheric blood perfusion increased significantly, relative to the subjects' own baseline resting values. Perfusion during AT was significantly less than during hypnosis.

Shapiro and Lehrer (1980) contrasted psychophysiological effects in subjects who
had learned either PMR or AT in a 5-week training program. All active training reduced anxiety, depression, and reports of physical symptomatology, but only AT triggered self-perceived heaviness and warmth as well as changes in depth of breathing. Similarly, in a contrast of effects for AT versus progressive muscular relaxation (Lehrer, Atthowe & Weber, 1980) for anxiety reduction, subjective reports revealed reduced anxiety for both active treatments whereas AT showed some additional advantages via heart rate reductions not seen in progressive relaxation. Unfortunately, published studies are rare that suggest effects specific to AT but not to other methods. The three studies described here support the potential of distinct physiological and subjective effects for various self-regulation methods, without, however, offering conclusive evidence.

The core ingredients of AT that make it distinct as a method are six standard formulas referring to specific body sensations. These formulas are subvocally repeated by the patient; in addition, the patient is encouraged to develop vivid, personally meaningful images to accompany and enhance these formulas. An important feature that also distinguishes AT from PMR (Jacobson, 1938) and meditation (Wallace, 1970) is the inherent claim of specific effects for each formula. Each formula targets a specific bodily function, and the sensations and images suggested by the formulas are derived from patient reports of deep relaxation and trance states rather than being theoretically derived. The formulas suggest sensations that a relaxed trainee is likely to experience anyway, and create positive expectations of distinct somatic experiences; their occurrence then reinforces the effort and lends further credibility to the formulas. The "magic" of hypnosis is thereby tied to a focus on and increasing awareness of real somatic sensations.

There is growing evidence that AT may not only affect sympathetic tone, but may achieve some of its benefits through its impact on parasympathetic activation. To examine the hypothesis that the AT response is associated with an increase in cardiac parasympathetic tone, the frequency components of heart rate variability during relaxation training were investigated in 16 college students (Sakakibara, Takeuchi, &
Hayano, 1994). Electrocardiograms and pneumograms were recorded during a 5-min baseline period followed by three successive 5-min sessions of the **autogenic training** (relaxation) or by the same periods of quiet rest (control), while subjects breathed synchronously with a visual pacemaker (0.25 Hz). Although neither the magnitude nor the frequency of respiration showed a significant difference between relaxation and control, the amplitude of the high-frequency component of heart rate variability increased only during relaxation ($p = .008$). There was no significant difference in the ratio of the low-frequency (0.04-0.15 Hz) to the high-frequency amplitudes. The increased high-frequency amplitude without changes in the respiratory parameters indicates enhanced cardiac parasympathetic tone. Thus, our results support the initial hypothesis of this study. Enhanced cardiac parasympathetic tone may explain an important mechanism underlying the beneficial effect of the relaxation response.

Similarly, physically healthy individuals with high trait anxiety were studied for changes in heart rate variability (HRV), during two opposite psychophysiological conditions of mental stress, and relaxation induced by autogenic training. The main finding was that high anxiety was associated with reduced R-R intervals and high frequency power across conditions. In comparison to mental stress, autogenic training increased HRV and facilitated the vagal control of the heart. There were no significant effects of TA or the psychophysiological conditions on LF power, or LF/HF ratio (Miu, Heilman, & Miclea, 2009).

The assumption of AT that somatic imagery can trigger underlying physiological activity is also consistent with Lang’s (1979) theory of emotional imagery coding and experience-based somatic-visceral responding. In a series of studies (Lang, Kozak,
Miller, Levin, & McLean, 1980; Lang, Levin, Miller, & Kozak, 1983), Lang and his collaborators showed experimentally that focusing in imagination on a distinct physiological response (e.g., sweating or heart rate) did indeed provoke the imagined visceral response with reasonable specificity.

The heaviness formula in AT is directed at muscular relaxation and has been found to be associated with reduction in muscle tone, reductions in blood pressure, and increases in skin resistance (Fischel & Mueller, 1962; Ohno, 1965; Schultz, 1973; von Siebenthal, 1952; Wallnoefer, 1972). The warmth formula is directed at vascular dilation, and researchers have observed peripheral vasodilation in hands and face with an accompanying increase in skin temperature, as well as occasional light sweating (Dobeta, Sugana, & Ohno, 1966; Pelliccioni & Liebner, 1980; Polzien, 1953; Schwarz & Langen, 1966). Practice of the heart regulation formula has been associated with reduction in heart rate, reduced cardiac output with simultaneously improved CO₂ utilization, and stabilization of labile electrocardiogram signals (Luthe, 1970a; Polzien, 1953). Subjects practicing the breathing regulation formula displayed reduced breathing rates and volume, and showed shifts from predominantly thoracic to more abdominal breathing patterns (Ikemi et al., 1965; Linden, 1977; Luthe, 1970a; Polzien, 1953). Practice of the "sun rays" formula is supposed to regulate visceral organ activity, and researchers have indeed reported normalization of dysfunctional stomach and intestinal function; increased blood flow to the gastric mucous and vasodilation of peripheral blood vessels have also been noted (Ikemi et al., 1965; Sapir & Reverchon, 1965; Lantzsch & Drunkenmoelle, 1975). Finally, the "cool forehead" formula, which is meant to regulate brain activity and forehead blood flow, has been associated with reduced frequencies of beta waves and increased frequencies of alpha and theta waves in the electroencephalogram (Israel & Rohmer, 1958; Jus & Jus, 1968; Katzenstein, Kriegel, & Gaefke, 1974). Dierks, Maurer, and Zacher (1989) also reported increased theta and reduced beta wave activity; alpha wave activity, however, increased slightly with AT practice. Furthermore, Dierks et al. (1989) noted that the reduction in beta wave activity was specific to the right hemisphere, which is commonly presumed to be the site of emotional function.
A phenomenon not described in the literature for other self-regulation techniques is that of "autogenic discharges," which are seen as a sudden and unpredictable form of "unloading" of pent-up thoughts, sensory processes, and muscular activity (Luthe, 1970b). Although AT is presumed to have an overall gentle, slow effect on autonomic self-regulation, the concept of autogenic discharges incorporates the idea that some of the self-regulation may occur through short bursts of central nervous system activity. Luthe (1970b) differentiates (1) reactive discharges (i.e., responses to acute provocation); (2) normally occurring spontaneous discharges (e.g., motor discharges during presleep stages); (3) discharges that originate from the brain and characterize forms of pathology (e.g., epilepsy); and (4) discharges that may occur during sensory deprivation and during the practice of AT.

Luthe (1970b) also reported that some autogenic discharges are experienced as pain memories from previous injuries, illnesses, or operations. Similarly, there have been reports that the quality of the autogenic discharge may be related to the particular formula being practiced at the time. This can take on the form of a discharge sensation experienced in the body part that is currently being concentrated on, and may be functionally related (although typically in the opposite direction) to the target sensation (e.g., heart palpitations during the heart regulation formula).

Unfortunately, the discharge phenomenon is experienced with considerable variation in intensity and can take on many different forms. In consequence, one can debate whether trainees who do not report sudden discharges have them nevertheless but at a subliminal level (Luthe’s position; Luthe, 1970b), or whether they do not occur at all. Also, given that the discharges may take on different forms, it cannot be ruled out that the label "autogenic discharge" may simply cover a variety of phenomena with heterogeneous underlying neuro- or psychophysiological origins. One thing, however, is clear: Autogenic discharges, when noticed by trainees, are usually interpreted as bothersome and unwanted side effects of the procedure. The traditional view in the AT literature, however, is that autogenic discharges are necessary in a "hydraulic" sense and are considered signs of progress, because they suggest a reduction in physiological and psychological inhibition and provide an opportunity for release of excessive pressure in the system. It is important for the AT instructor to
interpret discharge experiences for confused trainees and to provide sensible, comforting explanations.

Data collected by Luthe (1970b) on two experimental groups may further serve to explain the phenomenon and illustrate the variety of possible autogenic discharge experiences. The two groups of subjects were all AT trainees classified either as openly sexually active or as sexually deprived because of their particular life situations (i.e., they were members of the clergy or were otherwise prohibited by their religion from being sexually active). The two groups were similar in male—female proportion, age, clinical condition, and level of professional achievement. The experimental prediction was that the sexually deprived individuals would display more sexuality-related autogenic discharges. Luthe's (1970b) observations suggested that the sexually deprived group indeed had more sexuality-related and general discharge symptoms that did the controls. The sexually deprived group reported more itching, tingling, pain, and muscular twitches; they also reported more erections and vaginal spasms, as well as more sexual fantasies. The perceived sites of the most frequent sensory and motor discharges were the thighs, lower abdomen, and genital regions.

Autogenic discharges are similar in some ways to phenomena described in connection with other techniques (e.g., "relaxation-induced anxiety" as described in the PMR literature; see Bernstein & Carlson, Chapter 3, this volume [still true?]; the "side effects of tension release" described by Carrington, Chapter 5, this volume [still true?]). The AT literature, however, presents a more detailed picture of these phenomena than literature on other techniques and gives more specific suggestions for how to manage them when they do occur.

**Assessment**

Studies of therapy effectiveness typically provide statistical demonstrations of between-group means (based on comparisons of treated patients with themselves before training, or with waiting-list or other treatment controls) as "proof of a positive outcome" (Linden & Wen, 1990). Hidden in such mean change comparisons, however, is considerable variability in treatment response: Some patients benefit, whereas
others do not change or get even worse (Jacobson, Follette, & Revenstorf, 1984). A particularly striking demonstration of treatment effect variability is provided by Aivazyan, Zaitsev, and Yurenev (1988), who randomly assigned hypertensive patients to either AT or a no-treatment control condition. When mean changes were broken down into "percentage improved" ratings, the following figures emerged: In the AT-treated group, 32% improved, 59% remained unchanged, and 9% deteriorated; in the control group, 59% also remained unchanged, 11% improved, and 30% deteriorated. Clearly, therapy did little for the majority of patients, whereas the between-group difference is effectively attributable to treatment effects consisting of both direct improvement and the prevention of worsening. Thus, valuable health care funds may be better invested if patients who are not going to benefit from treatment can be identified a priori and left out of the treatment comparison.

Especially in light of these observations on treatment outcome variability, a clinician teaching individual clients cannot be satisfied with knowing that a statistically significant mean change of a treated group occurred; instead, the practitioner needs to attend to each individual’s progress. Therefore it is of great importance for practitioners using AT to be aware of what kind of client can learn and benefit from AT, and to know in advance whether AT is indeed the best method of treatment for a given client. The question of AT’s suitability, given certain individual characteristics, is addressed in this section.

The literature and my own experience indicate clearly that the mechanics of AT can be taught to a wide variety of individuals; nonetheless, caveats are in order. Adults of all ages and many children have learned AT, but children below school age lack the discipline to master AT. Depending on a child's maturity, intelligence, and imaginative abilities, the youngest age at which AT can be taught effectively is between 6 and 10 years. Retarded individuals, those with acute central nervous system disorders, and those with uncontrolled psychoses are also likely to be unable to process and follow the instructions. Thus, with these relatively few exceptions, AT can be taught effectively to a wide range of populations, both as a treatment but also as a preventive skill.

Although there are few individuals unable to learn the mechanical aspects of Autogenics, this does not mean that every learner will necessarily show clinical benefit,
and the practitioner has to consider the possibility that AT is not the treatment of choice for a given person. Three lines of research contribute valuable information in this respect. The first is research on relaxation-induced anxiety (Heide & Borkovec, 1984). A second pertinent area of research has attempted to predict relaxation training success by considering differences in initial resting levels (Jacob, Chesney, Williams, Ding, & Shapiro, 1991) and interindividual differences in response to the first training sessions (Vinck, Arickx, & Hongenaert, 1987). And finally, personality factors as predictors of success have been specifically targeted (Badura, 1977).

A number of potential explanations exist for the paradoxical effect of anxiety increase during relaxation (Heide & Borkovec, 1983). The first explanation is that during relaxation a shift toward greater parasympathetic dominance occurs, which results in peripheral vasodilation and feelings of warmth and heaviness (the first and second formulas in AT) (Budzynski, Stoyva, & Pfeffer, 1980). The unfamiliarity with parasympathetic activity sensations may be particularly disturbing to chronically tense or anxious individuals. Also, relaxation frequently brings about unfamiliar spontaneous muscular-skeletal events such as myoclonic jerks, spasms, twitches, or restlessness ("autogenic discharges" in AT). Another explanation centers around the notion of fear of loss of control. Chronically anxious individuals may have learned to control their anxieties in the past by never letting go; they typically work in a compulsive, rigid manner and cannot permit themselves to relax (Martin, 1951). Finally, Ley (1985), on the basis of his work with panic disorder, has proposed that relaxation-induced anxiety may be linked to "relative hyperventilation" ("relative" in this context means that the perceived pace of one's own breathing is above what would be metabolically needed in a given situation). The discrepancy between perceived need and actual respiration pace serves as an alarm cue triggering additional anxiety cognitions, which may then create an upward spiral toward even more arousal.

These findings suggest that patient characteristics such as an anxiety experience can predict differential relaxation treatment outcome, and deserve consideration in individual treatment plans involving relaxation therapy. Unfortunately, the replicated findings in this research domain involve only meditation, exercise, and PMR, and it is not clear how AT outcome may be affected by individual predispositions such as
pretreatment anxiety levels.

The second and third lines of research deal with pretreatment or early-treatment differences between individuals. Vinck et al. (1987) attempted to predict blood pressure treatment responses in normotensives who learned either PMR (Jacobson, 1938) or AT. Training was provided weekly for 6 weeks. Relaxation effects were measured as within-session changes during the first treatment session, overall changes in resting values from the first to the last treatment session, and within-session changes during the last treatment session. Although no differential effects for PMR relative to AT were reported, Vinck et al. (1987) did replicate Jacob, Kraemer, and Agras's (1977) findings that higher initial blood pressure levels also predicted the greatest reduction after relaxation training. A recent review and a controlled trial of therapy outcome for hypertension treated via relaxation strategies (Jacob et al., 1991; Linden, Lenz, & Con, 2001) clearly confirms an earlier contention that patients with initially high blood pressure show greater reductions. Vinck et al. (1987) also found that trainees with the smallest changes within the first training session of either AT or PMR were the ones who showed the greatest reductions during the last training sessions. Attempts to predict blood pressure treatment response via personality indices was unsuccessful. Vinck et al. (1987) may have failed to identify personality factors as predictors of AT success because their subjects were healthy individuals who probably reflected a relatively narrow range of associated personality features. No such range restriction was apparent in the work of Badura (1977), who related Minnesota Multiphasic Personality Inventory (MMPI) profiles to AT outcome in 200 patients who displayed neurotic, functional, and/or psychosomatic symptomatologies. Badura's patients were subdivided into "successes" and "failures" on the basis of their reported ability to achieve formula-specific auto-genie sensations. Patients in the "failure" group were characterized by relative elevations on the Hypochondriasis, Depression, Hysteria, and Social Introversion subscales. Discriminant function analysis indicated that with these distinct MMPI profiles, 80% of the success-failure incidences in AT could be correctly classified.

A number of conclusions and suggestions appear justified. Patients with elevated baselines on an autonomic index (e.g., blood pressure) profit more from AT (or other
relaxation therapies) than those with lower baselines similarly, those patients showing the least initial response to treatment improve relatively more over time. Also, clinical elevations on the MMPI scales noted above predict lack of success with AT. Such individuals may be better served with another form of psychotherapy.

Method

The Training Format

AT can be taught individually or in groups. The advantages for each mode of training are fairly obvious and are the same as for other forms of psychological therapy. Individual training is much more expensive, but training can also be easily adjusted to likely differences in the pace of learning and other individual needs (this is especially true when AT is taught as part of a complex intervention package). The existence of a personal therapeutic relationship may also serve to enhance compliance and credibility. Group training is more cost-effective, but permits less individualized attention and may thus reduce compliance. On the other hand, groups also have the potential to develop cohesion and serve as mutual support systems, which in turn will have a positive impact on compliance. My personal preference is to teach AT in groups of 8-12 participants, as long as the group can be expected to have more or less homogeneous needs and learning paces.

Another important point that cuts across the learning process is that of realistic expectations. At the outset of AT, trainees should be alerted to the probability that learning will be slow. The great majority of practitioners feel little if anything during their first practices, and it is perfectly normal for the desired sensations to remain weak for the first weeks of practice. This is true even for the avid practitioner who is fully compliant with the instruction to practice twice per day.

The Physical Setting

The ideal physical setting is one of comfort, with minimal likelihood of disruption, a room temperature of 20-24°C, a couch or exercise mattress (plus pillows) to stretch
out on, and adjustable lighting conditions (a slightly darkened room is best). Training success is facilitated by an environment that permits trainees to concentrate on their inner sensations. Accordingly, any speech while training impedes with the basic principle of "autogenics." If the trainer talks during the exercise or plays a record or cassette, the trainee cannot really learn to exercise autogenically (i.e., independently); instead, he or she will go through a light heterohypnosis. Therefore, autogenic training necessitates tranquility. In a tranquil setting, AT, with its focus on six functional systems (muscles, blood vessels, heart, breathing, inner organs, and the head), can be learned best.

In order to go through the training procedure, a very comfortable sitting—or, even better, lying—position is necessary. The entire body position must be comfortable, since body position itself may lead to muscle tension, which will interfere with progress in the exercises. It is most advantageous to exercise in a supine position, so that the neck especially is well supported. The arms should be placed flat beside the body with slightly bent elbows, and the interior of the hands should be placed on the ground. The tips of the feet should fall slightly to the outside. If lying is not possible (e.g., if a trainee wants to practice in the clinician’s office), a chair with a high back and armrests is best, so that the head and arms are supported. The elbows should be bent at nearly a right angle, because this will insure that the stretching and bending muscles in each arm will be in a balanced state. The entire back and the back of the head should be fully supported. Small pillows may facilitate this support. The feet should rest flat on the ground and close to each other, and the knees should fall slightly to the outside, which will help to prevent mechanical tension in the thigh musculature. Most people will tend to close their knees even while sitting, although this position is often associated with unconscious muscular tension.

When it is not possible either to sit comfortably or to lie down, a third position may be used for the exercises: A trainee can sit on a bench or a chair without back support. In this position the head should be allowed to sink into the torso, so that the arms will hang at the sides and the head will be in a perfectly vertical position over the spine. It is important for the trainee not to bend forward; instead, the torso must be in a vertical position, although somewhat reduced in height. In this position, no muscular activity is
necessary and no muscular tension is created, because the skeleton is held by the spine and its tendons. Now the arms can be moved loosely and can be supported on the widely spread thighs, so that the underarms (close to the elbow) will be supported by the thighs. The arms are again bent in the above-described manner. The body now hangs without any muscular work in its own bone structure.

These positions need to be assumed carefully before the exercises begin. In one of these positions (preferably lying down), the trainee can now begin with the first exercise. The eyes should be closed to facilitate passive concentration, and the trainee should now try to imagine the sensation in the formula as well as possible, without making any movement or trying to speak or do anything else. The ideas, images, and memories that will necessarily develop in each individual should not be fought off, because this attempt in itself would lead to tension. Ideas and images other than the formula-based sensations should be ignored.

**Content and Sequence of Exercises**

First Exercise: The Heaviness Experience (Muscular Relaxation)

The first AT exercise involves the musculature, because muscle activity is familiar to people and is most easily influenced by conscious efforts; in addition, experience with hypnosis and relaxation suggestions has shown that notable muscular relaxation can be achieved rapidly. Muscular relaxation is experienced as a heaviness of the extremities. Intentional concentration on outside stimulation is associated with muscular tension (e.g., looking, speaking, and reaching out are based on muscular movement). Attentional anticipation can also justifiably be called "tension," since muscles are already tensed in anticipation of movement. Even profound thinking may be associated with muscular activity, since many individuals crease the forehead while thinking. Each intention, or even vivid imagination, of a motion will result in increased tone of the musculature in the extremities.

It is not advisable to use the entire body as an object of training at once, because in this case the necessary focus would be difficult to achieve. The training should begin with the dominant arm. If this arm has been trained for a reasonable period of
time, the experience of heaviness during muscle relaxation will generalize to the other arm, the legs, and other body systems, since all extremities and organs are accessed by the same nervous system. The exercise is executed on the arm until it has generalized to the other three extremities. It is important to achieve a maximal concentration in the one arm first and to permit a generalized overflow of relaxation into the other extremities before good results can be expected.

The steps in the heaviness formula are as follows: (1) "The right (left) arm is very heavy" (this is repeated six times); (2) "I am very quiet" (this is said only once, and then alternates with the first step until six cycles have been completed). In normal individuals a noticeable experience of heaviness will develop soon, particularly in the area of the elbow and lower arm. After the heaviness formula is practiced, the instructions are "taken back." "Taking back" refers to a systematic set of activities designed to bring the trainee gradually from a state of relaxed, low muscle tone back to an alert state. This needs to be performed in a consistent manner to facilitate the reflex nature of the process. It is executed in the following steps: (1) The arm is bent and stretched a few times with an energetic pull; (2) the individual breathes profoundly in and out briefly; (3) the eyes are opened. As brief versions, one can use the following: (1) "Bend arm"; (2) "Breathe deeply"; (3) "Open eyes."

It is important that the trainee pay attention to the timing of the exercise. Training should be repeated in two or three practice sessions per day. In each training session, one can practice the heaviness formula twice for about 1 minute each. If in the beginning the individual steps are extended, because many trainees want to do the exercise particularly well, semiconscious tensions may arise. Trainees will realize that the experience of heaviness, instead of increasing, decreases more and more with excessively long practices.

Within the first week of training, the feeling of heaviness in the trained arm will be more pronounced and will occur more rapidly; also, the same feeling will be experienced in the other extremities, usually at the same time as in the other arm. When the experience of heaviness in both arms is quite pronounced, the formula can now be changed into "Arms are heavy." The taking-back procedure for both arms involves a count from 1 to 4, where each number is associated with a specific instruc-
tion: (1) "Make a couple of fists"; (2) "Bend the arms a few times"; (3) "Breathe in deeply"; and (4) "Open the eyes and sit up." Heaviness experience in the legs does not necessitate a particular taking-back procedure, since legs function more autonomically. Normally, within a week, the exercise has proceeded so far that with only a brief moment of inner concentration arms and legs can be perceived as quite heavy. It is then time to approach the second exercise.

Second Exercise: Experience of Warmth (Vascular Dilation)

Muscular exercises are something that the naive individual finds natural, since muscular activity is typically considered to be a voluntary act. It is a more novel idea that blood vessels may constrict or dilate through intentional effort. However, it should be noted that all emotional activity tends to be associated with a change in blood flow (flushing or paleness). Furthermore, there are systematic types of activities (e.g., the sauna) in which individuals systematically train blood vessels; these activities are reasonably familiar to many individuals. The second AT exercise, which aims at the warmth experience, affects the entire peripheral cardiovascular system: It affects blood flow through arteries, capillaries, and veins in the skin, organs, and musculature. The distribution of blood in the vessels is regulated through constriction and dilation, which take place as a response to nervous system innervation; their magnitude and direction are determined by physical activity, general state of arousal, and inhibition.

Once the first exercise with the heaviness experience has been well trained and can be induced rapidly and reliably, training sessions can then be extended by inclusion of the second formula, as follows:

1. "Arms (legs) are very heavy" (this is repeated for a total of six times).
2. "I am very quiet" (this is said once).
3. "The right (left) arm is very warm" (this is repeated six times; the term "quiet" is then repeated once).

A normal individual will notice an inner, streaming, flowing sensation of warmth very rapidly, typically in the area of the elbow and the lower arm. Quite frequently, trainees who master the heaviness sensation will also spontaneously report warmth
sensations before they are instructed to imagine them. Specific instructions for "taking back" the experience of warmth are not necessary, since the blood vessels are elastic and governed by a compensatory self-regulation, which will trigger a return to their usual position in an autonomous manner.

The first and second training exercises are executed in the same manner for a period of at least 1 week, until warmth is experienced easily and rapidly in the trained arm first and then in all four extremities. The experience of heaviness and warmth will then also generalize to the entire body. The blood vessel dilation and associated relaxation have a particularly tranquilizing and sleep-inducing effect. Training exercises directed at blood vessel dilation are not necessarily innocuous, since the changed distribution of blood influences the entire organism. The exercise should be instituted only in healthy individuals for whom no vascular risks are known to exist.

When a new exercise step is added in AT (e.g., when the experience of warmth is added to the feeling of heaviness, as above), the subject should always concentrate initially on the already learned exercises and should add a new exercise only for brief periods (typically 1 minute). New exercises are added only for brief periods, in order to keep the overall exercise length brief and to prevent trainees from attempting to achieve "perfect success" (i.e., taking it too seriously). The choice of 1-minute segments is somewhat arbitrary; it is suggested because 1 minute is an even unit of time, and because when all training steps are added together they amount to a reasonable practice length of 10-15 minutes. Once heaviness and warmth are achieved rapidly and reliably, the third exercise can be added.

Third Exercise: Regulation of the Heart

The awareness of heart activity varies considerably among people. How does one feel heart activity? Many individuals are aware of it in times of strain, excitement, and fever, but many others do not feel heart activity without prior training. These trainees need to be sensitized to their own heart activity.

Trainees who do not perceive their heart activity at any particular point in their body can use their pulse for orientation. With further training they will also experience the activity of the heart itself. If this help is not sufficient, a trainee may try to become
aware of heart activity by other means. This can be done by lying flat on the back so that the right elbow is fully supported and lies at the same height as the chest. Now the right hand is placed in the heart area; the left arm’s position remains unchanged. Now the trainee can go into the usual state of heaviness, warmth, and quietness and can concentrate on the sensations in the chest area just where the hand touches the skin. The pressure of the hand functions as a directional indicator. After a few exercises, the trainee is now likely to recognize heart activity, and with continuing repetition of the entire exercise the experience will become more obvious. The heart formula is "The heart is beating quietly and strongly" (or, in the case of easily arousable individuals, "quietly and regularly"); this formula is repeated six times, and the word "quiet" is added once.

When the heart sensation has been learned (and in a sense "been discovered"), the hand does not need to be placed any longer in the area of the heart, but the exercise can be continued in the usual position. It should be strongly emphasized that the intent of the exercise is not actively to slow down the heartbeat, since this would prevent self-regulation. The emphasis of this exercise is on regular and strong beats, but not on a reduction of the heartbeat frequency.

Fourth Exercise: Regulation of Breathing

Breathing is partially intentional and partially an autonomous activity. In AT the muscular, vascular, and heart relaxation becomes immediately integrated with the rhythm of breathing, much as heaviness and warmth automatically generalize from the trained arm to all the other extremities. In the AT procedure, however, any intentional influence on or modification of breathing is undesired, since an intentional change would be associated through a reflex-type mechanism with tension and voluntary activity. Again, the trainee is to enter all the other exercise levels before the new, fourth formula is added: "It breathes me" is repeated six times, and then the word "quiet" is added.

For many subjects it is very seductive to attempt voluntary changes of breathing, as in a systematic breathing exercise (e.g., in yoga). This intentional modification needs
to be prevented in AT, since breathing is supposed to function autonomously and in a self-regulatory system without any active adjustment. In order to prevent intentional change, the passive wording "It breathes me" has been chosen. This statement is intended to make it clear to the trainee that relaxation and the regulation of breathing will come by themselves—that the trainee will be carried by and is to give in to his or her natural breathing rhythm. It typically takes another week to make good progress with this exercise.

**Fifth Exercise: Regulation of Visceral Organs ("Sun Rays")**

For self-regulation of visceral organs, the trainee focuses on the area of the solar plexus, which is the most important nerve center for the inner organs. The image associated with this nerve center is that of a sun from which warm rays extend into other body areas. The solar plexus is found half-way between the navel and the lower end of the sternum in the upper half of the body. The trainee now concentrates on the solar plexus area: The formula "Sun rays are streaming quiet and warm" is repeated six times, and "quiet" is repeated once. This exercise also takes approximately 1 week for normal individuals to learn. The image that the breath is streaming out of the body when the subject breathes out can also help with this particular exercise.

**Sixth Exercise: Regulation of the Head**

The well-known relaxing effect of a cool cloth on the forehead forms the basis for the sixth exercise. In order to learn the sixth exercise, the subject will engage in the first five exercises in the same careful and progressive manner as described above, and will then (initially only for a few seconds) proceed with the following formula: "The forehead is cool" (repeated six times). Just as warmth is associated with vasodilation, the experience of freshness on the forehead leads to a localized vasoconstriction and thereby to a reduced supply of blood, which in turn accounts for the cooling effect. Since all blood vessels of the entire organism are interconnected, a localized vasoconstriction may generalize to other blood vessels. This can be demonstrated by placing a finger in a basin filled with cold water; the entire hand (and at times even the opposite hand as well) is likely to feel cool and look pale. During AT the concentrative
relaxation will originate from the cortex as a central organ, which also possesses the capability of changing the distribution of blood within the body. The "cool forehead" exercise can be learned in about the same time as the other exercises, although up to a third of trainees never acquire a strong response to this formula (Mensen, 1975).

Since most walls and windows are not entirely airtight, there will likely be a slight movement of air in any room. Therefore, the cool forehead may be sensed and described as a cool breeze.

Summary of Exercises

With these six formula-specific exercises, AT has been described in its basic but complete form. The entire exercise sequence can now be summarized as follows:

- "Arms and legs are heavy" six times; "quiet" once.
- "Arms and legs are very warm" six times; "quiet" once.
- "The heart is beating quietly and strongly" six times; "quiet" once.
- "It breathes me" six times; "quiet" once.
- "Sun rays are streaming quiet and warm" six times; "quiet" once.
- "The forehead is cool" six times; "quiet" once.
- Now "taking back": "Make fists" bend arms; breathe deeply; open eyes."

After about 8 weeks of training, most individuals have acquired the complete set of sensations, and the emphasis can be placed on ease in achieving the described sensations reliably and rapidly. Daily training for another 4-6 months will lead to more profound and stronger sensations, and generalization of training to different environments can be targeted. It is important to go through the taking-back procedure after each session (except when the trainee has fallen asleep during AT). Thus the trainee will acquire a readily available mechanism for switching from active tension to deep relaxation and vice versa.

Monitoring Progress and Maximizing Compliance

Compliance and monitoring progress are intricately linked and are therefore dis-
cussed jointly in this section. Clearly, a trainee who does not see any progress despite twice-daily practice and weeks of training will quickly lose the motivation to continue. In some ways, this section could also be entitled "Maximizing Motivation," because this is the cornerstone of progress and compliance. Because progress is not immediately obvious, a trainee with high initial motivation is more likely to succeed; the therapist needs to radiate confidence in the effectiveness of AT from the very beginning of training. It is recommended that the therapist give an optimistic but reasonable picture of the success to be expected: "I have trained $x$ number of people or groups, and there is hardly anybody who has not benefited considerably. Even after $x$ number of years I still practice it myself. Within the first 2 weeks you can expect the first training effects, which will only become stronger and easier to bring about as you keep on practicing." It is important to reinforce compliance with daily practice, especially until the training effects themselves become apparent and take over as motivation enhancers. Even motivated learners, however, do not perfectly adhere to relaxation homework assignments (Taylor, Agras, Schneider, & Allen, 1983). Taylor et al. tested compliance with relaxation practice, using a special tape recorder that displayed instructions but also monitored unobtrusively the number of times it was actually used; 71% of clients adhered to the instructions. Hoelscher, Lichstein, and Rosenthal (1986) similarly tested compliance with home practice instructions; they found that self-reported compliance exceeded monitored compliance by 91%, and that only 32% of trainees averaged one practice a day. These results leave no doubt that poor compliance is a major problem and needs to be taken seriously. The implication for clinical researchers, is that compliance needs to be monitored carefully and that only those patients who comply should be included in statistical analyses of outcome.

On the basis of empirical findings on compliance and my own past experience with AT, I can recommend a number of concrete steps for monitoring progress and enhancing compliance.

**Having Trainees Keep a Diary**

Trainees should keep a diary in which they record their daily practices and particular success or failure experiences. Of course, trainees may cheat and record a
practice that they actually skipped, but this does not happen often in my experience, and in fact the diary serves as a potent reminder to trainees. It is recommended that trainees rate the intensity of their perceived sensations in order to maximize the principle of the self-fulfilling prophecy. When trainees rate each practice after being told that the sensation will get stronger and stronger, they are likely to expect steady improvement, which will become even more obvious when they see the progressive ratings they have made. The diary is of course very useful for the review of the past week's training experiences, which should be undertaken at the beginning of a given therapy session. For maximum convenience and compliance, as well as to facilitate standardization, I actually supply all trainees with a preprinted diary that has a page for every training week. This prevents uneven record keeping and eliminates the excuse of "I could not find an appropriate booklet for a diary."

**Emphasizing Regular Timing of the Home Practice**

Lack of compliance is a profound problem plaguing all behavioral prescriptions and treatments that require specific daily routines. Research on medication use (Haynes, Taylor, & Sackett, 1979) has revealed that taking medications at predetermined times of day coupled with other already existing routines is an important vehicle for enhancing compliance. In the same vein, I ask my trainees to think about and commit themselves to such practice times in the first training sessions. I would rather deal with their scheduling difficulties before they start practicing than find out a week later that they did not practice at all because they could not find the time. When I say "predetermined" times, I do not mean "6:47 P.M. every day" but "every time after I finish watching the evening news" or "when I am in bed before falling asleep." AT practice must become a routine that requires no thinking or planning; otherwise, it is much too vulnerable to daily mood fluctuations or outside disturbances.

**Emphasizing the Need for Frequent Practice**

AT trainees may find the rule of twice-daily practice for 2 months (or more) overly compulsive; when it is combined with other competition for their time, they may be
tempted to cut down on practicing. My recommendation is to be understanding if one or two practices a week are skipped; however, trainees should be urged to stick to the rule. Frequent practicing is more likely to occur if trainees clearly understand the reason for this rule. In the first session it should be emphasized that relaxation is a skill that requires practice, just as learning to talk or walk is for a small child, or reacquiring good balance is for somebody with a complicated leg fracture and a cast. One can also compare AT practice with throwing a baseball or playing the backhand in tennis; any and all of these are skills that require practice, practice, practice.

Examining Reasons for Dropout

Although AT is popular, patients drop out for a variety of reasons: They move away; there is too much competition for their time; the training effects are too slow in coming; or a variety of other reasons. Even the most experienced therapist will have to face dropout and noncompliance rates of 20-25% in AT. If the dropout rates are noticeably higher than this, the therapist should question his or her own ability to motivate patients. Lack of trainer enthusiasm, poor communication skills, or poor session planning is sometimes the culprit. I have also seen—although rarely—that some groups never develop cohesion without apparent reason, or that one or more members are considered so obnoxious that other members stay away.

Highlighting Success

Nothing succeeds like success, as the old saying goes. The therapist can use this principle by regularly asking the trainees whether they have tried AT in acute stress situations (e.g., anticipating an exam or facing a confrontation with a superior) and highlighting their success stories. Trainees can be asked regularly whether they have noticed any generalizations of training effects, such as improvement in their ability to fall asleep or to relax after a hard day of work, or reduction in occasional tension headaches. Even if they have not personally experienced such benefits, hearing that somebody else has benefited from AT can serve as an extra motivator.

Also, the trainer should frequently praise the learners not only for apparent
positive outcome, but also for coming regularly to the training sessions and keeping up with the home practice.

Knowing Possible Problems and Potential Solutions

Anybody attempting to apply a standardized treatment such as AT will soon find out that clinical reality and full standardization are often incompatible: Trainees lose motivation, have unpredictable and confusing experiences, have medical or psychological problems that may interfere with learning and/or practicing AT, or obligations that may prevent regular practice. Good general clinical skills are required to complement the training manual and still bring training to a fruitful end. Nevertheless, some problems are well known to experienced teachers of AT and are endemic either to specific exercises of AT or to the practice of relaxation at large. A full discussion is beyond the scope of this chapter but typical problems that can be anticipated and some suggested solutions are presented in the manual (Linden, 1990).

Clinical Applications and Case Study

This section serves as a bridge between the prescriptive, standardized procedure described above and the recurrent need of practitioners to apply, modify, and adjust this procedure to the realities of the clinical situation. The practical approach taken in this section is of greatest value for the clinician who needs to make therapy plans on a case-by-case basis and who may have to make modifications to “classic” AT or create a multicomponent therapy package. Modifications of the AT formulas to suit specific case needs, a case study, and a possible integration of an AT component into a stress management package are described below to illustrate the clinical applications of AT.

Modifications of Formulas to Suit Specific Clinical Needs

Modifications of the standard formulas are typically of three types: (1) Only a few of the formulas are taught (often the heaviness and warmth formulas only); (2) the standard set is taught, but one specific formula is left out or modified; or (3) the
standard formulas are taught and an additional, problem-specific formula is created and appended.

Teaching abbreviated AT would be cost-efficient if comparative effectiveness with the long version had been demonstrated empirically. Unfortunately, no such direct comparisons are available, although some abbreviated applications of AT have been found to produce therapeutic benefit (see Linden, 1990). Given the absence of clear comparative evaluations, I argue that teaching abbreviated AT methods (e.g., the heaviness and warmth formulas only) may be inadvisable if full therapeutic benefit is expected. The need for elimination or modification of a certain formula from the standard set often results from an unanticipated difficulty. One possibility is that certain formulas trigger negative associations, images, and memories for a particular trainee. Another possibility is that of a rationale-application mismatch: For example, a cardiac patient may (at least initially) be hypersensitive to all cardiac sensations, and elimination of the heart regulation formula may be advisable.

Many other formula-specific patient problems are possible. I noted in one case that a trainee experienced searing heat sensations at the words "very warm" in the warmth formula, and a toning down to "pleasantly warm" was judged more appropriate. The "sun rays" formula may be contraindicated for ulcer patients; a non-heat-related image may be preferable in order to set the desired sensation apart from the burning sensation of ulcer pain. Or the formula may be left out altogether in order not to direct even more attention to a potential pain site. Such decisions require clinical, on-the-spot judgment, and excessive standardization and prescription via a manual may be inappropriate.

A particularly appealing modification for many therapists and their patients is that of a person- or disorder-specific additional formula. Lindemann (1974) has provided a useful catalogue of formulas for specific applications, from which I have selected a subset for demonstration here. There really are no limits for adapting such formulas (also called "intentional formulas") to idiosyncratic preferences in imagery and word choices, or descriptions of desirable target behaviors. Characteristics of effective intentional formulas are brevity, a pleasant rhyme or rhythm, a positive choice of words, high relevance to the trainee, and good match to his or her personality.
Guidance for creating formulas with these characteristics can be drawn from Erickson and Rossi (1979).

Some of Lindemann's intentional formulas are as follows:

- "First work, then pleasure" to help against procrastination.
- "I am happy, relaxed, and free of hunger" to accompany a weight reduction program.
- "I sleep deeply, relaxed, and restful" against insomnia.
- "I am calm and relaxed; my cheeks stay cool" against blushing.
- "I am completely relaxed and free; my stomach and bowels are working steadily and smoothly" against gastrointestinal complaints.
- "I am totally quiet and in peace; my joints are moving freely and without discomfort; they feel warm" against arthritis pain.

Case Study

Jane M was referred by her family physician because of elevated blood pressure. This 25-year-old woman had a 10-week-old baby at home, and had developed high blood pressure during the pregnancy. Pregnancy-induced hypertension tends to disappear quickly after birth but this had not happened in her case.

The assessment consisted of a 1-hour interview in which Jane and I attempted to identify major sources of distress in her life. Throughout the interview, the patient's blood pressure was sampled at 2-minute intervals, using a fully automated blood pressure monitor with digital displays (Dinamap Model 850, Critikon Corp., Tampa, FL). I routinely use this procedure with all referrals for stress-related problems, because it may help identify emotion triggers that patients themselves may not be aware of (Linden, 2006). The diagnosis of elevated blood pressure was confirmed, in that the 1-hour average reading was 138/95 mm Hg; these readings also supported her family physician's recommendation that drug treatment was not indicated for blood pressure at this level.
Jane remembered that at the age of 18 she had become aware of the family’s positive history for high blood pressure, and she had been preoccupied with her own blood pressure ever since. Although I explained that this was probably not accurate, she claimed an awareness of sudden blood pressure changes and attributed subjective feelings of stress to excessive demands in her job as an administrative assistant. When she became pregnant and developed blood pressure problems, she had quit her job and did not plan to return in the near future.

Neither Jane's verbal reports nor my attempts to link these reports with accompanying changes in her blood pressure identified specific stress triggers that could have become the targets for a stress management approach. Instead, I chose to teach her AT, which appeared to hold credibility as an intervention for her.

Over an 8-week period with a total of seven 1-hour sessions, Jane learned the full AT package with six formulas. Using a daily diary system, she charted her practice times and successes, thus also documenting her compliance with the twice-daily home practice requirement. At the end of the seventh session, she was clearly comfortable with the full six-formula AT procedure. She continued to be puzzled that her subjective evaluations of when her blood pressures were high or low were as inaccurate at the end of training as they had been before. Her average blood pressure during the last session was 128/78 mm Hg, indicating a 10-point drop in systolic blood pressure and a 17-point drop in diastolic blood pressure from the readings in the first session. Although this averaging procedure is inferior to 24-hour ambulatory blood pressure monitoring, it is nevertheless better than determinations that are based on two or three readings only (Selenta, Hogan Linden & 2000). The 1-hour averaging procedure at least captures the adaptation processes typical for repeated measurement (some ref as above). At a 3-month follow-up, Jane reported that her blood pressure was still in the normal range (this was verified by her family physician). She continued to practice AT, although less often than during the acute training phase.
**Autogenic Training in a Multicomponent Treatment Package**

In the clinic patients often present with multiple complaints, and/or the therapist discovers during an individual assessment that a given problem is probably caused or exacerbated by a multiplicity of factors. This in turn calls for a program of therapy with multiple components. Although multicomponent therapy is the norm in everyday clinical work and is associated with better clinical outcome than single-component therapies (Shapiro & Shapiro, 1982), infinite numbers of such treatment combinations are possible; this makes extensive comparative outcome testing for each combination extraordinarily difficult. Clinical judgment, good training, experience, and an awareness of research findings are needed to judge the appropriateness of a treatment package for a given patient. The best packages tend to be those with strong individually tailored rationales, and with components that have been shown to be efficacious when tested alone. Because there are so many possible combinations of treatment techniques, only a stress management combination including AT is described here.

A multicomponent package including AT has become the standard stress management approach in my own clinical work. First, the client is provided with a rationale that describes stress as a three-step process, involving (1) environmental stress triggers, (2) behavioral and cognitive responses to the challenge, and (3) the ultimately ensuing physiological stress response. For each of the three elements of the stress process, different intervention techniques are taught: (1) situational analysis for identification of stress triggers, and use of stimulus control procedures to prevent these from triggering stress; (2) modification of the acute response to challenge via cognitive restructuring and assertiveness skill training; and (3) acquisition of a behavioral coping skill for reducing the physiological and subjective arousal via AT. Learning to relax via AT not only has desirable acute effects, but tends to generalize insofar as patients typically learn to perceive themselves as being at the control of their stress responses; this in turn has a positive impact on the way they perceive potential stress triggers and how they respond to them.
**Reflections on the Clinical Outcome of Autogenic Training**

Early clinical reports of AT are heavily dominated by case studies and uncontrolled research (Luthe, 1970a; Pikoff, 1984). If taken at face value, these clinical findings suggest that AT possesses treatment potential for almost every psychological and psychosomatic problem ever listed in a medical catalogue. Pikoff (1984) reviewed the available clinical studies published in English and found that the quality of published research was very uneven, with very few properly controlled trials. Also, because most researchers used time-limited training programs and rarely trained subjects in more than the heaviness and warmth formulas, he concluded that AT had never really been tested in this body of literature. Nevertheless, the overall evaluation of AT was quite promising; positive outcomes were reported for AT and insomnia, test anxiety, and migraine.

There have been two comprehensive reviews on AT outcomes, one being a combination of narrative and meta-analytic review of outcomes (Linden, 1994), and the other a meta-analysis (Stetter & Kupper, 2002). No similarly comprehensive reviews have appeared since then. Both reviews used similar search and inclusion criteria. Results are reported here as effect sizes $d$ which can be defined two ways. They can refer to raw means at posttest and pretest, respectively, when change within a group is determined. They can also reflect change scores or means obtained at posttest (but adjusted for pretest differences) for comparisons between treatment groups (e.g., AT vs. attention control groups). Quantitative, meta-analytic, findings indicated that Autogenic Training was associated with medium-sized pre- to post-treatment effects ranging from $d = -0.43$ for biological indices of change to $d = -0.58$ for psychological indices in the Linden (1994) review, and $d = -0.68$ (biological indices) and $d = -0.75$ (psychological outcomes) in the Stetter and Kupper review (2002). The pooled effect size estimates hide considerable variability in behavioral/psychological effects for individual target problems; moderately sized improvements were reported for tension headache and migraine, hypertension, coronary heart disease rehabilitation, asthma, somatoform pain disorder, Raynaud’s disease and anxiety and sleep disorders.

To place these observed outcomes of AT in context, one can compare the effect
of AT with those reported for other psychophysiological arousal reductions strategies and other psychotherapies. Data from six meta-analyses permit aggregation and comparison of results (Godfrey et al., 1990; Grossman, Nieman, Schmidt, & Walach, 2004; Hyman et al., 1989; Linden, 1994; Luebbert et al., 2001; Stetter et al., 2002). Effect sizes when averaged for all types of arousal reduction strategies and classes of endpoints were:

- $d = -0.56$ for pre-post comparisons
- $d = -0.58$ for arousal reduction vs no treatment
- $d = -0.52$ for arousal reduction vs attention placebo
- $d = -0.15$ for arousal reduction vs other active psychotherapies

Interestingly, while effect sizes for self-reported distress weakened with increasing levels of non-specific effects inherent in different controls, the effect sizes of AT for biological indices of stress remained at the same level. Overall, the effect sizes for AT fall clearly in the same range as those reported for other arousal reduction methods, and all of these are slightly less effective than psychotherapy at large. In sum, a consistent picture of comparable, moderate effect sizes emerges; subgrouping for techniques produced no meaningful differences, and effect sizes for pre-post changes are essentially the same as for active treatment versus no-treatment controls. Biological indices were more robust than self-report indices to varying types of control comparison.

Given that the aggregation principle of meta-analyses means at time indiscriminate ‘lumping’, there still remains the question of which technique is the best match for which problem. Note, however, that this literature is much broader than is needed for a discussion of AT effects. Lehrer and his collaborators (1994, and also this volume) have presented a detailed review of effective technique to area-of--application matches for arousal reduction strategies. These researchers classify techniques on the basis of their cognitive vs behavioral/autonomic emphasis with meditation and mindfulness forming the more cognitive end of the spectrum, autogenic training possessing both a cognitive and autonomic rationale, and muscular relaxation and biofeedback being the most physiological, autonomically based techniques. Stress, anxiety and phobias were considered most responsive to interventions with strong
cognitive and behavioral elements.

Meta-analytic reviews may not reveal much about design differences, which could, however, influence treatment outcomes. In this light, it is important to stress that the majority of AT studies have used less than ideal training programs (because of taped instructions, very brief treatments, and/or only a subset of the six-formula set). I suspect that comprehensive training and personal delivery are bound to make AT more effective. The effect sizes reported here may therefore underestimate the maximal effects possible with more appropriate training procedures.

Furthermore, the results of AT and similar self-regulation approaches can evaluated with a variety of different endpoints. One such example is that of using AT to facilitate the reduction of prescription drug use as was done with headache patients (Zsombok, Juhasz, Budavari et al.; 2003). Within three months patients showed significant reductions in use of analgesics and anxiolytics, a welcome finding given the cost of drug treatment and lower risk of side effects with reduced medication intake.

As mentioned above, there are no recent, large-scale meta-analyses of AT’s effectiveness. Nevertheless, AT remains a topic of interest and small reviews and individual trials continue to be conducted, often for innovative applications. A sampling of such wide-ranging work is offered in table form

(Insert Table 1 here)

Conclusions

AT continues to deserve a place in the practice of clinicians working with psychophysiological disorders and in every stress management book, given its long history, enthusiastic endorsement around the world (although somewhat less prominent in English-speaking countries), and the extensive data base available for critical evaluations of outcome. Furthermore, this database continues to grow with demonstrations of numerous applications for target areas previously untested (see also Table 1 above). However, it is also clear that there are still remaining questions. There
is tentative evidence that AT may be more useful than other self-regulation methods for certain disorders, whereas for others a different method (e.g., thermal biofeedback) may be better. Detecting specific effects will remain difficult, however, because the average effect associated with AT is medium when AT’s effects are tested in a pre-post manner or when they are compared against those of no-treatment controls. When different target problems are lumped together, the comparison with other active biobehavioral treatments generally reveals that these interventions produce similar medium-sized effects. It is safe to presume shared nonspecific treatment elements account for a portion of this effect. A more promising approach is that of permitting clients to select their own treatment after a range of treatments and their rationales have been presented; clients who then choose AT may respond more strongly because of the a priori credibility that self-chosen methods embody.

At this time there is no evidence that full-length training (i.e., suggested to last at least 8 weeks) is superior to brief training with a selected subset of formulas. However, this question has never been subjected to a direct test in a single study that has targeted one clearly delineated clinical problem, and in which trainees have been randomly assigned to either short or full-length training. The conclusion of no evidence for a difference between short and long training is based on comparisons of effect sizes from short versus long treatments across different studies. This also implies likely confounding of effect size with problem severity, in that less severe problems may have received shorter treatment, and quick recovery may have been attributable to lesser problem severity rather than shorter treatment length.

In summary, there is a strong research base supporting AT’s rationale and clinical outcome but it also seems true that AT is overall comparable in rationale and effect to other self-regulation interventions (like meditation, muscular relaxation, Yoga or mindfulness; Grossman et al., 2004). Notwithstanding this observation of overall comparable outcomes, further research is welcomed to test possible specificity effects; i.e., some clients may benefit more from AT than others and we need to know who they are. Also, as Lehrer and his colleagues (this volume) suggest, some applications may favor AT for stronger outcomes than others. Resolving issues of ideal client-to-problem-to technique matches is a laborious task because of the large number of possible
comparisons that have to be tested.
REFERENCES


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Lim S.J., Kim C. (2014) Effects of Autogenic Training on Stress Response and Heart Rate Variability in Nursing Students Asian Nursing Research 8 286- 292


Table 1: A sampling of recent reviews and individuals clinical outcome studies with innovative treatment target

<table>
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<tr>
<th>Reviews</th>
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<td>Relaxation training for anxiety: a ten-years systematic review with meta-analysis</td>
<td>Manzoni et al. 2008</td>
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<td>Autogenic training for headache: A systematic review</td>
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<th>Individual studies</th>
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<td>Stress Response and Heart Rate Variability in Nursing Students</td>
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<td>Lung capacity, competitive anxiety and subjective vitality.</td>
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<td>Cardiac autonomic nervous activity in high-risk fire service workers for posttraumatic stress disorder</td>
<td>Mitania et al., 2006</td>
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Autogenic Training as a Technique for Self-Regulation

Paul Lehrer, Ph.D.
Professor of Psychiatry
Rutgers – Robert Wood Johnson Medical School
Piscataway, New Jersey, USA
Procedures for autogenic training

- Passive concentration on autogenic formulas about specific body sensations
  - ‘Imagine what it would be like if….’
  - Rather than ‘Try to make your body feel…’
- Avoid ‘intentionality’
- Frees the body to regulate itself
- Observe ‘autogenic discharges’
Characteristics

• Meditation- and mindfulness-like:
  – Observe body sensations
  – Don’t try to change them

• Passivity involves relinquishing control

• Thoughts and feelings that are often inhibited by higher brain centers now come out
  – Emotional thoughts and feelings
  – A free range of mental associations
Autogenic formulas

- My arms and legs are heavy
- My arms and legs are warm
- My heartbeat is calm and regular
- My forehead is cool
- It breathes me
- My solar plexus is warm
Additional formulas

• Organ-specific (e.g. my shoulders are warm)
  – Causes blood to flow to the organ

• My mind is at peace

• Various habit-related and psychophysiological formulas
Cautions

• Autogenic discharges can be powerful. Talk to someone about them. They can be upsetting, although usually they are not.
• Occasionally paradoxical effects occur: symptoms get worse. Stop.
• Solar plexus is warm: can make ulcers to bleed
• If you are taking insulin for diabetes, you might need less. Beware of hypoglycemia.
Internal vs External

• Applies to agency of cause for things that happen to them, including disease
  – Something the person him (her)self does (internal)?
    • Better self care, preventative care, diet, exercise
    • Relaxation/stress management
  – Something caused by external forces
    • Microbes
    • Heredity
    • Stressful family/job/society
Biofeedback sometimes Produces Greater Physiological Effects than AT

- Biofeedback augments sports performance and physiological indices of respiration over AT

- Migraines: Bfk > AT > control
  - Labbe EE. *Headache* 35:10-3, 1995

- Stronger handwarming effects for biofeedback
    - Nonneural beta-adrenergic and alpha adrenergic blockade; vs. “relaxation”
Freedman’s Results

- Finger temperature rises with
  - Humoral beta sympathetic activation
  - Neural alpha sympathetic downregulation
- Autogenic training produces relaxation
  - Slight increases in finger temperature
  - Decreased heart rate
- Biofeedback produces specific handwarming
  - Large increases in finger temperature
  - Increased heart rate
Hypotheses

• AT has powerful effects on perception of symptoms and emotional reactions to them
  – Specific effects on suggested sensations (heaviness warmth)
  – Similar to hypnosis

• AT may have specific physiological effects, especially on the autonomic nervous system
  – General relaxation effect

• AT does have side effects ("autogenic discharges"), sometimes interpreted as positive events
My mantra choice is: ____________________________

MANTRAS

The following is a list of Sanskrit and other sounds which are considered soothing. Please read over the list, pronouncing each sound to yourself several times (either mentally or out loud in a soft voice) and then place a:

"1" next to the one you like best
"2" next to the one you like next
"3" next to the one you like third

If you prefer to make up your own mantra, see below.

NOTE: "a" is usually pronounced "ah", but do whatever pleases you.

_____ ah-nam                _____ ma-ha-yam
_____ vahn-day               _____ vis-ta
_____ shi-rim                _____ at-man
_____ sat-yam                _____ ra-ma
_____ ha-sam                 _____ shan-ti
_____ in-dra                 _____ ra-yim
_____ see-tah-ram             _____ ma-na
_____ ta-sam                 _____ shee-vo-humm

If you decide to create your own mantra, be sure to keep the following in mind:

1) It should be soothing and resonant -- avoid all sharp, stacatatto words.

2) It should not be emotionally stimulating -- do not use names of people or other words that have special "loaded" meanings to you.

3) "Meaningless" sounds are particularly useful because they have fewer associations and seem to have a more "mysterious" quality, but they are not absolutely essential. One person, for example, successfully used the self-created phrase "inner peace" as a mantra.

When you have selected your mantra write it down at the top of the page where space is provided. Later you may transfer it to your Reminder schedule for your future reference. If you wish to tell your mantra to a close friend or relative, do so in a respectful, serious manner and ask them to keep it in confidence. We will explain this further after you have received further instruction.
MEDITATION INSTRUCTION

Preparation for Meditation Lesson

1. The type of meditation you will be learning is a westernized version of an ancient Indian practice known as mantra meditation, where a soothing sound (a mantra) is repeated mentally for 20 minutes, under quiet conditions. It is easy to learn and does not require conscious effort or concentration.

IMPORTANCE

2. DO NOT TAKE ANY NONPRESCRIPTION DRUGS (SUCH AS MARIJUANA) OR ANY ALCOHOL FOR 24 HOURS PRIOR TO YOUR INSTRUCTION IN MEDITATION -- LEARNING MEDITATION REQUIRES A SPECIAL DEGREE OF ALERTNESS.

3. DO NOT EAT, AND DO NOT DRINK ANY CAFFEINE BEVERAGE (SUCH AS COFFEE, TEA OR COCA COLA), FOR ONE HOUR PRIOR TO YOUR MEDITATION INSTRUCTION -- MEDITATION SHOULD ALWAYS BE PRACTICED ON AN EMPTY STOMACH, AND STIMULANTS (SUCH AS COFFEE) SHOULD BE REGULARLY AVOIDED BEFOREHAND.

4. Among the many benefits that some people report from regular meditation with this method are a lessening of a sense of urgency about life in general, an easing of tensions, decreased anxiety, greater energy, and more restful sleep. In many ways, meditating can be thought of as giving yourself a "vacation" twice a day. It is often described as being like lying on a quiet beach with the sound of the surf lulling you into a peaceful state or like resting on a boat gently rocking on a calm sea. Meditation Western-style is a time when you are "nice" to yourself. Most of us who practice it have found it a very enjoyable addition to our lives. We hope you will too.
POINTS TO REMEMBER ABOUT MEDITATION

-- You will be meditating twice daily, for your selected number of minutes.

-- Ordinarily you will not meditate on a full stomach, although it is fine to meditate after a very light meal (without caffeine).

-- An ideal time for your first meditation is in the morning before breakfast, and before morning coffee (caffeine, being a stimulant, may counteract the effects of meditation).

First, get out of bed and sit in a chair (or on the floor if preferred). It may be useful to walk about a bit and wash up so as to be thoroughly awakened before commencing meditation...but no strenuous physical exercises before meditating.

If you miss doing meditation before breakfast, meditate either after finishing a very light breakfast, or at midmorning, or just before lunch. Whichever, make sure to space your two daily meditations so that they are separated in time by at least 4 hours.

-- An ideal time for your second meditation is in the late afternoon, before dinner if possible. If this is not possible, wait about an hour after eating before meditating (never meditate on a full stomach).

-- Unless you plan to stay up, you may not want to meditate late in the evening since meditation increases available energy in some people and about 20% of people find they do not feel like sleeping after meditation. On the other hand, about 80% of people find that they go to sleep easily and restfully directly after meditation even if the hour is late (you can find out, by trial and error, which way you react to a late-evening meditation).

-- Your meditation should be practiced in a reasonably quiet place where you are not too likely to be disturbed for at least 20 minutes. If you are disturbed (for example, by a telephone ringing) remember to play for time. Take 20 to 30 seconds to come out of meditation before dealing with the interruption, giving yourself ample time to "surface". After disposing of the interruption, then return to meditation for the time that is left in it (not starting over again from the beginning, but continuing where you left off).

-- Falling asleep during meditation occasionally happens. When it does, it shows that you need sleep more than meditation at that particular moment. Never fight sleep. If it comes, just lie down, sleep, and when you awaken, return to the meditation and complete the approximate time you need to in order to have done it for 20 minutes total time.

Meditation may be timed by occasionally peeking at a watch or clock with one eye (this is much less apt to arouse you from meditation than using both eyes). Many people learn to sense when their number of minutes is up after they have been practicing meditation for several weeks.

-- When sitting down to meditate, the first 30 seconds sit quietly with eyes closed, so that you have a chance to "settle down" before commencing to think the mantra.
-- After finishing meditation (and before opening your eyes), it is most important that you spend 2 minutes in silence (without thinking the mantra). This quiet interval will help you to carry over the effects of the meditation into your daily life and to dissolve stresses that may have surfaced during meditation.

-- When meditating, do not "force" the mantra or "clutch" at it. If the mantra appears or disappears, if it gets loud or soft, if it is accompanied by many thoughts or by no thoughts...all these things make no difference. The meditation will be just as beneficial with much thinking of mantra as with little thinking of mantra, with many thoughts as with few. Simply take it as it comes.

NOTE: IF YOU HAVE ANY QUESTIONS ABOUT YOUR EXPERIENCES DURING YOUR HOME MEDITATION IN THE NEXT FEW DAYS, PLEASE FEEL FREE TO CALL ME ON MY OFFICE PHONE AT +1-732-235-4413. LEAVE A MESSAGE IF I DO NOT PICK UP.
Mindfulness Meditation

Mindfulness meditation is one of two traditionally identified forms of meditative practice, along with concentrative meditation (see Carrington, Chapter 13, on mantra meditation) (Goleman, 1988; Goleman & Davidson, 2017). Over the last 15 years, mindfulness meditation, also referred to as ‘insight meditation’ or ‘Vipassana practice,’ drawn from Buddhism, has become the predominant focus in defining how meditation can contribute to therapeutic growth and personal development (Creswell, 2017; Shapiro & Carlson, 2017). First identified within Buddhist traditions as ‘sati’, it can be argued that ‘mindfulness’ is the first meaningful construct from Eastern philosophy to be substantively engaged by contemporary psychology.

Probably the most commonly cited definition of mindfulness is from Jon Kabat-Zinn (1990):

“…moment to moment non-judgmental awareness cultivated by paying attention.” The concept of ‘non-judgment’ is highly important. It refers to adding positive or negative evaluation (‘judgment’) to virtually all experience. ‘Paying attention’ perhaps seems obvious, but it speaks to cultivating a quality of sustained attention, with an intended focus, rather than letting attention quickly jump to some other aspect of our external or internal environment, as it often does. The core practice involves attending to the feelings of the breath, then noticing when attention has moved to something else – a thought, a feeling, a sound, for example – then observing that object without judging or reacting, before intentionally moving attention back to the breath, repeating this process over and over. This both trains the capacity for engaging mindfulness throughout the day, such as in a high stress situation, and also to appreciate the value of sitting for a period of mindfulness meditation, for the sense of deep calm, wonder, and/or wisdom often evoked.

With the integration of mindfulness practice into an increasingly wider range of therapeutic...
uses, including online resources, the amount of recommended training varies greatly. The
original clinical application, the Mindfulness-Based Stress Reduction (MBSR) program (Kabat-
Zinn, 1990/2013), includes 8 sessions, now a widely used model. The MBSR program, while
using breath awareness practice from the beginning, also incorporates body awareness (the body
scan), gentle yoga, and walking meditation. Research has explored the value of briefer training,
though with mixed results (Gilmartin et al., 2017; Schumer, Lindsay, & Creswell, 2018).

Evidence (Dunn, Hartigan, & Mikulas, 1999; Xu et al., 2014) suggests concentrative and
mindfulness practices engage somewhat different neuro-psychological processes. Although all
meditation techniques cultivate the ability to focus and manage attention, mindfulness meditation
cultivates an ability to bring nonjudgmental sustained awareness to any object of attention, in
that the breath is an inherently ‘softer’ focus by not engaging a specific cognitive focus as is a
sound or word. Because of this, while initially more challenging to learn, the skill involved in
maintaining focus on the breath may be at a higher level than focusing on a more concrete object.
Focus on the breath is also ‘softer’ in that one may more easily shift attention mindfully onto
other content, such as thoughts, feelings (such as pain), or a behavior (eating, walking, etc.),
thereby providing more flexibility and mindful engagement than does concentrative meditation,
either for personal or therapeutic value (Shapiro & Schwartz, 2000).

History of Mindfulness Meditation for Stress Management

The therapeutic use of mindfulness meditation is still most often associated with the
Mindfulness-Based Stress Reduction program or a variant of it. However, there is a rapidly
expanding literature on other mindfulness-based interventions (MBIs), integrating mindfulness
meditation into group-based approaches such as Mindfulness-Based Cognitive Therapy (MBCT)
(Segal, Williams, & Teasdale, 2002/2013), Mindful Self-Compassion training (MSC) (Germer &
Neff, 2019), and Mindfulness-Based Eating Awareness Training (MB-EAT) (Kristeller,... among others. (See Table 14.1 for a summary list of mindfulness-related abbreviations used in the chapter).

[Place Table 14.1 approximately here].

Programs are also in use for an increasingly wide-range of individuals from children and teens to worksite settings (Biegel, Chang, Garrett, & Edwards, 2014; Dunning et al., 2018; Germer, Siegel, & Fulton, 2013). Mindfulness perspectives and techniques, including brief meditation, are used in Dialectical Behavior Therapy (DBT) (Linehan, 2015; Linehan & Wilks, 2015), and Acceptance and Commitment Therapy (ACT) (Hayes, Follette, & Linehan, 2004).

Other therapeutic uses of mindfulness meditation practices include very traditional retreat-based programs (Hart, 1987) and, alternatively, use of meditation-type practices within individual therapy sessions (Germer et al., 2013).

These approaches have been informed by traditional mindfulness meditation practices, mostly based in Buddhism, although meditative practices exist in virtually all religious traditions (Walsh & Shapiro, 2006). For example, DBT melds elements of Zen practice with cognitive behavior therapy. Buddhism also contains a wide range of traditions, with distinct meditative practices. Mindfulness meditation entered psychology through several different routes: through the Zen tradition; SE Asian Vipassana or Theravadan traditions; and Tibetan practice.

Mindfulness is often linked to Americans who entered monastic training in Asia, particularly in the Thai Theravadan tradition, notably psychologist Jack Kornfield (1993) and Sharon Salzburg (1999) who were then founded the Insight Meditation Society in Barre, MA in 1976. Burmese traditions are reflected in the 10-day retreat programs led by Goenka (Hart, 1987). Tibetan meditation was substantively introduced into the U.S. in the early 1970s by Chogyam Trungpa...
Rinpoche, who founded the Naropa Institute in Boulder, Colorado, now Naropa University, dedicated to Tibetan and Buddhist studies and psychology. Interest in Tibetan practices has grown with the influence of the Dalai Lama and with deeper understanding of the impact of Tibetan meditation practices on emotional and physical self-regulation. Cultivation of positive emotion plays a central role in Tibetan Buddhism (Ricard, 2006).

Another highly influential Asian teacher has been Thich Nhat Hanh, a Vietnamese monk who resided for many years in France and whose lineage is influenced by both Theravadan and Chinese Zen (Ch’an) Buddhism. His approachable writings universalize mindfulness approaches, from his first, now classic, book, “The Miracle of Mindfulness”, in 1975, to the many that have followed (e.g., Hanh, 1996; Hanh, 2017). He is particularly associated with contemplative walking meditation (Hanh, 1991) and loving kindness meditation (Hanh, 1997). Loving kindness meditations are brief guided practices in which individuals silently and slowly repeat phrases to themselves such as “Breathing in, may I be well … may I be happy…may I be free from suffering. … Breathing in, may you be well … may you be happy … may you be free from suffering…” (also see Alidina, 2015). Zen meditation is not always considered a mindfulness tradition, but many aspects of Zen practice are essentially mindfulness practices. Shinkantaza (“just sitting”) refers to letting the mind be aware of whatever comes into consciousness, similar to ‘open awareness’ practice. See the following online overviews for more understanding: the first link is to an introductory overview; the second is a compiled set of commentary, from both Zen and Western perspectives. (https://kirkville.com/just-sitting-the-zen-practice-of-shikantaza; http://shoresofzen.com/index_htm_files/DefinitionsOfShikantaza.pdf). Zen also had early influence on the incorporation of Buddhist perspectives into psychodynamic psychotherapy (Fromm, 1994; Horney, 1945, 1987), autogenic training (see Ch. 18, by Wolfgang Linden), and
continues to influence therapeutic practices through the work of Linehan (1993), Rubin (2016), and others (Germer & Neff, 2019). Zen practice in the United States also draws on Korean traditions (Coleman, 2001), which influenced Kabat-Zinn’s work, and Chinese Zen (Chan) practice following the teachings of Sheng-Yen (2004) and others.

Shonin and his colleagues have strongly argued that a deep understanding of Buddhist perspectives and concepts is central to fully comprehending mindfulness-based therapies (Shonin, Van Gordon, & Griffiths, 2014; Shonin, Van Gordon, & Singh, 2015). Indeed, consider that Buddhism, unlike Western traditions, has not separated religion from psychology. Therefore, one can consider Buddhism to encompass both spiritual and psychological principles and teachings. Models of underlying processes in meditation practice continue to evolve, particularly in how they link into contemporary psychological theory, while still drawing on their traditions.

**The Method: Basic Elements of Mindfulness Meditation**

Mindfulness practices distinguish between focused awareness and open awareness (Lutz, Slagter, Dunne, & Davidson, 2008). Focused awareness encompasses breath awareness, brief focused practices, and guided mindfulness practices. Open awareness and focused awareness are often used in combination. Evidence, although limited, suggests differential effects for types of practice (Perlman, Salomons, Davidson, & Lutz, 2010).

**Breath Awareness and Brief Focused Awareness**

Vipassana practice or insight meditation, uses a focus on the breath as a core way to both cultivate attention and reengage it when the mind becomes distracted. The breath is potent, always present, sensitive to stress reactions, inherently rhythmic in nature, and in that attending to it is more subtle, cultivates higher levels of attentional capacity. Further, cultivating awareness of the richness of something as simple as the breath is also an intention of mindfulness practice
Yet when moments of racing thoughts or distractions occur, adding a cognitive element, such as briefly saying a mantra-type word or counting breaths, which may be carried even into advanced practice, may help manage awareness. (See Table 14.2 for brief instructions).

Learning to shift one’s attention to the breath at times of stress may also cultivate a positive physiological feedback system, with deeper slower “belly” breathing engaging the vagus nerve, bringing sympathetic and parasympathetic responses into balance (Gerritsen & Band, 2018) (See Lehrer, Ch. 2 and Ch. 10, and van Dixhoorn, Ch. 12, for further detail). Maintaining slower breath is an aspect of several meditation traditions, including Tibetan and Zen Rinzai practices (Lehrer, Sasaki, & Saito, 1999), but is optional in clinical applications.

Open Awareness

Open awareness (or ‘open monitoring’) is a core element of mindfulness practice, as contained in the outline in Table 14.2. In open awareness, one gently rests attention on whatever rises into consciousness; as that fades, attention rests on the next object of awareness. Such practice has several goals: (1) to bring awareness to experiences in the body and in the mind; (2) to disengage the reactive and analytical mind, in regard to both behavioral impulses and to content of thought (ruminating) rather than to simply observing them; (3) to train the ability to engage mindfulness more easily during daily activities.

A useful teaching metaphor is to imagine oneself sitting on the banks of a river, observing whatever is floating by: leaves, branches, perhaps a piece of trash. Our analytical mind might analyze, judge, or have associations to each object —“What type of leaf is that? . . . Where did that branch fall in? . . . Oh, who threw that trash in? Isn’t that terrible… oh, I forgot to put out the garbage.” In contrast, mindfulness involves simply observing or ‘noting’: “leaf . . . branch . . .
trash . . .” without letting the mind be carried along. A metaphor, offered by a client, is the
difference between “mall walking” for exercise vs. window shopping. Both are fine, but serve
different intentions. When window shopping, one may stop to chat with friends or enter a store to
browse. When mall walking, doing so would defeat the intent of walking for exercise, but one
would still greet friends or make a mental “note” of a window display to return to later.
This type of ‘noting’ is often valuable, particularly when first learning to meditate—silently
naming the type of thought or experience one is having, such as “analyzing,” “pain,” “desire to
move,” ‘phone ringing,’ “impatience”—and then moving back to the breath. This helps train the
mind simply to be aware of, rather than “grabbing onto”, content of an experience or thought.
Many find mindfulness training very powerful because they now realize they have this capacity
simply to observe, rather than to analyze or judge.
**Guided Awareness**

In guided meditation practice, one brings awareness to a chosen experience, but again in a
mindful, rather than analytical or judgmental, way. The goal is to first increase awareness of the
targeted object, observing any cognitive, behavioral, or emotional reactivity, then to shift them
into more reflective ‘responses’. Guided meditations may be elements of general mindfulness
practice, such as occurs in the MBSR program related to symptoms such as pain or anxiety, or as
fully “scripted” meditations. Such scripted meditations may be as brief as a loving kindness
meditation, or they may make up a substantial part of an treatment program, as in the MBCT
program for depression (Segal et al., 2013) or related to eating in the MB-EAT program
(Kristeller, 2013; Kristeller, Wolever, & Lieberstein, in press), and can also be integrated into
individual therapy. Within individual therapy, the therapist, trained in one or more mindfulness-
based approaches, may introduce a client to mindfulness practice in general, and then to
particular focused mindfulness practices, that may last only a few minutes or perhaps longer.

How do such focused or guided meditations differ from imagery work or hypnosis-based therapy? There is, of course, overlap in the use of focused attention and disengagement of usual thought processes. The processes in autogenic training overlap more fully. The distinctions with hypnosis are clearer; hypnosis more generally cultivates mental processing of images and experience, both spontaneous and suggested (see Ch. 19 for more detail), whereas mindfulness practice cultivates “bare awareness” that may be brought to any life situation, feeling or thought; guided practices provide experience in doing so (Thompson, Waelde, Tisza, & Spiegel, 2016). In my experience, individuals may also experience hypnosis as something “done to them,” whereas mindfulness meditation cultivates a greater sense of discovery and internalization of awareness and self-control. However, there has been long-standing interest in combining these approaches clinically.

It is also useful to consider body-focused practices as a distinct type of guided meditation practice. Body practices include body scanning, mindful yoga, walking meditation, and guided meditations on the senses or interoceptive experience. The word yoga comes from the Sanskrit term yuj, meaning “to yoke,” as in yoking the mind, spirit, and body. From a therapeutic perspective, the type and degree of emphasis on body work can be adjusted to therapeutic goals and the needs (or limitations) of a particular client or population.

**Mindfulness: Treatment Formats**

Perhaps the best known and most fully researched mindfulness approach is the MBSR group program (Kabat-Zinn, 2013). The basic structure includes eight weekly sessions of 2½–3 hours each, with a full-day silent retreat after session 6. Typically, about 25 people attend; group sharing is an important aspect of the program. After learning breath awareness, body scan, gentle
yoga and walking meditation in the first few sessions, they continue with formal sitting mindfulness meditation. Daily home practice includes use of audiofiles of guided practices, 45 minutes in length, reflecting traditional practice time. Information is also provided on stress management and creating a healthy lifestyle. While informed by Buddhist practice, presentation of material is strictly secular. Orientation sessions occur prior to the program; assessment includes medical and psychiatric symptom checklists, but individuals are rarely screened out. While individuals may sometimes experience highly charged emotional reactions, rarely (less than 1%) do these require referral or withdrawal (Kabat-Zinn, personal communication, June 2004). Meta-analyses and reviews have generally supported the value of MBSR for a range of issues/populations (see Table 14-3). Training and certification programs for MBSR leaders are offered by the Center for Mindfulness, linked to both the University of Massachusetts Memorial Health Care and to Brown University School of Public Health.

Mindfulness-Based Cognitive Therapy (MBCT), the second most widely used and researched program, adapted the MBSR program to address the downward spiral of negative thinking and emotion that contribute to relapse in clinical depression (Teasdale et al., 2000). MBCT, structured similarly to MBSR, gradually engages awareness of mood states, expanding in Sessions 4 to 6 to negative automatic thoughts, cultivating acceptance, and seeing thoughts as “just thoughts.” The ‘cognitive’ components integrated into the MBCT program draw elements from cognitive-behavioral therapy (CBT). Mindfulness is used, rather than formal ‘thought logs’, to cultivate awareness of such patterns. The last two sessions focus on positive self-care, creating mastery, and relapse prevention. Excellent overviews of the clinical flow of MBCT are provided by Kuyken and Evans (2014) and Segal, Williams, and Teasdale (2002/2013). Gotink and his associates (2015) provides an overview of the meta-analyses exploring both MBSR and MBCT.
Other mindfulness-based group programs are available for an increasingly wide range of issues and populations. Perhaps most notable is Linehan’s Dialectical Behavior Therapy (DBT), originally developed to use for borderline personality disorder (Linehan, 2015; Linehan & Wilks, 2015). Mindfulness practice is core to DBT but in a more limited way than in MBSR or MBCT. DBT is now extended to eating disorders (Linardon, Gleeson, Yap, Murphy, & Brennan, 2018; Robinson & Safer, 2012), generalized anxiety disorder (Roemer et al., 2014), and anger/aggressive behavior (Frazier & Vela, 2014). Acceptance and Commitment Therapy (ACT), originally developed to enrich cognitive therapy with self-acceptance practices and self-awareness of intention, now incorporates more active mindfulness into the program. ACT, along with DBT, MBSR, MBCT, and other mindfulness-based programs such as MB-EAT, are often referred to as third-wave cognitive behavioral therapies (Springer, 2012).

The value of mindfulness practice for becoming more aware of subtle or complex feelings is compatible with insight-oriented psychodynamic approaches (Epstein, 2007; Rubin, 1996; 2016). The evidence that mindfulness meditation helps access higher levels of wisdom, inner awareness or spiritual experience when facing stress or anxiety also makes it compatible with humanistic/transpersonal approaches to therapy (Khong & Mruk, 2009).

Much briefer introductions of mindfulness practice are gaining attention. A meta-analysis found small to medium effect sizes on improvement of mood for programs ranging from a single session to 2-week programs, with stronger effects for community relative to student samples. One caution was evidence of publication bias reducing effect size (Schumer et al., 2018).

In contrast, a traditional form of Vipassana meditation, a 10-day intensive retreat model, was developed by Goenka, from Burma, in India about 30 years ago (Hart, 1987). Silence is maintained, with 10 hours/day spent in meditation. After 3 days of breath awareness, the
program shifts to mindful observation of physical and mental experiences. Each evening presents a secular Buddhist perspective on suffering, stress and the value of meditative practice. The program has been used in both the India and U.S. prison systems (Bowen et al., 2006), with the transformative impact documented in the film Doing Time, Doing Vipassana (Menahemi & Ariel, 1997), and is also available more generally.

Integrating mindfulness meditation practice into individual therapy has garnered more interest in the past 10 years. A study compared MBCT delivered individually or in the standard group, finding comparable effects (Schrovers, Toyote, Snippe & Fleer, 2016). Mindfulness can be a primary component of treatment or draw on clients’ own practice experience to complement psychotherapy. There are increasing resources for self-teaching mindfulness (Mikulas, 2015), the value of which is supported by a meta-analysis (Cavanagh, Strauss, Forder, & Jones, 2014).

Length and Type of Practice

Formal mindfulness practice entails practicing for certain lengths of time, such as 20, 30, or 45 minutes, once or twice per day. Shorter periods of time, such as 5–10 minutes, may be helpful initially, in teaching children, or in special settings. The 3-minute mindfulness pause is a core part of MBCT used to diffuse depressive thoughts/feelings. In our MB-EAT program, we emphasize using ‘mini-meditations’ of just a few moments when eating to bring mindful awareness to the food. Attention is brought to the breath, and then to related experiences of hunger, food choice, fullness, etc., cultivating choice, rather than habitual reaction.

During daily activities, a person may shift attention to the breath or simply stop and attend mindfully to whatever he or she is doing. A client of mine was struggling with almost incapacitating anger and anxiety at work. She had experience with mantra meditation but had a difficult time using her mantra in daily activities without “zoning out”. After a weekend
mindfulness retreat, we explore using “mini-meditations” at work. She stuck small red dots in her office (on her computer monitor, her telephone, etc.) as reminders, if she felt agitated, to shift her attention gently to her breath. She returned the next week noting that this had been very helpful—and that she had also imagined a red dot on the forehead of her boss.

Meditation retreats, lasting from several hours to months, held mostly in silence, cultivate deeper awareness of the mind and body, and provide a path into altered states or deeper spiritual experiences (Kozasa et al., 2015; Austin, 1998). A unique randomized clinical trial explored effects of a three-month retreat in experienced meditators, finding broad improvement in various aspects of self-regulation (Sahdra et al., 2011). A meta-analysis of MBIs has found positive effects of half- to full-day retreats (Visted, Vøllestad, Nielsen, & Nielsen, 2015).

**Theoretical Foundations: Mindfulness as a Cognitive Process**

Several thousand studies have explored mindfulness-based techniques, and mindfulness is now considered a measurable human capacity, referred to as ‘dispositional’ mindfulness (Baer et al., 2008; Bishop et al., 2004). The therapeutic value of meditation practice, originally framed mostly as a function of physical relaxation, is now better understood as a function of the cognitive–attentional processes engaged (Keng, Smoski, & Robins, 2011; Lutz, Jha, Dunne, & Saron, 2015; Shapiro & Carlson, 2017; Wallace, 2006).

Skill in engaging moment-to-moment, nonjudgmental awareness of one’s present experience, whether narrowly or more broadly focused, develops over time. Often referred to as “decentering,” particularly within the MBCT program, this process refers to engaging the human capacity to observe experiences in a more detached manner, rather than over-identifying with them, and assigning them a stable reality (Shoham, Goldstein, Oren, Spivak, & Bernstein, 2017).

A related concept is ‘decoupling’, or the separation of an emotional pull from previously
conditioned reactions/behavior (Levin, Luoma & Haeger, 2015). In the model outlined in Figure 14.1 (see below), such processes mediate the wide range of effects of mindfulness practice, including physical awareness/relaxation, emotional balance, behavioral regulation, relationship to self and others, and spiritual engagement.

As these capacities are cultivated over time, longer-term meditation practice is associated with an enhancement of cerebral areas related to attention and increased synchrony across brain pathways (Lutz, Greischar, Rawlings, Ricard, & Davidson, 2004). Neuroimaging studies have shown that mindfulness practice activates the prefrontal cortex (PFC) and the anterior cingulate cortex (ACC) and modulates attentional processes and meta-awareness in self-regulatory ways (Fox et al., 2014; Lutz et al., 2008; Lutz et al., 2009; Goleman & Davidson, 2017; Davidson et al., 2003), consistent with helping individuals lessen their reactivity to challenging issues such as chronic pain or depression (Farb, Anderson, & Segal, 2012; Zeidan & Vago, 2016). Hölzel found that individuals with generalized anxiety disorder improved to an equivalent degree with either MBSR or with a stress education control intervention, but only the MBSR program improved neuro-linkages between the PFC and the amygdala, correlated with symptom improvement (Hölzel et al., 2013).

MBIs are often compared to cognitive/behavioral therapy, also informed by the premise that we construct much of our reality through imposed meaning. Cognitive therapy acts by directing us to substitute alternative content—by substituting optimistic thoughts for pessimistic thoughts or by reframing the meaning of particular experiences. Behavioral therapy works by repeatedly changing the pairing of actual triggers and responses through extinction, exposure, or by practice. Mindfulness acts somewhat differently by providing a means to disengage reactive attention from whatever signal is impinging on the mind, whether threatening or engaging, by
simply observing the occurrence of patterns of conditioned reacting, a type of reflective self-
monitoring and deconditioning. That doing so is possible with relatively little training suggests
that this is an accessible and even universal capacity (Raffone, Srinivasan, & Barendregt, 2014).
Yet as the construct of ‘mindfulness’ enters contemporary vocabulary, and is being recognized as
a meaningful human capacity, usage of the term mindfulness being discussed in increasingly
complex ways (Van Dam, van Vugt, Vago, Schmalzl, Saron et al., 2018).

One also becomes aware that most physical or emotional experiences are in flux; they rise
and fall, rather than being constant. Second, by disengaging the stimulus from conditioned
reactions over and over again, the mind creates different patterns of responding, consistent with
contemporary learning theory. Third, one becomes aware of an inherent ability to purposefully
disengage from the usual chatter of the conscious mind, often experienced as a sense of space,
liberation and freedom, a release from operating on “automatic.” Finally, this process of
disengaging immediate associative reactions allows a broader range of connections and
perspectives. Patients often report experiencing their alternative choices as fresh and in some
way unexpected, along with a growing sense of insight and wisdom, emerging from their own
capacities rather than being directed or prescribed from the outside, as a reintegration or
synchronization of existing neural networks becomes possible. (Germer & Siegel, 2012).

Lutz and his associates, as part of a special issue on mindfulness in the American
Psychologist (2015), assert that mindfulness is best conceptualized as a multi-dimensional
process engaging complex neuro-cognitive elements. Although studies exploring mediational
processes are still limited in number, a meta-analysis (Gu, Strauss, Bond, & Cavanagh, 2015),
primarily focused on MBSR and MBCT, found that decreases in cognitive and emotional
reactivity were indeed mediators of change.
Clinical Effects of Mindfulness Meditation: Applying the Multi-domain Model

Because meditation practice affects basic processes by which we encode and respond to meaning in our perceptual and internal experience, effects of meditation practice can appear across all areas of functioning. Based on contemporary psychological theory, clinical application, and research to date, the following six domains, as noted above, are heuristically useful in framing meditation effects: cognitive, physiological, emotional, behavioral, relation to self, relation to others, and spiritual, as depicted in Figure 14.1.

[Place Figure 14.1 approximately here].

The order of columns in Figure 14.1 is not arbitrary. Cognitive processes are placed first, as the primary mediating process and as an object of practice. Physical effects are next; most clients, on first experiencing meditation, note how physically relaxing it feels, and body awareness is an easily accessible focus. Emotional effects encompass decreases in negative affect and heightened positive experiences. Behavioral change may be more challenging, benefiting from guided practices. Shifts in relation to self and others proceed as self-judgment decreases and with directed compassion practices. Finally, greater spiritual well-being is a virtually universal goal of meditative traditions. The dashed vertical lines in Figure 14.1 reflect that as effects develop within each domain, they also interact with each other. The dashed horizontal line indicates that initial effects (below the line) may occur with relatively little practice. The second level represents effects that follow with further practice, but with considerable variability in how readily such effects are experienced. Practice within a particular domain—for example, with use of guided meditations—may cultivate more rapid growth.

More advanced effects such as spiritual awakening, often beyond the goals of therapeutic work, are also depicted in Figure 14.1. A hallmark of this level is sustainability of effects, despite
life challenges; another is cultivation of certain exceptional capacities. Yet because the
traditional literature is replete with references to extraordinary states, insight, and spiritual
enlightenment, beginning meditators may be confused about what to expect, even leading to
unrealistic expectations. Fleeting experiences with unusual states may occur early in practice on
occasion, contributing to this confusion, to frustration at not sustaining access to such effects, or
to a lack of appreciation for the value of practice for more readily accessible effects.

Mindfulness and Empirical Evidence across Domains

The sections below review the current research, and are organized by domains/sub-areas,
linked with Figure 14.1, in relation to demonstrated efficacy. Also refer to Table 14.3 for a
listing of related key meta-analyses and reviews organized by and within domains.

[Place Table 14.3 approximately here]

Overall Effects. By mid-2013 a meta-analysis of MBIs drew on 209 studies (Khoury et al.,
2013), showing comparable effects of MBIs to CBT and psychopharmacology, and greater
effects in comparison to other control conditions. Other meta-analyses are now showing effects
for stress reduction in healthy individuals (Khoury, Sharma, Rush, & Fournier, 2015), in primary
care (Demarzo et al., 2015), older adults (Hazlett-Stevens, Singer & Chong, 2018), and the
prison population (Shonin, Van Gordon, Slade, & Griffiths, 2013). An inclusive meta-analysis of
psychiatric disorders (Goldberg, Tucker, Greene, Davidson, et al., 2018) examined efficacy by
five types of control groups (from wait-list to evidence-based intervention), finding significant
improved value at both immediate post- and followup for most comparisons, with MBIs being
comparable to evidence-based alternatives. There are now enough meta-analyses in core areas
for a meta-analysis of the meta-analytic studies (Gotink et al., 2015). With the focus primarily on
MBSR and MBCT, results show significant improvement in depressive symptoms, anxiety,
stress, quality of life, and general physical functioning.

Most meta-analyses focus on specific areas of application. The next sections review the literature across the six domains, some of which can be mapped on to patterns of underlying mechanism processes (Gu et al., 2015). The primary clinical focus of the research may or may not lie within the domain noted (for example, Teasdale’s work on major depression is also cited within the cognitive domain because of the underlying mechanisms being tested).

**Cognitive Effects.** As reviewed earlier, meditation fundamentally is a cognitive process that involves focusing the attention at will onto an object of choice, such as bodily feelings, thereby disengaging usual conditioned reactivity or elaborative processing -- the stress reaction. In a now classic study, Lazar and her colleagues (2005) showed thickening in parts of the right prefrontal cortex in experienced meditators, indicating heightened cognitive capacity; another study showed that cortical thickening varied by level of practice (Grant et al., 2013).

Applications within the cognitive domain address the process and power of thought content, and the process of attention itself. In our work, we introduce a model in which the first step is heightening awareness of the “chattering” or “monkey mind,” followed by awareness of the more usual “thinking mind”, and finally moving to flashes of the “wise mind.” The ‘wise mind’ emerges as preoccupation with everyday concerns decreases, and brain functioning shifts into ‘insight’ mode. The cognitive construct, ‘mind wandering’, describes the default network of the mind when not actively engaged in a focused task (Smallwood & Schooler, 2015). Relevant to mindfulness (Vago & Zeidan, 2016), mind-wandering was initially framed as particularly relevant to mood disorders, but it is also related to positive mood, as creative perspectives arise during mindfulness practice or at other times (Horan, 2009; Franklin et al., 2013).

That mindfulness meditation practice can heighten objective self-awareness and disengage
ruminative thinking patterns, a key element of stress, has been utilized by Teasdale and his colleagues within MBCT (Segal, Williams, & Teasdale, 2002; Segal et al., 2013). Teasdale (1999) differentiates between metacognitive knowledge (knowing that thoughts are not always accurate reflections of reality) and metacognitive insight (experiencing thoughts as events, rather than as being necessarily reflective of reality). This can be broadened to include neural processes underlying executive functioning, referred to above as ‘wise mind’. Executive functioning increased in children after a bi-weekly (30 mins./session) 8 week program (Flook et al., 2010) and in older adults with an MBSR program (Moynihan et al., 2013).

Applications include attention-deficit/hyperactivity disorder (ADHD) in adults (Mitchell, Zylowska, & Kollins, 2015), students (van de Weijer-Bergsma, Formsma, Bruin, & Bögels, 2012), and children (Cassone, 2015). Use of DBT with college students found over 50% recovery from ADHD symptoms, with higher quality of life (Fleming, McMahon, Moran, Peterson, & Dreessen, 2015), and with similar effects for MBCT (Gu, Xu, & Zhu, 2018).

These results are consistent with those I observed for a student with ADHD taking a course I taught on the psychology of meditation. While most students reported value from their required practice (4x/week) within a week or two, she struggled with the “chattering mind”, taking about 6 weeks before experiencing shifts in her ability to stay focused. By the end of the semester, she reported dramatic change, and was feeling far more hopeful for her future.

Experiencing thoughts as “just” thoughts is extremely powerful for those struggling with schizophrenia/psychotic-type thinking (Chadwick et al., 2016). This has been shown for mindfulness in a vocational training program for individuals with stabilized schizophrenia (Davis et al., 2015), and on an individual basis in a promising pilot study of a 4-week intervention (Louise, Rossell, & Thomas, 2019). I observed such responses in a woman with several
hospitalizations for paranoid psychosis, although she was otherwise highly functioning, married, and working in a responsible position. In treatment, she became aware that under stress she would construe even mild criticism as very harsh, ruminating on it, with increasing paranoid ideation. With mindfulness, she became able to simply observe negative thoughts rather than reacting to them, interrupting an escalating course of paranoid ideation.

**Mind-Body and Health Benefits.** Much of stress is experienced in the body. Further, stress contributes to chronic health issues – and health issues lead to stress. Almost immediately meditation elicits a sense of physical relaxation for most people. Part of this effect is due to vagal nerve stimulation that occurs with deeper, slower breathing, as noted above, identified as the “relaxation response” established in early research, primarily on mantra-based meditation (Benson, 1975; Lehrer, 1983). Very early work (Kasamatsu & Hirai, 1969) also identified dominance of alpha and theta brain rhythms, consistent with greater relaxation, work which still informs brain rhythm research (Kerr, Sachet, Lazar, Moore, & Jones, 2013) and extends into clinically-oriented studies, within the MBSR program (Hunt, Al-Braiki, Dailey, Russell, & Simon, 2018). Telomeres, the ‘caps’ at the end of DNA strands sensitive to stress, are also responsive to meditation practice across multiple studies (Schutte & Malouff, 2014).

MBIs are valuable for a wide range of health-related issues (Carlson, 2015). Chronic pain, a disorder in which decreased symptom reactivity plays a key ameliorative role, has been a primary focus of the MBSR program, documented in the now classic book, *Full Catastrophe Living*, by Kabat-Zinn (1990/2013), though meta-analyses of chronic pain research have shown somewhat mixed effects (Hilton et al., 2016; Veehof, Trompetter, Bohlmeijer, & Schreurs, 2016). A meta-analytic review related to fibromyalgia (Lauche, Cramer, Dobos, Langhorst, & Schmidt, 2013) found effects of MBSR relative to active control, for quality of life and for pain.
Peripheral physiological effects of MBSR include enhanced endocrine and immune system functioning (Davidson et al., 2003). In psoriasis, brief guided mindfulness meditation, delivered during standard light treatment by audio recorder, proved highly effective as an adjunctive treatment (Bernhard, Kristeller, & Kabat-Zinn, 1988; Kabat-Zinn, Wheeler, et al., 1998), with more rapid improvement of the scaly, itchy skin patches. Effects on cardiac health (Abbott et al., 2014) have been explored in limited studies. The MBSR program has extended value for cancer patients across a range of psychosocial measures, including fatigue (Johns et al., 2015).

**Emotional Benefits.** Mindfulness can be considered one of the few tools for cultivation of emotional equanimity, a more advanced level of stress tolerance (Walsh & Shapiro, 2006; Desbordes et al., 2015), modulating underlying neurocognitive processes in emotion regulation. Davidson found that meditation enhances activity in the left prefrontal cortex underlying positive emotion, both in novice meditators (Davidson et al., 2003), and to a striking amount in highly adept (>10,000 hours of practice) Buddhist monks and other practitioners (Goleman, 2003). The Mindfulness-Based Flourishing Program (MBFP), an 8-week online training, draws on positive psychology, showing increased self-compassion, loving kindness and self-efficacy, including in an ethnic Chinese sample (Ivtzan et al., 2017). Engaging positive elements has been explored for treating opioid misuse in chronic pain management as part of the Mindfulness-Oriented Recovery Enhancement (MORE) program (Garland, Howard, Zubieta, & Froeliger, 2017). Further, effects may be additive. A creative study (Kutz et al., 1985) added a 10-week intervention modeled on MBSR to ongoing individual psychodynamic therapy for 20 patients with an average of four years of treatment. Both therapists and patients noted improved anxiety and quality of life, and greater insight; 80% of patients indicated that daily practice was the most valuable part, engaging a deeper sense of well-being in their daily lives.
Anxiety. Meditation practice may be particularly powerful for anxiety disorders. The first study of MBSR on anxiety (Kabat-Zinn, Massion, Kristeller et al., 1992) found lower anxiety, panic, and general dysphoria, sustained 3 years later for panic attacks and agoraphobia, declining gradually for generalized anxiety disorder (GAD) (Miller, Fletcher, & Kabat-Zinn, 1995). More recent work with GAD has confirmed the value of MBSR and ACT in the shorter term (Hölzel et al., 2013; Roemer, Fuchs, & Orsillo, 2014), suggesting that individual therapy be added as an appropriate complementary treatment for GAD. A 12-week training for young teenagers (primarily Latino and Asian) showed improvement across multiple outcome measures, with effects for perceived stress mediated by reductions in expressive suppression and rumination (Fung et al., 2018). Meta-analyses have documented the value of MBIs for anxiety disorders in adolescents (Borquist-Conlon et al., 2019) and adults (Singh & Gorey, 2018). A meta-analysis for treatment of PTSD (Hopwood & Schutte, 2017) found moderate effects, somewhat dependent on length of training.

Depression. Mindfulness meditation interrupts cascades of negative thinking that contribute to psychobiological dysregulation. The MBCT program includes guided practices that heighten awareness of depressive-type thoughts, while cultivating an ability to disengage from them. Mediation analyses highlight the value of practicing these decentering skills to prevent relapse (Segal et al., 2019). A meta-analysis found clear effects for MBCT for prevention of relapse, particularly for previously higher levels of depression (Kuyken et al., 2016). For active depression, a meta-analysis of MBCT found effects comparable to other interventions (Goldberg et al., 2019); Wang (2018) found short-term effects but lack of maintenance at followup.

Anger and other emotions. Anger management may be well suited to mindfulness approaches in that awareness, acceptance, and the ability to suspend immediate reaction are core
to disengaging anger responses. Decreases in anger rumination mediate the effects on anger expression (Peters et al., 2015). Woolfolk (1984) used a single-case reversal design with a 26-year-old construction worker who had lost several jobs due to anger. The client used mantra meditation, separately and in combination with mindful-awareness practice, with typical precursors to his angry outbursts. In 4 weeks, the effects were clear; only the combination of practices, rather than mantra meditation alone, affected expression of anger. A RCT examined a wide range of emotional regulation responses to MBSR, finding significant effects for anger (Robins, Keng, Ekblad, & Brantley, 2012). Brantley’s book, Calming Your Angry Mind (2014), for the layperson, is an excellent accompaniment to anger-management therapy. DBT addresses the emotionally chaotic inner lives, often marked by anger, of individuals diagnosed with borderline personality disorder (Linehan, 1993).

Research on emotional adjustment has also focused on specific populations. Much of the value of MBIs for medical patients lies in relieving distress related to challenges of treatment and fears of disability or mortality (Sagula & Rice, 2004). MBSR may be particularly powerful for patients dealing with cancer, shown in several reviews/meta-analyses (Rush & Sharma, 2016; Zainal, Booth, & Huppert, 2013; Zhang, Xu, Wang, & Wang, 2016). An adaptation, the Mindfulness-Based Cancer Recovery (MBCR) program (Carlson & Speca, 2011), has shown sustained benefits, particularly for stress. A recent meta-analysis (Veehof et al., 2016) including MBSR, MBCT and ACT for chronic pain patients found comparable effects for emotion regulation across interventions, with higher impact of ACT on anxiety and depression. Another meta-analysis found mixed effects for brief (1-2 week) MBIs (Schumer et al., 2018). A meta-analysis of mindfulness for perinatal women found particularly strong effects for anxiety (Shi & MacBeth, 2017).
Mindfulness practice also contributes to better coping in high-stress work environments, such as for medical and other healthcare students and professionals, confirmed in a meta-analysis (Burton, Burgess, Dean, Koutsopoulou, & Hugh-Jones, 2017). These effects extend to business environments (Davidson et al., 2003; Wolever et al., 2012), also supported by meta-analyses (Lomas, Medina, Ivtzan, Rupprecht, & Eiroa-Orosa, 2018).

**Changing Behavior Mindfully.** Chronic stress is often associated with behavioral issues, whether causally or triggered by the behaviors. MBIs have been applied to drug and alcohol addiction, smoking, eating behavior, gambling, and internet gaming. Mindfulness may help by improving emotional regulation, interrupting the chain of behavioral reactions, increasing receptivity to behavioral recommendations, or learning to ‘ride out’ waves of craving (Brewer, 2017; Tapper, 2018; Witkiewitz, Lustyk, & Bowen, 2013). Mindfulness first increases awareness of behavioral patterns, followed by a sense of a general “deconditioning,” of being somehow “freed” from the power of earlier patterns of avoidance or compulsions, accompanied then by increases in purposeful, focused or “wiser” action. A meta-analysis of research on a range of addictive behaviors, up through 2011, found overall positive effects for MBIs (Alberto Chiesa & Serretti, 2014). The extent to which such changes occur as a function of meditation practice, or practice focused on the behavioral intentions explicitly is not yet clear.

Eating behavior appears particularly responsive to mindfulness practice. A number of eating disorder and weight-control programs have incorporated mindfulness, with a meta-analysis of studies focusing on binge eating disorders showing large effects (Godfrey, Gallo, & Afari, 2015). In our MB-EAT program for binge eaters, we begin with mindfully eating four raisins, adapted from the MBSR program, followed by more challenging foods, including a buffet meal. There are also guided meditations on awareness of physical hunger, taste, satiety, and emotional eating.
and using nutritional information in a non-judgmental manner. Evidence shows comparable
effects to a CBT-intervention for decreasing bingeing, but with greater improvement on
internalization of change, related to amount of mindfulness practice (Kristeller, Wolever, &
Sheets, 2007). The application of MB-EAT has been broadened (Kristeller & Wolever, 2014),
showing effectiveness for Type 2 diabetes (Miller, Kristeller, Headings, & Nagaraja, 2014),
individuals with a range of obesity (Daubenmier et al., 2016; Mason et al., 2016), and for post-
bariatric surgery patients (Wnuk et al., 2017). Larger effects have also been shown for individuals
with stress or compulsive eating than those without (Radin et al., 2020).

Gambling is another area in which people may behave in a compulsive way. A meta-
analysis (Maynard, Wilson, Labuzienski, & Whiting, 2018) showed moderate to large effects for
both gambling urges and gambling behavior. A RCT comparing the MORE program to a support
group for internet gambling disorder (IGD) found that reduction in IGD and craving were
mediated by the decrease in maladaptive cognitions (Li, Garland, & Howard, 2018).

Applying mindfulness to smoking cessation seems particularly suitable, given the role of
paced inhalation as part of smoking, the compelling nature of craving for nicotine, and highly
conditioned associations with smoking. Brewer (Brewer et al., 2011) found clear effects for an 8-
session MBI compared to the American Lung Association’s Freedom from Smoking program.
In another study, those in the mindfulness condition reported better volitional control over
smoking than those in the CBT group (Spears et al., 2017). A meta-analysis (Oikonomou,
Arvanitis, & Sokolove, 2017) found an overall 4-month quit rate of 25.2%, double the 12.6% for
comparison treatments. A very strong study of underlying mechanisms of self-regulation (Tang,
Tang, & Posner, 2016) showed that following brief mindfulness training, smokers increased
activity in the anterior cingulate cortex (ACC) and adjacent prefrontal cortex (mPFC) areas,
comparable to non-smokers.

Research has consistently found a reduction in drug and alcohol use as a result of practicing mindfulness meditation (Li, Howard, Garland, McGovern, & Lazar, 2017). An early application was the Mindfulness-Based Relapse Prevention (MBRP) program (Witkieiwitz, Marlatt, & Walker, 2005), integrating mindfulness into relapse prevention (Marlatt & Gordon, 1985). While the CBT-based control was initially more effective, MBRP showed stronger effects at one year, particularly for those with more severe dependence and higher anxiety/depression (Roos, Bowen, & Witkiewitz, 2017). Marlatt and his associates (Bowen et al., 2006) compared prison inmates about to be discharged, who volunteered for a 10-day Vipassana retreat as created by Goenka (described earlier), to those in the usual process. Three months later, these individuals had significantly lower levels of marijuana, crack cocaine, and alcohol use, in comparison to the controls, along with improvement on impulse control, psychiatric symptoms, and optimism.

**Relationship to Self and Others.** Harsh self-judgment is a source of stress, and lack of social connectedness contributes to poor adjustment. Gilbert, in his wonderful book, *The Compassionate Mind* (2009), opened the door wider to the psychology of mindfulness in cultivating self-compassion and compassion toward others. Since then, further research is evidenced in Kirby, Tellegen and Stiendl’s meta-analysis (2017), along with a rich overview in Germer and Siegel’s edited volume *Wisdom and Compassion in Psychotherapy* (2012).

One paradox of meditation practice is how a clearly inner-focused undertaking can cultivate empathy and altruism, elements central to Buddhism. The answer may lie within the process of decreasing self-protective reactivity, one which can be supplemented with guided meditations that cultivate self-acceptance and caring for others. Exploring, understanding, and shifting one’s
relationship to sense of ‘self’ and to others can be considered core to both traditional and contemporary use of mindfulness practices (Kristeller & Johnson, 2005).

**Understanding the ‘Self’**. The mind constructs meaning out of experience, encapsulated by conscious thoughts (Mahoney, 2003). A central tenet of Buddhist psychology is that conditioned desires distort perception, contribute to an illusionary sense of self, and, by producing craving and attachment, are the primary source of distress. For example, addictions are powerfully directed by constructed thoughts and conditioned reactions, which the individual experiences both as uncontrollable and as integral aspects of “self.” Indeed, Albert Ellis notably linked his work in Rational Emotive Behavior Therapy to Zen perspectives in regard to the value of disengaging the identity of the “self” from the content of one’s thought (Kwee & Ellis, 1998). A core process in mindfulness is “dis-identification”, observing experiences without over-investing a sense of self into them (Walsh and Shapiro, 2006). Suspending this identification of self, laden with judgement, either positive or negative, promotes self-acceptance and self-growth, deepening engagement of inner sources of strength and higher capacities. It also incorporates Buddhist concepts of multiple facets of self, in contrast to Western perspectives that there is one ‘true’ self. It can be quite releasing for a client to recognize that they can experience different aspects of ‘self’, none of which can – or should - fully define who they are. I have found this perspective powerful in helping people disengage from over-identification with a ‘diagnosis’ -- that they are much more than their depression, bipolar disorder, or phobia.

**Self-Acceptance and Self-Compassion**. Much as we project positive or negative valuation on experience, we also do so in relation to self-perception. Higher levels of self-compassion are confirmed as key mediating processes in the MBSR program (Keng, Smoski, Robins, Ekblad, & Brantley, 2012). Greenberg and his associates (2018) found that in a MBCT program, greater
self-compassion protected against mind-wandering at baseline and at the end of treatment, decreasing links to depression. Mindful awareness may also aid the clinician in cultivating empathic concern (Bruce, Shapiro, Manber, & Constantino, 2010). Such effects have been supported in a meta-analysis for adolescents (Marsh, Chan, & MacBeth, 2017).

Guided self-acceptance practice is powerful for cultivating positive self-awareness, as shown in Neff and Germer’s important work, maintained out to one year (2013), and that of others. A meta-analyses supports the value of guided practices for cultivation of these qualities (Ferrari et al., 2019). Two trials explored a brief mindfulness intervention, finding the addition of acceptance components created more positive affect (Lindsay, Chin, et al., 2018) and less stress reactivity (Lindsay, Young, Smyth, Brown, & Creswell, 2018). Shorter programs also found that increases in self-kindness mediated decreases in depression and stress in younger breast cancer patients (Boyle, Stanton, Ganz, Crespi, & Bower, 2017), and led to a range of positive effects in university students, still present after six months (Dundas, Binder, Hansen, & Stige, 2017).

**Compassion toward others.** Buddhist practices (Davidson & Harrington, 2002) incorporate a strong focus on cultivating compassion, both for others and self. Kornfield (1993) has written eloquently of meditation as a path to loving kindness and to opening the heart, as has Sharon Salzberg (1999). Thich Nhat Hanh’s (1997) now classic brief meditations on loving kindness are particularly powerful and easily incorporated into psychotherapy. The value of such components are now supported in a meta-analysis (Galante, Galante, Bekkers, & Gallacher, 2014). In one of the few RCTs exploring mindful engagement in couples, Carson and colleagues (2004) found that a loving kindness meditation therapy improved aspects of the relationship, even when the quality was already high. Susan Lord (2017) reports on a process, Meditative Dialogue, designed to help couples develop empathy. A study introducing couples to mindful preparation for an
expected birth found effects particularly clear for the fathers (Gambrel & Piercy, 2015). And pre-
school children have been shown to increase their kindness toward others while involved in a 12-
week mindful kindness program (Flook, Goldberg, Pinger, & Davidson, 2015).

Compassion towards others links to spiritual experience, widely recognized as such within
religious traditions. Yet, in that individuals who do not consider themselves religiously or
spiritually inclined may still engage a deep sense of compassion, it can be placed within both
areas in the current model, leading us into the final domain.

**Meditation and Spiritual Well-Being**

Spiritual well-being has received increasing attention within therapeutic contexts as an
important component of optimal coping (Kristeller, 2011; Plante, 2016) in the face of significant
life stressors, such as cancer and trauma (Aldwin, Park, Jeong, & Nath, 2014; Shiyko, Hallinan,
& Naito, 2017). Traditionally, spiritual growth is a goal of all meditative traditions, with
meditative practice playing a core role in religious training (Walsh, 1999; Trammel, 2017).

Although examination of the neurophysiological processes underlying spiritual experience
remains at an exploratory stage (Newberg, 2014; Austin, 1998; Walach, Schmidt, & Jonas,
2013), meditation practice is almost universally used to cultivate such experiences. The
processes appear to involve disengagement from other preoccupations, followed by potentiation
of neurological functions specific to spiritual experience. Brain imaging provides intriguing
evidence regarding brain responses during spiritual experience in meditators (Newberg, 2014;
Newberg & Waldman, 2009). In a broad range of participants, a review (Barnby, Bailey,
Chambers, & Fitzgerald, 2015) suggests an overlap in the underlying processes, with meditation
engaging the prefrontal cortex, and spiritual processes reduced activity in the parietal cortex.

Despite the long-standing association between meditation and cultivation of spiritual
experience, most contemporary approaches to mindfulness meditation secularize meditation practice. However, as attention to spirituality as an appropriate therapeutic focus has developed (Marlatt & Kristeller, 1999), measures of spiritual engagement have been developed (Monod et al., 2011), and research is documenting effects of meditation and related practice on spiritual well-being, even within secular programs (Falb & Pargament, 2012). An early randomized study (Shapiro et al., 1998) with medical students showed substantial changes across all measures of well-being, including spirituality, within a 7-week mindfulness meditation program.

Increases in spiritual well-being in the MBSR program relate to physical well-being (Carmody, Reed, Kristeller, & Merriam, 2008; Greeson et al., 2011) and to lower depression (Greeson et al., 2015). Similar effects have been documented with medical populations, including cancer patients (Carlson et al., 2016), with changes in mindfulness mediating increases in spiritual well-being (Labelle, Lawlor-Savage, Campbell, Faris, & Carlson, 2015). Another study found that increases in spirituality occurred over the course of the MB-EAT intervention, with increases in spiritual engagement mediating other indicators of improvement, including binge eating symptoms (Kristeller & Jordan, 2018). A meta-analysis of the effects of MBSR in healthy individuals also showed broad effects on spiritual well-being (Chiesa & Serretti, 2009).

This research suggests that when spiritual experience is engaged through mindfulness practice, even when it is not a focus, personal enhancement of these experiences occur, deepening self-regulatory capacity. The growing interest in understanding this aspect of mindfulness practice is also reflected in an increased call for MBIs to engage more spiritual aspects from traditional Buddhist teachings (Lomas, 2017; Shonin et al., 2014).

Assessment of Mindfulness and Mindfulness Meditation

As mindfulness becomes accepted as a viable human capacity, interest in measurement of
dispositional mindfulness has emerged. Multiple assessment tools are now available; Eisenlohr-Moul, Peters and Baer (2015) provide an excellent overview. Widely used is Baer’s 39-item Five-Facet Mindfulness Questionnaire (FFMQ) created by giving previously developed mindfulness scales to a sample of undergraduates (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). Five factors emerged: Nonreactivity, Observing, Acting with Awareness, Describing, and Nonjudging. Using responders with little or no meditation experience limited the research, but meta-analyses have found consistent changes on the FFMQ and other measures of mindfulness following meditation training (Goldberg, Tucker, Greene, Simpson, et al., 2018; Quaglia, Brown, Lindsay, Creswell, & Goodman, 2015). Somewhat distinct, the Toronto Mindfulness Scale (TMS; Bishop et al., 2004) assesses experiences during meditation itself.

It can also be valuable, both for research and in a therapeutic context, to assess the quality of meditative practice that clients are engaging. Individuals can track, on a daily basis: (1) type of meditation (i.e., sitting/guided/walking meditation); (2) the quality of experience (e.g., distracted, focused); and (3) therapeutic impact noticed. This can be done informally or using a self-monitoring form suiting the practice/needs of the clients. I use a form with five columns: time of day, type of practice, length of practice, benefits, and problems/issues that arose.

Mindfulness Meditation: Clinical Applications, Challenges, and Practical Issues

A key question is how to deliver mindfulness meditation instruction most effectively, both clinically and in regard to patient receptivity, burden, and cost. Two excellent resources are by McCown, Reibel and Micozzi (2011; 2016). For therapeutic value, most approaches use group programs, which entail substantive but valuable teacher training. Guidelines for integration of mindfulness approaches into psychotherapy are also being developed (Michalak et al., 2019). Wilson et al. (2017) provides an overview of implementation related to behavioral addictions.
Audio programs/apps are increasingly available for home use. Reviewing them for the needs of a client is recommended; such apps often include music, nature sounds, or frequent instruction, valuable but not providing enough open awareness space for optimal mindfulness practice.

**Client Engagement in Practice**

Considerable attention has been given to maintaining high levels of involvement in the MBSR program (Salmon, Santorelli, Sephton, & Kabat-Zinn, 1998). Over a 2-year period in the program at the University of Massachusetts Medical Center, of 784 individuals enrolled, 76.3% completed the program (Kabat-Zinn & Chapman-Waldrop, 1988), but not necessarily complete assigned home practices. The daily 45-minute meditation sessions raise one concern for compliance. A meta-analysis (Parsons, Crane, Parsons, Fjorback, & Kuyken, 2017) found small but consistent effects of the relationship of practice to outcome (r=0.26, p<.01), with typical reported length at about 30 minutes/day. Both the MBCT and MB-EAT programs introduce sitting meditation with 10-minute practices, increasing to 20 and then 30 minutes.

Many teachers emphasize regularity of practice over the length of practice. Sitting for even 10 - 20 minutes per day would be preferable to skipping days—or weeks. While even 3 minutes may bring a mindful perspective to a range of daily activities or tasks (Harp, 1996), it would not be long enough to elicit deeper awareness. In my experience, regular periods help people move toward valuing the transformative elements of meditation. Using the analogy of learning a musical instrument or a new sport helps people understand that regular practice heightens the skills needed under more challenging circumstances of a performance, game -- or life!

Therefore, a key issue in clinical use of meditation is how formal practice of mindfulness carries over into everyday activities. Sitting every day or most days deepens and sustains the effects achieved, heightening the transfer of mindfulness to everyday life. Both work together.
Carlson has examined change over the course of her MBCR program for cancer patients (Labelle, Campbell, Faris, & Carlson, 2015), and found early effects of MBCR on the FFMQ factors of Observing, and Nonjudging, and on rumination; these changes which then led to later effects, for example, on non-reactivity. One question often raised is whether individuals will practice on their own after formal instruction ends, implying that there is little value in learning meditation if not practiced on an extended basis. It is also a question grappled with in many areas of therapeutic practice and behavioral change. Mindfulness meditation training is analogous to other types of therapeutic interventions, such as cognitive restructuring, in that they cultivate a set of skills, in addition to inducing a particular state of being. The individual who participates in substantial mindfulness experience learns to focus more easily, shift attention at will, use the breath to find physical relaxation, recognize emotional reactivity better, shift from reactivity to ‘wise’ responses, and cultivate to a state of compassion toward self and others. Such abilities exist independent of meditation practice.

In the 3-year follow-up of Kabat-Zinn’s study of individuals with anxiety and panic attacks (Miller, Fletcher, & Kabat-Zinn, 1995), effects were well maintained, yet only about half of people reported any continued use of meditation practice, mostly irregular. Follow-up of chronic pain patients (Kabat-Zinn, Lipworth, Burney, & Sellers, 1986) revealed similar patterns; about half still used some breath awareness through 4 years, with 30–40% reporting regular sitting practice (3 or more times/week for 15 minutes or more). A practice effect on pain experience was evident, but did not reach statistical significance. Much like many skills, the basic ability to engage mindfulness is retained, but regular practice will continue to deepen it. Many individuals do maintain regular sitting, coupled perhaps with occasional retreats, finding that this allows
them to deepen their self-management skills, accessing inner wisdom and insight more readily.

**Cautions and Concerns: Other Challenges to Practice**

Gunaratana, a Sri Lanka Buddhist monk and meditation teacher, in his classic small book *Mindfulness in Plain English* (1991), outlines 11 problems that may arise when meditating, including physical pain, “odd” sensations, drowsiness, inability to concentrate, boredom, fear, agitation, and trying too hard. He addresses each one, with a common thread being his encouragement simply to observe these experiences as aspects of the mind and the self, that may arise even for experienced meditators. If these states occur during meditation, they may be present in the background of other activities, reflecting issues to be dealt with more broadly.

Typically, most individuals find enough calm in the midst of these experiences to keep practicing. But they may need reassurance that ‘clearing the mind’ of all thoughts or feelings is not the goal of practice, a common misperception. In contrast, someone may find his or her mind racing so much, even without ADHD as noted earlier, that he or she is unable to find any relaxation at all during the initial experiences, regardless of whether the content of the thoughts is distressing. Reassurance that such agitation is not uncommon and that with more practice this should improve, potentially providing an even greater value of meditation, can help increase someone’s willingness to stay with developing a practice. Also as mentioned earlier, using a mantra, the technique of “noting”, or starting with shorter time periods can be helpful for anyone. In contrast, someone who deeply resonates to the practice may report a sense of physical ‘floating’. During our usual daily activities, our body awareness comes from even low-level movements that generate feedback to the brain. The ‘floating’ sensation occurs when someone is able to still their bodies to substantial degree; while unusual in beginners, it can be disconcerting. Simply explaining the reason to the individual – and to the whole group -- is reassuring. And the
person experiencing it can be gently congratulated for a high level of inner and outer quiet.

The perceived religious context of mindfulness practice in Buddhism may be concerning for those who hold a strong identity with another religion, even to a sense of betrayal of their beliefs. I have found it very helpful to first explore this concern, and then to point out that the program draws on Buddhist psychology, rather than Buddhist religion. Paradoxically, it is then helpful to point out that virtually all world religions have developed such practices to help people access inner wisdom and connect to a higher sense of spirit. These two messages together seem to quell these concerns, creating a greater sense of comfort with practicing mindfulness.

A noted earlier, another challenge may occur with more advanced meditators – or those who have read extensively in the Buddhist literature. They may misunderstand Buddhist-based teachings as requiring that one give up the ego or sense of self. Rather than cultivating mindful awareness of the natural fluctuations of their experience, they suppress the presence of craving or desire, trying to meet a goal of spiritual attainment that is unrealistic. Epstein (1995) discusses this as confusion between “egolessness,” defined as realization that desires or aversions do not define the “self,” versus a steady state of ‘no-self’ that can rarely be sustained. Shapiro, Segal and Neff (2018) address these issues in a model contrasting (1) Acceptance vs. Change, (2) Escape vs. Engagement, (3) Effort vs. Non-Striving, and (4) Self-Focus vs. Non-Self.

**Cautions and Concerns: Uncovering Memories, Dissociation, and Trance Experiences**

Mindfulness meditation cultivates the ability to “fall awake.” At the same time, meditative practice can induce trance states, access hidden memories, or create dissociative experiences (Vieten et al., 2018). Kutz and his colleagues (1985), while exploring meditation as an adjunct to psychodynamic psychotherapy, mentioned above, also assessed the occurrence of unpleasant reactions; four patients recovered memories of a past traumatic event when meditating. Others
reported feelings of “defenselessness,” leading to emotionality, anger, fear, and despair. Even so, such experiences were balanced by an enhanced sense of inner centeredness. An excellent qualitative study of over 60 individuals with extended meditation practice (70% had over 5000 hours of lifetime practice) (Lindahl, Fisher, Cooper, Rosen & Britton, 2017), found that while 12% noted a challenging experience (e.g., emotional, trauma-memories) in the first few days of practice, for the majority (70%) it was after at least a year of practice, mostly (72%) associated with intense retreat experience. There was wide range of effects, in over 50 different categories; for example, 47% reporting delusional or paranormal beliefs; 72% unusual anxiety or fear; 43% traumatic memories; and 75% unusual positive affect. While this sample is clearly non-representative of individuals enrolling in MBIs, it illustrates a wide range of challenging experiences that may occur, yet for individuals who nevertheless continue with their practice.

As noted before, the prevalence of traumatic reactions within the MBSR program, which draws from a general population, has tended to be very low, generally under 1%. Within a psychiatric setting, such experiences may be more prevalent. Within my own therapy practice, they have covered a range. A woman in the MB-EAT program found the mild dissociation she could induce so appealing that she began to “zone out” to avoid engaging with her husband (“I could be right there, and he didn’t even know I was somewhere else”). An older man I saw for an anxiety disorder recovered memories of childhood sexual abuse within a few days of practice, bringing him to better understand the avoidance issues he had dealt with for 50 years. And a woman who, upon trying meditation to stop smoking, was immediately flooded with images related to past sexual abuse, which she believed she had fully dealt with in previous therapy.

For the first woman, we reviewed appropriate use of meditation practice and explored the need for marital counseling. In the second case, the client decided he wished to continue
meditating but followed it with journaling so we could more readily use recovered material in therapy, also enabling him to recognize some ‘false’ memory components that emerged. In the third case, the woman became aware that she had been using her smoking as a way to suppress these memories of abuse, and returned to her previous therapist for further work.

Meditating may also evoke vivid and even bizarre imagery, without it entailing a significant psychiatric issue. Such individuals may need to modulate the depth or type of meditation used, consult with senior meditation teachers, or explore the significance of the imagery in a therapy context. Contraindications are rare. People with unstable psychiatric issues should wait until other treatment is established, as noted earlier. When offered in a group context, creating a sense of quiet is important, so those who have difficulty managing social expression or who dominate group discussion, might better be introduced to mindfulness in individual therapy.

**Therapist Training and Practice**

It is very important that a therapist have substantive personal experience with mindfulness practice before using it professionally. Internal experiences are being cultivated, and it is difficult to understand the reports of clients in regard to such experiences without personal practice. The MBSR certification programs assume that individuals already have a personal sitting practice. Piet, Fjorback, and Santorelli (2016) provide an excellent overview of teaching needs, incorporating sensitivity to both contemporary science and Buddhist traditions that have informed the core programs, MBSR and MBCT. Saki Santorelli, with Jon Kabat-Zinn, led the Center for Mindfulness at the Univ. of Massachusetts Medical Center for many years. Despite high expectations for teachers, practicing at the level of a meditation “master” is not necessary for using basic techniques in a therapeutic context or for teaching such techniques to others.

**Resource Material**
A substantial amount of resources are available to help beginning meditators understand the value of practice, including reading materials and local sitting groups/retreat centers. One consideration is whether a client is interested in the spiritual context of meditative traditions. A highly readable guide to mindfulness from a secular perspective is *Mindfulness for Dummies* (Alidina, 2015). I generally ask clients what they have read or downloaded from meditation audiofiles. If I am unfamiliar it, I ask the client to bring it in to show me, or upload the app during therapy; this helps clarify previous experience or identify sources of misunderstanding.

Most sitting groups and retreat environments focus on a particular tradition (i.e., Zen, Tibetan, or Vipassana), so that should be investigated and considered in relation both to therapeutic goals and to specific training or spiritual messages that might be conveyed. A range of residential programs are offered at the Omega Institute, Rhinebeck, NY (www.omega.com), and at Kripalu Center for Yoga and Health, Lenox, MA (www.kripalu.org). Focused on mindfulness practice are Spirit Rock Meditation Center near San Francisco (www.spiritrock.org) and the Insight Meditation Society near Boston (www.dharma.org), among others.

**Case Example**

Choosing a case example to illustrate use of mindfulness meditation in a therapeutic context is challenging. Applications are varied and are becoming increasingly so; further, much of the validated use is within a group context. In regard to the MBSR program, *Full Catastrophe Living* (Kabat-Zinn, 2013) presents substantial case material related to chronic pain management. Segal and his colleagues (Segal et al., 2013), in their manual on MBCT for depression, present useful case material. For individual therapy, Germer and his colleagues (Germer et al., 2013) illustrate varying applications of mindfulness practice in psychotherapy, as does Ron Siegel in “The Mindfulness Solution” (2010). Jeffrey Rubin (1996) and Tara Brach (2003) also draw on rich
case material to illustrate their applications of mindfulness-based approaches in therapy.

The case presented here is a 40-year-old woman who participated in our MB-EAT program and then continued in individual therapy under my supervision. This case illustrates someone drawing benefit from a group program utilizing general sitting practice and guided meditations, and then moving deeper with individual therapy. M.W. entered our MB-EAT program for binge-eating disorder. She weighed more than 250 pounds, and struggled with knee and hip pain. She was vivacious, professionally employed, and acknowledged turning to food as a primary way to manage stress. She had tried many diets, losing considerable weight and then gaining it back. Her family had placed substantial importance on physical fitness, but she had struggled with weight and admitted to binge-eating issues since age 15. Otherwise, she had no other notable psychiatric issues. Although projecting confidence, she was in reality extremely hard on herself, with much of her self-judgment focused on her inability to control her eating and weight.

During the MB-EAT program, she responded very positively to meditation practice, noting how valuable the mindfulness exercises were in staying away from automatic eating. Unlike many participants, she lost little weight initially. However, she noted that her relationship to food changed markedly. She said that she learned to “honor my hunger,” became aware of satiety, and came to “care what I put in my body;” her eating patterns continued to improve during the 4-month follow-up. Several months later, she began therapy with one of the group leaders, focusing on interpersonal relations and other issues. Two and a half years later, she focused again on weight issues, re-enrolling in Weight Watchers, noting “now I’m doing this for myself, and not for them” and lost over 50 pounds. At that time, she was binge eating only a few times a year, and would be mindful of the circumstances, using the episode to examine why her stress was high enough to trigger a binge. She also noted that while she was no longer craved rich
foods, she enjoyed food more and it played a better role in her life. Although rarely practicing
formal meditation, she frequently engaged mindfulness and breathe awareness, attributing much
of her self-growth to the meditation training, saying “it helps me hook into my inner wisdom.
Meditation slows you down enough to be in touch with God . . . and God lives in all of us.”

Comments and Reflections

I have tried to convey the potential value of mindfulness meditation within the therapy
context. There is a rapidly expanding appreciation of mindfulness as a cognitive process that is
powerful in its potential for heightening self-regulation and for disengaging the type of automatic
reactivity, whether emotional or behavioral, which leads to suffering. Meditation practice helps
cultivate the ability to bring mindfulness into moment-to-moment activity, a capacity that I
would assert virtually everyone can develop. Over the past 30 years, the range and complexity of
mindfulness meditation practices is being increasingly recognized and appreciated. The
empirical foundation for understanding the value of mindfulness-based approaches is growing
rapidly, within both the framework of “stress management” and more broadly as a means to
understanding how optimal functioning may require optimal management of stress-inducing
situations. As with a number of other stress management approaches outlined in this volume, it is
important to keep in mind that many of these approaches go far beyond relatively simple
“relaxation” effects in their value to individuals. Mindfulness meditation provides provide clients
with tools to engage the full range of their capabilities without becoming caught up in patterns of
overdetermined and long-standing emotional and behavioral reactions to stress situations.

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Figure 14.1
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Table 14.1

Figure 14.1
TABLE 14.2. Basic Instructions in Breath Awareness and Mindfulness Meditation

1. Find a quiet place and time. As preferred, set a soft timer, perhaps in the next room, for your intended length of practice time. Become comfortable in your chair, one you can sit in with a relaxed but straight, erect posture, balanced but not straining. Loosen any tight clothing that will restrict your stomach. Let your hands rest comfortably in your lap. Gently close your eyes.

2. Simply allow your body to become still. Allow your shoulders, chest, and stomach to relax. Focus your attention on the feeling of your breathing. Breathing through your nose, take two or three deeper breaths from your diaphragm, letting the air flow all the way into your stomach, without any push or strain, and then flow gently back out again. Repeat these two or three deep breaths, noticing an increased sense of calm and relaxation as you breathe in the clean, fresh air and breathe out any sense of tension or stress.

3. Now let your breathing find its own natural, comfortable rhythm and depth. Focus your attention on the feeling of your breath as it comes in at the tip of your nose, moves through the back of your throat, into your lower diaphragm, and back out again, letting your stomach rise and fall naturally with each breath.

4. Allow your attention to stay focused on your breath, away from the noise, thoughts, feelings, the concerns that usually fill your mind. Perhaps explore the nature of the breath—changes in temperature in your nose, feelings in your throat, changes in rhythm and depth.

5. As you continue, you will notice that your awareness will move to thoughts, feelings, sounds. You may find yourself remembering something from your past or thinking about the future. This is to be expected. This is the nature of the mind. As you notice this occurring, without self-judgment, simply observe the process of the mind. You might note to yourself the nature of the thought or experience: “worry,” “planning,” “pain,” “sound.” Then gently return your attention to the breath.

6. Again, as you notice your mind wandering off, try not to be critical of yourself. Understand that this is the nature of the mind—to become attached to daily concerns, to feelings, to memories. If you find your mind becoming preoccupied with a thought, simply notice that, rather than pursuing it at this moment. Then return your attention to your breathing. See the thought, feeling or memory as simply an activity that your mind is familiar with. Being mindful also involves just noticing where your mind goes, without judgment.

7. As you gain more experience, you may choose to use open awareness to let your mind stay with the thought, feeling, or emotion that arises, for a few moments, doing so with intention, much as you might watch a bird flying across the sky, with curiosity and gentle observation. With even more experience, you might practice open awareness for longer, using the breath only occasionally to ground your awareness.

8. When you are ready, or with the sound of the timer, gently bring your attention back just to the breath, taking a few deeper breaths. Now bring your attention back into the space of your body and into the space of the room. Move around gently in the space of the chair. When you are ready, open your eyes and gently stretch out.
Table 14.3 Mindfulness-related review papers and meta-analyses.

- Note: Some references are repeated across categories, as applicable.
- Full citations are contained within the reference section of the chapter.
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