

Chapter 17

Broad-Spectrum Memetic Therapies

Contents

17.1 What is Broad-Spectrum Meme-Oriented Therapy?	195
17.2 Sleep, Sedation, and Electroconvulsive Therapy	196
17.3 Relaxation and Meditation	197
17.4 Hypnosis	197
17.5 Music and Dance Therapy	198
17.6 Massage Therapy	199
17.7 Exercise	200
17.8 Bibliotherapy	200
References	200

17.1 What is Broad-Spectrum Meme-Oriented Therapy?

Our body contains many microorganisms. Many of them are beneficial, even essential, for bodily function such as those in the gut that assist the digestive function. Some ancient intruders became an integral and essential part of our very cells in the form of mitochondria. Other microorganisms are merely symbiotic, causing neither harm nor any benefit. Then, some, like the varicella and herpes simplex viruses, are pathogenic but may stay in our bodies without causing much trouble as their multiplication is checked by our immune system. Under certain conditions of weakened defenses, however, the latent pathogenic viruses may multiply and disease ensues. Weakened defenses may be caused by infection by another organism, as in HIV, or by malnutrition, drugs, etc. Under those conditions, even normal flora may overgrow and cause disease. Of course, infusion of virulent microorganisms may overwhelm the defenses and cause disease immediately. In all these instances, there is a massive multiplication of the organism in the disease state.

Likewise, there is a massive multiplication of memes in mental illness – the culprit memes may have been initially benign and beneficial, or symbiotic, or pathogenic but dormant. In the disease state, there is a massive multiplication of

memes in the form of ideas (e.g., paranoid or obsessive), emotions (e.g., depressive or euphoric), worries, desires, and behavior.

In treating infections by microorganisms, broad-spectrum antibiotics have been particularly useful as they target a broad range of organisms, i.e., regardless of the nature of the organism, the therapy can be effective. Especially in the case of mixed infections, they can be particularly useful. Similarly, there are broad-spectrum therapies that may be geared to suppressing a broad range of memes. Of course, as in the case with antibiotics, broad-spectrum memetic therapy may have the side effect of suppressing beneficial normal flora of memes as well. Nevertheless, when the unchecked multiplication of memes may be overwhelming, broad-spectrum anti-meme therapy can be a very effective method of controlling the situation and preventing an escalation of the memetic multiplication.

How can we actually achieve this? Antibiotics generally interfere with the replicative mechanism of the microbe. What is the replicative mechanism of memes? As we discussed in Chapters 9 and 11, memes replicate through signal reinforcement of the neural cliques that make up the memes and by recruiting other neural clusters through the development of new synaptic and dendritic connections. These old and new connections are enhanced by attention, affect, and thinking. There is, of course, unconscious replication of memes in the background, but the dominant replication process is usually conscious in the form of thoughts and feelings. Thus, depriving the pathogenic memes of attention, affect, and thought and thus the neural reinforcement would interfere with their multiplication.

An obvious approach is pharmacological intervention, a direct suppression of attention and cortical activity. It is well known that most mental illness is associated with insomnia and the promotion of sleep with drugs have beneficial effects. Many tranquilizers, especially benzodiazepines, induce drowsiness and reduced attention. Antipsychotic drugs and antidepressants are often chosen for the “side effect” of sedation as well as for the specific action. Many patients on these drugs also report a blunting of their affect.

There are a number of extant nonpharmacologic techniques that are considered to be valuable in promoting mental health, but the reason why they are effective has not been clearly defined. They include such diverse techniques as relaxation training, meditation, hypnosis, bath, massage, music therapy, dance therapy, exercise, and bibliotherapy. In the light of our understanding of memes, it is clear that all these techniques have in common the focusing of attention on something other than the thoughts and feelings that are distressful, and thus the ability to suppress the multiplication of memes.

17.2 Sleep, Sedation, and Electroconvulsive Therapy

Most current psychotropic drugs have either sedative or stimulant effect on the brain. The sedative qualities of the drug are useful in two ways: (1) in inducing sleep and thus temporarily stop most meme replication, especially if the drug suppresses rapid

eye movement (REM) sleep and (2) by general reduction in attention directed to memes while awake, thus reducing meme replication (Rush and Griffiths, 1996).

Stimulants, on the other hand, seem to have the effect of reducing the scattered attention and thus chaotic meme replication in attention-deficit hyperactivity disorder (ADHD), and focusing attention to the memetic task at hand. The memes associated with the task had been at a disadvantage because of the unchecked proliferation of irrelevant memes. In patients with chronic depression associated with chronic physical illness, especially in elderly patients, stimulants may enhance attention and energy, strengthening the selfplex memes.

Electroconvulsive therapy (ECT) produces a generalized seizure activity in the brain, i.e., all memetic proliferation is suspended during the seizure activity when all neurons are firing simultaneously. Memory impairment is common following ECT, indicating reduced accessibility and thus multiplication of memes.

17.3 Relaxation and Meditation

Relaxation and meditation therapies are grouped together here because they are usually practiced together, i.e., meditative techniques are usually utilized to bring about relaxation, and relaxation is usually suggested or achieved during meditation.

Relaxation therapy has three models – specific effects, relaxation response, and integrated. The specific response model is geared to specific effects based on the modality, i.e., muscle relaxation for symptoms associated with muscle tension. The relaxation response, first formulated by Benson et al. (Benson et al., 1975) postulates that all effective relaxation techniques produce a generalized physiologic “relaxation response” characterized by reduced sympathetic arousal. The integrated model posits that most relaxation techniques have both a relaxation response and a specific component (Schwartz et al., 1978).

The techniques of relaxation usually involve one or a combination of the following: focusing on muscle relaxation, focusing on breathing, focusing on bodily sensations (e.g., warmth of hands), focusing on an imagery, focusing on a word or sound (mantra) (Geba, 1973; Jacobson, 1962; Samuels, 1975).

By diverting attention from the proliferating, pathogenic memes, and focusing attention on the specific sensation, regardless of the body part or function, there is attenuation of general memetic replication. This broad-spectrum anti-meme effect, together with whatever specific physiologic effect the relaxation of muscles or pacing of breathing or vasodilation in hand warming might have, may be responsible for the overall beneficial effect of relaxation and meditation in mental illness.

17.4 Hypnosis

Contrary to popular notion, hypnosis involves focused and concentrated attention on a sensation or imagery. A state of altered consciousness or trance is induced by first fixating attention to a physical sensation, often by gazing at a point or concentrating

on a feeling of floating. This concentration of attention tends to attenuate attention paid to other memes and thus their proliferation.

The hypnotic experience itself depends largely on the hypnotizability of the individual, which seems to be a trait associated with the ability to concentrate attention and to enter into a dissociated state. In highly hypnotizable individuals, hypnosis can alter actual sensory experience such as pain or auditory stimulus through activation of the prefrontal and cingulate gyri (Faymonville et al., 2006; Nash, 2005; Raij et al., 2005).

In the dissociated state, susceptibility to suggestion is heightened, and the subject is ready for new meme infusion by the hypnotist. The hypnotist may then infuse the subject with memes designed to neutralize existing pathogenic memes and to enhance salutary memes. The subject can then be taught self-hypnosis, in which the newly introduced salutary memes can be reinforced. The dissociative experience in hypnosis thus may nurture the development of a healthier selfplex that will replace the currently dominant selfplex which is saddled with multiplying pathogenic memes (Bob, 2008).

Even without achieving a dissociated state, the directed focusing of attention in hypnosis and self-hypnosis deprives the pathogenic memes of unchecked multiplication, and potentially rechannels attention to salutary memes. Hypnosis is often used in conjunction with relaxation, and may have synergistic effects.

17.5 Music and Dance Therapy

As early as eighth and ninth centuries, the Islamic scholar and psychologist, al-Farabi (872–950), known as “Alpharabius” discussed the therapeutic effects of music in his treatise, *Meanings of the Intellect* (Haque, 2004). In the seventeenth century, Robert Burton, an English scholar and vicar at Oxford University, wrote that music and dance were critical in treating mental illness, especially melancholia (Burton, 2001). Music therapy became widely recognized after World War II.

The Nordoff–Robbins approach to music therapy posits that everyone can respond to music, no matter how ill or disabled. Music can enhance communication, and enable people to live more resourcefully and creatively.

Music therapy has been shown to be effective in alleviating anxiety, depression, pain, and disability in a wide variety of medical and psychiatric conditions including mood disorders, addictions, perioperative anxiety and pain, cardiac rehabilitation, autism, and psychosis (Choi et al., 2008; Dingle et al., 2008; Hanser, 1993; Hanser and Mandel, 2005; Hanser and Thompson, 1994; Jing and Xudong, 2008; Kemper et al., 2008; Klassen et al., 2008; Leung, 2008; Mandel et al., 2007; Maratos et al., 2008; Nilsson, 2008; Raglio et al., 2008; Ross et al., 2008; Sarkamo et al., 2008).

Specific modes of music, e.g., major vs. minor keys, may have specific effects on the brain, e.g., music in major mode has been shown to be more effective in reducing mental fatigue associated with stress (Suda et al., 2008).

Music as well as massage has been shown to attenuate the right frontal EEG activation seen in depressed adolescents (Jones and Field, 1999).

Music seems to activate specific pathways in the brain that may have salutary effects on mood and cognitive function (Boso et al., 2006; Esch et al., 2004; Thaut, 2005). There is also evidence that BDNF (brain-derived neurotrophic factor) may be released with music (Angelucci et al., 2007). Specific music, for example, Mozart's piano sonata (K448) but not Beethoven's *fur Elise* was shown to enhance spatiotemporal tasks and increased blood flow in dorsolateral prefrontal cortex, occipital cortex, and cerebellum in individuals even after the music has stopped (Bodner et al., 2001).

Rhythm, an essential component of music, has direct effects on human motor activity and its regulation (Thaut et al., 1999). Dance therapy is a good example of the utilization of rhythm in health care.

How do these therapies affect the memes? Music is itself memetic, i.e., particular tunes and rhythms are encoded in neurons and the patterns are replicated in recall and reproduction. An example of such replication, often unwanted, is the phenomenon of the earworm, the repetition of a song or jingle in one's mind over and over again. Music therapy is a form of meme infusion which may have direct neurophysiologic and neurochemical effects as discussed above, in addition to the effect of distracting attention from the replicating pathogenic memes and thus deprive them of sustenance. Even background music can be an infusion of memes coming into the brain without awareness but effectuating change in it.

Music and dance therapy, together with play therapy and writing are often considered to be *expressive* therapy when they are used to express patients' emotions and thoughts. In such expressive form, memes are emitted by the patient in the form of words, sounds, and motion. Such expressions may result in a decompression of memetic pressure built by forceful replication. The replicated memes may be creative and salutary, or may be pathogenic. No matter what the nature of the memes might be, relief of the memetic pressure may be beneficial.

17.6 Massage Therapy

There are writings on massage in such ancient civilizations as Rome, Greece, China, Japan, Egypt, India, and Mesopotamia. Hippocrates wrote in 460 BC that "The physician must be experienced in many things, but "assuredly in rubbing." The ancient Chinese medical textbook by the Yellow Emperor, *Huangdi Neijing* (also known as *the Inner Cannon of the Yellow Emperor*), considered to date around two to fourth century BCE, recommends "massage of skin and flesh." Massage became popular in the United States in the middle of the nineteenth century and was based on techniques developed in Sweden (NCCAM, 2006).

There are more than 80 types of massage therapy including the Swedish massage, deep tissue massage, trigger point massage, and Shiatsu. In all of them, therapists press, rub, and otherwise manipulate the muscles and other soft tissues of the body,

often varying pressure and movement. They most often use their hands and fingers, but may use their forearms, elbows, or feet. Typically, the intent is to relax the muscles and tendons and to increase blood flow to the massaged areas.

Massage draws attention to the immediate sensations of touch and warmth in the massaged area and away from the proliferation of pathogenic memes in the form of thinking, worrying, and other preoccupations. The relaxation of muscles also may produce a brain state incompatible with anxiety and/or depressive memes.

17.7 Exercise

Physical exercise tends to concentrate attention at the physical task at hand, and reduce attention being paid to pathogenic memes. Furthermore, the endorphins that are released with exercise enhance positive mood and general health (Bender et al., 2007; Karacabey, 2005; Koseoglu et al., 2003). Exercise has been shown to be effective in the rehabilitation of chronic psychiatric patients (Faulkner and Carless, 2006).

17.8 Bibliotherapy

Bibliotherapy or reading therapy is geared to providing the patient with reading materials that may be helpful. The reading material may be information concerning a medical or psychiatric condition, a “how to” book to overcome a condition, or simple recreational reading. Bibliotherapy combined with cognitive-behavioral therapy has been found to be effective in treating adolescent depression (Ackerson et al., 1998) and in preventing and treating addiction (Pardeck, 1991).

Bibliotherapy involves attention to the reading material and away from the replicating pathogenic memes, and the memes contained in the reading material are absorbed and may counteract the pathogenic memes.

It may be possible to develop reading material that may be specifically geared to neutralize or enhance specific memes in the brain, e.g., for depression, for anxiety, or for health promotion. Of course, any reading material is capable of introducing new memes, which is the essence of book learning.

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