

From Ancient to Integrative Medicine: Models for Music Therapy

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Ancient practices, Eastern medicine, and nonconventional treatments, including music as therapy and as medicine, are being reexamined for the wisdom that they can contribute to modern methods of enhancing health. By introducing the Western approaches of alternative, complementary, and mind-body medicine, the Eastern approaches of traditional Chinese medicine and Ayurvedic medicine, and worldwide practices in shamanism, this article offers a model for the integration of music therapy into integrative medicine. The philosophies underlying these approaches have

intrigued the Western medical community, who are now using traditional medical research methodology to understand the effects of these treatments. Similarly, the effect of music has been studied by nurses, physicians, and other medical professionals as well as music therapists. Their combined efforts have provided convincing evidence that music therapy should be included as a modern, integrative medical treatment.

Keywords: integrative medicine; music and medicine; mind-body medicine; music medicine; music therapy

Once, there was a community of healers. These people treated illness with herbs, salves, and music that they learned from their ancestors. They believed in belief as a healing power. They saw faith and the natural curative properties of the human body as affecting both the body and soul. Music was the way the community accessed their own spirits and the spirits in a world beyond. Their harps soothed souls, their timbrels celebrated life, and their drums drove away evil. Their horns sounded victory; their songs comforted the young.

This is an ancient story of cultures near and far. It is also a contemporary one, as modern medicine turns from its technological advances to its ancient roots, and natural treatments are once again joining the armamentarium of therapies offered by contemporary physicians. The story alludes to the practices of Chinese medicine some 5,000 years ago (Elias & Ketcham, 1998), which are inspiring today's physicians to add herbs and salves to their prescription pads. Faith and belief were the hallmarks of

shamanism, and today, we know that these factors influence health (Bertisch et al., 2009). Demonstrations of music in healing appear in cave paintings from some 26,000 years ago, and there is evidence that music was used by shamans in the past 30,000 years (Moreno, 1991). Suddenly, consumers are consumed with treatment alternatives, from acupuncture to music, and massage to creative arts, perhaps due to a paradigm shift toward the whole patient and a burgeoning field known as integrative medicine. This is the story of the integration of Western and Eastern medicine, as well as the mind and the body.

The thesis of this article is that ancient practices, Eastern medicine, and nonconventional treatments, including music as therapy and as medicine, are being reexamined for the wisdom that they can contribute to modern methods of enhancing health. Indeed, a growing body of evidence attests to extensive usage of these treatments by consumers (Eisenberg et al., 1993). By introducing the Western approaches of alternative, complementary, and mind-body medicine, the Eastern approaches of traditional Chinese medicine (TCM) and Ayurvedic medicine, and worldwide traditions of shamanism, this article offers a model for the integration of music therapy into integrative medicine. The

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philosophies underlying Eastern medicine have intrigued the Western medical community, who are now using traditional medical research methodology to understand the effects of these treatments. Similarly, the effect of music has been studied by nurses, physicians, and other medical professionals as well as music therapists. Their combined efforts have provided convincing evidence that music therapy should be included as a modern, integrative medical treatment.

Eastern and Western Medicine

While innovations in the philosophy of medical care have been occurring in the United States over the past two decades, Eastern medicine has been in existence for thousands of years. Western medicine hails from a more contemporary source, the ancient Greeks, notably Hippocrates. Indeed, the Oath of Hippocrates of the 4th century BCE—to do no harm, act ethically, and prescribe proper regimens, among other duties—is preserved in the diplomas of modern medical doctors. It is interesting that the word *medicine*, whose definition generally refers to healing as an art and science, has come to mean the use of medication and pharmacology to Western consumers.

The focus of Western medicine is on the body, with its diseases, symptoms, and illnesses. The mind is something quite different. Rene Descartes is probably responsible for this distinction, because in 1637, while the scientific revolution was spiraling out new machines, he espoused his famous theory of the duality of the body and the mind. He declared that the human body was like a mechanical object that followed the laws of physics, while the mind was unpredictable (Descartes, 1637, as translated and updated in Descartes, 2007).

In their text on Chinese medicine, acupuncturist and practitioner of Western and Chinese herbal medicine Jason Elias and coauthor Katherine Ketcham (1998) distinguish between Western and Eastern medicine:

While Western medicine tends to concentrate on the disease rather than the patient, Eastern medicine focuses on the impact of the disease or disorder on the patient's emotional and spiritual health. For if we fail to take care of the mind and spirit, counsel the ancient sages, we will do great damage to the patient's ability to recover. (p. xxv)

The differences between East and West permeate approaches to diagnosis, treatment, and service provision, making it challenging to look at one system from the vocabulary of the other. This has posed major challenges for conducting research and explaining the efficacy of various procedures, including music therapy.

Complementary and Alternative Medicine

While the ocean separating Eastern and Western medicine was becoming bridged, the chasm between mind and body was also shrinking. Over time, research and thinking in the fields of physiology, psychology, and medicine began to intertwine, as investigations at distinguished institutions, such as Harvard Medical School, delved into various phenomena (Taylor, 2000). Harvard professors took the lead in experimenting with unusual clinical observations and developing new conceptual frameworks. Beard's 1878 thesis on neurasthenia and trance was followed by James's psychology of emotion in 1884. Psychology, neurology, and immunology became wedded in the fight-flight response theories by W. S. Cannon in 1915 and in the General Adaptation Syndrome of Selye in 1956. Limbic connections to the cortex were discovered in 1958 by McLean, and Fisher mapped ecstatic states in 1971. Ader looked at sources of immune suppression in 1981, Pert examined the journey of neuropeptides in 1985, and in 2001, Stefano et al. studied the neurophysiology of the "relaxation response" and placebo. This fascinating chronology in what is now called mind-body medicine was reviewed extensively by Taylor (2000).

Modern medicine began looking at alternative practices when consumers started clamoring for acceptance of nontraditional health remedies. By 1997, the number of visits of U.S. consumers to unconventional therapists was estimated at 629 million, for a total of \$21 billion spent on complementary and alternative medicine (CAM) treatments, with similar rates reported in other industrialized countries (Eisenberg et al., 1998). People were using herbs, supplements, massage, acupuncture, and aromatherapy to feel better (Eisenberg et al., 1993), and creative arts therapies began to be included over time. The treatments being sought were largely ancient practices, many based on Eastern philosophies and practiced extensively outside of Western

cultures. Western medical doctors observed many beneficial outcomes of these treatments, but they became concerned about possible interactions between their prescribed medications and substances like unidentified herbs used by their patients. They called these methods “alternative medicine” and began to monitor their usage and efficacy.

By the 1990s, clinical practice and a plethora of research studies supported the effectiveness of some of these approaches, particularly in treating conditions for which Western medicine offered no cures or viable treatments. For example, many individuals diagnosed with fibromyalgia and arthritis found methods to help control their pain, and people with cancer discovered methods to ameliorate their symptoms and the side effects of traditional treatment. Research became so convincing that, in 1991, the U.S. Congress allocated \$2 million to investigate unconventional medical practices. By 1993, the National Institutes of Health (NIH) in the United States established an Office of Alternative Medicine, and 3 years later, it became a World Health Organization Collaborating Center in Traditional Medicine.

Physicians observed that their patients were using more and more unconventional alternatives to treatment, and many of these were successful in managing symptoms of disease. As medical practitioners started to apply many of these methods side by side with traditional therapies, the term “complementary medicine” was added to the medical vernacular. In 1998, the National Center for Complementary and Alternative Medicine (NCCAM) became an official center within NIH, offering a clearinghouse, funding, and other resources relative to research on ancient as well as innovative treatments. CAM gained in credibility and medical centers began to hire complementary practitioners, including music therapists, to treat their patients.

The Placebo Effect

The enhanced confidence in CAM also came as a result of impressive experimental findings on the power of belief in the efficacy of treatment. This research led to the establishment of the “placebo effect” (from the Latin for “I will please”), that is, the success of an inert or benign substance in treating patients because they believe in its effectiveness. So great is this effect that randomized controlled trials of new treatments or drugs are now expected

to include a group that receives a placebo to compare with the treatment being tested. Interestingly, this term also has a music connotation. The word is recited at funerals in Psalm 114:9, “placebo Domino in regione vivorum” (“I will please the Lord in the land of the living”). The “singer of placebo” came to refer to a person who showed up at a funeral, convincingly sang the psalm, and reaped benefits from the grieving family through this deception. While this reference to singing is not a positive one, the deceptive placebo is an important reminder of the strength of the connection between mind and body. Researchers continue to seek the determinants of the ubiquitous placebo, yet no clear answers are thus far evident (Bertisch et al., 2009).

Chinese Medicine

One of the medical systems that not only accounts for the connection between mind and body but also includes metaphysical sources of energy is traditional Chinese medicine. TCM provides a comprehensive conceptual system for health and illness, and Lu’s (2005) *Traditional Chinese Medicine: An Authoritative and Comprehensive Guide* provides the descriptions of the concepts presented here. Lu points out that if the physician does not take into account the patient’s social, familial, and financial resources, then an accurate diagnosis cannot be made. If the patient’s emotional patterns are not observed, the prescribed treatment may exacerbate the patient’s condition rather than heal. In part, this is because the yin and yang, representing two complementary forces moving toward a state of balance inside the individual, are strongly affected by emotion. For example, the dark, passive, feminine yin is affected by anger; the bright, active, masculine yang is influenced by hyperexcitability. Yin and yang are manifestations of chi as they flow in and around the body. Chi or qi is the vital, invisible, metaphysical energy that sustains life. The presence and interrelationship of the five elements of wood, fire, earth, metal, and water in human nature further determine how people interact with the world. These elements flow through the individual as energy forces. Wei chi is an immensely powerful energy that protects the body from disorder. The sources of wei chi reside in different parts of the body.

Lu (2005) describes other forms of chi. Shen chi lives in the heart and courses through the

bloodstream. People obtain this energy from relationships with others and from nature. Jin chi is stored in the kidneys and passed down from generation to generation. Jin chi energy is, thus, inherited. Gu chi resides in the digestive organs and flows through the body when food and beverages are consumed. Do chi is in the lungs; its source is the air. As one inhales and exhales, do chi fills the body. Breath is central to this system, so these various forms of energy converge in the lungs. They begin to circulate around the entire body and evolve into the wei chi.

Wei Chi was a shaman from Tibet who created a system for healing the body and spirit. Emotional healing is an integral part of this process, which also includes taking responsibility and offering gratitude as part of the treatment. The wei chi that bears his name is the invisible life force that also protects people from environmental stressors.

When relationships turn sour, food is not digested naturally; when the air is not fresh, the wei chi is weakened. This first level of defense is penetrated and disease seeps in. Unpleasant symptoms result from a distressed state of being. Physically, people may cramp or ache; psychologically, they may lose their will or give up. This is when the second level of defense, the chi, is infiltrated. Wei chi and chi are closely related in this meta-system of health and well-being (Lu, 2005).

The holistic model of chi presented in TCM is not unlike the framework used by many music therapists as they inspire health and well-being in their clients and patients. The positive approach of music therapy that engenders the talents and creativity within each person is consistent with the philosophy of Chinese medicine in its emphasis on the importance of balance and harmony in the person's chi. While professional music therapists focus on specific goals and objectives, their intention is often to improve overall quality of life. Some would go so far as to claim that music provides a source of metaphysical energy that unites and heals. Music therapist Carolyn Kenny (2006) says, "We love. We create. We give our attention to energy as it travels in and around us" (p. 3).

In *Chinese Medicine for Maximum Immunity*, Elias and Ketcham (1998) offer some medical advice:

When you avoid excessive physical and emotional stress, and live in harmony with the world around you, you will maintain a stable internal environment in which the wei chi can live and thrive. (p. xxvi)

Harmony is central to Chinese medicine, and it is not coincidental that the word *harmony* is used to describe this ultimate state. After all, it is the vibrating energy of the strings and other physical objects that gives rise to harmonics. These, in turn, rule the perception of consonance that contributes to the emotional response. In this sense, musical harmonics are at the heart of the healing energy of the human being. Another physics of music term, resonance, denotes the sympathetic vibrations of oscillating bodies and has also come to mean the synchronicity of the moods of two individuals. This shared vocabulary enhances our understanding of music and its use in medicine.

Ayurvedic Medicine

More than 2,000 years ago, Ayurveda was defined on the leaves of palm trees in Persia, in the Sanskrit language. Derived from Hindu philosophy, *ayur* means life and *veda* means knowledge or science, so *Ayurveda* may be translated as the science of life (Lad, 2002). Also known as Ayurvedic medicine, this system of practice focuses on achieving balance and harmony as the way to good health and well-being. Obviously, there are many healing interventions that are common to the systems of chi and Ayurvedic medicine.

Western medicine is known in India as allopathic medicine. In contemporary India, allopathic medicine is now offered along with Ayurveda, forging the beginnings of an integrated form of medical treatment. In Western societies, the Ayurvedic practice of yoga is well-known and becoming very popular. This extensive system is based on the sutras of Hindu text including, among others, karma yoga, bhakti yoga, raja yoga, and hatha yoga. Each practice is unique and may include learning such diverse techniques as body postures and movements, meditation, and forms of breathing.

The wisdom of Ayurvedic masters has informed techniques involved in music-facilitated stress reduction (Hanser, 1999). The use of repetitive forms of music (e.g., chanting a mantra and participating in drumming circles) replicates meditative practices. The importance of the breath for inducing a deeply relaxed state is emphasized in a variety of methods for music therapy, as evidenced by an entire text devoted to the subject (Azoulay & Loewy, 2009). Using music to cue rhythmic and relaxed breathing

is particularly indicated for women in childbirth (Hanser, Larson, & O'Connell, 1983), and individuals with asthma benefit from playing wind instruments and entraining the breath to regulate over time (Harris & Rondina, 2009).

According to Acharya Lama Gursam Rinpoche, sound has a direct connection to the heart (D. Grodin, July 10, 2008, personal communication). The metaphysical energy centers of the body, known as *chakras*, vibrate with the sounds produced by the voice and also by resonant instruments surrounding the person's body. To unblock the flow of energy throughout the body, these chakras, or energy channels, must be realigned. The use of singing bowls has been shown to affect the acupuncture meridians that metaphysically correspond to the crown and heart chakras (Allen, 2004). Toning and chanting through the body's chakras are two techniques described by music therapist Louise Montello. Her book *Essential Musical Intelligence* (Montello, 2002) offers a compendium of these and other music therapy techniques for health and healing, based on ancient and innovative practices. Her experience with patients is chronicled as she describes the effect of music on the body, mind, and spirit.

Shamanism

The features of repetitive music are seen in various forms of shamanism (Howard, 2005). Shamans practice healing by working their rituals as an integral part of their respective cultures. They recede into a deep level of awareness to communicate with the spirit world and to bring their invisible world to the earth. But shamans are, perhaps, best known for their healing methods. By inducing trance or ecstasy, invoking spirit guides, singing power songs, or enticing the spirits to leave human bodies, they heal, foretell the future, or interpret dreams. Their tools are typically a creative art form, like dance, music, and story-telling. Their practices are guided by the religious and cultural beliefs of their indigenous peoples and permeate ancient traditions around the world. Ethnomusicological studies in Indonesian, Australian Aboriginal, sub-Saharan African, North American Indian, Alaskan Eskimo, and South American Indian cultures, for example, cite the extensive use of music in shamanic traditional healing practices (Moreno, 1991).

Shamans use music to enter the spirit world, and sometimes, the music guides them to become

possessed by a spirit. It is said that energetic and repetitive music allows shamans to enter the supernatural realm through their trance. Then, the patient or person in need can also be swept away by the frenetic rhythms and chants. Moreno (1991) indicates that the modern music therapist would use the word *entrain* to explain the locking-into phase of patient and shaman as they begin to act together in synchronized movement, led by the beat of a drum or repetitive chant. He likens the shaman to a holistic, multidisciplinary practitioner in a single body, who applies all of the arts and medicines into practice at once. The shaman may also sing and play gongs, drums, rattles, didgeridoos, bells, or other instruments made of natural materials while dancing and dabbing the patient with natural herbs. The music may be the mantra that floats them into the spiritual world (Winn, Crowe, & Moreno, 1989).

The roots of music therapy are found in shamanic use of sound, and modern research methods are beginning to examine ancient forms, such as drumming circles. For example, Bittman et al. (1994) found that immune and neuroendocrine function were positively influenced by group drumming. Beyond this study, there have been few experimental investigations of these ancient practices.

Although shamanism has been virtually ignored by today's medical community, respected physicians have become intrigued, like Harvard Medical School researcher William Bradford Cannon, when he learned of the effect of voodoo practices on the deaths of intended victims. His research led to strides in the understanding of the power of the mind to affect illness and death and brought attention to the closing gap between mind and body.

Mind-Body Medicine

Mind-body medicine acknowledges the synergy between the mind and body and the interactions between an individual's thoughts, feelings, behavior, relationships, and spirituality. It is a modern, evidence-based therapeutic approach that adopts cognitive behavioral techniques in an effort to ameliorate stress, reduce symptoms, and enhance quality of life. Mind-body medicine is an ancillary component of medical practice aimed at reducing the pathophysiological effects of stress.

The practice of the relaxation response (Benson, 1976) is a cardinal component of most mind-body

medical programs that target illnesses in which stress is a major factor. It has been reported to benefit patients with cancer, cardiac disease, headache, inflammatory bowel syndrome, hypertension, panic attacks, arthritis, anxiety disorder, depression, chronic pain, insomnia, HIV/AIDS, and stroke. Recently, the concept of allostasis has been described in the field of stress research (Esch, Fricchione, & Stefano, 2003). *Allostasis* means maintaining stability (or homeostasis) through change. It describes the capacity to adapt to change, that is, modify physiological parameters to adjust to ever-shifting environmental conditions (McEwen, 1998). The state of sympathetic nervous system arousal results in increased levels of stress hormones, epinephrine, norepinephrine, and cortisol. “‘Allostatic load’ refers to the wear and tear that the body experiences due to repeated cycles of allostasis. . . . Stress, i.e., (allostatic) stress responses, and a related secretion of norepinephrine [and] cortisol apparently cause or exacerbate many different disease processes” (Esch et al., 2003, pp. RA24, RA29).

Music therapy has been identified as an agent for eliciting the relaxation response and, concomitantly, reducing allostatic load while activating the parasympathetic nervous system. When this system takes over, heart rate and blood pressure are reduced, and the body recuperates through rest and relaxation. While certain music therapy stress management techniques can now stand on this well-established theory and research, the field of music therapy is developing its own evidence base through well-controlled studies of its efficacy with medical patients (Dileo & Bradt, 2005).

Integrative Medicine

Integrative medicine is built on a recognition that intention, belief, and other powers of the mind act on the body and, in particular, the body’s immunological responses. This relatively new approach to medicine values the effect of the community and external circumstances as much as the complex interrelationships within the individual on health and disease. It applies modern scientific standards to ancient paradigms and accepts those that demonstrate efficacy. It is holistic in that it is concerned with enhancing the health of the whole person, and it welcomes both new and old ways of dealing with health.

Integrative medicine is a modern answer to an age-old question: How can we heal our ills and remain healthy in mind, body, and spirit? It is an acknowledgment by practitioners of 21st-century Western medicine that ancient forms of medicine spawn valuable research questions in addition to providing beneficial therapies.

Integrative medical centers are flourishing around the world, as therapists form teams to treat a great variety of disorders with their specialized techniques. Clinics are becoming widespread, and many are associated with medical schools that provide the expertise to test their methods in scientific protocols. Consumers are flocking to them, with and without physician referrals, and insurance providers are developing affinity groups to offer CAM care by qualified clinicians.

Music Therapy in Integrative Medicine

Music therapy is one of the modalities that has been incorporated into integrative centers of medicine for such diverse outcomes as alleviation of stress, pain, and unpleasant symptoms. It provides creative relaxation techniques, coping strategies, self-expression, awareness, mastery, presence, community, relationships, and social support, among others. In addition, it can evoke a peak experience or spiritual encounter that sometimes goes beyond and deeper than traditional talk therapies. Because of its expanding research base and its emphasis on the potential within every human being to heal, it fits well within the spectrum of integrative medical therapies. There is extensive qualitative research to support music therapy as a clinical intervention, and its effect on such conditions as pain, sedation, and the neurological illnesses, in particular, is being documented, as recent advances in the neurosciences offer the technology and physiological basis to explain the process in greater depth.

David Aldridge is a world-renowned music therapist who has been working in the field of integrative medicine for many years. His book *Health, the Individual, and Integrated Medicine* (Aldridge, 2004) is a valuable resource for the exploration of this new aesthetic of health care. He asks the reader to question assumptions concerning decision making, lifestyle, community, aesthetics, ethics, and research models. For Aldridge, music therapy treats those aspects of a person’s make-up that are not generally taken into account in typical treatment

models, for example, spirituality, the meaning of suffering, and prayer. His treatises on music therapy in palliative care (Aldridge, 1999) and medicine in general (Aldridge, 1996) emphasize all that the individual brings, internally and externally, to an encounter with music as a healing modality.

Evidence-Based Music Therapy

According to the American Music Therapy Association (AMTA, 2008), “Music therapy is the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program” (p. vi). Music medicine, on the other hand, is (Dileo, 1999)

typically used by medical personnel (nonmusic therapists, such as physicians, nurses, dentists and allied health professionals) as an adjunct to various medical treatments or situations. It often represents an attempt to provide a nonpharmacological intervention for stress, anxiety, and/or pain for the medical patient. (p. 4)

The disciplines of music therapy and music medicine have both contributed to an evidence base that has given the application of music credibility in the medical setting. While music medicine uses passive listening to prerecorded music (Dileo & Bradt, 2005), music therapy applies strategies that are based on diverse philosophical, theoretical, and musical foundations. The long history of music therapy has enabled the field to integrate new thinking in psychiatry, medicine, and other fields into its evolving practices. Disciplines such as psychoneuroimmunology and new technologies have advanced its techniques and informed innovative methods. While music therapy services have been provided in medical settings since the inception of music therapy as a recognized profession, only a few of its methods have been tested in rigorous experimental designs. The complex interrelationships between the music, patient, and music therapist within an individualized treatment plan certainly complicate experimental controls. Within the growing body of research to support music in medical arenas, the lack of distinction between music therapy and music medicine has also caused confusion when researchers test the use of music. Meta-analyses and

systematic literature reviews have begun to demonstrate where music is effective and where efficacy has yet to be shown. This process has supported music therapy and music medicine as evidence-based integrative treatments; yet, the evidence is challenging to interpret.

The Cochrane Collaboration is an international research network that provides standards for evidence-based health care interventions; it collects systematic reviews in its online Cochrane Library. One such review evaluated the effect of music on pain (Cepeda, Carr, Lau, & Alvarez, 2006). In 51 clinical trials, listening to music alone had some effect on pain intensity (including pain related to cancer, labor, chronic conditions, and medical/post-operative procedures), although this effect was of questionable clinical significance. Most of the studies included in this analysis were not conducted by qualified music therapists and involved passive music listening without any other individualized treatment. Listeners had some control over music selection in 27, or slightly more than half, of the studies. The analysis also excluded 17 studies of music plus suggestion and another 45 investigations that failed to meet inclusion criteria. It is no wonder that the results were insubstantial.

Another contribution to the Cochrane Library, “Music for Stress and Anxiety Reduction in Coronary Heart Disease Patients” (Bradt & Dileo, 2009), found inconsistent results in 23 studies of 1,461 individuals. While reductions in blood pressure and heart rate were observed, only patients with myocardial infarction effectively reduced their anxiety with music listening. Out of all of those studies, only two interventions were performed by music therapists. One of these reports investigated the effect of music therapy sessions, specifically group stress management, with 103 patients undergoing cardiac rehabilitation (Mandel, Hanser, Secic, & Davis, 2007). This randomized controlled trial revealed significant changes in systolic blood pressure in patients who participated in music therapy in addition to cardiac rehabilitation, compared with those who had cardiac rehabilitation alone.

Another technique for summarizing the known influence of an intervention is the meta-analysis. Meta-analyses use statistics to combine results of different quantitative studies that examine similar hypotheses. A calculation of effect size determines the collective effect of the intervention.

Pelletier (2004) implemented a meta-analysis of experiments testing the effect of music on arousal

due to stress. With an initial search revealing 72 studies, only 22 met inclusion criteria for experimental rigor. In these studies, music alone and music-facilitated relaxation were both successful in decreasing arousal. The effect size of this change was statistically significant ($d = +.67$).

Jayne Standley has been developing medical music therapy programs for clinical practice, education, training, and research (Standley et al., 2005) and has performed several meta-analyses. She evaluated the effectiveness of music in medical and dental settings and found an average effect size of 1.17. When she culled the studies that included music selected by the patient, the effect size grew to 1.40 (Standley, 2000). Her meta-analysis of research on music with premature infants revealed an impressive $d = +.83$ (Standley, 2002), while Standley and Whipple (2003) calculated a sizable effect size of $d = +.64$ for the use of music in pediatrics, in general.

In a comprehensive look at the field of medical music therapy, Dileo and Bradt (2005) have prepared an ambitious agenda for future research efforts as a consequence of their massive meta-analyses. They agree that music therapy must be distinguished clearly from music medicine and recommend more music therapy investigations in all specialties of medicine. They demand both greater specificity and diversity of the research and provide guidelines for the next critical steps in documenting the effect of music.

Hilliard (2005b) has investigated the clinical outcomes of music therapy, as tested in randomized trials of end of life care. He cites changes in such symptoms as pain, dyspnea, confusion, anxiety, depression, isolation, agitation, depression, and quality of life as a function of music therapy. Evidence-based techniques are found in several guides for developing and providing clinical care (Dileo & Loewy, 2005; Hilliard, 2005a) and in other literature reviews of medically ill patients (Aldridge, 1993; Codding & Hanser, 2008; Evans, 2002; Hanser, 2006; Uman, Chambers, McGrath, & Kisely, 2008).

While the literature is encouraging, a convincing argument for the inclusion of music therapy in medical treatment has yet to be made. Of course, the challenges faced by the music therapy researcher are vast. First of all, research designs must control for belief in the efficacy of music therapy; yet, it is difficult to compare it with a music placebo. This would most likely entail comparing one group who listens to some benign music with a group who engages in a specific music therapy strategy. Given that the

influence of music listening alone does offer benefits in many cases, the music therapy protocol would have to be statistically significantly better. Second, research protocols must be replicable; yet, the music therapist's most effective protocols are individualized to the needs and interests of each patient. Third, endless varieties of music applications complicate experimental control; yet, integrative medicine insists on randomized controlled trials of standardized protocols.

Conclusion

The root of music therapy is planted in primeval times, yet modern medical science is only beginning to acknowledge its strength in affecting lives. As we discover the neuropsychological mechanisms inherent in our musical experiences, fashion the links between mind, body, and spirit that are chained through music, and document the efficacy of specific music therapy interventions, the field of music therapy will gain respect as a bona fide form of integrative medicine.

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