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PERSPECTIVES

Weaving Medicine Back Together: Mind–Body Medicine in the Twenty-First Century

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ABSTRACT

In the past century, the medical profession has taken pride in the rapid and often effective advancement of diagnostic technology, surgical interventions, and pharmaceutical remedies. However, it has also witnessed the unraveling of the woven connection among mind, body, and the human soul. The history of the fall and rise of the concept of mind–body medicine is discussed, along with a review of the recent laboratory and clinical studies providing evidence of the direct connection between mind, body, and belief systems. Relevant components of a mind–body skills group program for clinical practices are addressed.

"There is no logical way to the discovery of elementary laws. There is only the way of intuition . . . the longing to behold an interweaving harmony is the source of the inexhaustible patience and perseverance . . . The state of mind that enables a man to do work of this kind is akin to that of the religious worshiper or the lover; the daily effort comes from no deliberate intention or program, but straight from the heart."

—Albert Einstein (Hoffman, 1972)

Weaving—a: to produce by elaborately combining elements: b: to unite in a coherent whole c: to introduce as an appropriate element: work in—usually used with in or into; to make form (cloth) by interlacing strands (as of yarn) (hyphos, Greek.; weban, old German; weven, Middle English)

—Merriam-Webster Dictionary (1998)

INTRODUCTION

In the past century, advocates of allopathic approaches within the medical profession have taken pride in the rapid and often effective advancement of diagnostic technology, surgical interventions, and pharmaceutical remedies that have eliminated the scourge of many acute diseases and hastened the detection of pathology. Yet they have also witness-

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esed the unraveling of the woven connection between mind, body, and the human soul. This unraveling has contributed to the fact that at least 60% of all visits to family doctors offices involve stress-related disorders (Benson, 2001), and to the exponential increase in burnout among health care professionals and trainees (Haley, 2002). What led to this unraveling? Is there reason and purpose for weaving the threads of biomedicine and the complementary disciplines of mind, body, and spirit back together again—in a pattern that is now commonly called 'integrated health?"

One may speculate that the threads unwound as a result of biomedical training that emphasized compartmentalization and control, therein protecting against the vulnerability of both clinician and patient. Perhaps it happened as a result of the belief that humankind has the potential to control nature completely, or that our society has fostered entitlement and competition at all levels. Some may speculate that this unraveling had to do with the loss of an inherent ethic of community care, or the lack of questioning and respect for individual purpose. Or is the untying of mind–body and spirit directly related to the lack of physician self-awareness and self-healing? To quote the famous philosopher Hillel (60 BC–9 AD) "If I am not for myself, who will be for me? But if I am for myself alone, what am I? And if not now, when?" (Lampel, 1998) Regardless of the provoking factors, there has been a substantial body of laboratory and clinical research evidence built over the past three decades making the scientific connection between mind, body, and belief systems indisputable. This growing body of research has led to mind–body medicine, the name given to an emerging field of complementary medicine in which health care professionals and patients alike are given the opportunity to learn and practice tools that will help them better cope with life traumas and practice responsible health care. Mind–body medicine is a way of perceiving and practicing medicine that mirrors and integrates every facet of life. It weaves together the central components that contribute to an individual's experience, and in so doing honors that weaving as a sum greater than the individual parts. The practice of mind–body medicine makes it incumbent on physicians to develop life skills so as to promote understanding, respect, and value for others. The field also emphasizes the concept of healing as much as it does curing.

THE UNRAVELING OF MIND AND BODY: A BRIEF HISTORY

To gain an understanding of why, as Albert Einstein put it, our "technology has exceeded our humanity" (Calaprice, 2000), it is helpful to observe the unraveling of mind, body, and spirit through the history of Western medicine. In fact, Hippocrates, the "father of medicine," wrote in 440 BC that to distinguish between diseases we must, "consider man's speech, his mannerisms, his silences, his thoughts, his habits of sleep and wakefulness, and his dreams, their nature and time" (Lloyd, 1978). Hippocrates recognized the moral and spiritual aspects of healing. He believed that treatment of illness could occur only with consideration of attitude, environmental influences, and natural remedies. Having scarce knowledge of human anatomy, Hippocrates nevertheless honored his patients for their unique and complex nature. In the second century AD, Galen of Pergamon, a surgeon and anatomist, began to map out the nature of organ structures, primarily through animal experiments. Although many of his presumptions about body physiology were incorrect, Galen nevertheless believed the mind and body to be interrelated in some fashion, and that illness of the body was related to illness of the soul.

Environmental and nutritional factors, as well as a spirit of the air (*pneuma*) were all considered by Galen to be critical to good health (Singer, 1959). By the early Christian era and Middle Ages, church and science were not separate. Sins and other lifestyle behaviors were seen as directly contributing to disease, and living a balanced life was prescribed as an antidote. It is during this era that we come across the first use of the word "placebo." Placebo (literally meaning in Latin, "I shall please") was taken from the Catholic vespers, and sung at the graveside by those hired to preside over the leaving of souls at the time of burial (Spiro, 1998).

Medical scientists would use the term placebo in a different ways centuries later; to mean "belief" as opposed to "fact." By the time of the Renaissance in sixteenth and seventeenth century Europe, an "enlightenment" as to the true nature of life's many forms was under way. It was here, in the 1600s, that Francis Bacon, Lord Chancellor, hired a French mathematician, Rene Descartes, and asked him to shine "a light that would eventually disclose and bring into sight all that is most hidden and secret in the universe" (Porter, 1998). Bacon saw the purpose of the scientist as being "to enhance man's control over nature, (such that) social progress, prosperity and the conquest of disease would follow" (Bacon, 1952). Descartes thus took on a detailed search for the "true" nature of human organisms, and concluded that the mind is of a different form and higher than that of the material world. He believed that the only interface between mind and body lay in the tiny pineal gland at the base of the brain. This mathematical model was the beginning of the dualistic way of thinking that ruled medicine for the next 300 years. From the eighteenth century on, science took its formidable place as text in health care. The inventions of the microscope, stethoscope, and blood pressure cuff, together with refined surgical instruments and technique, demonstrated a cellular world that seemed far apart from the world of belief and emotion. The discovery of bacteria, and later the magic of antibiotics further dispelled the importance of belief. Fixing or curing an illness took precedence over, not a place along side, healing of the soul.

By the early part of the twentieth century, an emerging split became apparent in the teaching of medicine in North America. On the one hand, one school of thought still believed in a complete examination of the patient's environmental, attitudinal, and emotional factors contributing to symptoms. This school of thought was led by the homeopathic clinicians, trained in a discipline founded more than two centuries earlier by its founder, Samuel Hahnemann, M.D. The second school of thought was that of the "allopathic" scientists (a term coined by Hahnemann related to treating symptoms, but that later became associated with biomedical doctors as opposed to homeopathic doctors [Monte, 1993]) led by members of the American Medical Association (AMA). A problem that haunted the homeopathic school was that by the end of the nineteenth century, many snake-oil salesman and magic potion traveling salesman took advantage of the beliefs of naïve clients and sold them sugar potions that claimed to cure everything. It was then incumbent on Abraham Flexner, M.Ed., a schoolteacher commissioned by J.D. Rockefeller and the Carnegie Foundation, to sort out what should be taught as "purer academic and laboratory-based biomedicine," and to issue the now infamous Flexner Report in 1910 (Gordon, 1996). Flexner, in siding with the AMA, foretold the closing of more than 21 homeopathic medical schools in the United States, and his report led to the diminished importance of homeopathy in North America for almost the next century. In fact, from 1920–1950, the word belief or placebo was never mentioned in any prominent medical journal in North America (Benson, 1993).

Now that medicine had pulled the threads of body apart from belief, the scientists of the "mind" studied this separate thread and its role in having control over matter. Neurologists such as Charcot and Freud borrowed on the earlier works of hypnotists such as Mesmer to introduce concepts such as the unconscious mind and emotional impulse. These notions came to be seen not as the interweaving of mind and body (as the authors often intended) but as impulses over which a patient had no control. Thus, emotional impulses or cognitive delusions came to solidify the perception that diseases of the mind were not "real," or were false imitations of real diseases. However, a few groundbreaking scientific discoveries were about to be made that would start once again to interlace mind, body, and belief in a tighter weave than ever before.

THE REWEAVING OF MIND, BODY, AND SPIRIT INTO MEDICINE

In the 1920s, Walter Cannon, M.D., a Harvard physiologist, provided insight into the direct relationship between stress and neuroendocrine activation in mammals. Coining the

term "fight or flight," Cannon discovered that when mammals were under stress, a primitive reflex occurred in the body, causing the adrenal glands to secrete norepinephrine and stimulate the sympathetic nervous system to increase heart rate, blood pressure, and breathing rate (Cannon, 1932). Blood was pooled to vital organs and large muscle groups (along with other physiologic actions), thus readying the organism for fight or flight. By mid-century, this linkage of stress with a specific biologic response would help McGill University professor Hans Selye, M.D., to understand the connection between our perception of stress as overwhelming ("distress") and its potential deleterious effect on our adrenal glands (Selye, 1974). But alongside these discoveries, modern technological medicine was expanding at an exponential rate, with miracle antibiotics that would rid bacteria, vaccines that would eradicate plagues, and diagnostic machines that could identify pathology in details beyond our wildest dreams. In this technological drive, psychiatry was relegated to a separate specialty and taught, as the rest of medicine, from disease-based models. Emphasis was placed on the search for disease and external cures, rather than empowerment of the individual patient to use whatever they could muster of their own resources to establish health.

It was during World War II that the importance of belief reentered the web of health care. At the Anzio beachhead, wounded American soldiers awaited their return to the homeland. Morphine supplies were short, and it became apparent to Henry Beecher, M.D., that many soldiers could be given salt-water injections and still experience analgesic effects similar to those of morphine (Rossi, 1986). He speculated that the soldiers' knowledge that they were returning to their loved ones tempered the pain from their wounds. Beecher labeled this the "placebo effect," and his subsequent research demonstrated that up to 35% of any medical treatment could be the result of belief *per se* (Rossi, 1986). From this theory came the advent of today's double-blinded placebo trials, to measure the "legitimacy" of a particular new treatment on the market. However, because most ethical research is done on subjects who have knowledge that they are in a study, this knowledge in itself may taint the research and the effect of the placebo effect may in fact be much greater than Beecher had previously thought.

In the 1960s, more research was done on the connection between mind and body. Herbert Benson, M.D., a Harvard cardiologist, studied the monks of northern India with biofeedback instruments. He took a keen interest in the monks' ability to raise their own body temperature in freezing environmental conditions through simple meditation (Benson, 1990). Back in his laboratory, Benson was able to train squirrel monkeys to lower their blood pressure through biofeedback. Soon afterwards he proved that simple relaxation techniques could effectively reverse the "fight or flight" reaction that Cannon had discovered in the same laboratories almost 40 years earlier. Benson called his discovery "the relaxation response," a technique that would form the central core of his Mind–Body Medical Institute, established in the 1980s (Goreman et al., 1993). Benson's work, Miller's biofeedback studies (Richter-Heinrich et al., 1992), and Norman Cousins, M.A., Hon., M.D.'s book *Anatomy of an Illness* (documenting his overcoming severe ankylosing spondylitis with humor and attitudinal shift [Cousins, 1991]) shared the loom for the intricate interlacing of mind, body, and science. George Solomon, M.D.'s discovery that the hypothalamus gland communicates with the immune system (Koenig et al., 2002), and George Stefano, Ph.D.'s observation of immune cells and nerve tissue interacting were precedents to more marvels (Cadet et al., 2000). In the 1980s, David Felton, Ph.D., M.D., and Suzanne Felton, Ph.D., found that sympathetic nervous system peptides communicate with immune receptors in the spleen, thymus, and lymph nodes to promote lymphocytic maturity (Felton et al., 1991). At the University of Rochester, Robert Ader, Ph.D., Hon.Doc.Sc., showed that it was possible to classically condition the immune systems of mice. Ader and colleagues had been working with the immunosuppressant drug, cyclophosphamide. In order to get the mice to take this noxious drug, they paired it with a sweet saccharine solution. After time, the cyclophosphamide was withdrawn and the saccharine solution itself produced immunosuppression. The results of this simple yet groundbreaking experiment opened the possi-

bility that belief systems could have a direct effect on major organ systems in the body (Ader et al., 1982). Laboratory follow-up has been impressive. Georgetown University's Candace Pert, Ph.D., who discovered the endorphin receptor in the 1970s, as well as other basic scientists, have discovered dozens of receptor sites for the emotional neurotransmitters associated with the limbic lobe sitting on immune cells, endocrine, and nervous tissues (Pert, 1997). Other world-renowned scientists have been able to demonstrate that corticosteroids suppress the immune system (Besedovsky et al., 1975), brain cells make immune peptides (Fontana et al., 1984), immune cells stimulate the production of corticosteroids (Besedovsky et al., 1986), and that immune cells can produce brain hormones such as adrenocorticotropic hormone (ACTH) (Woloski et al., 1985). In fact Eric Kandel, M.D., at Columbia University showed how learning (nerve growth) can change immune cells and how immune cells can change learning (Antonov et al., 2001). By the 1990s it was clear that psychologic factors could conceivably affect all aspects of neuroendocrine and immune function. Also, immune cells and neuroendocrine glands could theoretically exert a reciprocal influence on all aspects of neural function and behavior.

THE FABRIC OF MEDICINE TODAY

Over the past 30 years, the weaving of mind, body, and spirit has slowly become an established medical practice. Clinical studies have shown how emotional, cognitive, and spiritual beliefs can directly affect physical well-being. David Spiegel, M.D., studied the effects of a mind-body support group for women with metastatic breast cancer and found that these women lived on average 18 months longer than a control group at 10-year follow-up (Spiegel et al., 1989). Fawzy Fawzy found similar results for a mind–body support group of men with malignant melanoma. After only 6 weeks these men did better than controls 6 years later (Fawzy et al., 1993). At Harvard University, women in mind–body support groups for infertility conceive 44% of the time (as opposed to the expected 8%–10% rate) (Domar et al., 2000) and 80% of men with hypertension in mind–body groups are able to decrease their medication, while 16% are able to stop their antihypertensive medication entirely (Friedman et al., 1992). Meyer Friedman, M.D., studied more than 1000 postmyocardial infarct patients and showed that introducing behavioral counseling altered type-A behavior and reduced cardiac morbidity and mortality significantly (Friedman et al., 1984). Redford William, M.D.'s studies at Duke University showed how hostility is significantly related to cardiac disease, and how patients at cardiac risk who are not married or without a confidante are three times more likely to die (Bosworth et al., 2000). At the University of Pittsburgh, Sheldon Cohen, Ph.D., has shown that psychologic stress is associated in a dose-response manner with an increased risk of acute infectious respiratory illness (Cohen et al., 1991). Janice Kiecolt-Glaser, Ph.D., and Ronald Kiecolt-Glaser, Ph.D., have demonstrated that wound healing is slower in the stressed spouses of patients with Alzheimer's disease (Kiecolt-Glaser et al., 1995), and that immunity is suppressed in medical students prior to examinations (Glaser et al., 1993) as well as in marital partners in conflict (Kiecolt-Glaser et al., 1998). Other studies in the diseases of arthritis (Lorig, 1993), acquired immune deficiency syndrome (AIDS) (Cole et al., 1997), chronic pain (Caudill et al., 1991), as well as for the condition of insomnia (Jacobs et al, 1996), have revealed the benefits of mind–body group skills programs on the health of individuals involved. Also, the studies of Harold Koenig, M.D., M.H.Sc., and the late David Larson, M.D., M.S.P.H., at Duke University have proven how spiritual belief increase longevity and protects against illness (Helm et al., 2000; Larson et al., 2000). In fact, evidence of belief itself has recently been documented through technological instrumentation. Two studies using positron emission tomography (PET) scans have shown that placebos effect the same parts of the brain as antidepressant medications and analgesic opiates (Mayberg et al., 2002; Petrovic et al., 2002).

THE STRANDS THAT ARE WOVEN TOGETHER

Mind–body medicine is one of the most researched and evidence-based branches of com-

plementary medicine. Benson has written that mind–body medicine "unites modern and traditional medicines, psychology, nursing, nutrition, and exercise physiology and addresses a framework of attitudes and behaviours that surround a medical condition. Mind–body medicine applies scientific method to psychologic and social phenomena in relation to health and disease. It is interested in the interaction of thoughts, emotions, behaviours, spiritual faith and an individual's relationship to the environment and how those factors affect medical illness" (Benson, 1993). Jim Gordon, M.D., director of the Center for Mind–Body Medicine in Washington D.C., states that mind–body medicine helps us "to recognize in our own lives the psychologic, biologic, and sociologic factors that may affect our health. We then may develop a sense of control and well-being (Gordon, 1996, 1999).

It is clear that mind–body medicine teaches responsible health care, but at this time it is unclear what factors actually create the healing changes that occur for members of mind–body skills groups. Some researches purport it likely to be emotional sharing and a perception of being connected to group members (Giese-Davis et al., 2002), and others believe it may be the degree of commitment to change (Cunningham et al., 2000). Nevertheless, at this point there is enough basic research demonstrating the connection between mind and body that as Dr. Aviad Haramati, B.A., M.D., M.S., Ph.D., the director of Complementary and Alternative Medicine at Georgetown University states, "it is irresponsible to ignore such a significant issue in contemporary medical practice" (Sierpina, 2002).

Medicine has learned all too well how to attempt to fix illness. But mind–body medicine emphasizes healing. Healing is an internal process, by which an individual becomes vulnerable to his or her own emotions, thoughts, sensations, and spirituality in a nonjudgmental way every moment for the rest of his or her life. Mind–body medicine promotes healing, and is a way of perceiving and practicing medicine that mirrors and integrates every facet of life.

As Antonio Damasio, M.D., Ph.D., the prominent researcher, author and director of Neurology at the University of Iowa has put it: "for the past three centuries, the aim of biologic studies and of medicine has been the understanding of the physiology and pathology of the body proper. The mind was out, largely left as a concern for religion and philosophy . . . the result has been an amputation of the concept of humanity with which medicine does its job" (Damasio, 1994).

Recently, many biomedical practitioners have been making this "concept of humanity" an important part of the "warp" of their weavings, the backbone that makes a weaving strong and durable. The variety of healing methods that are used in the field of mind–body medicine can then form the beautiful "weft," the patterning that is used in the weaving to produce many shades and colors. These methods contribute to the whole weaving, and each method, like each strand in a weaving, is of equal importance to the final product. Let us hope that the reweaving of mind–body and spirit continues to create a tighter connection, for the benefit of our patients and ourselves.

The Different Strands of Mind–Body Medicine

The components of mind–body medicine, any of which may be taught as part of a mind–body medicine skills group program are: the history of the field, stress physiology, psychoneuroimmunology (PNI), imagery, emotional awareness, cognitive restructuring, music and sound, spirituality, nutrition, humor, body awareness, sleep hygiene, morality, environmental awareness, and complementary and alternative medicines. Experiential tools are learned, such as breathing techniques, meditation, autogenic training, progressive muscle relaxation, guided imagery, biofeedback, art therapy, movement therapies, and genograms. Just as importantly, mind–body groups permit a growing self-awareness and personal transformation. This awareness allows clinicians in such groups to be more empathic with their patients and protects clinicians from burnout and helps patients in such groups to find solace in life despite trauma and to reestablish purpose in their lives.

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