

Nature and Evolution of Consultation-Liaison Psychiatry and Psychosomatic Medicine

Hoyle Leigh

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1.1 Definition

Consultation-liaison (CL) psychiatry refers to the skills and knowledge utilized in evaluating and treating the emotional and behavioral conditions in patients who are referred from medical and surgical settings. Many such patients have comorbid psychiatric and medical conditions, and others have emotional and behavioral problems that result from the medical illness either directly or as a reaction to it and its treatment.

Psychosomatic medicine refers to the study of “mind–body” relationship in medicine. Investigators in psychosomatic medicine have historically been interested in the psychosomatic aspects of medical patients, and were pioneer practitioners of CL psychiatry.

1.2 Ancient Civilizations

Imhotep, court physician and architect to King Djoser (2630–2611 BCE) of Egypt, built the Step Pyramid in Sakkhara, Egypt, some 4500 years ago, as a medical instrument to keep the king’s body through eons until his soul returned, a truly “psychosomatic” instrument. This pyramid is the oldest pyramid still standing, and Imhotep was deified as god of medicine. Ancient Chinese and Indian medicine was inherently “psychosomatic” in that the psyche and the soma were seen to be intrinsically interconnected. In Chinese medicine, excesses or deficiencies in

H. Leigh, MD, DLFAPA, FACP, FAPM (✉)
Professor of Psychiatry, Department of Psychiatry,
University of California, San Francisco, CA, USA

Director, Psychosomatic Medicine Program &
Psychiatric Consultation-Liaison Service, UCSF-
Fresno, 155N. Fresno St., Fresno, CA 93701, USA
e-mail: hoyle.leigh@ucsf.edu

seven emotions—joy, anger, sadness, grief, worry, fear, and fright—were commonly considered to cause disease (Rainone 2000). In Vedic medicine, certain personality components were considered to reside in particular organs, for example, passion in the chest and ignorance in the abdomen, and powerful emotions may cause peculiar behavior.

Hippocrates (470–370 BCE) was perhaps the first physician to systematize clinically the notion that psychological factors affect health and illness. In a famous, what might now be called “forensic psychiatric” opinion, Hippocrates defended a woman who gave birth to a dark-colored baby on the grounds that her psychological impression on seeing an African was sufficient to change the color of her fetus (Zilboorg 1941). Hippocrates was an excellent clinical observer of psychiatric manifestations of medical disease as shown by his detailed descriptions of postpartum psychosis and delirium associated with tuberculosis and malaria (Zilboorg 1941). Hippocrates condemned the prevailing view of epilepsy as a “sacred” disease, holding that it was a disease like any other. Though his theory of the “wandering uterus” underlying hysteria lacked scientific foundation, Hippocrates’ humoral theory of disease anticipated present-day neurotransmitters. His emphasis on climate, environment, and lifestyle in health and illness, together with his awareness of the role of psychological factors in physical health and his belief in biologic/physiologic explanations of pathogenesis, entitle him to the title of not only the father of medicine but also the father of psychosomatic medicine and the biopsychosocial approach.

With the descent of the Dark Ages, a tyrannical religious monism attributing mental and physical illness to witchcraft, and divine retribution stifled scientific inquiry. A textbook for the diagnosis (torture) and treatment (execution) of witches was the *Malleus Maleficarum* (The Witch’s Hammer, 1487) written by two Dominican monks, James Sprenger and Henry Kramer, and prefaced with a bull from Pope Innocent VIII.

1.3 Mind–Body Philosophy Through the Nineteenth Century

The Hippocratic tradition in medicine was revived with the Renaissance and nourished by the Enlightenment. The French mathematician and philosopher René Descartes (1596–1650) proposed that the human body was like a machine, subject to objective investigation, while the soul or mind was a separate entity that *interacted* with the body in the pineal gland and that it was in the domain of theology and religion. This *mind–body dualism* facilitated the scientific study of the body at the expense of such studies of the mind. A number of competing and complementary theories, briefly described below, have been proposed since then to attempt to explain the nature of mind and body/matter.

Benedictus de Spinoza (1632–1677), a Dutch lens crafter and philosopher, proposed a monism called *double aspect theory*, that is, the mental and physical are the two different aspects of the same substance, which in his view was God. Gottfried Wilhelm Leibniz (1646–1716) proposed *psychophysical parallelism*, that is, mind and body exist in parallel harmony predetermined by God from the beginning. *Immaterialism*, as advocated by George Berkeley (1685–1753), declared that existence is only through perception of the mind, that is, the body is in the mind. On the opposite pole is *materialism*, which holds that matter is fundamental and that what we call mind is a description of a physical phenomenon. Julien Offroy de la Mettrie (1709–1751) advocated that human souls were completely dependent on the states of the body and that humans were complete automata just like animals as proposed by Descartes.

Epiphenomenalism, proposed by Shadworth Holloway Hodgson (1832–1912), an English philosopher, postulates that the mind is an epiphenomenon of the workings of the nervous system. Mind and emotions, being epiphenomena, cannot affect the physical, just as a shadow cannot affect

a person. Thomas Henry Huxley (1825–1895) popularized this view and placed it in an evolutionary context. *Double aspect monism*, proposed by George Henry Lewes (1817–1878), postulates that the same phenomenon, if seen objectively, is physical, and, if seen subjectively, is mental. William Kingdon Clifford (1845–1879) coined the term *mind-stuff theory*. In this theory, higher mental functions, such as consciousness, volition, and reasoning, are compounded from smaller “mind-stuff” that does not possess these qualities, and even the most basic material stuff contains some “mind-stuff” so that compounding of the material stuff would produce higher order “mind-stuff.” This theory holds psychical monism—mind is the only real stuff and the material world is only an aspect in which the mind is perceived.

In spite of strong monistic trends, the major trend in medicine and psychiatry through the nineteenth and twentieth century has remained dualistic and interactional, that is, how the mind affects the body and vice versa. Johann Christian Heinroth (1773–1843) coined the term *psychosomatic* in 1818 in the context of psychogenesis of physical symptoms. Psychosomatic relationship in the form of hypnosis was demonstrated and exploited by Anton Mesmer (1734–1815), though he mistakenly claimed it to be magnetic in nature (“animal magnetism”). Hypnosis was revived as a subject of medical investigation, diagnostics, and treatment by two competing schools, one at the Salpêtrière Hospital in Paris headed by the neurologist, Jean-Martin Charcot (1825–1893), and the other at the university in Nancy, France, led by the internist, Hippolyte Bernheim (1840–1919). Charcot believed that hypnotizability was a result of brain degeneration in hysteria, while Bernheim and the Nancy school (including Ambroise-Auguste Liebeault and Pierre Janet) believed that psychological suggestion underlay the hypnotic phenomena.

1.4 Psychoanalytic Theory

Sigmund Freud (1856–1939) learned hypnosis to treat hysteria under Charcot. Freud gave up hypnosis in favor of free association, and with this

tool systematically investigated and proved the psychogenesis of somatic symptoms by reversing them with successful treatment. Franz Alexander (1891–1964) was a student of Sigmund Freud who emigrated to the USA and founded the Chicago Institute of Psychoanalysis in 1932. Alexander psychoanalyzed patients suffering from a variety of somatic illnesses, and formulated that there were seven diseases that were particularly psychosomatic: essential hypertension, peptic ulcer, thyrotoxicosis, ulcerative colitis, neurodermatitis, rheumatoid arthritis, and bronchial asthma. He postulated that specific psychological conflicts were associated with specific autonomic activation, resulting in psychosomatic disease (e.g., in peptic ulcer, repressed dependency needs stimulate gastric secretion causing ulceration). This is called the *specificity theory* of psychosomatic medicine. Flanders Dunbar (1902–1959), a contemporary of Alexander, believed that psychosomatic illnesses were associated with certain personality profiles and constellations rather than specific conflicts.

Peter Sifneos and John Nemiah (1971, 1973, 1996) proposed that psychosomatic disorders arose as a result of a difficulty in describing or recognizing one’s own emotions, a limited fantasy life, and general constriction in the affective life, which they called *alexithymia*. The concrete mode of thinking associated with alexithymia is called *operational thinking* or *pensée opératoire*. Alexithymia is postulated to be related to primitive defenses of denial and splitting, and may be associated with a disturbance in cerebral organization.

Psychological defense mechanisms have been shown to be essential in modulating psychophysiological arousal to stress.

During the latter half of the twentieth century, through the work of various investigators, specificity theory gave way to a field model of psychosomatic medicine in which biological constitution interacts with environment in the development of personality, which, in turn, interacts with current stress in health and disease (Mirsky et al. 1957; Leigh and Reiser 1992).

1.5 Studies on Stress

The American physiologist Walter Cannon (1871–1945) investigated the physiologic activation associated with the *fight–flight reaction* and the role of homeostasis in physiology. Hans Selye (1907–1982) systematically studied stress that led to the elucidation of the *general adaptation syndrome* through the activation of the hypothalamic–pituitary–adrenal (HPA) axis. Later in the twentieth century with the development of psychoneuroendocrinology and psychoimmunology, there has been an explosion of knowledge on the relationship between stress and all aspects of the human organism.

1.6 Biopsychosocial Model and Integrative Medicine

George Engel (1913–1999), a well-known psychosomatic investigator, coined the term *biopsychosocial model* (Engel 1977), as an alternative to the prevailing disease model in medicine that he called the biomedical model. While recognizing the contributions that the biomedical model made to the development of modern medicine, Engel objected to the “dogma” of the biomedical model on the grounds that it is reductionistic, mechanistic, and dualistic. Utilizing a general systems theory approach, the biopsychosocial model proposes that psychosocial factors influence the pathogenesis of all diseases. The biopsychosocial model has found wide acceptance among psychiatrists and medical educators.

In late twentieth century, the terms *behavioral medicine* and *integrative medicine* appeared. Behavioral medicine is practically indistinguishable from psychosomatic medicine except that, in treatment modalities, it tends to incorporate more behavioral techniques such as biofeedback. Integrative medicine strives to incorporate within the biopsychosocial model approaches derived from nonorthodox medicine such as *alternative* and *complementary* medicine.

1.7 Evolution, Evolutionary Medicine, Memes

Charles Darwin (1809–1882) showed that species evolved through the process of natural selection (*The Origin of Species*, 1859). With modern advancements of genome analysis, it is now possible to calculate just how closely specific species are related. For example, humans and chimpanzees share almost 99 % of the genes. An evolutionary perspective of human illness is shedding light on why illnesses arise. As natural selection confers advantage to traits only up to the reproductive age, healthy traits in the post-reproductive period are not selected for. The human body probably evolved so that it was best adapted for the Stone Age, when most adults died in their youth. With the prolongation of human life that came with the progress of civilization and medical advances, the human body is living long past what it was adapted for (Nesse and Williams 1996). The Stone-Age adapted human body may be ill-adapted for modern life, with its abundance of food, lack of physical exercise, and mental stresses, especially in the post-reproductive age. Evolutionary perspectives also may explain why certain genes that may cause vulnerability to potential mental illness, such as panic, may be adaptive under certain conditions found in evolutionary history (e.g., survival value, as in an overly sensitive smoke-detector).

Richard Dawkins, in his book *The Selfish Gene*, postulated a second replicator comparable to the gene, the *meme*, which is information that is replicated through imitation (Dawkins 1976). Later, memes are recognized as being cultural replicators, which may be stored outside of brains such as books and electronic media. Memes are considered to be like cultural DNA, containing cultural information that undergoes Darwinian natural selection.

Leigh extended the concept of memes as information contained in the potentiated neural connections in the brain, which may be absorbed from culture or generated from experience

(memory) or from genes (Leigh 2010). Leigh proposed that the environment does not affect genes directly, but mediated through these memes, and gene x meme x environment interaction is important in health and pathogenesis (Leigh 2012a, b). See Chapter 7 for more on this. According to this view, what we call "mind" is the brain's processing of the memes. As both genes (making up "body") and memes (making up "mind") are replicating packets of information that can be translated into codes (e.g., binary code), the distinction between the mind and body seems to be reduced to that of patterns.

1.8 Modern Psychosomatic Medicine

Advances in molecular genetics and imaging technology have elucidated the role of genes in our constitution, brain morphology, and behavior. Psychoneuroendocrinology and psychoneuroimmunology have elucidated the mechanism by which stress affects the human organism. Health and illness is now conceptualized as a result of the interactions among genes, early environment, personality development, and later stress (see Chap. 7). This interaction is in no small measure influenced by salutary factors such as good early nurturance and current social support. It is also clear that all illnesses are the results of this interaction, that there is no subset of illnesses that are any more psychosomatic than others. Nevertheless, the term *psychosomatic* continues to be used to denote studies and knowledge that place particular emphasis on psychosocial factors in medical illness.

Some consider *psychosomatic medicine* to denote an interdisciplinary approach that includes internists, oncologists, psychologists, etc., in contrast to *consultation-liaison psychiatry*, which is clearly a field within psychiatry.

There are a number of national and international "psychosomatic" organizations such as the American Psychosomatic Society, Academy of Psychosomatic Medicine, European Society of Psychosomatic Medicine, and International College of Psychosomatic Medicine, and

"psychosomatic" journals such as *Psychosomatic Medicine*, *Psychosomatics*, *Journal of Psychosomatic Research*, and *Psychotherapy and Psychosomatics*. *General Hospital Psychiatry*, *International Journal of Psychiatry in Medicine*, and *Psychosomatics* are mainly consultation-liaison psychiatry journals. Most of the organizations and journals are interdisciplinary, participated in by members of various specialties and professions. In Europe and Japan, there is often a department of psychosomatic medicine in medical schools, apart from the psychiatry department. Such psychosomatic departments mainly deal with patients with psychophysiological disorders, and may use complementary medicine techniques such as yoga and meditation.

In the USA, the term *psychosomatic medicine* is often used interchangeably with consultation-liaison psychiatry, and most CL psychiatrists practice in general hospital settings evaluating and treating psychiatric, emotional, and behavioral problems of medical patients. Research in the emotional aspects of specific medical patients gave rise to such fields as psychonephrology, psycho-oncology, and psychodermatology.

1.9 Consultation-Liaison Psychiatry Training and Psychosomatic Medicine as a Subspecialty

In the early part of the twentieth century, formal training in CL psychiatry began in a number of general hospitals, most notably at the University of Rochester under George Engel's direction and at the Massachusetts General Hospital (MGH) under Thomas Hackett's direction. Other notable training sites included University of Cincinnati, Montefiore Hospital–Albert Einstein Medical College in New York, and Yale–New Haven Hospital. The Rochester model was psychodynamically oriented, and trained both psychiatrists and internists in "liaison psychiatry." Liaison psychiatry emphasized the educational role, and the trainee was assigned to be a member of the primary medical team including making rounds together. The MGH model, in contrast,

emphasized the consultation aspect of training. The training programs were usually one to 2 years in duration. The CL training programs thrived during the 1960s and 1970s with the support of the National Institute of Mental Health and James Eaton, then head of its education branch. With the advent of managed care, however, “unbillable” liaison activity has faded to a large extent.

In 2003, the American Board of Psychiatry and Neurology (ABPN) approved the issuance of certificates in psychosomatic medicine. The Academy of Psychosomatic Medicine, an organization of CL psychiatrists, had been advocating the recognition of a subspecialty for CL psychiatry for some time. The executive summary of the proposal submitted to the ABPN states:

This application is in response to the growing body of scientific evidence demonstrating the high prevalence of psychiatric disorders in patients with medical, surgical, obstetrical, and neurological conditions, particularly for patients with complex and/or chronic conditions (“the complex medically ill”), and the critical importance of addressing these disorders in managing their care. [Psychosomatic medicine] psychiatrists would, therefore, constitute a group of individuals in psychiatry who have specialized expertise in the diagnosis and treatment of psychiatric disorders/difficulties in complex medically ill patients.

Obviously, this is a description of CL psychiatry. It is ironic that psychosomatic medicine, rather than CL psychiatry, is now recognized as a subspecialty of psychiatry as this designation leaves nonpsychiatric “psychosomaticists” in a Neverland.

1.10 Postscript: The Mind–Body Relationship Revisited in the Light of Modern Physics

The advances in medicine during the past several decades have been largely due to the elucidation of the mechanisms of pathogenesis based on genetics, the role of stress, and functional morphology. At a philosophical level, the *psyche* of

psychosomatic medicine is understood as a label for brain function, particularly of the prefrontal cortex. While this Newtonian conceptualization of the mind works at a heuristic level, developments in modern physics may require us to reexamine this epiphenomenologic view of the mind.

Sperry (1969, 1980) proposes that mental phenomena have dynamic emergent properties arising from cerebral excitation, which are different from and more than material brain processes. Once generated from neural events, the higher order mental patterns and programs have their own subjective qualities, and progress, operate, and interact by their own causal laws that cannot be reduced to neurophysiology. Popper and Eccles (1981) maintain that mental processes are emergent relative to physical processes but believe in a dualism where the relationship of the brain to the body is that of the computer to the programmer, with the self-conscious mind playing a superior interpretive role.

Software written in binary language is both patterns of magnetic or optical properties as well as information, as defined with the interacting entity (without interaction there is no communication and no information). How do these entities become interactional (communicational)? Such interaction may be inherent in nature, as matter and antimatter “know” to annihilate each other upon encounter. Psychological awareness, although a subset of communication (interaction), might arise as an emergent phenomenon in a complex system of lower level interactions. Perhaps, as a critical mass of uranium will start a chain reaction, a “critical mass” of “proto-awareness” might result in a series of events leading to what we call awareness. To the extent that humans can hardly guess at the experience of “awareness” of beings such as photons, electrons, or, for that matter, dogs and chimpanzees, a true description of others’ awareness may be an impossible task. Nevertheless, whether mental or physical, information is exchanged at all levels of organization in the cosmos.

Modern quantum theory presents us some intriguing notions of the mind. Quantum mechanics places the conscious observer at the center of reality. It is a quantum theory maxim

that “no phenomenon is a phenomenon unless it is an observed (or recorded, resulting in some irreversible change) phenomenon.” Until observation has occurred, reality exists only as potentials or probabilistic waves. At the instant of observation, however, the wave function collapses into a reality according to the orthodox Copenhagen interpretation (Bohr 1958), or the universe splits into a number of possible universes according to the many worlds theory (Everett 1973; Wolf 1988). Consciousness, though arising as a result of brain processes, may be regarded as a cosmic process of creation (as the choices it makes are not locally determined but cosmically inherent) that produces events or reality (Stapp 1993). Such events, or the observation-induced collapse of the wave function into particles, seem to supersede the barriers of space-time.

Einstein proposed an experiment that tried to show what he considered to be a failing in quantum theory: Suppose two particles arising from an interaction are flying apart at the speed of light. According to quantum theory, if one quality of the particle is observed at a later time (say, a particular spin to the left) at one place by observer A, another observer B, observing the other particle (say, 20 light years away from observer A) must observe the complementary quality that is being observed by A. As it is purely by chance that A would observe the spin to the left, until the moment of observation of A, the spin of B is indeterminate. But once A is observed, B’s spin can be nothing but “right,” which Einstein considered to be “spooky action at a distance” at speeds faster than light—the Einstein–Podolsky–Rosen (EPR) paradox (Einstein et al. 1935). Later reformulation of the EPR experiment (Bell’s inequality; Bell 1964) that was carried out by Aspect et al. (1982) proved the quantum theory predictions over Einstein’s objections. It should be pointed out, however, that the quantum theory predictions do not presuppose “communication faster than light.” It simply shows a cosmic connectedness or unity beyond space-time separation. One way of looking at this is to consider the two particles not to be separate at all, but a part of a whole (a single wave). This is compatible with

modern superstring and Membrane or M-theories (Greene 2004).

In playing a role as to when and how observation is done, a series of conscious choices influence the way reality occurs (wave function collapses), or biases the number of split-off universes in a particular direction and therefore the probability that observers will find themselves in a universe in the chosen direction (in a many-worlds interpretation).

In this regard, it may be useful to ponder the role of the *observing physician* in the diagnosis and treatment of disease and in patient care. Will the act of diagnosis result in a collapse of the wave function? What is the role of a patient’s *will* (or *choice*) to live, which may arise out of an interaction between the patient and the physician or the family and friends?

The practice of medicine may truly be a creative process. The interaction between the physician and the patient creates new paths of reality for both participants.

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