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Pseudosciences
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COVER STORY

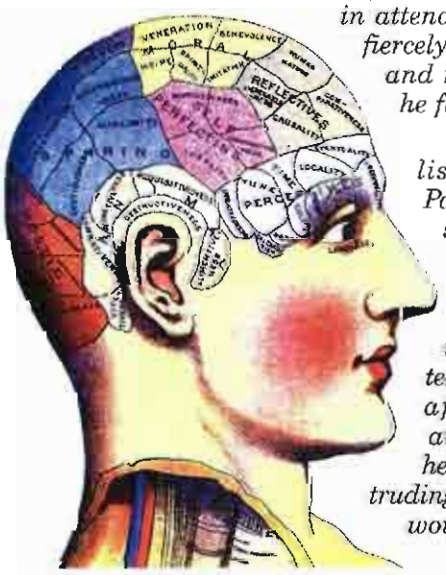
Pseudosciences

A pseudoscience is a theory or method that is claimed to have a solid foundation and function, but is not scientifically valid. Some therapies like balneotherapy, in which patients were submerged in water for an extended period of time, were popular in the 18th and 19th centuries, but do not exist today.

Other practices like biorhythms, which allegedly predict human behavior by charting an individual's fixed physical, emotional and intellectual cycles, have not proved to be scientifically substantial and is therefore a pseudoscience. "Fringe therapies" like acupuncture and homeopathy have been around for centuries and are considered alternative medicines, not pseudosciences.

Many pseudosciences have generated valid theories and practices that exist today. Mesmerism was the precursor to hypnosis. It was named after Franz Anton Mesmer (1743-1815), an Austrian physician. His doctoral thesis, entitled On the Influence of the Planets *— partly plagiarized from a paper written by one of Newton's peers — reflected the popular view of the time: that the body retains an invisible fluid called ether that is affected by planetary gravitation.*

Mesmer concluded that a person's health relied on the adequate flow of the fluid and whether or not it is in accord with gravity. After he "successfully" treated a patient using magnets, he assumed that the body is permeated by a magnetic fluid. He treated more patients with magnets until he claimed that he restored partial sight to a blind woman, who unfortunately could see only with him in attendance. Other doctors fiercely debunked his work and methods; disgraced, he fled Austria in 1778.



Gall's theories of phrenology may appear comical, but his theories on the cortex as the seat of intelligence moved psychology away from metaphysics and closer to empirical science.

Mesmer reestablished a practice in Paris and held healing sessions. A large tub, filled with chemicals and magnetized iron scraps, was placed in the center of a room. Dozens of affluent people sat around the tub and held onto one of the protruding metal rods. Mesmer would parade into the room wearing a

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regal purple robe and holding another iron rod. He would scream, stare, and point at each of the participants until each felt tingling sensations and either shrieked or fainted.

Mesmer's assistants would calm the crowd and, after everyone was sufficiently soothed, the participants would invariably claim that their symptoms had improved or vanished. Mesmer ceased to use any magnets or magnetized objects because he began to believe that his own body was abnormally magnetic and that he could influence others' magnetic fluid by eye contact, touch, and gesture.

In 1784, Mesmer encouraged a delegation to experiment with his "science." The delegation's study revealed that his patients' ailments were not cured and that any relief was due to the placebo effect. However, James Braid (1795-1860), a surgeon, discovered that while mesmerism worked, its effect was due to a psychological process — the patient's susceptibility — and not to magnetic forces. He renamed it "neuro-hypnology" and eventually the term was shortened to "hypnosis."

In 1893, the British Medical Association acknowledged that hypnosis was a useful tool for therapy if used prudently. Josef Bruer, a physician and physiologist used hypnosis extensively in the case of "Anna O." Sigmund Freud, a close friend of Bruer's for many years, was not an ardent believer in hypnosis and post-hypnotic suggestion because he found that most improvements were temporary and many patients were difficult to hypnotize.

Physiognomy, or to infer a person's mental and intellectual attributes from the shape and size of the face, was around for centuries before Dr. Franz Joseph Gall (1758-1828) studied the science and his reputation was forever associated with it.

Gall was a German neurophysiologist and anatomist whose brain dissection method revealed that a correlation existed between intelligence and the amount of brain cortex — the more cortex in the brain, the smarter the animal. He theorized that personality and intellectual differences could be measured by the bumps on and the shape of the head, so Gall and Johann Christoph Spurzheim (1776-1832) conducted extensive examinations of the heads of errand boys, inmates, patients, and friends.

They initially found 27 different regions, but upon further scrutiny, ten more were discovered. According to Gall's and Spurzheim's findings, for example, "benevolence" was detected in the upper forehead's center and "combativeness" was located behind each ear. "Cranioscopy," or phrenology, became popular due to books written by Gall, and Spurzheim's Europe and United States lectures.

As popular as phrenology was, it was not accepted by the medical community and several problems with Gall's experimental method were found. Instead of random sampling, he studied subjects that complied with his theory; any subject that did not follow his theory was explained by "balancing action" — some brain regions compensating for the lack of development in others. Also, according to dissection conclusions, the brain did not conform to the skull's bumps and hollows.

Pierre Flouren (1794-1867), a physiologist and surgeon, further invalidated phrenology. He conducted experiments on small animals by removing parts of their brain and then studying the reaction. What Flourens found was not a change in an animal's behavior, but a change in sensory stimulation response and physical coordination. Thus Gall and phrenology led to the first experiments of brain functions and the current notion that many physical functions are indeed localized, but memory, intelligence, and other superior functions are not. ⊏

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