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## Is Hysteria Real? Brain Images Say Yes

By [ERIKA KINETZ](#)

Hysteria is a 4,000-year-old diagnosis that has been applied to no mean parade of witches, saints and, of course, Anna O.

But over the last 50 years, the word has been spoken less and less. The disappearance of hysteria has been heralded at least since the 1960's. What had been a Victorian catch-all splintered into many different diagnoses. Hysteria seemed to be a vanished 19th-century extravagance useful for literary analysis but surely out of place in the serious reaches of contemporary science.

The word itself seems murky, more than a little misogynistic and all too indebted to the theorizing of the now-unfashionable Freud. More than one doctor has called it "the diagnosis that dare not speak its name."

Nor has brain science paid the diagnosis much attention. For much of the 20th century, the search for a neurological basis for hysteria was ignored. The growth of the ability to capture images of the brain in action has begun to change that situation.

Functional neuroimaging technologies like single photon emission computerized tomography, or SPECT, and positron emission tomography, or PET, now enable scientists to monitor changes in brain activity. And although the brain mechanisms behind hysterical illness are still not fully understood, new studies have started to bring the mind back into the body, by identifying the physical evidence of one of the most elusive, controversial and enduring illnesses.

Despite its period of invisibility, hysteria never vanished — or at least that is what many doctors say.

"People who say it is vanished need to come and work in some tertiary hospitals where they will see plenty of patients," Kasia Kozłowska, a psychiatrist at the Children's Hospital at Westmead in Sydney, Australia, and the author of a 2005 review of the subject in [The Harvard Review of Psychiatry](#), wrote in an e-mail message.

But it did change its name. In 1980, with the publication of the third edition of its Diagnostic and Statistical Manual of Mental Disorders, the [American Psychiatric Association](#) officially changed the diagnosis of “hysterical neurosis, conversion type” to “conversion disorder.”

“Hysteria, to me, has always been a pejorative term, because of its association with women,” said Dr. William E. Narrow, the associate director of the research division of the American Psychiatric Association. “I think the fact we got rid of that word is a good thing.”

Unofficially, a host of inoffensive synonyms for “hysterical” have appeared: functional, nonorganic, psychogenic, medically unexplained.

“Medically unexplained” and “functional” encompass a broader swath of distress than just conversion disorder — by some accounts, patients with medically unexplained symptoms account for up to 40 percent of all primary care consultations. But clinicians seeking to avoid the wrath of patients who do not appreciate being told that their debilitating seizures are hysterical in origin also use these blander terms.

Throughout that cloud of shifting nomenclature, people have kept getting sick. “The symptoms themselves have never changed,” said Patrik Vuilleumier, a neurologist at the University of Geneva. “They are still common in practice.”

Common, perhaps. Well studied, no. There is still no consensus on how conversion disorder should be classified, and not all physicians agree on diagnostic criteria. The epidemiology is hazy; one commonly cited statistic is that conversion disorder accounts for 1 percent to 4 percent of all diagnoses in Western hospitals. In addition, patients have heterogeneous symptoms that affect any number of voluntary sensory or motor functions, like blindness, paralysis or seizures.

The two things all patients have in common are, first, that they are not faking the illness and, second, that despite extensive testing, doctors can find nothing medically wrong with them. The scientific studies that have been conducted on conversion disorder generally have small sample sizes and methodological differences, complicating the comparison of results from different scientific teams and making general conclusions difficult.

“It’s one of those woolly areas, and it has this pejorative association,” said Peter W. Halligan, a professor of neuropsychology at Cardiff University in Wales and the director of Cardiff’s new brain imaging center. “Some people say, ‘That’s a Freudian throwback, let’s go into real science.’ ”

Hysteria actually predates Freud. The word itself derives from “hystera,” Greek for uterus, and ancient doctors attributed a number of female maladies to a starved or misplaced womb. Hippocrates built on the uterine theory; marriage was among his recommended treatments.

Then came the saints, the shamans and the demon-possessed. In the 17th century, hysteria was said to be the second most common disease, after fever. In the 19th century, the French neurologists Jean-Martin Charcot and Pierre Janet laid the groundwork for contemporary approaches to the disease. Then Charcot’s student, a young neurologist named [Sigmund Freud](#), radically changed the landscape and, some argue, popularized hysteria.

Freud’s innovation was to explain why hysterics swooned and seized. He coined the term “conversion” to describe the mechanism by which unresolved, unconscious conflict might be transformed into symbolic physical symptoms. His fundamental insight — that the body might be playing out the dramas of the mind — has yet to be supplanted.

“Scores of European doctors for generations had thought hysteria was something wrong with the physical body: an unhappy uterus, nerves that were too thin, black bile from the liver,” said Mark S. Micale, an associate professor at the University of Illinois at Urbana-Champaign and the author of “Approaching Hysteria” (Princeton University Press, 1994). “Something somatic rooted in the body is giving rise to fits, spells of crying, strange aches and pains. Freud reverses that direction of causality. He says what the cases on his couch in Vienna are about is something in the psyche or the mind being expressed physically in the body.”

For neuroscientists now, there is no such division between the physical brain and the mind. The techniques allow scientists to see disruptions in brain function, which lets them sketch a physical map of what might be going on in the minds of modern-day hysterics. Many questions remain unanswered, but the results have begun to suggest ways in which emotional structures in the brain might modulate the function of normal sensory and motor neural circuits.

In the last decade, a number of brain imaging studies have been done on patients suffering from hysterical paralysis. Patients with hysterical paralysis have healthy nerves and muscles. Their problem is not structural but functional: something has apparently gone wrong in the higher reaches of the human mind that govern the conception of movement and the will to move. The dumb actors in this dance are fine; it’s the brilliant but complex director that has a problem.

Movement is the product of a multistage process. There is initiation (“I want to move my arm”); then planning, in which the muscles prepare for coordinated action; and finally execution, in which you actually move your arm. In theory, paralysis could result from a

malfunction at any stage of this process. (Charcot had a similar idea back in the 1890's.)

In a 1997 paper published in the journal *Cognition*, Dr. Halligan, of Cardiff, and John C. Marshall and their colleagues analyzed the brain function of a woman who was paralyzed on the left side of her body. First they spent large amounts of money on tests to ensure that she had no identifiable organic lesion.

When the woman tried to move her “paralyzed leg,” her primary motor cortex was not activated as it should have been; instead her right orbitofrontal and right anterior cingulate cortex, parts of the brain that have been associated with action and emotion, were activated. They reasoned that these emotional areas of the brain were responsible for suppressing movement in her paralyzed leg.

“The patient willed her leg to move,” Dr. Halligan said. “But that act of willing triggered this primitive orbitofrontal area and activated the anterior cingulate to countermand the instruction to move the leg. She was willing it, but the leg would not move.”

Subsequent studies have bolstered the notion that parts of the brain involved in emotion may be activated inappropriately in patients with conversion disorder and may inhibit the normal functioning of brain circuitry responsible for movement, sensation and sight.

Such imaging studies may one day be useful as diagnostic tools. Conversion disorder has long been a troubling diagnosis because it hinges on negative proof: if nothing else is wrong with you, maybe you've got it.

This has led to some obvious problems. For one thing, it means hysteria has been a dumping ground for the unexplained. A number of diseases, including [epilepsy](#) and [syphilis](#), once classified as hysterical, have with time and advancing technology acquired biomedical explanations.

Such specious history makes patients skeptical of the diagnosis, even though the rates of misdiagnosis have gone down. (One widely cited 1965 study reported that over half of the patients who received a diagnosis of conversion disorder would later be found to have a neurological disease; more recent studies put the rate of misdiagnosis between 4 percent and 10 percent.)

“It helps to have some information from functional imaging to support the diagnosis,” Dr. Vuilleumier said. “That helps make the treatment and the diagnosis in the same language. The patient is coming to you with bodily language. The patient is not saying, ‘I’m afraid.’ It’s ‘I’m

paralyzed.' If you can go to the patient with bodily language, it helps."

Such physical evidence might help hack away at prejudice among medical practitioners too. "Hysterical patients take a bad rap in the medical profession," said Deborah N. Black, an assistant professor of neurology at the [University of Vermont](#).

"We don't like them," Dr. Black said. "Somewhere deep down inside, we really think they're faking it. When we see a patient with improbable neurological signs, the impulse is to say: 'Come on, get off it. Sure you can move that leg.' The other reason we don't like them is they don't get better, and when we can't do well by them we don't like them."

The embodiment of distress is common across cultures, and the suffering tend to find acceptable manifestations for their pain. The "jinn" (evil spirits) in Oman are thought to cause convulsions. In Nigeria and India, common somatic symptoms include hot, peppery sensations in the head, hands or feet. Among Caribbean women, "ataque de nervios" — headache, trembling, palpitations, upset stomach — is a common complaint. One study of British veterans found that over the course of the 20th century, post-traumatic disorders did not disappear, but rather changed form: the gut replaced the heart as the most common locus of weakness.

Both its persistence and its pervasiveness suggest that hysteria may be derived from an instinctual response to threat. Total shutdown, in the form of paralysis, for example, is not an entirely untoward or unheard of response to an untenable situation. (Think of deer in the headlights.)

But the broadest consensus within the scientific community does not pertain to what is known about hysteria, but instead to how much remains unknown. "We're only at the beginning," Dr. Halligan said.

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