



[Indian J Psychol Med.](#) 2009 Jan-Jun; 31(1): 11–15.

PMCID: PMC3168073

doi: [10.4103/0253-7176.53309](https://doi.org/10.4103/0253-7176.53309)

PMID: [21938085](https://pubmed.ncbi.nlm.nih.gov/21938085/)

## Mind, Brain and Psychotherapy

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### Abstract

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There is long-standing debate about superiority of mind over brain, in other words about superiority of mind over matter. And outcome of this debate is going to decide future of psychiatry. The psychiatrists believing in materialism may say that brain is all and by changing neurotransmitters level with new molecules of drugs would cure all illnesses. On the other hand, antipsychiatry activists and some psychotherapists oppose all types of treatment despite of convincing evidence that drug therapy is effective (although sometimes it is not as effective as it claims to be). However, truth lies somewhere in between. Pharmacotherapy and psychotherapy are like two legs of psychiatry and psychiatry cannot walk into a future on one leg. The studies have shown that judicious use of pharmacotherapy along with psychotherapy gives better outcome than any one of them used alone. We must heal dichotomy between mind and brain before we heal the patients.

**Keywords:** *Mind, brain, neurotransmitters, psychotherapy, pharmacotherapy*

### INTRODUCTION

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There is long-standing dichotomy between mind and brain. And this dates back to the time of René Descartes. Ever since he introduced the concept of mind-body duality, the exact link between mind and body or the causal relation between the mental and physical remained an unsolved problem. And this debate has more of a practical value rather than a theoretical value. The outcome of this raging debate is not only going to decide the mode of treatment of mental illness but also going to decide the future of psychiatry, which is jeopardized not only by some overzealous psychiatrists, who believe in overmedication but also by the antipsychiatry movement activists and some psychotherapists who believe in no medication.

### MINDLESSNESS OF 'BRAIN IS ALL' THEORY

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One major problem vexing psychiatry is that there is currently no mechanism for psychiatry to shed or screen out unscientific and erroneous claims that cannot be directly tested empirically.<sup>[1]</sup> While we know that mind and brain are inseparable as light from its shadow and

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our practice do not always reflect that. To say that the 'Mind is matter,' is to say that insulin is same as islets of Langerhans.[2] It is naïve reductionism.

Psychiatrists found it useful to emphasize their medical identity for purely economic reasons.[3] Sometimes one wonders, whether battle between mind and brain is not really between psychologists and psychiatrists. Specifically, psychiatry is at risk of becoming a house divided against itself, with psychosocial specialists in one camp and neuroscientists in another.[4] Mindlessness has begun to replace brainlessness.[5]

What we call 'mind' can be understood as the activity of the brain;[6] although the complexity of one's unique subjectivity is not easily reducible to chemistry and physiology. If brain can be likened to fan, then mind is air thrown by the fan. In other words, mind is to the brain what a painting is to a canvas. You need a canvas to support a painting, but studying the canvas will reveal much less about the painting than an understanding of art would.[7]

Canadian neurosurgeon Wilder Penfield was one of the pioneering scientists to investigate the relationship between mind and brain. He found uncertain connection between physical stimulation and mental response. In the 1930s, he probed the brains of his patients with an electrode while operating on them for epilepsy. Such surgery was carried out while the patients were conscious and able to talk about what they were experiencing. Penfield found that jolts to some regions sparked vivid imaginary scenes or surges of emotion. But equally he was puzzled that there were large areas of 'silent' cortex where he got no reaction. On the basis of his findings, he argued that there must be more to being a mind than just set of brain circuits.[8] However, Lorber went further than him and his experiments showed that brain is inconsequential for functioning and existence of mind.

Lorber was part of a world-leading spinal surgery team at the hospital treating kids with spina bifida. A frequent complication of this complaint is hydrocephalus where the fluid-filled ventricles in the middle of the brain expand, causing the cortex to be squashed against the bone of the skull. Lorber found that a few of his patients showed no outward sign of mental deterioration, and yet X-rays revealed 'wall to wall' ventricles. The X-rays did make many people wonder, what was requirement of the millions of years of careful evolutionary tuning to develop the very large and complex human brain if it still worked just as well when reduced to no more than a slick of neural tissue. Lorber's claims were never publicly refuted. And Lorber—who died in 1996—stuck firmly to his story, claiming that in 500 CT scans he had found many hydrocephalics with hardly any brain left above the level of the brainstem and yet living ordinary lives.[9]

Maybe psychiatry has reached cul-de-sac because current trend of probing mystery of mind by studying brain. Maybe researchers of mind have lost in mazes of mind because they use their own minds—about which they know very little—to study mystery of mind.

## NEUROTRANSMITTERS AND MENTAL ILLNESSES

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There is still no conclusive evidence that proves the relationship between particular neurotransmitter and particular symptoms of any mental illness. All we have are various hypothetical imbalances of neurotransmitters that are responsible for mental illness (hypothetical mental illness according to antipsychiatrists). But according to evolutionary theory, hypotheses about dysfunction can be generated only when the function of a system is understood or at least suspected.[10] This is also true for the monoamine theory of depression as it is for the dopamine theory of schizophrenia. In such situations, it seems highly unlikely that focusing on individual neurotransmitters in such a highly complex organ as the human brain would lead to any significant cumulative advance in our understanding of the complexities of depression or schizophrenia.[11]

Some recent study done by researchers[12-14] concluded that there is no persuasive or consistent evidence that a deficiency of brain serotonin causes depression or that an increase in brain serotonin relieves depression. They also claim that powerful financial and political interests may bias current research and medical education. Chemical theories of depression, for example, are often oversimplifications, based on observations of altered neurotransmitter synthesis and function in the brains of mice and rats. It has not been possible to study the living chemistry of the human brain; hence, we do not really know how relevant animal data is.[15]

In fact, serotonin has very little relationship with depression and that is why fluoxetine, which inhibits serotonin uptake, is as effective as tianeptine in curing depression, which enhances serotonin uptake. In crayfish, investigators identified a neuron whose response to the neurotransmitter serotonin differs dramatically depending on the animal's social status.[16] These findings led them to speculate that the perception of one's place in a relationship may influence the activity of neurotransmitters and their effect on the brain. Other thing Not in the favor of serotonin theory of depression is although antidepressants change serotonin level in brain immediately, improvements in the patient's mood typically do not occur for several weeks.

Suppose if some person hears sad news, he may get depressed. According to this hypothesis, if we measure serotonin level of that person at that particular time, it may be low. Now at that time, if the same person receives information that earlier news was wrong, he may feel elated. At that time, person's serotonin level may rise. So it was thought of mind which was responsible for the increase or decrease in the level of serotonin, which in turn leads to depression or elation, rather than vice versa. So by changing thought of mind or way of perception, we can alter the level of serotonin and thus can cure mental illness like depression.

It is naïve to believe that helpless and innocent neurotransmitters, which cannot defend themselves or employ battery of lawyers, are responsible for all the ills of human mind. Perhaps, neurotransmitters are like an innocent person who has been falsely implicated in crime because he was present at the site of crime.

We must realize that directly changing neurotransmitters does not resolve conflict. It is like sweeping a dust of conflict under the carpet of unconscious mind. And seething volcano of the conflict may erupt at any time. And it may cause far more damage than untreated mental illness. As 'Gestalt theory' says whole is more than sum total of its parts, so mind is more than the sum total



of neurotransmitters of a brain. If neurotransmitters are likened to mud in a pond of brain, then mind is lotus in that lake. As mystery and beauty of lotus cannot be known by studying mud, so mystery of mind cannot be known by studying neurotransmitters.

## A MYTH OF OMNIPOTENT PHARMACOTHERAPY

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Like other specialties in psychiatry also new drugs have started coming in a shorter period of time. However, there is little improvement in prognosis of mental illness. The new highly selective antidepressants do not appear to be any more effective than the older tricyclic drugs.<sup>[17]</sup> A recent meta-analysis of the drug treatment of depression, while showing unequivocally that antidepressants are effective, found a response rate no better than 50% for active treatment by comparison with 32% for placebo.<sup>[18]</sup> Only advantage newer drugs seem to have is favorable side effects profile, but this advantage is offset by prohibitive cost of medicines which itself may generate depression and anxiety.

Recent studies suggest that inactive placebos (placebos without side effects) are approximately 75% as effective as antidepressant medications in nearly all published outcome studies.<sup>[14]</sup> Irony is that recently FDA has asked to label antidepressants—which are given to decrease incidence of suicides—with a warning that it increases suicidal risk in the adolescents and adults below 25 years of age.<sup>[19]</sup>

Same startling findings are also reflected in Clinical Antipsychotic Trials of Intervention Effectiveness, which is the largest and longest medication-treatment study of patients with chronic schizophrenia. National Institute of Mental Health launched it in 1999 with an initial five-year funding of \$44 million. And these findings of the government sponsored study, published in *The New England Journal of Medicine*, comparing an older generic antipsychotic to four new atypical antipsychotics, undercut the legitimacy of psychiatry's treatment and practice guidelines for schizophrenia. In this study, researchers followed more than 1400 patients for up to 18 months. Jim Rosack wrote in 'Psychiatric News' about the results of study, 'Government antipsychotic study finds no clear winner in Horse Race.'<sup>[20]</sup> Good as they are, psychotropic drugs were vastly overvalued then, as they are now.<sup>[21]</sup>

Thornley and Adams<sup>[22]</sup> reviewed for the Cochrane Collaboration the first 2000 controlled treatment trials in schizophrenia. Most trials were substantially flawed—they had inadequate sample size, or too short duration, uncertain blinding, inconsistent methods of evaluation, or poor reporting. Only 20 (1% of the 2000) were rated at five on a 1–5 scale of quality.

There also appears to be a publication bias in the scientific literature, in that industry-funded studies resulting in negative findings often do not get published or have their publication delayed.<sup>[23]</sup> Judging by advertisements in medical journals, the pharmaceutical industry heavily underwrites the publication process itself, raising the appearance of a conflict of interest.<sup>[24]</sup> So studies show that there is little improvement in prognosis of mental illness even after advent of new class of drugs.



If we are making a person happy by providing pharmacotherapy, without resolving his conflict, it will be akin to happiness of a manic, who is happy despite being mired in the mud of difficulties. And since he is happy despite of numerous problems, he would never try to solve the problems. So we are harming the person instead of helping him if we provide pharmacotherapy alone to the patient.

## PSYCHOTHERAPY AND CHANGES IN THE BRAIN

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Studies have shown that it is possible for the poor, feeble, and formless thought of mind to override genetic programming and change the brain made up of gross matter.

Thought originates in the brain as a result of neuronal firing. The constant hum of neural firing generates a measurable electromagnetic field. Conscious processing in the brain generates a field of 35—40 Hz usually called gamma activity. Wheel chairs that can move and turn by simple thoughts of 'Go right'; 'Go left' are designed for handicapped persons. These examples clearly demonstrate that 'thinking' is a form of energy.

Environmental factors including directed thinking appear to have an ability to modify the proteins that act as gates in activating or turning off the genes, thus controlling the gene expression. Directed thought and meditation are shown to have demonstrable influence in changing the neural circuits in the brain overriding genetic disposition. Confident positive and intense thinking within a carefully orchestrated belief system appears to have the potential of bringing about a transformation in an individual superseding the genetic effects.[25] Mental phenomena arise from the brain, but subjective experience also affects the brain.[26]

Thoughts, the mind's energy, directly influence how the physical brain controls the body's physiology. Thought 'energy' can activate or inhibit the production of proteins that affects the cell's function via the mechanics of constructive and destructive influence.[27]

Lutz *et al.*, [28] found "that long-term Buddhist practitioners self-induce sustained electro-encephalographic high-amplitude gamma-band oscillations and phase-synchrony during meditation." The data obtained by them suggest that mental training through meditation involves temporal integrative mechanisms and may induce short- and long-term neural changes. Thoughts can cause the release of hormones that can bind to DNA, turning genes 'on' or 'off'. [29]

Zubieta [30] did an experiment on volunteers with a belief in a painkiller (actually a placebo) administered by them. They compared the brain scans of pain-only phase with the pain-plus-placebo phase using positron emission tomography. They found that when the placebo was being administered, the brains released significantly more endorphins, the brain's natural painkillers. The placebo effect could possibly be linked to the belief the volunteers had in what was administered to them.

Our belief or thoughts can change the neurotransmitters or our perception of experiences. By changing the thoughts, we can influence expression of genes and thus can change the level of neurotransmitters and thus can cure mental illnesses like depression. However,



that medication is no longer needed, as psychotherapy cannot alter all biological substrates.[4]

## BRIDGING THE GAP BETWEEN PSYCHOTHERAPY AND PHARMACOTHERAPY

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Psychotherapy of one sort or another is now an indispensable part of the management of all major psychiatric disorders, including schizophrenia,[31], manic depression and major depressive disorder,[32] personality disorder,[33] posttraumatic stress disorder,[1] and somatization disorders.[34] Kandel postulates that psychotherapy may cause similar changes in brain synapses like a pharmacotherapy. The learning about oneself that occurs in psychotherapy may in itself influence the structure and function of the brain.[35]

The challenge is to translate research findings into routine clinical practice—to move from efficacy to effectiveness.[36] General psychiatry needs psychotherapy if it is to deliver effective psychosocial interventions to people with psychosis.

Researchers in Finland showed that psychodynamic therapy might have a significant impact on serotonin metabolism.[37] A useful example of this combined approach of medication and psychotherapy is the approach to personality disorders. The presence or otherwise of a personality disorder is determined by character variables. In fact, all personality disorders show low scores in self-directedness and in cooperativeness. Temperament variables tend to be influential in determining the subtype of personality disorder, as well as susceptibility to Axis I emotional disorders. Making the distinction between temperament and character may be essential for effective treatment planning. Temperament tends to be highly stable over time, and is fairly unresponsive to psychotherapy, while character is malleable, develops throughout adulthood, and may respond favorably to psychotherapeutic interventions. Hence, understanding these distinctions can help the psychiatrist design a treatment plan that uses medications such as the selective serotonin reuptake inhibitors to target impulsivity and affective lability, which are temperament constructs, while using psychotherapy to approach problems in the patient's self-directedness and object relations (cooperativeness). Using combined treatments in this neurobiologically informed manner may be critical to effective treatment.

Combined treatment may be most thoroughly studied in persons with major depression. Keller *et al.*,[38] conducted a randomized, controlled trial that compared an antidepressant (nefazodone), a form of psychotherapy (the cognitive-behavioral-analysis system), and the combination of the two; 519 subjects completed the protocol. The response rates among those who received psychotherapy alone and those who received nefazodone alone were 52 and 55%, respectively, whereas the combined treatment group had a response rate of 85%. The patients in this study suffered from chronic nonpsychotic major depressive disorder, and it may be that combined treatment holds a distinct advantage particularly for patients with chronic forms of depression.

## CONCLUSION

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It appears that mind is brainier or superior to brain made up of matter and brain does not have as much mindfulness or intelligence as it is presumed to have. Going by that assumption that psychotherapy, which directly deals with mind, is superior to pharmacology deals



with brain or matter. But psychotherapy and medication may work on different target symptoms and at different rates. Pharmacotherapy appears to provide fast relief from acute distress, and psychotherapy makes enduring change in brain, with combined treatment retaining the specific benefits of each. Medication can be likened to air strikes on the enemy camps of mental illness, which yields rapid results; however, to sustain gain, slow ground strike in form of psychotherapy is necessary. We must use both things judiciously. Psychotherapy and pharmacotherapy are two eyes of psychiatry and psychiatry Cannot have a whole three dimensional in-depth vision of illness and its treatment with a single eye alone.

## Footnotes

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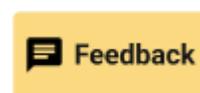
**Source of Support:** Nil

**Conflict of Interest:** None.

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