

## Essay

# Consciousness in Psychiatry: Can We Measure It?

Massimo Cocchi\* & Fabio Gabrielli

Research Institute for Quantitative & Quantum Dynamics of Living Organisms,  
Center for Medicine, Mathematics & Philosophy Studies, Italy

### Abstract

This work finds plausible reasons for recognizing the possibility that the "psychiatric" state of consciousness is measurable. As a consequence, it can be inferred that this possibility remains a fundamental safeguard in psychiatric clinical practice.

**Keywords:** Consciousness, psychiatry, measurement, clinical practice.

### Historical Concepts of Consciousness in Psychiatry

The history of consciousness from Socrates, understood as the seat of the intellectual and moral qualities of man (the psyché), to the acquisitions of neuroscience, including D. Chalmers' hard problem concerning qualia, constitutes a fascinating track and, for many aspects, still enigmatic. There are countless attempts to integrate consciousness into a unitary ego and, conversely, the positions that consider this phenomenon to be illusory. If we then try to calibrate the concept in the psychiatric field, the question becomes even more problematic.

Despite the rich, yet unfinished, debate on consciousness, which involved neuroscience, evolutionary biology, cognitive science, philosophy of mind, advanced research in Artificial Intelligence, psychiatry has remained quite on the sidelines: at least a curious thing for a branch of medicine that it addresses, first of all, a pathological field (alterations in the level of consciousness, disturbances in the experience of the self, dissociations, obsessions, mood disorders, etc.).

From the anthropological point of view, then, the debate opened by Michel Foucault's concept on psychiatry as a moment of surveillance, control, punishment on individual biographies and on society, with all the scenery of forms of biopower, biocontrol on bare life, remains in contemporary authors such as de Sutter L. (de Sutter 2017) who sees in narcocapitalism the pervasive and organic possibility to harness the natural existential effervescences of consciousness, including fears and anxieties, in psychopharmacology.

In this way, a capitalism of drugs is determined, which together with intangible capitalism or big data, structures a submissive, controlled, sad society. And sadness, already warned Gilles Deleuze, playing Spinoza, stiffens thought and action by channeling them into control practices (Deleuze 1988). From a clinical point of view, a certain evanescence of psychiatric nosology

---

\*Correspondence: Prof. Massimo Cocchi, Research Institute for Quantitative & Quantum Dynamics of Living Organisms, Center for Medicine, Mathematics & Philosophy Studies; & Department of Veterinary Medical Sciences, University of Bologna, Italy.  
E-mail: massimo.cocchi@unibo.it

compared to other areas of medicine makes it particularly weak in the actual measurement of mental pathologies. Think, in particular, of the major depressive forms in differential diagnosis with respect to bipolar disorder, especially in the early onset phase. Hence the extreme need for biochemical markers capable of tracing psychopathology to objective and possibly exhaustive diagnostic criteria.

### **Different Psychiatric Diagnosis and Different States of Consciousness?**

Graham and Stephens (2006) have formulated a thesis which recognizes that “mental illness is an illness in and of consciousness”. If the state of consciousness is inscribed in mental illness, then it is important to precisely define the state of mental illness to be able to assume that the subject manifests a different state of consciousness than the psychiatric pathology. This entails the need to get out of the considerable margin of diagnostic error, from 40 to 70%, extensively described in the literature (Bowden 2001; Tenth World Day for the Prevention of Suicide (2012). Rome). In this context, reference is mainly made to the two main mental disorders that afflict the human being, namely Major Depression and Bipolar Disorder.

In the first phase of the research, in which platelets fatty acids were studied in combination with an Artificial Neural Network (Self Organizing Map by Kohonen) (Cocchi & Tonello 2010a; Cocchi & Tonello 2010b; Kohonen 2001) the psychiatric cases were compared to apparently normal cases (it was not possible to subject the so-called normal subjects to psychiatric tests, for obvious personal and ethical reasons) the neural network used worked to the point of identifying a specific area of normality, placing the remaining "normal" subjects in areas that also contained subjects diagnosed with psychopathology. Surprisingly it was clear that an impressive number of people believed to be absolutely normal, presented, even if the pathology was not evident, molecular characteristics similar to those with psychopathology.

Not least, the second phase of the research made it possible to accurately distinguish, within psychiatric patients, subjects with bipolar disorder from subjects with major depression (Benedetti et al. 2014). A further analysis of the data made it possible to recognize Linoleic Acid as a critical element in psychiatric pathology (Cocchi et al. 2017) and in the Arachidonic Acid the element for regulating the mobility of the membrane capable of conditioning the uptake of serotonin (Cocchi & Traina 2020).

### **Is the State of Consciousness Measurable in Psychiatry?**

If we know that different psychiatric states generate different states of consciousness through the measurement of brain waves (Flynn et al. 2008; Herrmann & Demiral 2005), if theories have been formulated between consciousness and quantum dynamics of the brain (Cocchi et al. 2017) it is necessary and essential to address the problem of measurability of the state of consciousness in psychiatry outside the classic conditions of consciousness related to brain damage (severe injuries, coma etc.).

The ability to correctly identify psychiatric pathology, especially in the early stages, can also allow the most appropriate pharmacological approach.

On the side of "psychiatric" consciousness, which expresses the subject's behavioral framework, the identification of the different attitudes of behavior and thinking can be useful to allow the best psychotherapeutic use of the "word". The fatty acids of the platelets, in the interpretation of the artificial neural network, in their role conditioning the mobility of the membrane and therefore the modulation of the uptake of serotonin, can be extremely useful for the clinical management of the psychiatric patient. This possibility, of immediate utility for the treatment of the subject, will allow the deepening of the bio-molecular connections involving membrane, Gs alpha protein, cytoskeleton and microtubules as well as the evaluation of the cell membrane ion channels function, up to the definition of the precise function of the cellular interactome, as well as giving plausible answers to the quantum function of the brain.

## Conclusion

The measurement of consciousness in psychiatry therefore remains a fundamental safeguard in psychiatric clinical practice in avoiding the subjectivity of interventions in the interest of the best diagnostic and treatment result.

*Received November 6, 2020; Accepted December 21, 2020*

## References

- Benedetti, S., Bucciarelli, S., Canestrari, F., Catalani, S., Mandolini, S., Marconi, V., Mastrogiacomo, A., Silvestri, R., Tagliamonte, M., Venanzini, R., Caramia, G., Gabrielli, F., Tonello, L., and Cocchi, M. (2014). Platelet's Fatty Acids and Differential Diagnosis of Major Depression and Bipolar Disorder through the Use of an Unsupervised Competitive-Learning Network Algorithm (SOM). *Open Journal of Depression*, 3, 52-73.
- Bowden, C.L. (2001). Strategies to reduce misdiagnosis of bipolar depression. *Psychiatr Serv.* 52: 51-55.
- Cocchi, M., and Traina, G. (2020). Tryptophan and Membrane Mobility as Conditioners and Brokers of Gut–Brain Axis in Depression. *Appl. Sci.* 10, 4933.
- Cocchi, M., Minuto, C., Tonello, L., Gabrielli, F., Bernroider, G., Tuszynski, J.A., Cappello, F., and Rasenick M. (2017). Linoleic acid: Is this the key that unlocks the quantum brain? Insights linking broken symmetries in molecular biology, mood disorders and personalistic emergentism. *BMC Neurosci* 18: 38.
- Cocchi, M., Tonello, L. (2010a). "Running the hypothesis of a bio molecular approach to psychiatric disorder characterization and fatty acids therapeutical choices", *Annals of General Psychiatry* (supplement 1): S26.
- Cocchi, M., Tonello, L. (2010b). "Bio molecular considerations in Major Depression and Ischemic Cardiovascular Disease". *Central Nervous System Agents in Medicinal Chemistry* 9: 2-11.

- Cocchi, M., Tonello, L., & Gabrielli, F. (2017). The Declaration of Palermo and the Declaration of Bologna in: *Quantum Paradigms of Psychopathology: From Consciousness to Neuroethics*. *Open Journal of Depression* 6, 24-30.
- de Sutter, L. (2017). *Narcocapitalism. Life in the Age of Anesthesia*, Translated by Barnaby Norman, Cambridge (UK), Polity ISBN 978-1509506835.
- Deleuze, G. (1988). *Spinoza: Practical Philosophy*. Translated by Robert Hurley, San Francisco: City Lights Books. ISBN 978-0872862180).
- Flynn, G., Alexander, D., Harris, A., Whitford, T., Wong, W., Galletly, C., Silverstein, S., Gordon, E., Williams L.M. (2008). Increased absolute magnitude of gamma synchrony in first-episode psychosis. *Schizophr Res* 105:262-271.
- Graham, G. & Stephens, G. L. (2006). Psychopathology: minding mental illness. In P. Thagard (Ed.), *Philosophy of Psychology and Cognitive Science: A Volume of the Handbook of the Philosophy of Science* 12: 339–367. Amsterdam: North Holland.
- Herrmann, C.S., Demiral, T. (2005). Human EEG gamma oscillations in neuropsychiatric disorders. *Clinical Neurophysiology* 116: 2719–2733.
- Kohonen, T. (2001). *Self-Organizing Maps* (3rd ed.). Berlin: Springer.
- Tenth World Day for the Prevention of Suicide (2012). Rome.