

Some Philosophical Reflections on Orthomolecular Psychiatry

Introduction

Orthomolecular psychiatry is a relatively veteran attempt to develop, study, practice and teach molecular yet wholistic evidence based psychiatric therapeutics. The historically informed article published in this issue by John Hoffer¹ provides an opportunity to review – both descriptively and critically – orthomolecular psychiatry to date, as well as its prospects. In this philosophically informed editorial, I will reflect on some important conceptual underpinnings of orthomolecular psychiatry, as reflected in John Hoffer's article as well as in a few other key publications in this area. These reflections will suggest strengths and challenges of scientific aspects of orthomolecular psychiatry and ways of addressing them, in order to point to possible improvements in this area. I will use approaches from philosophy of science,² and conceptual analysis,³ which is a set of methods of philosophical inquiry that examine the coherence within and between concepts. From the more general to the less general (in that order), I will address the framework, boundaries, theories, research methods and level of evidence of orthomolecular psychiatry.

The Framework of Orthomolecular Psychiatry

John Hoffer argues that “The concept of orthomolecular psychiatry is simply that: a thought framework for capturing and analyzing diagnostic and therapeutic possibilities that remain to be tested for robustness, both biochemically and in the clinic.”¹ If so (and I agree that such a conceptualization is reasonable), orthomolecular psychiatry may be useful as a heuristic for generating (molecular) hypotheses that can and should be tested empirically. This is compatible with it being a metaphysical framework that attempts to outline part of the reality of mental abnormality and its molecular remediation, as metaphysical frameworks

have been shown to be useful as heuristics for generating hypotheses that can be and have been tested empirically in various areas of science.^{4,5} Hence, the framework of orthomolecular psychiatry can be useful scientifically, at least in principle.

Note that the molecular remediation framework most different conceptually from the molecular remediation framework of orthomolecular psychiatry may be homeopathy (rather than conventional or mainstream pharmacopsychiatry, as may be commonly thought), as homeopathy postulates remediative properties of toxic molecules (substances normally not present in the brain and in the body more generally) in very small amounts, whereas orthomolecular psychiatry postulates remediative properties of orthomolecules (substances normally present in the brain and in the body more generally) in relatively large amounts. This two-dimensional classification of molecular remediation, consisting of the dimension of relative (molecular) amount and of the dimension of normal (molecular) presence – or alternatively lack of it – in the brain and in the body more generally, may assist in the classification of other molecular remediation frameworks, such as that of conventional or mainstream pharmacopsychiatry, and even in the generation of novel molecular remediation frameworks, particularly if the dimensions are considered continuous or at least multicategorical rather than dichotomous, and if they are not mutually exhaustive (obviously they are not mutually exclusive); detailed discussion of such a classification is beyond the scope of this editorial. The issue of classification leads me to the discussion of the boundaries of orthomolecular psychiatry.

The Boundaries of Orthomolecular Psychiatry

John Hoffer continues to argue that “Approaches like herbal therapy and diets that eliminate cerebral allergies may sometimes be effective, but they are not properly classified as examples of orthomolecular psychiatry as Linus Pauling defined it.”¹ Pauling's definition is that “Orthomolecular psychiatric

therapy is the treatment of mental disease by the provision of the optimum molecular environment for the mind, especially the optimum concentrations of substances normally present in the human body.⁶ By optimum, Pauling means “that the optimum molecular concentrations of substances normally present in the body may be different from the concentrations provided by the diet and the gene controlled synthetic mechanisms, and, for essential nutrilites (vitamins, essential amino acids, essential fatty acids) different from the minimum daily amounts required for life or the “recommended” (average) daily amounts suggested for good health.”⁶ Hence the orthomolecular psychiatric practice of using relatively large doses of vitamins, such as vitamin B₃ in the order of a few grams per day for schizophrenia.⁷

By definition, what is optimal is restricted to given circumstances and hence depends on various factors that vary across individuals and environments. Hence, the optimum may be lower as well as higher for a particular individual or a group of individuals, as compared to the general population. Therefore, I argue that Pauling’s definition does not exclude optimum molecular concentrations of substances normally present in the body being lower (rather than higher) than concentrations provided by the (presumably common) diet, the gene controlled synthetic mechanisms, the minimum daily amounts required for life or the “recommended” (average) daily amounts suggested for good health. Thus, elimination diets may not be excluded from orthomolecular psychiatry, and the boundaries of orthomolecular psychiatry can be viewed as broader than argued by John Hoffer.

The Theories of Orthomolecular Psychiatry

Orthomolecular psychiatry seems to have distinct theories, such as the theory of the existence of cerebral allergies (which by implication of my argument above in relation to elimination diets, can be part of orthomolecular psychiatry) and that they cause mental disorders, as well as the theory that mental disorders such as schizophrenia are

dependency diseases (which refers to the need of some individuals for larger than usual amounts of vitamins and other nutrients).⁷Theories are necessary in science,⁸ and may not be initially tested or even testable for practical reasons such as lack of suitable technology or appropriate circumstances to test them; yet they must be testable in principle to be scientific,⁸ and eventually they must be tested in order to count as part of science (note that they may still be counted as scientific if they are refuted through testing, as illustrated by Newton’s refuted theories in physics).⁴ This is what has happened with some important theories in physics, which are difficult to test but testable in principle and eventually tested, at least in part, such as the theories of relativity.⁵ Also, the issue of testing and testability is compounded by the fact that a theory may be more or less directly testable and tested. For instance, the monoamine theory of some mental disorders remained considerably indirectly testable and tested for a long time,⁹ and only recently has it become more directly testable due to the advent of functional neuroimaging (in spite of the complexity of testing by neuroimaging).

Orthomolecular psychiatry’s theories of cerebral allergies and of mental disorders such as schizophrenia as dependency diseases are not directly testable yet. The theory of cerebral allergies is indirectly testable, particularly through the use of elimination diets. The theory of mental disorders such as schizophrenia as dependency diseases is even less directly testable, as its main proposed test to date is the beneficial response – or lack of it – to relatively large doses of nutrients such as vitamins.⁷ As such, their scientific status may not be much different from that of the monoamine theory of some mental disorders a while ago (although there were more animal models supporting the monoamine theory), but the more time goes by without more direct testing of them, which may be facilitated by more detailed theoretical research, the more suspect will be their scientific status. Still, there has been some indirect testing of these theories, which may

shed more light on orthomolecular psychiatry. What does this testing demonstrate?

The Research Methods and Level of Evidence of Orthomolecular Psychiatry

The (indirect) testing of theories in orthomolecular psychiatry has been conducted using various research methods. Interestingly, it seems that the level of evidence of orthomolecular psychiatry has decreased over decades. Contrary to the change over time in pharmaco-psychiatry, which initiated research systematically at approximately the same time that orthomolecular psychiatry initiated research systematically (largely in the early 1950s), and which proceeded from randomized controlled studies to systematic reviews (including meta-analyses), orthomolecular psychiatry proceeded from randomized controlled studies (such as those of Abram Hoffer⁷) to case series and case studies, which are widely considered to provide low level evidence, particularly in molecular remediation frameworks. John Hoffer states: "Accurate, skillfully drafted clinical case reports and case series can be an important component of evidence-based medicine, especially when, as is true in the case of orthomolecular psychiatry, there is little or no reliable information available from randomized clinical trials."¹ To my mind, it is not sufficiently clear why this scientific deterioration happened in orthomolecular psychiatry research, although the fact that orthomolecules do not seem to have as much commercial potential as pharmacological products may have played a role in this process, considering that large randomized clinical trials require considerable funding that is mainly provided by the for-profit industry in relation to pharmaco-psychiatry. Rigorous historical investigation on this matter in relation to orthomolecular psychiatry may be helpful, as similar historical investigation in relation to pharmaco-psychiatry has uncovered important and unexpected findings.¹⁰

Furthermore, John Hoffer states: "I believe that the present state of orthomolecular psychiatry is such that appropriately designed and suitably powered prospec-

tive clinical trials would be premature even if they were practical, which they are not."¹ This is even more puzzling, as even if such rigorous research may not be practical due to lack of sufficient funding for it, it is not at all clear why it is premature, as it already occurred fifty years or more ago. It is important to clarify this situation and to try to improve on it methodologically rather than to advocate merely for anecdotal descriptions such as publishing case reports and case series, helpful as they may be. Only with such clarification and methodological improvement may orthomolecular psychiatry contribute significantly to the understanding and remediation of mental disorders, by means of rigorous corroboration and/or refutation of its theories and therapeutic predictions. If randomized clinical trials and their meta-analyses are considered insufficient for orthomolecular psychiatry, further methodological research and progress is required, preferably captured in publications in order to make it available to wide scholarly and public discussion. And social action (transformative) research and advocacy may be imperative to promote resourcing for adequate orthomolecular psychiatry research, if renewal of rigorous studies as part of it emerges as promising.

Conclusion

In summary, orthomolecular psychiatry has both strengths and challenges in relation to its scientific aspects. It has a metaphysical framework that may facilitate – as a heuristic – the development of hypotheses for empirical testing. Its boundaries are broader than sometimes claimed, as it includes elimination diets. Its theories are only indirectly testable, at least at this stage. And its research methods and level of evidence have deteriorated over the years. Much of this may be improved on by theoretical, empirical and methodological research, as well as by historical investigation, social action and further philosophical reflection. Note that some of my arguments and their conclusions may hold for orthomolecular medicine in general. Be that as it may, philosophical

reflection may be useful for orthomolecular medicine beyond orthomolecular psychiatry.

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