Should mental disorders be regarded as brain disorders? 21st century mental health sciences and implications for research and training

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Two recent papers focus our attention on developments in mental health sciences and their implications, respectively, for research, by Insel et al (1), and for the psychiatry profession, by White et al (2). Both papers headline the classification problem and both propose to regard mental disorders as brain disorders. While this proposal is not new (3,4), what is striking is that these two recent formulations are plainly not reductionist. By this, I mean that they do not suppose that neural dysfunctions are the only causes of mental disorders, but rather recognize developments in mental health sciences showing that causes or risks of mental disorders may operate at many levels, including the genetic and the neural, the individual, the family environment, and the social context. Crucially, this view of multifactorial or multilevel view of causation (or risk) acknowledges and is intended to accommodate the fact that interventions at these various levels may affect onset and course, playing parts in primary prevention and management and treatment after. This is one aspect of developments in mental health sciences outlined by both papers; another, and the emphasis in both papers, is the massive recent developments in the fields of genetics and neuroscience.

There is something of a tension between these two aspects of the new mental health sciences. On the one hand, the importance of genetics and neuroscience can suggest that the important causal pathways are intra-organism, within the brain in particular, pulling toward reductionism, a plausible interpretation of the proposal that mental disorders are brain disorders. On the other hand, if the causal pathways really do run up and down the biopsychosocial system, in and out of the organism, then the brain is part of the system involved, so also may be the mental life of the patient and their life circumstances – a nonreductionist view, not well expressed by the proposal that mental disorders are brain disorders.

One way to examine this apparent tension is by considering the “biopsychosocial model” in the context of the new sciences. This model has recently come under criticism from Ghaemi (5) in its original version due to Engel, in which “all three levels, biological, psychological, and social, must be taken into account in every health care task” (6), a proposition which Ghaemi (5) understands as meaning that the three levels “are all, more or less equally, relevant, in all cases, at all times”. Ghaemi rejects the biopsychosocial model in this sense and also rejects its traditional opposite,

biological reductionism, proposing to explore other options between these two extremes. In the brief characterization of new developments in the mental health sciences above, the intention was to say that causal pathways and hence interventions may involve all the three “levels” – the biological, the psychological, and the social – but this was not meant to imply that all the three levels were always causally involved, let alone always involved “equally”.

The Research Domain Criteria (RDoC) framework proposed by Insel et al (1) has a matrix in which there are columns labeled genetic, molecular, cellular, neural circuitry, individual, family environment, and social context; in the rows, there are conditions that may be diagnostic or transdiagnostic. The authors say (1, p. 749): “Importantly, all of these levels [in the columns] are seen as affecting both the biology and psychology of mental illness. With the RDoC approach, independent variables for classification might be specified from any of these levels of analysis, with dependent variables chosen from one or more other columns”. However, there is no implication here that all these levels of analysis will always have causal relevance, still less equal causal relevance – regardless of what conditions are entered in the rows. Depending on the condition, genetic risk may be more or less important, for example, as may be the potential for psychological therapy to make any sustainable difference to the primary problem, or the causal role of social factors and potential for effective intervention in this domain. To make the point at one extreme: some conditions that might go into the rows of the RDoC framework will have no ticks under any boxes indicating causal processes at levels other than, for instance, the genetic or the neural, such as Huntington's disease or concussion, that is, no psychological or social factors make any difference (though they may do if the row had “adjustment to”). That is to say, reductionism might be right in some cases and in some cases it is already known to be right; in other cases, the psychosocial might be more important, account for more of the variance in incidence or outcomes, than, for instance, genetic factors. In short, the new sciences for which RDoC provides a framework make discriminations between conditions in these respects.

A related aspect of the view of causation in the new sciences is that they emphasize the interplay between the internal biology, the environment, and individual differences. Causal interplay occurs in normative development and in the development and course of health conditions, in psychiatric conditions and in some general medical conditions such as

cardiovascular disease. The new sciences of genetics and gene–environment interactions through the life course can be expected to increase this emphasis on interactions, and it will require research attention to be given not only to genes and the brain but also to environmental impacts and their timing in interaction with internal processes. In this context, the research effort needs to span the biological, the psychological/behavioral, and the environmental/social context, and their interactions – not limited to a “brain science” that studies only what is inside the skull.

The question of the importance of biological factors in mental disorders and especially the proposition that mental disorders should be regarded and classified as brain disorders is often coupled with challenges facing the psychiatry profession (e.g., 2,4). Many recent within-psychiatry papers have referred to challenges facing the profession, including clarifying the distinctive task of medical psychiatry within multiprofessional mental health care provision and improving the too low rates of recruitment of medical graduates into psychiatry (2,4,7–10). The new sciences as indicated above generally reaffirm the position of psychiatry as a medical specialty by blurring the differences between mental health and physical health conditions: the same kinds of multifactorial pathways may be operating in both. Nevertheless, while this is correct, the common assumption is that mental health conditions involve much of the psychosocial, evidenced for example in many of the “rapid responses” in the *BMJ* (see www.bmj.com) following the publication of the White et al analysis (2). The RDoC framework (1) actually provides a way in which medical and psychiatric conditions could be compared, and let me make a suggestion: if you put 10 typical physical health conditions in the first 10 rows of the framework and 10 typical mental health conditions in the next 10 rows, and fill in the cells in each column with processes known to be causal and amenable to effective intervention in the condition (after onset) – then the density of the resulting matrix would be greater in the upper left and the lower right quadrants. Once they have onset, physical health conditions are more amenable to internal medical procedures and not much to psychosocial; conversely, mental health conditions are more amenable to psychosocial interventions. My only excuse for flying such a kite without book length examination is that it at least represents common prejudice. In any case, it would all likely look different again – the density patterns would shift – if the rows had “primary prevention of”; and it would shift around again if the rows had “person’s attitude to their illness”, or “attitude to risk”, or “adjustment to/quality of life in”, that is, factors relevant to decent health care.

Insofar as psychiatry has particular expertise in the management of psychosocial factors as well as internal biological factors, it is somewhat unlike the rest of medicine, in particular, unlike much of internal medicine, and this is

probably one of the problems in defining medical psychiatry’s distinctive role among the other psychosocial professions – clinical psychology and social work – and in medical graduate recruitment to the profession. However – and this is the main point I wish to make in this connection – these professional divisions and the educational traditions they embody do not make much sense from the point of view of the new mental health sciences. These new sciences do not work with ideological battles between the biological, the psychological, and the social, the old parallel universes with poor communication between them; rather they work with all of these factors and the diversity of interplay between them.

Whether our current professional boundaries and trainings are fit for the purpose of accommodating, assimilating, and applying the vast fields and subtleties of these new sciences is seriously open to doubt. Yet this is what we need, I suggest, to align future mental health services with the science. What is to be looked forward to – and I raise this issue as a clinical psychologist, not a psychiatrist – is not so much reestablishing psychiatry as a medical speciality, going over again a 100-year-old problematic, but the construction of a new curriculum covering genetics, neuroscience, psychology, and social determinants of health, for a new profession of consultants in mental health for the 21st century. This might provide better care for patients, relative to expenditure, and might also solve the recruitment problem.

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DOI 10.1002/wps.20004