new ways of solving old problems without the NIMH telling them that they are not.

References

1. Cuthbert BN. The RDoC framework: facilitating transition from ICD/DSM to dimensional approaches that integrate neuroscience and psychopathology. *World Psychiatry* 2014;13:28-35.
2. Gold JM, Strauss GP, Waltz JA et al. Negative symptoms of schizophrenia are associated with abnormal effort-cost computations. *Biol Psychiatry* 2013;74:130-6.
3. David AS. Why we need more debate on whether psychotic symptoms lie on a continuum with normality. *Psychol Med* 2010;40:1935-42.
4. Gomar JJ, Bobes-Bascaran MT, Conejero-Goldberg C et al. Utility of combinations of biomarkers, cognitive markers, and risk factors to predict conversion from mild cognitive impairment to Alzheimer disease in patients in the Alzheimer's disease neuroimaging initiative. *Arch Gen Psychiatry* 2011;68:961-9.

DOI 10.1002/wps.20096

Wittgenstein's nightmare: why the RDoC grid needs a conceptual dimension

JEROME C. WAKEFIELD

School of Social Work and Department of Psychiatry, New York University, New York, NY 10003, USA

RDoC attempts to finesse an existential dilemma facing psychiatry: psychiatry is most persuasively a medical field if mental disorders are understood as brain disorders, but brain disorders seem to fall under neurology. The RDoC attempts to resolve this dilemma by distinguishing brain circuit malfunctions as the distinctive domain of psychiatry: "the RDoC framework conceptualizes mental illness as brain disorders; in contrast to neurological disorders with identifiable lesions, mental disorders can be addressed as disorders of brain circuits" (1). RDoC further locates brain circuit function within a grid of analytical and developmental levels and dimensions that together are supposed to replace DSM/ICD categories with more valid diagnoses.

Wittgenstein famously said: "In psychology there are experimental methods and *conceptual confusion*. . . The existence of the experimental method makes us think we have the means of solving the problems that trouble us; though problem and method pass one another by" (2). RDoC is a paradigmatic expression of Wittgenstein's concerns. It joins an ambitious empirical research program with a conceptual framework so weak that it is difficult to envision success. I consider below some of the RDoC's apparent conceptual challenges.

RDoC embraces brain-circuit construct validity without addressing conceptual validity, thus gets the relationship wrong between itself and the DSM/ICD. The RDoC sees the DSM/ICD's failures when it comes to construct validity (i.e., each diagnosis identifying one etiological category), but fails to appreciate DSM/ICD's essential role in psychiatric legitimacy. The DSM/ICD identifies conditions that, judging from surface symptoms, context, and background knowledge of normal human functioning, fall under the concept of disorder. Correctly distinguishing between disorder and normality is what I have labeled *conceptual validity*. Conceptual validity is independent of construct validity: a DSM/ICD disorder category can encompass ten different disorders and thus lack construct validity, but be conceptually valid if it encompasses only disorders, and it can be construct valid but identify a non-disorder and thus be conceptually invalid. Most criticisms of DSM-5 were accusations of conceptual invalidity, that criteria encompassed normal variations. Whatever its errors, DSM/ICD remains an attempt to delineate the domain of psychological conditions that fall under the concept of disorder. RDoC offers nothing to replace the DSM/ICD efforts to delineate the domain of disorders and provide a target at which construct validation can aim. DSM/ICD provides the only thoughtful guidance to what conditions the RDoC must explain in terms of malfunctioning circuits.

RDoC pays inadequate attention to context. RDoC's grid includes environmental influences, but by this RDoC means environmental risk factors like early traumas or disturbed attachment relations that influence the trajectory of disorder development. Nowhere in the RDoC grid is there adequate recognition that human psychological mechanisms are biologically designed to respond sensitively to the social and environmental context. No diagnostic scheme can be valid without building ample contextual references into diagnostic criteria, as does the DSM (3).

RDoC is confused about which of two meanings of "etiology" is pertinent to disorder diagnosis. Ultimately, etiology individuates disorders. This is why, when multiple etiologies are discovered in formerly unified diagnostic entities, they divide into several disorders, as in recent developments regarding breast cancer. But, what is an etiology? In the context of mental disorder, "etiology" is ambiguous, having a broader and narrower meaning (4). In the broad sense, "etiology" refers to the causal story by which a disorder comes about. Such causal histories can encompass anything that led to the disorder, including risk factors, environmental events, common genetic variations, and other factors that are not in themselves disordered but were part of the pathway that led to the disorder. As indicated in its grid, RDoC studies the entire developmental trajectory that leads to disorder, adopting what I call a "kitchen sink"

approach advocated by some anti-essentialist theorists (5,6). The diagnosis thus includes the entire history of contributory risk factors that caused the disorder within the omnibus diagnosis. The problem is that most of those factors are perfectly normal. Introducing them into the diagnosis does not correspond to how we think about disorder as harmful dysfunction (7), and is usually about as diagnostically informative as listing “gravity” when trying to explain a plane crash. Diagnosis concerns etiology in a narrower sense: among the myriad causal factors, what exactly went wrong? That is, what is the current dysfunction that is responsible for the symptoms? Broad etiology is useful for prevention but generally not for diagnosis or treatment. One can get cholera from contaminated water, but once one has cholera, diagnosis and treatment involve identifying and eliminating the infectious agent; the water supply remains relevant only regarding prevention of future re-infection.

Inadequate emphasis on the centrality of meaning and conscious experience. Even if research shows that human exceptionalism is a mistake, the human meaning system is still a uniquely complex entity. Yet, meaning, subjective experience, and mental representations are downplayed by RDoC, except for their entering into the “cognitive” domain which, given the emphasis on circuits, seems a bit of window dressing. But meanings are real and their functioning is part of our biological design. There is nothing less medical about dealing with disordered meaning processing. What makes this RDoC oversight particularly problematic is the instability of behavior under small perturbations in the meaning system. One’s sexual desire circuits may be highly activated, but just one additional belief, such as “this is wrong because I am married” or “he/she may have a venereal disease”, may override those circuits and alter your behavior. The traditional “virtues” were simply such abilities to overcome natural biological tendencies based on beliefs about what is right. Perhaps all such phenomena concern one activated circuit overpowering

others. However, we are nowhere near knowing how to identify and assess the power of single beliefs at the brain level that interact with standard circuit activations. This imposes limits on how predictive the RDoC can be.

Confusing high circuit activation with disorder. Particularly pernicious is the lazy notion that disorder is simply high circuit activation. Anyone who has been terrified at imminent danger or experienced an orgasm knows that this can’t be right. One might object that RDoC sees *atypical* or *impairing* high activation as disordered. But, depending on how you select your dimensions, you can make anything atypical. It is statistically typical to sleep, but the circuit activation during sleep is highly deviant from normative circuit status when awake, and it is highly socially impairing. No RDoC cell will tell you that sleep is a biologically designed condition and not a disorder. For that you need an evolutionary dimension, lacking in RDoC. Is the fidgeting child who is thereby socially disruptive and impaired in schoolwork suffering from a dysfunction of attentional mechanisms, or is he a normal but high-energy boy caught in an overly constraining modern school environment? Either way, the fidgeting child’s brain and behavior will look different from those of other kids. Evaluating these alternative hypotheses requires an understanding of the concept of disorder beyond statistically deviant impairing brain activation.

Valid disorder cutpoints may not emerge from RDoC dimensional empiricism alone. RDoC cites the standard examples of hypertension and hypercholesterolemia to demonstrate that dimensions are a scientific medical approach. In fact, these are controversial as to their disorder versus risk factor status, and the vast majority of medical conditions are categorical. The notion that conceptual validity will emerge from the empiricism is reminiscent of D. Regier’s suggestion that DSM-5 would dimensionalize severity and then conceptually valid cutpoints would emerge. Several problems beset such a strategy. First, severity is not

always the test of disorder (childbirth pain, illiteracy, and normal grief are more severe than arthritic pain, mild dyslexia, and mild depressive disorder, respectively, but the former are normal and the latter disorders). Second, the point at which a dimensional feature turns into disorder does not always emerge as a literal discontinuity, but rather may require theory to identify an underlying conceptual boundary.

RDoC reorganizes diagnosis according to shared risk factors, but risk of disorder is not disorder. Sharing risk factors does not necessarily mean two disorders are the same disorder (although at times they might be). For example, the fact that people with high genetic loading for neuroticism have a higher risk for developing both major depression and generalized anxiety disorder (8) does not mean that those two disorders are the same disorder. They may involve quite divergent dysfunctions both made more likely by the common genetic risk factor. This ought to be obvious from the physical disorder domain: the fact that smoking is a risk factor for both cancer and cardiovascular disease does not mean that those are the same or even similar disorders.

DSM-5 demonstrated how well-intentioned efforts can go embarrassingly wrong if there are conceptual missteps. Oddly enough, RDoC seems to be repeating DSM-5’s error. The DSM-5 Task Force Chairs rejected a proposal for a conceptual committee to clarify conceptual assumptions and address conceptual disputes (9). The subsequent objections to DSM-5 were mainly conceptual.

All mental processes take place in brain tissue, therefore mental disorders must be brain disorders, we are repeatedly assured. The analogy to computer software/hardware (software runs in hardware, but not all software malfunctions are hardware malfunctions) suggests the inference is invalid. However, even accepting the inference, the fact remains that all normal psychological processes equally occur in brain tissue. Thus, studying the brain does not evade the conceptual challenge of distinguishing disorder from normality, it just

moves the problem inward. The RDoC lacks any serious conceptual component that might effectively connect its ambitious empiricism with the conceptual problems of diagnosis it aims to resolve.

References

1. Insel T, Cuthbert B, Garvey M et al. Research Domain Criteria (RDoC): toward a new classification framework for research on mental disorders. *Am J Psychiatry* 2010; 167:748-51.
2. Wittgenstein L. *Philosophical investigations*. Oxford: Blackwell, 1953.
3. Wakefield JC, First MB. Placing symptoms in context: the role of contextual criteria in reducing false positives in DSM diagnosis. *Compr Psychiatry* 2012;53:130-9.
4. Wakefield JC, First MB. Validity of the bereavement exclusion to major depression: does the empirical evidence support the proposal to eliminate the exclusion in DSM-5? *World Psychiatry* 2012;11:3-10.
5. Kendler KS. Levels of explanation in psychiatric and substance use disorders: implications for the development of an etiologically based nosology. *Mol Psychiatry* 2012; 17:11-21.
6. Kendler K, Zachar P, Craver CF. What kinds of things are psychiatric disorders? *Psychol Med* 2010;41:1143-50.
7. Wakefield JC. The concept of mental disorder: diagnostic implications of the harmful dysfunction analysis. *World Psychiatry* 2006;6:149-56.
8. Kendler KS, Neale MC, Kessler RC et al. Major depression and generalized anxiety disorder. Same genes, (partly) different environments? *Arch Gen Psychiatry* 1992; 49:716-22.
9. Kendler KS, Appelbaum PS, Bell CC et al. Issues for DSM-V: DSM-V should include a conceptual issues work group. *Am J Psychiatry* 2008;165:174-5.

DOI 10.1002/wps.20097

Will RDoC hasten the decline of America's global leadership role in mental health?

MICHAEL R. PHILLIPS

Shanghai Mental Health Center, Jiao Tong University School of Medicine, Shanghai, China; Departments of Psychiatry and Global Health, Emory University, Atlanta, GA, USA

Two recent events have substantially increased the perceived global importance of mental health and provide hope that mental health problems will, finally, be allocated the financial and other resources commensurate with their importance to the health of communities. The December 2011 release of the new Global Burden of Disease Study (GBD) results demonstrates the growing importance of mental health problems as a major component of public health in both high-income and low- and middle-income countries (1,2). And in May 2013 the World Health Assembly – the annual World Health Organization (WHO) meeting of ministers of health from around the world – passed a major global mental health initiative, the Mental Health Action Plan 2013–2020 (3).

At this high point for global mental health, the RDoC initiative of the US National Institute for Mental Health (NIMH) unequivocally declares that the traditional basis for identifying

mental health problems – ICD and DSM diagnoses – are fundamentally flawed and need to be completely redrawn (4). Despite proclamations to the contrary (5,6), the clear take-home message of the RDoC initiative for the mental health community is that the considerable effort the American Psychiatric Association put into generating the DSM-5 and the effort the WHO is still expending to create the mental health section of the upcoming ICD-11 are misguided and of little use for the promotion of mental health.

If this internecine struggle is taken seriously by the GBD consortium and by ministers of health in leading countries, the NIMH position could make them rethink the rationale for recommending expansion of mental health efforts. The GBD data about mental illnesses are based on epidemiological studies using DSM diagnostic categories, and an important component of the WHO global mental health plan is the Mental Health Gap program (7) which is based on providing treatments for a core group of ICD-defined conditions. If the GBD findings and the proposed WHO interventions are based on flawed constructs, why not wait until the mental health community gets its

house in order before reallocating scarce resources to deal with these problems?

The RDoC initiative, though intellectually appealing (to neuroscientists), is tone deaf to the current global trajectory of mental health. The world is clamoring for fixes to the clinical and administrative problems that are limiting the access to care and the quality of care for the vast numbers of individuals with mental health problems (8). This high-profile focus of NIMH funding on the very long-term goal of establishing biologically-based diagnostic categories – which may ultimately prove impossible for a large proportion of the persons we currently treat – will distance NIMH research efforts from the central concerns of clinicians and mental health administrators, particularly those in low- and middle-income countries.

The world will not throw away the current diagnostic system for mental illnesses based on the say-so of the NIMH. There needs to be convincing evidence that any proposed major changes would dramatically improve outcomes. A much better incremental approach would be for the NIMH to emphasize the need to identify dimensional neuroscience measures to help