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From the Editor's desk

By Kamaldeep Bhui

White, grey and dark matter in psychiatric research and practice

Psychiatric diagnostic systems (ICD-10 and DSM-5) are based on patterns of symptom clusters. This approach remains popular with clinicians: the diagnostic categories have face validity and are easy to apply, as occurs in general medical diagnostic practice; and categorical diagnoses have utility when patients are seeking certainty about the causes of their illness and remedy; and commissioners favour categories because they are convenient and easily communicated in procurement and billing processes.[1] A revolution in psychiatric diagnostic systems is still awaited with recommendations that, first, the weaknesses of existing systems be better defined and addressed, in part, by a dimensional approach and prototypic matching.[2] Yet, prototypic matching, a part of the ICD-11 Clinical Descriptions and Diagnostic Guidelines, is insufficient to improve precision and the clinical task.[3]

The National Institute of Mental Health's Research Domain Criteria (RDoC) Project seeks precision medicine for psychiatry – a diagnostic system based on a deeper understanding of the biological (including genetic) and psychosocial basis of a group of disorders and better evidence about pathophysiology and the neuroscientific basis of psychiatric disorders.[4] Although subjective experiences are not entirely dismissed in RDoC,[4] no concern is expressed about biological reductionism that risks oversimplifying experiences of altered consciousness, and epistemic errors of inference and explanation.[5] Notwithstanding concerns about biological reductionism and reifying novel findings, rapid and exciting scientific advances that hold promise for the RDoC vision are seen in the area of genomics and epigenetics.[6–9] Promising neuroscientific research is emerging. For example, there are innovative studies of localised white matter lesions as markers of prognosis and treatment responsiveness in depression (for example, see Reppermund *et al* (pp. 315–320) and Korgaonkar *et al* (pp. 321–328), this issue).

'Dark matter' is hypothesised in astronomy to account for gravitational influences that are not explained by measurements: the discrepant findings are explained by a mass that is not observed but must exist. Several leading researchers have called for more attention to the dark matter of psychiatry to help resolve aetiology and treatments of psychosis, intellectual disabilities, autism and syndromes such as attention-deficit hyperactivity disorder.[10,11] The evidence of high genetic heritability is not consistent with a failure to replicate gene–disorder associations, and much future risk (50–60%) is influenced by the shared environment and non-genetic factors in general.[10,11] The same can be said of non-genetic domains of research such as social cognition[12] and studies of intelligence.[13] As discrepant findings and failures of replication are not restricted to genetic research, the same 'dark matter' concept should be applied to all psychiatric research, whether investigating psychosis, social processes, environment, suicide, or resilience. For example, the neural processes underpinning social interaction and the social processes influencing or even biasing neuroscience methods warrant greater attention.[14] A twin study of resilience in this issue (Amstadter *et al*, pp. 275–280; invited commentary by Wertz & Pariante, pp. 281–282) suggests that both genetic and social influences, changing with time and context, are better ways of conceptualising resilience as a dynamic and time-dependent construct. And there is a review by Cuijpers *et al* (pp. 268–274) of psychotherapy for subclinical depression, showing some promise – modest or small effects – perhaps due to non-specific factors.

It is no coincidence that the papers most cited in the *BJPsych* in the past year, contributing to a 10% increase in its Impact Factor, seek to address discrepant findings – dark matter. Among the highly cited papers is a study of copy number variants (CNVs) suggesting that routine screening for CNVs may now be appropriate and helpful;[6] there were meta-analyses of agomelatine as an antidepressant (finding little effect),[15] of cognitive–behavioural therapy for schizophrenia (a small effect),[16] and the risk of suicide by occupation (lower-skilled workers being at greater risk).[17] And a contentious but rigorous study showing that frequent religious attendance is a long-term protective factor against suicide.[18]

I welcome more explicit statement of the important 'dark matter' questions that authors aim to resolve, alongside studies of white, grey, mind and other brain matters.

1 Craddock N, Mynors-Wallis L. Psychiatric diagnosis: impersonal, imperfect and important. *Br J Psychiatry* 2014; **204**: 93–5.

2 First MB, Westen D. Classification for clinical practice: how to make ICD and DSM better able to serve clinicians. *Int Rev Psychiatry* 2007; **19**: 473–81.

3 First MB. A practical prototypic system for psychiatric diagnosis: the ICD-11 Clinical Descriptions and Diagnostic Guidelines. *World Psychiatry* 2012; **11**: 24–5.

4 Insel TR. The NIMH Research Domain Criteria (RDoC) Project: precision medicine for psychiatry. *Am J Psychiatry* 2014; **171**: 395–7.

5 Parnas J. The RDoC program: psychiatry without psyche? *World Psychiatry* 2014; **13**: 46–7.

6 Rees E, Walters JTR, Georgieva L, Isles AR, Chambert KD, Richards AL, et al. Analysis of copy number variations at 15 schizophrenia-associated loci. *Br J Psychiatry* 2014; **204**: 108–14.

7 Fiorentino A, O'Brien NL, Locke DP, McQuillin A, Jarram A, Anjorin A, et al. Analysis of ANK3 and CACNA1C variants identified in bipolar disorder whole genome sequence data. *Bipolar Disord* 2014; **16**: 583–91.

8 Pena CJ, Bagot RC, Labonte B, Nestler EJ. Epigenetic signaling in psychiatric disorders. *J Mol Biol* 5 April 2014 (doi: 10.1016/j.jmb.2014.03.016).

9 Darby MM, Sabunciyan S. Repetitive elements and epigenetic marks in behavior and psychiatric disease. *Adv Genet* 2014; **86**: 185–252.

10 Insel TR. Brain somatic mutations: the dark matter of psychiatric genetics? *Mol Psychiatry* 2014; **19**: 156–8.

11 Lesch KP. Editorial: Illuminating the dark matter of developmental neuropsychiatric genetics – strategic focus for future research in child psychology and psychiatry. *J Child Psychol Psychiatry* 2014; **55**: 201–3.

12 Cummins F. Social cognition is not a special case, and the dark matter is more extensive than recognized. *Behav Brain Sci* 2013; **36**: 415–6.

13 Ackerman PL. Domain-specific knowledge as the 'dark matter' of adult intelligence: Gf/Gc, personality and interest correlates. *J Gerontol B Psychol Sci Soc Sci* 2000; **55**: P69–84.

14 Schilbach L, Timmermans B, Reddy V, Costall A, Bente G, Schlicht T, et al. Toward a second-person neuroscience. *Behav Brain Sci* 2013; **36**: 393–414.

15 Koesters M, Guaiana G, Cipriani A, Becker T, Barbui C. Agomelatine efficacy and acceptability revisited: systematic review and meta-analysis of published and unpublished randomised trials. *Br J Psychiatry* 2013; **203**: 179–87.

16 Jauhar S, McKenna PJ, Radua J, Fung E, Salvador R, Laws KR. Cognitive–behavioural therapy for the symptoms of schizophrenia: systematic review and meta-analysis with examination of potential bias. *Br J Psychiatry* 2014; **204**: 20–9.

17 Milner A, Spittal MJ, Pirkis J, LaMontagne AD. Suicide by occupation: systematic review and meta-analysis. *Br J Psychiatry* 2013; **203**: 409–16.

18 Kleiman EM, Liu RT. Prospective prediction of suicide in a nationally representative sample: religious service attendance as a protective factor. *Br J Psychiatry* 2014; **204**: 262–6.