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Letter to the Editor

Measuring and defining: the double role of the DSM criteria for psychiatric disorders

'Should the criteria in the Diagnostic and Statistical Manual of Mental Disorders (DSM) constitute or index psychiatric disorders?' is the central question of 'DSM disorders and their criteria: how should they inter-relate?' (Kendler, 2017). In this review, Dr K.S. Kendler contrasts two possible relations between psychiatric disorders and the DSM criteria (American Psychiatric Association, 2013). First, Kendler argues for a purely *indexical* relation – DSM criteria are meant to *measure* psychiatric disorders, analogous to an electrocardiogram (ECG) measuring the presence of myocardial infarction. Thus, major depression is a hypothetical diagnostic construct, which we measure with our current DSM criteria with a certain sensitivity and specificity (Kendler, 2016, 2017). Second, Kendler argues against a *constitutive* relation between psychiatric disorders and the DSM criteria – the DSM criteria do not *define* what psychiatric disorders are. Kendler argues that this latter view might have adverse consequences for clinical care, teaching, research, and revision of the DSM criteria.

We fully agree with Kendler's plea for not taking DSM criteria as definitive or authoritative, and for an evaluation of patient characteristics beyond the DSM criteria. However, we disagree with the view that DSM criteria should exclusively be seen as means to measure, and not as attempts to define disorders. The DSM criteria need not be constrained to only one of these two roles, to the exclusion of the other. The DSM criteria serve both roles at once: the current DSM criteria for major depression offer a tentative definition of what depression is, and they simultaneously provide a measurement tool for it (van Loo & Romeijn, 2015). Moreover, we maintain that the hybrid nature of the DSM is beneficial to psychiatric science.

Historical and philosophical studies of science reveal that measurement techniques and theoretical structures are often developed in tandem. When there is an overlap of this kind, questions such as 'What counts as a measurement of X?' and 'What is X?' cannot be answered independently of each other (van Fraassen,

2008). The scientific concepts that measurement and theory rely on are in such cases used for indexical and constitutive purposes simultaneously. For example, the scientific understanding of temperature developed in close connection with the development of thermometers. The thermometer was part and parcel of this development in two distinct ways, namely by facilitating the measurement of heat, and by defining what heat is (Chang, 2004). Another example is the use of the pendulum by Galileo in his study of motion (Van Dyck, 2005). Galileo used the pendulum to measure the motion of falling bodies, but at the same time, the pendulum secured the reference of Galileo's theoretical models, i.e. it contributed to a definition of the motion of free fall. Faraday's experiments on electromagnetism offer other examples of double roles for scientific concepts (Steinle, 1997).

In the philosophy of science, the double role of concepts shows up in the debate over so-called *conventionalism*. Conventions are bridge principles that coordinate concepts (e.g. depression) onto empirical reality (e.g. a population with a certain symptom profile). They are crucial for science: by associating concepts that belong to a theoretical representation with empirical reality, we make empirical reality and theoretical representations relevant for each other.

With this in mind, we turn our attention to medical science and in particular to disease concepts in psychiatry. Many of the current concepts in the DSM perform the mediating function of conventions (van Loo & Romeijn, 2015). The DSM criteria are used to measure the occurrence of mental disorders, and simultaneously they define these disorders, i.e. they serve as part of a representation of reality.

Importantly, psychiatry is by no means an exception within medical science. For instance, migraine is both defined and measured by criteria such as having more than five headache attacks lasting 4–72 h with specific qualities (pulsating quality, unilateral location, nausea, photophobia) (Headache Classification Committee of the International Headache Society (IHS), 2013). In that sense, depression and migraine are different from myocardial infarction, in which measurement procedures (biomarkers, ECG changes, imaging techniques) and definition do not overlap, at least at present (Thyssen *et al.* 2012). To explain our point, we consider myocardial infarction in some more detail.

The current definition of myocardial infarction has developed from the pure symptom-based diagnosis angina pectoris in the eighteenth century: precordial pain, collapse, heart failure and sudden death

(Leibowitz, 1970). Definition and measurement of angina pectoris at this point overlapped – there were no independent measurement procedures to assess it – similarly to migraine and major depression. In the nineteenth century, angina pectoris became connected with the presumed cause ‘coronary artery disease’. In the twentieth century, the interest shifted from the coronary vessels to the myocardium and the concept of myocardial infarction – myocardial cell death due to prolonged ischemia – became clearly separated from angina pectoris and arteriosclerosis as a separate disease entity. Currently, myocardial infarction can be assessed by a variety of independent measurement tools: ECG changes, imaging techniques, and cardiac biomarkers (Thyseggen *et al.* 2012).

This brief history suggests that research practice might benefit from the use of concepts that simultaneously function as index and definition. After all, we must have an idea of what we are targeting if we want to rethink how we measure our target. In saying we are merely rethinking indicators, we risk losing sight of what is being indicated. The hybrid nature of scientific concepts is conducive to making scientific discoveries. Accordingly, we propose that, in tentatively formulating criteria as indicators, we are at the same time gradually building up a representation of what these disorders are. In parallel to the development from angina pectoris to myocardial infarction, DSM criteria can be improved to offer increasingly accurate descriptions of what constitutes mental disorders.

It deserves emphasis that, while we might disagree with Kendler on the exclusively indexical role of the DSM criteria, we fully concur with his recommendations for psychiatric science. In particular, our claim about the double role for the DSM criteria does not entail that having a psychiatric disorder is nothing more than meeting the relevant criteria, or that these criteria are infallible. We endorse Kendler’s plea for the tentativeness of the current DSM criteria and for a broader assessment of psychiatric disorders than by DSM criteria alone, in order to improve research, clinical practice, and classification.

Declaration of Interest

None.

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