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Editorial

The 'continuum of psychosis': scientifically unproven and clinically impractical

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Summary
The limitations of current diagnostic categories are well recognised but their rationale, advantages and utility are often ignored. The scientific support for a 'continuum of psychosis' is limited, and the examination of whether categories, a continuum or more than one continua, and alternatives such as subtypes or hybrid models, best account for the distributions of symptoms in populations has simply not been done. There is a lack of discussion, let alone consensus, about the critical aspects of psychosis to measure, the best ways to quantify those and how these would be applied in clinical practice. Systematic studies are needed to evaluate which of a range of plausible approaches to the classification of psychosis is most useful before change could be justified.

Declaration of interest
None.

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The DSM–V and ICD–11 planning processes have re-ignited the debate about the definition and validity of concepts such as schizophrenia.[1] Many commentators criticise the current categorical diagnostic systems and favour a 'continuum of psychosis'.[2,3] They do so however without any specific proposals, while neglecting the limitations of what could be several continua and ignoring alternative approaches to classifying psychotic disorders. We argue here that rejecting time-tested and progressively refined clinical concepts is at best premature and at worst wrong scientifically, and that a continuous approach to psychosis would be time consuming and quite possibly disastrous in clinical practice.

The known value and limitations of categories

The limitations of current categorical diagnostic systems are well recognised – principally, their uncertain validity, the lack of clear 'zones of rarity' between disorders, the heterogeneity observed between individuals within categories and that individuals often meet multiple diagnostic criteria. The rationale and advantages of diagnostic categories are however in danger of being forgotten.[4,5] Diagnosis is a preliminary to treatment and prognostication. The current criteria for the psychoses are neither arbitrary nor fixed – they consist of symptoms that tend to aggregate in patient groups and have evolved over decades of clinical observations. Critically, extant categories of psychosis have enabled reliable diagnosis around the world, definite advances in our understanding of aetiology and pathogenesis, based on highly replicable neurobiological differences between people with psychoses and healthy controls, and improvements in management.[6] From a genetic perspective, they identify relatively stable concepts of high heritability – certainly more stable over time than any symptom and as heritable as many proposed endophenotypes. A number of plausible candidate genes for schizophrenia and bipolar disorder have been identified in recent years, and the pace of progress appears to be increasing – apparently not fatally hindered by clinical heterogeneity.[7]

We acknowledge that there is overlap in genetic susceptibility, symptoms, treatments and prognoses between schizophrenia and bipolar disorder. Indeed, perhaps the most striking finding of recent genetic association and genome-wide association studies has been the degree of shared genetic susceptibility to schizophrenia and bipolar disorder.[7] However, shared polygenic vulnerability does not necessarily imply that the resultant conditions lie on one continuum or even several continua. Indeed, there is considerable evidence for differences between the disorders in terms of risk factors, pathology and treatment response. Thus urban birth, abnormal neurodevelopment and premorbid cognitive impairment are strongly associated with schizophrenia but not with bipolar disorder.[8] Schizophrenia is associated with an increased burden of large and rare chromosomal abnormalities (copy number variants) not seen in bipolar disorder.[9] In addition there are replicated differences in brain structure and function between the disorders, which although primarily quantitative allow for considerable separation of the disorders.[10–12] Most importantly, there are clearly established differences in responsiveness to lithium and other treatments.[13]

The putative value of a continuous approach

The main arguments used to support the adoption of one or more continua – and it is usually unclear whether it is one or more – tend to revolve around the fact that psychotic symptoms are continuously distributed in general populations. It is asserted that psychosis is therefore on a continuum, that continua are more valid and easier to dissect biologically than heterogeneous categories, and that such an approach would lead to faster scientific and clinical progress. None of these speculations necessarily follow and each can be challenged on theoretical grounds.

Just because psychotic symptoms are continuously distributed in the general population does not mean that schizophrenia and other psychoses are qualitatively indistinct from normal experience, or each other; nor does it exclude the possibilities of distinct underlying latent categories or several subtypes of psychosis. Phenotypic or symptomatic heterogeneity may be a particularly common, even intrinsic, feature of disruptions in complex systems such as the brain/mind. Indeed, as Paul Meehl observed, the very phenotypic heterogeneity of schizophrenia and the fact that the symptoms of schizophrenia are more highly intercorrelated in mixed than in pure clinical population samples are indicative of underlying categories and inconsistent with a continuous model.[14] It may even be that psychotic symptoms are epiphenomenal to the true nature of psychosis as Bleuler[15] argued and could be considered the case when psychotic symptoms complicate Alzheimer's disease. Crucially, the research to evaluate whether categories, subtypes, continua or hybrid models of psychosis best account for the distribution of symptoms in general or patient populations has simply not been done.

It is not just that there is no guarantee that a continuum of psychosis is more valid and will aid scientific progress – there are in fact good reasons to question some of the implicit assumptions underlying the view that symptoms will be easier to dissect than diagnoses.[16] Individual symptoms are less reliably elicited than a multidimensional diagnosis, they vary in severity over time and may differ in different environmental contexts. In line with traditional teaching, passivity, grandiose and depressive delusions appear to be qualitatively distinct, and a mood congruent delusion or hallucination may have more in common biologically with other features of mood disturbance than with other delusions or hallucinations. On the other hand, cutting-edge functional brain imaging studies have shown that counterintuitive combinations of hallucinations or delusions can have distinct pathophysiologies at a neuronal systems level.[17] The possibility to examine these aetiopathogenetic similarities and differences would be lost in a single delusional rating, let alone a 'positive psychosis' severity scale. The bottom line is that a continuous model may be scientifically better than a categorical approach, but we just do not know. Why jeopardise the advances we have made for something of unknown value? This is even more true clinically.

Clinical utility and practical concerns

Above all, established diagnostic categories for psychosis are useful clinically – essential now and for the foreseeable future if we are to regulate and prescribe treatments based on the currently available replicated clinical trial evidence (which is all from studies in diagnostic groups), make dichotomous decisions such as whether or not to legally detain people, and in some health systems to approve insurance and other payments. Categories are also more easily used and communicated than continua. Although there are studies that suggest that symptom types are better predictors of treatment response than disorders, some of the same studies show better overall outcome prediction with categories, and in any case specific replications are rare.[3] Different tasks may require different solutions.

From a practical perspective, major questions are yet to be addressed, let alone answered. Which symptom and outcome continua should be rated, and how are they to be reliably elicited and measured, recorded and available for reference? How are busy clinicians going to find the time to do the ratings and establish reliability over time and between colleagues? Most cogently, how are clinicians going to use complex multidimensional information in clinical practice – which continuous measurements would be used, when and what would be the necessary cut-offs for actions such as initiating treatment or detention? Critically, how will clinicians know when to apply these assessments at all? They would, ironically, have to first make the categorical judgement as to whether or not someone was 'psychotic' before applying these assessments. This begs a definition of 'psychosis', and if there truly is a 'continuum of psychosis' – or even several continua – this decision will be completely arbitrary.

Prima facie, there are equally valid claims for spectra of schizophrenia and bipolar disorder,[18] merging respectively into the apparently distinctive schizotypy and cyclothymia and ultimately into the eccentricities and moodiness of everyday life. There are also symptomatic overlaps between the schizophrenia and autistic spectra, whereas the bipolarity spectrum merges into depression and then anxiety, with their associated mild variants and personality types.[19] Where then are the boundaries of psychosis? Would conditions with occasional psychotic symptoms qualify, and if so when? Would bipolar II disorder, which is rarely associated with psychotic symptoms, no longer be a psychotic disorder?

Worse, individuals with more or less equivalent scores on putative depression and psychosis dimensions could for example have prodromal schizophrenia, acute schizoaffective psychosis, drug-induced psychosis, post-schizophrenic depression or psychotic depression – all of which would currently and with good justification from clinical trials be treated differently. If several continua were required to characterise individuals with psychosis – e.g. positive, negative, disorganised, depression, euphoria, anxiety, obsessionality, cognitive function, personality – how would clinicians decide when to treat? By returning to arbitrary categories of mild, moderate and severe? With respect to arbitrary cut-offs on scale severity scores? Continuous measures could thus reduce evidence-based practice, while exacerbating medicalisation, overdiagnosis, comorbidity, excessive treatment and polypharmacy.

Conclusions and future directions

Our principal concern is that an overenthusiastic and undercritical acceptance of 'the continuum of psychosis' will throw away something scientifically serviceable and clinically useful. Clinical definitions may have limited validity but categories that can account for a range of observations cannot just be dismissed until we have something better to put in their place. This drive towards what seems new and exciting might be borne of frustration with the slow pace of progress in psychosis, but that might be better attributed to insufficient resources and the lack of a research culture in psychiatry generally. Although it is true that 'facts' about psychiatric disorders have been difficult to accumulate, we no longer have to argue that schizophrenia and other disorders have neurobiological correlates. The focus is now rightly on explaining these findings and using objective measures to distinguish disorders and inform clinical decisions.

Above all, we need consistent evidence that any change in our approach to the classification of psychosis would benefit patients and thereby justify the time and effort involved. We need systematic studies to establish the essential measures for particular purposes, whether available neurocognitive examinations, blood tests and neuroimaging indices add any value, and in which patients, and when they could usefully be applied. We also need clinical trials to determine the therapeutic implications of different approaches and different cut-offs on putative continua – to establish, for example, what levels of symptom severity predict therapeutic responses, the degrees of clinical benefits at

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certain thresholds and whether comorbidities required additional treatments. Alternative approaches, including hybrids such as categories with stratification for key traits, potentially including relevant biological assays, should also be considered in these studies. We are pleased that two other articles that have been published since we submitted the present editorial have come to similar conclusions.[20,21] One of these has usefully highlighted that extant studies can support both a continuous and categorical view of schizophrenia,[20] but the additional possibilities described above have received little or no study. The research agenda we describe requires large studies of reliably rated and diagnosed and measured patients across many settings, but this would pave the way for any new initiative and would be a welcome opportunity for many clinicians to participate in research that directly addresses their concerns about diagnostic practice. It would also foster more research experience and capability generally. It is a complex and daunting series of tasks but we psychiatrists need to handle that complexity in research before we can translate any changes required into routine clinical practice.

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