

DSM-5 and Research Concerning Mental Illness

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Abstract It is widely agreed that the DSM-IV categorical framework (and its predecessors) have a number of problems (e.g., questionable reliability in the field, questionable validity, heterogeneity, unexplained comorbidity, an unsound concept of mental disorder) that have compromised its utility in research concerning mental illness. At the root of these problems is a substantial “lack of fit” between the DSM framework and the domain of mental illness. With the publication of DSM-5, it is appropriate to ask whether the process of revision leading from DSM-IV to DSM-5 has been sufficiently responsive to the problems with DSM-IV to justify continued use of DSM categories in either basic research concerning psychopathology or more applied clinical research. In this paper, I argue that the revision process has not been responsive to these problems and that, hence, DSM-5 categories ought not to be used in research concerning mental illness. Rather, alternative approaches should be developed, and I conclude with a discussion of three such alternatives.

Introduction

It is widely agreed that the DSM-IV categorical diagnostic framework (and its predecessors) has problems (e.g., questionable reliability in the field, questionable construct and predictive validity, poor phenotypic definitions, heterogeneity, comorbidity, an unsound concept of mental disorder) that have compromised its utility in research concerning mental illness. Critics of the DSM (Cromwell 1982; Blashfield 1984; Eysenck 1986; Carson 1991; Kirk and Kutchins 1992; Poland et al. 1994; Murphy 2006; Poland and Von Eckardt 2013) have argued to this effect over the past three decades and the view that the DSM has serious shortcomings is now emerging as a consensus view, even in the research community which has relied upon the DSM since 1980 (see Kendall and Jablensky 2003; Andreassen 2007; Kendler et al. 2009; Hyman 2010; Insel et al. 2010).

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In the light of this emerging consensus, it is appropriate and timely to ask whether the revision process culminating in the publication of DSM-5 has been sufficiently responsive to the problems afflicting the DSM-IV that compromise its research utility. In the following, I will present a hypothesis for explaining why the DSM-IV has exhibited its many problems and argue that the DSM-5 represents no significant improvement over DSM-IV with respect to research utility. I will conclude with a discussion of alternative approaches to research concerning mental illness.

Why Does the DSM-IV Lack Research Utility?

Our starting point is the consensus view that the DSM-based research program has not yielded the sorts of results that were expected (*viz.*, validation of the diagnostic categories). In addition, the categories exhibit substantial heterogeneity, confusing comorbidities, and poorly defined phenotypes, each of which is problematic for research purposes. As a consequence, research has tended to produce findings that are negative, non-replicable, inconsistent, weak, non-specific, or uninterpretable. In this section I shall argue that the reason DSM-based research has been non-productive in these ways is that there is a *lack of fit* between the conceptual resources (broadly speaking) available in the DSM classification system and the domain of mental illness. To make good on this claim, four steps are required: (1) an overview of the known features of the domain of mental illness; (2) a review of the representational resources and assumptions provided by the DSM classification system; (3) an argument that DSM-based representational resources and associated assumptions are insufficient for representing and managing the various features of the domain (*i.e.*, there is a “lack of fit”); and, (4) an argument that, as a result, they are unlikely to aid in the pursuit of research questions concerning mental illness.

Features of the Domain of Mental Illness

The domain of mental illness includes phenomena involving individual life problems, distress, disability, deviance, failures to perform social functions, and maladaptation. It is a domain in which both mental and behavioral capacities are centrally involved, and it is obviously a domain of considerable human interest that can be a target of scientific research. For present purposes, the most important point is that this domain, like all domains of human functioning, exhibits considerable complexity of process and structure at many levels of analysis, as well as normative and perspectival dimensions. The following list summarizes many of the relevant features (see Poland 2014 for further discussion of these features):

- *Causal Ambiguity*: features in the domain of mental illness can be derived from many different causal processes.

- *Hierarchical organization*: human biological systems consist of many levels of organization ranging from low level genetic, biochemical, and neuroanatomical to high level cognitive, behavioral, and socio-cultural. These levels are also present in mental illness.
- *Multi-dimensionality*: the state or condition of a person with mental illness at a time consists of features and processes of many different sorts, within and across levels of organization.
- *Interactivity and context sensitivity*: the features and processes of mental illness are typically interactive with each other, and each is sensitive to the context in which it is embedded.
- *Dynamics*: the features and processes of mental illness evolve over time at various time scales along varying trajectories, and they can exhibit phase dependence and a variety of distinctive causal patterns.
- *Perspective and agency*: individuals suffering mental illness are persons who are agents and who have a first person perspective on themselves, the world, their past, and their future.
- *Normativity*: the identification of conditions as problematic, deviant, maladaptive, dysfunctional, diseased, distressing, or disabling presupposes background norms, values, or interests that may be theoretical, personal, social or of some other sort (“normative pluralism”).
- *Normal and abnormal conditions and processes*: although there may be conditions or processes in mental illness that violate some specified norms, there are also conditions and processes that are normal by the same or different standards (“normative diversity”).
- *Relational and non-relational problems*: the kinds of problems that people with mental illness can suffer can be both non-relational (i.e., conditions of the individual) and relational (i.e., conditions involving relationships between an individual and other people or between an individual and some aspect of the non- personal environment).
- *Individual variability*: individuals suffering a mental illness vary widely and tend to exhibit relatively unique combinations of problems, functional profiles, embedding contexts, and causal processes.

These features characterize the general outlines of the domain of mental illness,¹ whereas scientific inquiry is required to flesh out how each is concretely manifested by the various phenomena in the domain. At issue in the present context is whether it is productive to do this research within the framework of the DSM category system.

¹These features are, of course, not specific to the domain of mental illness, but might be found in many areas of normal human functioning as well as in chronic and complex physical diseases.

Resources Provided by the DSM-IV

The DSM-IV-TR (American Psychiatric Association 2000) is a categorical scheme comprised of over 300 categories of mental disorder, conceived of as harmful dysfunctions or prototypical patterns of symptoms,² that can be identified on the basis of atheoretical,³ polythetic⁴ diagnostic criteria framed in terms of clinically salient features (signs and symptoms) or other characteristics (e.g., of history or context) that can be readily determined by the clinician. The disorders in the DSM are specified as individualistic (i.e., non-relational); each is viewed as a condition of a person consisting of a pattern (or set of patterns) of symptoms along with a putative (but unspecified) biological, psychological, or behavioral dysfunction of the individual, a dysfunction that manifests itself in terms of the signs and symptoms specified by the diagnostic criteria. In mainstream psychiatry, such conditions are typically assumed to be brain diseases, an assumption tied to the medicalization of mental health research and clinical practice (see Poland 2014; Poland and Von Eckardt 2013).

It should be noted that in DSM-IV there are also resources for representing conditions that can be the objects of clinical concern but are not mental disorders (e.g., relationship problems, employment problems); these are coded in what are called “V-Codes” and they represent an important body of information.⁵ In addition there is an Axis 4 coding of psychosocial and environmental problems that may be the occasion for a mental disorder or a consequence of a mental disorder. Finally there is an Axis 5 coding of a “Global Assessment of Functioning,” which is a subjective rating by the clinician on a scale of 0–100 of occupational, social, and psychological functioning (not due to physical or environmental limitations).⁶

The aggregation of the above types of information (categorical diagnosis based on a clinical interview, plus any relevant V, Axis 4 and Axis 5 codes) provides the clinician with a basis for: identifying a person’s condition and the problems

²Although there are competing conceptions of the DSM categories (viz., harmful dysfunctions, clinical prototypes), the arguments presented in the text apply equally to both. In what follows, I will formulate the issues in terms of the harmful dysfunction view (see Wakefield 1992).

³“Atheoretical” criteria do not refer to either pathology or etiology.

⁴“Polythetic” criteria are disjunctive and their use is supposed to reflect the idea that mental disorders can manifest themselves in various ways across individuals with the same disorder.

⁵At a minimum, V codes draw attention to significant aspects of the context in which a putative mental disorder arises; but perhaps more important is that such problems are essentially implicated in a person’s current mental health condition, and are a critical component in understanding what is wrong (if anything) and what is likely to help. Arguably, from the point of view of research, information picked out by V codes is required for a realistic scientific analysis of the problems and processes involved in mental illness.

⁶Note that, in DSM-5, this multi-axial approach has been dropped, although V-codes have been retained.

they face; developing a case formulation drawing on the clinician's background knowledge, understanding and experience; and, combined with standards of care for specific conditions, proposing a treatment plan.⁷

In contrast, in pursuing DSM-based research, researchers typically employ only the DSM diagnosis, specifically to identify the subjects for a study; the other information is typically left behind. In other words, for research purposes, DSM diagnoses (which are symptom-based, atheoretical, polythetic, and taken out of context) are assumed to represent meaningful targets of research and to provide a useful identification of subjects with the (more or less) same condition. In studies in which DSM categories are used to create subject groupings, researchers also typically leave behind the raw clinical data (e.g., the specific symptoms exhibited by each individual) upon which the subjects' diagnoses were based. Finally, given that DSM categories are not associated with specific diagnostic tests and that DSM-based research has not provided well-confirmed specific models and findings concerning the categories, researchers cannot supplement a diagnosis with a consensually validated model of pathology or etiology (although many hypotheses abound.) So, to sum up, the representational resources provided by the DSM to researchers working within the conventional psychiatric research tradition, are limited to de-contextualized diagnoses that are symptom-based, atheoretical, polythetic, and not associated with well-confirmed tests and models. Of course, researchers can and do introduce other representational resources in their research; at issue here is what resources the DSM provides, what roles these resources play, and whether they contribute anything of value.

Lack of Fit Between the DSM-IV Framework and the Domain of Mental Illness

The phrase 'lack of fit' will be used to refer to the idea that DSM categories provide artificial groupings of individuals experiencing mental illness, that DSM representational resources do not map well onto the features of the domain of mental illness, and that the DSM approach makes problematic assumptions about the domain. Alternatively put, for there to be a "good fit" with the domain of mental illness the DSM framework should satisfy the following conditions: (1) it should

⁷The reasons for being suspicious of the use of DSM diagnoses in research are also very good reasons for being suspicious of their use in the clinic, although I will not pursue that line of argument here (see Poland et al. 1994; Poland 2003; Spaulding et al. 2003). However, it should not be supposed that supplementing the diagnostic categories with V-codes and Axis 4 and 5 codes is sufficient for meeting either clinical or research challenges and hence for retaining the DSM categories for use in those contexts. The argument below suggests why this is the case with respect to research.

exhibit construct as well as predictive validity⁸ of the categories (i.e., they should not be artificial); (2) it should have the resources for representing and managing important features, conditions, problems, processes, and groups in the domain; and (3) it should not make any problematic assumptions about the domain. The DSM framework fails to satisfy these conditions.

First, as noted above, it is widely acknowledged that DSM categories lack established validity. Such a lack is an inevitable consequence of the features of the domain of mental illness and the DSM categories being de-contextualized, atheoretically conceived, and defined in terms of polythetic diagnostic criteria focusing on superficial aspects of clinical phenomenology: when such criteria are applied to the domain of mental illness exhibiting the characteristics identified above, any patterns of behavior and other clinically identified features will mask a wide range of distinct causal processes and a wide range of distinct features at all levels of analysis. Such heterogeneity combined with the dynamic interactivity and context sensitivity of such processes and features make it highly likely that de-contextualized, atheoretical and polythetic criteria focused on clinical phenomenology will lead to DSM categories that are lacking in both construct and predictive validity (i.e., they are artificial) (see Poland et al. 1994).⁹

Second, the use of decontextualized, atheoretical, polythetic, and symptom-focused DSM diagnostic categories does not provide the descriptive resources required for representing important features, conditions, problems, processes, and groupings in the domain of mental illness. A DSM diagnosis, for example, is essentially blind to both the hierarchical, multi-dimensional complexity of mental illness and the dynamic interactivity and context sensitivity of the causal processes involved in a hierarchically organized biological system. Instead, such clinical diagnostic categories are artificial impositions on a domain with these characteristics and mask the identity and variability of key features and processes of research significance. For instance, clinical symptoms such as delusional speech, impulsivity,

⁸Many conceptions of validity have been employed in the evaluation of research in psychology and psychiatry. Roughly speaking for present purposes, validity concerns (1) the empirical or theoretical integrity of a construct establishing that it picks out what it is supposed to be picking out (i.e., construct validity) and (2) empirical or theoretical relations between a construct and other variables of interest (i.e., predictive validity and related concepts.) This approach is a general approach widely employed in psychological research. In psychiatry, it is standard to employ a notion of validity introduced by Robins and Guze (1970) that concerns the establishment of empirical relations between a diagnostic category (or syndrome) and various “validators” established in five phases of validation research (viz., clinical description, laboratory study, exclusion of other disorders, follow-up study, and family study.) Subsequently, additional validators (e.g., response to treatment) have been included (see Kendler 1980; Andreassen 1995). This second approach is supposed to imply the construct and predictive validity of diagnostic categories. In any event, the problems with the validity of DSM categories discussed in the text can be framed in terms of either approach to understanding what validity consists in. See also Kendell and Jablensky 2003.

⁹This line of argument strongly suggests that, at the time of the development and publication of DSM-III (American Psychiatric Association 1980), it was quite predictable that the strategy adopted by the developers of DSM-III would fail.

or confusion can be the result of a variety of quite different causal processes and reflect very different conditions.¹⁰ Symptom-based DSM diagnostic categories do nothing to resolve such causal ambiguity, and thus in a research context, the use of such categories creates artificial subject groupings that mask such variation. Finally, the widely acknowledged heterogeneity of DSM diagnostic groupings is largely unmanaged by the use of DSM categories in research. This heterogeneity is typically recognized in terms of symptomatology, but in reality the heterogeneity of DSM categories concerns a wide range of features at all levels of analysis and is especially significant with respect to process heterogeneity (viz., the variability of causal structures and processes, both normal and abnormal, across individuals with the same DSM diagnosis).¹¹ In sum, a decontextualized, atheoretical, polythetic, and symptom-focused DSM diagnosis lacks the resources for representing any person's relatively unique mix of problems, capacities, deficits, perspective, and psychosocial and biological context and, hence, is insufficient for conceptually managing the variability, complexity, ambiguity, dynamic interactivity, context sensitivity, and resulting uncertainty that constitute the domain of mental illness.

Third, the conventional psychiatric understanding of the DSM makes a number of problematic assumptions concerning the domain of mental illness. One of these is the assumption of individualism, explicitly made with respect to DSM categories (American Psychiatric Association 1994, xxi–xxii): all mental disorders are constituted by bodily states and processes (viz., behavioral, psychological, or biological dysfunctions and the symptomatic patterns they produce) within the individual who has the disorder. This assumption leaves out a host of relational problems (e.g., interpersonal relationship problems, social problems) that are partially constitutive of the domain of mental illness. But more importantly, the assumption of individualism fails to take into account the complex dynamically interactive relations between an individual and aspects of the physical or social world; both positive and negative feedback loops can be present and the relevant processes can only be understood in terms of the relations involved, as in escalating arousal in two individuals interacting with each other. Another example concerns the evaluation of cognitive states as delusional, something that typically involves an essential reference to the socio-cultural context in which the delusional individual is embedded.¹²

Further, the various interpretations of this individualism, viz., mental illnesses consist of mental disorders (i.e., harmful dysfunctions) or of brain diseases, have not found much research support in the sense of discovering well confirmed

¹⁰See Wiecki et al., [in press](#) for discussion of strategies and techniques for resolving causal ambiguity (e.g., of the clinical symptom of impulsivity) using the resources of computational cognitive neuroscience.

¹¹See Fair et al. 2012 for research concerning ADHD and heterogeneity of cognitive profiles in both normal and clinical populations.

¹²As observed by an anonymous reviewer, there may be states that are manifestly delusional in any cultural context; but nonetheless the delusional character of any such state is constituted by presupposed epistemic norms characteristic of the local culture and variation in such local norms can lead to variation in the character and significance of the delusion.

associations of DSM categories with internal dysfunctions or brain diseases (e.g., a pathophysiology). Although mechanisms and processes associated with specific symptoms or other traits (e.g., cognitive deficits) are being studied with some success, this is not the same as identifying a dysfunction or disease associated with the diagnostic categories. In addition, the postulation of either disorders or diseases requires a framework of norms of functioning and a rigorous specification of the range of normal variation that has not been worked out. Thus the assumption that DSM categories are either harmful dysfunctions or brain diseases¹³ presupposes a set of facts (e.g., concerning putative deviations from the range of normal functioning) and defensible norms (e.g., social, empirical, or theoretical norms that demarcate the normal from the abnormal) that are not currently available. As a consequence, such an assumption is an unsubstantiated ideological projection onto the domain, a projection that obscures many of the real problems and processes from which people suffer.

This last point is especially important for research: many of the problems and processes in the domain of mental illness are not discontinuous from normal function and persons suffering mental illness do not necessarily have diseased or disordered brains. For example, severe and persistent depressive symptoms consequent to a job loss is not necessarily a display of a brain disease in need of medical treatment so much as a personal employment problem calling for a new job.¹⁴ In addition, a pathology focus on disorder or disease tends to obscure the operation of normal processes and the availability of a person's individual strengths and capacities. Consequently, with respect to research, framing questions in terms of the DSM categories may result in a neglect of such normal processes, their range of variation, and their context sensitivity.

In sum, since the DSM-IV has failed to satisfy the three conditions (viz., validity, representational adequacy, no problematic assumptions) for fitting the domain of mental illness, we must conclude that DSM-IV does not fit that domain.

The DSM-IV Lacked Research Utility

As described above, it is widely agreed that the DSM-based research agenda has not delivered the long sought-for validation of the categories and has not provided well confirmed and well developed models of the etiology or pathology of the

¹³The idea that DSM diagnostic categories pick out brain diseases is not explicitly assumed within the DSM, whereas the idea that DSM categories pick out harmful dysfunctions is explicitly expressed. However, the idea that mental disorders (as conceived in the DSM) are medical diseases, and indeed brain diseases, is widely assumed among "biologically oriented" psychiatric clinicians and researchers.

¹⁴This point does not mean that research concerning brain processes associated with depressive symptoms is not important; rather, it is that a pathology focus on the individual can lead to disproportionate emphasis on causal processes in the brain relative to those in the environment.

putative mental disorders identified in the DSM-IV. Nor has it, for the most part, produced a body of findings to substantiate the predictive validity of the categories concerning response to treatment, course and outcome. These results are readily understood if one recognizes the poor fit between the categories and the domain: the DSM-IV categories and associated criteria were simply ineffective in representing important features, conditions, processes, problems, and groups, and, hence, in managing causal ambiguity, multi-dimensional complexity, individual variability and other features of the domain. As a consequence, they could not support a progressive research program concerning mental illness because they were ill suited for representing significant variables, for controlling systematic and unsystematic sources of error, for managing heterogeneity, and for grouping subjects with similar features and processes. Rather, they were superficial categories that created artificial and heterogeneous groupings, poorly defined phenotypes, and unexplained comorbidities¹⁵ that compromised the research.

Such problems impacted research at every stage (e.g., sampling, subject grouping, measurement, design, analysis, and interpretation of results). As a consequence, and as noted earlier, the research agenda associated with DSM-IV categories has yielded a body of findings that are largely negative, unreplicated, inconsistent, weak, non-specific, or uninterpretable (see Heinrichs 2001 for a review of research findings concerning “schizophrenia” which exhibits these patterns). The bottom line is that the research program based on the DSM-IV categorical system has not progressed, the categories have not been validated, and, thus, the DSM-IV categorical framework has exhibited very limited research utility.

The DSM-5 Is No Improvement

In this section we turn to the question of whether the DSM process of revision has produced a DSM-5 that is responsive to the problems and limitations of DSM-IV with respect to research. I shall argue that it has not and that, therefore, DSM-5, like DSM-IV, has very limited utility for research on mental illness.

The DSM process of revision exhibited a number of features that limited the possibilities of serious reform of the diagnostic manual and hence the possibilities of responding to the problems of using the DSM in research concerning mental illness. First, the process was controlled by the American Psychiatric Association

¹⁵The prevalence of comorbidity of DSM diagnoses (e.g., ADHD and learning disorders) is problematic at least because the co-occurrence of multiple disorders is causally ambiguous: i.e., two conditions can co-occur because they are two independent conditions or because they share a pathogenic cascade and one is the downstream consequence of the other or because they are each consequences of some common cause or because they share overlapping diagnostic criteria, etc. Such causal ambiguity is not resolvable within the atheoretical DSM framework, compromises research and clinical practices, and may point to the necessity of radically re-conceiving the domain in terms of a framework based on causal structure and processes.

and substantially guided by considerations and constraints that promote the guild interests of psychiatrists. These included a strong commitment to the medicalization of mental health practice (e.g., mental illnesses are brain diseases that are diagnosed and treated by physicians in a psychosocial context of medical roles, identities, settings, etc.), and hence to a specific form of clinical practice. These commitments are reflected in the essentially conservative guidelines for change of the DSM-IV embodied in the following four principles (American Psychiatric Association 2013, p. 7):

1. DSM-5 is primarily intended to be a manual used by clinicians, and revisions must be feasible for routine clinical practice
2. recommendations for revisions should be guided by research evidence
3. where possible, continuity should be maintained with previous editions of DSM
4. no a priori constraints should be placed on the degree of change between DSM-IV and DSM-5.

Putting aside that (1) and (4) seem to be in serious tension with each other, the “routine clinical practice” mentioned in (1) refers to routine psychiatric practice as delimited by the training and experience of psychiatrists and the demands of various clinical psychiatric settings (e.g., time pressure, resources, institutional constraints, finances, etc.). The “research evidence” mentioned in (2) predominantly refers to DSM-based research that bears upon DSM diagnostic categories and associated criteria (e.g., research concerning their reliability and validity).

As a consequence of these features (viz., hierarchical control by the APA, influence of guild interests, focus on supporting routine clinical practice, continuity with DSM-IV,¹⁶ employment of DSM-based research), the various aspects of the revision process (e.g., the literature reviews, the field trials, the review processes of the various works groups and the task force, the ultimate decision process) were all strongly anchored in a way that kept more fundamental questions regarding the domain of mental illness and the core assumptions of the DSM framework off the table. Hence, despite protestations that there were no a priori restrictions on the sorts of change that might be made (i.e., 4 above), the revision process was for the most part focused on revising the existing DSM-IV by reviewing DSM-based evidence that bears upon questions of whether to add or delete categories or to revise criteria for existing categories or to modify the accompanying text. The result is a DSM-5 that is, in essential respects, little changed from DSM-IV, that is heavily geared for preserving existing clinical practices and the framework of assumptions

¹⁶Continuity with DSM-IV is typically deemed important because radical changes would be too disruptive to both clinical and research practice; point 3 above is an acknowledgement of this that was added to the criteria for change late in the process. Early in the DSM-5 development process (see Kupfer et al. 2002) it was recognized to some extent that radical changes may well be required to be responsive to the problems of DSM-IV, as is partially acknowledged in point 4. What seems clear is that the tensions between these acknowledgements were never effectively resolved and that more conservative pressures were dominant.

that support them, and that retains categories exhibiting the same characteristics as those in previous DSMs (viz., de-contextualized, symptom-focused, atheoretical, polythetic).

This last point is especially significant. It is a characteristic of the past several revisions of the DSM that categories with no demonstrated validity when they were introduced in DSM-III in 1980 have been continuously grandfathered through on the grounds that there is no substantial evidence to justify their removal, and that their removal would be too disruptive of ongoing clinical and research practice (see Frances 2010a). As a consequence, essentially the same categories as were introduced in DSM-III are retained and augmented by more of the same, despite there being no solid evidence for the construct and predictive validity of the categories, the acknowledgement that they exhibit problems of heterogeneity, comorbidity, and poor phenotypic definition and hence that they have questionable value in research.¹⁷ As suggested above, this grandfathering through of unvalidated clinical categories is the result of a process that is highly constrained by its task specification (to review and revise the existing DSM), the questions posed (which typically concern whether to add, retain, revise, or delete categories or criteria), the problematic knowledge base relative to which these questions are addressed (viz., existing DSM-based research), the stringent standards on any revision (e.g., that they be useful for routine clinical psychiatric practice, that they be supported by evidence), the aforementioned guild biases, and, in sum, the importance of keeping the DSM highly tuned to preserving clinical practice as it currently exists.

As a consequence, the process of revision was profoundly compromised in ways that make it highly unlikely that significant changes relevant to the issue of research utility have been made in DSM-5. In particular, and despite a few innovations to be discussed below, the DSM-5 revision process did not effectively engage the problem of the “lack of fit” of the DSM-IV with the domain of mental illness. It has retained (and augmented) the various artificial diagnostic categories in DSM-IV; it has not effectively addressed the failure of the DSM to provide sufficient representational resources for managing the features of the domain of mental illness (e.g., the diagnostic categories are still atheoretical, polythetic, and symptom focused); and it has retained various problematic assumptions concerning that domain (viz., individualism, medicalization and the assumption that mental illnesses are brain disorders.) Thus, the DSM-5 in all likelihood exhibits a lack of fit with the domain of mental illness and will not therefore contribute effectively to promoting a progressive research program.

It should be mentioned, however, that in addition to tinkering with the symptom-based categorical approach of the DSM-IV, the work groups of the DSM-5 process did consider other sorts of revision, some of which were included in

¹⁷Although not directly relevant to the present chapter concerning research utility, it should be noted that the idea that DSM categories are clinically useful is questionable. See Poland 2003 for a discussion of how diagnostic categories like “schizophrenia” function as harmful stereotypes in clinical settings.

the final document. For one thing, there was consideration of adding genetic and neuroscience based diagnostic criteria, thereby challenging the assumption of atheoreticity that has prevailed for the past 30 years (see Hyman 2007). However, it was widely agreed that this could not be done at present because the research didn't support it; none of the categories, after all, have been sufficiently validated in these ways. Short of introducing genetic or neuroscientific diagnostic criteria, information concerning genetic, neuroscientific, and other research findings related to various DSM categories has been introduced into the text for some categories (e.g., schizophrenia), although it is unclear how meaningful such discussions can be given the widely acknowledged problems with the DSM categories and the DSM-based research program.

There has also been a substantial addition of language and tools concerning dimensional assessment to the diagnostic process, thereby broadening diagnostic assessment beyond the assignment of individuals to a categorical diagnostic grouping. In addition to a dimensional severity coding that is part of the coding of many DSM diagnoses, DSM-5 has introduced in its Sect. 3 ("Emerging Measures and Models") a set of brief rating scales aimed at quantifying the severity of various symptoms, and, thus, the severity of diagnoses. Some of these scales focus on symptoms that are "cross-categorical" while others target specific diagnoses and symptom types. These scales, however, are highly constrained by the requirement that they be usable by clinicians in routine clinical psychiatric settings; hence they are tuned to the DSM-based training of clinicians and the pragmatics of conventional psychiatric practice more than they are tuned to the features of the domain of mental illness, the real epistemic demands of the clinic, and (most important for present purposes) the challenges of research, each of which requires a more nuanced and powerful dimensional approach.¹⁸ The limits of the training of clinicians and the context of clinical use make more serious dimensional assessment approaches impracticable in routine clinical practice: consequently, the proposed dimensional tools are simple, superficial, and atheoretically conceived rating scales of clinical phenomenology that are likely to contribute little to the formidable assessment tasks posed by the features of the domain of mental illness for either clinical or research purposes. Among other limitations, they may lack important psychometric properties (see Frances 2010b), they focus on too narrow a range of features, and they are not theoretically related to underlying processes.

Another way in which a more "dimensional" approach has been introduced into DSM-5 is with respect to the higher order organizational structure of the categorical framework: chapter organization and ordering is now supposed to reflect significant dimensions along which categories of mental disorder fall. Shared similarities are supposed to include such factors as: neural substrates, family traits, genetic risk factors, specific environmental risk factors, biomarkers, temperamental antecedents, abnormalities of emotional or cognitive processing, symptom similarity, course of

¹⁸See Spaulding et al. 2003 for an example of how a more rigorous clinical assessment might proceed in the case of severe mental illness.

illness, high comorbidity, and treatment response (American Psychiatric Association 2013, p. 12). The idea is that grouping disorders with respect to similarities of these sorts, and locating them on some sort of dimension of similarity, will aid both clinicians and researchers in their respective tasks (Andrews et al. 2009; Bernstein 2011). Ultimately, given the putative clinical utility of developmental and lifespan considerations and empirical support for the value of the distinction between internalizing and externalizing factors, the final organizational structure of the DSM-5 involves the following ordering of categorical groupings: neurodevelopmental disorders, internalizing disorders, externalizing disorders, neurocognitive disorders, and other disorders. The stated purposes of this structure (APA 2013, pp. 12–13) are “to enable future researchers to enhance understanding of disease origins and pathophysiological commonalities between disorders,” to thereby provide a base for assessing validity, to develop new diagnostic approaches, and to provide a basis for explaining heterogeneity and comorbidity of current categories.

Although the spirit of this change is of interest, and the identification of significant features and processes such as those listed above is on the right track with respect to research concerning the domain of mental illness, the idea of proceeding by creating super-groups and spectra of DSM categories based on putative similarities is problematic given the lack of validity and the heterogeneity of DSM categories; there is no reason to believe that super-groups or dimensional orderings of problematic categories will be any less problematic than the categories themselves. Hence, there is no reason to expect that the current DSM categories can be meaningfully said to fall along some theoretically or empirically significant dimensions. What is needed is an approach to research, free of DSM categories and commitments, that focuses more directly on significant features and processes of the domain.

A further idea being seriously considered is the idea of making the DSM-5 a “living document” (viz., one which will be updatable on much shorter timescales than previous DSM revisions). This, however, seems to be a move in the wrong direction, since, given the heavily biased and ineffective nature of the current revision process, what is needed is to slow the process down and reconstitute it so that it is unencumbered by the inertia of the DSM-5 framework and the associated commitments of the psychiatric tradition. Arguably, given the features of the domain of mental illness, a radical break from this framework and tradition is necessary if the challenges to research posed by those features are to be met. Making the DSM-5 a “living document” would likely deepen the entrenchment of the very framework and commitments that have led to the current crisis in research rather than provide a venue for the more radical changes required.

In any event, the proposed sorts of revision (viz., revision of categories/criteria, adding dimensional scales, adding genetic/neuroscientific information, identifying a metastructure of the categorical system, making DSM-5 a living document) do not effectively address the deeper problem with the DSM framework: its lack of fit with the domain of mental illness. The categories and criteria remain symptom-based, de-contextualized, atheoretical, polythetic, unvalidated, and hence artificial. The various attempts at making the DSM more dimensional in character fall well short of

adequately augmenting the representational resources provided by the DSM because they are focused on (ambiguous) symptoms and symptom-based categories, and do not clearly provide a means of representing the hierarchical, multi-dimensional, dynamically interactive and context sensitive features of the domain. And, the DSM-5 continues to be associated with problematic commitments to individualism and medicalization. In sum, there is no reason to suppose that the DSM-5 will be any better than DSM-IV in fitting the domain of mental illness and helping to structure a research program focused on that domain. Hence, the DSM-5 ought not to play a role in such research programs.

Significance and Outlook

In this paper I have argued that (1) DSM-IV-based research is compromised by the lack of fit between the DSM-IV and the domain of mental illness, (2) DSM-5, despite various revisions and innovations, is no better than DSM-IV with respect to research purposes, and (3) therefore DSM-5 ought not to play any serious role in research concerning mental illness. In light of these conclusions how should research on mental illness proceed?

To begin, despite the conclusions above, there may yet be two limited roles that the DSM might play in research concerning mental illness. The first is to review the existing DSM-based research record for ideas and findings that, despite being compromised by the employment of DSM categorical groupings, might be of heuristic value. For example, research aimed at explaining specific symptoms putatively associated with a given diagnostic category (e.g., anhedonia in schizophrenia) may identify important mechanisms and processes associated with the symptom (see Strauss et al. 2011 for an example), even if the research cannot be meaningfully interpreted as concerning something called “schizophrenia.” Although the DSM-based research record has not been especially productive with respect to validating DSM categories, some (but not all) of such research may have this sort of heuristic value, although care must be taken in not taking the diagnostic categories too seriously.¹⁹

In addition, the inevitable problem of recruiting subjects into research may lead to a certain amount of reliance on DSM diagnoses although this should be quite minimal, and, as assessment and coding practices change, eliminated entirely. For example, research concerning “response inhibition” might proceed by recruiting subjects with such DSM diagnoses as ADHD, Tourette’s syndrome,

¹⁹Note that the authors of DSM-III and DSM-IV issued various cautionary comments regarding the use of DSM categories; and see Hyman 2010 for a discussion of the mistake of reifying DSM categories. In research contexts this mistake takes the form of not recognizing that DSM diagnostic groupings are artificial in character. Given the various roles that DSM diagnostic categories have played in research, their toxic impact is not mitigated by either cautionary comments or discussions of the mistake of reification.

and OCD since problems of response inhibition appear to be associated with each of these categories. However, given the problems with DSM categories, the diagnostic associations cannot be presumed to have any deep significance. Once individuals have been recruited, more rigorous, individualized assessments should be employed to determine the specific features exhibited by subjects. In addition to the questionable value of the diagnostic association, a clinical symptom (e.g., impulsive behavior) is very likely to be causally ambiguous (viz., producible by many different causal processes) and the main focus of research should initially be to resolve such ambiguity, to employ more rigorous parameters of assessment, and to create more meaningful groupings. A DSM diagnosis might be tentatively used to get subjects in the door, but once inside a research context, other assessment tools should take over.

More generally, what is required is a loosening of the tight relation between DSM categories and research concerning mental illness; some examples of this highlight the fact that this is a matter of degree. First, research aimed at trying to identify sub-types of diagnostic groupings (e.g., sub-types of ADHD) is widely pursued, based on the recognition of the considerable heterogeneity of such groupings (see Durston et al. 2011 and Fair et al. 2012 for examples). Although such research may be heuristically useful in the way discussed above (e.g., by identifying possible mechanisms for specific symptoms; by identifying significant sources of variation in functioning), in the end this is a misguided approach due to taking the DSM categories too seriously (see Poland and Von Eckardt 2013 for discussion).

A second example of alternative research programs is embodied in the National Institute of Mental Health RDoC initiative (NIMH 2011; Insel et al. 2010), which is based on a matrix that identifies a range of domains of functioning (e.g., negative valence systems, positive valence systems, cognitive systems, systems for social processes) and encourages the pursuit of research concerning different units of analysis (e.g., genes, molecules, cells, circuits, physiology, behavior, self-reports). The goal is to fill in the matrix with research which will clarify, for the capacities and functions in each research domain, the range of normal functioning, various sorts of dysfunction, and associated mechanisms and causal processes. It is hoped that such research will lead to improved approaches to diagnostic classification and clinical intervention. In many respects this approach is on the right track, because it is directly responsive to various features of the domain of mental illness (e.g., multi-dimensional complexity, hierarchical organization) and it has dissociated itself from DSM diagnostic categories. However, the RDoC is also explicitly committed to a number of the commitments (e.g., medicalization) that have hampered the DSM approach (see Poland 2014). Consequently, it appears to be biased in the direction of lower levels of analysis, a focus on brain disease, and physical forms of intervention, each of which will tend to skew the research away from other aspects of the domain of mental illness (e.g., social and psychological processes; personal agency; non-physical forms of intervention).

Whereas these first two examples of research are potentially hampered by the over-reliance on DSM categories or other commitments that have compromised DSM-based research, a more progressive approach will divest itself of these

categories and commitments and be more directly responsive to the various features of the domain of mental illness. One example of this sort of approach can be found in labs that employ the methods and representational resources of computational cognitive neuroscience to develop models of normal function, explore the range of individual differences with respect to a wide range of biological and psychological capacities and processes, and identify measurable deficits, dysfunctions and impairments (see Montague et al. 2011; Maia and Frank 2011). This sort of research is explicitly armed with resources for identifying and managing the various features of the domain. For example, computational models at multiple levels of analysis (e.g., neural, cognitive) are especially well suited for managing hierarchical, dynamic interactivity and the coordination of processes at different levels. In addition, computational modeling, parameter estimation, and clustering algorithms and techniques allow for the identification of measureable processes and features that promote the study of individual differences, the resolution of causal ambiguity (e.g., by identifying different parameter values that can lead to a common symptom), the management of context sensitivity (e.g., by creating multi-dimensional functional profiles built up from parameters estimated on the basis of a broad range of task performance data), and the identification of meaningful groupings of individuals. Of considerable importance is the promise of these techniques for reconceptualizing the phenomena in the domain of mental illness, thereby breaking the grip of conventional ways of conceptualizing such phenomena grounded in an unscientific clinical psychiatric tradition (e.g., traditional diagnostic categories, proto-scientific ways of conceiving symptoms).²⁰

In conclusion, and drawing on Kuhn's classic work (Kuhn 1970, Chapter VIII) we are in a period of "extraordinary science" in which a crisis exists with respect to the dominant approach to research concerning mental illness; what is needed is a deep probing of the problems with the conventional DSM approach and associated research record, a loosening of the standards and models of research based on the DSM, and a proliferation of alternative approaches aimed at reconceptualizing the domain and managing its various features. A critical step in this direction involves changing patterns of thought, perception, and action concerning mental illness, and for this the first step is to stop thinking, perceiving, and acting in terms of the categories identified in DSM-5.

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²⁰See Wiecki et al., [in press](#) for a review of the various strategies and tools of "computational psychiatry" and examples suggesting the promise of the approach.

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