1 Introduction: Psychiatric Research and Extraordinary Science

Jeffrey Poland and Şerife Tekin

A climate of crisis and controversy exists in contemporary mental health research and practice, stemming partially from tensions within psychiatry. On the one hand, as a branch of medicine, psychiatry aims at clinically addressing the complaints of individuals with mental disorders, including unwanted behavior and the subjective, mental, and first-person aspects of psychopathology (such as feelings of unwarranted guilt and hallucinations); yet there are serious concerns regarding overdiagnosis and overtreatment, and there is no consensus on which treatment methods are most effective in addressing mental health problems. On the other hand, as a branch of science, psychiatry targets the objective, embodied, and third-person causes and correlates of behavioral problems and mental distress (such as atypical brain mechanisms and genetic anomalies); however, there is no agreement on what kinds of scientific constructs will best help probe these phenomena, and there has been a notable lack of scientific progress. At the center of these controversies is *The Diagnostic and Statistical Manual of Mental Disorders* (DSM), the psychiatric taxonomy used in the United States and widely around the world, which has been developed to identify both the scientific and clinical targets of psychiatry, as well as to be used in the service of sociological, pedagogical, and forensic projects (American Psychiatric Association 2013, xli; American Psychiatric Association 1994, xv). It is widely agreed, however, that the DSM is seriously flawed. Common and widely acknowledged problems include problems concerning the validity and reliability of the psychiatric diagnoses, poorly understood comorbidities, heterogeneity of diagnostic groupings, and overinclusiveness of diagnostic criteria. As a consequence, the DSM is seen by many as a major source of the current crisis in mental health research and practice.

The goal of the present volume is to focus directly on research-related issues in this crisis and to explore both the nature and sources of the crisis

as well as whether and, if so, how, it can be responded to, or at best, overcome. There has been an increased focus on the scientific research of mental disorders, not only by scientists, but also by philosophers. However, both in areas where this research exemplifies the problems characteristic of the crisis (e.g., problems of scientific validity of DSM categories) and in areas where it constitutes a source of responses to those problems (e.g., the conviction that the more we understand the brain, the better we will address mental disorders), a thorough philosophical investigation of the current crisis is missing. Moreover, given the existing crisis, whether and, if so how, research in psychiatry can make progress is not adequately addressed in the relevant literature.

Several recent philosophical and scientific discussions and developments set the stage. First, underlying the conviction that the DSM is seriously flawed as a guide for research is the concern that the mental disorder constructs found in the DSM are not appropriate for scientific research (Frances 2013; Hacking 2013; Horwitz and Wakefield 2007; Schwartz and Wiggins 1987; Poland, Von Eckardt, and Spaulding 1994; Poland 2001; Sadler 2005; Tekin 2014). Critics argue that the DSM categories, being based on atheoretical, polythetic, and symptom-based criteria, are too general and that they do not include specific details that square with the features of mental disorder. Because of this, a wide range of phenomena—sometimes problems in ordinary living, such as grief—are included as mental disorders. Further, this nonspecificity of DSM categories leads to problems of their validity as scientific constructs, heterogeneity of diagnostic groupings, overinclusiveness of diagnostic criteria, and problems of false positives. In addition, because diagnostic groupings are heterogeneous, diagnostic criteria for different categories sometimes overlap, and boundaries of the constructs are fuzzy and loose, it becomes challenging to detect and investigate comorbidities (i.e., simultaneous occurrence of multiple mental disorders). These various problems make DSM categories ill-suited for scientific research.

Second, there are various explanations tracking the source of the crisis in psychiatric research. Some point to the lack of an adequate scientific foundation of the DSM-III (American Psychiatric Association 1980) classification scheme—which marked the transition from a psychoanalytically oriented etiological taxonomy to a symptom and sign oriented descriptive taxonomy—and its successors (DSM-III-R, DSM-IV, DSM-IV-TR, DSM-5). Others, more specifically, focus on the lack of an adequate scientific foundation due to the immaturity of neuroscience and genetics (Schwartz and Wiggins 1987; Sadler 2005; Zisook, Shear, and Kendler 2007; Frances 2013; Kleinman 2012; Kendler et al. 2008; Tekin 2011; Radden 1994). An

alternative view sees the crisis as resulting partially from a failure of the DSM to effectively map the domain of mental illness, which exhibits multidimensional, hierarchical, dynamical, and interactive causal complexity as well as personal perspectives and considerable individual variation (Poland and Von Eckardt 2013; Tekin and Mosko 2015). Correspondingly, there are multiple proposals on what would constitute an adequate response to this crisis. For example, some phenomenologically oriented critics prioritize psychiatry's medical target and argue that the way to overcome the crisis in psychiatry is focusing on the needs of the clinic (Parnas 2005; Parnas and Zahavi 2002; Tekin 2015). Some of those who see psychiatry as a branch of science, on the other hand, believe that psychiatry should work harder to resemble the basic sciences such as genetics and neuroscience (Andreasen 2001; Insel and Lieberman 2013). Scientific explanations, framed in terms of the genetic and neurological underpinnings of mental disorders, are viewed by them as the best way to develop effective psychiatric interventions. Others, however, emphasize the importance of integrating resources from a broader range of relevant sciences (Murphy 2006; Poland 2014). Further, with respect to such proposed remedies, there is no consensus on whether an adequate response to current problems in psychiatric research and practice needs to provide a single unified solution applicable to all contexts in which psychiatric classifications are deemed necessary or whether a pluralistic approach is required where the multifaceted complexity of mental health related issues are addressed in a piecemeal manner.

Third, the existing crisis recently became explosive following the publication of the just revised DSM, namely, the DSM-5. Some critics have proposed that the DSM needs more revising and tinkering to be made fit for research (and clinical) purposes. For instance, Allen Frances, the chair of the DSM-IV Task Force, argued vehemently against some of the changes in the DSM-5, insisting, for example, that grief should remain conceptualized as a normal response to loss, as opposed to being categorized as depression (Frances, 2013). Others, on the other hand, push toward a rejection of the DSM project altogether, declaring the DSM-5 to be unfit for scientific research. For example, the National Institute of Mental Health (NIMH), the division of the US government that funds most research in psychiatry, has declared the DSM unsuitable for research purposes (Insel 2013; Insel and Lieberman 2013). The arguments put forward are that the DSM categories are no longer appropriate for research purposes because they lack validity, and that a diagnostic system that aims to scrutinize mental illness should more directly reflect modern brain science, as "mental illness will be best understood as disorders of brain structure and function that

implicate specific domains of cognition, emotion, and behavior" (Insel and Lieberman 2013). As an alternative to the DSM for research purposes, the NIMH announced the Research Domain Criteria (RDoC) project (Insel et al. 2010), which attempts to create a new conceptual framework for psychiatric research that identifies domains of functioning that can be analyzed at several levels of analysis, thereby integrating resources provided by various basic sciences, especially genetics, neuroscience, and cognitive science. Critics of the NIMH's approach have suggested that emphasizing the primacy of neuroscientific and genetic research in psychopathology continues an unfortunate trend that ignores the crucial role of the phenomenology of mental illness (Graham and Flanagan 2013). Others are concerned that in the RDoC there may be a lack of suitable attention to relational problems, social processes, and cultural context (Poland 2014). Whether to choose the revise-and-tinker approach to the DSM project or go with a more radical approach that completely abandons the DSM is a philosophy of science question that needs attention.

Finally, the current landscape of responses to the crisis in psychiatric research also includes abundant work of numerous individuals and research groups concerned with probing the problems exhibited by DSM categories (e.g., the development of methods and models for understanding the heterogeneity and unexplained comorbidities of DSM categories; Poland and Von Eckardt 2013 provide some examples) and with targeting various aspects of mental illness in novel ways (e.g., creating meta-clusters of DSM categories, focusing on specific symptoms or cognitive impairments, introducing novel measures of biological, psychological, and behavioral functioning, and building on genetic, biochemical, neurostructural, and neurofunctional findings). Special attention has been given to a focus on "endophenotypes" and the use of novel sampling methods, measurement technologies, multidimensional functional profiles, and modeling techniques (Wiecki, Poland, and Frank 2015 provide some examples).

Current research is in a state of flux and increasingly directed at responding to the problems of conventional diagnostic categories and developing novel ways of studying and understanding mental illness. Although such approaches are promising, it is our view that more needs to be done at a deeper level in response to the current crisis. General philosophy of science, in particular, gives us some conceptual resources to engage in such analysis.

The probing of the problems of the dominant research framework of psychiatry (viz., the DSM by critics and institutions such as the NIMH), as well as the emergence of alternative scientific initiatives (e.g., the RDoC project and the work of various research groups) is suggestive of Thomas Kuhn's

characterization of periods of crisis that can arise in scientific research during "normal science" and of the "extraordinary science" that ensues in response to such periods of crisis (Kuhn 1962/1996, 77–91). Extraordinary science takes several forms in Kuhn's view, which, we believe, are mimicked in contemporary psychiatry. Consider a few of these here: (1) attempts to shore up and defend a reigning paradigm (exemplified by the American Psychiatric Association's insistence that the DSM-5 is a potentially useful research framework given its new organizational structure; American Psychiatric Association 2013, 10), (2) attempts to isolate and probe anomalous research results encountered during the normal science[1] period (exemplified by research aimed at explaining the heterogeneity of diagnostic categories), (3) the loosening of standard forms of research practice (exemplified by the NIMH's RDoC initiative which eliminates the necessity of using DSM diagnoses), and (4) the exploration of alternative research frameworks (again exemplified by the NIMH's RDoC initiative as well as the work of various research groups). Kuhn also emphasizes another feature of this stage of research: namely, the turning to philosophical analysis for an identification and evaluation of the constitutive frameworks of research programs and the exploration of their foundational assumptions (e.g., identification of questions and problems deemed important by the scientific community, analysis and evaluation of constitutive concepts and assumptions concerning the domain of research, and analysis and evaluation of various substantive and methodological assumptions that structure research practices).

Following Kuhn, we suggest that the current crisis in mental health research provides an important opportunity for a critical examination of the foundations of research in this area and that such philosophical analysis is a crucial component in efforts to effectively respond to, and perhaps overcome, the current crisis. It is especially called for because of the nature of the domain of scientific investigation (viz., mental illness) insofar as this domain is (1) causally complex (e.g., processes involve multiple dimensions, hierarchical organizations, dynamic interactivity spanning numerous levels of analysis, context sensitivity, etc.) and (2) concerned with physically embodied human agents with a personal perspective who are embedded in sociocultural contexts. Such factors complicate both the research agenda and the application of research findings in practical (e.g., clinical, educational, social) contexts. This is especially the case for (2) since, although the sciences are well equipped for tackling problems of causal analysis, they are not as advanced and well equipped for dealing with either the personal or the sociocultural dimensions of mental illness. Arguably, given (2) and the social and personal significance of mental illness, a special premium

should be placed on pursuing scientific research agendas that are compatible with maintaining an important focus on personal perspective, agency, and sociocultural context.

Philosophical analysis concerning this domain and the research agendas focused upon it can contribute to a deeper understanding of the features of mental illness and to the pursuit of responsive and robust research programs that will contribute to understanding and managing the current crisis. This volume brings together a collection of original chapters that share this goal. The authors develop and apply various analytical ideas and strategies from the philosophy of science, and from other relevant areas of philosophy and science, with the aim of clarifying some aspect of the current crisis and the associated extraordinary science. The various purposes of these chapters include understanding the research domain of mental illness, clarifying the nature of the problems that constitute the current crisis in mental health research, identifying key substantive and methodological assumptions concerning classification and research focused on the domain, identifying ideas bearing on how best to respond to the current crisis with respect to the scientific research agenda (e.g., identification of promising pathways forward for scientific research), and constructively addressing the tension between pursuing a progressive scientific research program concerning mental illness and maintaining a place of prominence for individual persons and their contexts. Such philosophical analyses can help in the process of engaging and resolving the current crisis. They can also contribute to reconciling the claims that a study of psychopathology needs to be scientific and that it needs to put the person/self/individual suffering from psychopathology at the center. Further, such work may provide new insights for the philosophy of science based on the special features of this sort of case study.

Overview of the Chapters

The volume starts with two chapters by Edouard Machery and Robyn Bluhm that trace the source of the current crisis to fundamental epistemological problems about the ontological status of mental disorders, and the nature of evidence that guides psychiatric research. Machery ("Kinds or Tails?") focuses on a pivotal epistemological problem at the heart of determining whether psychiatric conditions are best conceived as distinct kinds or whether they are the tail of a distribution of some trait in the general population (e.g., are individuals suffering from depression a distinct kind or are they at the tail of a distribution of, say, neuroticism?). The

epistemological problem is how to know whether psychiatric syndromes are taxons or the tails of a distribution defined over the general population. Machery addresses this question by contrasting informal (e.g., clinical judgment) and formal (e.g., cluster analysis) methods and argues for the superiority of the latter. However, he shows that specific procedures can have built-in assumptions about the nature of taxons (e.g., that they are classes characterized by causal essences or that symptoms are uncorrelated among patients), and he notes that such commitments can be at odds with certain features of psychiatric syndromes (e.g., they can be more or less severe or they can have a heterogeneous etiology). Thus, an aspect of extraordinary science is the pursuit of research programs that require vigilance for inherent assumptions that may or may not fit well with features of the domain under investigation.

Robyn Bluhm ("Evidence-Based Medicine, Biological Psychiatry, and the Role of Science in Medicine") focuses on the current crisis in psychiatry by evaluating how current psychiatric research practices frame the nature of evidence in psychiatry. She identifies a tension between evidence-based medicine (EBM), an instance of medical empiricism that focuses on the efficacy of treatments without regard to mediating causal mechanisms, and biological psychiatry, an instance of medical rationalism which aims to improve clinical efficacy by focusing on the causes that give rise to clinical outcomes. Using the examples of research concerning post-traumatic stress disorder and attachment, Bluhm argues that EBM is shortsighted and proposes that EBM be integrated with rationalist concerns with pathophysiology. She then applies this framework to compare NIMH's RDoC initiative with the pre-DSM-III Feighner criteria, cautioning against the possibility of reifying RDoC criteria and constructs before the assumptions of RDoC are fully examined and the clinical relevance of such constructs and criteria is established.

The next two chapters focus on the NIMH's RDoC project and evaluate whether the project is indeed an effective response to the crisis in psychiatric research. Ginger A. Hoffman and Peter Zachar ("RDoC's Metaphysical Assumptions: Problems and Promises") identify two key features of the current crisis: a lack of validity of DSM categories (with associated problems of "therapeutic impact") and toxic "reflective impact" of DSM diagnoses on patients' reasoning about their illness. They proceed to present the RDoC initiative of the NIMH as an important research program aimed at meeting problems of validity and (ultimately) therapeutic impact. With respect to RDoC's promise for promoting "etiopathological validity" they discuss several obstacles that must be negotiated (e.g., problems of multiple mappings

across levels of analysis), but (somewhat ironically) they note that the complexities of the RDoC approach may undermine toxic reflective impact by inhibiting the incorporation of pathology concepts into an individual's self-narrative and identity.

Claire Pouncey ("Psychopathology without Nosology: The Research Domain Criteria Project as Normal Science") identifies the RDoC as a response to the stagnation of DSM-based research but argues that the shift of focus to the RDoC framework is not a paradigm shift as many maintain since the core theoretical and methodological assumptions of biological psychiatry are maintained across this shift in research focus. Rather, RDoC is a version of the normal science tradition of which DSM-based research is a part. In both instances, the aim is to translate basic and clinical neuroscience research relating brain structure, brain function, and behavior into a classification of psychiatric disorders based on etiology and pathophysiology. The standards of research (e.g., a focus on construct validity and the development of nomological networks) are also maintained across this shift.

The next four chapters each focus on a particular research practice in psychiatry, namely, computational psychiatry, personalized psychiatry, mechanistic approaches, and user-led research initiatives, assessing their ability to effectively respond to the crisis in research. In their chapter ("The Promise of Computational Psychiatry"), Jeffrey Poland and Michael Frank focus on computational psychiatry. They offer an explanation of why the crisis in psychiatric research exists that helps to identify four sorts of challenge that researchers must face during the current period of extraordinary science: ideological, methodological, clinical, and transitional. They then proceed to identify the foundational substantive and methodological assumptions and resources of the research program of computational psychiatry, and they demonstrate the promise of this research program for meeting various of the challenges using case studies focused on Parkinson's disease and schizophrenia.

Aaron Kostko and John Bickle ("Personalized Psychiatry and Scientific Causal Explanations: Two Accounts") focus on personalized psychiatry. They explore the tension in psychiatry between striving to be individualized and patient centered on the one hand and scientific on the other. To do this, they pursue a strategy of applying two accounts of causal explanation (viz., Woodward's 2003, 2008 interventionist account and Silva, Landreth, and Bickle's 2013 metascientific account) to research bearing on psychopathology in social neuroscience and environmental epigenetics. While each account has strengths and weaknesses, two main lessons are

gleaned from the analysis: (1) properly understood, basic scientific research is not inconsistent with the aims of personalized psychiatry, and (2) non-epistemic considerations (e.g., clinical utility and therapeutic applicability) partly determine which account of scientific causal explanation best fits with personalized psychiatry (e.g., with respect to questions about the most appropriate level at which to explain psychiatric disorders). Of special importance in their discussion is the epistemic value placed on pursuing fundamental research into mechanisms that mediate high-level causal relations (e.g., identification of such mechanisms helps secure confidence in causal claims).

Kelso Cratsley ("The Shift to Mechanistic Explanation and Classification") focuses on mechanistic approaches to psychiatric research. He takes on the question of how mechanistic explanation fits into the effort to build a scientifically sound etiological and nosological framework for psychiatry. After sketching what mechanistic explanation should look like in the context of psychiatric research, Cratsley identifies several challenges posed by features of the domain under investigation (e.g., the role of social and environmental factors, the relatively transient nature of symptoms, the complexity of underlying systems, and the significance of nonstandard developmental course for many psychiatric conditions). Cratsley argues that such challenges can be met with a broad notion of mechanism that allows for something less than flawless execution of internal operations, that attends to organizational relations both within the mechanism itself and across the wider cognitive system, and that appeals to the influence of contextual factors. His discussion exemplifies the general theme that, among the challenges to researchers in this period of extraordinary science, the features of the target domain call for conceptual and methodological resources that are up to the task of representing and managing them.

Next, Rachel Cooper ("Classification, Rating Scales, and Promoting User-Led Research") focuses on user-led research initiatives in psychiatry. She notes that a critical dimension of the current crisis in psychiatric research concerns a crisis of trust and confidence in reported research findings. For a variety of reasons, such confidence has been eroded, and a part of navigating this period of extraordinary science is to identify research practices and processes that will help restore confidence in research. Cooper observes that one widely believed cause of the loss of confidence is the perception that much research serves the interests of industry rather than the interests of patients. And she suggests that one way to ameliorate such concerns is by the development of more "amateur/citizen/user-led" research, something which would constitute a dramatic shift from current research practices.

Cooper argues that promoting user-led research conducted outside traditional academic settings promises a range of benefits, and she engages certain objections to such research (e.g., amateur/user researchers are not competent and have nothing to contribute). After arguing that user-led research is worth pursuing, she goes on to discuss how research by users is impacted by the informational infrastructure of science (e.g., different styles of classification and rating scale can facilitate or interfere with the work of amateur/user-led research communities). Thus, changes to such informational infrastructure might be required for effectively engaging the challenges of extraordinary science.

The next three chapters focus on specific psychiatric categories, namely, schizophrenia, major depressive disorder, and bipolar disorder, and address some problems that underlie the research on these. Richard P. Bentall ("Six Myths about Schizophrenia: A Paradigm Well Beyond Its Use-By Date?") provides a brief history of the schizophrenia concept and identifies six "myths" concerning the diagnostic category bearing on reliability, boundaries with normality and other diagnostic categories, genetics, environmental factors, and brain disease. In all cases, he argues that, although widely endorsed within conventional psychiatry, these assumptions about the nature of schizophrenia lack scientific support and in some cases are refuted by the research record. Bentall concludes by drawing some important lessons for extraordinary science. First, the endurance of the schizophrenia concept and the associated myths, despite the increasingly countervailing research record, is testament to the power that paradigms can hold over the minds of researchers. Further, the impact of such powerful paradigms can lead to a failure of normal processes of empirical refutation. For example, deeply entrenched assumptions about schizophrenia can lead to a relaxation of standards in order to accommodate recalcitrant data and thereby protect paradigms, and they can lead to a stifling of research that challenges the paradigm, as well as to blindness to the significance of research findings.

With a focus on DSM-led research on schizophrenia, Şerife Tekin ("Looking for the Self in Psychiatry: Perils and Promises of Phenomenology–Neuroscience Partnership in Schizophrenia Research"), like Bentall, reviews some criticisms of the schizophrenia concept and the research based upon it. Her special target is a research initiative she calls the "phenomenology–neuroscience partnership (PNP)," which takes the phenomenology approach as a starting point to investigate schizophrenia. Although largely supportive of the initiative, Tekin identifies a weakness in much extant research. Specifically, she identifies a critical conceptual distinction concerning two senses of "self-experience" (viz., a subjective sense and an objective sense), and she argues that PNP researchers have typically failed to honor the distinction,

focusing exclusively on the objective sense when it is the subjective sense that is putatively disturbed in schizophrenia. She dubs this the problem of "wandering terminology." The upshot is that, while PNP has promise for engaging subjective dimensions of severe mental illness, there is a need to be vigilant regarding the problem of wandering terminology so as to maintain contact with the person who is the subject of mental illness. She concludes by pointing out some of the strengths of PNP and offers suggestions for improvement.

Harold Kincaid ("DSM Applications to Young Children: Are There Really Bipolar and Depressed Two-Year-Olds?") responds to critics who reject the DSM wholesale and suggests that the DSM exhibits "heterogeneous validity," that is, while many DSM categories lack established validity and research utility, some categories do not. He reviews a range of research findings supportive of the idea that both adult major depressive disorder (MDD) and adult bipolar disorder (BPD) have established validity and research utility. However, Kincaid contends that the application of categories of adult psychopathology (specifically MDD and BPD) to young children, for either research or clinical purposes, is entirely unwarranted by the research record. He argues that, given that this is true for "best case scenarios" (i.e., categories that have been validated for adults), great caution should be exercised when applying any DSM categories to children, especially in clinical contexts where drugs are routinely prescribed. Kincaid points to possible social explanations for the persistent use of psychiatric diagnostic categories, and especially the increase in diagnoses of BPD in children.

The volume concludes with a provocative chapter by Owen Flanagan and George Graham ("Truth and Sanity: Positive Illusions, Spiritual Delusions, and Metaphysical Hallucinations") that targets the psychiatric enterprise as a whole. They strongly criticize what they take to be the worrisome trend in contemporary psychiatry that pathologizes normalcy on dubious epistemic grounds. They specifically target the dual ideas that mental health has a clear, precise, and firm link to true belief and that mental disease/disorder has some clear, precise, and firm link to false or misbegotten belief. Using a broad range of examples of experiences, they argue that illusions, delusions, and hallucinations are not categorically or even typically unhealthy or abnormal. As a consequence, the assumptions that link truth/falsity with mental health/illness are suspect and should raise doubts about our understanding of what might make illusions and so forth unhealthy or abnormal. Such concerns reach to the normative underpinnings of contemporary mental health research and practice and, more importantly, to the challenges for effectively engaging such norms during this period of extraordinary science.

Concluding Comment

This is an exciting time for the philosophy of psychiatry. Within the current climate of crisis and controversy and given recent developments in the landscape of psychiatric research, this is a moment in time when philosophy is substantially relevant to mental health research and practice and philosophers have opportunities to address fundamental questions in ways that might contribute to scientific change.

Using the analytical resources offered by history and philosophy of science, philosophy of mind, and ethics, philosophers are actively engaging questions about the causes of the current crisis; the nature of mental illness; the validity and reliability of psychiatric diagnoses; the substantive, methodological, and normative assumptions in psychiatric research; the criteria for good constructs; the pathways for progress in psychiatric research; the tensions among scientist, practitioner, and patient perspectives; and the morality of various clinical practices. With *Extraordinary Science and Psychiatry: Responses to the Crisis in Mental Health Research* we aim to further the impact of philosophy of psychiatry by providing a sampling of work that examines and responds to some of these questions.

Note

1. Of course, it is doubtful that psychiatric research ever entered a period of "normal science" as Kuhn understood that term; nonetheless, we think the Kuhnian apparatus is useful for understanding the current situation in psychiatric research.

References

American Psychiatric Association. 1980. *Diagnostic and Statistical Manual of Mental Disorders*. 3rd ed. Washington, DC: American Psychiatric Association.

American Psychiatric Association. 1994. *Diagnostic and Statistical Manual of Mental Disorders*. 4th ed. Washington, DC: American Psychiatric Association.

American Psychiatric Association. 2013. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Arlington, VA: American Psychiatric Association.

Andreasen, N. 2001. *Brave New Brain: Conquering Mental Illness in the Era of the Genome*. New York: Oxford University Press.

Frances, A. 2013. Last plea to DSM-5: Save grief from the drug companies. Huffington Post. January 7. http://www.huffingtonpost.com/allen-frances/saving-grief-from-dsm-5-a_b_2325108.html.

Graham, G., and O. Flanagan. 2013. Psychiatry and the brain. Oxford University Press Blog; August 1. https://blog.oup.com/2013/08/psychiatry-brain-dsm-5-rdoc/.

Hacking, I. 2013. Lost in the forest. *London Review of Books* 35 (15) (August 8).

Horwitz, A. V., and J. C. Wakefield. 2007. *The Loss of Sadness: How Psychiatry Transformed Normal Sadness into Depressive Disorder*. New York: Oxford University Press.

Insel, T. 2013. Director's blog: Transforming diagnosis. http://www.nimh.nih.gov/about/director/2013/transforming-diagnosis.shtml.

Insel, T., B. Cuthbert, M. Garvey, R. Heinssen, D. S. Pine, K. Quinn, C. Sanislow, and P. Wang. 2010. Research Domain Criteria (RDoC): Toward a new classification framework for research on mental disorders. *American Journal of Psychiatry* 167 (7): 748–751.

Insel, T. R., and J. A. Lieberman. 2013. DSM-5 and RDoC: Shared interests. Press Release, May 13. http://www.nimh.nih.gov/news/science-news/2013/dsm-5-and-rdoc-shared-interests.shtml.

Kendler, K. S., S. H. Aggen, N. Czajkowski, E. Roysamb, K. Tambs, S. Torgersen, M. C. Neale, and T. Reichborn-Kjennerud. 2008. The structure of genetic and environmental risk factors for *DSM-IV* personality disorders. *Archives of General Psychiatry* 65 (12): 1438–1446.

Kleinman, A. 2012. The art of medicine: Culture, bereavement, psychiatry. *Lancet* 379 (9816): 608–609.

Kuhn, T. S. 1962/1996. *The Structure of Scientific Revolutions*. 3rd ed. Chicago: University of Chicago Press.

Murphy, D. 2006. *Psychiatry in the Scientific Image*. Cambridge, MA: MIT Press.

Parnas, J. 2005. Clinical detection of schizophrenia-prone individuals: Critical appraisal. *British Journal of Psychiatry* 187 (Suppl. 48): s111–s112.

Parnas, J., and D. Zahavi. 2002. The role of phenomenology in psychiatric classification and diagnosis. In *Psychiatric Diagnosis and Classification*, ed. M. Maj, W. Gaebel, and J. J. Lopez-Ibor, 137–162. World Psychiatric Association Series in Evidence and Experience in Psychiatry. Chichester, UK: Wiley.

Poland, J. 2001. Review of *DSM-IV Sourcebook*, Vol. 1, *Metapsychology Online Reviews* 5 (14). http://metapsychology.mentalhelp.net/poc/view_doc.php?type=book&id=557&cn=392.

Poland, J. 2014. Deeply rooted sources of error and bias in psychiatric classification. In *Psychiatric Classification and Natural Kinds*, ed. H. Kincaid and J. Sullivan, 29–63. Cambridge, MA: MIT Press.

Poland, J., and B. Von Eckardt. 2013. Mapping the domain of mental illness. In *The Oxford Handbook of Philosophy and Psychiatry*, ed. K. W. M. Fulford, M. Davies, R. G. T. Gipps, G. Graham, J. Z. Sadler, G. Stanghellini, and T. Thornton, 735–752. Oxford: Oxford University Press.

Poland, J., B. Von Eckardt, and W. Spaulding. 1994. Problems with the DSM approach to classification of psychopathology. In *Philosophical Psychopathology*, ed. G. Graham and L. Stevens, 235–260. Cambridge, MA: MIT Press.

Radden, J. 1994. Recent criticism of psychiatric nosology: A review. *Philosophy, Psychiatry, & Psychology* 1 (3): 193–200.

Sadler, J. 2005. *Values and Psychiatric Diagnosis*. Oxford: Oxford University Press.

Schwartz, M. A., and O. P. Wiggins. 1987. Diagnosis and ideal type: A contribution to psychiatric classification. *Comprehensive Psychiatry* 28 (4): 227–291.

Silva, A. J., A. Landreth, and J. Bickle. 2013. *Engineering the Next Revolution in Neuroscience: The New Science of Experiment Planning*. Oxford: Oxford University Press.

Tekin, Ş. 2011. Self-concept through the diagnostic looking glass: Narratives and mental disorder. *Philosophical Psychology* 24 (3): 357–380.

Tekin, Ş. 2014. Self-insight in the time of mood disorders: After the diagnosis, beyond the treatment. *Philosophy, Psychiatry, & Psychology* 21 (2): 139–155.

Tekin, Ş. 2015. Against hyponarrating grief: Incompatible research and treatment interests in the DSM-5. In *The DSM-5 in Perspective: Philosophical Reflections on the Psychiatric Babel*, ed. P. Singy and S. Demazeux, 179–195, History, Philosophy and Theory of the Life Sciences Series. Dordrecht, the Netherlands: Springer.

Tekin, Ş., and M. Mosko. 2015. Hyponarrativity and context-specific limitations of the DSM-5. *Public Affairs Quarterly* 29 (1): 111–136.

Wiecki, T., J. Poland, and M. Frank. 2015. Model-based neuroscience approaches to computational psychiatry: Clustering and classification. *Clinical Psychological Science* 3 (3): 378–399.

Woodward, J. 2003. *Making Things Happen: A Theory of Causal Explanation*. Oxford: Oxford University Press.

Woodward, J. 2008. Cause and explanation in psychiatry. In *Philosophical Issues in Psychiatry: Explanation, Phenomenology, and Nosology*, ed. K. S. Kendler and J. Parnas, 132–184. Baltimore: Johns Hopkins University Press.

Zisook, S., K. Shear, and K. S. Kendler. 2007. Validity of the bereavement exclusion criterion for the diagnosis of major depressive episode. *World Psychiatry: Official Journal of the World Psychiatric Association (WPA)* 6 (2): 102–107.

2 Kinds or Tails?

Edouard Machery

Psychiatric nosology, the branch of psychiatry dealing with the classification of psychiatric syndromes, has attracted much attention from philosophers of psychiatry (e.g., Kendler and Parnas 2012), but much of the philosophical debate has focused on a narrow set of topics: whether psychiatric syndromes (e.g., psychopathy) can be defined objectively, whether psychiatric syndrome labels (e.g., "depression" or "schizophrenia") refer to natural kinds (whatever a natural kind is), and whether the current nosology will be radically transformed by focusing on the endophenotypes emerging from neuroscience (on the former issue, see, e.g., Zachar 2000; Murphy 2006; Cooper 2014; Kincaid and Sullivan 2014; on the latter issue, see, e.g., Schaffner 2012). There has been comparatively little attention among philosophers to the following vexed question (*the taxon issue*): Are psychiatric syndromes the tails of distributions of particular traits in the general population, or do they form distinct kinds or taxa? For instance, do individuals suffering from depression form a distinct kind, or are they rather the tail of the distribution of neuroticism in the general population? Do people suffering from delusions form a distinct kind, or rather are they individuals with an extreme openness to experience? While the taxon issue may have little practical implications when it comes to alleviating distressing symptoms—it may not really matter whether depression is an extreme form of neuroticism or a distinct taxon when the goal is to reduce suicidal thoughts in a patient—it may have important implications for research on the etiology of psychiatric syndromes: although this issue calls for further reflection (Meehl 1999), it is plausible that tails of distributions and taxa result from different causal structures.

I will not address the taxon issue head on in this chapter; rather, my aim is to address a preliminary epistemological question: How can we determine whether psychiatric syndromes should be treated as kinds or taxa rather than as the tails of distributions defined over the general population?