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# Diagnosis in American Psychiatry: A Brief History of the Diagnostic and Statistical Manual

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## Introduction

Classification is the formal human process analogous to concept formation that occurs in all higher animals as they attempt to master their environment. (Spitzer & Wilson, 1975)

Nosology, from the Greek *nosos* (disease) and *logos* (rational study), is the discipline and practice(s) that deal with the classification of disease. Nosology has been a focus of attention throughout the history of psychiatry. The current, fifth edition of the American Psychiatric Association's *Diagnostic and Statistical Manual (DSM-5)* has, like prior editions of the work, become something of a benchmark for standardizing classification of psychiatric disorders. Reflecting this hegemony, the *DSM-5* is viewed as the authoritative resource for assessment and characterization of mental disorders, for use by clinicians, researchers, policy makers, insurance agencies, and legal systems ("American Psychiatric Association [APA]," 2014). A major feature of the *DSM*, and *DSM-5* in particular, is homogenization and universalization of psychiatric diagnoses, which has become somewhat

normative in psychiatric practice, not only in the United States but increasingly in Europe and Asia, given current trends toward concomitantly employing *DSM* and International Classification of Diseases (ICD) standards and criteria (Demazeux & Singy, 2015).

Yet, each successive revision of the *DSM* has generated increasing scholarly discourse and criticism. In many ways, the ongoing discourse – and debates – about the basis and meanings of psychiatric nosology and its effect upon medical practice as well as social constructs (of normality and abnormality) reflect the history of psychiatry writ large. This historicity provides insight to iterative changes in psychiatry as a discipline and set of practices, the role of biomedicine and technology in medicine, and changing social values and stances. In this light, we believe that a historical overview may shed important light upon contexts of iterative developments and modifications in psychiatric nosology – and practice(s) – within an evolving scientific, medical, and sociopolitical milieu. In this chapter, we trace the roots of current discourses – and controversies – starting from nineteenth-century psychiatry to the publication of the *DSM-5*, with some speculation as to what the *DSM* may portend for the near future. At this point, it may be worth mentioning what Micale (1996) has called the "paradigmatic structuring of psychiatric historiographies," the unintentional but implicitly biasing phenomenon of emphasizing theories, figures, and facts of a prevailing theoretical paradigm (e.g., the biomedical

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orientation) and marginalizing competing ideologies and facts. Acknowledging these tendencies, we hope to maintain an impartial perspective on this brief recollection of events which led to the development of *DSM-5*.

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## The Beginnings of Psychiatric Nosology

In the nineteenth century, the practice of psychiatry was conducted either in (rather posh) private office settings for those patients who were of upper social standing or in asylums for those patients of more proletariat or impoverished social standing. Of additional note and import is that mental illness was commonly referred to as insanity. Some of the earliest attempts to classify insanity can be seen in a treatise by Philippe Pinel and his foremost pupil Jean-Étienne Dominique Esquirol (Esquirol, 1845; Pinel, 1806). In the United States, a crude form of classification of insanity into mania, melancholia, dementia, and idiocy is found in 1838–1844 Annual Reports of the Trustees of State Lunatic Hospital at Worcester (Worcester, 1838, 1839, 1840, 1841, 1842, 1843, 1844). However, the 1840 report noted:

The division of insanity into these four classes is somewhat arbitrary. In the strongly marked cases, the distinctions are very plain, no less so by natural language than by symptoms of disease; as they approximate each other, the difficulty of classification is increased till it is found impossible where the cases shall be arranged.

Germane to our theme, these reports also discuss the nature of insanity at some length. For nineteenth-century asylum psychiatrists, insanity was a physical disease of the brain, yet it was mysteriously suborned by immaterial entities like immorality, stress, and psyche (Grob, 1962, 1991). To be sure, nineteenth-century nosological attempts in the United States were not intended for diagnostic clarity; rather, they were a quest for empirical data to inform social policies concerning the institutionalized mentally ill (Grob, 1991). These nosological efforts reached their peak in the progressive era (1890–1914), when the roles of census and statistics grew stronger in social and scientific disciplines

(Gould, 2001). By 1917, the Bureau of Census and the American Medico-Psychological Association (what is now the American Psychiatric Association) had already conjoined efforts to develop a uniform nomenclature that could serve to expedite the collection of statistical data on mental illness.

In Europe, Emil Kraepelin had developed a system of classifying psychiatric conditions, which, contrary to intentions behind nosological attempts in the United States, were primarily aimed at revealing the “secrets of nature” by operationalizing psychiatric symptoms and observing the natural course of illness (Hippius & Müller, 2008). Kraepelin’s teachings were communicated to members of the American Medico-Psychological Association through his textbooks, editions of which were anticipated with same degree of anticipation (and in some cases vehemence) as would be later observed with editions of the *DSM*. Subsequently, motivated by the Bureau of Census and inspired by Kraepelin’s work, the American Medico-Psychological Association (with cooperation of the National Committee for Mental Hygiene) issued the first standardized psychiatry nosology, *Statistical Manual for the Use of Institutions for the Insane*, in 1918. This manual had 22 categories of disorder (predominantly psychoses), of which 20 were based on Kraepelinian constructs. Nine subsequent editions of the *Statistical Manual* followed during the interwar years. None were endorsed by psychiatrists; after all, diagnosis was not essential to treatment at that time. Instead, psychiatrists were attending to Freudian conceptualizations of disorder as derived from and based upon psychoanalytic theory. Nevertheless, the *Statistical Manual* established a niche as defining American psychiatric nosology in the period prior to the Second World War.

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## *DSM-I* Development and the Post-*DSM-I* Era

During (and after) World War II, Freudian psychoanalysis, promoted by Meyerian “search for life events”(McHugh, 2016), proved to be relatively successful in treating “combat neurosis”

and other “psychoneuroses”(Grob, 1987). As a result, psychodynamic theories gained rapid acceptance in military psychiatry, so much so that William C. Menninger, director of the Psychiatry Consultants Division of the United States Army, developed an independent nomenclature called “War Department Technical Bulletin, Medical 203,” which was predominantly psychodynamic in orientation. Psychodynamic theories challenged both Kraepelinian doctrine and, albeit more indirectly, the traditional medical model of disease. When military psychiatrists returned home after the war, they further reinforced psychodynamic trends and psychoanalytic traditions and, in so doing, adopted roles as reformers of American psychiatry.

The conceptualization of psychopathology largely shifted from recognizing mental conditions as discrete disease entities that were distinct from mental health to considering mental health and illness on a continuum of variable severity. Reflecting upon shifting constructs of mental disease, and a growing population of psychiatric patients, the APA Committee on Nomenclature and Statistics sought a new system of classification (Raines, 1953). Led by George Raines, a former United States Navy neuropsychiatrist and then professor of psychiatry at Georgetown University Medical Center, the first edition of the *Diagnostic and Statistical Manual of Mental Disorders* was released in 1952 (APA, 1952).

The *DSM-I* can be regarded as official evidence of the growing preeminence of psychoanalysis in American psychiatry, as it classified mental disorders into two major groups: (1) conditions that were presumed to be caused by organic brain dysfunction (e.g., as associated with trauma, intoxication, or somatic diseases) and (2) conditions that presumably resulted from socio-environmental stress and its impact upon patients’ constitution and adaptive ability. While considered to be an important step in the evolution of psychiatric nosology, the *DSM-I* actually exerted little to no influence on psychiatric practice (Braslow, 2000). In fact, normality, neuroses, and psychoses were

considered to be on the same continuum in psychodynamic psychiatry; therefore, diagnosis was considered to be irrelevant. What mattered was early intervention, which could impede the progression of psychological dysfunction to severe psychoses (Menninger, 1964).

Many psychiatrists sought to intervene at a social level, as it was viewed as the source of actions (socio-environmental factors) that triggered “reactions” (a term considered to be synonymous with mental illness in the Meyerian tradition). As a consequence, psychiatry adopted a type of social responsibility (Group for the Advancement of Psychiatry, 1950) and mental health policies shifted in favor of this approach (Grob, 1987). Highly influential, the “Group for the Advancement of Psychiatry” (GAP) further promoted this social activism through its reports, which applied psychiatry to broad social issues such as child desegregation, industry, civil defense, and international relations (GAP, 1950, 1951, 1957).

By the 1960s, the legitimacy of “asylum psychiatry” was clearly in question, and “community psychiatry,” driven by psychoanalysis and social activism, tended to be ever more representative of both the professional stance and “public face” of the contemporary psychiatry. Indeed, psychoanalysis reached the community and was very well received by general public. Dynamic psychiatrists were considered – and portrayed – as purveyors of reason, knowledge, and well-being (Gabbard & Gabbard, 1999). Psychiatry became delimited from traditional diagnostics to engage a wider community in which diverse problems such as failing marriage, troubled childhood, and personal dissatisfaction were now seen as viable for clinical intervention (Hale Jr, 1995). In short, psychiatry came closer to being established as both a charismatic medical specialty and a growingly forceful social discipline. Yet, as Grob (2011) has noted, “... at precisely the time that the social legitimacy of psychiatry peaked, a series of disquieting elements were already eroding its very foundation.”

## DSM-III: A Nosological Revolution

While a shift in the conceptualization of mental illness radically transformed American psychiatry, it also sparked a number of controversies during the 1960s and 1970s (Grob, 1987). The fluidity of construct boundaries between what constituted mental health and mental illness, inherent to psychodynamic concepts of mental illness, became the source of two extremely different perspectives on psychiatry. On the one hand, psychiatry activists attributed every wrongdoing of society to mental illness, while on the other, Szasz (1961) and several others (Goffman, 1961; Scheff, 1970) argued that psychiatry was merely a discipline for social control of unwanted behavior, as there was no “true mental illness” (Szasz, 1961). They thus challenged the medical legitimacy of psychiatry for the first time in the history of the field. Szasz’s argument was further strengthened by the fact that psychodynamic therapy services, most of which had not been rigorously investigated, were at that time being offered not only by psychiatrists and clinical psychologists but by non-medically licensed professionals (e.g., social workers and counselors; Mayes & Horwitz, 2005). Moreover, the deinstitutionalization movement liberated many patients with chronic mental illnesses from mental hospitals and allowed them to freely enter into the community. Psychoanalytic therapies, once tremendously successful in treating “psychoneuroses,” failed to deal with serious and debilitating mental illness.

Instead, by the 1960s the use of drugs – psychopharmacology – had become ever more en vogue, fortified, in due part, to the development of a significant armamentarium of mood- and behavior-modifying agents, which proved to be effective in alleviating psychiatric symptoms and restoring daily functioning of mentally ill patients (Ban, 2001). This “psychopharmacological turn” fostered the rise of an “invisible college” of biologically oriented psychiatrists who were more neo-Kraepelinian in focus and critical of psychodynamically oriented approaches (Millon & Klerman, 1986).

When the second edition of the *Diagnostic and Statistical Manual of Mental Disorders* was published in 1968 (APA, 1968), psychodynamic approach was already losing its hegemony on psychiatry. Although the *DSM-II* was generally aligned with Freudian traditions, subtle amendments hinted at change. For example, there was a notable decrease in the use of the psychodynamic term “reaction.” A disclaimer accompanied this development:

Some ... may interpret this change as a return to a Kraepelinian way of thinking, which views mental disorders as fixed disease entities. Actually this was not the intent of the APA Committee on Nomenclature and Statistics: “[The Committee] tried to avoid terms ... regarding either the nature of a disorder or its causes [...]. In the case of diagnostic categories about which there is current controversy ... the Committee has attempted to select terms which it thought would least bind the judgment of the user.

The total number of disorders increased from 106 in *DSM-I* to 182 in *DSM-II*, with inclusion of milder disturbances such as Conditions without Manifest Psychiatric Disorder and Transient Situational Disturbances, suggesting evidence of a natural progress in classification of mental illnesses. The *DSM-II* Task Force also made first attempts to classify childhood psychopathology based on psychodynamic concepts; included were now a separate subgroup Behavior Disorders of Childhood and Adolescence containing seven “reactions”: hyperkinetic, withdrawing, overanxious, runaway, unsocialized aggressive, group delinquent, and other reactions of childhood (or adolescence). It is worth mentioning here that prior to the release of the *DSM-II*, the GAP had already proposed an independent classification system for psychopathological disorders in childhood. GAP’s proposed classification had a typically psychodynamic flavor and divided behaviors – presumably on a continuum – into healthy responses, developmental deviations, and disorder categories.

However, the reliability of both classification systems was relatively low (Achenbach & Edelbrock, 1978; Beitchman, Dielman, Landis, Benson, & Kemp, 1978; Freeman, 1971). This issue of subpar reliability not only was limited to

childhood mental disorders but rather was problematic for all psychiatric diagnoses (Sandifer, Pettus, & Quade, 1964; Tarter, Templer, & Hardy, 1975). Diagnosis, in turn, had by then become relevant – and a matter of concern – to psychiatrists because it had become the basis for prescribing medications, insurance reimbursements, clinical research trials, and research grants (Mayes & Horwitz, 2005; Wilson, 1993).

With progress in biological psychiatry and psychopharmacology (Baer, Platman, & Fieve, 1970; Klerman, 1968; Sachar, 1970), negative critique of the extant psychiatric nosology mounted considerably during the 1960s and early to mid-1970s. Moreover, significant improvements in quantitative psychiatric assessments, through symptom-based rating scales, raised the possibility of defining a mental disorder using a descriptive phenomenology approach. In fact, Lorr, Sonn, and Katz, (1967) had called for a phenomenological definition of depression prior to the release of *DSM-II* (Lorr et al. 1967). In 1972, the Washington University group, under the supervision of Eli Robins and Samuel Guze, demonstrated how a phenomenological approach could be utilized to operationalize mental symptoms, and proposed the “Washington University Diagnostic Criteria” for the diagnosis of mental disorders (Feighner et al., 1972). This seminal work established the Foundation for Research Diagnostic Criteria (Spitzer, Endicott, & Robins, 1978) and, in so doing, created a propitious climate for change that culminated in the publication of the third edition of the *Diagnostic and Statistical Manual of Mental Disorders* in 1980 (APA, 1980).

The publication of the *DSM-III* was, by any measure, a nosological revolution as the classifying paradigm shifted from being etiological/phenomenological to being more purely phenomenological. The *DSM-III* Nomenclature Task Force incorporated a polythetic criteria-based categorical system of classification for the first time in the history of psychiatric nosology. Such delicate attention to symptoms and their reorganization into categories heralded a return to Kraepelinian traditions. Perhaps the most telling feature of this trend was the official removal

of the psychodynamic term “neurosis” in the draft, which, after waves of protest, would later appear only parenthetically as neurotic disorder. Neuroses were renamed and placed under several categories including affective, anxiety, somatoform, and dissociative disorders.

The increased number of mental disorder categories (from 182 in the *DSM-II* to 265 in the *DSM-III*) was partly reflective of the increase in psychiatric knowledge achieved since the publication of the *DSM-II* and was also a consequence of gross reorganization of previously broad categories into several individual subcategories or subtypes, each considered as a separate and discrete mental disorder. For instance, *DSM-III* introduced an Axis I category “Disorders Usually First Evident in Infancy, Childhood, and Adolescence,” which included mental retardation; conduct disorder (with five subtypes); attention deficit disorder (with and without hyperactivity); four specific eating disorders (previously a single category “Feeding Disturbance” in *DSM-II*); anxiety disorders (separation anxiety, avoidant and over-anxious disorders); three stereotype movement disorders (previously a single category, Tic, in *DSM-II*); pervasive developmental disorder (including infantile autism); five other disorders of infancy, childhood, or adolescence (including oppositional, schizoid, and identity disorders); and five other disorders with physical manifestations (stuttering, enuresis, encopresis, sleepwalking, and sleep terror disorders). Similarly, specific learning disturbance of *DSM-II* was divided into five different specific developmental disorders. In addition, many novel disorder categories such as bipolar disorder, post-traumatic stress disorder, psychosexual dysfunctions, and four disorders of impulse control not elsewhere classified were also incorporated. Further, as based on the consensus opinion that the earlier classifications of homosexuality as disorder were largely shaped by politically and socioculturally contingent notions of deviance rather than scientific corroboration, homosexuality was permanently removed from psychiatric nomenclature and nosology (Millon & Klerman, 1986).



But the main innovation in the *DSM-III* was not in the renaming and reorganization of the disorder categories, but in the articulation of explicitly defined operational criteria, and listing of symptoms and durations a patient would require in order to be given a particular diagnosis. Another unique feature of the *DSM-III* was the adoption of a “multi-axial system” of diagnosis that emphasized the interaction of presenting symptoms, personality, physical health, psychosocial and environmental factors, and functioning in daily life. One development that we feel deserves special mention was the field testing of *DSM-III* diagnoses through National Institute of Mental Health (NIMH)-sponsored trials before publication. Although it was not compared to inter-rater agreement(s) of earlier nosologies, the *DSM-III* classification system demonstrated relatively good diagnostic reliability (Spitzer et al., 1978) and was officially released in 1980.

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### **The Post-*DSM-III* Era: Transformation of American Psychiatry**

Soon after its release, Gerald Klerman, a leading psychiatrist, labeled the publication of *DSM-III* as “...another major turning point similar to the acceptance of chlorpromazine” (Klerman, 1984). Within 6 months of its publication, more orders were received for the *DSM-III* than all the previous *DSM* editions combined, including their 30-plus reprintings (Mayes & Horwitz, 2005). Effects of *DSM-III* were evident in all dimensions of psychiatry including research, clinical practice, and education. For clinicians, *DSM-III* proved their claim that they were treating “true illnesses.” For insurance providers, it provided standards for reimbursement of therapeutic modalities. For medical students and psychiatry residents, it became “the reference” for diagnosis, if not conceptualization of mental disorders, to the extent that American medical schools and residency programs expected students and physicians to pass examinations based on *DSM-III* criteria (Young, 1997).

In retrospect, the *DSM-III* marked the beginning of the end of Freudian influence on American

psychiatry. While a defense of conventional medical model of disease was not explicitly stated in *DSM-III*, the process of its development made it clearly implicit. In fact, the decision of the *DSM* Task Force to maintain a stance of being “atheoretical” about the nature of mental disorder with diversion of research interests (and funding) to neuroscience, neurobiology, and psychopharmacology was reflective of a general belief among the research community that the biomedical (i.e., physical) nature of mental disorders will be eventually proven. In this light, the *DSM-III* achieved tremendous success in establishing the medical legitimacy of psychiatry (Pasnau, 1987). Several epidemiological studies, including the NIMH Epidemiological Catchment Area Project, followed to assess the incidence and prevalence of mental disorders.

The landscape of psychiatric research changed completely as all scientific inquiries in psychiatry were heretofore directed at *DSM-III* disorders. For psychopharmacology, the *DSM-III* catalyzed the dawn of a new era of randomized controlled trials (RCTs) directed at specific disorders. In the following years, billions of dollars were allocated by the government and pharmaceutical companies for psychopharmacological research. Psychopharmacological agents became the first line of treatment for the majority of mental disorders. The culmination, if not fruition of this progress, was evidenced in the US Congressional declaration that the 1990s were to be the “Decade of the Brain”.

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### ***DSM-III-R*, *DSM-IV*, and the Rising Tides of Controversy**

Subsequent editions of the *DSM* were generally in keeping with the scope and tenor of the *DSM-III*. An updated edition, the *DSM-III-R*, was published in 1987 (APA, 1987) and incurred minor revisions such as the changing of attention deficit disorder to attention deficit hyperactivity disorder, placement of mental retardation and pervasive developmental disorder in Axis II category, deletion of schizoid disorder of childhood (or adolescence), and the renaming of affective disorders as mood disorders. Similarly, *DSM-IV*

and the text-revised edition, *DSM-IV-TR*, published in 1994 and 2000, respectively (APA, 1994, 2000), reflected minor additions, deletions, and reorganization of diagnostic categories of the descriptive phenomenological approach initially adopted in the *DSM-III*.

With each successive edition of the *DSM*, the specificity of operational criteria and, in turn, the total number of diagnoses increased. For instance, the diagnostic criteria for autistic disorder were substantially revised, and two diagnoses, Rett's disorder and Asperger's disorder, were added to the pervasive developmental disorder group. Similarly, avoidant disorder and overanxious disorder of childhood were eliminated because their diagnostic criteria were not specific and resembled those of social phobia and generalized anxiety disorder (Shaffer et al., 1996). In addition, acknowledging cultural variability in the ways that mental health and illness are expressed and construed, "culture-bound syndromes" were also included in the *DSM-IV* and *DSM-IV-TR*.

A major development in transition from *DSM-III-R* to *DSM-IV* was the inclusion of the "clinical significance" criterion to most of the categories of mental disorder. Inclusion of this criterion was a response to increasing criticism from the psychiatric community that the *DSM-III-R* approach had a tendency toward "medicalization" of normal behavior. Most notable was the evidence provided by Shaffer et al. (1996) that there were many children and teenagers who met *DSM-III-R* criteria for diagnoses, but who did not appear to have significant social or academic impairment, and had never been referred for any clinical service (Shaffer et al., 1996). In reality, the heart of this issue was the same fluidity of the boundary between mental health and mental illness, which, after the loss of psychodynamic hegemony, was now resurfacing in the post-*DSM-III* era to raise controversial issues. Thus, the concept of mental disorder had to be reevaluated.

Proposed that "disorder is a harmful dysfunction, wherein 'harmful' is a value term based on social norms, and dysfunction is a scientific term referring to the failure of mental mechanism to perform a natural function for which it was designed by evolution." To some extent,

inclusion of the "clinical significance" criterion conformed to this "harmful dysfunction" analysis; however, it was not applied to all mental disorders and was even reversed for Tic disorder in the *DSM-IV-TR* (First & Pincus, 2002). The lack of clear demarcation between mental health and illness raised other issues, as well, inclusive of problems with under- and/or overdiagnosis and the "pharmacologization of psychiatry" (Timimi, 2014).

The classifying approach for diagnosis of developmental disorder was also questioned (Cohen, Paul, & Volkmar, 1986). In particular, the deficiency of a systematic, multidisciplinary, developmentally based classifying approach in the *DSM* was immediately felt in infant and early childhood mental health practice, which led to the development of the *Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood (DC:0-3)* (Wieder, 1994). The effect was noted even in the psychiatric care of older children, as there was an evident surge in pediatric bipolar disorder diagnoses (Frances, 2010; Parry et al., 2008; Zimmerman, Ruggero, Chelminski, & Young, 2008). Parallel to this broadening categorization of mental disorders was a consistent increase in the use of psychopharmacological interventions. This was – and continues to be – heavily criticized, especially in relation to the risk of suicide consequential to (outpatient) antidepressant use (Hammad, Laughren, & Racoosin, 2006) and use of psychostimulants for cognitive performance enhancement (del Carmen Panini, Garraza, Teves, Giraudo, & Calderón, 2015; Insel, 2009; Moynihan & Cassels, 2006).

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## The Development of the *DSM-5*

The process of *DSM-5* development began in 1999, and a major concern was to address a range of issues that had emerged over the previous 30 years of *DSM* use in practice. Nowhere were these issues more accurately depicted than in *A Research Agenda for DSM-V* (Kupfer, First, & Regier, 2008). Briefly, these issues were related to: (1) the definition of a mental disorder,

(2) relationships between mental disorder and disability, (3) debates about adding dimensional criteria to diagnoses, (4) potential addition of a neurodevelopmental perspective to nosology to account for variable manifestations of an illness across developmental stages of the life span, and (5) incorporation of neuroscience research-based data in diagnostic criteria.

Perhaps the most pressing issue was the increasing gap between insights gained by neuroscience research and their application to psychiatric practice. The Decade of the Brain evoked a significant growth in neuroscience research. Such research highlighted interesting aspects of *DSM* classification which led many to then question the validity of *DSM*-based diagnoses (Kendell & Jablensky, 2003; Lahey et al., 1998; Morgan, Hynd, Riccio, & Hall, 1996). To wit, David Kupfer, chair of the *DSM-5* planning committee, together with coauthors Michael B. First and Darrel E. Regier, stated:

Those of us who have worked for several decades to improve the reliability of our diagnostic criteria are now searching for new approaches to an understanding of etiological and pathophysiological mechanisms— an understanding that can improve the validity of our diagnoses and the consequent power of our preventive and treatment interventions. (Kupfer et al., 2008)

The issue of significant comorbidity and concurrent overlap of neuroscience research findings for distinct *DSM* disorders remained problematic throughout the development of *DSM-5* (Berrettini, 2000; Doherty & Owen, 2014; Kendler, Neale, Kessler, Heath, & Eaves, 1992). This overlap of research findings implied that there would not be enough evidence-based data to reliably differentiate between what had been posited to be nosologically discrete psychiatric disorders. As a result, the opportunity to incorporate neurobiological data from neurogenetics, structural and functional neuroimaging, psychophysiology, developmental psychopathology, and pharmacogenomics was lost, and, against the hopes of the majority of psychiatric community who were envisioning the *DSM-5* as a revolutionary neuroscientifically based classification system, the volume was published in 2013,

as what appeared to many to be little more than a revised, descriptive phenomenologically based nosology (APA, 2013).

Yet, changes in the *DSM-5* deserve a mention. The total number of categories increased from 297 in *DSM-IV-TR* to 541 in *DSM-5*; however, unlike previous editions, the number of defined diagnoses decreased from 172 in *DSM-IV-TR* to 157 in *DSM-5*. Disorders were reordered into a revised organizational structure, with disorders more frequently diagnosed in childhood (e.g., neurodevelopmental disorders) at the beginning of the manual and disorders more applicable to older adulthood (e.g., neurocognitive disorders) at the end. Introduction of a new organizational structure was in recognition of a model of internalization-externalization that has gained increasing support over the years (Krueger, 1999; Krueger & Markon, 2006).

Age, gender, and culturally related factors that are specific to diagnosis were included. The *DSM-IV* “Not Otherwise Specified” category was further divided into “Other Specified” and “Unspecified” categories. The *DSM-IV* subtypes of schizophrenia (i.e., paranoid, disorganized, catatonic, undifferentiated, and residual types) were eliminated, and autistic disorder, Asperger’s disorder, and pervasive developmental disorder were placed on a single spectrum under the umbrella of autism spectrum disorder after elimination of disintegrative disorder and Rett’s syndrome. Individual disorders, diagnostic categories, and criteria were revised to better serve young patients. Social communication disorder (SCD), disruptive mood dysregulation disorder (DMDD), and post-traumatic stress disorder for children 6 years and younger were newly included. A unique feature of the *DSM-5* was the addition of a new section (Section III) to highlight disorders that required further study, but were not sufficiently well established to be a part of the official classification of mental disorders for routine clinical use. Finally, an alternative, “hybrid” model of classifying and conceptualizing personality disorders was also a feature of Section III, which discussed the possibility of integrating categorical and dimensional models for better clinical utility.



## Moving Beyond the *DSM-5*

Overall, *DSM-5* did not meet the expectations of the psychiatric community. Controversial issues surrounding the *DSM-IV* continued to haunt the *DSM-5* as well. Comorbidities of disorders are likely to remain high. The concept of mental disorder is vague and diagnostic uncertainty prevails. Yet, most people who go to a psychiatrist get a diagnostic label, be it in the “Other Specified” or “Unspecified” category, which invokes criticisms such as “pathologization of deviance” and the “medicalization of social ills” on a regular basis. Similarly, discourse – if not controversy – continues about the interpretation of subjective variables, such as what constitutes “normal” or “optimal” function within the context and expectations of society and culture (Giordano, 2014; Nagel, 2014).

Perhaps the most disappointing aspect of the *DSM-5* has been the lack of neurobiological data in establishing diagnostic criteria. Two parallel views have emerged to explain why neuroscientific research has failed to inform psychiatric nosology. One view attributes this to the inherent complexity of the brain, persistent unknowns regarding the nature of consciousness and brain-mind relations, and unrequited hopes that neurobiological data will validate *DSM* diagnoses (Nemeroff et al., 2013); the other holds biblical adoption of *DSM* diagnoses as being responsible for the continuing negligibility of neuroscientific information on and in psychiatric practice (Cuthbert, 2014; Cuthbert & Insel, 2013).

Arguably, standardized diagnostic classifications, based on conceptualization of discrete disease entities, can legitimize existence of named and defined disease(s), and in so doing both reduce (at least the overt appearance of) social constructivism and sustain ontologic claims of medicine (Rosenberg, 2002; Patil and Giordano, 2010). Hence, it may be worth pondering the extent to which such a phenomenon could be problematic in psychiatric research. Most neuroscientific research in the post-*DSM-III* era was intended to examine *DSM* diagnoses as if they were “natural disease entities,” and in so doing, the mixed monothetic/polythetic criteria-based

categorical approaches inherent to *DSM*-based diagnoses invariably incorporated considerable comorbidity and symptom heterogeneity in study populations. This produced similar degrees of variability in results (even for the most sophisticated assessment techniques of neuroscience), thereby decreasing their reliability – if not validity in certain instances. As a result, a vast majority of neuroscience research findings are of moderate or small effect sizes and attempts to replicate these findings have failed for the most part (Kapur, Phillips, & Insel, 2012).

To counter such problems, the NIMH initiated the Research Domain Criteria (RDoC) project in 2009 so as to liberate researchers from current diagnostic nosology of the *DSM* and ICD systems. The RDoC shift the focus of psychiatric research to identify biologically homogenous subtypes that extend across phenotypic diagnoses, rather than validating traditional *DSM* diagnoses, and in this way, aims to enable a more contributory engagement of neuroscientific research in an integrative science of psychopathology (Kozak & Cuthbert, 2016). The knowledge base acquired from RDoC-oriented research will transform psychiatric nosology (Cuthbert, 2015; Cuthbert & Insel, 2013) to a dimensional model of classifying psychopathology, integrating several levels of information (e.g., epigenetics, neurogenomics, structural and functional neuroimaging, neurophysiology, molecular psychiatry, and psychology) to validate and conceptually refine conceptualizations of cognitions, emotion, and behavior. Moreover, the RDoC framework has increasingly emphasized the temporal interaction of neurological development and the environment in the formation of personality, behavior, and mental illness (Casey, Oliveri, & Insel, 2014).

Although still rather new, the RDoC project represents a viable approach to addressing many problematic issues currently arising from the use of the *DSM-5* and *DSM*-based diagnostic criteria. The use of dimensional rather than categorical or diagnostic measures may provide greater traction for discovery of brain-behavior associations. Specifically, with the framework intentionally constructed to increasingly incorporate iterative

findings from neuroscientific research, the prospects of utilizing neurotechnology for the assessment and characterization of mental disorders appear brighter, and consequently, both reliability and validity of diagnosing mental disorders are expected to increase. Moreover, the neurodevelopmental and environmental emphases of the RDoC framework are better suited to address the challenges faced when assessing young children, in whom rapid developmental changes, immediate relevance of a dynamic caregiving environment, and temperamental variations are of considerable interest and importance.

However, some issues of psychiatric nosology are likely to persist even after adoption of a neuroscience-based classification system. For example, in light of recent findings from neuroscience research, human cognition, emotion, and behavior are increasingly being conceptualized to function as continuous variables, which make demarcation of what is ordered or disordered a value judgment, which would be based on the context and expectations of society. Therefore, issues such as “distinction between normality and abnormality” and “pathologization of deviant behavior” could become even more problematic. Similarly, the search for biomarkers, biotypes, and endophenotypes to serve as diagnostic criteria of psychiatric disorders is likely to (continue to) raise concerns about stigmatization and over-medicalization (Singh & Rose, 2009).

There is also continuing focus upon – and debate about – what constitutes treatment or enhancement, what measures should be applied to define and assess these characterizations, and what guidelines and policies should be developed and employed in accordance with these criteria and to direct and govern psychiatric interventions toward such practices (Giordano & Shook, 2015; Shook & Giordano, 2016). Perhaps, solutions to these issues reside in recognizing ideologies, values, standards, and contexts that influence (or, in some cases, define) those ways that scientific knowledge is acquired and employed. Such recognition will require interdisciplinary engagement of neuroscience researchers, psychiatrists, social scientists, ethicists, legal scholars, and

policymakers and will likely remain a work in progress as psychiatric classifications are proposed, established, and employed in research, clinical practice, and the social realm.

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## Conclusion

The history of the *DSM* may certainly be viewed as an attempt to utilize the existing epistemological capital of “science” and “medicine” in the classification of psychopathology. But, as Almeder (1998) has noted, considerations and concepts of science and medicine are often mutable and vary with types and level of knowledge available, cultural influence, and changes in regnant ideas and schools of thought. Each iteration of the *DSM* has provided its own framework for conceptualization and inquiry of mental illness to develop a knowledge base for future nosology. It is important to realize that current psychiatric diagnoses are, to some extent, “constructed entities” that will undergo continual refinement and modification, until such time that they are able to stand as irrefutable, and “carve nature at its joints.” Many of the controversies surrounding the *DSM-5* may be related to the concept of “disorder.” As such, we posit that it would be wise to consider “disorder” in Karl Jaspers’ terms as “an objective which one cannot reach since it is unending...” but which “... indicates the path for fruitful research and supplies a valid point of orientation for particular empirical investigations.” The evolution of the *DSM* illustrates that values can and often do play a crucial role in developing nosology. According to Sadler, Hulgus, and Agich (1994):

...values... determine what we select as ‘important,’ ‘crucial,’ ‘central,’ ‘decisive,’ or ‘related’ ... consequently, ‘descriptive’ statements about psychopathology issue from presupposed value stances that conceal their own deeper sources, compatibilities, and incompatibilities.

It will be worth noting which values will be given priority, importance, and address in discussion and formulation of future psychiatric nosology. Our hope is that if each iteration (or revision)

of nosologic classification improves psychiatric research and practice, and consequently the health of the mentally ill, then the eventual success of nosology as *logos* – a rational study – to accurately reflect the complex reality of psychiatric illness and the soundness of its care remains promising.

**Acknowledgments** This chapter was based upon and adapted from our previous work, Kawa S, Giordano J. A brief historicity of the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*: Issues and implications for the future of psychiatric canon and practice. *Phil Ethics Humanities Med* 6(17); (2012), with permission. The authors acknowledge support of the Children’s Hospital and Clinics Foundation (JG), and the William H. and Ruth Crane Schaefer Endowment (JG).

**Conflict of Interest** The authors declare no financial interest or any conflict of interest in this work.

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