Classification and Diagnosis Concepts

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Chapter 1

Defining Classification and Diagnosis

Psychological constructs are more enduring than diagnostic systems. This premise serves as an organizing principle underlying this text about the process of identifying children and adolescents who need a service: educational, health, mental health, prevention, monitoring, or any other type of service that promotes children's adjustment to their context of development.

Prerequisite to the process of service delivery is classification, a fundamental, continuously unfolding task that is relevant to all sciences, including the applied clinical process of making a mental health diagnosis. Biological taxonomies exist for classifying various animals and plants according to both common and distinct characteristics. Classification, due to its overarching nature, is a more important activity for a clinician to master than diagnosis—a far more restrictive term. Classification, for example, may lead to the provision of a variety of services, whereas diagnosis is designed to lead to identification and treatment of a disorder—in this text, a mental illness. Classification, the broader term, serves many purposes, diagnostic or

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otherwise, not the least of which is allowing for natural phenomena, be they disorders or theoretical constructs, to be better defined and measured to enhance our understanding of them.

Diagnosis, the type of classification that is the focus of this text, may be considered a specialized type of classification, one concerned with the categorization of diseases. Although psychiatric diagnostic processes were initiated long ago (Kamphaus, 2001), modern psychiatric diagnosis began with the work of Emil Kraepelin who proposed that a system be created for classifying mental illnesses according to their symptoms, causes (or etiologies), and course (progression of symptomatology). As in the medical sciences where conditions such as heart disease and high blood pressure are classified as separate diseases in psychiatric classification, disorders such as borderline personality disorder are classified separately from schizophrenia or panic disorder.

In spite of various objections and its imperfect nature (Kamphaus & Frick, 2002), the majority of mental health professionals concur that the basic purposes and inherent advantages of classification support its use and further development (Cantwell, 1996). Related to this assumption, Blashfield (1998) described five primary purposes for classification in psychopathology that also serve to illustrate its utilitarian properties:

1. Creation of a common professional nomenclature
2. Organization of information
3. Clinical description
4. Prediction of outcomes and treatment utility
5. The development of concepts upon which theories may be based

These goals, although sound and pragmatic, have yet to be achieved by any one classification system. The predominant diagnostic classification schemes do attempt to provide a common nomenclature, organize information, and clinically describe syndromes or patterns of behavior. Nevertheless, the reliability and validity of prevailing models have not been demonstrated adequately, nor has a clear line of research established expediency with regard to treatment and theory development (Kamphaus & Frick, 2002).

Categorical and Dimensional Methods

Two primary models of diagnostic classification have been presented in the psychopathology literature, categorical and dimensional. Categorical models are dichotomous, inferential in nature, involving the identification of qualitative differences in behavior that are based on clinical observations and careful history taking. The dichotomous nature of categorical approaches deems that an individual either has or does not have a disorder as long as predetermined criteria for that disorder are met. To date, categorical approaches such as the *Diagnostic and Statistical Manual of Mental Disorders, fourth edition, text revision* (*DSM-IV-TR;* American Psychiatric Association, 2000) and the Individuals with Disabilities Education Act (IDEA) are used most frequently in health and education, perhaps due in part to tradition and relative ease of application.

In comparison, dimensional classification methods are quantitative and empirical in nature, adopting the assumption that there are a number of behavior traits that all individuals possess in varying degrees that exist along a continuum. These traits or dimensions of behavior are typically derived from measures (e.g., behavior rating scales) through the use of multivariate statistical procedures such as cluster analysis, latent profile or class analysis, or factor analysis (Kamphaus & Frick, 2002). It has not been clearly demonstrated that either of these classification approaches optimally meets the criteria for the five purposes of diagnostic classification as outlined by Blashfield (1998).

The relative value of categorical or clinical-inferential, for example, the *DSM-IV-TR* (American Psychiatric Association, 2000) and dimensional or empirical, for example, Edelbrock and Achenbach (1980), classification methods has been frequently debated (Fletcher, 1985). However, an increasing body of literature has described the advantages of dimensional models (LaCombe, Kline, Lachar, Butkus, & Hillman, 1991). For example, Achenbach and McConaughy (1992) noted that the yes/no nature of categorical methods does not necessarily account for children whose problems vary in degree or severity. As a result, the shift between "normalcy" and psychopathology cannot be well understood with categorical methods since most high prevalence problem behaviors in children, such as inattention and

hyperactivity, are not classifiable when below diagnostic threshold levels. Substantial evidence is emerging to suggest that child behavior problems such as inattention, hyperactivity, depression, and conduct problems, in fact, fall along continua in the population. Therefore, the continuous nature of these child behaviors is more appropriately measured with dimensional scales (Hudziak et al., 1998) rather than with categorical systems (Scahill et al., 1999).

Although not fully incorporated in popular diagnostic schemes, empirically based dimensional classification approaches have demonstrated their usefulness in the study of psychopathology. For example, dimensional approaches have demonstrated more predictive validity than categorical approaches (Fergusson & Horwood, 1995), as well as statistical reliability (Cantwell, 1996). Such methods also minimize the need for clinical judgment and inference (Haynes & O'Brien, 1988), provide greater sensitivity to the presence of comorbid conditions (Caron & Rutter, 1991), and have the ability to depict multiple symptom patterns in a given individual simultaneously (Cantwell, 1996). Further, and perhaps most importantly, the use of dimensional, person-oriented approaches to identify subtypes or clusters of individuals can lead to more efficient, streamlined subtype-specific intervention and prevention services (Achenbach, 1995; Bergman & Magnusson, 1997).

In one sense, a dimensional approach to classification can be viewed simply as another means of translating underlying latent traits into categories (e.g., internalizing/externalizing behaviors), thereby offering only a communicative alternative to existing classification schemes such as the *DSM-IV.* This point of view suggests that the ultimate goal of classification or diagnosis, the categorization of individuals into homogeneous groups with similarities, is shared by proponents of both categorical and dimensional methods, and arguments that these approaches are entirely distinct are simplistic.

Psychiatric Diagnostic Classification

Psychiatric classification models seek to place disorders into discrete categories as is characteristic of the *DSM-IV-TR.* The *DSM-IV* was pub-

lished in 1994 and is currently the most widely used method of psychiatric classification in the United States (Beutler & Malik, 2002). The first *DSM* was published in 1952 by the American Psychiatric Association and included three main categories of psychopathology: mental deficiency, functional disorders, and organic brain symptoms. In 1968, the *DSM* was revised to include 11 major diagnostic categories (*DSM-II*) and in 1980 the third edition introduced a multiaxial system, the inclusion of explicit criteria, and many unsubstantiated theoretical inferences were removed. The *DSM-III-R* (American Psychiatric Association, 1987) emphasized empirical literature and the *DSM-IV* continued with this emphasis on empirical findings (Scotti & Morris, 2000). The *DSM-IV* reportedly made modest improvements in the reliability and validity of several diagnostic categories, but reliability estimates for many disorders of childhood and adolescence remain inadequate (Nathan & Langenbucher, 1999). The *DSM-IV* is recognized to be a categorical or taxonomic system of classification (Arend, Lavigne, Rosenbaum, Binns, & Christoffel, 1996) and is concerned with classifying mental disorders—significant distress, functional impairment, and/or special risk (House, 1999). This approach uses rules to determine membership in a category. Using these decision rules, disorders are seen as being either present or absent (Blashfield, 1998). While it appears that improvements have been made in the *DSM,* some have asserted that the categorical nature of this system has been shown to impede progress toward a more accurate system of classification (Jensen et al., 1993).

Characteristics of Psychiatric (Categorical) Diagnosis

First, diagnosis is made based on the presence of marker symptoms or deviant signs that define a syndrome (*DSM-IV-TR,* American Psychiatric Association, 2000). Each diagnostic category has a characteristic and unique set of symptoms or signs that are qualitatively different from "normal." Cancer cells, for example, are cells that differ qualitatively from healthy ones. Similarly, paranoia differs from caution, conducts disorder from mischief, anxiety disorder from occasional worry, clinical depression from normal

bereavement, and social phobia from shyness, in quality. Qualitative differences are assessed via structured diagnostic and unstructured patient interviews, and history taking. An adolescent patient may be seen by a clinician for tearfulness and crying, loneliness, inability to sleep, and poor appetite accompanied by weight loss. These are all potential symptoms of depression but through historical interview it could be determined that their duration has been about 10 days and their onset was abrupt. Upon still further questioning, the clinician may discover that the patient broke off a long-term romantic relationship that apparently precipitated these problems. Although the patient experiences waves of sadness, she or he continues to enjoy the company of friends and has a generally optimistic outlook. In fact, the patient may state that she or he desires some medication just until the feelings of sadness pass. She or he is mostly concerned now about getting some sleep in order to be able to function better at work or school. This patient's expectations for improvement belie the presence of "negative affectivity" that is commonly associated with depression (Kamphaus & Frick, 2002). As the patient's history unfolds, it becomes increasingly clear that the quality of this individual's symptomatology differs from that of depression in duration and intensity, thus causing the clinician to be unwilling to classify or diagnose this symptom pattern as a case of depression.

Formal psychometric tests are less valuable for identifying qualitative differences in symptomatology necessary for making a *DSM* diagnosis leading to dependence in psychiatric diagnosis on interview methods of assessment. The mental status examination (see Kamphaus & Frick, 2002) is characteristic of psychiatric diagnosis and is used as a means for identifying qualitative differences in symptomatology. It is not "scored" or submitted to any type of quantitative analysis; not even the mathematical process of addition of symptoms. The method uses questions to clarify the nature of symptomatology. A child patient, for example, may report that he or she "hears things." The child might remark that, "I hear someone telling me to do bad things." After further questioning the clinician may learn that the child often worries about the bully in his classroom who threatens him in an effort to convince him to be disruptive in

class. This child's explanation for "hearing voices" is not unlikely given that psychotic disorders are relatively rare in the population. This "innocent" response is therefore qualitatively different than a case of hearing voices that would suggest the presence of psychotic symptomatology in childhood. Such a response would be something like, "I hear terrorists telling me to kill my friends. I'm scared because they will not stop. I hear this all day long most days. I can't get it out of my head. I am afraid I will hurt someone because I think that if I do this then maybe they won't talk to me any more." Interview methods are ideal for clarifying the meaning of, and qualitative differences in, symptomatology.

Psychiatric syndromes are also mutually exclusive (e.g., mental retardation and autism, versus Asperger's syndrome) but potentially comorbid or co-occurring (e.g., diabetes and heart disease, Attention-Deficit/Hyperactivity Disorder and Tourette's syndrome, Conduct Disorder and depression). The assumption of distinctness is consistent with another assumption of psychiatric diagnosis—syndromes are presumed to be pathogenically distinct as well (i.e., to have differing etiologies). Not only do syndromes have presumed differing etiologies, they also have differing outcomes (e.g., morbidity differs significantly for stomach ulcers versus stomach cancer), and prognoses (e.g., schizophrenia is more debilitating versus dyslexia). Depression has a higher morbidity rate than dyslexia due to the higher risk of suicide associated with the former. In the case of psychiatric diagnosis, other outcomes may substitute for the rare occurrence of death. School drop out, criminality, substance abuse, and elevated risk for developing a more severe psychiatric disorder may serve as proxies for morbidity. Prognoses may differentiate mental health disorders on the basis of chronicity and intensity of services needed. Mental retardation and autism are examples of disorders with greater chronicity and continuing impairment, whereas phobias and separation anxiety disorder may not be chronic, nor are they as likely to require residential care or other more invasive services.

Psychiatric diagnosis, like general physical diagnosis, is categorical or dichotomous in that one either has the disorder or not (e.g., Attention-Deficit/Hyperactivity Disorder [ADHD], irritable bowel syndrome, clinical depression). One cannot be mildly, moderately,

or severely pregnant, for example. Severity of symptoms along a continuum is not directly measured although it is "estimated" by the clinician. An exception is that the global assessment of functioning (GAF) code of the *DSM* system is used by the psychiatric clinician to rate severity of functional impairment. More commonly, however, *DSM* criteria do not exist to differentiate "severe" from "mild" ADHD, Conduct Disorder, generalized anxiety disorder, and so on.

Severity is not easily determined when interview methods are used as the primary method for diagnosis because they are not as amenable to quantitative analysis, an essential characteristic of a severity scale. Some aspects of physical diagnosis are amenable to quantitative measurement and the disorder can be rated by severity. Vision, disorders of height, and obesity are some examples. Generally, however, the *DSM* and IDEA classification systems do not apply diagnoses that are either based on or present classifications for severity.

Severity of psychiatric disorder is established readily when psychometric tests are incorporated into the diagnostic criteria. Mental retardation, for example, is not diagnosed based on qualitative criteria or via interview methods (Kamphaus, 2001). The presence of intelligence and adaptive behavior test scores are adequate to the task, and progressively lower test scores are associated with different comorbidities, outcomes, prognoses, and needs for care (American Association on Mental Retardation [AAMR], 2002). Mental retardation diagnosis provides an example of the progress of the development of the *DSM* criteria, toward incorporation of psychometric tests and other well-documented scientific improvements in classification.

Subtyping is common in psychiatric diagnosis. For example, there are numerous types of cancer, three types of ADHD, subtypes of depression, and early versus late onset conduct disorder. Diagnosis then sometimes resembles a decision tree where one must decide on the condition and within that, the subtype that best describes the individual's symptom cluster, age of onset, or other distinctive characteristics.

The extent to which subtyping of mental health diagnoses is of value is still open to debate. There is, for example, a large literature on subtypes of learning disabilities based on methods that have formed subgroups of individuals with different types of academic

disabilities (Kamphaus, 2001). Controversy remains regarding the differentiation of ADHD subtypes as well (Kamphaus & Frick, 2002), although Scahill et al. (1999) have shown differences in functional impairment and comorbidity for children beneath and beyond the *DSM* diagnostic threshold for ADHD. Given that subtypes are at their essence new "types" or diagnoses that lie within diagnostic categories, their validity will likely always be more difficult to establish with clarity, especially in light of any lack of evidence of validity for the overall diagnostic category of which the subtype is likely to be a member. If, for example, the learning disability diagnostic category remains ill-defined (Dombrowski, Kamphaus, & Reynolds, 2004), then nonverbal, written expression, and other subtypes will of necessity be difficult to validate adequately.

Differential diagnosis is emphasized in psychiatric classification, thus, there is an emphasis on "rule outs," or determining whether or not there are alternative causes for the symptom presentation of a disorder. Inattention or hyperactivity symptoms of ADHD, for example, may be caused by a variety of disorders, inattention by clinical depression and hyperactivity by mania are just some examples (C. R. Reynolds & Kamphaus, 2004). The clinician must then decide, often using a very high level of inference, the primary "cause" of the symptoms in order to make the proper diagnosis.

History taking via interview is useful for this purpose because the method is particularly well-suited to the identification of qualitative variables such as age of onset of symptomatology, and developmental course of symptomatology. Through careful history taking, the onset and course of symptoms of various disorders may be identified in order to rule out alternative causes. A case of "sudden" onset of ADHD at age 16 illustrates the value of history taking. A referred adolescent could very well display the core symptoms of the disorder, hyperactivity/impulsivity and inattention, and nevertheless not have ADHD. History taking may reveal that the adolescent had a history of high academic achievement and placement in a program for gifted and talented children until the age of 12, was popular and well-liked up to this age, and was exposed to numerous stressors at about age 12 including the death of a favorite aunt, parental divorce, change of schools, association with a new substance abusing peer group, and removal from the gifted and talented program due to sudden poor

achievement and motivation that resulted in low school marks. The sudden onset of the symptoms gathered via interview in this case and the presence of multiple stressors that coincided with the onset of symptoms of ADHD, suggest that ADHD may be effectively ruled out.

An associated practice in medical and psychiatric diagnostic assessment is that diagnosis of high frequency disorders should typically take place before the diagnosis of those with a low base rate of occurrence in the population (Kamphaus & Frick, 2002). A physician, for example, is more likely to label upper respiratory symptoms as either a common cold or influenza unless there are compelling symptoms of lung cancer such as clear laboratory findings. In the ADHD example, it may have been found that this 16-year-old is in fact experiencing symptoms of depression including suicidal ideation, anergy, anhedonia, and symptoms of conduct disorder such as lying, stealing, and insolence at school. Diagnosis of depression and conduct disorder may be warranted in this case more than bipolar disorder since the latter is of lower base rate with less prevalency among 16-year-olds in the population than is the case for adults. Bipolar disorder may eventually be diagnosed but more clinical findings will be necessary to confirm the diagnosis. Specifically, when torn between diagnostic decisions, clinicians are often advised to at least provisionally make the diagnosis of the higher frequency condition (e.g., depression) over a low frequency one (e.g., schizophrenia) to increase diagnostic accuracy.

Reliability and validity of *DSM* diagnoses tends to be lower than is characteristic of psychological tests (Sroufe, 1997; Widiger, 1992), a fact that is well known to clinicians. While interdiagnostician agreement of ADHD is very good with obtained correlations ranging from .60 to .80, this reliability is far inferior to composite scores on psychometric measures of intelligence tests that yield reliability coefficients of .95 and higher. Even child behavior rating scales completed by parents and teachers commonly have clinical scale reliabilities of .80 and higher with some scales (e.g., attention problems) having reliabilities as high as .90 (C. R. Reynolds & Kamphaus, 2004).

Overall, there are several strengths to using a categorical system, such as the *DSM*. The impact of operational diagnostic criteria in the *DSM-IV* has made it possible to increase diagnostic agreement;

improve the reporting on comorbidity, services, treatment, and outcomes; introduce rigorous diagnostic standards in research; provide an international reference system; and improve communication with consumers, health providers, and the public (Jablensky, 1999). Parsimony is another key strength of the *DSM*. This system of diagnosis provides a clear, concise description of disorders and the widespread use and familiarity with the *DSM* allows for ease of communication among professionals for consistent research and treatment development (Blashfield, 1998).

Disadvantages of a Categorical Method: According to the *DSM-IV-TR* (American Psychiatric Association, 1994), categorical classification is most appropriate when all members of a diagnostic disorder (i.e., class) are homogeneous, when the different diagnoses (i.e., classes) are mutually exclusive, and when the boundaries between diagnoses are clear. Typically, these criteria are not met when using the *DSM* as a classification tool. Individuals with the same diagnosis are likely to be heterogeneous, the boundaries between classes might be imperceptible, and different diagnoses are not completely exclusive (American Psychiatric Association, 1994). There seems to be a lack of "goodness of fit" between current categorical classification systems and "clinical reality" (Jablensky, 1999), as verified by empirical findings.

First, comorbidity is not well accounted for in categorical classification systems. There are a large number of individuals, at least one-third of current cases in the general population, who meet diagnostic criteria for more than one disorder (Wittchen, 1996). In fact, epidemiological surveys indicate that more than half of the individuals with one *DSM* diagnosis have at least one additional disorder (L. A. Clark, Watson, & Reynolds, 1995). This finding suggests that psychiatric illness is typically characterized by comorbidity, or that this current classification system fails to discriminate between disorders (Jablensky, 1999). In the anxiety and depression literature, for example, the high rate of comorbidity (up to 65%; *DSM-IV*) between the two disorders gives rise to the theory that they emanate from a "common nosological stream" (Chorpita, Plummer, & Moffit, 2000). Comorbidity seems to be the rule, rather than an exception

(Sroufe, 1997) and psychiatric systems of classification are not designed for adequate description of this co-occurrence of disorders.

Second, categorical classification systems fail to account for severity of symptoms, or quantitative differences among individuals with the same core symptoms (Kamphaus & Frick, 2002). Research suggests that there are quantitative differences in symptomatology for numerous behavioral and emotional disorders of childhood. Specifically, evidence demonstrates quantitative differences in symptoms of hyperactivity/impulsivity, attention problems, conduct problems, depression, and anxiety (Deater-Deckard, Reiss, Hetherington, & Plomin, 1997; Fergusson & Horwood, 1995; Hudziak et al., 1998; Hudziak, Wadsworth, Heath, & Achenbach, 1999; Nease, Volk, & Cass, 1999; Scahill et al., 1999). For example, Hudziak et al. (1999) tested whether attention problems in 2,100 children were continuously distributed in the population or categorically discrete and found that symptoms of inattention should be considered as continuously distributed. A similar study by Hudziak et al. (1998) found continuously distributed symptoms of inattention, hyperactivity, and the combination of the two in a sample of adolescent female twins.

Quantitative differences have also been found in symptoms of mood and anxiety disorders. A study by Nease et al. (1999) investigated the symptom severity of mood and anxiety symptoms and compared the degree of congruence with current *DSM* classification. This study suggested that individuals grouped by symptom severity, rather than type of symptom (as is done in the *DSM*) significantly explained differences in quality of life, independent of *DSM* diagnosis. The authors suggested that severity should be accounted for in classification models.

Third, this lack of attention to matters of severity indicates that categorical systems of classification are also not appropriate for classifying subsyndromal psychopathology (Cantwell, 1996). Scahill et al. (1999) studied the psychosocial and clinical correlates of ADHD in a community sample of 449 children and found that symptom severity was associated with higher levels of psychosocial severity. Additionally, they found that children beneath the diagnostic threshold for ADHD still possessed evidence of functional impairment in school; impairment nearly identical to children above the

diagnostic threshold (Scahill et al., 1999). Furthermore, results from a study by Hudziak et al. (1999) indicate that imposing the structure of the *DSM,* or a categorical system, on symptoms that are quantitatively distributed might not identify children with significant problems. These results point to the limitations of purely categorical systems of classification that could fail to classify, or diagnose, children who will nevertheless experience functional impairment due to the use of essentially arbitrary diagnostic thresholds, because they are not grounded sufficiently in a strong program of research.

Fourth, psychiatric classification systems do not account for normally functioning or marginally functional behavioral systems. This lapse leads to difficulty in investigating phenomena such as healthy behavioral adjustment (Jensen, Watanabe, Richters, & Roper, 1996), variations in normality, the transitions between health and disease, and the endogenous and exogenous variables that affect these transitions (Rutter & Sroufe, 2000). The study of adaptive behavior or behavioral competency, and range of behaviors are also precluded by use of a categorical classification system.

Fifth, atypical disorders, such as those frequently diagnosed as "not otherwise specified" or "other," point to the shortcomings of current psychiatric classification systems (Jablensky, 1999). The discrete nature of categorical classification does not account for individuals who do not meet specific diagnostic criteria or meet criteria for "not otherwise specified" disorders. Heterogeneity within diagnostic categories and within individuals that display mixed symptom patterns leads clinicians to question the utility and validity of the categorical approach to classification (L. A. Clark et al., 1995). Clinical trials of classifications suggest that there is an unsatisfactory match between the diagnostic criteria and the actual symptom features of patients in 18% to 22% of cases (Regier, Kaelber, Roper, Rae, & Sartorius, 1994).

A final limitation of psychiatric classification systems is their excessive reliance on clinical judgment to make complex diagnostic decisions. Most all *DSM-IV* diagnoses rely entirely or primarily on the clinician's ability to elicit, integrate, and apply complex decision rules to information in an entirely unbiased or objective manner (Jablensky, 1999). Considerable research indicates that reliance on

clinical judgment for classification purposes is inferior to purely actuarial methods (Achenbach, 1995; Dawes, Faust, & Meehl, 1989; Grove & Meehl, 1996). Clinicians are subjected to numerous biases when they engage in diagnostic decision making including: a tendency to refute disconfirming evidence, determining diagnoses before collecting all relevant data, and assigning a diagnosis with which they are most familiar (Lewczky, Garland, Hurlburt, Gearity, & Hough, 2003).

These studies highlight the growing concern that categorical classification methods, while convenient and parsimonious, inadequately represent current empirical knowledge and are insufficient to serve new research needs (Helzer & Hudziak, 2000). The categorical model of classification is based on the assumption that disorders form discrete categories. This premise contributes to a "fallacious belief that psychopathological processes constitute discrete entities, even medical diseases, when in fact they are merely concepts that help focus and coordinate our observations" (Millon, 1991). Such overarching problems with categorical classification have been cited as a major factor in hindering research in psychopathology (Arend et al., 1996).

Individuals with Disabilities Education Act

The Individuals with Disabilities Education Act (IDEA) legislation that mandates a free and appropriate public education for children with disabilities is not a diagnostic system per se, but the implementation regulations of IDEA have created a de facto diagnostic system because it is used routinely to "classify" individuals as eligible for special education or related services, or ineligible (see Table 1.1). The IDEA regulations provide definitions of a variety of disorders evident early in childhood including learning disabilities, mental retardation, and "emotional disturbance." The diagnoses of mental retardation, speech/language, ADHD, and other disorders are not well explicated in the regulations likely because these syndromes and their diagnosis are fully described in the *DSM*, American Association on Mental Retardation manual *Mental Retardation; Definition, Diagno-*

Table 1.1 **"Diagnostic" Criteria for Emotional Disturbance from the Individuals with Disabilities Education Act (1999)**

(i) The term means a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance:
  (A) An inability to learn that cannot be explained by intellectual, sensory, or health factors.
  (B) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.
  (C) Inappropriate types of behavior or feelings under normal circumstances.
  (D) A general pervasive mood of unhappiness or depression.
  (E) A tendency to develop physical symptoms or fears associated with personal or school problems.

(ii) The term includes schizophrenia. The term does not apply to children who are socially maladjusted, unless it is determined that they have an emotional disturbance. (Federal Register, March 12, 1999, Section 300.7, p. 12423)

sis, and Systems of Care (AAMR, 2002). The IDEA regulations, however, have proved influential for the diagnosis of "Specific Learning Disabilities," and have generated considerable controversy in this regard (Dombrowski et al., 2004). The category of "Emotional Disturbance" was essentially created by these regulations. Therein lay the controversy regarding eligibility for special education and related services; the school-based equivalent of obtaining a *DSM* diagnosis that makes a person eligible for mental health treatment and reimbursement from an insurance carrier.

The "diagnostic" criteria for emotional disturbance were inspired by a 1968 study by Eli Bower of the University of California at Berkeley. In this investigation, he took teacher ratings of child behavior in an effort to form subgroups of children who exhibited behaviors so deviant from their peers that they were likely to need specialized instruction and management at school. These subgroups are basically described in the regulations quoted in Table 1.1. Dr. Bower may not have anticipated, however, that his work would be incorporated into the original version of Public Law 94-142 some years later.

The IDEA criteria for emotional disturbance have thus been controversial since their origin, due to the fact that they do not align themselves in any significant way with the *DSM* or other criteria. As displayed in Table 1.1, they are also not particularly well developed

leaving considerable room for interpretation, particularly subgroup one "an inability to learn that cannot be explained by intellectual, sensory, or health factors." This category of "disability by rule out" is particularly difficult to apply in everyday diagnostic practice in schools. Although classifications such as this one appear nearly impossible to apply, they are nevertheless applied daily by school-based multidisciplinary special education eligibility teams of psychologists, special educators, school administrators, counselors, social workers, and others. Thus, the question must be asked as to how these professionals are to apply such nebulous and unvalidated "diagnoses." The answer probably lies in substituting diagnoses or dimensions with some evidence of validity for those offered by IDEA as emotional disturbance.

The regulations do refer to the existence of a "condition exhibiting one or more of the following characteristics" suggesting that impairments or problems that do result in the application of diagnoses by some other system such as the *DSM* would be harder to justify as meeting the criteria. In addition, the condition must exist "over a long period of time and to a marked degree," suggesting that transient problems due to bereavement, and a mental health disorder of a known mild symptomatology such as adjustment to parental divorce, would not be sufficient to warrant an IDEA "diagnosis." Finally, the condition must be one that "adversely affects a child's educational performance," which may indicate that a child with clinical depression or ADHD, who is in the gifted education program and receiving marks of A would be difficult to classify under IDEA.

With these prescriptions in mind, the remaining five categories of emotional disturbance become somewhat easier to apply. Even the ill-defined first criterion is not met in the absence of a condition that is not diagnosable by any other diagnostic system such as the *DSM,* and is associated with significant behavioral or emotional impairment, that is long standing and accompanied by substandard educational performance.

The second and third areas of eligibility involve an "inability to build or maintain satisfactory interpersonal relationships with peers and teachers," or "inappropriate types of behavior or feelings under normal circumstances." Conditions that may be associated with such impairment may include schizophrenia and autism spectrum disor-

ders. The fourth area of eligibility requires "a general pervasive mood of unhappiness or depression," and the fifth area, "a tendency to develop physical symptoms or fears associated with personal or school problems." *DSM* diagnoses of major depression, bipolar disorder, and somatiform disorders may meet these requirements. The IDEA criteria do specifically acknowledge that schizophrenia is a qualified disorder, however, the relationship of other *DSM* diagnoses to IDEA has to be inferred. The lack of prescription is negative in the sense that clinicians do not have the specific guidance that they desire to ensure compliance with IDEA. Alternatively, little specificity provides the flexibility to utilize new diagnostic categories as they are identified or old ones that are significantly modified by research.

The IDEA explicitly states an important exclusionary criterion as well by stating that "social maladjustment" in the absence of an emotional disturbance, does not constitute an emotional disturbance that makes a child eligible for special education and related services. Social maladjustment introduces yet another term and classification that does not have an agreed on definition. The lack of specificity of this construct further compromises the ability of the school-based clinician to make a correct classification. The introduction of this term has caused some to question whether or not *DSM* diagnoses of Conduct Disorder or Oppositional Defiant Disorder constitute cases of social maladjustment, emotional disturbance, or both. The inclusion of these "disruptive" behavior disorders in the *DSM* suggests that they are clinical syndromes and not forms of social maladjustment; a social rather than mental health condition.

In effect, the IDEA system is another categorical classification system that requires diagnoses from another categorical system, the *DSM,* to classify an individual as having an emotional disturbance. In this sense, the IDEA and *DSM* systems are hierarchically related to one another.

Dimensional Methods of Classification

The dimensional approach to classification assumes that behavior does not occur dichotomously, but rather along a continuum. Descriptive

variables such as symptoms, behaviors, and/or scales from a rating scale are collected and combined with other correlated variables to form a dimension. Thus, the dimension summarizes information about the descriptive variables into an abstract, higher order variable (Blashfield, 1998). There are a smaller number of dimensions than descriptive variables that should account for much of the systematic reliable variance that would be present if using the larger number of variables (Blashfield, 1998). A major assumption of this dimensional model is that individuals can exist anywhere along these dimensions (Scotti & Morris, 2000). Dimensional models classify individuals based on quantification of attributes and best describe behaviors that do not have clear boundaries and are distributed continuously (American Psychiatric Association, 1994).

Dimensional classification stands in direct contrast to categorical classification systems. Dimensional methods are also not widely used or sanctioned for use to diagnose mental disorders, because they have not been fully incorporated into either the *DSM* or IDEA classification systems. These latter classification systems have dominated diagnostic practice in the United States and elsewhere.

The unit of measurement in dimensional systems is the scale not the symptom or item level of measurement. Dimensional systems that have their roots in psychometric assessment and the attempt to measure "latent traits" or "latent constructs" made up of multiple indicators (i.e., items) or behaviors (Kamphaus, 2001; Kamphaus & Frick, 2002). These traits in turn are thought to be distributed dimensionally in the population as continua, thus making it possible to assess "severity" or the amount of the latent trait possessed by an individual. In this way of thinking, depression, anxiety, hyperactivity, and social withdrawal are not considered disorders but latent constructs that are more or less characteristic of individuals. Children may have less depression than average, modal depression, or considerably more of the depression construct than average; enough to cause functional impairment in an important developmental context such as school.

Norm referencing is used to define deviance or the level of a construct assessed in psychometric assessment. In other words, the

standard for deviance is not set a priori by theory, but rather it is set a posteriori by comparing an individual to a population of interest. Norm referencing is powerful in that it allows a clinician to state with considerable accuracy the level of the construct possessed by a child. In comparison to saying the child has clinical depression as defined by the *DSM*, dimensional classification allows the clinician to say that the child's depression is equal to our worse that 70%, 80%, 98%, or 99% of children of the same age. These percentile ranks provide definitive answers to parents' or others' questions about the severity of a child's depression.

Dimensional assessment methods such as child behavior rating scales also typically assess adaptive traits or competencies as part of the classification process (C. R. Reynolds & Kamphaus, 2004). A child's classification depends not only on the presence of psychopathology but also on the absence of important competencies. In this way dimensional assessment is similar to some aspects of physical assessment. A child, for example, may be diagnosed as having a growth disorder if his or height is insufficient in comparison to same age peers, or hearing is inadequately developed.

The collection of evidence of reliability and validity is emphasized to a greater extent in dimensional assessment. Dimensional assessment scales such as the MMPI-A have known evidence of reliability and validity allowing clinicians to estimate the amount of error associated with a classification. If, for example, a depression scale has an internal consistency coefficient of .90, the clinician knows that the classification of depression at or above the 98th percentile rank has a 10% error rate associated with it and 90% reliable variance. The specification of error for *DSM* or IDEA diagnoses by contrast is not as readily obtained or included in written or oral communication by clinicians.

Overall, dimensional measures require less inference on the part of the diagnostician. If a child scores highly on a dimensional scale the construct is possessed in abundance unless there are clear contraindications. Using height as an example again, there is little reason to suspect problems with the ruler unless the child was standing on her or his toes or slouching considerably.

Advantages of Dimensional Methods of Classification

Dimensional methods account for many of the shortcomings of categorical methods of classification. First, dimensional methods more adequately portray the agreement among many research findings supporting the notion that symptomatology for children and adolescents is dimensionally distributed. Research suggests that children who qualify for diagnoses are quantitatively different (Sroufe, 1997) and that these quantitative differences are of greater import than qualitative differences for classification purposes (Deater-Deckard et al., 1997). Furthermore, it has been argued that knowing the exact nature of disorder may be less important than assessing for the severity of dysfunction (L. A. Clark et al., 1995). Dimensional classification models are in accordance with research regarding quantitative differences and take severity into account by calculating the individual's deviance from the norm.

Second, the use of dimensional classification methods minimizes many of the problems associated with the diagnosis of comorbidity and atypical, mixed, and not otherwise specified categories (Westen, Heim, Morrison, Patterson, & Campbell, 2002). Dimensional methods report clinical symptom presentations that might be subthreshold, comorbid, or atypical in a categorical system of classification, thus communicating a wider range of information.

Third, dimensional systems increase the reliability and validity of diagnosis (American Psychiatric Association, 1994). Evidence suggests that there are not true, or clinically meaningful, qualitative points where individuals should be categorically separated, or "diagnosed" (Sroufe, 1997; Widiger, 1992), supporting the need for dimensional methods. When quantitative symptoms are artificially converted to a dichotomous, categorical scale, reliable and valid information is lost (Widiger, 1992). Therefore, reliability and validity are increased by using a set of scores examined through factor analysis and other statistical approaches (Arend et al., 1996), and by not arbitrarily forming dichotomous variables from continuous variables (Westen et al., 2002).

Disadvantages of Dimensional Methods of Classification

Limitations of dimensional models of classification are also apparent. These limitations include descriptors that are less concise and familiar to researchers and clinicians, thus limiting the ease of communication afforded by categorical systems. However, the description offered by psychiatric categorical systems might be misleading because they will not always recognize the complexity that exists within individuals (Widiger, 1992). Another limitation of dimensional methods is that agreement has not been reached as to the optimal dimensions that should be used for classification purposes (American Psychiatric Association, 1994). Furthermore, dimensional methods that require inferential statistics and computational methods might prove cumbersome and more difficult to understand than a categorical name. To date, dimensional methods have been rejected as an alternative to categorical methods due to issues such as clinical utility and lack of consensus (L. A. Clark et al., 1995).

There continues to be an inadequate number of studies that directly examine the relationship between categorical and dimensional classification systems (Arend et al., 1996). It has been suggested that categorical methods might be more useful for some syndromes, while dimensional methods might better explain others (Meehl, 1995). A study by Arend et al. (1996) compared categorical and dimensional approaches to classification in preschool children and failed to provide sufficient evidence to suggest one approach over the other. As there are significant advantages and disadvantages of both categorical and dimensional approaches to classification, and superiority among the systems has not yet been unequivocally established, it has been recommended that the systems be used in combination to learn the strengths and weaknesses of each system (Mattison & Spitznagel, 1999; Widiger, 1992). However, issues such as comorbidity continue to produce complicated results when the two systems are used together, and neither classification method may adequately deal with the issue of comorbidity (Nathan & Langenbucher, 1999).

Combining Categorical and Dimensional Diagnostic Methods

The forgoing discussion of categorical and dimensional approaches to classification is necessarily oversimplified in order to draw conceptual distinctions between research traditions. The *DSM* system, for example, has increasingly adopted dimensional assessment practices with each new edition. The *DSM-IV-TR* provides lists of symptoms with "cut scores" beyond which diagnoses of ADHD or several other disorders are made. In fact, in the case of ADHD, the diagnosis is almost purely quantitative and dimensional, in that the nature of the specific symptoms of hyperactivity/impulsivity and inattention is not as important for making the diagnosis as the number of symptoms acknowledged by the parent or child reporter. This methodology of symptom counting and derivation of cut scores associated with the presence of functional impairment, with more emphasis on the number than type of symptoms represents the influence of dimensional, quantitative, and psychometric methods on the popular psychiatric nosology.

This rapprochement between methods has been a long time in the making, having its roots in "composite" models of classification espoused by Skinner (1981) and others. According to Skinner,

> *The more complex structures offer considerable potential for the integration of seemingly disparate theories of abnormal behavior. For instance, the debate over dimensions versus categories has generated a heated controversy throughout the history of psychiatry. . . . Hybrid models, such as the class-quantitative structure, may prove fruitful for integrating the distinctive merits of each approach. . . . Perhaps a real breakthrough in our understanding of psychiatric disorders awaits the skillful use of composite models. (p. 72)*

Although the focus of this book is on the practical enterprises of classification and diagnosis, the clinician would be disserved by merely offering yet another manual for using the *DSM* or IDEA. Given the eventual changes in diagnostic systems, and their history of significant change from version to version, the clinician is best served by developing a deeper understanding of how the process of diagnosis relates to the overarching process of classification, and the

need to continually improve both processes. For these reasons, the clinician is advised to begin to anticipate changes in diagnostic systems based on current and previous trends, the most promising one being the development of composite models of classification that have been advised for decades, are partially incorporated in the *DSM*, and capitalize on diverse views of classification science.

There is a continuing desire to take the process of diagnosis beyond the realm of description, to the point of understanding, by integrating theory with classification research (Skinner, 1981). This point of view was echoed in the opening sentence of this book where it was suggested that constructs such as anxiety, depression, hyperactivity, and so on, are more enduring than versions of the *DSM* or other classification systems. Theories of these constructs should inform classification research which, in turn inform theory in a continuing interplay that pushes the boundaries of the fields of psychopathology and classification science forward in productive directions (Skinner, 1981).

With humility about the current state of diagnostic system development and knowledge of psychopathology, the reader is advised to begin the diagnostic process by developing an understanding of both construct theory and classification. Each chapter in this volume aims to integrate the two. In addition, each succeeding chapter recommends currently accepted categorical and dimensional methods for diagnosing each disorder or class of disorders under consideration.

A Composite Diagnostic Model

First, the construct, diagnosis, or pathologies under consideration should first be defined based on theory because theories influence the choice of assessment methods, and the relative importance of various methodologies for making a diagnosis or classification. The diagnostic process represents a case of concept mapping where the clinician determines the fit between their theory of a disorder, the assessment results collected, and a diagnostic system template for disorder.

If, for example, one adopts the theory that ADHD is comprised of two core sets of symptoms that are continuously distributed in

the population (Kamphaus & Frick, 2002), then an assessment of these dimensions takes on importance for assessment design. The inattention and hyperactivity/impulsivity core symptoms of ADHD, like several other important constructs, are clearly more amenable to dimensional assessment than some other symptoms.

Childhood disorders that are related to the well documented dimensions of externalizing and internalizing disorders are differentiated well by dimensional methods and measures of these constructs (Achenbach & Edelbrock, 1978). The disorders related to these constructs, with symptoms that are known to be distributed as continua in the population are:

- Inattention (Hudziak et al., 1999; Scahill et al., 1999)
- Hyperactivity/impulsivity (Barkley, 1996; Deater-Deckard et al., 1997)
- Conduct problems, defiance, and oppositional behaviors (Fergusson & Horwood, 1995; Hinshaw & Anderson, 1996)
- Anxiety and somatization (*DSM-IV;* American Psychiatric Association, 1994)
- Depression (Hammen & Rudolph, 1996)
- Learning disability (Dombrowski et al., 2004)
- Mental retardation (Kamphaus, 2001)

Disorders associated with these constructs or combinations of them should emphasize assessment via methods designed to assess quantitative differences such as the ubiquitous and practical behavior rating scales (Hart & Lahey, 1999).

Still other disorders differ qualitatively from normality like schizotypy and schizophrenia (Beauchaine, 2003). These disorders require the assessment of individual deviant signs (symptoms) rather than aggregating symptoms into dimensions in order to produce a score. Similarly, substance abuse disorders are best assessed by collecting specific information about the type and frequency of inappropriate use of substances, and eating disorders by collecting information about deviant eating behaviors. A theory of schizophrenia may posit that patients with this disorder display qualitative differences in social interactions, thinking, and affect that influence

adjustment. This theoretical conceptualization dictates that interview and other methods of assessment be used to document the existence of deviant signs indicative of the disorder.

Second, assessment methods are selected based on theory and current scientific understanding of the syndrome under consideration. Disorders that are better represented quantitatively would benefit from dimensional or psychometric assessment methods such as:

- Behavior rating scales completed by teachers and parents
- Self-report inventories of constructs of interest such as depression, anxiety, hyperactivity, inattention, and conduct problems
- Formal cognitive tests of intelligence and academic achievement
- Tests of adaptive behavior and related behavior competencies and skills

Measures of individual symptoms and qualitative factors associated with a diagnosis could include:

- Structured diagnostic interview schedules
- Unstructured or semi-structured interviews and mental status examinations
- Collection of symptom, medical, educational, cultural/linguistic, and other history
- Classroom observations, structured observation schedules, responses to projective stimuli, and clinical observations
- Laboratory assessment such as serum alcohol content and body weight

Third, data are compared to the known dimensional and symptom characteristics of a disorder to determine match or mismatch to the a priori theory of the disorder or to a template offered in a diagnostic system. These processes are not identical, although they often are considered the same in everyday practice. One may make a diagnosis consistent with theory that is inconsistent with a diagnostic system if theory and science has outpaced the diagnostic system. This scenario is likely given that science and theory development continue while a diagnostic system remains stagnant while waiting

to be updated. It is therefore a certainty that clinicians may make diagnoses that are either not included in the *DSM* or inconsistent with the *DSM* criteria since the *DSM* was last fully revised in 1994. Making the diagnosis of auditory processing disorder or bipolar disorder for a 5-year-old is not unlike "off-label" prescribing of medications. Hence, there is a constant tension between the pace of theory development based on scientific findings and the classifications offered by diagnostic systems.

These three processes of theory specification, assessment method selection, and data collection based on theory, and matching of findings to the a priori theory or to a diagnostic system, are demonstrated in the chapters that follow for a variety of disorders of childhood.

Conclusion

Diagnosis is a specialized type of classification with the latter taking on increased importance for the work of mental health service providers of all professions but particularly for psychiatrists and psychologists who have done much of the "diagnosing" historically. There is far more interest today in classifying children as "healthy," "resilient," "at-risk," and "subsyndromal," than was the case previously.

Related to the increased focus on the broader purpose of classification is the improved appreciation for the fact that much of children's behavior patterns and emotional tendencies are continuously distributed in the population, not unlike the constructs of intelligence and academic achievement. Granted, some of these distributions are quite skewed (e.g., conduct problems) but there are nevertheless meaningful differences in severity and degree of health along the distribution of these constructs. Accompanying this knowledge is an increased dependence on the use of behavior rating scales and related technologies for the classification and diagnosis of children (Hart & Lahey, 1999).

Although nascent there is an increased interest in using theory to guide the assessment, classification, and diagnostic processes. Whether formally acknowledged or not, all clinicians enter into the

assessment process with a guiding theory. Clinicians, for example, do not emphasize the use of laboratory measures (e.g., blood tests) for the assessment of conduct disorder because the biological locus of such problems is not yet well established.

The chapters in this volume reflect all three of these trends. Each chapter discusses relevant theories of each disorder or class of disorders, uses theory to map an assessment strategy, defines the constructs or dimensions of interest, and guides the practitioner through the processes of diagnosis and a variety of other classification decisions depending on the syndrome.