Developmentally Sensitive Diagnostic Criteria for Mental Health Disorders in Early Childhood

The Diagnostic and Statistical Manual of Mental Disorders—IV, the Research Diagnostic Criteria—Preschool Age, and the Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood—Revised

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As the infant mental health field has turned its focus to the presentation, course, and treatment of clinically significant mental health disorders, the need for reliable and valid criteria for identifying and assessing mental health symptoms and disorders in early childhood has become urgent. In this article we offer a critical perspective on diagnostic classification of mental health disorders in young children. We place the issue of early childhood diagnosis within the context of classification of psychopathology at other ages and describe, in some detail, diagnostic classifications that have been developed specifically for young children, including the Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood (DC:0–3R; ZERO TO THREE, 2005), a diagnostic classification for mental health symptoms and disorders in infants, toddlers, and preschoolers. We briefly outline the role of diagnostic classification in clinical assessment and treatment planning. Last, we review the limitations of current approaches to the diagnostic classification of mental health disorders in young children.

Keywords: psychopathology, diagnosis, infant mental health, nosology, *DC:0–3R*

It has been difficult for us as a society to recognize suffering in infancy and early childhood. Recent history provides dramatic examples of this fact. In the 1940s, using films that movingly showed infants' distress, René Spitz described infantile grief (anaclitic depression) and other forms of infantile suffering arising from emotional deprivation (Spitz, 1945, 1946a, 1946b). Nonetheless, the general implication of Spitz's work was subject to doubt and strong criticism for some time (see the controversy about the validity of his descriptions and disputes about developmental testing that were waged in *Psychological Bulletin*—Pinneau, 1955; Spitz, 1955—and the historical review of the controversy in Emde, 1983). The medical community's lack of recognition of child maltreatment until the 1960s (Helfer & Kempe, 1974) is another example of our reluctance to recognize young children's suffering.

Resistance to children's emotional and physical suffering has not been confined to early childhood. Pediatric depression was not recognized as a valid psychiatric disorder until the 1970s, and then only at the end of the decade was it included in textbooks of psychiatry (Cytryn, 2003; Cytryn & McKnew, 1980). Over the last 40 years, there has been an explosion of knowledge about the identification and treatment of mental health disorders in older children (first adolescents, then school-age children; Angold & Costello, 2009). The relatively young field of infant mental health now has the opportunity to address these same issues in infants, toddlers, and preschool children.

The early childhood mental health field emerged from the growing recognition that very young children experience impairing mental health problems that warrant social

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and clinical intervention (Call, Galenson, & Tyson, 1983, 1984; Fraiberg, 1980; Minde & Minde, 1986; Rexford, Sander, & Shapiro, 1976). Initially, the field's focus was on infants and toddlers, but the infant mental health field now spans the period from birth through age five years. Our use of the term *infant mental health* in this article refers to infants, toddlers, and preschoolers. Currently, our understanding of the nosology, epidemiology, assessment, and treatment of most mental health symptoms and syndromes in early childhood lags far behind our knowledge about mental health problems and their treatments in school-age children and adolescents (Egger & Angold, 2006b). It is only recently that programs of research have begun to apply standardized nosologies and measurement approaches familiar from the study of older children to the study of early childhood psychopathology. As the infant mental health field has turned its focus to the presentation, course, and treatment of clinically significant mental health disorders, the need for reliable and valid criteria for identifying and assessing mental health symptoms and disorders in early childhood has become urgent.

In this article, we offer a critical perspective on diagnostic classification of mental health disorders in young children. We place the issue of early childhood diagnosis within the context of the classification of psychopathology at other ages and describe in some detail diagnostic classifications that have been developed specifically for young children. We briefly outline the role of diagnostic classification in clinical assessment and treatment planning. Last, we review the limitations of current approaches to the diagnostic classification of mental health disorders in young children.

Diagnostic Classification of Mental Health Disorders

Current psychiatric diagnostic manuals, including the *Diagnostic and Statistical Manual of Mental Disorders* (4th edition; *DSM–IV–TR*; American Psychiatric Association, 2000) and the *International Classification of Diseases—10* (*ICD–10*; World Health Organization, 1994), present systemized classifications of mental health disorders and guidelines for identifying symptom-level and diagnostic-level criteria. In these phenomenology-based, rather than etiology-based, classifications of psychopathology, a disorder is a syndrome characterized by a distinct pattern of symptoms at specified levels of intensity, frequency, duration, and/or onset age, and other variables. The utility of a diagnostic nosology depends upon whether the criteria can be measured reliably and whether diagnostic distinctions validly define (a) the boundaries between health and illness (or, in other words, normative variation and clinically significant syndromes) and (b) the boundaries between individual disorders. The Robins and Guze model (Robins & Guze, 1970) for validation of psychiatric disorders (applied to adult psychiatric disorders) was expanded by Cantwell and Rutter (1994) to address the validity of disorders in childhood. Cantwell and Rutter's model for validation starts with clear definitions of the clinical phenomenology of a disorder—both the core symptoms and associated features. The phenomenology must be described on both the dimensional level and the categorical level and include explication of subtypes and comorbidities. Other indices of validation include associated demographic factors, psychosocial risk factors, biological factors, family environmental factors, natural history of the disorder including continuities and discontinuities across time, and the responses to intervention.

The application of the *DSM* and *ICD* classifications of psychopathology first to adolescents and then to school-age children has led to important advances in our understanding of the presentation, course, etiologies, identification, and treatment of pediatric mental illnesses. Development of reliable diagnostic and symptom-level measures and systematic approaches to validation have enabled researchers and clinicians to examine how pediatric disorders are similar to and different from adult disorders, as well as how they differ across childhood (for a review of the history of nosology and measurement in pediatric psychopathology, see Angold & Costello, 2009).

Diagnostic Classification in Early Childhood

Until recently, the infant mental health field has not, by and large, embraced the approach to psychopathology reflected in the *DSM*/*ICD* classification systems. The infant mental health field emerged from the collaboration among multiple disciplines including psychology, nursing, social work, occupational therapy, early education, and early intervention, as well as diverse medical specialties including psychiatry, pediatrics, and family practice. This multidisciplinary foundation includes a variety of views and approaches to clas-



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sification (Emde, Bingham, & Harmon, 1993). The interactions between multiple domains of the child's development, the child and his or her caregivers, family structure and functioning, environmental circumstances and influences, and different biological substrates have all been identified as critical contributors to an infant's, toddler's, or preschooler's mental health (Sameroff, 2009; Sameroff & Chandler, 1975). Dimensional, relationship-based models have been thought to better reflect these dynamic processes than categorical systems. The prevention–early intervention orientation of the infant mental health field has also focused researchers and clinicians on factors that put the child at risk for later adverse outcomes, including psychopathology, rather than on the presence of disorders themselves.

The founding perspectives of the infant mental health field have seemed to present real conceptual, empirical, and even practical challenges to the development of a reliable and valid early childhood mental health classification system. Yet, as the infant mental health field evolved, clinicians and researchers identified the need for a shared language to facilitate clinical decision making and communication and to make possible research including case-control treatment studies and population-based epidemiology. Work began to develop a nosology of early childhood psychopathology that would stay true to the founding perspective of the field.

The question facing the field was whether it is possible to define a developmentally informed classification of early childhood psychopathology that (a) focuses specifically on the full range of early onset behavioral, emotional, developmental, and relationship symptoms and disorders and impairments; (b) reflects the central orientations of the infant mental health field (e.g., multidisciplinary, relationship based, focused on early intervention and prevention); and (c) links with how psychopathology and psychiatric impairment are characterized at later ages.

Approaches to the Diagnostic Classification of Early Childhood Psychopathology

We briefly review different approaches—descriptive and dimensional—to the classification of early childhood mental health problems, and then we discuss diagnostic approaches. Our primary focus is on the revised version of the *Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood* (*DC: 0–3*; revised version, *DC:0–3R*; ZERO TO THREE, 1994, 2005), a diagnostic classification of early childhood mental health problems that aims to be developmentally appropriate and reflective of the orientations of the infant mental health field.

Descriptive Methods

Early work in infant mental health used case reports to describe clinical manifestations of young children's emotional and behavioral problems. Clinical observations from these case reports, along with psychological studies of typical and atypical development, provided the foundation for more recent attempts to characterize early onset problems as discrete symptoms and syndromes. Studies on anaclitic depression, attachment and its disturbances, and the impact of maternal depression on the social–emotional development of the infant are but a few examples of the seminal works that have described how problems present and develop in the early years of life (e.g., Ainsworth, Blehar, Waters, & Wall, 1978; Bates & Bayles, 1988; Boris, Wheeler, Heller, & Zeanah, 2000; Bowlby, 1973; Carter, Garrity-Rokous, Chazan-Cohen, Little, & Briggs-Gowan, 2001; Spitz, 1946a; Zeanah & Fox, 2004). These careful, clinically informed descriptions of phenomenology are the foundation for the development of a nosology of early childhood psychopathology. As we have already noted, the Cantwell and Rutter (1994) model for diagnostic validation begins with detailed descriptive phenomenology at the categorical and dimensional levels.

Dimensional Methods

Historically, the infant mental health field has focused on a dimensional approach to early childhood mental health problems rather than the categorical approach to psychopathology dominant in the psychiatric/medical community. We agree with Pickles and Angold (2003) that the question is not whether psychopathology is dimensional or categorical. It is both. The key question is this: When does it make sense to treat psychopathology as dimensional and when does it make sense to treat psychopathology as categorical (Pickles & Angold, 2003)? Rather than considering dimensional and categorical classifications as being in opposition, they should be seen to be inextricably intertwined. Reliable dimensional and categorical measures of psychopathology are critical for psychopathology research and clinical prac-

tice (Pickles & Angold, 2003). For example, a clinician might make a diagnosis so that he or she can decide whether to recommend treatment for a particular child. Making a diagnosis does not contradict the reality that the underlying psychopathological phenomena are continuously distributed. This same clinician then may use a dimensional scale to assess whether the child's symptoms and functioning are changing over time (Angold & Costello, 2009).

Some dimensional approaches to psychopathology emerge from the perspective of normative development with cutpoints set to characterize subsets of children at the extreme of the distribution of normative behaviors and emotions (or other phenomena such as temperament traits). From a mental health perspective, values on scales above a predefined cutpoint represent problematic (e.g., atypical, clinically significant) behaviors (an example of a dimensional measure of early childhood emotional and behavioral problems is the Child Behavior Checklist 1.5–5, which can be used with children as young as 18 months; Achenbach & Rescorla, 2000). Dimensional scales may also measure the presence and severity of specific aspects of psychopathology (an example of such a measure is the Spence Preschool Anxiety Scales; Spence, Rapee, McDonald, & Ingram, 2001). Scalar measures are very useful in identifying broad domains of problems, in showing how an individual child's behaviors compare with those of other children of the same age, and for identifying targets for treatment and monitoring the effectiveness of interventions. However, even scales that specifically index symptoms in a diagnostic classification such as the *DSM* (e.g., the Early Childhood Inventory—4; Gadow & Sprafkin, 1997, 2000; Gadow, Sprafkin, & Nolan, 2001; Sprafkin & Gadow, 1996) do not have the level of specificity about the intensity, frequency, duration, or onset of specific symptoms that is required to make diagnoses. Furthermore, although they provide good coverage of common symptoms, most do not include rare but potentially significant symptoms (e.g., suicidality).

Diagnostic Systems

DSM and ICD

The *DSM–IV–TR* (American Psychiatric Association, 2000) and the *ICD–10* (World Health Organization, 1992) are the dominant psychiatric classification systems used around the world. Because of the similarity between the *DSM* and *ICD* systems, our discussion below of the *DSM* applies to the *ICD* as well.

The *DSM* system was developed with little attention to developmental differences in the presentation of psychiatric disorders. Despite this nondevelopmental approach, the *DSM* diagnostic criteria have proved to be clinically and scientifically useful for the characterization of many mental health disorders in school-age children and adolescents. For example, the *DSM* criteria for major depressive disorder, developed from studies of adults, are reliable and valid for identifying depression in adolescents and school-age children (Cicchetti & Toth, 1998). Yet, similarities between these descriptive phenotypes of depression do not mean that adult and childhood depressive disorders are the same. In fact, significant differences in associated symptoms, factors, and outcomes between adult and childhood disorders lead to different approaches to treatment and different avenues for exploring etiology (Angold & Costello, 2009; Costello & Angold, 1996).

The challenge of applying the *DSM* criteria to very young children is greater than in later childhood because of the rapid developmental changes, the limitations of language, and the interdependence of the child with his or her caregivers that characterize early childhood. Moreover, the cognitive limitations of young children (e.g., in the realms of symbolic thought and metacognition) make it difficult to assess many of the symptoms that are tapped in *DSM* criteria (e.g., obsessions, guilt, rumination). Two different approaches to the construction of a mental health classification system for young children have emerged. One approach begins with the diagnostic classification systematized for adults and older children and then proposes developmentally appropriate modifications of these criteria. The Research Diagnostic Criteria—Preschool Age (RDC–PA; Scheeringa, 2003) reflects this "top-down" approach. The other approach "starts fresh," using scientific and clinical knowledge about infants, toddlers, and preschoolers to characterize mental health problems in a separate classification system. The first edition of the *DC:0–3* (ZERO TO THREE, 1994), developed in response to the lack of coverage for infant and preschool mental health problems in the *DSM*, primarily reflects this "bottom-up" approach. The revision of *DC:0–3* published in 2005 (*DC:0–3R;* ZERO TO THREE, 2005) reflects a combination of these two approaches. In the next sections we describe the main characteristics, strengths, and weaknesses of these approaches to the classifications of early childhood mental health disorders.

RDC–PA, a Developmentally Sensitive Revision of DSM Criteria for Preschool Mental Health Researchers

To address the limitations of the current *DSM* criteria, the American Academy of Child and Adolescent Psychiatry sponsored a work group of infant and preschool mental health researchers to develop a complementary and developmentally sensitive modification of Axis I *DSM* diagnostic criteria for use with preschool children. The group explicitly chose to focus on children two years old and older because of the paucity of data on infants. Their goal was to define clearly operationalized diagnostic criteria based on available empirical evidence. Details about the 40 published studies identified and reviewed by the work group are included in the RDC–PA appendix so that users can judge for themselves the strength of the empirical evidence underlying the proposed revisions. The modifications were published as the RDC–PA in 2003 (Scheeringa, 2003). The primary purpose of the RDC–PA was to facilitate further research on the reliability, validity, and clinical utility of developmentally sensitive criteria for Axis I *DSM* disorders; it was never intended to be a stand-alone classification system.

In general, the application of developmentally modified *DSM* criteria to children two years old or older has

been relatively useful, scientifically and clinically, in characterizing early childhood psychopathology. This is particularly true when this approach is one part of a translational program of research that combines developmental, psychological, genetic, neurobiological, cognitive, and epidemiologic approaches to the study of early childhood mental health (Egger & Angold, 2006b). Epidemiologic studies of two- to five-year-olds in the community have shown that (a) *DSM*-type symptom scales and diagnoses can be reliably measured in this age group; (b) the overall rate of impairing psychiatric disorders is about 10%, a rate remarkably similar to that found for older children and adults; and (c) early childhood disorders are as impairing, persistent, and associated with known psychopathology risk factors (e.g., poverty, family psychiatric history) as are disorders at other points in childhood (e.g., Briggs-Gowan, Carter, Skuban, & Horwitz, 2001; Briggs-Gowan et al., 2003; Egger & Angold, 2006b; Egger et al., 2006; Keenan, Shaw, Walsh, Delliquadri, & Giovannelli, 1997; Lavigne et al., 1998a, 1998b; Lavigne et al., 2001).

Since its publication, a number of research groups have used the RDC–PA criteria as the putative presentations of specific preschool psychiatric disorders, including posttraumatic stress disorder, depression, oppositional disorders, and anxiety disorders, and have begun to demonstrate the validity of these disorders (Luby, 2006). For example, over the last decade, Luby and colleagues (Luby, Belden, Pautsch, Si, & Spitznagel, 2009; Luby, Si, Belden, Tandon, & Spitznagel, 2009) have pursued a program of research that has demonstrated the concurrent and predictive validity of the developmentally modified *DSM–IV* (American Psychiatric Association, 1994) depression criteria presented in the RDC–PA in children ages three through five years. On the other hand, the *DSM* system is clearly inadequate for classification of mental health syndromes in infants and young toddlers and does not encompass the full range of psychopathology in preschoolers. The RDC–PA never aimed to address these two limitations. The *DC:0–3* arose from the conclusion that a separate, bottom-up classification was needed to fully characterize mental health problems in very young children.

DC:0–3, a System Based on Consensus Diagnostic Criteria Developed by Experienced Clinicians

In 1987, ZERO TO THREE: National Center for Infants, Toddlers, and Families (now known as ZERO TO THREE), an organization that represents interdisciplinary leadership in the field of infant development and mental health, convened a task force to develop a mental health classification system for infants and toddlers. Task force members included clinicians and researchers in the United States, Canada, and Europe. From literature reviews and discussion of knowledge from case reports and clinical experiences, the task force members came to a consensus on diagnostic categories and specific patterns of emotional and behavioral problems. Background for the work included developmental, psychodynamic, family systems, relationship, and attachment theories, as well as an appreciation of individual differences in motor, sensory, cognitive, affective, interactive, and language patterns. A diagnostic manual, the *DC:0–3*, was published in 1994. The introductory text emphasizes the exploratory nature of the *DC:0–3*, which reflected clinical consensus rather than systematic, empirical evidence (which was not available):

> In any scientific enterprise, but particularly in a new field, a healthy tension exists between the desire to analyze findings from systematic research before offering even initial conceptualizations, and the need to disseminate preliminary conceptualizations so that they can serve as a basis for collecting systematic data, which can lead to more empirically based efforts. The development of the Diagnostic Classification: 0 - 3 represents an important first step: the presentation of expert consensus-based categorizations of mental health and developmental disorders in the early years. It is an initial guide for clinicians and researchers to facilitate clinical diagnosis and planning, as well as communication and further research. (ZERO TO THREE, 1994, p. 11)

The Structure of *DC:0–3*

Like the *DSM* and *ICD*, the *DC:0–3* is a multiaxial classification system. Table 1 outlines the five axes in the *DC:0–3*, original and revised versions, and *DSM* systems.

At the level of Axis I disorders, *DC:0–3* includes alternative versions of familiar *DSM–IV* diagnoses (e.g., anxiety and depressive disorders), new diagnostic categories (e.g., regulatory disorders and parent–child relationship disorders), as well as new disorder types (e.g., mixed disorders of emotional expressiveness). The use of Axis II for reporting relationship disorders rather than personality disorders as in the *DSM* emphasizes the fundamental importance of the parent–infant relationship in understanding young children's mental health problems (Sameroff & Emde, 1989). Axis V addresses the child's level of "functional emotional development," rather than a global assessment of overall functioning as in the *DSM*. This change reflects the importance of social and emotional capacities in the assessment of a young child's mental health. The *DC:0–3* manual also includes clinical assessment approaches and broad classification guidelines for infant mental health practice.

Despite the age range implied in its title, the *DC:0–3* has been widely adopted in clinical and service settings for the assessment of children from birth to age five years. The manual has been translated into seven languages. The wide use of *DC:0–3* across multidisciplinary clinical settings and across the world indicates that *DC:0–3*'s pioneering efforts to draw attention to the syndromes of suffering and distress in early childhood have been successful; this critical recognition that infants, toddlers, and preschoolers experience emotional and behavioral problems has led to the development and dissemination of many developmentally based and relationship-focused early interventions and preventive approaches (Emde & Wise, 2003; Zeanah, 2009).

However, the original *DC:0–3*'s lack of operationalized criteria (e.g., clearly defined symptoms, symptom cutpoints, or duration criteria), as well as a lack of discrete

Table 1
Comparison of Axes in the DSM–IV *and* DC:0–3 *Systems*

Axis	*DSM–IV*	*DC:0–3*	*DC:0–3R*
Axis I	Clinical disorders	Primary diagnosis	*Clinical disorders*
Axis II	Personality disorders	Relationship disorder classification	*Relationship classification*
	Mental retardation		
Axis III	General medical conditions	Medical and developmental disorders and conditions	Medical and developmental disorders and conditions
Axis IV	Psychosocial and environmental problems	Psychosocial stressors	Psychosocial stressors
Axis V	Global assessment of functioning	Functional, emotional developmental level	*Emotional and social functioning*

Note. DSM–IV = Diagnostic and Statistical Manual of Mental Disorders (4th edition; American Psychiatric Association, 1994); *DC:0–3 = Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood* (ZERO TO THREE, 1994); *DC:0–3R = Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood—Revised* (ZERO TO THREE, 2005). Underlined type indicates a difference between *DSM–IV* and *DC:0–3*. Italic type indicates a change from *DC:0–3* to *DC:0–3R*.

boundaries between many of the disorders (e.g., regulatory disorders and many of the other disorders), has limited the development of reliable measures of *DC:0–3* diagnostic criteria and has hampered research on the validity and diagnostic accuracy of the *DC:0–3* classifications. There have been a number of reviews of studies using the *DC: 0–3* (Emde & Wise, 2003; Stafford, Zeanah, & Scheeringa, 2003). These reviews have concluded that data on the reliability and validity of *DC:0–3* criteria are limited, although a start has been made. Dunst, Storck, and Snyder's (2006) comprehensive review of 15 studies conducted from 1996 through 2004 that used the *DC:0–3* in the assessment of a total of 2,065 young children highlighted the need for future research on the interrater reliability, test–retest reliability, convergent and divergent validity, and clinical utility of the *DC:0–3* diagnostic categories, in order to establish diagnostic validation as described in the Cantwell and Rutter (1994) model. It is important to note that none of the studies reviewed in the Dunst et al. article used the revised version of the *DC:0–3* (*DC:0–3R*).

Revision of the *DC:0–3* (*DC:0–3R*)

After nearly a decade, ZERO TO THREE recognized the need to incorporate new knowledge from clinical research and clinical experience in the *DC:0–3* diagnostic system. The process of revision began in 2002. The revision was undertaken with the explicit aims of increasing the reliability of the diagnostic classification and facilitating epidemiologic and clinical research on the validity of the criteria. *DC:0–3R*, the revised edition, was published in August of 2005.

DC:0–3R reflects an integration of current empirical evidence on mental health disorders in infants, toddlers, and preschoolers and the clinical observations of mental health clinicians across the world. Inputs to the work of the revision task force included the following: (a) an initial survey of users of *DC:0–3*; (b) a detailed review of the literature, including RDC–PA; (c) a second survey of users to comment on a preliminary draft of *DC:0–3R*; (d) further comments from individuals and identified clinical groups working in areas where the task force had found particular uncertainty or differences of perspective; and (e) a final set of critical reviews of a penultimate revised document by a panel of expert infant mental health clinicians and researchers.

The Evolution of Nosology: Examples of Changes in DC:0–3R From the First Version

Although we cannot enumerate all of the changes made in *DC:0–3R*, we highlight some key revisions as illustrations of how a diagnostic classification system changes in response to emerging empirical evidence and the need to establish whether the classification system is psychometrically sound, valid, and clinically useful. We describe the reasons why changes were made as well as the real-world compromises that were made in the revision process.

What's in a Name?

At first glance, the change in the name of *DC:0–3* Axis I from Primary Diagnosis to Clinical Disorder in *DC:0–3R* seems trivial. However, this change reflects two points of clarification in the revised edition. First, the fact that *DC: 0–3R* and *DSM* Axis I now share the same name acknowledges the interrelationship between the two diagnostic classifications. The *DC:0–3* diagnostic system is intended to supplement, not replace, the *DSM*/*ICD* systems. The revised edition explicitly states that if a child meets criteria for a *DSM* disorder, that disorder should be coded on *DC:0–3R* Axis I, referencing a *DC:0–3R* 800 code with the appropriate *DSM* code in parentheses. Thus, disorders such as attention deficit hyperactivity disorder, oppositional defiant disorder, and obsessive–compulsive disorder, which are not covered in the *DC:0–3* classification, should be recorded as *DC:0–3* clinical disorders on Axis I.

Second, the previous *DC:0–3* Axis I label of Primary Diagnosis gave many clinicians the impression that they

should make only one diagnosis rather than identify all of the disorders for which the child met criteria. The appendix titled "Guidelines to Selecting *the* [emphasis added] Appropriate Diagnosis" in the first version of *DC:0–3* reinforced the idea that there was a hierarchy of disorders and a proscription against identifying multiple disorders. By naming Axis I Clinical Disorders (and adding explicit text about comorbidity to the revised manual), the *DC:0–3R* clarifies that infants, toddlers, and preschoolers may meet criteria for more than one psychiatric disorder and that the co-occurrence of disorders is often an indicator of illness severity and impairment (Angold, Costello, & Erkanli, 1999; Egger & Angold, 2006b).

Presuming Health: Crafting Criteria to Decrease the Chance of False Positives

The work group also grappled with the concern that *DC: 0–3* criteria would identify disorders in healthy children. The anxiety disorders provide an example of this potential problem because it is challenging to distinguish between developmentally normative anxiety (e.g., stranger anxiety), variations in temperament that do not meet the level of clinical significance, and clinically significant anxiety in young children (Egger & Angold, 2006a). On the basis of the current empirical evidence, *DC:0–3R* added specific criteria for symptoms, types, and subtypes in the Anxiety Disorders section. However, to minimize the risk of false positives (i.e., children identified with a disorder who are actually healthy), the *DC:0–3R* Anxiety Disorders section specifies broad characteristics of clinically significant anxiety that must be present before a diagnosis of any of the anxiety subtypes should be considered. Anxiety symptoms must (a) cause the child distress or lead to avoidance of activities or settings associated with the anxiety or fear; (b) occur during two or more everyday activities, or within two or more relationships; (c) be uncontrollable, at least some of the time; (d) persist for at least two weeks (note that for some disorders the duration is longer than two weeks); and (e) impair the child's or the family's functioning, and/or the child's expected development.

The Weight of the Evidence: Revision of DC: 0–3 Diagnoses Not Included in the DSM System

Another challenge for the work group was revision of diagnostic categories unique to the *DC:0–3* nosology. We describe two examples of how the relative lack or relative abundance of empirical evidence differentially shaped the revision of two diagnostic categories unique to the *DC:0–3* system: regulatory disorders and disorders of relating and communicating.

The *DC:0–3* presented a new category of disorders called Regulatory Disorders. In the revised edition, the name of the category was changed to Regulation Disorders of Sensory Processing to emphasize that difficulties processing sensory information (i.e., from senses—visual, auditory, touch, olfaction, taste—or from movement) are the core symptoms of these disorders. Here again, a change in name reflected an attempt to provide greater specificity to these criteria. The name change also reflected a revised definition of these disorders as "difficulties in regulating emotions and behaviors, as well as motor abilities, in response to sensory stimulation that lead to impairment in development and functioning" (ZERO TO THREE, 2005, p. 28). The work group sought input from occupational therapists who evaluate young children with sensory and motor dysregulation (Miller, Robinson, & Moulton, 2004). Despite clinical enthusiasm for this category of disorders (regulatory disorders were the most common disorder diagnosed in the user survey; ZERO TO THREE, 2005), data supporting sensory and motor dysregulation syndromes as distinct and valid disorders are scant. The lack of consensus among experts and the lack of empirical data led the task force members to conclude that there was insufficient evidence to support the inclusion of detailed symptom criteria for each of the subtypes. Instead, descriptive information was provided with the hope that future research will lead to more specific criteria.

Changes in the Disorders of Relating and Communicating in *DC:0–3R* reflect a situation opposite to the one just described for regulatory disorders; there have been substantial advances made in our understanding of the presentation and treatment of autistic spectrum disorders since the publication of *DC:0–3* (Volkmar, Lord, Bailey, Schultz, & Klin, 2004). On the basis of the current and growing strength of empirical support for the *DSM–IV* criteria for pervasive developmental disorders, the *DC: 0–3R* states that when a child's symptoms meet the *DSM–IV–TR* criteria for any of the pervasive developmental disorders (including pervasive developmental disorder, not otherwise specified), the *DSM* diagnosis should be recorded on Axis I, referencing both a *DC:0–3R* 800 code and the appropriate *DSM* code. It was difficult for the workgroup to reach a consensus about multisystem developmental disorder (MSDD), a *DC:0–3* disorder that does not require the full appearance of the relationship and communication difficulties observed in children with autistic disorder. Disagreement about MSDD's inclusion in *DC:0–3R* led to a compromise: The classification of MSDD was retained, but it was designated as an option to be applied *only* for children under two years of age, because agreement about the diagnosis of *DSM* pervasive developmental disorders in children younger than two years old has not yet been achieved.

Changes to Axis II

Axis II is intended to be used to assess the child's relationships with all of the child's primary caregivers, including biological, foster or adoptive parents, grandparents, and other adults. In the *DC:0–3R*, two tools for evaluating and classifying the child's relationships with his or her primary caregivers are included as appendices: The Parent–Infant Relationship Global Assessment of Functioning (PIR–GAS) and the Relationship Problems Checklist. The workgroup made minor scaling changes and rewordings of the PIR–GAS, a 0 to 100 scale that is meant to reflect degrees of disturbance in the parent–child relationship. Psychometric data on the PIR–GAS are *not* included in the original or

revised *DC:0–3* manual. Because of a lack of empirical support for the relationship disorders specified in the original *DC:0–3*, the symptoms of these putative disorders were turned into a Relationship Problems Checklist, which is meant to guide the clinician in assessing whether and in what ways the child's caregiving relationships are dysfunctional.

Changes to Axis III

Axis III is unchanged in the revised *DC:0–3*. Axis III is for recording medical and developmental disorders (e.g., language disorders) and mental retardation using other established diagnostic systems. As noted above, Axis I *DSM* disorders, including pervasive developmental disorders, are coded on Axis I.

Changes to Axis IV

Axis IV provides a framework for evaluating psychosocial and environmental stressors. A checklist of stressors is included as an appendix in the *DC:0–3R*. The stressor checklist does not encompass the universe of possible stressors; clinicians are encouraged to list all stressors affecting the child and family being evaluated. The impact of any given stressor on a child is affected by the child's developmental level; by the availability of caregivers to buffer, protect, and help the child understand and cope; and by the severity, duration, and number of stressors. The checklist provides spaces to indicate age of onset, duration, severity, and context of each stressor to encourage a comprehensive assessment of all aspects of these risk factors.

Changes to Axis V

Whereas Axis V in the *DSM* system codes global functioning, Axis V in *DC:0–3R*, as in the first edition, provides an opportunity for the clinician to assess and rate the child's capacities for developmentally appropriate emotional and social functioning. This difference represents a shift from the *DSM* focus on "incapacity" and "impairment" to an exploration of an infant's, toddler's, or preschooler's functional capacities for and competence in social and emotional domains. The *DC:0–3* perspective provides the opportunity to identify the child's functional coping capacities, not only the child's incapacities. The revision represents an attempt to clarify the descriptions in this section. Like the regulatory disorders, the capacities in Axis V are clearly very important in understanding mental health and developmental problems in young children, but more empirical evidence is needed to help us define and measure these capacities and integrate these findings into an overall mental health assessment.

Crosswalk Between DC:0–3R and the DSM

We have described cross-classification between the *DSM* and the *DC:0–3R*. Cross-classification differs from a crosswalk between the two systems. A number of states have supported the use of *DC:0–3R–DSM* crosswalks to facilitate the use of *DC:0–3* in clinical settings. The need for a crosswalk has arisen because *ICD–10* codes are required for reimbursement (e.g., for Medicaid coverage), and *ICD–10* codes are usually based on their corollary *DSM* codes. Thus, a crosswalk serves an administrative, not a clinical, purpose. On one hand, the development of a crosswalk between the *DSM*/*ICD* and *DC:0–3* systems reflects increasing recognition of the need for a developmentally appropriate nosology of early childhood mental health problems and the need to provide young children with mental health assessments and interventions. On the other hand, the crosswalk may give the impression that the empirical support for both specific *DC:0–3* disorders and their relationships with the *DSM*/*ICD* criteria is much stronger than it is.

Diagnostic Classification and Clinical Formulation

Guidelines for assessment and clinical formulation were also revised in the *DC:0–3R*. The inclusion of these guidelines in the *DC:0–3* diagnostic manual acknowledges the relationships between nosology, assessment, and clinical formulation. Clinical formulation emerges as the clinician pulls together a wide range of information from multiple sources and contexts and across many domains. From this information the clinician identifies a meaningful pattern that can be used to define the child's mental health needs and plan treatments or interventions to address those needs. It is beyond the scope of this article to address the components of comprehensive mental health assessments of young children and their families or the process of clinical formulation (an excellent resource is Zeanah, 2009).We explore here three key points about the interplay between nosology, assessment, and clinical formulation.

First, the *DC:0–3* system is multiaxial. A comprehensive mental health assessment must attempt to understand the child across all five axes. For example, the child's present emotional or behavioral symptoms must be understood within the child's current level of functioning across multiple developmental domains (e.g., cognitive functioning, expressive and receptive language, gross and fine motor skills, and social–emotional skills). Moreover, because children three years old and younger (and in some states five years old and younger) are eligible for early intervention services for developmental delays, as well as for medical disorders, it is critical that clinicians who are assessing young children identify any delays and medical disorders on Axis III to provide appropriate referrals for developmental assessments (e.g., by speech therapists, occupational therapists). Collaboration with other pediatric health providers, including the child's pediatrician, is essential to ensure that underlying medical, developmental, or genetic conditions are considered in the differential diagnosis.

Because the pervasiveness of the child's symptoms across settings may vary, assessment of the context of symptoms is also essential. Assessment must include the quality of the child's relationships with caregivers and others (Axis II), the child's environment and stressors (Axis IV), as well as the quality and context of the child's capacities for social and emotional functioning (Axis V). A

comprehensive assessment will include multiple sessions, multiple informants, multidisciplinary and multicultural perspectives, and multiple modes of assessment (Zeanah, 2000). Last, assessment of young children requires training in and clinical expertise in infant mental health. On one hand, a diagnostic classification must show acceptable reliability and validity to be clinically useful; on the other hand, the value of these systems in clinical practice will be only as good as the systems of care and individual clinicians who apply them.

Second, the aim of a nosology is to classify problems as disorders, not to classify children as problems (Rutter & Gould, 1985). Resistance to categorical diagnosis sometimes arises from a misperception that making diagnoses reduces individuals to "labels" and thereby minimizes the complexity of the child and his or her relationships. The goal of a mental health assessment is to make sense of a child's mental health symptoms and the associated factors, including the parent–child relationship, the environmental context, the child's physical and developmental status, acute and chronic stressors, and biological features. Understanding the interplay between these factors may begin within a nosological framework, but the domain of classification must be integrated with within-person, relationship-based, and environmental (including family, neighborhood, culture) approaches to understanding the risk for, emergence of, and persistence of impairing emotional, behavioral, and developmental symptoms and disorders in early childhood.

Third, standardized nosologies facilitate the development of dimensional and diagnostic measurement tools (Angold & Costello, 2009). A comprehensive mental health assessment of a young child must use multiple modes of assessment, including adult reports; observational assessments; structured or unstructured play/interactions with the child; and standardized cognitive, motor, language, and social/emotional assessments. When possible, empirically tested measures with demonstrated reliability and validity should be used. There are a number of psychometrically sound scalar measures for assessing mental health symptoms in young children beginning at about 12 months. Types of measures include broad symptom checklist measures (e.g., the Infant Toddler Social Emotional Assessment for children 12 to 36 months old; Briggs-Gowan, 1996, 1998; Carter, Briggs-Gowan, Jones, & Little, 2003); *DSM*-referenced rating scales (e.g., the Early Childhood Inventory—4; ages 3 through 6 years old; Gadow & Sprafkin, 1997, 2000; Gadow et al., 2001; Sprafkin & Gadow, 1996); or checklist measures of specific symptom clusters (e.g., the ADHD Rating Scale; DuPaul, Power, Anastopoulos, & Reid, 1998; Gimpel & Kuhn, 2000).

In the future, structured diagnostic interviews for assessing early childhood psychiatric symptoms and disorders will enable clinicians to reliably assess the full range of early childhood mental health symptoms and disorders. The Preschool Age Psychiatric Assessment (PAPA; Egger, Ascher, & Angold, 2008) is currently the only comprehensive parent-report psychiatric interview with demonstrated test–retest reliability and validity for assessing psychiatric symptoms and disorders in children ages two through five years, but the PAPA is not currently feasible for use in most clinical settings (Egger et al., 2006). Observational assessments also play an important role in infant and early childhood mental health assessments. Currently, there is only one diagnostic assessment protocol for young children that combines results of parent-report and observational structured assessments to make a diagnosis in clinical settings: the Autism Diagnostic Interview—Revised (ADI–R; Rutter, LeCouteur, & Lord, 2003), which, when conducted in conjunction with the Autism Diagnostic Observation Schedule (ADOS; Lord, Rutter, DiLavore, & Risi, 2003), is considered the gold standard assessment for autism. In the future, psychometrically sound and valid descriptive and observational measures, as well as genetic, metabolic, and neuroimaging methods that are rapidly being developed, will change our characterizations of disorders and be integrated into future nosologies and assessment approaches (Angold & Costello, 2009).

The development of the ADI–R, the ADOS, and the PAPA illustrates the iterative relationship between nosology and measurement: Each of these measures has advanced the quality of research on early childhood psychopathology, which then leads to refinement of the current classification systems. Standardized and psychometrically validated tools, whether scalar or diagnostic, are still not widely used in clinical infant mental health settings. This gap between research and clinical practice is also present in mental health practice in later childhood (Angold & Costello, 2009). Access to measures, availability of training in their application and interpretation, and feasibility of use within time and budget constraints must be addressed so that the infant mental health field can bring evidence-based assessments and interventions to young children and their families.

Limitations of Current Classifications and Future Research

Despite its title and intent, the *DC:0–3* system does not yet provide fully adequate diagnostic criteria for the identification of mental health disorders in infants. We need clinically focused longitudinal studies of infants that use much more refined measures of the specifics of symptomatology as it emerges from birth to 24 months. Most likely, infancy syndromes will be defined by patterns of dysregulation across multiple domains. We need measures that will enable us to describe normative variation and patterns of dysregulation in crying, sleeping, eating, motor activity, sensory sensitivity, and disturbances in social relatedness (e.g., not simply presence of dysregulation but the intensity, frequency, duration, onset, and environmental and relational context of the symptom). We will need to determine empirically the boundaries between normative and clinically significant presentations just as we are doing with psychiatric symptomatology in preschoolers (Egger & Angold, 2006b). Integration of early temperament approaches, which cover many of the domains described above, with

those of developmental psychopathology will most likely provide an avenue for moving forward in our understanding of very early onset psychopathology (Angold & Costello, 2009). Developing an empirically based nosology of mental health symptoms and disorders for infants and toddlers is one of the most important needs facing the infant mental health field.

Current mental health classifications are imperfect. This is true across the life span but is particularly true in early childhood. Just as the *DSM* and *ICD* systems have undergone multiple iterations (*DSM–V* is slated for publication in 2012), the *DC:0–3R* will change, and, we hope, will eventually become part of a nosology of psychopathology that reflects a truly developmental approach to mental health disorders across the life span.

The current classifications of psychopathology, for adults as well as children, are based on clinical observations of clusters of specific behaviors and emotional states. The high rates of comorbidity among psychiatric disorders in adults and children, including preschoolers (Angold et al., 1999; Egger & Angold, 2006b), suggest that our current nosologies may be identifying syndromes that are, in fact, not distinct disorders but varied presentations of underlying syndromes that cannot be characterized adequately by our current descriptive criteria. As we get closer to understanding the underlying mechanisms that cause and sustain the clusters of behavioral and emotional symptoms that we call mental health disorders, we would expect to have greater, but not complete, delineation of the boundaries between different disorders. Ongoing research in cognitive and affective neuroscience, developmental psychology, genetics, and epidemiology has the potential to reshape our understanding of the neurobiological foundations and mechanisms of mental disorders. As we understand more about the relationship between multiple biological systems and behaviors, we should be able to develop a clinically and biologically meaningful nosology that enables us to find better ways to identify and alleviate the suffering of young children.

The infant mental health field has insights important to the diagnostic process throughout the life span. The inclusion of (a) the characteristics and quality of primary caregiving relationships and (b) the developmental and environmental contexts in the diagnostic process should not be seen as barriers to the development of a scientifically and clinically meaningful nosology in early childhood. Rather, they should be seen as important components of all classifications of psychopathology from early childhood to late life. For example, the challenge of characterizing depressed mood in toddlers with limited expressive language is also faced with older children who have very low IQs, as well as with older individuals with dementia. Moreover, understanding how problematic behaviors and emotions change within the context of relationships is not only informative for understanding disorders in early childhood but is a key perspective for understanding and treating mental disorders throughout the life span, as family–behavioral therapies demonstrate so clearly. As the infant mental health field makes progress in developing a valid classification system of disorders, it may well be able to inform and reshape our approaches to classification of psychopathology at other ages. We may then reach a point where we have a shared nosology of mental disorders that is developmentally sensitive and relevant from infancy through old age.

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