

How should we classify complex neurodevelopmental disorders?

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The Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) includes the category, “neurodevelopmental disorders”, which includes intellectual disabilities, communication disorders, autism spectrum disorder (ASD), attention-deficit/hyperactivity disorder (ADHD), specific learning disorder, and motor disorders (1). Grouping this set of disorders into the new neurodevelopmental disorders category is useful since it puts together a number of conditions related to atypical neurodevelopment, which are most often identified during childhood, and can frequently co-occur. The DSM-5 gives clear descriptions of the individual neurodevelopmental syndromes, which are useful in classifying individuals for clinical and research purposes. However, the DSM-5 does not adequately address the issue of multiple co-occurring neurodevelopmental problems, especially in cases where multiple subthreshold neurodevelopmental symptoms occur in an individual. The DSM-5 does describe a number of “other specified” and “unspecified” neurodevelopmental diagnoses, which can be used for subthreshold or unclear cases with associated impairment, but some of these descriptions are problematic because they suggest that the diagnoses should not be used if the individual meets full criteria for *any* diagnosis in the entire neurodevelopmental disorders diagnostic class. This could discourage clinicians from providing a full diagnostic description in cases where multiple neurodevelopmental problems co-occur.

The example of ADHD classification is particularly important to consider. As in the previous version of the manual, DSM-5 ADHD requires that an individual has either six of nine listed inattentive symptoms or six of nine hyperactive/impulsive symptoms in order to meet the full diagnostic criteria. Depending on whether they meet the symptom count threshold in just one or both of the

above two symptom domains, individuals are classified as having the predominantly inattentive presentation, predominantly hyperactive/impulsive presentation, or the combined presentation (1). As noted in existing literature (2), this is problematic in the case of clinically impaired individuals who have six or more total symptoms but have less than six symptoms in each of the two domains. During the process of developing DSM-5 diagnostic criteria, it was suggested that an ADHD “not elsewhere classified” diagnosis could be used for such individuals (3). The need for this option is supported by research suggesting that individuals with subthreshold symptoms in both symptom domains may be more impaired than those with a similar number of total symptoms, but in just one of the two symptom domains (2). Although the final version of DSM-5 does not use the term “ADHD not elsewhere classified”, it does include “Other Specified Attention-Deficit/Hyperactivity Disorder” (for cases where the clinician specifies why full ADHD criteria are not met) and “Unspecified Attention-Deficit/Hyperactivity Disorder” (to be used if the clinician chooses not to specify the reason full criteria are not met). The other specified ADHD category seems particularly appropriate for individuals with symptoms in both symptom domains who fail to meet the symptom count cutoff in either domain. Such individuals can be described as having a mild combined presentation of ADHD, a category which has been supported by latent class analysis of ADHD symptoms, and which (along with severe combined and severe inattentive latent class subtypes) is associated with significant impairment (4). The problem is that within the DSM-5 descriptions for other and unspecified ADHD diagnoses, the wording suggests these categories should not be used if the individual meets full criteria for *any* neurodevelopmental diagnosis (1). If strictly

followed, this means that a child with a diagnosis of intellectual disability, autism spectrum disorder, any communication disorder (even just a speech sound disorder), specific learning disorder, developmental coordination disorder, stereotypic movement disorder, or tic disorder cannot be given the diagnosis of other or unspecified ADHD simply because of their other neurodevelopmental disorder diagnosis. In other diagnostic classes, such as depressive disorders, it may make sense to reserve other and unspecified diagnosis labels for those who do not meet full criteria for any DSM-5 syndrome in the same class, but in the case of neurodevelopmental disorders, it is useful and important to be able to diagnose subthreshold but clinically impairing neurodevelopmental problems in multiple areas, so that each neurodevelopmental problem can be monitored over time and treated when appropriate.

Given the high degree of phenotypic and genetic overlap among various neurodevelopmental symptoms and diagnoses (5, 6, 7, 8, 9), the presence of one neurodevelopmental disorder should make clinicians alert for co-occurring full syndrome or subthreshold neurodevelopmental problems in the same child, which may also need to be diagnosed and addressed. Hierarchical systems (such as ASD diagnosis disqualifying an individual from having an ADHD diagnosis in previous versions of the DSM) and symptom count cutoffs can be problematic when describing developmental deviations which can occur in various combinations and with differing severity. Research studies of neurodevelopmental disorders often focus on one disorder at a time, and may exclude individuals with another co-occurring neurodevelopmental disorder, but this leaves us with a relative lack of information regarding how to treat individuals with co-occurring neurodevelopmental disorders. Alternate methods of describing complex neurodevelopmental syndromes may be appropriate. For example, Gilger and Kaplan have suggested using the term “atypical brain development” and then specifying the child’s strengths and weaknesses (5). Gillberg has suggested the term “Early Symptomatic Syndromes Eliciting Neurodevelopmental Clinical Examinations” (ESSENCE) to describe neurodevelopmental syndromes which commonly co-occur and warrant comprehensive neurodevelopmental assessment (8). Although it may be more difficult to sort out mechanisms when studying complex cases with symptoms in multiple areas, it is important to include neurodevelopmentally complex cases in research, so that we will know how various neurodevelopmental symptoms interact and whether co-occurrence of multiple problems warrants different approaches to treatment. Some progress has been made in

treatment studies of co-occurring ASD and ADHD (9), but further work is needed in this area, and in the study of other combinations of neurodevelopmental disorders. Future studies should bring improved methods of classifying and treating complex neurodevelopmental syndromes.

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