



Reforming learning disorder diagnosis following COVID-19 educational disruption

Mary K. Colvin^{1,2}✉, Jennifer Reesman^{3,4} and Tannahill Glen⁵

Current diagnostic criteria for learning disorders are insufficient because of ongoing COVID-19-related educational disruption. Diagnostic criteria for learning disorders should be modified to reduce the risk of misdiagnosis and ensure timely intervention.

Since the onset of the COVID-19 pandemic in March 2020, millions of children across the globe have experienced the partial or full closure of schools and/or prolonged reliance on virtual learning. The effects of this ongoing educational disruption are still unfolding. Early studies from the COVID-19 era have associated educational disruption with increased mental health concerns (including depression and anxiety) and diminished learning gains (especially in maths and reading) in young people. Those affected by racial and economic disadvantages have been more likely to experience longer periods of educational disruption¹.

During educational disruption, youth with developmental concerns, including learning disorders, have reduced access to special education and other support services. Approximately 10% of children and adolescents in the US are diagnosed with a specific learning disorder, which can impair reading (dyslexia), maths (dyscalculia), or writing (dysgraphia)². Learning disorders often occur in the context of other neurodevelopmental, psychiatric, and medical conditions, and are associated with increased lifetime risk of mental health challenges, greater involvement in the criminal justice system, and fewer socioeconomic opportunities^{3,4} than for individuals without such disorders. Evidence-based treatments for learning disorders are most effective when delivered during early childhood^{3,5}. The clinical diagnosis of a learning disorder is often a first step towards intervention, but educational disruption during the COVID-19 era has complicated this process.

Diagnosing learning disorders

According to the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5), diagnosis of a specific learning disorder requires evidence from standardized achievement tests and comprehensive clinical assessment indicating that academic skills are below age-based expectations and interfere with daily activities. In addition, the difficulties in learning and using academic skills must have persisted for at least six months despite

intervention and cannot be accounted for by psychosocial adversity or inadequate instruction. Specific learning disorders can be diagnosed in reading, writing, or maths⁶.

When education has been disrupted by COVID-19, rigid adherence to DSM-5 criteria for initial diagnosis of a specific learning disorder entails substantial risk of error. In the past two years, most youth have experienced some loss of academic instruction. Many have also experienced psychosocial adversity (such as death of a loved one or decreased social support). Interventions might not have been available within any given six-month span within the pandemic. These factors would seem to rule out the diagnosis of a learning disorder on the basis of the DSM-5 criteria. As educational disruption persisted, some schools altered the curriculum by eliminating content; consequently, it is increasingly difficult to know whether observed learning difficulties and/or low achievement scores reflect an underlying learning disorder or lack of instruction. This difficulty is confounded if standardized academic assessments use pre-COVID-19 normative data to assess COVID-19 era progress¹.

Adherence to the DSM-5 criteria in the COVID-19 era may result in two types of diagnostic error. False negative errors, or missed diagnoses, will occur when true learning disorders are misattributed to prolonged educational disruption, lack of prior intervention, or psychosocial dysfunction. These errors might delay the initiation of necessary interventions for children with learning disorders. By contrast, false positive errors, or inaccurate diagnoses, will occur when attenuated learning gains are misattributed to an underlying learning disorder. Although the risk of harm from unnecessary intervention is relatively low, misdiagnosis might result in inappropriate and avoidable integration of the learning disorder diagnosis within the child's identity and family narrative.

School-based intervention

In the United States, most intervention for learning disorders is provided through public schools. Eligibility for special education services and accommodations is

¹Department of Psychiatry, Massachusetts General Hospital, Boston, MA, USA.

²Harvard Medical School, Boston, MA, USA.

³Psychiatry and Behavioral Sciences, Johns Hopkins University School of Medicine, Baltimore, MD, USA.

⁴The Chesapeake Center, Bethesda, MD, USA.

⁵Neuropsychology Inc., Jacksonville, FL, USA.

✉e-mail: mcolvin@
mgh.harvard.edu

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determined by the federal Individuals with Disabilities in Education Act (IDEA)⁷. Clinical diagnoses are often considered but are not required for service eligibility.

IDEA criteria for learning disability services overlap with DSM-5 diagnostic criteria for learning disorders. In both cases, there must be evidence of learning difficulty within one or more specific areas (for example, reading comprehension or calculation) with achievement scores falling below age-based or grade-based expectations despite intervention. Criteria for exclusion from IDEA services include disadvantages owing to environmental, cultural, or economic factors or to lack of appropriate instruction⁷. If any of these factors are determined to be the main cause of learning problems, then a child may not be eligible for special education services. Given the prevalence of these factors in the COVID-19 era, schools might delay or deny interventions to children who have learning disorders.

Several additional factors compound the risk of delayed intervention. When schools were closed or engaged in remote instruction, evaluations of cognitive and/or academic skills were postponed. Furthermore, special education and/or response-to-intervention services (provided to struggling students not identified as needing special education services) were not always available. Even if interventions were accessible, the intensity or delivery method might have been changed in ways that could limit efficacy¹. Together, these factors increased the likelihood of inadequate remediation of learning disorders.

Reforming diagnostic criteria

The extraordinary extent of COVID-19-related educational disruption has substantially limited the sensitivity of DSM-5 diagnostic criteria for learning disorders and has delayed or eliminated access to special education services in schools. If these issues are not addressed, the cohort of students affected by COVID-19 may be at the highest risk of unremediated learning disorders since IDEA was first implemented in 1975. Reform of diagnostic criteria is needed to improve psychologists' ability to identify and quickly intervene on behalf of youth with learning challenges. We suggest three immediate changes: improving recognition of clinical symptoms and risk factors; provisional diagnoses; and prioritizing vulnerable students for assessment and intervention.

First, scientific and clinical understanding of learning disorders must be fully integrated into existing diagnostic criteria. Learning disorders are brain-based developmental disorders with early developmental and genetic risk factors. Learning disorders are associated with distinct neuropsychological profiles and skilled psychologists can detect their early signs in school-age children^{6,8,9}. Although academic achievement scores are important indicators of a learning disorder, these scores should be weighed with clinical symptoms and history. For example, low reading scores in the context of pervasive delays in language acquisition and family history of dyslexia are more suggestive of a learning disorder than low reading scores in the absence of such factors. Diagnostic criteria should include these considerations.

Second, criteria should permit provisional diagnoses for youth with low academic achievement scores.

Provisional diagnoses will limit intervention delays and identify children at high risk of learning disabilities, especially in the presence of documented COVID-19-related educational disruption. Psychologists should ask for details about a child's pre-pandemic academic functioning, any compounding psychosocial factors, how educational access and/or special education service was influenced, and how the child compares to peers on local standardized testing data (if available). Provisional diagnoses should waive the requirement for six months of prior intervention, especially because such interventions have not always been accessible. A full diagnosis could be made if the child still does not respond to intervention after six months.

Third, psychologists need to advocate on behalf of vulnerable students. Youth impacted by racial and economic disparities were more likely to experience substantial educational disruption during the COVID-19 pandemic, exacerbating the risk of diagnostic error. These children and those with other developmental risk factors should be prioritized for school-based evaluation. IDEA criteria should remain in place, so that children with academic achievement scores below pre-pandemic grade-based expectations are eligible for remediation regardless of whether clinical criteria for a learning disorder have been met. These services may include response-to-intervention, but there should be clear guidelines about when formal special education services should be considered. Clinical evaluation and diagnoses remain important in determining whether children receive appropriate evidence-based intervention and/or whether additional clinical conditions warrant intervention.

Without a holistic and integrated approach to diagnosis, psychologists risk failing to identify children who have learning disorders during crucial intervention windows or misattributing the effects of attenuated learning gains due to COVID-19 disruptions to a learning disorder. Such errors will only compound the disproportionate effects of the COVID-19 pandemic on the most vulnerable children.

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Competing interests

The authors declare the following competing interests: all have or will receive honoraria from the American Psychological Association (APA) and the American Academy of Clinical Neuropsychology (AACN) for presenting on this topic.