

Understanding Learning Problems vs. Learning Disabilities

In schools, a large number of students demonstrate learning problems, but only a relatively small subset of these students actually have a learning disability (LD).

Learning Problems Are All Too Common

Here are some recent indicators:

Academic Struggles Are Widespread

National Assessment of Educational Progress (NAEP) data indicate that:

- About 40% of fourth graders and one-third of eighth graders perform below the basic level in reading.
- National reading proficiency remains at 30-31%, meaning roughly 70% of students are not meeting proficiency standards.

While the limitations of the NAEP are well known, the pattern of findings do support concerns about widespread, systemic challenges requiring systemic solutions.

Student Engagement is Eroding

Chronic absenteeism (missing at least 10% of the school year) remains at elevated levels nationwide. In many urban districts:

- 30% or more of students are chronically absent.
- Urban districts are five to six times more likely than suburban or rural districts to report extreme absenteeism.

Chronic absenteeism is widely recognized as a symptom of unaddressed barriers to learning and teaching, including unsafe environments, negative home conditions, peer problems, and personal vulnerabilities. *Addressing these challenges is beyond the reach of instruction alone.*

Dropouts

Approximately 725,000 U.S. students drop out of high school each year.

Gaps Are Widening, Especially for the Most Vulnerable

Recent analyses show:

- Achievement gaps have widened significantly, particularly for students in the lowest quartile, students with disabilities, and other vulnerable populations.
- Many students whose learning was disrupted during the pandemic have advanced in grade level without recovering lost opportunities; 35 million more younger students are now advancing without the supports necessary to thrive.

In sum, significant numbers of students are not learning well at school, with as many as 20–40% or more affected in some schools. A portion of these commonplace learning problems are among those diagnosed as having a learning disability.

*The material in this document was compiled in 2026 and builds on work done by the national Center for MH in Schools & Student/Learning Supports at UCLA over many years.

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About Learning Disabilities

A true learning disability (LD) – such as dyslexia, dyscalculia, or dysgraphia – is viewed as a neurologically based disorder (see Appendix). Students diagnosed with a learning disability typically have consistent, persistent, and pervasive learning difficulties that occur despite appropriate, high quality instruction and supports. A range of *symptoms* have been identified to aid in making the diagnosis.

Only a relatively small percentage of students meet formal LD criteria. National statistics generally indicate that students with LDs represent a minority of all students receiving special support and a much smaller minority of all students who struggle.

National statistics generally indicate that 5-15% of school-aged children have a learning *disability* depending on definition and source. In 2025, Xu and colleagues reported a large-scale national study (221,244 children) that estimates that more than 8% of U.S. children were currently diagnosed with a learning disability (LD).

A National Center for Education Statistics (2024) report indicated that in 2022–23, 15% of public school students received services under IDEA (the Individuals with Disabilities Education Act). Of those, only 32% were identified with specific learning disabilities (SLD). This means that SLD students represent roughly 4-5% of the total student population, even though many more students struggle with learning for non-disability reasons (instructional gaps, attendance, language barriers, social emotional issues, etc.)

Over the years, the increase in the incidence of those diagnosed LD has led to recognition that federal policy related to LD was so poorly formulated that it was producing many misdiagnoses, especially erroneously identifying common learning problem as LD. Actions to correct the matter have had mixed results.

Many Factors Can Interfere with a Student's Learning

There is a common tendency among the general public to refer to anyone with a learning problem as LD (or even ADHD). While some youngsters do have true learning disabilities, attention deficit/hyperactivity disorder, or other conditions stemming from internal dysfunctions, these categories do not account for most learning and behavior problems observed in schools.

Despite the growing number of students being assigned such diagnoses, the reality is that the majority of struggling learners are experiencing commonplace difficulties that should not be interpreted as signs of internal pathology. For many of these students, the troubling symptoms would not have emerged had their environmental circumstances been different.

The exhibit on the next page highlights and categorizes a range of factors that can instigate and exacerbate learning, behavior, and emotional problems. These problems may result in poor academic performance, but they do not necessarily indicate a disability. Indeed, most students who struggle at school do not have a disability.

Exhibit

Factors Instigating Learning, Behavior, and Emotional Problems

Environment (E)

1. Insufficient or inconsistent learning opportunities
e.g., prolonged periods in impoverished environments; deprivation of learning opportunities at home or school such as lack of play and practice situations and poor instruction; food insecurity or inadequate nutrition
2. Excessive or dysregulating demands
e.g., overly demanding home, school, or work experiences, such as overwhelming pressure to achieve and contradictory expectations; overcrowding; frequent transitions or unstable schedules
3. Intrusive, harmful, or discriminatory conditions
e.g., medical practices, especially at birth, leading to physiological impairment; exposure to environmental toxins or unsafe housing; chronic conflict or violence in home, school, or workplace; ineffective, developmentally inappropriate, and/or abusive child-rearing practices; dysfunctional family; migratory family; environments not accommodating students learning English as an additional language; lack of culturally and linguistically responsive supports; bias, discrimination, and social marginalization based on race/ethnicity, gender, age, disability, or appearance

Person (P)

1. Neurological or physiological injury/illness
e.g., traumatic brain injury; perinatal complications; endocrine disorders; illnesses affecting brain, sensory, or motor functioning
2. Genetic or neurodevelopmental differences
e.g., inherited or de novo variations associated with atypical development trajectories
3. Cognitive and emotional factors that limit effective learning or coping
e.g., gaps in foundational knowledge and skills (including executive function or learning strategies); negative attitudes about school; difficulties regulating emotions or stress; negative feelings about self determination, competence, and connectedness to significant others
4. Physical or sensory characteristics affecting learning and coping
e.g., visual, auditory, or motor differences; atypical sensitivity to sensory input; health conditions that increase fatigue; characteristics that may elicit stereotyped responses from others
5. Behavior or performance patterns misaligned or with or deviant from environmental expectations
e.g., high error rates on academic tasks; very high or very low activity levels; difficulties with sustained attention or task initiation

Interactions and Transactions Between E and P*

1. Severe to moderate personal vulnerabilities and contextual barriers are joint contributors
e.g., personal and environmental factors simultaneously precipitate the difficulty, such as when a person with markedly slower development is placed in a highly demanding setting without appropriate supports
2. Modest personal vulnerabilities not accommodated by the situation produce mismatch
e.g., student with mild auditory or visual challenges expected to learn primarily through lecture; highly active student in classrooms with limited movement opportunities
3. Contextual differences not accommodated by the individual produce mismatch
e.g., student from a racial or cultural minority avoids participation because of anticipated exclusion or lack of belonging; newcomer student doesn't access available bridging supports

*Interactions may involve a single (P) and (E) variable or multiple combinations. The same factor can function as a risk or protective influence depending on context, intensity, timing, and available supports.

Why the Distinction Matters

Understanding that learning disabilities constitute just one subset of learning problems can help:

- Prevent problems
- Provide appropriate early intervention before labeling a student
- Avoid misdiagnosis, especially of students affected by environmental or instructional factors
- Design multi-tiered systems of support that address the full spectrum of learning problems – not just disabilities
- Use existing resources more effectively by tailoring supports to student needs
- Pursue valid research

Not differentiating can result in

- Over-diagnosis and misclassification
- Misprescriptions and inappropriate interventions
- Stigmatization and self-fulfilling prophecies
- Inappropriate access to accommodations that give unfair advantage
- Reduced access to current and future opportunities

More young people are getting diagnosed with conditions such as LD, ADHD, anxiety, and depression. And universities are making the process of having accommodations easier. Rose Horowitz notes that this has occurred disproportionately at the most prestigious and expensive institutions. She reports:

“At Brown and Harvard, more than 20 percent of undergraduates are registered as disabled. At Amherst, that figure is 34 percent. Not all of those students receive accommodations, but researchers told me that most do. The schools that enroll the most academically successful students, in other words, also have the largest share of students with a disability.”

<https://www.schoolinfosystem.org/2025/12/04/americas-colleges-have-an-extra-time-on-tests-problem/>

About Those with Commonplace Problems

Because learning results from ongoing transactions between the learner and the environment, it is understandable that certain groups of students experience higher rates of commonplace learning and behavior problems. One such group are children and youth living in poverty.

Poverty is an important correlate – not the cause – of an individual’s learning problems. As Sampson and colleagues (2002) stress, guided by transactional thinking

... we have progressed from a static model in which structural factors, such as poverty level, were linked to indices of community pathology, to a dynamic model of neighborhood processes and experiences, focusing on characteristics such as social integration, value consensus, and community resources and services.

Understanding the factors that lead many young people in poverty to manifest learning and behavior problems is essential. Equally important is understanding what enables others, growing up in similar environments, to counteract negative conditions and succeed.

Poverty is highly correlated with learning problems

For years, official statistics have indicated that children under age 18 represent the age group with the highest proportion living in poverty in the United States – about 16 percent (roughly 11.4 million youngsters). Poverty is strongly associated with school failure, high school dropout, delinquency, teenage pregnancy, and other problems.

Compared to students coming from middle or higher income families, young children residing in poverty generally have less opportunity to develop the initial capabilities and attitudes most elementary school programs require for success. Families struggling with limited resources often cannot provide important early experiences (e.g., preschool programs). Moreover, those in urban ghettos reside in the type of hostile environment that can generate so much stress as to make school adjustment and learning excessively difficult.

Thus, it is not surprising that many students from low income families enter kindergarten – and return each day – less than ready for the demands schools make of them. The mismatch may be particularly bad for individuals who have recently migrated from a different culture, do not speak English, or both.

There is a poignant irony in all this. Children growing up in poverty often develop cultural, subcultural, linguistic, and adaptive strengths that schools oriented toward middle class norms neither accommodate nor capitalize upon. As a result, many students struggle without access to their assets. It should surprise no one that a high proportion are soon viewed as having learning or behavior problems. Some may even be diagnosed with learning disabilities, ADHD, or other disorders – even though the initial source of their difficulties is not an internal disorder.

and this may lead to a diagnosis of LD, ADHD, and/or other disorders – even though most will not have problems initially caused by an internal disorder

Of course, a youngster does not have to live in poverty to be deprived of the opportunity to develop the initial capabilities and attitudes to succeed in elementary-school programs. Some simply develop a bit slower than their peers. Their long term learning potential is not necessarily compromised. Yet when a task demands developmental levels they have not yet reached, these children become vulnerable to failure. For instance, youngsters who have not yet developed to a level where they can visually discriminate between the letter b and d or make auditory discriminations between words such as fan and man are in trouble if the reading curriculum demands they do so. And months later, when their development catches up to that curriculum demand, the reading program relentlessly has moved on, leaving them farther behind. Given the wide range of normal developmental variation, it is no surprise that many such children experience problems.

When students have trouble learning at school, they frequently manifest behavior problems. This is a common reaction to learning problems. And, of course, behavior problems can further exacerbate learning problems. (This sometimes leads to a dual diagnosis of ADHD and LD.) Problems may appear simultaneously and stem from the same or separate causes. With such complexity, confusion about the relationship between learning and behavior problems is common.

In some geographic areas, large numbers of students experience a cluster of problems associated with poverty, unstable or stressed family

conditions, high mobility rates, limited English proficiency, community violence, substance abuse, inadequate health care, and lack of enrichment opportunities. Such problems are exacerbated as youngsters internalize the frustrations of confronting barriers and the debilitating effects of performing poorly at school. In some locales, the reality often is that more than half the students may show some form of learning, behavior, and/or emotional problem. And, in most schools in these locales, teachers are ill-prepared to address the problems in a potent manner.

For instance, the first-grade reading curriculum begins with the assumption that all students have a certain level of auditory and visual perceptual capability. It is important to distinguish *acuity* from *perception*. Auditory and visual perception differ from auditory and visual acuity. Acuity is a matter of sharpness and depends on the sensitivity of one's sense organs, (e.g., an eye that can clearly see shapes and forms). Perception is the psychological process by which a person organizes and makes sense out of incoming sensory information. A child may have 20/20 vision (good acuity) but still be unable to perceptually discriminate between similar letters or sounds.

If young David has not yet developed certain processing capabilities at the expected level expected for his age, he is likely to struggle with parts of his reading lessons. As the teacher moves forward to new material, David falls further behind. A year or so later, his neurological development may catch up, giving him the physiological capacity he previously lacked. Unfortunately, by that point he will have missed critical foundational skills.

In situations like this – and even in many cases where neurological differences only temporarily disrupt learning – the student's later learning difficulties are no longer rooted in the original developmental delay. Instead, they stem from the absence of essential prerequisites. These gaps, combined with the frustration and lowered motivation that often accompany repeated failure, leave the youngster increasingly vulnerable to ongoing learning problems.

Ultimately, whether early difficulties harden into long-term barriers depends greatly on how the environment responds. When adults recognize the vulnerability and accommodate it with timely support, the trajectory of learning can change dramatically for the better.

Enhancing Supports for All Students Who Need Them

True learning disabilities are not curable. However, all students who experience learning problems can benefit from well-designed instruction and supports. Positive outcomes depend on effective personalized interventions combined with the learner's motivation and capabilities. This includes classrooms that provide personalized instruction and special assistance (including accommodations and compensatory strategies).

Any school that has a significant number of students experiencing learning, behavior, and emotional problems needs to develop and implement a unified, comprehensive, and equitable system of student/learning supports. The aim of such a system is to ensure all students have

an equal opportunity to succeed at school (and beyond). This necessitates a system that is dedicated directly to (1) addressing barriers to learning and teaching and (2) reengaging disconnected students. Engagement is critical. Schools that fail to ensure meaningful, ongoing student engagement struggle to sustain participation, positive behavior, and effective learning over time.

To meet these challenges, policy makers and researchers must help schools move beyond narrow, fragmented services and initiatives. Schools need guidance and support in weaving existing resources into a cohesive approach and then developing a comprehensive and equitable system.

Daily classroom and schoolwide supports are conceived as more than a simple continuum organized around a standard MTSS or tiered framework. For a continuum of interventions to guide significant school improvements, each level needs to be developed into an integrated set of subsystems that braid together existing school and community resources aimed at common concerns.

Yet a continuum alone is insufficient. The many disconnected activities occurring at each subsystem level need to be organized into a delimited set of well-defined domains of support – domains that reflect the major areas in which schools work every day to address barriers to learning and teaching. For example, interventions can be organized into about six domains of support and then mapped across the continuum.*

By combining a continuum of interventions with a clear set of domains, schools gain a unifying framework. This framework has been used by states, districts, and individual schools to map existing efforts and to plan the development of a unified, comprehensive, and equitable system of student and learning supports.

*For additional information on the system of supports school and students need, visit the *National Initiative for Transforming Student and Learning Supports* <https://smhp.psych.ucla.edu/newinitiative.html>

Appendix

About the Causes of Learning Disabilities

In contrast to commonplace learning problems, learning disabilities have been defined as stemming from a central nervous system (CNS) dysfunction. However, the dysfunction is seen as a relatively subtle or minor one. That is, the term is used to account for neurologically-based learning problems that are not the result of gross brain damage or the kind of severe CNS dysfunction associated with major disorders such as cerebral palsy.

Symptoms of learning disabilities that are commonly cited include:

- Understanding and using language (morphological and semantic processing)
- Hearing and working with sounds in words (phonological processing)
- Recognizing written words and letters (orthographic processing)
- Processing information quickly
- Holding information in memory and retrieving it when needed
- Understanding spatial relationships and visual information
- Problem solving and reasoning
- Struggles with planning, organizing and decision making

As you read on, remember that the factors discussed can, but do not always cause CNS dysfunctions, and when they do, the effects may be so minimal as not even to result in learning problems.

Factors Causing Central Nervous System Problems

Factors that can cause CNS problems and lead to learning disabilities may be grouped into four categories: (1) genetic, (2) prenatal, (3) perinatal, and (4) post-natal. Current research stresses that there is rarely a single cause for a learning disability – multiple risk factors often interact.

Genetic Factors. Current research suggests that genetic influences can play a substantial – but not exclusive – role in learning disabilities. Although family patterns are common, similarity between parent and child may reflect shared environments as well as shared genes. Many learning disabilities now appear to involve polygenic influences – multiple genes each contributing small effects – rather than simple inheritance patterns. Learning disabilities also can coexist with other neurodevelopmental conditions such as ADHD or autism, which share overlapping genetic risk factors.

Children often grow up in similar educational and home environments as their parents, so environmental attitudes toward reading, learning, and school can shape outcomes. These learned patterns can appear hereditary when they are actually transmitted through experience, not DNA.

A small number of specific genetic syndromes – such as Down syndrome or neurofibromatosis – are well documented contributors to intellectual or learning difficulties. Such conditions can disrupt brain development by producing abnormal neural structures, altered maturation patterns, or biochemical irregularities.

Prenatal Factors (Before Birth). Modern studies continue to identify the prenatal period as a highly sensitive window for brain development. Certain conditions increase risk for later CNS difficulties and learning disabilities:

- Maternal infections, including rubella and other pathogens that cross the placenta
- Poor maternal nutrition, including micronutrient deficiencies
- Maternal health conditions such as diabetes, thyroid disorders, kidney disease, and chronic stress
- Exposure to harmful substances, including alcohol, tobacco, illicit drugs, and environmental toxins
- Use of certain medications or radiation exposure
- Prematurity or fetal growth restriction, both of which are strongly associated with later developmental and learning difficulties. Premature infants face heightened risks due to vulnerability of developing neural circuits.

Advances in prenatal screening and maternal care continue to reduce many risks, but the prenatal period remains one of the most significant contributors to later learning challenges.

Perinatal Factors (During Birth). Although less common than prenatal causes, perinatal complications can still contribute to CNS injury:

- Birth trauma, including intracranial hemorrhage
- Oxygen deprivation during prolonged labor or when the umbilical cord restricts breathing
- Very low birth weight or extreme prematurity
- Effects of anesthesia or medications used during labor

Perinatal influences are now better understood through advanced neuroimaging and long term developmental studies. Research highlights that perinatal risks interact with genetic susceptibility rather than acting alone.

Postnatal Factors (After Birth). After birth, a wide range of medical and environmental conditions can affect CNS development:

- Severe infections such as meningitis or encephalitis
- Traumatic brain injuries, especially in early childhood
- Exposure to toxins, including lead and other environmental pollutants
- Chronic malnutrition and vitamin deficiencies
- Endocrine and metabolic disorders (thyroid abnormalities, hypoglycemia, calcium imbalance)
- Seizure disorders
- Chronic stress or environmental deprivation, which can affect brain connectivity and learning pathways

Many postnatal causes are preventable through public health measures, such as vaccination, toxin reduction, nutrition support, and safer environments.

Children do not all reach the same developmental milestones at the same time. Variability is normal. Problems emerge when curriculum pacing and school structures don't accommodate that variability, when early skill gaps accumulate without support, and when students become disengaged. In other words, mismatch, not "maturational defect," often explains early struggle – and mismatch is something schools can change.

Current Neurological Explanation of Learning Disabilities

Modern research consistently characterizes learning disabilities (LDs) as neurodevelopmental disorders grounded in the (1) genetic, (2) prenatal, (3) perinatal, and (4) post-natal factors highlighted above. These are seen as producing differences in brain structure, function, and genetic regulation that lead to differences in how the brain processes information. These conditions – such as dyslexia, dyscalculia, and dysgraphia – occur despite adequate intelligence, instruction, and opportunity, and reflect atypical information processing in specific neural circuits.

Brain structure and function. Neuroimaging consistently shows atypical development in regions responsible for language, memory, attention, reading, and numerical processing (e.g., in dyslexia, altered activity in the left hemisphere language network is documented).

Neural processing efficiency. Disruptions in processing speed, phonological processing, working memory, and executive functioning underlie many specific learning disabilities.

Information processing disruptions. Contemporary theories emphasize that LDs arise from breakdowns in sensory cognitive information processing, not from motivation or instructional factors alone.

The sequence of events becomes complicated after a CNS disorder causes learning problems. More often than not, the learning problems themselves cause more problems. Subsequent development, learning, and performance are disrupted. The impact on the individual can extend into all areas of learning and can be responsible for a variety of negative emotions, attitudes, and behaviors. The combination of performance problems and problems stemming from negative psychological effects often cause the learning problems to become worse. That is, these factors become secondary instigating factors leading to further handicapping conditions that cause specific learning problems to become wide-range performance and behavior problems.

Major Criticisms of the Neurobiological Research on Learning Disabilities

Major criticisms of the neurobiological research on learning disabilities (LDs) cluster around methodological diversity, the heterogeneity of LDs, overemphasis on biological explanations, limited generalizability, diagnostic ambiguity, and uncertain causal pathways. These critiques do not invalidate neurobiological findings; rather, they caution against relying on neurological explanations in isolation and highlight ongoing questions about how severe or specific difficulties must be before diagnosing a disorder. They also underscore concerns about labeling, equity, and socio cultural bias. Here are a set of major concerns:

Heterogeneity of learning disabilities and study samples: Neurologically based learning problems (i.e., LD) represent a broad set of conditions that may arise from different neural pathways and cognitive profiles. This heterogeneity – combined with the difficulty of distinguishing LD symptoms from those stemming from environmental influences, inadequate instruction, or linguistic differences – poses serious challenges for differential diagnosis. One result is that a significant number of misdiagnosed persons often are included in LD studies, which compromises interpretation of findings. Additionally, many studies rely on small, highly specific samples, limiting broader generalizability of results.

Methodological inconsistency across studies: The research base draws on widely divergent methodologies – including genetic, neuroanatomical, electrophysiological, and neuropsychological approaches. While each contributes valuable insights and highlights many neurological correlates, the divergence of methods complicates synthesis and comparison across studies. This methodological variability makes it difficult to integrate findings into a coherent explanatory model of learning disabilities.

Difficulty linking brain differences to functional impairment: Although numerous brain differences have been identified, their functional significance is often unclear. Neuroimaging studies frequently show atypical activation (e.g., reduced left hemisphere in dyslexia), but evidence is lacking about whether these differences are causal, compensatory, or simply correlational. Without clear causal pathways, many neurological findings remain descriptive rather than explanatory.

Overemphasis on biological determinism: Even comprehensive neurobiological reviews caution that the LD literature tends to over-attribute causality to genetics and brain differences, while under-emphasizing socio-environmental contributors. In general, biomedical framing can inadvertently medicalize normal learning variability, increasing the risk of overdiagnosis or misdiagnosis. This contributes to a narrowing of focus that can divert attention from contextual interventions and systemic improvements that support a wider range of learners.

In sum, while neurobiological research is essential to understanding learning disabilities and distinguishing them from other learning problems, the field has not yet achieved a unified or fully explanatory framework. Integrating biological, psychological, and environmental perspectives remains a fundamental task.

Some References Used in Preparing this Resource

Adelman, H.S., & Taylor, L. (2017). *Addressing barriers to learning: in the classroom and schoolwide*. Los Angeles: Center for MH in Schools & Student?learning Supports. <https://escholarship.org/uc/item/55w7b8x8>

Asdaq, S.M.B., Alhowail, A.H., Rabbani, S.I., Nayeem, N., Asdaq, S.M.E., & Nausheen, F. (2025). Learning disabilities in the 21st century: Integrating neuroscience, education, and technology for better outcomes. *SAGE Open*, 1-25. <https://doi.org/10.1177/21582440251365483>

American Speech-Language-Hearing Association. (n.d.). *IDEA: Specific learning disabilities*. <https://www.asha.org/advocacy/idea/04-law-specific-ld/>

Bartosz, M.R., Sajewicz-Radtke, U., Bieleninik, Ł., & Lipowska, M. (2023). Developmental learning disorders in children with prenatal/perinatal exposure to hypoxia: A systematic review protocol. *PLOS ONE*. <https://doi.org/10.1371/journal.pone.0293067>

Bell, P.F. (2024). *Learning disabilities*. EBSCO Research Starters. <https://www.ebsco.com/research-starters/health-and-medicine/learning-disabilities>

Capilla, A., Carboni Román, A., Maestú, F., Ortiz, T., & del Río, D. (2006). The neurobiological foundations of learning disabilities. *Revista de Neurología*, 42(Suppl. 2), 171–175. <https://doi.org/10.33588/rn.42S02.2005832>

Centers for Disease Control and Prevention. (n.d.). *The ICF: An overview*. Author. https://www.cdc.gov/nchs/data/icd/icfoverview_finalforwho10sept.pdf

Chyl, K., Fraga González, G., Brem, S., & Jednoróg, K. (2021). Brain dynamics of (a)typical reading development: A review of longitudinal studies. *NPJ Science of Learning*, 6(4). <https://www.nature.com/articles/s41539-020-00081-5.pdf>

Dragoo, K. (2024). *The Individuals with Disabilities Education Act (IDEA), Part B: Key statutory and regulatory provisions*. Congressional Research Service. <https://www.congress.gov/crs-product/R41833>

Fiedorowicz, C., Benezra, E., MacDonald, G.W., McElgunn, B., Wilson, A.M., & Kaplan, B.J. (2001; updated 2024). *Neurobiological basis of learning disabilities – An update*. Learning Disabilities Association of Canada. <https://canadianfacesoflearningdisabilities.ca/sites/default/files/2024-09/Neurobiological.pdf>

Gigliotti-Manessis, A., et al. (2024). Perinatal risk and later intellectual and developmental disabilities. In M. G. Valdovinos (Ed.), *Intellectual and developmental disabilities (Contemporary Clinical Neuroscience)*. Springer. https://doi.org/10.1007/978-3-031-66932-3_9

Hawkins, W. (2024). The neurobiological basis of learning disabilities: Genetics, brain function, and environment. *Journal of Abnormal and Behavioral Psychology*, 10(6). <https://www.hilarispublisher.com/open-access/the-neurobiological-basis-of-learning-disabilities-genetics-brain-function-and-environment.pdf>

Lindsay Shea, L., Sadowsky, M., Tao, S., et al. (2024). Perinatal and postpartum health among people with intellectual and developmental disabilities. *JAMA Network Open*, 7(8), e2428067. <https://doi.org/10.1001/jamanetworkopen.2024.28067>

National Center for Education Statistics. (2024). *Students with disabilities (Indicator CGG)*. U.S. Department of Education, Institute of Education Sciences. <https://nces.ed.gov/programs/coe/indicator/cgg/students-with-disabilities>

National Center for Education Statistics. (2026). *Fast facts*. <https://nces.ed.gov/fastfacts/display.asp?id=16>

Ozernov-Palchik, O., & Gaab, N. (2016). Tackling the “dyslexia paradox”: Reading brain and behavior for early markers of developmental dyslexia. *Wiley Interdisciplinary Reviews: Cognitive Science*, 7(2), 156–176. <https://europepmc.org/articles/PMC4761294>

Perdue, M., et al. (2022). Reading intervention and neuroplasticity: A systematic review and meta-analysis of brain changes associated with reading intervention. *Neuroscience & Biobehavioral Reviews*, 132, 465–494. <https://doi.org/10.1016/j.neubiorev.2021.11.011>

Peterson, R.L., & Anderson, N.J. (2023–2024). Neurodevelopmental disorders: Learning disorders. In *Tasman's psychiatry* (Living reference work). Springer Nature. https://link.springer.com/rwe/10.1007/978-3-030-42825-9_53-1

Richlan, F. (2020). The functional neuroanatomy of developmental dyslexia across languages and writing systems. *Frontiers in Psychology*, 11, 155. <https://doi.org/10.3389/fpsyg.2020.00155>

Rubia, K. (2018). Cognitive neuroscience of attention deficit hyperactivity disorder (ADHD) and its clinical translation. *Frontiers in Human Neuroscience*, 12, 100.
<https://doi.org/10.3389/fnhum.2018.00100>

Rubia, K. (2024). Network connection issues in ADHD. *American Journal of Psychiatry* (Editorial).
<https://psychiatryonline.org/doi/epdf/10.1176/appi.ajp.20240319>

Sampson, R.J., Morenoff, J.D., & Gannon-Rowley, T. (2002). Assessing “neighborhood effects”: Social processes and new directions in research. *Annual Review of Sociology*, 28, 443–478.
<https://www.jstor.org/stable/3069249?seq=1>

Schneidert, M., Hurst, R., Miller, J., & Üstün, B. (2003). The role of environment in the International Classification of Functioning, Disability and Health (ICF). *Disability and Rehabilitation*, 25(11–12), 588–595.
<https://efisiopediatric.com/wp-content/uploads/2017/06/The-Role-of-Environment-on-the-ICF.pdf>

Tallal, P., Miller, S., Jenkins, W., & Merzenich, M. (1997). The role of temporal processing in developmental language-based learning disorders: Research and clinical implications. In B. Blachman (Ed.), *Foundations of reading acquisition and dyslexia* (pp. 49–66). Erlbaum.

U.S. Department of Education. (2025). *Individuals with Disabilities Education Act*.
<https://www.ed.gov/laws-and-policy/individuals-disabilities/idea>

World Health Organization. (2001). *International Classification of Functioning, Disability and Health*.
<https://www.who.int/standards/classifications/international-classification-of-functioning-disability-and-health>

Xu, C., Li, Y., Yu, H., Li, Q., Liang, Y., Zhou, K., Li, Q., Yu, X., Zeng, X., Qu, Y., & Yang, W. (2025). Rising prevalence of parent reported learning disabilities among U.S. children and adolescents aged 6–17 years: NSCH, 2016–2023. *PLOS ONE*, 20(10), e0333850.
<https://doi.org/10.1371/journal.pone.0333850>

Yadav, J.S. (2024). Understanding specific learning disabilities (SLD): A narrative literature review and analysis. *International Journal of Advanced Scientific Research*, 9(2), 79–82.
<https://www.allscientificjournal.com/assets/archives/2024/vol9issue2/9038.pdf>

Zefferino, T., & Eden, G. (2000). The neural basis of developmental dyslexia. *Annals of Dyslexia*, 50, 3–30. <https://pubmed.ncbi.nlm.nih.gov/20563778/>