



Defining dyslexia: 2025 revision

Hugh W. Catts¹ · Charles W. Haynes² · R. Malatesha Joshi³

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Abstract

In October 2025, the Board of Directors of the International Dyslexia Association approved a revised definition of dyslexia. This paper introduces this 2025 definition, outlines the iterative and data-driven process used in its development, and clarifies the intended purposes and boundaries of the definition for different stakeholders. The paper also reviews the current scientific evidence relevant to each component of the definition and provides the rationale for revisions to the 2002 IDA definition. In addition, it offers a set of high-level, practice-oriented guidelines intended to support the appropriate application of the definition. Finally, the paper emphasizes that, like its predecessors, the 2025 definition should be regarded as a living document, one that will continue to evolve as scientific understanding advances and as educational and clinical practices change.

Keywords Dyslexia · Definition · Multifactorial

2025 definition

Dyslexia is a specific learning disability characterized by difficulties in word reading and/or spelling that involve accuracy, speed, or both and vary depending on the orthography. These difficulties occur along a continuum of severity and persist even with instruction that is effective for the individual's peers. The causes of dyslexia are complex and involve combinations of genetic, neurobiological, and environmental influences that interact throughout

✉ Hugh W. Catts
hcatts@fsu.edu

Charles W. Haynes
chaynes@mghihp.edu

R. Malatesha Joshi
mjoshi@tamu.edu

¹ Florida State University, Tallahassee, USA

² MGH Institute of Health Professions, Boston, USA

³ Texas A&M University, College Station, USA

development. Underlying difficulties with phonological and morphological processing are common but not universal, and early oral language weaknesses often foreshadow literacy challenges. Secondary consequences include reading comprehension problems and reduced reading and writing experience that can impede growth in language, knowledge, written expression, and overall academic achievement. Psychological well-being and employment opportunities also may be affected. Although identification and targeted instruction are important at any age, language and literacy support before and during the early years of education is particularly effective.

The International Dyslexia Association's (IDA) prior definition of dyslexia has gained widespread acceptance and has influenced both research and practice since its adoption in 2002 (Appendix A). In introducing the definition, Lyon et al. (2003) emphasized that definitions should reflect the best that current science has to offer. They acknowledged that the 2002 definition was a working document and that as science progressed, more knowledge about dyslexia would be acquired, and the definition would need to be modified.

Over the past two decades, substantial advances have been made in our understanding of dyslexia. Research has expanded globally to examine dyslexia across a wide range of languages, demonstrating that the characteristics of literacy difficulties and the underlying deficits that contribute to them are influenced by the orthographic properties of the writing system being learned (Share, 2025). Advancements in statistical methodology, genetic research, and neuroimaging indicate that the causal basis of dyslexia is multifactorial, involving a combination of genetic, neurological, and environmental influences that impact outcomes in a probabilistic manner (Catts & Petscher, 2022; O'Brien & Yeatman, 2020; Pennington, 2006; Pennington et al., 2012; Snowling, 2008; van Bergen et al., 2014). In addition, research has demonstrated that diagnostic approaches relying on discrepancies between general intellectual ability and word-level reading difficulties lack predictive validity (Siegel & Hurford, 2019; Stuebing et al., 2015). Finally, we have gained a better understanding of the scope of secondary consequences associated with dyslexia (Livingston et al., 2018) and the importance of early identification as well as the characteristics of interventions required to address the literacy difficulties and downstream consequences (Lovett et al., 2017).

Revision process

In response to the advances in the scientific understanding of dyslexia, the IDA Board of Directors initiated an iterative, data-driven process to revise the 2002 definition. In April 2024, a Steering Committee of 18 members and an Advisory Committee of 74 members were formed. The committees were comprised of researchers, practitioners, educators, and parents and were diverse in terms of race, ethnicity, and linguistic background. Members of both committees completed a survey evaluating components of the 2002 definition based on contemporary research and practice. The Steering Committee met in-person in April 2025 to discuss the survey results and debate the evidence and recommendations. Additional evidence was provided by a series of papers in a special issue of the *Annals of Dyslexia* that revisited the 2002 definition of dyslexia (Catts et al., 2024; Elliot & Grigorenko, 2024; Gearin et al., 2024; Odegard et al., 2024; Snowling & Hulme, 2024; Vaughn et al., 2024; Wolf et al., 2024). Agreement was reached on a draft definition, which was released for

public comment in August 2025. More than 3,000 responses were received and systematically reviewed, leading to a revised definition that was evaluated and approved by the IDA Board in October 2025.

Purposes and boundaries of the revised definition

The revised definition has several interrelated purposes. First, it provides a clear and up-to-date description of the construct of dyslexia that reflects current scientific and clinical knowledge. In doing so, it brings together evidence concerning core characteristics, multifactorial causal base, secondary consequences, and broad implications for intervention. Second, it establishes a shared reference point for communication among researchers, educators, clinicians, families, and policymakers, promoting consistency in how dyslexia is conceptualized and discussed across disciplines and settings. It uses carefully selected language to bridge research, practice, and public discourse; as such, it is intended to serve as a vehicle for public awareness and advocacy. Beyond its descriptive and communicative functions, the definition is intended to direct professional practice by providing broad research-based guidance. It highlights difficulties in word-level literacy as the central feature of dyslexia and emphasizes that these difficulties vary in severity along a continuum. It also acknowledges the role of instruction and orthography and draws attention to the importance of early intervention. These features are meant to guide professional reasoning rather than prescribe specific assessment thresholds, diagnostic procedures, or instructional methods; specific practice guidelines are left to be determined by the professional community.

The definition also carries no direct legislative or regulatory authority. Its influence depends on how national, state, and local agencies interpret and apply its principles. While it can serve as a foundation for advocacy and policy development, it cannot alone ensure adequate funding, equitable implementation, or access to services. Furthermore, no definition is immune to misapplication. When interpreted too narrowly, definitional language can exclude students in need; when applied too broadly, it can weaken diagnostic clarity. Safeguards against such misuse rely on informed practitioners, engaged families, and responsive policy systems.

In the following sections, we address each of the central components of the 2025 IDA definition, as well as elements of the 2002 IDA definition that were intentionally omitted or revised. For each component, we review empirical and theoretical evidence that motivated its inclusion, modification, or exclusion and then discuss key implications for practice.

Specific learning disability

The revised definition continues to classify dyslexia as a specific learning disability—a designation that is recognized internationally and parallels the World Health Organization (2019) term “developmental learning disorder” in the International Classification of Diseases-11. This classification also aligns with the Individuals with Disabilities Education Act (2004) in the United States, thereby preserving the legal rights and educational services to which individuals with dyslexia are entitled. In addition, identifying dyslexia as a specific learning disability places it within a broader category of learning disabilities, some of

which (dysgraphia, dyscalculia) frequently co-occur with dyslexia. Awareness of comorbid learning disabilities could potentially improve the accuracy of diagnosis and facilitate more comprehensive interventions tailored to the full range of a students' learning needs (Wagner, 2018).

Some object to the term “disability” because it can carry negative socio-emotional connotations, lower expectations, and imply that the condition is categorical rather than continuous. Although alternative terms such as “learning difference” or “neurodiversity” may help avoid these associations, they can also obscure the reality that these challenges are genuine, persistent, and have significant educational and social implications. The term “disability” acknowledges the seriousness of the difficulties and can help individuals access the support and services necessary to improve literacy outcomes and mitigate the possible negative effects of literacy failure.

Word-level literacy difficulties

The 2025 definition continues to recognize **difficulties in word reading** as a primary characteristic of dyslexia. This statement emphasizes that dyslexia involves challenges at the word-level. While these difficulties can have important downstream effects on oral reading fluency and reading comprehension, word-level problems are its core feature. Within the framework of the dual-route model (Coltheart et al., 1993), word reading difficulties can include problems with decoding (sounding out words using sound-symbol correspondences) and/or sight-word reading (recognizing words as familiar orthographic units). Ziegler and Goswami (2005) argue that readers rely on different grain-size units to decode words. In alphabetic languages, beginning readers typically rely on phoneme-size units, but with experience, use larger grain-size units such as onset/rime, syllables, or morphemes to recognize words more efficiently (also see Share, 2025). In other orthographic systems such as Japanese Kana, young readers begin with syllable-size units, while in Chinese Hanzi and Japanese Kanji morpheme-size units play a critical role in word reading. In each orthographic system, there is a limited and learnable set of units, and as such, the units can be more easily combined in various ways to represent larger meaningful units. In this developmental process, each successful decoding becomes a learning opportunity, gradually leading to the “unitization” of the word, in which it is stored and recognized automatically as a single unit. As will be elaborated below, the characteristics of different orthographies influence the specific challenges individuals face in learning to use various grain-size units to develop accurate and automatic word reading.

Spelling difficulties remain in the definition because they are a central feature of dyslexia, particularly in alphabetic language systems (Berninger et al., 2008). Because spelling relies heavily on storage and retrieval of precise orthographic representations, these difficulties often persist even after word reading problems have been resolved (Maughan et al., 2009) and can negatively impact written expression (Sumner et al., 2016). The cognitive effort associated with inefficient encoding or retrieving of the spelling of a word can overload working memory, thereby interfering with high-level writing processes such as planning, idea formation, and grammatical formulation. Whereas spelling is a salient component of many written systems, in orthographies such as Mandarin Chinese (Hanzi), Japanese (Kana & Kanji), and many south Asian scripts (Akshara), the term “spelling” is not typically used.

Instead, these systems emphasize fine-motor formation of written language units (Joshi & McBride, 2019). For this reason, the grapheme-to-phoneme aspect commonly denoted by the term may be less applicable to those writing systems.

The definition continues to acknowledge that literacy difficulties may involve challenges with **accuracy, speed, or both**. These elements form the basis of word-level automaticity, which in turn, contribute to text-level fluency. The latter is important for comprehension, oral reading, and written fluency. A novel component in the 2025 definition is the recognition that the nature of these difficulties **varies by orthography**. Written language systems differ in numerous ways that affect word reading/spelling (Daniels & Share, 2018). For example, one of the most influential differences is the transparency of the orthography, that is, how closely written language units (e.g., graphemes) correspond to spoken language units (e.g., phonemes). Transparent or shallow orthographies have a close relation between written symbols and spoken language units, while opaque or deep orthographies show less consistency.

English is an outlier in orthographic transparency (Share, 2008). Due to historical, linguistic, and cultural influences, English orthography is far less consistent than that of many other alphabetic orthographies. This opacity poses a challenge for children learning to use grapheme-phoneme correspondence to decode novel words (Seymour et al., 2003), especially for those with deficits in phonological processing. Children with dyslexia who are learning to read English often attend less to grapheme-phoneme relationships and instead rely on alternative, less efficient cues (Harm & Seidenberg, 2004; Stanovich, 1984). Reduced attention to individual letters or other grain-size units and their associated sounds can lead to underspecified grapheme-phoneme representations and delay the development of unitized orthographic representations of words (Compton et al., 2014). This is especially problematic for vowel production which relies on knowledge of the probabilistic constraints of the orthography to tune pronunciation (Steady et al., 2021a, b). Because of the complexities of English orthography, children with dyslexia generally have problems in both accuracy and speed of word reading and spelling. Their difficulties are most often apparent in reading/spelling pseudowords which depend heavily on knowledge and automaticity of grapheme-phoneme correspondence (Steady et al. 2021a). This applies as well to Danish, another opaque orthography. In fact, in Denmark, dyslexia is identified primarily based on difficulties in pseudoword reading (Poulsen et al., 2023).

In more transparent orthographies (e.g., Finnish, Spanish, Italian), individuals with dyslexia show less problems with accuracy of word reading. Children learning to read these orthographies generally reach near-ceiling levels of accuracy in word reading after a year of instruction (Seymour et al., 2003). In contrast, those with dyslexia become rate-disabled and show speed deficits and a lack of automaticity in both word and non-word reading (Seymour et al., 2003; Ziegler & Goswami, 2005). But as with English speakers with dyslexia, problems are more pronounced in non-word reading than word reading, suggesting that a similar phonological-based deficit impacts reading across orthographies (Ziegler et al., 2003). In transparent orthographies, speed-based problems also appear to extend to spelling and written fluency (Martínez-García et al., 2021; Sumner et al., 2013).

There are exceptions to the primary occurrence of speed deficits in more transparent orthographies. For example, Shany and colleagues identified subgroups of children with dyslexia who were accuracy-disabled vs. rate-disabled in Hebrew (Shany & Share, 2011) and Arabic (Shany et al., 2023). Further examination showed that the former subgroup had

deficits in phonological and morphological awareness whereas the latter had a deficit in rapid automatized naming (RAN). In a more recent study, Jabbour-Danial et al. (2024) examined this relationship from a longitudinal causal perspective in children learning to read Arabic. They found that a subgroup identified based on poor RAN performance in preschool became slow but accurate readers in Grade 1 and a subgroup identified by deficits in phonological and morphological awareness became both inaccurate and slow readers.

Distribution of word-level literacy difficulties

The 2025 definition makes the important point that word-level literacy **difficulties occur along a continuum of severity**. Word reading and spelling abilities are continuously distributed, with most individuals falling within the average range and smaller percentages near the higher and lower ends of the distribution. However, in the initial stages of acquisition, a floor effect is often observed, with more children than normal clustered at the lower end (Catts et al., 2009). As instruction progresses, literacy abilities tend to assume a more typical normal distribution. Within this larger distribution, individuals with dyslexia are those who persistently perform at the lower end of the continuum. A key challenge is the absence of a universally agreed upon boundary between where typical literacy skills end and where poor literacy abilities begin. Determining this cut-point is ultimately the responsibility of practitioners, researchers, and policymakers. Of course, there is more to the diagnosis of dyslexia than performance below a cut-off, but an agreed upon boundary is often essential. Some propose that the division should be set higher, suggesting that as many as one in five children has the condition (Shaywitz et al., 2021), whereas many others contend that dyslexia represents a more severe condition, affecting approximately 5–10% of students (see Fletcher et al., 2019). Regardless, the continuous nature of word-level literacy abilities highlights the fact that those with more severe and less severe word-reading problems fall on the same continuum of literacy ability, and their performance differs by degree. Consequently, they share many of the same underlying risk factors and outcomes and can benefit from intervention tailored to their specific needs (Catts & Petscher, 2022). Therefore, a focus on diagnosing and addressing dyslexia has broader implications for benefiting any reader who falls toward the lower end of the literacy distribution. In fact, Brady (2019) has argued that rather than restricting intervention to the most impaired readers, it is preferable to employ a broad preventive framework that targets all students who struggle to learn to read.

Role of instruction

The revised definition notes that a defining characteristic of dyslexia is that word-level literacy difficulties **persist even with instruction that is effective for the individual's peers**. Reference to instruction is necessary, for without it, most individuals would exhibit these difficulties. Ideally, each instructional program or curriculum should be supported by research demonstrating effectiveness; however, given that many instructional programs worldwide have not been rigorously studied, practices grounded in research-supported instructional principles can serve as options until direct evidence for each program or curriculum becomes available (Spear-Swerling, 2022).

Establishing a benchmark for effective instruction and response to it is a challenge because the quality, consistency, and fidelity of instruction can vary considerably across

contexts. Measurement error is also a concern in quantifying literacy progress (Fletcher et al., 2014). But procedures need to be in place to ensure that appropriate classroom instruction is provided and that reliable assessments are used to track progress. Initially, some children perform poorly on word-level literacy assessments but with continued instruction their difficulties resolve. Children with dyslexia, on the other hand, distinguish themselves in that their difficulties persist when compared to benchmark norms and/or to their classmates' performance (Shaywitz et al., 1999).

The consideration of persistence is not an endorsement of a “wait to fail” approach. Too often the identification of dyslexia has been postponed until well into the elementary school grades, far after the time that intervention is the most effective (Ozernov-Palchik & Gaab, 2016). Depending on the school's curriculum, persistence of literacy difficulties can be observed as early as the first year of instruction and can be confirmed by examining the child's response to short-term supplemental instruction (Miciak & Fletcher, 2020). Research clearly indicates that intervention initiated in the early stages of learning to read (at least by first grade in the US) results in better outcomes than intervention that takes place in later primary grades (Connor et al., 2013; Lovett et al., 2017). Although dyslexia cannot be diagnosed before school entry, its risk factors can be identified much earlier (Snowling & Melby-Lervåg, 2016), and meta-analytic evidence supports providing a range of early literacy interventions from early childhood through preschool (National Early Literacy Panel, 2008).

Neurobiological in origin

The 2002 definition described dyslexia as being “neurobiological in origin.” Although neurobiological factors play a necessary causal role in dyslexia, this description does not fully capture the complexities of its causal basis. The revised definition offers a more dynamic perspective, recognizing that the **causes of dyslexia are complex and involve combinations of genetic, neurobiological, and environmental influences that interact throughout development.** The phrase “combinations of” underscores the research showing that there is no single cause of dyslexia; rather it is multifactorial in nature (Pennington et al., 2012; Rinne et al., 2024). That is, multiple genetic, neurological, and environmental factors add and/or interact to cause dyslexia. Further details on the multifactorial causal basis of dyslexia are discussed below in the section on underlying cognitive deficits.

Regarding dyslexia's genetic basis, research has now associated variation in numerous genes with individual differences in reading and related processes. In a recent review, Dobrynin et al. (2025) cataloged genes linked with reading disabilities and reading-related processes over the last four decades and identified at least 175 candidate genes. These are not genes specific to reading; rather they are mostly evolutionarily ancient genes, some of which are involved in shaping brain morphology and neural connectivity during early development. Moreover, genetic influences on neural development are more accurately characterized as *differences* rather than *deficits*, and many of these differences are also present in individuals without dyslexia (Mountford et al., 2025; Protopapas & Parrila, 2018). Consequently, current neuroscience has thus far been unable to identify definitive brain-based markers that can be used to diagnose dyslexia or inform intervention. This absence

of diagnostic biomarkers is not unique to dyslexia but is a common characteristic of many other neurodevelopmental disorders (Cortese et al., 2023).

The influence of genes related to dyslexia is probabilistic rather than deterministic. These genes may increase an individual's probability, that is likelihood, of experiencing reading difficulties, but they do not predetermine that they will have reading problems. Genetic factors operate within a complex and dynamic system, continuously interacting with environmental influences from the earliest stages of life through ongoing development (Karmiloff-Smith et al., 2014). Environmental, social, and health contexts, such as prenatal and postnatal conditions, adverse childhood experiences, malnutrition, heavy metals, chronic illness, impoverished home language and literacy environment, and school-related anxiety, among other factors can all shape and interact bidirectionally with genetic vulnerability and brain development (Blodgett & Lanigan, 2018; Delaney-Black et al., 2002; Evens et al., 2015). Instruction also plays a pivotal role in this interplay: ineffective teaching can exacerbate challenges to the development of a functional brain system that supports reading acquisition, whereas effective, evidence-based instruction can mitigate these challenges and foster progress.

While the revised definition acknowledges the vital contribution of environmental factors, it does not imply that environmental influences alone cause dyslexia. Rather, it underscores that dyslexia results from interacting factors across multiple levels of influence. Importantly, this definition challenges the current practice in some settings and locales of excluding from a dyslexia diagnosis individuals with significant environmental risk involving cultural factors, economic or environmental disadvantages and differences in the language of instruction. According to the definition, having an environmental risk in no way rules out the possibility that a child has dyslexia and that brain-based differences play a causal role.

The inclusion of the phrase **throughout development** emphasizes that dyslexia is not confined to a single stage of life and may affect learning across the developmental continuum (Scarborough, 2005). For example, risk factors for dyslexia can impair oral language learning in the early years, reduce literacy and language learning in early grades, impede acquisition and integration of content in middle and high school, or reduce attainment of literacy-dependent job skills in the late adolescent and adult years.

Underlying cognitive deficits

The 2002 definition indicated that a deficit in the phonological component of language played a primary role in dyslexia. The revised definition modifies that by stating that the **underlying difficulties in phonological processing are common but not universal**. Indeed, there is considerable evidence of a link between dyslexia and difficulties in the storage, retrieval, and awareness of the sounds of language (Melby-Lervåg et al., 2012; Peterson & Pennington, 2012; Snowling et al., 2019). Whereas the evidence linking phonological processing difficulties to dyslexia is robust, there is notable variability in the association. For example, Pennington et al. (2012) found that only about half of each of two samples of kindergarten children who later were identified with dyslexia showed a significant deficit in phonological awareness (PA). Somewhat similar results have been reported in other case-based studies of children with dyslexia (Debska et al., 2022; White et al., 2006 but see Ramus et al., 2003).

Examining the relationship from the opposite perspective, Catts et al. (2017) found that only about half of the children with a significant deficit in PA at the beginning of kindergarten displayed dyslexia at the end of second grade.

Some inconsistency in the relationship may be attributable to measurement-related factors. For example, when categorical cut-points are imposed on underlying continuous distributions, measurement error can lead to spurious changes in classification across time or across measures. In addition, when groups are selected based on extreme phonological scores at Time 1 and extreme word-reading scores at Time 2 (or vice versa), regression to the mean can introduce further misclassification. Nevertheless, measurement error alone is unlikely to fully account for the observed inconsistency in the relationship. Some degree of variability is instead to be expected given that the strength of the underlying relationship itself is moderate. Evidence of this is provided by Melby-Lervåg et al. (2012) who found in a large meta-analysis of 155 samples that word decoding correlated only moderately with phonological awareness ($r = .57$) and less well with phonological memory ($r = .34$). With relationships of this magnitude, individuals with dyslexia would be expected to differ from typical readers on average, while still showing substantial individual overlap. Accordingly, while phonological processing difficulties frequently accompany dyslexia, they should not be regarded as a definitive or exclusive marker of the condition (Brady, 2019).

Beyond phonological processing, research has consistently documented the relationship between other language difficulties and dyslexia. In a seminal study, Scarborough (1990) found that preschool children with a family history of dyslexia who themselves later developed dyslexia were characterized by delays in vocabulary and syntax. Others have also reported an association between preschool language problems and dyslexia (Lyytinen et al., 2005; Price et al., 2022; Snowling & Melby-Lervåg, 2016). In some cases, these language difficulties have been mild-to-moderate in severity, but in other instances, they are more severe and warrant an additional diagnosis of a developmental language disorder (DLD: Bishop & Adams, 1990; Catts, 1993; Catts et al., 2005; McArthur et al., 2000; Snowling et al., 2016). Most recently, Snowling and Hulme (2025) proposed the Reading is Language Model in which they argue that early oral language abilities play a foundational role in word reading and reading comprehension. In support of this model, they provide data that indicate that preschool oral language impacts early word reading through its influence on the alphabetic prerequisite skills of phonological awareness, rapid naming, and letter-sound knowledge (Hulme et al., 2015). They further show that early language instruction not only improves language ability but also the development of word reading skills (Hulme et al., 2025). These findings and others like them led to the inclusion of the statement in the revised definition that **early oral language weaknesses often foreshadow literacy challenges**. Taken together, these findings raise important questions that are beyond the scope of this paper but essential for future work, regarding what underlying factors distinguish dyslexia from DLD and what the clinical and educational implications are.

The definition also acknowledges that difficulties in **morphological processing** are often but not universally associated with dyslexia. Morphological processing refers to both implicit and explicit knowledge of morphology. One's implicit understanding of inflectional and derivational morphology is critical not only for comprehension but also for word reading. Models of word reading have for some time recognized the contributions of implicit understanding of word meaning to printed word recognition (Perfetti, 2007; Seidenberg &

McClelland, 1989) and research has shown that this influence extends to morphemes within words as well (Rastle et al., 2000).

Although individuals with dyslexia may show weaknesses in implicit knowledge of morphology as part of broader oral language difficulties, they can also exhibit isolated problems in explicit understanding of morphology or what is commonly referred to as “morphological awareness.” Like phonological awareness (PA), morphological awareness (MA) concerns readers’ use of metalinguistic knowledge to decode words. While potentially relevant across orthographies, research is strongest for its role in languages such as Mandarin and Cantonese, where written characters primarily map onto morphemes, and research shows MA to be a unique precursor of word reading in these languages. This work demonstrates that MA in preschool and kindergarten predicts subsequent word reading, even after controlling for PA and vocabulary (Lin et al., 2019; McBride-Chang et al., 2003) and is often found to be impaired in individuals with dyslexia (Chung et al., 2010; Shu et al., 2006).

Research further shows that MA plays a distinctive role in Semitic languages such as Hebrew or Arabic (Shechter & Share, 2025). In these languages, word formation is based on a root and pattern structure in which bi- and tri-consonantal roots convey core meaning and vowel patterns provide semantic and grammatical information. Because of this linguistic structure, readers often must rely on morphological cues to resolve the meaning and function of printed words. Longitudinal studies of children learning to read Hebrew have found that MA is a unique predictor of later word reading from the earliest stages of instruction, and the amount of unique variance explained increases across the early school grades (Cohen-Mimran et al., 2022; Yinon et al., 2025). Additionally, investigations have identified deficits in MA among individuals with dyslexia learning to read Hebrew and Arabic (Abu-Rabia et al., 2003; Shechter & Share, 2025).

The influence of MA further extends to learning to read in other alphabetic languages, especially more opaque alphabets (Lee et al., 2023). In English, for example, MA accounts for a significant amount of variance in word reading and spelling. However, in the early grades, much of the variance may overlap with PA (Apel et al., 2013; Kirby et al., 2012; Lyster et al., 2021). But as children progress through school, they encounter more multisyllabic words, and MA becomes more uniquely related to reading (Clin et al., 2009; Enderby et al., 2021; Kirby et al., 2012; Levesque & Deacon, 2022). There is also an emerging set of intervention studies that have sought to improve literacy skills by training MA (Brady & Mason, 2024). While this work has shown moderate to large effects sizes, even for primary school students, more research is needed to determine if MA deficits in English can serve as a unique early predictor of risk and when and how assessment and instruction should be incorporated into more comprehensive intervention programs across different orthographies.

Whereas the revised definition explicitly notes the role of language difficulties in dyslexia, a range of other factors have been implicated. Among these are deficits in rapid automatized naming (RAN). Performance on RAN tasks relies in part on phonological retrieval efficiency and articulation, which are often considered components of phonological processing (Wagner & Torgesen, 1987). However, RAN performance also indexes domain-general speed of processing involved in coordinating attentional, perceptual, and cognitive resources (Wolf et al., 2000). A substantial body of research has shown that RAN task performance explains independent variance in word reading across orthographies and is often impaired in individuals with dyslexia (Caravolas et al., 2012; Norton & Wolf, 2012). Research has also reported a relationship between word-level literacy abilities and work-

ing memory. This relationship appears to be mediated, at least in part, by the phonological storage component of working memory, and as such, overlaps with phonological processing abilities discussed above (Cowan et al., 2017; Swanson & Berninger, 1995). But meta-analytic results indicate that individuals with dyslexia may also have deficits in the central executive component of working memory, especially for verbal material (Swanson et al., 2009; also see Alt et al., 2022). Finally, research has also shown a link between word-level literacy ability and visual processing (Bosse et al., 2007; Joo et al., 2018; Manning et al., 2022), as well as procedural or statistical learning (Bennett et al., 2008; Kahta & Schiff, 2019; Lum et al., 2013). While each of the above factors aid our understanding of the breadth of dyslexia, and measurements of most are often included in neuropsychological evaluations, they were not deemed to be core characteristics of dyslexia at this time, and as such were not included in the definition.

Multifactorial causal models

Underlying cognitive deficits associated with dyslexia have often been considered within multifactorial causal models (Catts et al., 2017; Catts & Petscher, 2022; Compton et al., 2006; O'Brien & Yeatman, 2020; Pennington, 2006; Pennington et al., 2012; Snowling, 2008; Spencer et al., 2014; van Bergen et al., 2014). These models propose that multiple factors combine and interact to increase the probability of difficulty in learning to read. They are probabilistic rather than deterministic, reflecting the view that risk factors function as contributing influences rather than sufficient causes. In other words, multiple genetic, cognitive, and environmental risk factors work in conjunction to increase the likelihood of difficulties in learning to read, rather than any one factor or combination of factors determining that an individual will inevitably experience these difficulties (Catts & Petscher, 2022). This probabilistic framing accounts for the substantial variability observed in reading outcomes, including differences in severity, developmental course, and response to instruction/intervention, which deterministic models cannot readily explain.

In addition, there are two other ways that multifactorial causal models of dyslexia differ from deterministic models. First, in multifactorial models it is recognized that risk is not fixed and can be moderated by positive influences that serve as protective or promotive factors. Promotive factors are those associated with better outcomes for all individuals regardless of risk, whereas protective factors are moderators that have their greatest influence in the context of heightened risk (Masten & Barnes, 2018). Evidence clearly indicates the role of early intervention as a moderating factor for risk but other environmental (e.g., home literacy) and constitutional factors (e.g., vocabulary, verbal reasoning) likely play roles (Berninger & Abbott, 2013; Haft et al., 2016; Lovett et al., 2017; Morgan & Hu, 2025). However, research concerning resilience factors is quite limited and more work is needed to identify protective and promotive variables and understand how they impact risk.

A second difference concerns how causal factors operate. Multifactorial causal models conceptualize dyslexia as arising from the cumulative and interactive effects of multiple influences, each with variable strength and significance across individuals and developmental contexts (Catts & Petscher, 2022). Some factors will have a stronger effect size than others; specifically, in alphabetic languages, phonological processing deficits will be more influential than visual deficits (O'Brien & Yeatman, 2020). Factors can also differ in their developmental timing. Certain risks may emerge early, such as delays in oral language or

phonological awareness that can shape the trajectory of literacy acquisition from the outset (Snowling & Hulme, 2025). Other influences become more salient later, for example, as noted above, morphological processing deficits in English speaking students may have more unique impact in later stages of learning to read words.

Multifactorial casual models are consistent with recent arguments that developmental disorders in general are best explained by a constellation of strengths and weaknesses rather than “core deficits” (Astle & Fletcher-Martin, 2020). This would appear to be especially true for difficulties with word-reading development. The development of accurate and fluent word-reading abilities relies on the coordinated operation of numerous linguistic, cognitive, socioemotional, orthographic, and instructional factors that act and interact in various ways and change over time (Cain et al., 2017; Catts & Petscher, 2022). Furthermore, there is substantial variability in the specific combinations and the relative contributions of these factors among individuals who experience persistent problems in learning to read/spell (Elliott & Grigorenko, 2024; McGrath et al., 2020; Siegel & Hurford, 2019).

Considering this variability, no single factor or combination of cognitive, linguistic, or behavioral markers, apart from persistent difficulties in word reading and/or spelling, can definitively confirm or rule out a diagnosis of dyslexia. Approaches that attempt to identify dyslexia based on cognitive profiles independent of word-level literacy performance have not been shown to provide reliable or valid identification, nor do they consistently improve the prediction of intervention outcomes (D’Angiulli & Siegel, 2003; Miciak et al., 2014; Stuebing et al., 2015).

These findings do not imply that individual differences in cognitive correlates of dyslexia are irrelevant to diagnostic evaluation. Rather, such differences may be informative when they contribute incremental information about likely literacy trajectories or response to intervention beyond what is conveyed by the severity of current word-level literacy difficulties. Their value, therefore, lies in their potential prognostic utility rather than in their use for diagnostic determination. For example, prior to or during the early stages of formal reading instruction, measures of PA have consistently been shown to provide unique prediction of later word reading ability (Melby-Lervåg et al., 2012). Other cognitive variables, including oral language abilities and RAN performance have likewise been found to have unique predictive value (Norton & Wolf, 2012; Snowling & Melby-Lervåg, 2016). Together, these various factors can serve as early indicators of elevated risk for dyslexia before persistent difficulties in word reading and spelling can be fully observed. However, as children progress through the early grades, these factors may account for less unique variance because the variance associated with early cognitive and linguistic predictors may increasingly be reflected in observed differences in word-reading performance itself (Furnes & Samuelsson, 2011; Lervåg et al., 2009). At the same time, other predictors may assume greater importance as the demands of reading change, for example, measures like MA may account for additional unique variance as children encounter increasing numbers of multimorphemic words.

Beyond their role in early identification, cognitive factors may provide useful information about response to intervention. For example, studies indicate that measures of PA and/or RAN predict reading intervention outcomes over and above initial level of reading/spelling difficulties (Tilanus et al., 2019; Torgesen et al., 1999). In this context, such measures may serve as confirmatory indicators that help inform both diagnostic decision-making and prognosis, particularly with respect to the likely rate and magnitude of response to interven-

tion. At the same time, findings in this area should be interpreted cautiously, as results can vary depending on factors such as intervention dosage, how response is measured, and the broader study context. For example, Middleton et al. (2022) examined prognostic indicators in a 2-year school-based intervention employing both near and far transfer outcome measures. Their results indicated that pre-intervention reading fluency was the strongest predictor of treatment response, whereas pre-intervention PA did not significantly predict reading outcomes and baseline RAN showed only a very weak association with intervention effects.

A final area in which cognitive correlates may hold potential clinical relevance is in informing decisions about differential instruction. In principle a student's individual profile of cognitive and linguistic strengths and weaknesses could provide information that helps design instruction to more fully address specific learning needs among individuals with dyslexia. However, caution is warranted because research has yet to demonstrate that instructional approaches explicitly matched to cognitive profiles yield superior literacy outcomes compared with well-designed, evidence-based interventions that target word-level reading skills more directly (Burns et al., 2016).

Secondary consequences

In response to research during the last two decades, the revised definition elaborates on secondary consequences of dyslexia. The 2002 definition noted that secondary consequences of dyslexia include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge. However, reduced reading (and writing) experience can also impact other aspects of language such as understanding and use of more complex syntax and discourse structures (Graham et al., 2021; Snowling et al., 2016; Winckel & Dabrowska, 2024). Students with dyslexia also can face issues related to psycho-social wellbeing. These can include internalizing (e.g., self-esteem, anxiety, depression), and externalizing (e.g., behavioral) disorders (Arnold et al., 2005; Jorden & Dyer, 2017; McArthur et al., 2020; Morgan et al., 2012). These academic and non-academic challenges can make students with dyslexia more vulnerable to experiencing poorer school achievement and overall school/life success, including an increased likelihood of experiencing school dropout, truancy, delinquency, incarceration, and limited employment opportunities (Baker & Ireland, 2007; Daniel et al., 2006; Grigorenko, 2006; Taylor & Walter, 2003). Evidence for the latter relationships is not as strong as it is for those involving internalizing/externalizing behaviors, but nevertheless, is indicative of serious potential consequences when persons at risk for reading failure do not receive the instructional and psycho-social support they need.

Although the negative outcomes described above are often labeled as secondary consequences, they may not always originate solely from word reading difficulties. Carroll et al. (2005) suggested that the elevated rates of internalizing and externalizing disorders observed in individuals with dyslexia may, in some cases, reflect comorbidity with other developmental disorders, such as attention deficit hyperactive disorder ADHD or developmental language disorder (DLD), rather than being purely downstream effects of reading difficulties. More recently, Willcutt and Petril (2023), in a large-scale school-based study, reported that comorbid ADHD was associated with more severe internalizing symptoms, as well as greater academic and social challenges and may to a large degree explain the

comorbidity between dyslexia and reported externalizing problems. Similarly, McArthur et al. (2024) found that children with dyslexia and comorbid ADHD had a significantly higher rate of anxiety than children with dyslexia without inattention/hyperactivity, whereas comorbid language difficulties were not associated with elevated anxiety. These findings are largely cross-sectional, highlighting the need for longitudinal research to clarify causal pathways.

Early intervention

Because of the negative consequences associated with dyslexia, some have argued for a prevention approach much like that taken in medicine with conditions such as heart disease or diabetes (Catts & Hogan, 2021; Gaab & Duggan, 2024; Jansky & Hirsch, 1972). A prevention model is not intended to eliminate neurobiological risk but rather to promote early identification and intervention to improve reading outcomes and reduce secondary consequences. Traditionally, dyslexia has not been identified until children have experienced failure in learning to read for several years, often long past the time that intervention is most effective. Ozernov-Palchik et al. (2016) referred to this as the “dyslexia paradox” and challenged the field to address it.

Research has been ongoing for some time to identify children at risk for dyslexia prior to reading failure (Jansky & de Hirsch, 1972; Satz & Fletcher, 1979). This early work and more recent studies have shown that screening can accurately identify risk for dyslexia as early as kindergarten or beginning of 1st grade (Catts et al., 2015; Compton et al., 2006; Lyytinen et al., 2015) and that false positives can be addressed by follow-up testing and monitoring of response to instruction (Gellert & Elbro, 2017; Miciak & Fletcher, 2020). Family history and oral language difficulties may also signal risk during the preschool years (Thompson et al., 2015). Enquiries made during pediatric visits and at preschool or kindergarten enrollment can be valuable for identifying familial risk and parental or professional concerns about language development (Helland et al., 2021; Sanfilippo et al., 2020).

Not only have candidate risk factors been identified for screening, but evidence also demonstrates that early language and literacy intervention, matched to the child’s level of risk can improve developmental outcomes. This work demonstrates that intervention targeting PA, vocabulary, and broader oral language during preschool and kindergarten can produce significant gains in language and emerging literacy skills of children at risk for dyslexia (Justice et al., 2009; Lonigan et al., 2013; Hulme et al., 2025). Research further indicates that intervention focused on foundational reading skills, when initiated in first grade, yields substantially better outcomes than intervention begun in later elementary grades (Lovett et al., 2017; Wanzek et al., 2016). Furthermore, intervention that started early and sustained over several years has been found to produce the strongest outcomes (Connor et al., 2013). Together these results support the 2025 definition statement that for children at risk, **language and literacy support before and during the early years of education is particularly effective.**

Finally, for a prevention model to have maximum effect, it is imperative that educators have preservice preparation programs (Kehoe et al., 2025; Washburn et al., 2011) and ongoing in-service programs (Peltier et al., 2022) that provide them with the knowledge and skills to deliver research-supported classroom literacy instruction and help them recognize

the characteristics of struggling readers. They also need training that allows them to adapt their instruction to the needs of their students and to make appropriate referrals to well-trained and supportive interventionists based on screening and student performance.

What is not included in the 2025 definition

The 2002 IDA definition indicated that literacy difficulties and underlying phonological deficits were unexpected based on “other cognitive abilities.” A major problem with that part of the definition is that there is a long and well-documented history of educators, clinicians, and families conflating “cognitive abilities” and “intelligence,” and relying on an IQ-achievement discrepancy to determine diagnosis of learning disabilities, including dyslexia (Mercer et al., 1996; Stuebing et al., 2002). Unfortunately, many are drawn to this way of conceptualizing and diagnosing dyslexia, especially given the widespread portrayal of highly intelligent or creative individuals with dyslexia in popular media (e.g., Davis & Braun, 2004; Eide & Eide, 2023). Indeed, there are extraordinary individuals with superior intelligence who also have dyslexia. However, like those without dyslexia, most individuals with dyslexia have normal or even below normal intelligence (Siegel & Himel, 1998). Furthermore, children with dyslexia who have lower IQs demonstrate word reading difficulties, underlying causal factors, brain bases, and instructional response patterns like children with dyslexia who have higher IQs (Nilsson et al., 2025; Siegel & Hurtford, 2019; Stuebing et al., 2015; Tanaka et al., 2011). For this reason, reference to “other cognitive abilities” is not included in the 2025 revision of the definition. This does not preclude the need to differentiate dyslexia from intellectual disabilities and other potential reasons for being a poor reader. Children who have significantly low performance on standardized IQ measures and who demonstrate major challenges in adaptive functioning in language, social behavior, and self-care would not be identified as having dyslexia. Although these children may exhibit substantial word-level literacy difficulties, they require a broader and more comprehensive approach for intervention, which may also include word-level literacy support. Also excluded are individuals whose reading difficulties arise primarily from other developmental conditions, such as autism, and uncorrected hearing or visual acuity impairments. As with intellectual disability, when these conditions are severe, they very often require intervention approaches that extend beyond those typically employed for dyslexia.

Like the 2002 definition, the revised 2025 definition does not include reference to developmental conditions that may co-occur with dyslexia but represent a distinct diagnosis (Moll et al., 2020). Nevertheless, and as noted above, comorbidities are well-established ancillary features of dyslexia and warrant continued research and clinical attention. A common comorbid condition is DLD (McGregor, 2020). Children with DLD have significant difficulties producing and understanding spoken language and represent about 5–10% of the population (Tomblin et al., 1997). Their language problems are not explained by other conditions, such as hearing loss or autism, or by a lack of exposure to language. Despite the life-long nature of DLD and its impact on academic and social development, it remains an underserved condition (McGregor, 2020). As reported above, it is not uncommon for children with dyslexia to have problems in oral language, but when these difficulties are severe and impact academic and social functioning, they can be diagnosed with both dyslexia and DLD. Numerous studies have documented the high prevalence of DLD in children with

dyslexia (Catts et al., 2002, 2005; McArthur et al., 2000; Price et al., 2022; Snowling & Melby-Lervåg, 2016). Prevalence ranges from 30% in population-based samples of dyslexia (Catts et al., 2005) to near 50% in clinical samples (McArthur et al., 2000; Price et al., 2022). Despite the co-occurrence of dyslexia and DLD, research indicates that they are separate disorders (Catts et al., 2005). Evidence further shows that children with dyslexia and comorbid DLD have more severe word-reading problems and reading difficulties in general than those with dyslexia alone (Adlof et al., 2021; Duff et al., 2022).

There is also considerable evidence that individuals with dyslexia can have co-occurring diagnoses such as ADHD and dyscalculia, or math disorder (MD). Research shows that the bidirectional comorbidity between dyslexia and ADHD is 20–40% (Galuschka & Schulte-Körne, 2016; van Bergen et al., 2025; Willcutt & Pennington, 2000). A similar degree of overlap is also reported between dyslexia and MD (Galuschka & Schulte-Körne, 2016). The comorbidity of dyslexia with ADHD and MD, as well as DLD is perhaps best explained within a multiple-deficit framework (McGrath et al., 2020; Pennington, 2006). As discussed above, neurodevelopmental disorders such as dyslexia result not from single causes, but from the additive and/or interactive effects of multiple biological, behavioral, and environmental factors. Within this framework, comorbidity is argued to result from shared risk factors impacting multiple outcomes. For example, word reading problems and difficulties in math computation can both be impacted by deficits in phonological processing (Matejko et al., 2023). Similarly, dyslexia and ADHD may share problems in executive function and/or processing speed (Moreau & Waldie, 2016). Despite the apparent validity of the multiple-deficit framework in accounting for comorbidity, McGrath et al. (2021) argue that more needs to be understood about risk and resilience factors at each level of analysis (i.e., genetic, behavioral, & environmental) and how they are connected.

Discussion

The 2025 IDA definition represents an effort to integrate two decades of empirical progress into a coherent, accessible framework for understanding dyslexia. The preceding sections reviewed the evidence motivating specific revisions to the 2002 definition, including advances in cross-linguistic research, multifactorial models of etiology, and growing recognition of developmental persistence and downstream consequences. Also emphasized is the importance of early identification and targeted intervention. Like the previous definition, it does not attempt to capture every dimension of the condition. Rather it focuses on the most salient features to establish a shared understanding among researchers, educators, clinicians, families, and policymakers, and to promote consistency in how dyslexia is conceptualized and communicated across disciplines and settings.

Other formal definitions of dyslexia have also been proposed since the adoption of the 2002 IDA definition that have sought to update the scientific base and enhance a shared understanding. Specifically, a prominent definition emerged from the Rose Report, a comprehensive review of early literacy instruction in the United Kingdom (Rose, 2009). The Rose definition aligns with the 2025 IDA definition in its characterization of dyslexia as involving difficulties in accurate and fluent word reading and spelling, and in its recognition that dyslexia occurs across the range of intellectual abilities. The IDA definition differs from the Rose definition, however, by adopting a more multifactorial account of etiology, includ-

ing a broader array of secondary consequences, emphasizing that difficulties vary across orthographies, and noting the potential benefits of early identification and intervention.

Another influential definition of dyslexia was recently advanced in the Dyslexia Delphi Study (Carroll et al., 2025). In this study, a large international panel of dyslexia experts evaluated 55 statements about dyslexia, using an 80% agreement threshold to determine consensus. Consensus was reached on 42 statements, which were further reduced to 9 core statements to form a consensus definition of dyslexia. This definition overlaps with the 2025 IDA definition in a similar manner to that of the Rose report. In addition, like the IDA definition, the Delphi definition highlights the multifactorial causal basis of dyslexia and continues to recognize the role of phonological processing deficits. It differs from the IDA definition in several respects. Most notably, it explicitly includes difficulties in working memory, processing speed, and orthographic processing and notes common comorbid conditions. In contrast, the IDA definition focuses more on language-based difficulties, with specific references to phonological as well as morphological processing deficits and challenges in early oral language development. Finally, the IDA definition provides greater emphasis on response to instruction and secondary consequences of dyslexia, as well as more explicitly highlights the importance of orthography and early identification and intervention.

Taken together, these other recent definitions share much in common with the 2025 IDA definition, particularly in their characterization of dyslexia as a difficulty in accurate and fluent word reading and spelling, their recognition of its occurrence across the range of intellectual abilities, and their endorsement of a multifactorial causal framework in which phonological processing plays a central role. Where definitions differ is primarily in the scope of cognitive correlates that are explicitly included and in the degree of emphasis placed on response to instruction, early identification, and intervention. These differences should not be interpreted as fundamental disagreements about the nature of dyslexia. Rather, they reflect reasoned decisions about how broadly to define the construct and how best to balance scientific advancements with practical utility for clinical/educational practice. Viewed in this way, the 2025 IDA definition can be understood as one of several contemporary definitions that are broadly convergent in their core assumptions while differing in emphasis based on their intended purposes and contexts of use.

Implications for practice

Although definitions of dyslexia are primarily conceptual and descriptive, they are routinely used to guide decisions in research, educational, clinical, and legal contexts. For this reason, the practical consequences of definitional choices were an important consideration in the development of the 2025 definition. The section that follows presents a set of guidelines drawn from the revised definition and the research reviewed in the preceding sections, with the aim of supporting its appropriate use in practice.

The 2025 definition emphasizes that the core characteristics of dyslexia are severe and persistent difficulties in word reading and/or spelling. The expression of these difficulties may vary depending on orthographic characteristics, underlying cognitive–linguistic vulnerabilities, and developmental stage, and may be evident in reduced accuracy, speed, or both. Consequently, accurate identification of dyslexia requires the use of reliable and valid measures of word-level literacy that are appropriate for the individual’s age or grade

level. These assessment results should be interpreted within a broader evaluative context, including a careful review of the individual's educational history, instructional exposure, and relevant clinical information. This review should consider whether other developmental conditions (e.g., autism, intellectual disability) or uncorrected sensory impairments are primary contributing factors. The potential influence of environmental factors such as limited instructional opportunities or non-native language learning should also be considered. Consistent with the revised definition, however, the presence of these latter influences does not, in itself, preclude a diagnosis of dyslexia; rather, diagnostic decisions should be guided by professional judgment informed by the individual's response to appropriate, well-implemented instruction/intervention, as discussed below.

Because reading and spelling are acquired skills, the evaluation of literacy difficulties must also consider the quality, intensity, and appropriateness of instruction. A persistently slow and inadequate response to empirically validated reading instruction provides a critical indicator of inherent difficulties in word reading and spelling (Odegard, 2019; Miciak & Fletcher, 2020). However, using instructional response to inform identification presents substantial challenges. First, there is considerable variability across classrooms, schools, and educational systems in both the content and fidelity of reading instruction, which complicates efforts to distinguish instructional failure from intrinsic learning difficulties. Without greater consistency in instructional practices, it is difficult to achieve uniform and equitable identification of dyslexia. Thus, the applicability of the revised definition depends heavily on continued efforts to improve foundational literacy instruction for all children (Odegard, 2019).

Second, a substantial and unresolved challenge concerns how best to operationalize how one identifies a profoundly slow response to instruction. Under optimal conditions, responsiveness could be evaluated by comparing a child's reading and spelling performance to age- or grade-based normative expectations. However, as referenced above, wide disparities in the quality and effectiveness of reading instruction across contexts often undermine the fairness and interpretability of such comparisons. In underperforming instructional settings, large proportions of students may score well below normative benchmarks, making norm-referenced comparisons insufficient for distinguishing individual learning difficulties from broader instructional deficits. In such circumstances, the revised definition notes the option of evaluating a child's performance relative to those of similarly instructed classroom peers. Although this approach is imperfect, it provides a pragmatic alternative: without it, schools risk either overidentifying students as dyslexic based solely on normative comparisons or under identifying them due to concerns about inadequate instruction.

Beyond a persistently slow response to high-quality word-level literacy instruction, the definition offers additional guidance relevant to diagnosis. It notes that underlying difficulties in phonological and morphological processing are commonly associated with dyslexia. Importantly, however, the definition also acknowledges that such difficulties are not always present. Therefore, difficulties in these linguistic abilities cannot by themselves definitively confirm or rule out a diagnosis of dyslexia. In fact, as reviewed above, no behavioral, genetic, or neurological correlate, beyond difficulties in word-level literacy, shows consistency at the individual level that is necessary to reliably identify dyslexia.

Although not definitive behavioral markers of dyslexia, difficulties in phonological processing, and perhaps morphological processing, can function as early indicators of elevated risk. Evidence supporting this role for phonological awareness is especially strong across

orthographies, while that for morphological awareness is stronger in some orthographies than others. Other linguistic indicators, particularly delays or weaknesses in early oral language development, also can signal increased risk. Such indicators can especially serve a valuable role prior to and during the early stages of learning to read, when persistent word-level literacy difficulties have yet to be identified or confirmed.

Beyond their role in early identification, cognitive correlates may also provide useful prognostic information about response to intervention. As reviewed above, evidence suggests that measures of PA and RAN may predict intervention outcomes beyond initial levels of reading or spelling difficulty, thereby adding incremental prognostic value. A similar predictive role may be played by comorbid conditions. In both cases, however, further research is needed in a range of languages and orthographies to determine which factors, beyond the severity of word-level literacy difficulties, meaningfully improve the prediction of literacy outcomes and should be included in diagnostic decisions.

The 2025 definition explicitly acknowledges the potential secondary consequences of dyslexia, which should be carefully considered during diagnostic evaluation. These downstream effects may signal additional areas of difficulty that warrant attention within intervention planning. In some cases, they reflect sequelae of persistent reading difficulties, such as anxiety or reduced academic engagement. In other cases, however, they may represent comorbid conditions that co-occur with dyslexia but result from partially independent etiological pathways, and therefore, may require distinct forms of assessment and intervention. Careful differentiation between secondary consequences and true comorbidities can help ensure that intervention targets both the hallmark word-level difficulties and any additional factors that may affect educational/psychological outcomes.

Finally, the definition indicates the importance of early identification and intervention to prevent severe literacy difficulties and reduce secondary consequences. Procedures need to be in place to screen and identify children at risk prior to and during the early school grades and to ensure that children receive the instructional and emotional support required to meet their individual needs. At the same time, the definition's reference to identification and targeted instruction being important at any age acknowledges the ongoing importance and value of structured support of literacy skills in older children, adolescents, and adults.

These considerations, which are aligned with current scientific advancements in the study of dyslexia, are intended to provide initial guidance for the interpretation, implementation, and operationalization of the 2025 definition. We encourage all stakeholders, including researchers, clinicians, educators, and policymakers, to engage with the definition, to disseminate and discuss it with others, and to make appropriate adjustments in their work. For some, adoption of the 2025 definition will require few, if any, changes to existing practices and policies. For others, however, more substantial revisions will be necessary to ensure alignment with the principles and evidence reflected in the definition.

As with prior definitions, the 2025 definition should be regarded as a living document, reflecting the best available evidence at a particular point in time rather than a final or exhaustive account. As scientific knowledge and clinical educational practices continue to evolve, so too will the understanding of dyslexia. When the definition is revisited in the future, that process should be undertaken with humility and intellectual curiosity, alongside a shared commitment to improving identification, intervention, and long-term outcomes for individuals with dyslexia.

Appendix A

2002 definition

Dyslexia is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.

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