

# Dyslexia in the 21st century: revisiting the consensus definition

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## Abstract

Two decades after the International Dyslexia Association (IDA) adopted the 2002 consensus definition of dyslexia, this special issue of the *Annals of Dyslexia* revisits that definition in light of advances in scientific understanding and evolving needs. Through contributions from leading researchers and interdisciplinary teams, the issue examines the strengths and limitations of the definition as it has been applied in research, policy, and practice. Key themes emerged, which included reconsidering the need to include the neurobiological basis of dyslexia in the definition, the intersection of literacy challenges and mental health, and the role of context in shaping how dyslexia is defined. Contributors to this special issue also reflected on how the definition serves different audiences, including educators, policymakers, and families. As the IDA embarks on a thoughtful reassessment of the 2002 definition, this collection of articles offers insights to guide the path forward, ensuring the definition remains a robust tool for research, identification, intervention, and advocacy in the coming years.

We find ourselves over two decades past the adoption of one of the leading and most influential definitions of dyslexia—the consensus definition adopted by the International Dyslexia Association (IDA; Lyon et al., 2003). This definition has been a cornerstone in research and practice, guiding policy and shaping our understanding of dyslexia (Odegard et al., in press). As we reflected on the impact of this definition, it became evident that a reassessment was timely. Thus, this special issue of the *Annals of Dyslexia*, a publication from the IDA, focuses on collecting insights from various experts, mainly researchers, about the progress and lessons learned over the past two decades. It further explores the considerations we must contemplate moving forward.

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## **Objectives and contributions**

The primary objective of this special issue was to revisit the 2002 consensus definition of dyslexia, adopted by the IDA, and consider what has been learned through empirical study since then. Several factors motivated the decision to reassess the definition. First, the original definition was grounded in the scientific understanding of dyslexia at that time. Subsequently, significant advancements have been made in the field, warranting a reconsideration of how well the definition aligns with current knowledge. Second, the wide adoption of the IDA definition to guide policy and inform educational practice, especially in the United States (Odegard et al., in press), raises the question of whether it remains well-calibrated to meet the needs of diverse stakeholders today.

The editorship recognized the importance of thoroughly examining the definition's strengths and weaknesses, particularly given its influence on a broad spectrum of initiatives concerned with dyslexia. This issue provides articles grounded in empirical research that reflect societal realities. These articles aimed to inform future research, practice, and policy by highlighting how the definition has been applied over the past two decades and proposing potential revisions to enhance its relevance and utility. All contributions to this special issue were elicited through invitations to longstanding research groups and interdisciplinary teams actively addressing dyslexia or to individuals who have provided insights and public commentary on dyslexia and how it is defined. All invited authors were tasked with synthesizing their thoughts on the IDA definition relative to scientific advances since its conceptualization and its viability to inform research, policy, and practice. They were instructed to illustrate a consensus within their team in their respective contributions. As the editors of this special issue, we intended to obtain a diverse yet coherent set of articles that collectively address the scientific, practical, and policy-related dimensions of dyslexia. However, not all invited teams or individuals contributed to the issue. Nevertheless, it is important to communicate to the readers of Annals of Dyslexia that attempts were made to capture consensus papers from additional groups—including some from outside North America.

The contributions to this special issue adopted one of two formats: *Perspectives* and *Commentaries*. The initial round of invitations extended to research groups and interdisciplinary teams asked them to contribute their perspectives when synthesizing the strengths and weaknesses of the current definition in the form of *Perspectives* articles. These *Perspectives* are review articles intended to provide a forum for the authors to discuss models and ideas from a personal viewpoint. They are more forward-looking and speculative than traditional reviews and may take a narrower field of view. These articles are opinionated yet balanced, aiming to stimulate discussion and encourage new experimental approaches and ways of thinking about a topic. *Perspectives* articles underwent a formal peer review process.

In contrast, *Commentaries* did not undergo formal peer review and instead only received editorial feedback. These *Commentaries* were solicited through a second round of invitations to individuals who have significantly impacted the current understanding of dyslexia and its definition. The *Commentaries* are intended to provide informed pieces on topical issues related to scientific research and its broad social, ethical, and political implications. The *Perspective* and *Commentary* article formats are adopted from article types published in *Nature* publications and brought to the *Annals of Dyslexia*, which Springer publishes under the overarching auspices of SpingerNature.

## Perspectives articles

Four groups provided *Perspectives* articles for this special issue. As highlighted earlier, each invited group was asked to reach a consensus among the authors of their piece. The interdisciplinary group led by Gearin et al. (2024), which focused on dyslexia at the policy level, adopted a Delphi approach to consensus-building. Their article, *An interdisciplinary perspective on the strengths and weaknesses of the International Dyslexia Association definition of dyslexia*, provides a transparent account of the areas where consensus was challenging to achieve amongst their team of policymakers and implementers. Catts et al. (2024), representing the Florida Center for Reading Research, also encountered conceptual disagreements among the authorship, particularly regarding what constitutes dyslexia and whether the notion of exceptionality adds value. Their *Perspectives* contribution, *Revisiting the definition of dyslexia*, reflects the outcomes of their efforts.

In contrast, the group from the University of Texas and the University of Houston, represented by Vaughn et al. (2024), quickly agreed on defining dyslexia based on an instructional discrepancy—the continued struggle of an individual to respond to evidence-based literacy instruction. Their article, *The critical role of instructional response in defining and identifying students with dyslexia: A case for updating existing definitions*, emphasizes this point. Additionally, Wolf et al. (2024), comprised of researchers from the University of California Los Angeles, the University of California San Francisco, and California State University, built on the neurobiological foundations of dyslexia and proposed a dynamic conceptualization incorporating recent research on the heterogeneity of dyslexia. Their *Perspectives* article, *Towards a dynamic, comprehensive conceptualization of dyslexia*, was ambitious in its scope, capturing the history and evolving understanding of dyslexia.

# **Editorial commentaries**

Two pairs of co-authors provided *Commentaries* for this special issue, which can be thought of as brief editorials about various implications of the definition. Snowling and Hulme (2024) offer their thoughts in a *Commentary* entitled, *Do we really need a new definition of dyslexia?* A commentary. They argue that dyslexia is best understood as a dimensional language-based learning disorder with phonological processing deficits. Moreover, they stress that the purpose of a definition may vary depending on whether it is intended for research or educational services. They concluded that IQ provides little utility for practical purposes, and they found no reason to use it for identification or to inform intervention. At the same time, they acknowledge that IQ could be needed for research purposes when testing theoretically motivated hypotheses.

The other *Commentary* was provided by Elliott and Grigorenko (2024) and entitled, *Dyslexia in the twenty-first Century: A commentary on the IDA definition of dyslexia.* They discuss the main components of the IDA definition and propose a simplified definition that avoids causal explanations and secondary outcomes. This contribution stands out as an outlier in the characteristics it includes in the definition – notably not including spelling.

## **Key themes**

#### Purpose and audience of the definition

The consensus definition is not the only definition of dyslexia, nor is it the only one currently being reassessed. For instance, the Rose definition (Rose, 2009) has recently been the subject of inquiry through a Delphi study (Carroll et al., 2024; Kirby et al., 2024), which is a method to gather perspectives from different stakeholders on a topic and channel those perspectives into a set of conclusions and recommendations.

Across the contributions to our special issue, a recurring theme was the importance of understanding the purpose of the dyslexia definition and identifying the intended audience. It became clear that the purpose of a definition varies depending on who is using it. For example, practitioners tasked with identifying dyslexia may have different needs than those focused on prevention and intervention. Similarly, the perspectives of parents, guardians, or individuals with dyslexia may only partially overlap with the needs of educators or policymakers. This recognition that purpose matters was underscored by the Delphi survey about the Rose definition.

#### Contextual specificity and procedural challenges

Related to purpose, the context in which the definition is used also emerged as a central theme. The 2002 consensus definition, for example, adopts language specific to the United States and public schools within this country, where eligibility for students with learning differences is commonly provided using the eligibility category—specific learning disability (SLD). The term SLD, drawn directly from the 2004 reauthorization of the Individuals with Disabilities in Education Act (2004), introduces a procedural element that ties the definition to specific educational policies and eligibility criteria. The current definition of dyslexia, while potentially useful for U.S. public schools, may not be applicable in other contexts and could be seen as treating dyslexia more as an eligibility category rather than a specific diagnostic term. For example, adults with dyslexia find themselves outside the public school setting. Their needs and considerations are real and differ from those of school-age children.

Within an educational context, the variability in how dyslexia is addressed in different school systems was also a focal point. Some children are denied services due to inadequately managed and poorly implemented educational systems that limit their exposure to effective instruction and interventions. The continuation of including SLD in the dyslexia definition can lead to distorted interpretations of who should be identified with dyslexia, particularly under varying state and provincial laws and national educational policies. This issue is especially pronounced in U.S. states like Texas, where recent changes to the state's Dyslexia Handbook and educational procedures have led to students being denied services they previously received under a 504 plan because they did not qualify for an SLD under IDEA. This misalignment with the broader consensus on what constitutes dyslexia, as discussed by all contributors, underscores the complexities of linking dyslexia identification to specific legal frameworks within a specific jurisdiction.

Contributors agreed that dyslexia exists on a continuum and across the lifespan, a reality that complicates the binary categorizations often required by procedural definitions like SLD, which are limited to school-age children within a specific context. Many contributors highlighted the challenges in making categorical distinctions when dyslexia's severity can vary widely (Elliott & Grigorenko, 2024; Gearin et al., 2024; Snowling & Hulme, 2024; Vaughn et al., 2024). Similarly, some discussions emphasized concerns about exclusionary factors and comorbid conditions. These can often influence and bias interpretations of the unexpectedness of the difficulties experienced by individuals with dyslexia. Moreover, the cut point used for eligibility purposes significantly impacts which students receive additional protections and services, leading to potential inequities in educational outcomes. These concerns are supported by another theme that emerged—risk and resilience factors.

#### **Risk and resilience factors**

Catts et al. (2024) emphasized recognizing the combinatorial nature of risk and resilience factors associated with dyslexia (see also Snowling & Hulme, 2024). Similarly, Wolf et al. (2024) acknowledge the growing body of empirical research support for multifactorial models, such as the one proposed by Catts and Petscher (2022) that include phonological processing difficulties as one of a host of risk factors that occur alongside various protective or resilience factors. Both factors are critical in how dyslexia manifests and influences an individual's academic performance. This conceptual model addresses the concerns of families within public school settings whose children are denied services despite clear evidence of significant difficulties in word-level reading and spelling because they do not meet all eligibility criteria.

This scenario can arise in children with resilience factors that enhance their comprehension skills, masking their dyslexia in certain contexts and under certain conditions. Some researchers use the term resilient readers to refer to individuals who show remarkably intact reading comprehension despite dysfluent and inaccurate reading (Farris et al., 2021; Haft et al., 2016). Conversely, children with additional risk factors may experience broader academic difficulties, further complicating the identification process. These children may not be found eligible under procedures outlined in regulations such as IDEA.

These challenges are also particularly harsh in contexts where structured literacy interventions are only allowed to children who meet the eligibility criteria for the SLD category under IDEA, allowing them access to special education services. Additionally, it is challenging to address the needs of individuals who present with ongoing deficits in fluency and benefit from accommodations that allow them to access grade-level instruction and content or workplace job requirements. These individuals do not require specialized instruction but instead require accommodations to address the persistent literacy challenges characteristic of dyslexia. Such a concern is heightened by a recent meta-analysis across European language and writing systems that highlighted that the most common and pronounced deficit characteristic of dyslexia that persists into adulthood is fluency (Carioti et al., 2021).

#### Emotional consequences of dyslexia

A theme explored by Catts et al. (2024), Snowling and Hulme (2024), and Wolf et al. (2024) is the emotional and psychological impact of dyslexia. Moreover, the topic has been studied by the group led by Vaughn in other studies (e.g., Vaughn et al., 2022). Individuals with dyslexia often experience higher rates of mental health issues, including anxiety and depression (Donolato et al., 2022; Francis et al., 2019; Vieira et al., 2024). Research high-lights the causal role that literacy deficits play in leading to these mental health challenges.

For instance, when students with literacy deficits receive structured literacy interventions, their mental health improves more than those who do not (Grills et al., 2023; Traficante et al., 2017). This virtuous cycle of improvement in literacy leading to better mental health is particularly evident when intervention is provided early, though it can also be observed in later elementary grades.

However, a vicious cycle can emerge in older students, where individuals with higher levels of anxiety at the outset of an intervention make fewer gains in literacy outcomes in response to structured interventions. As unaddressed literacy challenges persist, they exacerbate mental health issues, particularly anxiety, which in turn serve as a push factor, leading students to disengage from academic activities that trigger their anxiety (Vaughn et al., 2022). These findings all highlight that the relationship between mental health and literacy is complex, and more work is needed to fully characterize these interactions (Fishstrom et al., 2024). At the same time, a clearer picture is emerging about the detrimental impact of literacy deficits on mental health outcomes, motivating action (e.g., McArthur et al., 2022). Moreover, emerging research suggests peer mentorship programs, where individuals with dyslexia support one another in understanding their place in the world, can help break this cycle (Williams et al., 2024). For example, Haft et al. (2019) found that upper elementary and middle school students with learning differences who received peer mentorship experienced reduced levels of depression and did not see the same increases in anxiety as their non-mentored peers.

#### The role of neurobiology in dyslexia definitions

A noteworthy theme from Wolf et al.'s (2024) contribution is the role of neurobiological research in informing dyslexia definitions. Their work emphasizes the need for a dynamic, comprehensive conceptualization of dyslexia that incorporates recent findings on the heterogeneity of dyslexia at the neurobiological level. Wolf et al. argue that understanding the brain's role in dyslexia is crucial for developing more accurate and effective definitions, particularly as research continues to reveal the complexity of dyslexia's neurological underpinnings. Catts et al. (2024) acknowledge the neurobiological basis while emphasizing the additive role of environmental factors.

However, it is important to note that other contributors chose to de-emphasize the neurobiological basis in their discussions (Elliott & Grigorenko, 2024; Snowling & Hulme, 2024; Vaughn et al., 2024). They argued that while neurobiological insights are valuable for advancing scientific understanding at a basic level, they offer limited practical guidance for identification practices and intervention strategies. These contributors focused more on education and aspects of language that directly impact the identification and support of individuals with dyslexia. Their accounts suggest that, at present, the neurobiological basis of dyslexia, though scientifically informative, has not yet been translated into tools or frameworks that can significantly enhance educational practice. Similarly, Gearin et al. (2024) identified the usefulness of neurobiological origins in the definition itself as a point of disagreement across their team. The choice to de-emphasize the neurobiological basis was motivated by another theme—the purpose of a definition.

#### Refining the definition for clarity towards purpose

Given the potential for the definition of dyslexia to be conflated with an eligibility category, along with other considerations, another significant theme emerged: the need to streamline the definition for more effective identification and intervention. Several contributors proposed more concise definitions that prioritize clarity and practicality. For example, Vaughn et al. (2024) emphasized the importance of focusing on accurate and efficient word-level reading and spelling as the primary characteristics of dyslexia. Elliott and Grigorenko (2024) advanced a simpler definition that avoids entangling dyslexia with causal explanations and secondary outcomes. It also drops reference to spelling. Their definition raises important questions about whether there is an empirical basis to justify dropping spelling and whether this distinction is warranted. Spelling instruction improves reading outcomes when a multi-component intervention is provided to individuals with dyslexia (Hall et al., 2023).

## Next steps

As the IDA celebrates its 75th anniversary, it has embarked on a thoughtful and methodical process to reassess its 2002 definition of dyslexia. The initiative, co-chaired by Drs. Charles Haynes and Malt Joshi, reflects IDA's commitment to ensuring its foundational definition remains aligned with the latest scientific insights and practical needs. The reassessment process is designed to be inclusive and comprehensive, involving a wide range of stakeholders, including scientists, practitioners, and other experts from various disciplines. The leadership of this initiative is further supported by a steering committee and an advisory group composed of diverse members who bring valuable perspectives from across the dyslexia community and beyond.

The reassessment process will be thorough, balanced, and reflective of the varied needs of those affected by dyslexia. Toward this end, insights will be collected through surveys, town halls, and summits to gather diverse perspectives on the current definition and potential updates. By engaging in this extensive review, IDA aims to carefully evaluate the impact of the 2002 definition and explore whether revisions are necessary to serve individuals with dyslexia, their families, and educators.

This initiative underscores IDA's recognition that, while the 2002 definition has been instrumental in guiding research, policy, and practice, the evolving landscape of dyslexia science and education—as highlighted by the contributors to this special issue and the reconsideration of the Rose definition—may warrant adjustments. The goal is to ensure that the definition remains a robust tool for diagnosis, intervention, and advocacy in a rapidly changing world.

IDA's commitment to this process is not only about considering the need to refine the definition, if warranted, but also about upholding its responsibility as a steward of a vital asset that has shaped the lives of countless individuals. The IDA community will be kept informed throughout this process. It will have opportunities to contribute their insights and feedback, ensuring that the revised definition, if adopted, reflects a broad consensus and continues to advance the understanding and support of individuals with dyslexia.

# Conclusion

The reconsideration of the 2002 IDA consensus definition of dyslexia, as explored in this special issue, underscores the evolving nature of dyslexia within research, policy, and practice. Over the past two decades, the IDA definition has shaped how dyslexia is understood

and addressed across multiple contexts. However, as the articles in this issue demonstrate, advancements in scientific knowledge, changes in educational practices, and societal expectations necessitate a critical review of this foundational definition.

The contributions to this special issue have highlighted the complexity of dyslexia as a construct, emphasizing the importance of considering diverse perspectives, including those of researchers, educators, policymakers, and individuals with dyslexia. Key themes that emerged from these discussions include the importance of understanding the purpose and audience of a definition, the challenges posed by contextual specificity and procedural requirements, the consideration of risk and resilience factors, the emotional and psychological impact of dyslexia, and the role of neurobiological research.

As the IDA begins reconsidering the 2002 definition, any potential revised definition must be scientifically robust and practically relevant. The insights provided in this special issue will undoubtedly contribute to shaping a definition that reflects the current state of knowledge and meets the needs of those it intends to serve.

In moving forward, the IDA's commitment to an inclusive and comprehensive reassessment process offers an opportunity to build upon the legacy of the 2002 definition while addressing the complexities and challenges that have emerged over the past two decades. This work will ensure that the definition of dyslexia continues to serve as a vital tool for research, identification, intervention, and policy in the years to come.

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