

BOOKS *et al.*

## COGNITIVE SYSTEMS

# What is in a word

By Laurie E. Cutting

While many of us take for granted our ability to read, this is not the case for many individuals in society, with approximately one-quarter or more of U.S. students typically performing at Below Basic levels on the National Assessment of Educational Progress (2013). The causes for such poor performance are likely multifaceted, including downstream effects from environmental influences, such as lack of appropriate schooling, as well as biological difficulty in learning how to read. While *The Dyslexia Debate* would appear on the surface to cover only a segment of individuals with reading difficulty (dyslexia), the book really tackles broader issues of those who struggle to read, regardless of origin or how we actually label it.

*The Dyslexia Debate* provides an up-to-date and comprehensive synthesis of what is known about the cognitive and neurobiological origins of reading difficulty. The book also highlights that, despite considerable scientific progress in this area, the field is still in its infancy in terms of understanding why so many individuals struggle to learn to read, what should be done to help, and how to best operationalize reading difficulty in terms of definition and label(s).

At the outset, Julian Elliott (at the School of Education, Durham University) and Elena Grigorenko (at the School of Public Health, Yale University) review all of the different definitions of dyslexia, from its earliest conceptualization to current definitions across various organizations and countries. Although this section is perhaps somewhat lengthier than necessary, it is extremely valuable in revealing why there is so much debate about the exact definition of dyslexia and thus, in turn, why there is debate in how to label those who struggle with reading. Some use the terms “dyslexia” and “reading difficulty” synonymously; others consider difficulty in sounding out words and dyslexia as synonymous; and yet others use dyslexia

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entirely differently, as a distinct disorder from other reading difficulties. The review also provides an important context, as there is one fundamental constant across all definitions: substantial struggle with reading has a biological basis and origin. While environment can modify this biological predisposition, in what manner, under what conditions, and how biological and environmental variability and their interactions result in different reading outcomes are largely unknown.

Herein lies one of the central themes throughout the book: the tools that we currently have to dissect out biological and environmental contributions or to disentangle the specifics of reading difficulty, and even more so the specific case of dyslexia, are not sufficient. While Elliott and Grigorenko are able to point to some clear generalities in terms of cognitive characteristics (phonological processing weaknesses) and neurobiological signatures (left hemisphere anomalies), the picture becomes much more complex when examined further. Processes may exist either in addition to or as a distinct

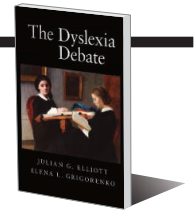


subtype of reading difficulty, such as visual attention and lower-level deficits contributing to phonological processing weaknesses. Additionally, while historically it has been suggested that reading difficulty is linked to corresponding strengths, fully unpacking this information is needed.

The debate over how we should label reading difficulties, and whether dyslexia is a term that should remain in use, is addressed head on toward the end of the book. There, Elliott and Grigorenko challenge us to think about what we can say and do using the current state of the science and raise the thought-provoking idea that dyslexia is not in and of itself a helpful term. Their opinions are largely centered on the fact that no specific cut points exist and therefore definitions are variable; they suggest that we should thus retire the term “dyslexia” and use “reading

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Elena L. Grigorenko  
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disability” to capture anyone who struggles with reading at the word level until a later time when we can understand better the relevant distinctions.

Should we subsume all reading difficulty under one label because we currently can only detect reading on a continuum and can't disentangle environment and biology? Although this is enticing in its simplicity, I respectfully disagree: Science needs to evolve so that we can make distinctions between various types of reading difficulties, and the dyslexia label, along with the broader reading disability term, pushes us to keep propelling science forward. This issue of fuzzy boundaries occurs in multiple developmental disorders—and many other medical disorders for that matter [some argue that most medical disorders are not discrete; for an example, see (1)].

Thus, Elliott and Grigorenko, perhaps unknowingly, provoke us to think not only about dyslexia per se but about the struggle across multiple developmental disorders that present on a continuum. Throughout medical history, there are instances in which disorders have been defined in one manner, but then the definitions are refined and more-precise boundaries are set as the science evolves.

One then circles back to what Elliott and Grigorenko close with: that the issue is not so much in using the label of dyslexia or not

but in understanding how to best define the boundaries and cut points. Right now we don't have the tools to make these very clear demarcations. But, as they state, just because we don't yet have the tools to unravel the complex interactions between genes, brain, and environment, it does not mean that the problem doesn't exist. This, ultimately, is the heart of the issue for defining, diagnosing, and most importantly helping those overcome reading difficulty. *The Dyslexia Debate* provides us with a thought-provoking way to consider these issues and challenges us to figure out the best ways to tackle them while we wait for the evolution of science to provide the greatest clarity.

## REFERENCES

1. A. Giannoni *et al.*, *PLOS ONE* 9, e81699 (2014).

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