

# "When trees overshadow the forest": A peculiar vision of dyslexia

[Simone Gori](#); [Sandro Franceschini](#); [Sara Bertoni](#); [Chiara Andreola](#); [Tiziana Giancesini](#); [Andrea Facchetti](#)

+ Author Affiliations

Journal of Vision August 2017, Vol.17, 641. doi:<https://doi.org/10.1167/17.10.641>

## Abstract

Individuals usually perceive at first the global visual scene (the "forest"), processed by the right hemisphere, and later the local features (the "trees"), perceived by the left hemisphere. Based on this hierarchical analysis, humans evolved reading ability. However, 10% of people are affected by dyslexia (D) and their reading acquisition is extremely difficult. Learning to read involves multiple linguistic, visual and attentional processes. Differences in perceiving the world might be one of the causes of D. Reversing the global to local world perception has been found to be associated with unusual and extraordinary performance in local features extraction in several neurodevelopmental disorders. Here, we employ a comprehensive approach incorporating all methods to test the causal relationship between D and reverse global to local perception. We tested this causal relationship with five experiments in 336 participants: comparison D with typically reading controls; remediation studies, in which "forest before trees" perception are specifically trained and the subsequent effect on reading improvements is measured, and a prospective-longitudinal approach where "forest before trees" perception is measured in pre-readers and its predictability with future reading development is investigate. Our results reveal that: i) a reverse "forest before trees" perception characterizes children with D;

ii) two "forest before trees" perception trainings improve reading skills in children with D, and; iii) pre-reading reverse "forest before trees" perception longitudinally predicts future poor readers. These results demonstrate that learning to read depends also on an efficient right neural network employed for the global analysis of the visual scene.

Meeting abstract presented at VSS 2017

This work is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/).

