

# Developmental electrophysiological studies of letter - speech sound processing in normal reading and dyslexia

Citation for published version (APA):

Froyen, D. J. W. (2009). *Developmental electrophysiological studies of letter - speech sound processing in normal reading and dyslexia*. [Doctoral Thesis, Maastricht University]. Datawyse / Universitaire Pers Maastricht. <https://doi.org/10.26481/dis.20091112df>

## Document status and date:

Published: 01/01/2009

## DOI:

[10.26481/dis.20091112df](https://doi.org/10.26481/dis.20091112df)

## Document Version:

Publisher's PDF, also known as Version of record

## Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

## General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

[www.umlib.nl/taverne-license](http://www.umlib.nl/taverne-license)

## Take down policy

If you believe that this document breaches copyright please contact us at:

[repository@maastrichtuniversity.nl](mailto:repository@maastrichtuniversity.nl)

providing details and we will investigate your claim.

## Stellingen behorende bij het proefschrift

### Developmental electrophysiological studies on letter – speech sound processing in normal reading and dyslexia Dries Froyen

---

1. Single letter – speech sound pairs are early and automatically integrated in the brain of experienced readers when letters and speech sounds are presented in close temporal proximity.
2. Although children learn the correspondences between letters and speech sounds within a few months of reading instruction, the development towards adult-like, automatic letter – speech sound integration takes years of reading experience.
3. The development of letter – speech sound processing is severely delayed in dyslexic children, whereas processing the same speech sounds in isolation is not, suggesting that the former constitutes the proximal cause of reading problems in dyslexia.
4. Other than for audiovisual speech processing, low level visual processing is not automatically involved in letter – speech sound integration, probably due to the arbitrariness of the relation between letters and speech sounds.
5. The auditory MMN can represent, besides purely auditory deviance detection and illusory auditory deviance detection, also a double, audiovisual deviance detection mechanism.
6. While naturally linked audiovisual stimuli are integrated early on in development, arbitrarily linked audiovisual stimuli need years of explicit instruction and practice to become automatically integrated.
7. Letter – speech sound pairs are very suitable for investigating basic audiovisual integration, since they bear no meaning but are strongly associated after years of reading experience.
8. The cause of dyslexia should be searched in the unique, unnatural characteristics of written language and how the brain learns to process them.
9. In fluent readers a conflict between automatic letter – speech sound conversion and automatic word recognition is relatively quickly resolved.
10. To put things back into perspective: "Science is built up of facts, as a *word* is built of *letters*; but an accumulation of facts is no more a science than a *random string of letters* is a *word*." (adapted from Henri Poincaré, *Science and Hypothesis*, 1905)