Implicit Learning in Specific Developmental Disorders

Results in Brief

Improved learning potential for children with developmental disorders

EU-funded researchers have explored implicit learning in children with developmental disorders. The work helps fill a gap in the study of more global, fundamental learning abilities.

HEALTH

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Implicit learning refers to the learning of complex information in an incidental manner – i.e. without consciously being aware it has been learned. Prior research suggests that learning becomes more implicit in nature following explicit instruction. Also, impairments in the mechanisms of implicit learning could mediate selective weaknesses in other cognitive processes such as reading and numeracy.

The project ILSDD (Implicit learning in specific developmental disorders) put this argument to the test by examining the nature of implicit learning and its relationship with reading. Better understanding difficulties in implicit learning may help to explain why reading is a challenging task for some children.

The team utilised behavioural and neuroimaging methods to study implicit learning in typical and atypical young populations – namely children with dyslexia and

dyscalculia. Shedding light on the interplay between behaviour and brain neurobiology helps inform theories and models of reading and sets the stage for evidence-based school interventions.

As a result, the project followed two lines of research. The first was related to fundamental implicit learning abilities in children with developmental disorders and potential implicit learning difficulties coupled with particular deficits.

The second line of research provided neuroimaging data on young children. This was used to generate functional phenotypes to predict individual differences in implicit learning.

ILSDD partners designed and piloted various behavioural experiments, collected neuroimaging data, created databases for the different types of data and performed an analysis of acquired magnetic resonance imaging data.

One important finding was that poor readers have a general difficulty in performing implicit learning tasks irrespective of the type of task (i.e. visual, auditory or tactile). The work can advance our understanding of implicit learning deficits and point the way to a better explanation of the wide range of difficulties found in dyslexia.

ILSDD results indicate that neuroimaging data confirm the behavioural data. The research team worked to deliver an integrated behavioural and neurobiological explanation of implicit statistical learning in young children. The work has implications for diagnosis and intervention in specific developmental disorders, as well as the development of innovative technological interventions.

Keywords

Children, developmental disorders, implicit learning, reading, ILSDD, neuroimaging

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Project Information

ILSDD

Grant agreement ID: 301704

Project closed

Start date
1 October 2012

End date
31 October 2015

Funded under
Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Total cost
€ 271 943,70

EU contribution
€ 271 943,70

Coordinated by
THE UNIVERSITY OF EDINBURGH
United Kingdom

Last update: 10 November 2016

Permalink: https://cordis.europa.eu/article/id/173698-improved-learning-potential-for-children-with-developmental-disorders