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Morphological Processing in Children with Phonological
Difficulties

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Executive Summary October 2017



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Background

We know that children with dyslexia have difficulties in phonological awareness tasks, and that children with a history of repeated ear infections (Otitis Media with Effusion, OME) also often have weaknesses in phonological awareness tasks, probably due to their history of transient hearing loss. The two groups have not previously been directly compared to assess the overlap between them.

Rationale

We were interested in whether children with OME showed the same pattern of phonological and literacy difficulties that dyslexic children showed. We were also interested in whether those children with phonological difficulties who escaped literacy difficulties were more likely to use morphology to help them progress well.

Method

We compared a group of 36 children with dyslexia to 29 children with a history of OME. Each of these two groups was also compared to groups of typically developing children of the same age, and groups of younger typical children at the same reading level. This made a total sample size of 195. We asked the children to complete a wide range of literacy, phonological and morphological tasks. We also retested their literacy skills 18 months later.

Key Terms:

Otitis Media with Effusion (OME): an infection of the middle ear in which fluid in the middle ear can affect hearing levels temporarily. This is very common in the preschool years and some children have repeated ear infections over this period.

Phonology: The sound structure of words – e.g. the fact that the word ‘thing’ has three separable sounds in it (‘th’, ‘i’ and ‘ng’).

Morphology: the meaning structure of words – e.g. the fact that the word ‘unforgettable’ has three units of meaning in it (‘un’, ‘forget’ and ‘able’).

Dyslexia: a developmental difficulty in which an individual shows difficulties in reading and spelling that are unexpected given their age, general abilities and education.

Key Findings

- Many children with OME show normal literacy skills, but there is a significant subgroup (around a third) that has literacy difficulties.
- Children with OME and children with dyslexia show different profiles of impairments:
 - Children with dyslexia show difficulties on meta-linguistic tasks, whether they involve phonology (ability to manipulate speech sounds) or morphology (knowledge of grammatical word structure).

- Children with OME have difficulties only on the phonological tasks or tasks with high perceptual demands.
- Our experimental measures show that children with dyslexia can use morphology in literacy, but they are sometimes inefficient in using it.
- Children with OME have normal morphological skills for their age and should be in a good position to use this knowledge to boost literacy.
- Despite these differences, there are overlaps between the groups: around a third of children with OME showed below average reading, and 25% of the dyslexic children had undiagnosed hearing difficulties.
- All groups progressed in literacy to a similar extent over the 18 months they were followed, and both morphology and phonology were small, but significant predictors of reading comprehension outcome.

Implications for Theory

Children with OME and children with dyslexia show different profiles of impairment, though there is some overlap between the groups.

This work informs the long-running theoretical debate about the nature of the phonological impairment in dyslexia. Our sample of children with dyslexia, in contrast to those with OME, shows meta-linguistic impairments that extend over phonology and morphology. This indicates that their difficulties are unlikely to be due to subtle difficulties in phoneme perception, as suggested by some researchers.

A significant minority of the children with OME showed reading difficulties. We suggest that OME will only result in reading difficulties when accompanied by weaknesses in other areas that may implicate meta-linguistic processes.

Researchers working with children with dyslexia should be aware of the high levels of undiagnosed hearing loss in this group, and should consider screening for hearing difficulties when recruiting samples.

Implications for Teachers and education professionals

1. Children with dyslexia have impairments in morphological awareness, but are able to use morphology in written language.

It is not that children with dyslexia are insensitive to morphology in reading and spelling, just that they are not always using it efficiently.

We know that children with dyslexia particularly benefit from structured, systematic phonics teaching. We argue that the same will be true of morphological teaching – **children with dyslexia need to be taught how to use morphology in a structured, step-by-step way.**

2. Children with OM often show average or good reading, but an increased number of children in this group have below average reading. **A history of OME should be regarded as a preschool risk factor which teachers should be aware of** to a) screen for and support phonological difficulties and b) consider the possibility of mild or moderate hearing loss.

3. Children with reading difficulties may sometimes have undiagnosed hearing difficulties

In our study, approximately 25% of children with reading difficulties also showed mild or moderate bilateral or unilateral hearing impairment, which the parents did not report. We do not have a large sample of children, but it seems that it is important to screen for hearing difficulties in children with reading difficulties.

Implications for Policy-Makers

Many children in school may have an undetected mild hearing loss, which would make it harder for them to access the curriculum. Current hearing screening procedures are not picking up these children, and we would advise that children have their hearing tested in more detail and more often.

It was not straightforward to predict which children with OM would have literacy difficulties. **We suggest that a history of OM should be regarded as a preschool risk factor which teachers should be aware of to a) screen for and support phonological difficulties and b) consider the possibility of mild or moderate hearing loss.**

Morphology is a useful skill for children to use in literacy. This provides support for the governments recently increased emphasis on teaching grammar and word structure in spelling (also known as SPaG: National Curriculum, 2014).

However, children with dyslexia may well have difficulties in learning to use these skills efficiently and **should be taught this information in a highly structured way.**

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