



# Sensitivity to subject–verb agreement in spoken language in children with developmental dyslexia

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## Abstract

The principle aim of this paper was to investigate sensitivity to subject–verb agreement morphology in children with developmental dyslexia. An auditory grammaticality judgement task was used to compare morphosyntactic abilities of primary school dyslexic children relative to normally developing children matched on chronological age and children matched on reading level. The dyslexic children performed significantly worse than both control groups. The findings of this study contribute to other evidence that morphosyntactic skills may be compromised in developmental dyslexia. Specifically, subject–verb agreement morphology may be affected in dyslexic 8 year-old children in such a way that it cannot be the consequence of a delay in reading ability.

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## 1. Introduction

Developmental dyslexia refers to a disturbance in the acquisition of reading and spelling skills. The American Psychiatric Association uses the term developmental dyslexia when reading achievement falls substantially below the expected, given the person's chronological age, measured intelligence and age appropriate education (DSM-IV, 1994). Hence, not a low level of reading performance is decisive for the diagnosis of developmental dyslexia, but the discrepancy between reading and general intelligence level. Dyslexia runs in families, suggesting a genetic component to the cause of the impairment. It has been estimated that children with first-degree dyslexic family

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members have around 40% chance of developing reading problems (Gilger, Pennington, & de Fries, 1991) compared to the average risk of 3–10%.

Reading is a complex skill and there may be many reasons why children fail. Converging evidence suggests that developmental dyslexia is a language disorder, which critically affects the phonological domain of language, even though visual deficits have also been demonstrated (cf. Lovegrove, 1994). Children with developmental dyslexia typically fall behind on tasks measuring phonological skills compared to their age-matched, but also to their reading level matched peers (Olson, 1994; Rack, 1994). Phonological processing entails the segmental analysis of words, as well as the meta-phonological skills required for analysing the sound structure of speech into the phonemic components represented by the alphabet. In this way it is related to reading development and, therefore, reading breakdown (Bryant & Bradley, 1985).

Several types of developmental dyslexia have been identified, indicating that the reading deficit is not a homogeneous condition. For example, Castles and Coltheart (1993) classified two types of dyslexia based on the pattern of reading impairment: *phonological dyslexia* which is characterised by a severe deficit in grapheme to phoneme conversion, expressed in particularly impaired non-word reading and *surface dyslexia* in which regularisation errors dominate.

Phonological deficits have been related to problems with speech perception. Numerous studies (cf. Mody, Studdert-Kennedy, & Brady, 1997; Reed, 1989; Tallal, 1980; Werker & Tees, 1987) have shown that children and adults with dyslexia are less able to discriminate and recognise speech sounds of which the formant transitions differ minimally from each other (tested by constructing a speech continuum from, for instance, /ba/ to /da/).

### 1.1. Developmental dyslexia and grammatical skills

Apart from phonological deficits, recent investigations of oral language skills in dyslexia have demonstrated more general weaknesses, including vocabulary and grammatical development. In general, these problems with spoken language are quite subtle and only surface when specific tests are administered. An issue that often is raised is whether it is actually viable to speak of developmental dyslexia, when oral language abilities are also limited in these children. Different views have been expressed about this issue (see Snowling, Bishop, & Stothard, 2000), but for this study our main aim was to study morphosyntactic ability in children whose primary (or at least most exposed) deficit is in the domain of written language to investigate the idea that, indeed, developmental dyslexia may need to be studied as a language disorder with limitations in the different modules of the language system.

Longitudinal studies in which pre-school children at genetic risk of dyslexia were followed, found that they produced shorter sentences (measured by calculating the mean length of utterance (MLU)), and that they scored more poorly on receptive and productive morphosyntax and on vocabulary measures compared to normally developing children (Lyytinen, Poikkeus, Laakso, Eklund, & Lyytinen, 2001; Scarborough, 1990, 1991). Studies of primary school-age dyslexic children also showed their linguistic abilities to be impaired relative to normally developing children. McArthur, Hogben, Edwards, Heath, and Mengler (2000) demonstrated that approximately half of a group of dyslexic children

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