

Do dyslexics have general or specific difficulties with phonemes?

Pierre Cormier and Stacy Corbin

Université de Moncton

Developmental dyslexia is a severe difficulty to read or spell printed words (Peterson & Pennington, 2015) caused at the cognitive level by impaired processing of phonological information, the basic components of the speech stream that can be associated with the symbols used in print. Accordingly, dyslexics obtain weaker scores as compared to typically developing children on a variety of tests assessing an awareness of phonological information; this difference being maximised when these tests include phonemes only (Melby-Lervåg, Lyster & Hulme, 2012). The few developmental studies of how particular phonemes affect the performance of typically developing children on measures of phonological awareness (Chafouleas, VanAuken & Dunham, 2001; De Graaff, Hasselman, Verhoeven & Bosman, 2011; McBride-Chang, 1995) did not test the full range of phonemes. Children had more difficulties with fricative phonemes than obstruent in grade three (McBride-Chang, 1995), with non-continuant phonemes than continuant in kindergarten and grade one (Chafouleas et al., 2001) and, in Dutch, with liquid and fricative phonemes than plosive and nasal in kindergarten (De Graaff et al., 2011). To our knowledge, there are no studies examining differences on a task of phonological awareness between dyslexic and typically developing children across the full range of phonemes.

In this study, 17 dyslexics and (11 in grade three and 6 in grade five) and 42 typically developing children (26 in grade three and 16 in grade 5) answered to the Test d'Analyse Auditive en Français, a measure of phonological awareness in French (Cormier, Grandmaison, MacDonald, & Ouellette-Lebel, 1995). All children were native

speakers of French. The children were classified as dyslexics if their parents reported a diagnosis by a professional and if they obtained standard scores below 90 on the word reading and pseudoword decoding subtests of the French Canadian version of the Wechsler Individual Achievement Test (Wechsler, 2005). All typically developing children scored above 90 on the same subtests and had no diagnosis reported by their parents.

The phonological awareness task involved deletion of a phoneme (all consonants) from a word (e.g.: remove the /k/ sound from “cat”). Phonemes were either at the beginning or end of a CVC word, within a complex word or part of a consonant blend beginning a word. Items were classified as containing either one of the six consonant groups in French (bilabials, labiodentals, alveodentals, alveolars, palatal-velars, uvulars) as well as being sonorous or not (Germain & LeBlanc, 1981). Children’s performance on each type of phonemes was submitted to a stepwise discriminant analysis to uncover which subset of those phonemes distinguished dyslexics from typically developing children.

Dyslexics were weaker than typically developing children on all types of phonemes, all F ’s (1, 54) > 22.00, p ’s < .001. The discriminant function included the palatal-velar and the uvular items and classified successfully 89% of all children (but only 67% of dyslexics).

In this examination of the classes of phonemes in French, dyslexics had more difficulties than typically developing children on all classes, suggesting a general deficit as hypothesised by the phonological core deficit hypothesis (Stanovich, 1988).

References

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