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Editorial: Spoken language processing in developmental dyslexia – beyond phonology

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Editorial on the Research Topic

Spoken language processing in developmental dyslexia – beyond phonology

Developmental dyslexia (DD) is a written language disorder, but phonological processing deficits are often pronounced (Wagner et al., 1994). One of the outstanding questions in the literature is whether children with DD have spoken language processing deficits beyond phonology. Bishop and Snowling (2004) developed a two-dimensional model that describes impaired phonological skills but intact non-phonological spoken language skills in DD. It has also been proposed that phonological processing problems are responsible for any observed morphosyntax difficulties in DD (Smith et al., 1989). However, empirical evidence to test this theory has been sparse and mixed (Shankweiler et al., 1995; Yeung et al., 2014). Addressing whether children with DD have spoken language deficits beyond phonology involves more than comparing phonological and other oral language skills across DD and control groups. Oral language skills such as morphological awareness, syntactic awareness, automatization of lexical access, and word learning are all unique forms of language processing. Importantly, even though such language skills involve handling phonological information, these specific language processes may contribute uniquely to reading development. In our Research Topic we have a collection of four papers that offer important insight into the characterization of spoken language problems in DD. This Research Topic includes novel ways to measure spoken language in DD and efforts to control for phonological processing when investigating other oral language skills in DD and in children with varying reading skills. This Research Topic takes a diverse and inclusive approach: the Research Topic includes Palestinian-Arabic, Dutch, and English-speaking children with a combined age range from the preschool years to the late elementary school years. Each of these papers carefully considered how other oral language skills such as word learning, automatized lexical access, morphological awareness, and syntactic awareness relate to phonological processing when investigating their relationships with reading difficulties. The findings from the four studies suggest moving beyond distinguishing between phonological and other oral language deficits in DD and digging deeper into how they are related.

van Viersen et al. took a novel approach and examined word learning in a task that required Dutch speaking children in Grades 3–6 to form associations between novel spoken words and novel objects. The DD group performed more poorly than the control group on delayed recall, with a lower percentage of correct phonemes produced when naming novel objects. Phonological awareness, non-word reading and receptive vocabulary predicted delayed recall scores. While word learning is a unique fundamental oral language skill that goes beyond phonology, it also integrates phonological and semantic representations. The results of this paper suggest word learning be monitored more closely in children with DD.

Zinger and Kruk examined oral language beyond phonology as a predictor of early reading comprehension skills in a longitudinal study that tracked English-speaking children across Grades 1–3. After phonological awareness skills were controlled for, morphological awareness—assessed with an oral task—predicted gains in reading comprehension. Children with low and high reading scores at the start of the study showed growth in reading comprehension and morphological processing over time. But the group that had low reading scores at the start of the study continued to perform more poorly than the group with high scores on reading comprehension and morphological processing across Grades 1–3. This study suggests that the relationship between morphological awareness and reading comprehension emerges very early in reading development and that attention be directed to struggling readers.

Robertson et al. examined syntactic awareness in English-speaking Grade 3–4 children with and without DD. The possibility that poor phonological processing could strain memory while performing an oral syntactic awareness task was investigated. The DD group performed more poorly than the control group even when phonological memory and verbal working memory were controlled. However, once phonological awareness was controlled, there were no significant group differences on syntactic awareness. These results suggest phonological awareness might be driving syntactic awareness problems in DD.

Jabbour-Danial et al. examined in a longitudinal study whether Palestinian-Arabic children show distinct profiles with respect to morphological awareness, phonological awareness and automatized lexical access. The results show indeed that cognitive distinct profiles could be identified in kindergarten which were related to distinct reading profiles later in their development.

These four studies first of all confirm the importance of investigating more broad language skills, beyond phonological skills, when studying reading development and problems in reading development in DD. Morphological awareness, syntactic

awareness, word learning and lexical access all seem related to progress in reading development. Importantly, children may show distinct cognitive language profiles leading to distinct reading profiles. A key issue that we set out to address in the current Research Topic was whether linguistic skills, such as morphological and syntactic awareness, and lexical processing contribute to reading development via phonological skills. This may be the case, as was found for instance in the paper of Robertson et al., but other studies found that linguistic skills seems to contribute to reading when phonological skills were controlled for. The variation in languages, measures and the age of children may be related to the variation in relations between broader linguistic skills, phonology and reading. We thus encourage more studies in this area, not only to enrich the scientific field of reading development and DD but to also stimulate research on clinical applications to facilitate reading development from a more wide language processing perspective.

Author contributions

ER: Conceptualization, Writing – review & editing, Writing – original draft. JR: Writing – original draft, Writing – review & editing. ST: Writing – review & editing.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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