Morphological Awareness Across RTI Tiers – Deficit or Strength?

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Introduction

Although testing with a diagnostic battery is not necessary for students to qualify for help under Response to Intervention II (RTI-II), it remains relevant for instructional planning. Our study explored the role of morphological awareness in diagnostic testing of children under RTI, in an effort to clarify two opposing ideas. One theory is that difficulty in learning to read and spell is associated with deficits in morphological awareness (Rubin, Patterson, & Kantor, 1991). However, recent findings suggest morphological awareness (MA) could be a protective factor for individuals with dyslexia (Farris, Cristan, Bernstein, & Odegaard, 2019; Law, Wouters, & Ghesquière, 2015). In a recent study of Greek children, scores on two tests of morphological awareness as well as scores in phonological awareness were significantly lower than in controls. However, in a binary logistic regression the deficiency in MA did not predict the classification of children in the group with dyslexia compared to typically developing readers – only phonological awareness predicted classification (Rothou & Padelidili, 2019).

MA has still not been clearly identified as a deficit in at-risk late elementary students, perhaps as it is often presumed to be learned. Moreover, MA has yet to successfully predict dyslexia membership in a regression model. In the current study, 4th and 5th graders (N = 95) already classified in RTI tiers completed a battery of measures of reading morphologically complex words, morphological awareness, and prosody to therapy. The data were utilized to answer two questions. First, whether morphological awareness (MA) could be a protective factor for children with dyslexia (Farris, et al., 2019 [In Press]).

Methodology

A sample of 95 elementary school students in fourth and fifth grades were recruited for the study. All students attended a public elementary school in a middle-to-low-socioeconomic class suburban area of the central Tennessee. Ages ranged from 9 years, 1 month to 12 years, 1 month (M = 10 years, 7 months, SD = 7.89 months). Students were already assigned into RTI tiers by the school. Test battery included:

- The word reading test - extended (WRT-E) adapted from Carlisle’s (2000) word reading test
- The Test of Written Spelling, Fourth Edition (TWS-4; Larsen, Hammill, & Moats, 1999)
- Developmental Spelling Assessment (DSA; Ganse, 2007)
- Vocabulary: WJ-III Synonyms, Antonyms, and Analogies subtests
- The Phonological awareness task (AAT-Nonde) adapted from Rosner and Simon (1971) and Singbon et al. (2008)
- Prosodic sensitivity test (PST)
- The Tennessee Comprehensive Assessment Program (TCAP) Achievement Test

Please refer to the manuscript for a detailed procedure.

Results

Table 1. Group differences in test battery components (N = 95). Groups are regular education (Tiers I & II) vs. reading disability (Tiers III & IV). Comparison with independent groups t tests. *Bonferroni corrected.

Table 2. Correlations Among Tasks in The Test Battery Along with Means and Standard Deviations.

Table 3. Hierarchical Binary Logistic Regression Model for Predicting SPED Classification with Test Battery.

Conclusion

Children with dyslexia performed significantly lower in every task, with the exception of PA (AAT Nonde) and prosody, as compared with typically developing readers. The hierarchical analysis was used to show the levels of the existing test battery plus morphology and prosody as predictors for SPED classification (Tiers III and IV). We found that while the current battery (steps one and two in the regression) is fairly accurate in classifying tier level, the addition of morphology and prosody (step three) raises the hit rate and decreases false alarms, thereby significantly improving classification accuracy. Word reading is a clear contributor in classifying. However, a second word reading task with additional morphologically complex words (WRT), appears to be redundant.

Rubin et al. (1991) accurately predicted spelling ability in adults with learning disabilities through spoken morphological tasks. These tasks, which were adapted in the current study, have previously been suggested by Rubin to be utilized in assessment. Rothou and colleagues (2019) found a clear deficit of instructional morphology in Greek-speaking children with dyslexia. This implies that reading and language distinctions in terms of testing may be preventing greater identification for children in need of intervention.

The current work goes further to demonstrate a predictive power to morphology and prosody in distinguishing typically developing readers from children with dyslexia.

Future Directions

These results are a clear indicator that the inclusion of morphology in diagnosis will allow for a more accurate detection of children with dyslexia in the RTI system. Fluency measures alone may not be sufficient to identify children at-risk. However, this proposal should be investigated further.

Our study may have been limited by the simplicity of the eight instructional morpheme task. This task, adapted from Rubin et al. (1991), was originally designed for second graders. Derivational morphology was not studied here but deserves future research as a potential predictor. It may also be investigated whether classification could be extended to other features of spoken language or should be more appropriately diagnosed with CELF or CASL.

The data here support the practice of explicit systematic instruction in morphemes as children with dyslexia in Tier-III do show difficulty with phonological awareness, decoding, word reading, and fluency (Lyon, et. al., 2005; Shaywitz, 1998). Additional work should explore the seemingly contradictory findings of recent work that points to morphology as a compensatory skill for children with dyslexia (Farris, et al., 2019 [In Press]).

References