Supplemental Material S1. The factor and the correlation analyses for the behavioral data of children with dyslexia.

Phonological tasks used in the current study measure a wide range of linguistic processes. To assess whether they measure a single underlying construct (phonological processing) or multiple constructs, we have performed both the factor and the correlation analyses for the behavioral data of children with dyslexia. We did not perform such analysis for the data of typically developing (TD) children since it appears that a number of the measures had ceiling effects. In future studies, it will be important to perform such an analysis including the data of preschool TD children (we can assume a lower level of phonological skills in younger children and the grater variability in the performance on phonological tests).

Using the scree plot method, we have identified that a single factor captures most variance in the test performance (Figure S1A). To corroborate that a single-factor solution optimally represented our data, we have explored the factor loading for this solution and compared it to the two- and three-factor solutions (Figure S1B).

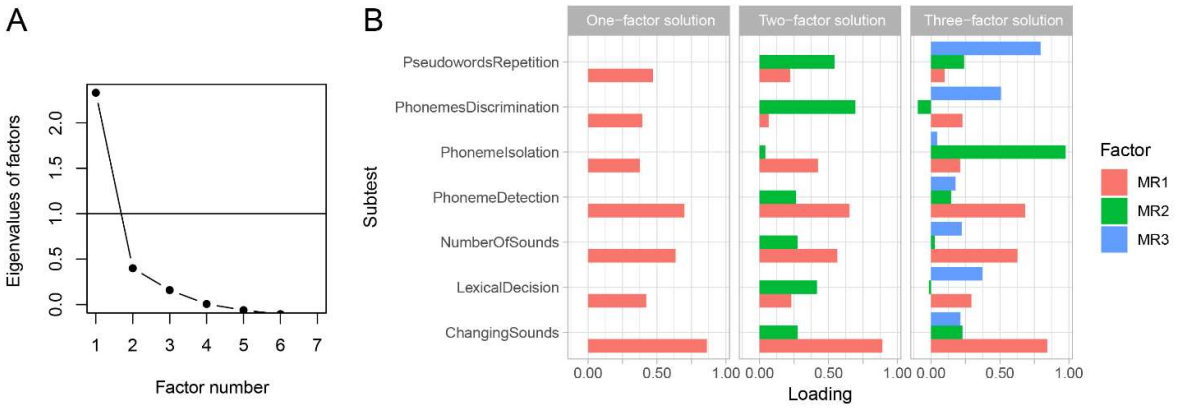

Figure S1. The results of the factor analysis. A: eigenvalues of the factors. B: factor loading for one-, two-, and three-factor representations of the dataset.

Across all three solutions, the first factor primarily captured the contributions of the most difficult tests (Phoneme Detection, Number of Sounds, and Changing Sounds). The second factor in two-factor solution, by contrast, did not seem to capture any reliably interpretable combinations of the tests. One can speculate that in three-factor solution first factor (primarily capturing the contributions of Changing Sounds, Number of Sounds and Phoneme Detection) might reflect the impact of the phonological analysis process (the process of consciously dividing the speech stream into individual phonemes), second factor (primarily capturing the contributions of Phoneme Isolation) might reflect the involvement of a conscious effort not required in other tests to name the first sound (but not the first syllable or the name of first grapheme), and the third factor (primarily capturing the contributions of Pseudoword repetitions, Phonemes Discrimination and Lexical Decision) might reflect the impact of phonological memory. These findings suggest that our tests indeed tapped into different aspects of a single construct, phonological processing.

The results of the correlation analysis are presented in Figure S2. Numerically, all subtests but two (Phoneme Discrimination and Phoneme Isolation) showed positive correlations (r ranged from .06 to .63). Three strongest correlations were significant after applying a Bonferroni correction for the number of unique correlations (21). These results are in line with the interpretation that the tests measure a single underlying construct, as none of the tests showed prominent negative correlations.

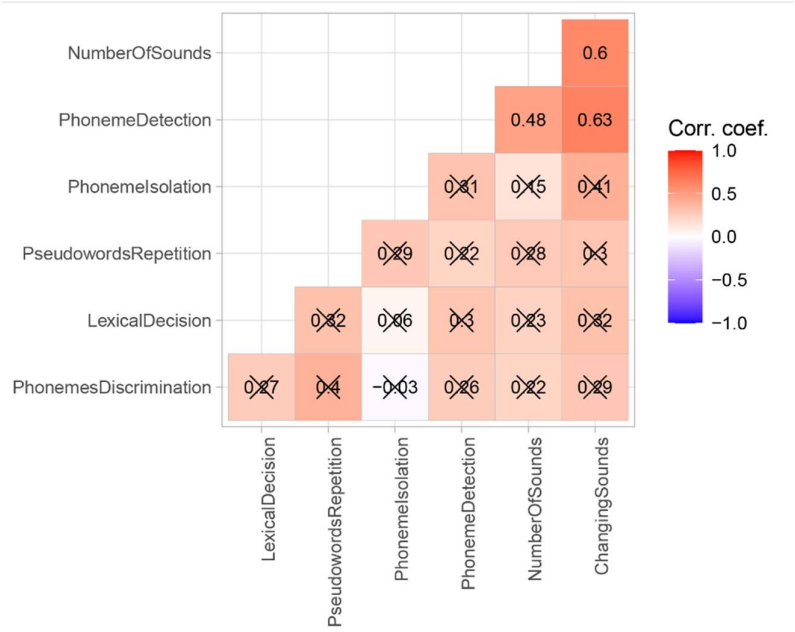

Figure S2. Spearman correlations between the behavioral tests. Crossed are the correlations that did not remain significant after applying a Bonferroni correction for the number of unique correlations (21, corrected *p* threshold is .0024).