

Developmental dyslexia is believed to involve deficits in phonological awareness (for overview see Goswami 2003). This suggests the main problem lies in faithfulness to adult forms. Contra the mainstream view, we argue the core problem does not lie in phonemic awareness. Instead, we suggest it lies in a disturbance of temporal spatial ordering abilities, evinced in lexical semantics and atypical prosodic development.

Our evidence is based on a case study of an individual with dyslexia (pseudonym: Tara). Tara, a 17 year old youth, has difficulty with temporal-spatial words like *before/after* and *above/below*. A typical error is given in (1). Moreover, Tara reads all syllables in unknown words as (C)CV. Via epenthesis, metathesis, or deletion, she reads word internal codas like onsets: (2). (We use nonsense words or Latin to ensure the presented words are unknown to her, and thus not rote forms.)

We suggest the overproduction of CV units is the reflex of a problem with the temporal-spatial ordering of salient items (vowels) versus non-salient items (consonants). From the articulatory phonology point of view, onsets, but not codas, are essentially co-articulations on vowels; thus (C)CV is ordered for free since the co-articulated onsets are auto-segments of the vowel: (3). However, for codas to be integrated into syllables, a temporal-spatial decision, (4) or (5), must be made. An obvious solution is to interpret every non-salient unit that poses problems as an autosegment of V. This produces an atypical parse of a multisyllabic word CVC.CV as CV.CV.CV.

We propose that integration of a coda into a syllable is so difficult for Tara because the metrical construct FOOT has not emerged (she lacks moraic trochees) and therefore a constraint such as FOOT-BINARITY does not drive syllabification of post vocalic consonants as codas. Instead, the person with dyslexia can syllabify post vocalic consonants as onsets. Without codas, the person with dyslexia cannot exploit the unit *rime* in reading. The absence of the construct *rime* is highly problematic for reading English because accurate and efficient acquisition of reading in English requires reference to *rime*: the pronunciation of vowel graphemes in this orthographically opaque language is most predictable in the context of the coda grapheme(s) (Treiman et al (1995)).

We note that at the right word margin, codas appear exceptionally possible. We generalize Goad and Brannen's (2003) proposal for early child language acquisition to this atypical development and conclude with them that (at least initially) final consonants can be syllabified as onsets of empty nuclei. This means that word final CVC is not necessarily evidence of knowledge of codas. The parallel to early child language acquisition suggests that the phonology of the individual with dyslexia will appear immature. This makes the prediction that beginning readers will display reading behavior that is similar to that of dyslexic readers in their (initial) reliance on CV as the main organizing unit of words. This prediction is borne out in a study of blending skills in beginning readers (Cassady, J. and L. Smith 2004) where nascent readers blend CVC words more efficiently as: CV+C than C+VC. Our proposal can also shed light on the findings of Geuden and Saunders (2002), which are discussed in Yip (in press). In their study of phonemic awareness in Dutch children, they found that young readers were reluctant to split apart a single syllable word at the so-called onset-rime division. Ex:....c/at. Instead, they preferred to split apart a word after the vowel and before the final consonant. Ex:....ca/t These findings are easily interpreted as arising from a(n initial) lack of FOOT.

Dyslexia: the temporal spatial disordering hypothesis and its metrical reflex

(1) “Mommy, sit above the blanket.” (Context: mother is sitting on top of the blanket. Intended meaning: “sit oriented to the other side of the blanket.” i.e., under the blanket)

(2)

target word →	epenthesis	target word →	metathesis	target word →	deletion
regatleb →	regat <b>l</b> ieb	maudlin →	mad <b>u</b> lin	wep <b>g</b> ad →	wegad

(3) C  
|  
V

(4) C    C  
|    |  
V ← C V  
    →<sub>time</sub>

(5) C    C  
|    |  
V C → V  
    →<sub>time</sub>