Introduction:
- Orthographic processing accounts for significant and unique variance in children’s literacy skills above and beyond phonological processing (e.g., Castro-Caldas & Reis, 2003; Cunningham et al., 2001; Manis et al., 2000).
- Orthographic fast-mapping, defined as the ability to learn a new written word (by spelling or identifying the new word), after four limited exposures to that form during a shared storybook reading activity, accounts for unique variance in preschool children’s spelling achievement (Apel, Wolter, & Masterson, 2006), and has been found to be significantly related to literacy achievement in kindergarten children with and without language impairments (Wolter & Apel, in review).
- Children who demonstrate orthographic fast-mapping abilities are suggested to have developed initial mental orthographic representations (MORs) of those words (Apel et al., 2006).
- Tasks such as reading decoding, reading recognition, and spelling tap specifically into stores of MORs and the facility with which children access and use those representations.
- Thus, we hypothesized that kindergarten orthographic fast-mapping skills would be related to fourth grade reading and spelling skills.

Participants:
- 37 public school children with/without LI
- Kindergarten and 4th grade
- Kindergarten children with LI: 19
- Kindergarten children with typical language skills: 18

Methods:
Kindergarten: Orthographic Fast-Mapping Task
1) Novel words presented four times with a picture of a novel object, via PowerPoint story book
2) Asked to generate nonword spellings
3) Asked to identify nonword spellings

Fourth Grade: Woodcock Reading Mastery Test- Revised
Word Identification, Word Attack, and Passage Comprehension subtests
Test of Written Spelling – 4
(Larsen, Hammill, & Moats, 1999).

Results:
- Group Comparisons:
  - Bonferroni adjustment made: alpha level at .012 (.05/4)
  - Independent samples t-tests conducted
  - Children with typical language skills performed significantly higher on all tasks compared to their peers with LI:
    - nonsense word reading: $t(35) = 3.91, p < .001, d = 1.3$
    - real word reading: $t(35) = 5.19, p < .001, d = 1.64$
    - reading comprehension: $t(35) = 6.00, p < .001, d = 1.98$
    - spelling: $t(35) = 2.91, p < .01, d = 1.29$

Discussion and Future Research Directions:
For children with typical language:
- This significant relationship between kindergarten orthographic fast-mapping ability and fourth grade real word reading suggests that the ability to quickly develop MORs of novel written words is related to their later ability to recognize words (i.e., match printed words to MORs).
- The lack of significant findings for the spelling task may have been due to low power or instrument sensitivity.

For children with LI:
- Even though the children with LI were significantly poorer at fast-mapping orthographic information in kindergarten compared to their counterparts with typical language skills, their ability to do so nevertheless related to their fourth-grade reading and spelling abilities.

These preliminary findings suggest that orthographic fast-mapping tasks in kindergarten may be one measure used to predict later reading and spelling outcomes, and thus the addition of an orthographic fast-mapping task may be found to be useful in early literacy screenings.

Future research directions include applying a spelling scoring system with increased sensitivity, the Spelling Sensitivity Scoring procedure (SSS; Masterson & Apel, 2007), and replicating with larger sample sizes and multiple populations.


