Modelling the relation between prosodic sensitivity and emergent literacy


Coventry University, UK; University of Manchester, UK; Dalhousie University, Canada

Abstract

A converging literatures has demonstrated that prosodic sensitivity (the rhythmic patterning of speech) is related to literacy development and theoretical models of this relation have begun to enter the literature (see Holliman et al., 2014). It has been theorized that the observed relation between prosodic sensitivity and word reading and spelling may be partially mediated by children’s vocabulary knowledge, phonological awareness, and morphological awareness; however, no study to date has tested this model with children in the earliest stage of reading development. In this study, four to five-year-old English-speaking children (N = 110) who were identified as pre-readers completed a new test of prosodic sensitivity and were also assessed for their vocabulary knowledge, phonological awareness, and morphological awareness. One year later, participating children were reassessed on the same measures. It was first important to demonstrate that the new measure of prosodic sensitivity was suitable for four- to five-year-old children who were identified as pre-readers. Results revealed that the measure was not prohibitively difficult, able to detect individual differences in prosodic sensitivity, and sound in terms of psychometric properties given that all four sub-tests loaded onto a single factor in an essentially consistent higher-order factor of prosodic sensitivity. Since there existed no cause for concern regarding the new measures of prosodic sensitivity its interaction with other emergent literacy skills and its influence on word reading and spelling was then examined. A correlation matrix (Pearson) between the key variables in the study are presented in Table 1.

Results

It was first important to demonstrate that the new measure of prosodic sensitivity was suitable for four- to five-year-old children who were identified as pre-readers. Results revealed that the measure was not prohibitively difficult, able to detect individual differences in prosodic sensitivity, and sound in terms of psychometric properties given that all four sub-tests loaded onto a single factor in an essentially consistent higher-order factor of prosodic sensitivity. Since there existed no cause for concern regarding the new measures of prosodic sensitivity its interaction with other emergent literacy skills and its influence on word reading and spelling was then examined. It can be seen from the bivariate correlations that prosodic sensitivity was significantly correlated with all other measures in this study.

Conclusion

T2: Spelling .222* .291* .492*** .232* .893***

Table 1. Correlation matrix between prosodic sensitivity, vocabulary, phonological awareness (composite), morphological awareness and T1 variables (variable measured at 1 Time 3: Word Reading and Spelling). The model with standardized loadings for variables at T1 was:

*p<.05; **p<.01; ***p<.001

Method

Participants

All participating children in this study were recruited from three primary schools in the West Midlands, UK. At Time 1, 110 four- to five-year-old English-speaking children (71 females) in Reception Year were available to take part: it was established that there were no pre-readers in that they were unable to read a single word on a validated UK word reading test. Of these children, 30 (28 females) were available to take part at Time 2, one year later, by which time they were aged five- to six-years-old in Year 1. All children who took part had English as their first language.

Measures

Time 1

• Brenda’s Animal Park – new measure of prosodic sensitivity (see below)
  o Compound nouns
  o Word stress
  o Intonation
  o Phrase stress
  • British Picture Vocabulary Scales II (Dunn et al., 2008)
  • Primary Inventory of Phonological Awareness – two subtests (Dodd et al., 2003)
  • Rhyme awareness
  • Phoneme Isolation
  • Morphology Completion Autumn et al. (Tredwell, B., & Hammerl, 2008)

Time 2

• British Ability Scales III (Word Reading subtest) (Elliot & Smith, 2011)
• British Ability Scales III (Spelling subtest) (Elliot & Smith, 2011)

Brenda’s Animal Park

During the task, children are introduced to the main character, Brenda, who works on an animal park. Brenda encounters four different problems on the animal park which can be thought of as four sub-tests measuring slightly different aspects of prosodic sensitivity. A composite measure of prosodic sensitivity can be constructed by combining the scores on each individual subset.

• Compound Nouns: Children had to decide whether a pre-recorded utterance took the form of a compound noun (e.g., ‘butterfly’) or a noun phrase (e.g., ‘butterfly’).
• Word Stress: Children had to decide whether a pre-recorded word was correctly stressed (e.g., ‘CHOCOLATE’) or incorrectly stressed (e.g., ‘CHOCOLATTTE’).
• Intonation: Children had to decide whether a pre-recorded utterance sounded like a question (e.g., ‘the farmer gets up early’) or a statement (e.g., ‘the farmer get up early’) implied by a rise or fall in intonation.
• Phrase Stress: Children had to decide which of two pre-recorded utterances (e.g., ‘apple pie’ [strong-weak-strong] and ‘apple pie’ [strong-weak-weak]) matched the ‘sea-bee’ phrase (e.g., ‘SA-RA-RA’).

The task was administered on a laptop using a Microsoft PowerPoint Presentation with audio files. For each sub-test there was a series of trials whose correct feedback was provided and four test trials. The task was administered in order presented above to maintain a coherent story that would be understandable to children of this age. A total score out of 56 was obtained.

Figure 1. Path analysis results for the conceptual model proposed by Holliman et al. (2014). Non-significant paths are represented by dashed lines.