

The Roles of Prosodic Sensitivity and Phonological Awareness in Second Language Learners' Reading Development

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Abstract

This study attempts to investigate the role of prosodic skills in the reading development of learners and clarify the relationships among prosodic skills, phonological awareness and reading development. Sixteen ESL lower achievers from Hong Kong secondary school participated in the study. Three types of related measures were conducted. A passage was read aloud and an acoustic analysis was conducted to measure and compare speed, pause and intonation of three utterances selected from the passage. The results showed that the correct rate of reading comprehension is 38.16 %. Among the phonological awareness subtests, rhyme detection was the easiest test, followed by alliteration detection, oral segmentation-syllables, and non-word reading. Among the prosodic sensitivity subtests, phrasal rhythm was the easiest test, followed by sentence-level intonation, and word stress. The tests that correlate highest with reading comprehension are non-word reading and word stress sensitivity tests. Almost all the subtests, rhythm and syllables, rhythm and stress were significantly and positively correlated. Detailed information about the participants' responses and strategies in individual subtests was described. Acoustic analyses of speed, pause and intonation were made, measured and calculated.

Keywords

Phonological processing, acoustic phonetics, phonics instruction, production and perception

1. Introduction

Research has shown evidence that phonological knowledge plays a crucial role in language learners' reading development (Kamil, Mosenthal, Pearson, & Barr, 2000). In recent years, contributions have been made to exploring the role prosody (the suprasegmental information) plays in language learners' reading processes (Whalley & Hansen, 2006). Studies have shown the predictive ability of prosodic skills on reading ability. Wood and Terrell (1998) noted that poor readers are less aware of

rhythm while Whalley and Hansen (2006) found that after controlling for phonological awareness and general rhythmic sensitivity, children with greater prosodic skills are superior in word reading accuracy and reading comprehension. Thus, there are strong theoretical reasons to anticipate that prosody is potentially related both to bottom-up (decoding) and top-down (comprehension) processes in reading development. While the importance of phonological awareness to reading ability is well established in the development of first language acquisition, the potential role of prosody in reading development of second language learners has been less explored. This study attempts to investigate the role of prosodic skills at word, phrase and sentence level in the reading development of Hong Kong ESL learners, and the relationship among their prosodic skills, phonological awareness and reading development.

2. Methods

Sixteen form five students from a band three Hong Kong secondary school were recruited to participate in this study. Three types of related measures, including phonological awareness (subtests include rhyme detection, alliteration detection, oral segmentation-syllables, and non-word reading), prosodic sensitivity (subtests include word stress, phrasal rhythm, and sentence-level intonation) and reading comprehension (five passages with multiple-choice comprehension questions) were conducted. Following the test measures, a passage extraction from *Harry Potter and Chamber Secret* was read aloud and acoustically analyzed with *Praat*. A native speaker of British English was invited to record the test stimuli and the passage. The latter recording was taken as the norm when making acoustic comparison with the utterances of 16 participants.

3. Results

3.1 Overview Performance

The average correct rates of three measures were

phonological awareness 74.10%, prosodic skills 60.02% and reading comprehension 38.16%. Among the phonological awareness subtests, rhyme detection (97.5%) was the easiest test, followed by alliteration detection (90.63%), oral segmentation-syllables (79.17%), and non-word reading (29.12%). Among the prosodic sensitivity subtests, phrasal rhythm (60.07 %) was the easiest test, followed by sentence-level intonation (55.00 %), and word stress (53.12 %). The tests that correlate highest with reading comprehension are non-word reading and word stress sensitivity tests and thus they are the two best indicators for the success of reading comprehension. Rhyme detection, alliteration detection, oral segmentation-syllables were considered too easy for these teens and failed to play key roles in their reading comprehension. Almost all the subtests, rhythm and syllables ($r=0.67$), rhythm and stress ($r=0.78$), and read loud and stress ($r=0.72$) were significantly and positively correlated.

3.2 Results of Two Subtests

The non-word reading test examined the participants' knowledge of English grapheme-phoneme correspondences and ability to blend phonemes through having them read aloud. Better performance was shown in short vowel /e/ in *crash* and *jelms*, /æ/ in *falp*, and /ɪ/ in *triffth* and *phliles*. Most participants were weak in diphthongs, such as /aɪ/ in *brive* and /əʊ/ in *coashed*. The word-level prosodic sensitivity test was designed for detecting participant's sensitivity on word stress. The average correct rate of stress assignment was around 50%, indicating that Hong Kong students were not familiar with the concept of word stress. The most problematic word was *today*, assigning the stress on the first syllable. In another example, *welcome*, 10 participants assigned the stress to the second syllable, which aligned with our general impression on Hong Kong students' pronunciation habit of stressing the word on the final syllable.

3.3 Acoustic analysis

Acoustic analyses of speed, pause and intonation were made, measured and calculated. Take the utterance "May I take your coats, Mr. and Mrs. Mason?" for example. The speed of the 16 participants (6.746s) was, on average, 2.5 times longer than that of NS (2.530s). The pause locations and durations for NS were: *May* (0) *I* (0) *take* (0) *your* (0) *coats* (0.274s), *Mr. and Mrs. Mason?* while those of the participants, on average, were: *May* (0.010s) *I* (0.098s) *take* (0.671s) *your* (0.328s) *coats* (0.621s), *Mr.* (0.006s) and (0.022s) *Mrs.* (0.850s) *Mason?* Figures 1 and 2 show the utterances produced by one native English speaker and one Hong Kong learner. According to the NS data, the major pauses

for the sentence occurred at clause or phrase boundaries. The major pause (0.274s) in Figure 1 was the one between *coats* and *Mr.* The intonation contour was $\rightarrow \nearrow$ (your coat) $\searrow \rightarrow \nearrow$ (Mason). The final rising tone expressed the real questioning. Though the pauses produced by the participants occurred unsystematically and were not easily classified, in general, most pauses occurred at clause as well. The major pause in Figure 2 was the one (1.1275s) between *coats* and *Mr.* Three pauses were showed as follows: *May I take your* (0.7785s) *coats* (1.1275s), *Mr. and Mrs.* (0.784s) *Mason?* The intonation contour was \searrow (May) \rightarrow (your) \nearrow (coat) $\rightarrow \nearrow$ (Mason). The contour was relatively fluctuating instead of a stable rising tone.

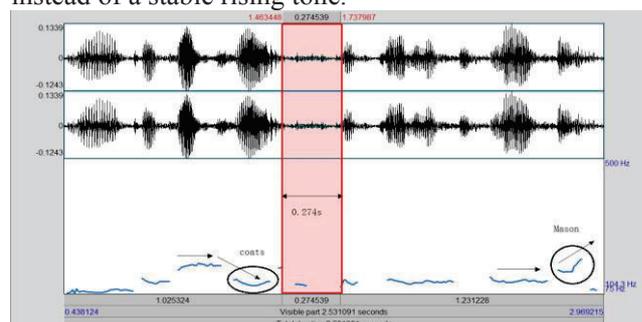


Figure 1: "May I take your coats, Mr. and Mrs. Mason?" produced by the NS

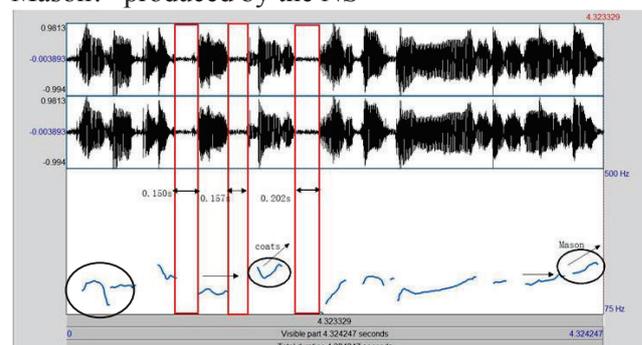


Figure 2: "May I take your coats, Mr. and Mrs. Mason?" produced by Participant 10

4. Conclusion

Implications on pronunciation learning and teaching and phonics instruction were provided.

References

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