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Phonological Awareness in Native Cantonese-speaking Children with Different English Competences

Shum Nui Ping, Carol

A dissertation submitted in partial fulfillment of the requirements for the Bachelor of Science (Speech and Hearing Sciences), The University of Hong Kong, April 30, 1997.
ABSTRACT

The study investigated phonological awareness in twenty-eight native Cantonese-speaking children aged between 5;06 and 6;00. It aimed at finding out whether children’s phonological awareness benefit from different levels of acquisition of a second language. Fourteen children studied in international schools with higher English competences and the others studied in local Chinese schools. The results show that children with higher English competences had heightened levels of phonological awareness skills in the area of phoneme awareness (production and detection) than those with lower English competences. Two groups of children performed similarly on rhyme detection, syllable counting, syllable deletion and tone detection tasks, and these tasks did not correlate with reading abilities. The children’s performance on syllable awareness and tone awareness was at ceiling. These results are interpreted to reflect the role of second language input on phonological awareness in particular area.
INTRODUCTION

Metalinguistic awareness is generally defined as an awareness of the underlying linguistic nature of language use. It allows one to step back from the comprehension or production of an utterance in order to consider the linguistic form and structure underlying the meaning of the utterance. Phonological awareness is one of the four types of metalinguistic abilities and it is the awareness of the internal phonological structure of words (Mann, 1986). It is a developmentally distinct kind of linguistic functioning that develops separately from and later than, basic and listening skills (Nesadale, Herriman, & Tunmer, 1984).

The acquisition of more than one language is suggested to have promotion on metalinguistic awareness (Vygotsky, 1962). Bilingual children's increase exposure of two linguistic systems in the world have enhanced awareness of the analysis and control components of processing. Besides, exposure to another language other than the native one provides a form of contrastive linguistics instruction which, leads bilingual children to compare and analyze the structural aspects of language in more advanced ways than monolingual children (Vygotsky, 1962; Ben-Zeev, 1977a; Cummins, 1987a). Bilinguals also need attending carefully to the speech stream in order to distinguish the two languages and to organize their developing lexicons (Walley, 1993). Ben-Zeev (1977) also suggested that bilingual children should be aware of their languages as internally consistent systems.
more than monolinguals since this kind of understanding provides a way of separating their languages from each other.

Awareness of phonemes is most influenced by the introduction of literacy skills (Morais, Alegria & Content, 1987; Perfetti, Beck, Bell & Huges, 1987; Bowey & Francis, 1991). It is found that children developed stronger associations between English phonemes and their associated English orthographic representations. Children without print experience are usually unaware that words are represented by individual phonemes. The reason is that phonemes in speech are not produced or perceived in isolation, but rather in the context of the preceding and following phonemes (Liberman, Shankweiler, Fischer & Carter 1974). The word *cat*, for example, is not heard as three distinct sounds but as one unit.

The study of Bruck & Genesee in 1995 suggested that input from a different language can influence the rate as well as the pattern of phonological development. The bilingual children (English and French) showed heightened levels of phonological awareness skills in kindergarten in the area of onset-rime awareness. By Grade 1, the bilingual children had higher syllable segmentation scores than their monolingual peers. Campbell and Sais's study (1995) also found that bilingual school children were superior to monolingual children at a task of spoken morpheme deletion. They were also superior at detecting the odd-one-out from sets of pictured words when detection was meaning-based and when it was initial-phoneme based. Other studies also showed that there was a positive relationship between
bilingualism and lexical awareness (Diaz, 1985); bilingualism and syntactic awareness (Bowey, 1987).

The studies of the relationship between bilingualism and metalinguistic awareness were all based on children's acquisition of two alphabetic languages (English-French, English-Italian). So, how about acquire an alphabetic language under a non-alphabetic one (Cantonese-English)? We should be reminded that Chinese/Cantonese is a logographic language and each symbol has its individual pronunciation. English is an alphabetic language and the letters represent to varying extends the phonemic units of sound in the language. Although there were studies which showed the relationship of phonological awareness and age (cognitive level), and level of education were positive (Ngan, 1992; Woo, 1993), there is little known about the relationship of second language acquisition and phonological awareness, and the relationship between phoneme awareness and reading abilities in native Cantonese-speaking children in Hong Kong.

English is an academic subject taught in Hong Kong. All native Cantonese-speaking children have a certain degree exposure of a second language: English, at school and it depends on the teaching medium adopted by the school. The level of second language acquisition of students studying in international school, with English as the main teaching medium is different to students studying in local schools. Besides, Hong Kong students mostly learn to read English in a nonanalytic way (look and see). Moreover, there is no
formal training on English pronunciation rules (phonetics) as in western countries in the kindergarten. So, it is interesting to find out whether there is any relationships between phonological awareness and level of English competence under this situation and, English competence is used as an indicator of level of bilingualism in this study.

This study aimed at finding out whether there is any relationship between degree of bilingualism and phonological awareness in Cantonese-speaking children. It is to see whether children's (phonological) metalinguistic awareness will be benefited under a different level of second language acquisition (English) and to answer the following questions:

1. Are there differences in the phonological awareness related to degree of second language acquisition?
2. If there are differences, which aspects of phonological awareness will be accelerated most?
3. Will phoneme awareness be promoted by English reading ability in Cantonese-speaking children?

Hypothesis

It is hypothesized that:

1. Children with higher English competences promote higher phonological awareness.
Child who grows up with more than one language, thus acquiring either simultaneously or sequentially two linguistic codes for symbolically manipulating the environmental should enjoy increase in metalinguistic awareness (Duncan and De Avila, 1979 cited in Tunmer & Myhill, 1984) So, as the HEC children are having more exposure to a second language, they might have an accelerated phonological awareness skills than the LEC peers.

2. **Children’s performance in phoneme awareness does not correlate with English reading ability.**

Reading ability in English words might not accelerate phoneme awareness since Cantonese is a logographic language. Children cannot get benefit from reading Chinese words as in English words since only one syllable matches with one word. In English, for example, once children learn that the word *cat* is spelled with three letters, it becomes easier for them to then figure out that there are also three (co-articulated) phonemes in speech (e.g. Ehri, 1984).

**Predictions**

1. Studies of English-speaking children with the acquisition of a second language: French (Bruck and Genesee, 1995) show that there is a selective effect of bilingualism to the children’s phonological awareness. Therefore, it leads to the prediction that
native Cantonese-speaking children with higher English competences will perform better phonological awareness in some areas only.

2. Studies of phonological awareness under the acquisition of a second language were both done with two alphabetic languages such as English with French or English with Italian. However, as Cantonese is a nonalphabetic language, there might be no direct relationship between the English reading abilities and phoneme awareness as stated in western studies.

METHODS

Subjects

Two groups of native Cantonese-speaking children aged between 5;06 to 6;00 were tested. Fourteen children (mean age at 5;09) who attended international schools with English as teaching-medium were classified as the Higher English Competence group (HEC) and fourteen (mean age at 5;10) at Cantonese-medium schools were in the Lower English Competence group (LEC). Both group were comprised of eight boys and six girls. In order to select children from these populations, parents were given a questionnaire to fill. The questionnaire inquired the children’s and parents’ native languages, the primary language used at home and if any English-speaking maid is employed. Children were included in this
study if 1) parents were Chinese, 2) the child’s first language was Cantonese, which was also
the primary language used at home, 3) the child did not receive any formal training in English
phonetics or Potunghua Pinyin, 4) the child was reported to have normal speech, language,
hearing and intellectual abilities.

Scores attained by the subjects in the Reynell Developmental Language Scales
(Reynell, 1987) English version, was used as an indicator of English competences. Children
were classified in the HEC group when they have attained age-appropriate scores within one
standard deviation as native English-speaking children (mean age ~ 5;09). On the other hand,
children in the LEC group should have at least three years lag or delay in their English
abilities in both comprehension and expression (mean age ~ < 2;10).

Children’s language abilities in Cantonese were also measured by the Hong Kong
Cantonese version of the Reynell Developmental Language Scales (Reynell, 1987). It is
aimed at to control the difference in the phonological awareness, if any, is due the difference
in English competences but not to the advantages in Cantonese ability.

Procedure

All subjects were tested individually in two 40-minute sessions. Questionnaires were
given to the parents and received before the sessions (see appendix 1). Cantonese Hong Kong
Reynell Developmental Language Scales (RDLS) and a reading test were given in the first session. The English version of the RDLS and the phonological awareness tasks were given in the second. Both sessions were held in a quiet room in the schools. The order of presentation of tasks was counterbalanced using a $6 \times 6$ Latin Square.

Explanations, examples and at least two practical trials preceded the experimental trials for task. After each practical trial, the experimenter gave corrective feedback to the subjects to shape the nature of response required. Neutral encouragement and reinforcement were given in the experimental trials.

Audio-recordings were made using the Sony WM-GX 50 radio cassette-corder TDK AR tapes.

**Reading Test**

Twenty common English words were chosen with the referent from the English text books of kindergarten (see appendix 2). Subjects were required to read aloud the words. Credit was given for a correct pronunciation or with mild distortion. No credit was given for providing semantically related answers such as telling the meaning.
Experimental Tasks

A battery of six phonological awareness tasks were administered to each subject. Five of the tasks were adapted from Woo (1993) except the ‘tone awareness’ task, with some modification. Short instructions, pictures, written words were used to minimize cognitive demands, auditory memory ability and to arouse interest (see appendix 3 for Instruction).

1) Syllable counting

The experimenter said either a monosyllabic, bi-syllabic or multisyllabic Cantonese words. Subjects had to tell how many syllables there were. Counting abilities were checked by asking the subject to count the number of candies.

2) Syllable deletion

Subjects were required to delete one or two syllables from Cantonese bi-syllabic, tri-syllabic or multisyllabic words presented auditorily. They had to tell the remaining syllables.

3) Rhyme detection

Three monosyllabic words were presented auditorily and subjects were required to repeat after the experimenter. Written words were also presented so as to minimize memory demands and ease for pointing the answers. Subjects had to tell or point out which of the two words sounded similarly.
4) Tone detection

Two identical Cantonese words or two words with only the tone different were presented auditorily. Subjects had to tell whether the pair was different or the same in tone.

5) Phoneme detection

Subjects were presented with three pictures. Each picture was associated with a phoneme: a snake with /s/, wind with /f/ and a cow with /m/. The subjects were told to imitate the sound with the experimenter. They were explained that some of the Cantonese words might also carry these sounds in the front part. Then the subjects had to identify the initial phoneme in each presented single word after three alternatives were presented auditorily.

6) Phoneme production

The experimenter presented a phoneme in isolation and repeated by the subjects. The subjects were required to generate Cantonese words which started with that phoneme.

Scoring procedure

There were six items in each of the six phonological awareness tasks. Each item was scored zero or one. One score was given for correct response. In the phoneme production task, one mark was assigned for producing any one correct target regardless of other
incorrect attempts. Zero mark was given for no response or for incorrect response. Therefore, the maximum score and minimum score was six and zero for each task respectively.

Reliability

In order to check the reliability of this study, ten percent of the subjects’ performance on the Expression part of the English version of the Reynell Developmental Language Scales (Reynell, 1987) and the phoneme production task were scored by another speech therapist undergraduate (Year IV student). The intra-rater reliability was 97% and the inter-rater reliability was 95%.

RESULTS

Results indicated that there were ceiling effects on syllable counting, syllable deletion and tone detection tasks in both groups.

Phoneme production task was the most difficult task followed by rhyme detection and phoneme detection tasks. Children performed around chance level (3/6) in the rhyme detection task.
Figure 1 shows the performance of the LEC and the HEC children on the six phonological awareness tasks.

**Figure 1. Performance of LEC and HEC children on the six phonological awareness tasks**

<table>
<thead>
<tr>
<th>Task 1</th>
<th>Task 2</th>
<th>Task 3</th>
<th>Task 4</th>
<th>Task 5</th>
<th>Task 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syllable counting</td>
<td>Syllable deletion</td>
<td>Rhyme detection</td>
<td>Tone detection</td>
<td>Phoneme detection</td>
<td>Phoneme production</td>
</tr>
</tbody>
</table>

Comparison of HEC and LEC children’s performance on each task

A one way analysis of variance (ANOVA) was carried out. The independent variable was group (LEC vs. HEC). The number of correct items for each of the six tasks served as the dependent variables. Results indicated that HEC group performed significantly better than the LEC on the **phoneme detection task** $F(1,26) = 6.345 \ p < 0.05$ and **phoneme production task** $F(1,26) = 4.53 \ p < 0.05$ (see Table 1).
There was no significant effects for group on the syllable awareness tasks (counting and deletion) and rhyme awareness tasks (rhyme detection and tone detection).

Table 1. Summary Table for the One-way ANOVA Examining the Effect of Group on Each task.

<table>
<thead>
<tr>
<th>Task</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F ratio</th>
<th>p-level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1: Syllable Counting</td>
<td>Group</td>
<td>0.036</td>
<td>1</td>
<td>0.036</td>
<td>0.351</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>2.643</td>
<td>26</td>
<td>0.102</td>
<td></td>
</tr>
<tr>
<td>Task 2: Syllable Deletion</td>
<td>Group</td>
<td>0.321</td>
<td>1</td>
<td>0.321</td>
<td>2.207</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>3.786</td>
<td>26</td>
<td>0.146</td>
<td></td>
</tr>
<tr>
<td>Task 3: Rhyme Detection</td>
<td>Group</td>
<td>1.750</td>
<td>1</td>
<td>1.750</td>
<td>1.046</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>43.50</td>
<td>26</td>
<td>1.673</td>
<td></td>
</tr>
<tr>
<td>Task 4: Tone Detection</td>
<td>Group</td>
<td>0.036</td>
<td>1</td>
<td>0.036</td>
<td>0.351</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>2.64</td>
<td>26</td>
<td>0.102</td>
<td></td>
</tr>
<tr>
<td>Task 5: Phoneme Detection</td>
<td>Group</td>
<td>8.036</td>
<td>1</td>
<td>8.036</td>
<td>6.345</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>32.93</td>
<td>26</td>
<td>1.266</td>
<td></td>
</tr>
<tr>
<td>Task 6: Phoneme Production</td>
<td>Group</td>
<td>6.036</td>
<td>1</td>
<td>6.036</td>
<td>4.530</td>
</tr>
<tr>
<td></td>
<td>Error</td>
<td>34.64</td>
<td>26</td>
<td>1.332</td>
<td></td>
</tr>
</tbody>
</table>

* p-level < 0.05

Multivariate ANOVA revealed that the overall effect of group on tasks was not significant, Wilks' Lambda (6,21) = 0.627, p > 0.05.
Correlation Analysis

Results indicated that the subjects' performance on phonological awareness tasks did not correlate to English reading abilities ($r = 0.31$, $p > 0.05$).

Children's performance on the phoneme detection and production tasks were positively correlated with their English competences demonstrated in the English version of the Reynell Developmental Language Scales in both the comprehension ($r = 0.43$, $p < 0.05$; $r = 0.38$, $p < 0.05$) and expression parts ($r = 0.46$, $p < 0.05$; $r = 0.40$, $p < 0.05$).

Table 2 presents a summary of the Simple Pearson intercorrelations among independent variables: 1) English reading scores 2) comprehension scores and 3) expressive scores in the Reynell Developmental Language Scales (English version), and the dependent variable (the scores attained in the six phonological awareness tasks) of the two groups of children.

Table 2. Pearson correlation of independent variables with dependent variables for the 2 groups of children (LEC and HEC)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Syllable counting</th>
<th>Syllable deletion</th>
<th>Rhyme detection</th>
<th>Tone detection</th>
<th>Phoneme detection</th>
<th>Phoneme production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading English</td>
<td>0.242</td>
<td>0.217</td>
<td>0.113</td>
<td>-0.075</td>
<td>-0.004</td>
<td>0.313</td>
</tr>
<tr>
<td>Comprehension</td>
<td>0.180</td>
<td>0.290</td>
<td>0.254</td>
<td>0.107</td>
<td>0.448*</td>
<td>0.392*</td>
</tr>
<tr>
<td>Expression</td>
<td>0.202</td>
<td>0.273</td>
<td>0.251</td>
<td>0.087</td>
<td>0.449*</td>
<td>0.409*</td>
</tr>
</tbody>
</table>

* $p < 0.05$
Further Analysis of the Results in the Phoneme Production Task

Interesting results were found in this task. Children produced different types of responses. Credit was given for producing a target response (a Cantonese word start with the initial phoneme required) even the children had given other incorrect answers. This scoring method was used so as to simplify the statistical analysis procedure.

Different types of responses given by the children to the phoneme production task were categorized and a distribution of the different response types were found. The response categories were:

1. Target response
2. No response
3. Unrelated response
4. English response
5. Other: children described the sound
   e.g. /tʰ/: train
   /kʰ/: typing
   /sʰ/: sweeping the floor

The distribution of the different types of responses to the phoneme production task is given in Figure 2.
Responses were different in both groups of children. HEC children demonstrated English responses but none for the LEC children. Besides, LEC children tended to provide more No Response and Unrelated Response than the HEC group.

The percentage of children's correct responses in producing Cantonese words with each phoneme as the onset was calculated so as to see whether there was a developmental sequence in children's achievement of phoneme production (Figure 3). The results indicated that to generate words with /p/ initial was the easiest while to generate words with /kw/ initial was the most difficult phoneme.
Further Analysis of the Results in the Phoneme Detection Task

Analysis of the errors (Table 3) in this task revealed that the HEC children were more likely to choose a phonological related response than the LEC children (e.g. to choose /f/ rather than /m/, for the target /s/).

<table>
<thead>
<tr>
<th>Group</th>
<th>Intra-manner errors</th>
<th>Other errors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>/f/ &gt; /s/</td>
<td>/s/ &gt; /f/</td>
</tr>
<tr>
<td>LEC</td>
<td>21.43%</td>
<td>17.86%</td>
</tr>
<tr>
<td>HEC</td>
<td>30.77%</td>
<td>53.85%</td>
</tr>
</tbody>
</table>
DISCUSSION

The HEC children performed significantly better than the LEC children in phoneme awareness tasks (detection and production).

In the present study, the HEC children had higher levels of phonological awareness than their LEC peers in the phoneme awareness tasks (detection and production). The groups did not differ significantly on tasks of syllable and rhyme awareness tasks. These results indicate that having a higher English competence can influence the pattern of development of young children's phonological awareness in specific area such as phoneme awareness. In other words, with more acquisition of a second language can promote better phonological awareness in some areas only. Therefore, we can say that bilingualism is having a selective effect on the development of phonological awareness rather than a universal one.

The advantages that the HEC children exhibited in the phoneme awareness tasks can be attributed to the differences in the English competences since the subjects' performance in the phoneme detection and production tasks were positively correlated to their English comprehension and expression abilities. However, the difference cannot be attributed to overall superior cognitive development since the subjects were drawn from a same age group.
No relation between English reading ability and phoneme awareness in Cantonese-speaking children.

The reason of why the HEC children out performed the LEC children in the phoneme awareness tasks is not due to the differences in English reading skills. Although the HEC children got higher mean in the reading test than the LEC children, results in Pearson correlation show no significant correlation between the performance in all phonological awareness tasks and reading English ability. This result is different to the hypotheses suggested by the Western studies which stated that phonological awareness develops as a result of learning to read an alphabetic orthography (Morais, Cary, Alegria and Bertelson, 1979). As Cantonese is a logographic language which each symbol represents individual pronunciation, it differs with those alphabetic languages such as English or Italian which symbols map onto the spoken language. As a result, no matter how good or poor the child’s English reading ability is, it will not accelerate the phonological awareness skills in Cantonese.

The HEC children demonstrated English responses in the phoneme production task but none from the LEC children.

HEC children tended to provide answers in English for the phoneme production might suggest that they have acquired the phoneme awareness in English but not yet in Cantonese.
Why? The HEC children demonstrated higher English reading ability than the LEC children (mean score: 6.6 vs. 1.8). As English studies support that children's phonemic awareness depends on literacy skills and the HEC did have a higher English reading abilities than the LEC children, the learning about spellings of co-articulated phonological units might increase explicit awareness of these segments. For instance, one Cantonese word contains only one syllable but an English word might contain more than one such as 'reading' contains two and 'articulation' contains five syllables. Besides, teacher's stressing on the number of syllable contain in an English word might highlight the phoneme awareness. So, as the HEC children did have a more exposure of English in schooling, this might help the children to develop phoneme awareness faster.

Method of reading instruction adopted in international schools might be different to local Chinese schools. It might influence the development of phonological awareness. Alegria et al. (1982) found that beginning readers who received instruction based on a phonics approach developed phonological awareness faster than did a comparable group of children who were taught by a whole-word method. As Hong Kong students studying in Chinese schools mostly learn to read English in a nonanalytic way, this might make them inferior to the HEC children in the phoneme awareness performance.

If the heightened level of phoneme awareness in the HEC children is not due to the acquisition of reading, can we be sure that the effects reported here are due to the difference
in English competences and not to other factors that distinguish the groups? The following possibilities may be considered; firstly, children in the HEC group may have better general language development than those in the LEC group.

A second possibility is that children in the HEC group were smarter or more stimulated than the LEC children. It might relate to the difference in the teaching medium used in international schools and local schools. The HEC children might play more language-games and rhyming games or are exposed more to print than the LEC children.

**Ceiling effect on tone awareness task.**

The HEC and LEC children's performance on the syllable counting, syllable deletion and tone awareness tasks were at ceiling. The results in syllable awareness tasks matched with Woo's study in 1993 since she found out that Hong Kong children's syllable awareness was fully developed at six years old. Besides, as Cantonese is a syllable timed dialect in which there is evenness to the rhythm and syllables recur at regular intervals of time (Ladefoged, 1982). Therefore, children can get more acoustic cues so as to segment syllables in Cantonese.

Why both groups of children have ceiling effect on the tone awareness task? It might be related to the syllable structure of Cantonese. Cantonese is a tonal language and tone is a suprasegmental feature that is superimposed on the segmental units of a syllable and it is
obligatory (Cheung, 1986) (Figure 4). So, as changing pitch is lexically significant and phonological contrastive, it conveys difference in meaning. It suggests that children might have to acquire tone awareness early so as to comprehend difference meanings in Cantonese words. So’s (1993) study also supports that children’s tone knowledge in Cantonese words develop early at two. On the other hand, as having to know whether the given words rhyme or not, the child should also know whether the words have the same tone. So, it explains why the subjects performed better in tone detection task than in rhyme detection task since it required less cognitive processing in comprehending both the tone and rime at the same time as in the rhyme detection task. It might be also the reason why subjects’ performance on the phoneme awareness is better than in the rhyme awareness task since only the initial/onset has to be process (syllable awareness > phoneme awareness > rhyme awareness).

Figure 4. Diagrammatic framework of the Cantonese syllable (Cheung, 1986)
The responses of phoneme production in word initial position seemed to be roughly related to the order of acquisition of different phonemes in children and the results were also supported by Woo, 1993. In her study, she found that children producing a word with the phoneme /tsʰ/ most difficult and /pʰ/, /l/, /m/, /s/, and /f/ were much easier. In this study, /kwʰ/ was the most difficult one among /pʰ/, /l/, /kʰ/, /kʰ/ and /tsʰ/. This is quite consistent with So’s findings (1993) that female children reach the 75% criterion in producing /pʰ/, /l/, /kʰ/, /kʰ/ before 2;3 and, /kwʰ/ and /tsʰ/ at 3;3.

CONCLUSION

To summarize, the results of this study contribute to our knowledge concerning those factors that influence phonological awareness in native Cantonese-speaking children with different English competences. The results indicate that different level of bilingualism can influence the pattern of metalinguistic development. Firstly, there was a significant difference between the HEC and LEC children in performance on selected items of phonological awareness. They are the phoneme detection and phoneme production tasks. Secondly, the difference in performance between the two groups was not due to the higher English reading ability in the HEC children. Thirdly, the HEC children who have a higher level of a second language acquisition tended to show more understanding on phoneme production in English since they provided correct answers in English.
CLINICAL APPLICATIONS

The present study provided information about the phonological awareness in native Cantonese-speaking children with different level of English competences. The level of English competence of the child might become a valuable information clinically in both assessment and in therapy. For instance, in assessment, a speech therapist can assess the client's English comprehension and expression abilities if the child is a bilingual. If the client does demonstrate good English competence and a better knowledge in phonological awareness, English words might be used as stimuli in the initial stage of the therapy. Then, Cantonese words will be introduced and generalization might be fastened.

FURTHER RESEARCH

In this study, the LEC and HEC children were not match on the schooling (teaching medium: Cantonese for LEC vs. English for HEC) and level of class (K.3 for LEC vs. P.1 for HEC). One may argue the variation in the metaphonological ability is due to these factors. Further research design controlling these factors may give more insight about the interaction among the exposure of a second language and the phonological awareness of Cantonese-speaking children in Hong Kong.
A longitudinal study can be done so as to check the effect of schooling. For example, first data can be collected for a group of native Cantonese-speaking children with same schooling at pre-school level. By kindergarten, the subjects are allocated to schools with different teaching medium (English vs. Cantonese). After a several years of different schooling, a second data can be collected in Primary one so as to document the effect of schooling to phonological awareness. This can check whether there will be a similar result as in Bruck and Genesee's study. Their research found that bilingual children showed heightened levels of phonological awareness skills in kindergarten in the area of onset-rime awareness but, had higher syllable segmentation scores in Grade 1.

We have not test for absolute levels of linguistic proficiency in this study. Therefore, in order to control the general language development in the two groups of children, one can check their overall verbal ability by giving Peabody Picture Vocabulary Test.

As the subjects performed at ceiling in the syllable counting, syllable deletion and tone detection tasks in this study, one may reduplicate the study with younger age groups so as to find whether younger children will perform differently.

One might also find out whether bilingualism will enhance lexical and syntactic awareness. This can increase our knowledge on the level of second language acquisition and metalinguistic abilities.
Romaine (1989) stated that early childhood bilingualism were depended on three factors: 1) native language of parents, 2) the language of the community at large and 3) parents’ strategy in speaking to the child. As the first and second factors were controlled in this study, one might find out whether phonological awareness will be enhanced by bilingualism under the situation of different parents’ strategy in speaking to the child.

ACKNOWLEDGMENT

I am very grateful to the principals and children of the First Assembly of God Kindergarten, Csear Rogers International School and the Chinese International School (Infant Division) for letting me visit the schools and test the children there. I would like to thank Professor Paul Fletcher, Dr. Godfrey Harrison and Dr. Lydia So for their comments on the research design and data analysis.
REFERENCES


Appendix 1

University of Hong Kong
Department of Speech and Hearing Sciences

Questionnaire

Child Name: ____________________
Sex/Age: ____________________
Date of Birth: _______________(M/D/Y)

Scale:- 4: always 3: occasional
2: seldom 1: never

1. Mother’s native language: Cantonese/English/Others
2. Father’s native language: Cantonese/English/Others
3. Parent’s education level: Mother- primary/secondary/tertiary
   Father- primary/secondary/tertiary
4. Parents speak English at home (not to the child): 4 3 2 1
5. Is there any English-speaking maid or private tutor employed? Yes/No
6. Do parents speak English to the child under the following situations?
   • teaching 4 3 2 1
   • story-telling 4 3 2 1
   • daily-conversation 4 3 2 1
7. Do any siblings or family members speak English?
   siblings/grandparents/relatives
8. Was the child brought in H.K.? Yes/No
9. Child’s mother tongue? Cantonese/English/Others
10. Does the child speak English at home? 4 3 2 1
11. How often the child reply in English when parents speak to him/her in English?
    4 3 2 1
12. What is the child’s level of speaking English?
    single word / multi-syllabic / short sentence / full sentence / conversation
13. How often is the child exposed to English TV programs or radio?
    4 3 2 1
14. What is the child’s results in English subject at school?
    Good / Fair / Bad / Poor
15. Is the child able to identify English?
    • letters: Yes/No
    • words: Yes/No (e.g., ________________)
16. Is there any problems identified in the following areas?
    IQ / Hearing / Sight / Pronunciation / Communication / Socialization
17. Has the child learned either English phonetics (pronunciation rules)
    or Chinese Pinyin 拼音? Yes/No
18. Other comments? _____________________________________________
姓名：
性别／年齡：
出生日期：(日／月／年)

1. 母親的母語：廣東話／英語／其他
2. 父親的母語：廣東話／英語／其他
3. 教育程度：母 小學／中學／大學
        父 小學／中學／大學
4. 家長之間互用英語溝通：4 3 2 1
5. 有否聘請外籍女傭或外籍教師？有（女傭／教師）／否
6. 家長有否在以下情況對孩子說英語？
       教學 4 3 2 1
       講故事 4 3 2 1
       日常對話 4 3 2 1
7. 家中有否兄弟姊妹或家中成員說英語？兄弟姊妹／祖父／祖母／親戚
8. 孩子是否在香港出世？是／否
9. 孩子的母語：廣東話／英語／其他
10. 孩子有否在家中說英語？4 3 2 1
11. 當家長用英語與孩子談話時，孩子是否會用英語回答？4 3 2 1
12. 孩子能說英語的程度：單字／多字／短句／完整句子／對話
13. 孩子有否接觸英語電視或電台節目？4 3 2 1
14. 孩子的英語科目成績？好／普通／甚差／非常差
15. 孩子認英文字的能力？
       字母 好／普通／甚差／非常差
       字 好／普通／甚差／非常差（舉例：
16. 孩子是否出現下列問題？
       智力／聽覺／視力／發音／與人溝通／社交
17. 孩子有否接受正統的英語或國語拼音訓練？有／沒有
18. 其他意見
       家長
       班主任

多謝合作
Appendix 2

Reading Test

1. CRY  
2. TREE  
3. HAND  
4. HORSE  
5. FATHER  
6. GIRL  
7. TABLE  
8. CAT  
9. READ  
10. KISS  
11. EYE  
12. DUCK  
13. APPLE  
14. WATER  
15. TELEVISION  
16. BOOK  
17. STAND  
18. RUN  
19. TEETH  
20. SISTER
Appendix 3

**Phonological Task Instruction**

**Task 1. Syllable Counting**

Present child with four candies. The child has to count the number of candies.

呢度有幾粒糖，你數下有幾多粒。

'Here are some candies. You tell me how many candies are there.'

巃巃霎，聽住巃霎，我話'香蕉'，'香蕉'有幾多個音呀？我點數下，'香蕉'有兩個音呀。宜家輪到你自己數。

'Right. Please listen to me. I said, "banana". How many syllable does the word "banana" carry? Let's us count together. "Banana" carries two syllables. Now, it is your turn to count.'

**Practice items:**

1. 糖 /toŋ2/ (candy)
2. 玩馬路 /pan1 ma2 sin3/ (zebra crossing)

**Test items:**

1. 超級市場 /ts^bliu1 k^bep6 si2 ts^bəŋ4/ (supermarket)
2. 花生 /fa1 sug1/ (peanut)
3. 橙 /ts^baŋ2/ (orange)
4. 電視機 /tin6 si6 kei1/ (television)
5. 新年進步 /sun1 lin4 tsœn3 pou6/ (newyear progress)
6. 大家樂 /tai6 ka1 lok'6/ (all happy)
Task 2. Syllable Deletion

When I said, /hœn₁ tsiu₁/ (banana), please guess what will be left if I do not want the word /hœn₁/. I think the word /tsiu₁/ will be left. So, what will be left if I take the word /tsiu₁/ away this time? Right. Let’s have some more trials.

Practice items:
1. 鉛筆 /jyn₄ put⁵⁶/ (pencil)
2. 漢堡包 /hœn₃ pou₂ pau₁/ (hamberger)

Test items:
1. 單車 /tan₁ tsʰe₁/ (bicycle)
2. 電風扇 /tin₆ fuŋ₁ sin₃/ (electric fan)
3. 海洋公園 /hoi₂ jœŋ₄ kuŋ₁ jyn₂/ (ocean park)
4. 菠蘿包 /pœ₁ lo⁴ pau₁/ (pineapple bread)
5. 海浪 /hoi₂ loŋ⁶/ (sea wave)
6. 巴士總站 /pa₁ si₂ tsᵘŋ₂ tsʰam⁶/ (bus terminus)

* the word(s) underlined is/are the word(s) taken away
Task 3: Rhyme Detection

I will say three words, please listen and remember them carefully: /fənɪ/, /sənɪ/ and /seɪ3/. Please say after me. Two of them have the same sound at the end of the word. Listen once more: /fənɪ/, /sənɪ/ and /seɪ3/. Do you know which of the two sound similarly at the end? These two words are: /fənɪ/ and /sənɪ/. Why? It is because that /fənɪ/ and /sənɪ/ both carry the /n/ sound at the end and, the word /seɪ3/ does not have the /n/ sound. Now, there are another three words, you have to point to the two words which sound the same at the end.

Practice items:
1. 雞 /k/ 花 /f/ 沙 /s/ (chicken) (flower) (sand)
2. 手 /s/ 角 /k/ 口 /h/ (hand) (horn) (mouth)

Test items:
1. 刀 /t/ 木 /m/ 魚 /s/ (knife) (wood) (so)
2. 四 /s/ 氣 /h/ 風 /f/ (four) (air) (wind)
3. 車 /tsʰ/ 超 /tsʰ/ 喔 /f/ (car) (beyond) (borwn)
4. 擦 /tsʰ/ 圓 /h/ 畫 /s/ (rub) (circle) (book)
5. 甲 /k/ 塔 /tʰ/ 空 /h/ (A) (tower) (empty)
6. 食 /s/ 袋 /t/ 惑 /h/ (food) (bag) (empty)
Task 4. Tone Detection

Now, I will say two sounds to you in each time. First of all I would like to see whether you know which sound is high in pitch and which is low. Listen, /la₁/ /la₄/, these two sounds are different in pitch. One is high and one is low. Let’s listen again: /la₁/ /la₁/. Are these two sounds sound similarly in high pitch? (subject responds) Right. Then, I will tell two sounds to you. You have to tell whether these two sounds are similar or different in pitch.’

Practice items:

1. 高 /kou₁/ (high)
   高 /kou₁/ (high)
2. 肥 /fei₁/ (fat)
   飛 /fei₁/ (fly)

Test items:

1. 你 /lei₄/ (you)
   梨 /lei₄/ (pear)
2. 好 /hou₁/ (good)
   好 /hou₁/ (good)
3. 包 /pau₁/ (bread)
   包 /pau₁/ (bread)
4. 馬 /ma₁/ (horse)
   媽 /ma₁/ (mum)
5. 笑 /siu₂/ (smile)
   小 /siu₂/ (small)
6. 水 /sɔy₂/ (water)
   水 /sɔy₂/ (water)
Task 5. Phoneme Detection

Different animals or things have different sounds. For example, likes ‘wind’, what is the ‘wind’ sound like? Yes, ‘wind’ sounds like this: /f/ (point to the picture). The sound of ‘snake’ is like this: /s/. How about ‘cow’? It sounds like /m/. These three pictures represent these three sounds. Please imitate the sounds after me again. Very smart. Now, I would like to see whether you can point to the right picture which carries the sound at the front when I produce to you. Are you ready?

Practice items:
1. 水 /sɔyɜ/ (water)
2. 花 /faɪ/ (flower)
3. 媽 /maɪ/ (mum)

Test items:
1. 木 /mʊk/ (wood)
2. 树 /syu/ (tree)
3. 火 /fɔ/ (fire)
4. 飛 /fɛi/ (fly)
5. 面 /miŋ/ (face)
6. 笑 /sju/ (smile)
Task 6. Phoneme Production

We have tried to listen to which words carry the sounds such as ‘cow’, ‘snake’ and ‘wind’. We don’t only listen this time, we have to think which words do carry the sound /f/ as ‘wind’ (pause). For example, /faɪ/ , /fɔɪ/ in the word /fɔɪ mʊk'/. Okay, try by yourself.

Practice items:
1. /s/
2. /m/

Test items:
1. /tʰ/
2. /kʰ/
3. /pʰ/
4. /tʂʰ/
5. /l/
6. /kwʰ/
XXX Kindergarten

Dear Principal Mrs. X,

**Asking for help in seeking participants in research**

I am writing to ask your permission to seek some subjects for research. I am a final year student on the speech therapy course at the University of Hong Kong. I am at present planning my final year dissertation, which is an important part of the work of my final year. My study aims to find out whether there is any relationship between degree of **bilingualism** and **phonological awareness** in bilingual Chinese children (English as their second language) aged between 5;06 to 6;00. It is to see whether children's (phonological) metalingualism awareness will be benefit under the acquisition and exposure of second language.

I am looking for five to ten children, girls or boys aged 5;06 to 6;00. They was born in Hong Kong and Cantonese are their mother tongue. The should be able to communicate in English and no formal pronunciation rules should be taught. Besides, they should demonstrate with normal pronunciation and language abilities in Cantonese.