

Chapter 1 Introduction

1.1 Background

In child phonology, it has been found that the ability to segment strings of sounds into syllables develops earlier than the ability to segment strings of sounds into phonemes (Liberman, Shankweiler, Fischer & Carter 1974; Bryan, MacLean, Bradley & Crossland 1990). In early child phonology, it has been found that children under 6 years old are better at tapping out the numbers of the syllables than tapping out the numbers of phonemes in the phonological tasks (Liberman et al. 1974, Treiman & Baron 1981). Results from several experiments have reported tasks requiring the attention to syllables are easier than the tasks requiring attention to phonemes for children (Liberman et al. 1974, Treiman & Zukowski 1991, Treiman & Baron 1981, Morais, Cluytens & Alegria 1979). For example, in the tasks (Liberman et al. 1974) *phonemes or syllable tapping*, children aged 3-6 years are asked to tap out number of the segments on the table when they hear the sound made by the experimenter. Results show that children under 6 years old are poor at judging the number of phonemes. In other words, segmenting spoken words into phonemes is more difficult than segmenting words into phonemes for young children.

Regarding to children's sensitivity to intrasyllabic segments and syllables, I will start the issues involving phonemes (intrasyllabic segments). Young children found

it difficult in the experiments, which require calculating the number of phonemes (Liberman et al. 1974). In phoneme tapping, the child is asked to tap out the number of phonemes in words spoken to him/her, e.g. three taps for *dog* and four taps for *jump*. However, children up to the age of 5 have difficulties judging the numbers of the phonemes in the phoneme tapping task (Liberman et al. 1974). In phoneme deletion, the child is asked to subtract a phoneme from a word. (e.g., “What would *dog* sound like if you moved away the first sound?”). It is also hard for young children (Bruce 1964, Bryan, MacLean, Bradely & Crossland 1990). In making same-different judgment about the numbers of the phonemic segments, children under 6 years old are poor at the judging the numbers of the phonemes (Jusczyk 1977, Walley, Smith, & Jusczyk 1986).

I will now turn to the focus on syllables. Several studies have justified words (syllables) as an important unit in the child’s phonological processing system (Ferguson & Farwell 1975, Ferguson 1978, Macken 1979, Menn 1983a, Studdert-Kennedy 1987). In infants’ speech perception, syllables are preferred as the length of the processing units (Jusczyk 1987). In infants’ speech perception, Bertoncini and Mehler (1981) have found that infants are better to discriminate the speech sounds which contain the legal syllable structures. Also, evidence from the children’s slips of the tongue in English leads Jaeger (1997) to propose that the

syllable is an important unit for the representation and processing in child's phonological systems. In syllable counting, Liberman et al. (1974) and Treiman & Baron (1981) found that young children are better at judging the numbers of syllables.

From the findings regarding to phoneme conditions and syllable conditions above, it's obvious that young children's sensitivity to phonemes (intrasyllabic segments) is lesser than the sensitivity to syllables.

However, one might think that the syllables do not necessarily always play an important role for children in phonological processing. For example, contrary to the idea of "syllable dominance", Walley et al. (1986) conclude that syllables do not serve as an important role in terms of children's phonological perception. In their study, they found that the kindergarteners often classify [nuli] (CVC_) and [nulo] (CVC_) more accurately than [nuli] (CV__) and [nugo] (CV__). The number of the shared units is more important for the kindergarteners. Their study shows that kindergartners perform well when the shared unit is based on maximal similarity. The syllable similarity fails to serve as an influential condition for the kindergarteners in classifying the speech sounds. In contrast, the maximal similarity (or CVC_ similarity) is more accessible for the kindergarteners. Besides, Walley et al. (1986) found that the position of the shared units also matters. In their kindergarteners' data, the classifications of initial syllable similarity (C₁V₁__) are significantly better than

the medial vowel and consonant similarity (_V₁C₂_). In addition, the kindergarteners' classifications of C₁V₂_ type tended to be better than the classifications of _C₂V₂ type. They also conclude that the attention to the beginnings of the sounds emerges prior to attention to the ends of the sounds. Hence, the number and the position of the shared unit are influential for the kindergarteners in detecting the similarity between the speech sounds in Walley et al.'s (1986) study.

In addition to the number and the position of the shared units, Treiman & Zukowski (1996) have incorporated the linguistic status hypothesis to explain children's performance in the tasks involving syllable conditions and phoneme conditions. The linguistic status hypothesis states that syllables always have the priorities over the phonemes (intrasyllabic units: such as onset consonants or rimes) (Treiman & Zukowski 1996). The syllable is viewed as having a hierarchical structure (e.g. Selkirk 1982), and the higher levels in the structure are more accessible than the lower levels. Therefore, syllables always have the advantages over the phonemes (intrasyllabic units).

Treiman & Zukowski' (1996) found that in judging the final similarity of the speech sounds, children's performance in the final syllable similarity is little better than the rime similarity. It indicates that children's familiarity with rimes may override the syllable advantages. One explanation is that when the shared syllables

are in the final position of the stimuli, children may treat the tasks as riming tasks (Read 1991). Therefore, the advantages for the final syllable similarity would be masked by the final rime similarity.

1.2 Purpose

This paper aims to investigate the roles of phonemes (intrasyllabic segments) and syllables in child's phonology of Mandarin speaking children. The 'phonemes' here refers to the units smaller than syllables. Based on the experimental designs in the study of Walley et al. (1986) and the study of Treiman & Zukowski (1996), I would like to see whether the Mandarin speaking children have presented similar performances which are found in the English speaking children. Besides, I would like to discuss the relationship between phonemes (intrasyllabic segments) and syllables in terms of the effect of the size of a unit and the syllable structure. The size of a unit here refers to the number of the shared units.

With regard to the experiments in the present study, three tasks are adopted: one nonword classification task and two word-pair judgment tasks. The materials are produced in Mandarin Chinese. The experiments will be explained in more details in Chapter 3 and Chapter 4.

The questions that we are going to address are summarized as follows:

- (1) Among the three conditions: initial-segment similarity, syllable similarity and

maximal similarity, which condition is more salient for young children in judging the similarity between the speech sounds?

(2) Do preschool children present similar responses which are found in the English speaking children (Walley et al.1986, Treiman & Zukowski 1996)?

(3) As to the position of the shared units: initial similarity and final similarity, which one is easier to perceive?

1.3 Organization

The organization of my thesis is as follows. In chapter two, I present literature review relating to the thesis topic and research questions. In chapter three and I present the methodology of the nonword classification task and the general findings with statistic analysis. In chapter four, I present the methodology of the word-judgment task 1 and 2 and the general findings with statistic analysis. In chapter five, I present the discussion and the conclusion based on the findings.