SEGMENTAL DETAIL IN CHILDREN'S EARLY LEXICAL REPRESENTATIONS

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ABSTRACT

Analyses of Dutch children's (1;0 – 2;11) production data have shown that both place and voice features show asymmetrical behavior in early productions. This study aimed to test whether these asymmetries also emerge in perception. Results show that children are able to detect mispronunciations of place and voice features in certain contexts, but not all. The same asymmetries attested in production are also found in perception. These findings suggest a tight link between perception and production in acquisition.

INTRODUCTION

• Production data suggests underspecified early lexical representations ([1], [2])
• Perception data from Swingley & Aslin [3] (a.o.) seem to indicate detailed representations: children are able to detect small mispronunciations of well known words.
• However, different types of mispronunciations were not tested in a systematic way. We used the same procedure as in [3], keeping factors clearly balanced. We tested two aspects: **voice** and **place.**

METHOD

SUBJECTS

• Fourty-eight 24 month-old Dutch-learning children

PROCEDURE

• Split-screen Preferential Looking Paradigm

• **STIMULI**

"Kijk naar de **poes**! Mooi he?"
(Look at the cat! Do you like it?)

The initial stop of the target word (e.g. 'poes') was either:

1. pronounced correctly **(CP condition)**
2. mispronounced with a change of the voice feature **(MPvoice condition)** ("Kijk naar de **boes**!")
3. mispronounced with a change of the place feature **(MPplace condition)** ("Kijk naar de **toes**!")

CONDITIONS

There were 4 different tests; subjects were presented with target words starting with either /p/, /b/, /t/, or /d/. The target words were each presented in all 3 conditions (CP, MPvoice and MPplace)

RESULTS

Figures 1, 2 and 3 show changes in looking times to the target picture. Proportions of looking times were compared in a window of 2 seconds before the target word was heard, with the first second after the target word. If children detect a mispronunciation, a smaller increase (or even decrease, a negative number) in looking time is expected.

Figure 1 – changes in looking times in three different conditions – all target words (/p/, /b/, /t/, /d/) collapsed
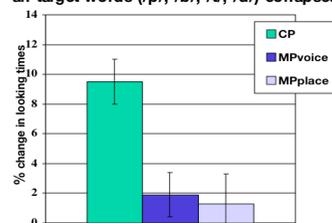

Figure 2 – coronal versus labial target words CP versus MPplace conditions
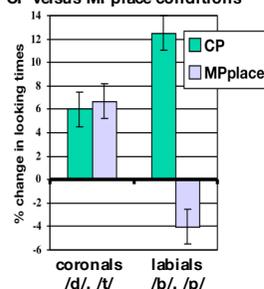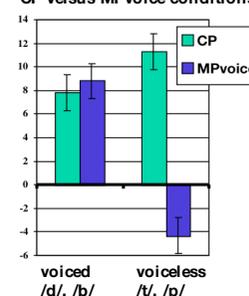

Figure 3 – voiced versus voiceless target words CP versus MPvoice conditions

Repeated measures ANOVA revealed a main effect of CP versus MP (both place and voice), and significant interactions between voice and condition, and between place and condition. In voiceless and labial, but not in voiced and coronal conditions, the MP conditions showed in Figure 2 and 3 were significantly different from the CP condition.

DISCUSSION

• Different mispronunciations are **not equal**: not all featural changes yield equally strong effects (See also [4]).

• **Voice**: The Dutch voicing contrast is between unaspirated voiceless and prevoiced voiced stops. The realization of voiced stops, but not of voiceless stops, can sometimes vary in spoken Dutch [5]. If children know this, it can cause them to ignore voiceless mispronunciations of voiced stops.
• Production data from Dutch children show that Dutch voiceless stops are acquired before voiced stops [2]. This contrast is acquired late (not yet by 2;6). The perception data show this same asymmetry.

• **Place:** Research on child language production studies has argued that Dutch children underspecify coronal place of articulation in early lexical representations [1]. This predicts stronger effects for mispronunciations of place on labials then on coronals.
• This asymmetry is also reflected in **confusion matrices** for Dutch. [6] shows that coronals are more often perceived as labials, then the other way around.

CONCLUSIONS

• Subjects were able to detect mispronunciations of features in well-known words - but not of all changed features in all MP conditions.
• The attested **asymmetries** between labials and coronals and between voiced and voiceless stops cannot be accounted for by assuming that children merely perceive changes in the phonetic realizations of the target words.
• These data suggest a tight link between **perception and production**

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