

The role of perceptual salience in the acquisition of Principle B: evidence from cochlear implanted children.

1. General

The aim of this study is to investigate the role of perceptual salience in the acquisition of Dutch object pronouns. The analysis will be based on data from deaf children with a cochlear implant (CI) who will be compared to hearing controls. CI children benefit from a partially restored hearing, but receive an audiologically reduced version of natural speech as compared to hearing peers. They therefore provide us with the ideal environment to investigate the effect of perceptual salience on the natural acquisition order of strong and deficient pronouns.

2. The acquisition of Principle B

Children often have problems with the acquisition of Principle B ("a pronoun must be free in its local domain"). In previous studies, this has been referred to as the Delay of Principle B Effect (DPBE). Cross-linguistic differences have been attested with respect to DPBE: while only around 10 percent of Italian children show non-adult behaviour of Principle B, more than 80 percent of English children fail in barring local co-reference of deficient pronouns (McKee 1992). DPBE is generally attested in Germanic languages, while it is absent in Romance. Dutch must be classified as a "problem language" alongside English, German and Icelandic (Koster 1993, Philip & Coopmans 1996, Baauw 1999, 2000). Up to the age of nine, Dutch children often display non-adult like behaviour with respect to the local binding of pronouns:

(7a)	<i>child grammar</i>	Wijst het meisje haar _{ij} aan?
(7b)	<i>adult grammar</i>	Wijst het meisje haar* _{ij} aan? Point the girl her at? Is the girl pointing at her?

Previous studies (Koster 1993, Philip & Coopmans 1996, Baauw 1997) have shown that there is even variation in DPBE across Germanic languages: Dutch children show more difficulty acquiring Principle B than English children do. The question that arises from these findings is which kind of language-specific principle might explain the cross-linguistic differences regarding the Delay of Principle B Effect. In the literature, a number of possible answers have been advanced in this respect: (i) the absence of clitics in Germanic languages (Baauw 1997); (ii) the ambiguity between strong and weak pronouns in a language like English (Cardinaletti & Starke 1995); (iii) in particular with respect to differences between Dutch and English, the presence of ambiguous lexical properties in Dutch (Philip & Coopmans 1996).

3. Perceptual salience and the pronominal structure.

The hypothesis developed in this paper is that perceptual salience of pronouns is a determining factor in the natural acquisition order of Dutch object pronouns. We will call this hypothesis the Perceptual Salience Hypothesis (PSH). Perceptual salience plays an implicit role in Cardinaletti & Starke's (1994, 1999) distinction between deficient and strong pronouns. Deficient pronouns are less perceptually salient than their strong counterparts: (i) they are phonologically reduced forms in comparison with strong forms; (ii) they are only acceptable when nuclear stress retraction occurs; (iii) they cannot receive contrastive stress (e.g. focalisation, modification, ...) and (iv) they can form one prosodic word with an adjacent element. As a result, they can be easily missed by children in incoming speech and may thus be acquired later than their strong counterparts.

Within the category of deficient pronouns, clitics and weak pronouns can be further distinguished on the basis of perceptual salience. However, there is no consensus about the status of deficient pronouns in Dutch within the Cardinaletti & Starke (1994, 1999) typology (strong-weak-clitic): either they are weak pronouns (Cardinaletti & Starke 1999, Corver & Delfitto 1993, van de Velde 2001) or they are true clitics, in the sense of Zwicky's "special clitics" (Zwart 1996). A frequently used argument for Dutch having weak pronouns instead of clitics is the presence of deficient pronouns in prepositional complement positions. On the basis of different properties and tests, Haegeman (1993) and van Koppen & van Craenenbroeck (2000) promote a more differentiated view in which some deficient pronouns are classified as weak and others as clitics.

4. Hypothesis

Due to the audiologically reduced version of natural speech hearing-impaired children with cochlear implants (CIs),

they provide us the ideal environment to test the Perceptual Salience Hypothesis (PSH). We crucially assume that PSH as a predictor for the natural acquisition order of pronouns can be strongly corroborated if CI children turn out to have more difficulties in acquiring deficient object pronouns and setting Principle B in comparison with hearing peers.

Moreover, we also take PSH to be crucial in explaining the differences in DPBE between Dutch- and English-speaking children, as both languages exhibit differences in perceptual salience with respect to their pronominal types (especially deficient pronouns).

5. Method: spontaneous and elicited data

The analysis is based on the study of Dutch object pronouns in longitudinal spontaneous production data and elicited comprehension and production data from hearing controls and children with CIs who were selected from The Eargroup (Deurne, Belgium). A homogeneous population of 10 monolingual Dutch-speaking children with CIs who suffered from severe congenital hearing loss and were implanted before the age of two were recorded from one month before implantation until 30 months post implantation. The corpus was transcribed using CHAT and morphologically coded with the help of a lexicon. The corpus contains in total 62.643 utterances by 10 CI children (CDS excluded). The elicitation tasks were performed in two groups of each 10 CI children (with 10 age-matched hearing controls) between the ages 5;0 - 6;0 and 7;0 - 8;0. The tests consisted of two comprehension tasks (a picture selection task and a yes-no judgement task) and a narrative production task.

6. Expected results

In a previous pilot study, the role of salience was tested in 11 hearing children between 5;1 and 5;8. The data from a picture selection task suggested that hearing children have more difficulties in the comprehension of deficient pronouns than strong pronouns. Perceptual salience was thus proven to be a factor in the acquisition of pronominal types. Therefore, I expect it to also influence the acquisition of Principle B. I expect that CI children (in comparison with hearing children) will have significantly more difficulties with (i) acquiring deficient pronouns and (ii) acquiring Principle B because of their difficulties in hearing non-salient elements like deficient pronouns.

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