“She did too”: Processing VP ellipsis by typical and atypical developing language populations.

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In this study we explore how typical language developing (TLD) children and children diagnosed with specific language impairment (SLI) comprehend syntactically complex sentences both in real time as well as in conscious reflective tasks. Prior research has demonstrated that children as early as four years of age exhibit adult-like parsing with complex constructions in real-time (Love, 2007, Roberts et al., 2007). One under-investigated area in the developmental psycholinguistic field is how both TLD and SLI children parse (unconsciously) complex sentence constructions whereby a component of the second clause (the verb phrase) is elided (phonetically unrealized) and refers back to an element within the first clause. The processing consequences of such a construction have been the source of many debates in the psycholinguistic literature (Shapiro & Hestvik 1995; among others). Research in the adult population generally demonstrates a preferred reading or conscious level interpretation of these constructions. Take for example,

Alyssa [defended herself] and Micheala did too.
Alyssa [defended herself] and Micheala did [defend herself] too.

Sloppy reading: Micheala defended Micheala
Strict reading: Micheala defended Alyssa

While the strict interpretation is possible, it is not the most preferred interpretation. However, in real-time studies, such as those by Shapiro et al., 1995, adults demonstrate exhaustive access of both initial and latter occurring clauses, a.k.a. strict and sloppy readings.

Current theories suggest that children with SLI process sentences different than their TLD peers (see for example Bishop et al., 2000). In this study, we looked at on-line (unconscious, real-time) and off-line (reflective) measures to investigate how these complex structured sentences [which were presented at normal rates of speech in English (approx 4.5 syll/sec)] are processed. Here, we used Cross-Modal Picture Priming (CMPP), presenting visual probes (pictures of NP1 or NP2) at the offset of “did” in the elided phrase “did too” (noted in the example below with an asterisk). This allowed us to explore which noun phrase (NP1 “DOCTOR” or NP2 “TRUCK DRIVER”) was activated at that particular point in time, thus indicating whether or not there was an on-line ‘preference’ for a strict or sloppy interpretation.

Materials
40 experimental sentences were constructed in the format presented below and were combined with 25 fillers of the same length but different constructions:

The doctor sprayed himself with a hose, and the truck driver from next door did * too for a long time.

A 2x2 within subjects design was employed. To date, 18 typically developing children (ages 5-12) and 5 SLI children (ages 5-12) have been run. TLD children demonstrate a different pattern of priming compared to the SLI children (Table 1). Specifically, the SLI children show priming only for the sloppy interpretation. Data from off-line sentence picture matching tasks for these children also demonstrate different patterns of preference (TLD: STRICT=32%, SLOPPY=68%; SLI: STRICT=17%, SLOPPY=83%). Current models of language processing and their implications regarding theories of SLI will be discussed.

Table 1. Reaction times for TLD and SLI children (msec).

<table>
<thead>
<tr>
<th></th>
<th>NP1 related</th>
<th>NP1 control</th>
<th>NP2 related</th>
<th>NP2 control</th>
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<tr>
<td>TLD</td>
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<td>791</td>
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<tr>
<td>SLI</td>
<td>798</td>
<td>771</td>
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References