Input Distribution Influences Tense/Agreement Inconsistency in Children with Specific Language Impairment

Laurence B. Leonard and Patricia Deevy
Purdue University
Acknowledgments

Thanks to NIDCD, NIH
R01 DC 00458
R01 DC 009574
Tense/Agreement Inconsistency

- Ernie’s running, Ernie running
- Dad sings everyday, Dad sing everyday
- Mom played soccer yesterday, Mom play soccer yesterday
Purpose:
To determine whether this inconsistency in children with SLI might be attributed to their misinterpretation of particular syntactic structures in the input.
Input: Look [the dog’s eating]

- The dog’s eating
- The cat’s eating
- The cat’s running
Input: I see [the frog jumping]

- The frog jumping
- The cat jumping
- The cat running
The cat’s running

The cat running
Typical Development

I see [the frog jumping]
Typical Development

[I see the frog jumping]
The cat’s running

The cat running
The cat’s running

The cat was running
Children with SLI

I see [the frog jumping]
The cat’s running

The cat was running

The cat running

The cat was running
Study 1

Will children with SLI produce novel verbs in non-finite form or with tense/agreement depending on how these verbs appear in the input?

Will the children generate new/original utterances that are based on the input pattern?
## Study 1: Participants

<table>
<thead>
<tr>
<th></th>
<th>SLI (N=18)</th>
<th>TD-A (N=10)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>4;2 – 5;9</td>
<td>4;0 – 5;10</td>
</tr>
<tr>
<td><strong>SPELT–II</strong></td>
<td>&lt;10&lt;sup&gt;th&lt;/sup&gt;%-ile</td>
<td>&gt;17&lt;sup&gt;th&lt;/sup&gt;%-ile</td>
</tr>
<tr>
<td><strong>CMMS</strong></td>
<td>112</td>
<td>118</td>
</tr>
<tr>
<td><strong>FVMC</strong></td>
<td>16 - 83%</td>
<td>93 - 100%</td>
</tr>
</tbody>
</table>
Across 10 sessions, 5 novel verbs were presented in non-finite form, as in:

*We saw the dog pagging*

And 5 novel verbs were presented with auxiliary ‘*was*’, as in:

*Just now the horse was channing*

Only one novel verb was used per session
Following the presentations of each novel verb, probe items were presented that:

• obligated use of auxiliary ‘*is*’ (i.e., ‘What’s happening here?’)

• required a subject NP that was either:
  ▪ previously paired with the novel verb
  ▪ reflected a new pairing
Effect of Input Condition: Percentage Use ‘is’ in Probes

- Auxiliary ‘was’
- Non-finite

TD-A
SLI
Effect of Subject NP on SLI Performance: Percentage Use ‘is’ in Probes

![Bar chart showing the percentage use of 'is' in probes for different categories: Auxiliary 'was' and Non-finite. The chart compares Previous Pairing and New Pairing.]
Summary of Study 1

As predicted, children with SLI showed both strong input effects and productive use, both in the tense/agreement condition (e.g., *The horse was channing* → *The cat is channing*) and the non-finite condition (e.g., *The dog pagging* → *The cow pagging*)
Study 2

Is this pattern of use associated with the children’s misinterpretation of particular syntactic structures in the input?
### Study 2: Participants

<table>
<thead>
<tr>
<th></th>
<th>SLI (N=6)</th>
<th>TD-Y (N=6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>4;3 – 5;7</td>
<td>3;3 – 4;0</td>
</tr>
<tr>
<td>SPELT-II,-P</td>
<td>&lt;10th %-ile</td>
<td>&gt;17th %-ile</td>
</tr>
<tr>
<td>% use ‘is’</td>
<td>29.5%</td>
<td>81%</td>
</tr>
<tr>
<td>CELF P-2 sent. structure raw score</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>
Comprehension Task

Example of Target Sentence:

*The dad sees the girl sleeping*

Example of Control Sentences:

*The girl is sleeping*

*The dad sees the girl*
Predictions

Accuracy on Target sentences:
- SLI < TD-Y

Accuracy on Control sentences:
- SLI = TD-Y

Error pattern: The errors of the children with SLI will usually be the principal foil (depicts the same non-finite clause as the target)
## Results: Comprehension Accuracy

<table>
<thead>
<tr>
<th></th>
<th>SLI</th>
<th>TD-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target sentence:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The dad sees the girl sleeping.</td>
<td>69%</td>
<td>87%</td>
</tr>
<tr>
<td><strong>Control sentences:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The dad sees the girl.</td>
<td>87.5%</td>
<td>84.7%</td>
</tr>
<tr>
<td>The girl is sleeping.</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Comprehension of Subordinate Clause: Error Patterns

SLI

TD-Y

- Principal Foll
- Other Foll
Summary of Study 2

As predicted, children with SLI had difficulty understanding the details of the target sentences and were disproportionately influenced by the non-finite subject-verb sequences constituting the subordinate clause.
Interpretation:
The inconsistency seen in SLI may rest with the pace at which these children expand the repertoire of constructions that serve as the basis for their utterances. These children seem to persist in generating new utterances based on constructions in the input that do not constitute full sentences in the adult grammar.