The acquisition of aspectual markers and scalar implicatures in Italian monolingual preschoolers

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Investigate children comprehension of aspectual markers in finite sentences

Temporal meaning of a sentence:

- how an event is described in the flow of time \( (\text{Aspect}) \)
- where an event is located in the flow of time \( (\text{Tense}) \)
- how the event structure maps onto the flow of time \( (\text{Aktionsart, VP-meaning}) \)
What’s on a verb: Aspect
(Klein, 1994; Kratzer, 1998; Musan, 2001; von Stechow, 2002)

1) Leo ate an apple

Perfective aspect (PF): external point of view on the event

1a) ∃e∃t(Leo-eat-an apple(e) & T(e) ⊆ t & t<Now)

2) Leo was eating an apple

Imperfective aspect (IMP): internal point of view on the event

2a) ∃e∃t(Leo-eat-an apple(e) & t ⊆ T(e) & t<Now)
Comprehension of Aspect contrast

1) Leo *ate* an apple
2) Leo *was eating* an apple.

Children at 5 years of age are not adultlike:

They have a **good** performance with **perfective** sentence,

They have **problems** with **imperfective** sentences.

$$\Rightarrow$$ Children accept **imperfective** sentences as descriptions of telic durative terminated events

John was building a house

Adults: NO

Children: YES
Acquisition of Aspect

Possible hypotheses:

- **IMP** changes non homogeneous telic predicates into homogeneous ones while **PERF** does not: the change is costly (van Hout, 2005; 2007; 2008).

- **IMP** sentences are ambiguous: **IMP** morphemes are more difficult to grammaticalize (van Hout, 2007).

- **IMP** morphemes introduce anaphoric tenses: children find difficult to understand them when an anaphoric link is not explicitly provided (Kazanina & Philips, 2007).
Acquisition of Aspect

- IMPF sentences are used to establish background information in discourse; children have problems in distinguishing which information is new and which one is given (Hodgson, 2003; Vinnitskaya & Wexler, 2001);

- Experimental demands and confounds: Presence/absence of an agent in videos; or props: children cannot compute grammatical aspect if they can only rely on information about the object (Wagner, 2002).
In our study

1) *Leo ha mangiato una mela*  
Leo has eaten an apple

2) *Leo sta mangiando una mela*  
Leo was eating an apple

Completed events  
Ongoing events
... and compare it to quantifiers comprehension

Quantifiers denote set relations

1) All apples are in the box
\{\text{apples}\} \subseteq \{\text{apples, lemons, strawberries}\}

2) Some lemons are in the box
\{\text{lemons}\} \cap \{\text{apples, lemons, strawberries}\} \neq \emptyset
Set relations might not be enough

1) Some apples are in the box

\[ \{ \text{apples} \} \cap \{ \text{fruits} \} \neq \emptyset \]

... adults reject (1) as a felicitous description of \( A \)

when hearing (1), we derive the additional meaning NOT ALL
Scalar Implicatures

1) Some apples are in the box
2) All apples are in the box

Sentence (1) is semantically true in situation A & B

Sentence (2) is semantically true in situation A and false in B

Sentence (2) is more informative than (1)

Speakers should use the more informative sentence among alternatives:

When we hear (1), we are entitled to derive that (2) is false.

Therefore, (1) is **pragmatically inappropriate** as a description for A
Acquisition of quantifiers

At 5yrs

- They correctly accept sentences like 
  "ALL S are P", when all S are P;
- They correctly reject sentences like 
  "ALL S are P", when not all S are P;
- They correctly accept sentences like 
  "SOME S are P", when some (not all) S are P;
- They correctly reject sentences like 
  "SOME S are P", when no S are P;
- They incorrectly accept sentences like 
  "SOME S are P" when all S are P;

(e.g., Chierchia et al., 2001, 2004; Papafragou & Musolino, 2003; Papafragou, 2003; Katsos & Bishop, 2011).
Acquisition of Scalar Implicatures

There is a bimodal distribution: some children consistently accept them, some consistently reject them.

Experimental settings and demands can influence their performance (Foppolo et al 2012).

Possible explanations:
- Children have problems in acquiring and automatizing the link between the meaning of a scalar term and the scale (Barner & Bachrach, 2010).
- Children are pragmatically more tolerant than adult (Katsos & Bishop, 2012)
Analogies

Some apples are in the box

John was building a house
An analogy: entailment relation

1) John built a house

2) John was building a house

3) All apples are in the box

4) Some apples are in the box
An analogy: informativeness

1) John **built** a house
2) John **was building** a house

3) **All** apples are in the box
4) **Some** apples are in the box
An analogy: children’s & adult’s performance

1) John was building a house
   Adults: NO
   Children: YES

2) Some apples are in the box
   Adults: NO
   Children: YES
Our questions

Are there analogies in the way NOT ALL and NOT COMPLETED are conveyed?

Aspectual implicatures?

Are aspectual morphems scalar terms?

Our study

Children comprehension of quantifiers & aspectual morphems

... by making use of parallel experimental tasks
Our hypothesis

<table>
<thead>
<tr>
<th>Prediction</th>
<th>Adults</th>
<th>Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>All - Perf V-F</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Some - Imp V-F</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Some - Imp Under</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

Age differences

Bimodal distribution with Some- Imp under-informative
Susanna is learning Italian.
The child is asked to correct her when she is wrong

In questa foto, Paolo ha montato il tavolino

Qui, Paolo ha messo tutte le mele nella scatola

Participants: - 33 Italian speaking children (3;8 yrs - 5;8 yrs)
- 9 adults (mean age 38;6 yrs)
**ASPECT TASK**

3 items X condition

Conditions:
1) PERF true
2) PERF false
3) IMP true
4) IMP false
5) IMP under-inf

**QUANTIFIER TASK**

3 items X condition

Conditions:
1) ALL true
2) ALL false
3) SOME true
4) SOME false
5) SOME under-inf

**ASPECT TASK**

3 items X condition

Conditions:
1) PERF true
2) PERF false
3) IMP true
4) IMP false
5) IMP under-inf

**QUANTIFIER TASK**

3 items X condition

Conditions:
1) ALL true
2) ALL false
3) SOME true
4) SOME false
5) SOME under-inf

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**PF)** In questa foto, Paolo ha montato il tavolino
In this pic, Paolo has built the table

**IMP)** In questa foto, Paolo stava montando il tavolino
In this pic, Paolo was building the table

**PF)** Qui, topolino ha messo tutte le mele nella scatola
Here, Mickey has put all the apples in the box

**IMP)** Qui, topolino ha messo qualcuna delle mele nella scatola
Here, Mickey has put some of the apples in the box
QUANTIFIER COMPREHENSION
BIMODAL DISTRIBUTION
In SOME under-informative COMPREHENSION

<table>
<thead>
<tr>
<th></th>
<th>3/3</th>
<th>2/3</th>
<th>1/3</th>
<th>0/3</th>
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<tbody>
<tr>
<td>( \geq 4;6 ) (12)</td>
<td>7</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>(&lt; 4;6 ) (21)</td>
<td>8</td>
<td>2</td>
<td>3</td>
<td>8</td>
</tr>
</tbody>
</table>
ASPECT COMPREHENSION

![Bar chart showing aspect comprehension for different age groups and sentence types. The chart compares performance (PERF) and imperfect tense (IMP) with true, false, and underinflected categories. The x-axis represents different conditions, and the y-axis shows the proportion of correct responses. The chart includes categories for ages less than 4.6, 4.6 and above, and adults.](image-url)
BIMODAL DISTRIBUTION
IMP under-informative COMPREHENSION

<table>
<thead>
<tr>
<th>Ipv under</th>
<th>3/3</th>
<th>2/3</th>
<th>1/3</th>
<th>0/3</th>
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<td>≥ 4:6 (12)</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>&lt; 4:6 (21)</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>14</td>
</tr>
</tbody>
</table>
CORRELATION between IMP-under and SOME-under in children ≥ 4;6

Moderate correlation (r=0.6, p=0.03)
CONCLUSIONS

There is a correlation between the comprehension of under-informative uses of *IPV morphemes* and *SOME*

Data suggest that *IPV morphemes* trigger implicatures, as *SOME* do.

Children have problems in deriving the implicatures.

Is the IPV morpheme a scalar terms?

Research with atelic predicates and languages where the non-terminated information is fully grammaticalized will shed light on this issue.