The interaction of lexical and grammatical aspect on language processing

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Overview

- Introduction to aspectual system
  - Inherent lexical aspect vs. grammatical aspect

- Background on aspectual asymmetry
  - The notion of ‘perfective advantage’
  - Mental Representation of events
  - Previous studies in English, Cantonese, Mandarin and Japanese

- Aim of the present study
  - Korean reaction time study

- Methodology
- Results and discussion
- Conclusion
Introduction to Aspectual System

Aspectual System

Lexical aspect
(situation aspect)

state  activity  accomplishment  achievement  semelfactive

Grammatical aspect
(viewpoint aspect)

Perfective  Imperfective
Inherent Lexical Aspect

- **Accomplishment**: [+telic], [+durative]
  - E.g. *sakwa-lul mekta*
    - eat ACC apple
    - ‘eat an apple’

- **Activity**: [-telic], [+durative]
  - E.g. *swuyenghata*
    - swim
    - ‘swim’
Introduction to Aspectual System

Aspectual System

Lexical aspect
(situation aspect)

Grammatical aspect
(viewpoint aspect)

Perfective
Imperfective

state activity accomplishment achievement semelfactive
Grammatical Aspect

- Imperfective marker – *ko iss*
  - depicts an ongoing action
  - e.g. *ku namca-nun swuyengha-ko iss-ta.*
    - the-man-TOP swim - PROG-DEC
    - ‘The man is swimming.’

- Perfective marker - *ess*
  - depicts a completed action
  - e.g. *ku namca-nun swuyenghay-ss-ta.*
    - the-man-TOP swim - PERF/PAST-DEC
    - ‘The man has swum.’
Processing Aspectual Asymmetries

- **English**
  - Magliano & Schleich (2000)

- **Cantonese, Mandarin**
  - Chan et al. (2004)
  - Yap et al. (2004)

- **Japanese**
  - Yap et al. (in press)
Our mental representation of events

- time
- space
- protagonist
- causation
- intentionality

Magliano & Schleich (2000)

Different aspectual markers impose different interpretations on the temporal duration of activities.

- Are perfective constructions processed faster than imperfective ones?
- Focus: accomplishment verbs
Previous methodology

The subject was shown a sentence …

- Either
  - *The boy was drawing a picture.* (imperfective)
- Or
  - *The boy drew a picture.* (perfective)
The subject was then shown two pictures …

ongoing vs. completed

Accuracy rate: 56% 76%
### Aspectual asymmetries (processing speed) across different languages

<table>
<thead>
<tr>
<th>Language</th>
<th>Perfective</th>
<th>Imperfective</th>
<th>Speed Advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>English (Medden &amp; Zwaan, 2003)</td>
<td>NA</td>
<td>1397 ms</td>
<td>perfective</td>
</tr>
<tr>
<td>Mandarin (Yap et al., 2004)</td>
<td>1315 ms</td>
<td>1253 ms</td>
<td>perfective</td>
</tr>
<tr>
<td>Cantonese (Chan et al., 2004)</td>
<td>1118 ms</td>
<td>1809 ms</td>
<td>perfective</td>
</tr>
<tr>
<td>Japanese (Yap et al., in press)</td>
<td>1512 ms ((-ta))</td>
<td>1809 ms (-teiru)</td>
<td>perfective</td>
</tr>
</tbody>
</table>

**Accomplishment verbs only**
Aspectual asymmetries in Cantonese (Yap et. al., 2006)

Processing speed for activity and accomplishment verbs

<table>
<thead>
<tr>
<th></th>
<th>Activity verbs</th>
<th>Accomplishment verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perfective (zo2)</td>
<td>1211 ms</td>
<td>941 ms</td>
</tr>
<tr>
<td>Imperfective (gan2)</td>
<td>1125 ms</td>
<td>1032 ms</td>
</tr>
</tbody>
</table>

Speed Advantage

- imperfective
- perfective

Perfective Advantage may not be observed across all verb types
Aim of the present study

- Examines 2 Korean aspect markers:
  - Perfective –ess vs. Imperfective –ko iss
- Inclusion of sentences without any aspect markers (‘null’ sentences) for comparison
  - e.g. *ku namca-nun swuyengha-ta.*
    - the-man-TOP swim -DEC
    - ‘The man swims.’
- Focus on accomplishment verbs and activity verbs.
Methodology

Task
• Sentence – Picture Matching Decision Task

Subjects
• 30 university students from Hankuk University of Foreign Studies, Seoul

Materials
• 96 sentences
  (48 target sentences and 48 distractors)
• 8 trial practices
Experimental Procedures

A. Presentation of a mask ‘XXXXXXXXX’

B. Presentation of a sentence in visual form (in Hangul)
   e.g.   *ku namca-nun swuyengha-ko iss-ta.*
       the-man-TOP swim- PROG-DEC
       ‘The man is swimming.’

C. Presentation of a mask ‘XXXXXXXXX’

D. Presentation of a picture:
Demonstration
그 남자는 수영하고 있다.
Keyboard

L  (match)

R  (mismatched)
Experimental Design

Two within-subject factors for the visual prime sentences:

1. Lexical aspect
   activity verbs vs. accomplishment verbs

2. Grammatical aspect
   perfective marker vs. imperfective marker
   vs. null sentences (without grammatical aspect markers)

   e.g. *ku namca-nun swuyengha-ko iss-ta.*
   the-man-TOP swim- PROG -DEC
   ‘The man is swimming.’
Results (Reaction time)

<table>
<thead>
<tr>
<th></th>
<th>Imperfective –ko iss</th>
<th>Perfective –ess</th>
<th>Null</th>
<th>Speed Advantage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity</strong></td>
<td>Mean = 993ms SD = 399</td>
<td>Mean = 1201ms SD = 425</td>
<td>Mean = 916ms SD = 371</td>
<td>Activity p&lt;.000</td>
</tr>
<tr>
<td><strong>Accomplishment</strong></td>
<td>Mean = 1050ms SD = 402</td>
<td>Mean = 1134ms SD = 400</td>
<td>Mean = 1133ms SD = 429</td>
<td></td>
</tr>
</tbody>
</table>
Prototype Theory

Activity verbs
e.g.  *swuyengha-ta.*

- DEC

‘swim’

[+durative]

Ongoing phase (swimming)

Imperfective marker

- *ko iss*

[ku namca-nun   swuyengha-ko iss-ta.
the-man-TOP   swim       - Prog -DEC

‘The man is swimming.’]

Prototype

[-telic]

endpoint (completion of the event)

Perfective marker

- *ess*

[ku namca-nun   swuyenghay-ss-ta.
the-man-TOP   swim       - Perf -DEC

‘The man has swum.’]
Prototype Theory

Accomplishment verbs
e.g. *cip-ul cis-ta*

house-ACC build-DEC
‘build a house’

[+durative]

Ongoing phase (building a house)

Imperfective marker  
-ko iss

[ku namca-nun cip-ul cis-ko iss-ta.]

the-man-TOP house-ACC build-PROG–DEC
‘The man is building a house.’

[+telic]

endpoint (completion of the house)

Perfective marker  
-ess

[ku namca-nun cip-ul ci-ess-ta.]

the-man-TOP house-ACC build-PERF–DEC
‘The man has built a house.’
Conclusion

- Aspectual asymmetry in Korean
  - Activity verbs: imperfective facilitation
  - Accomplishment verbs: no perfective advantage

- The perfective advantage in processing speed is not robust across all verb types.

- Prototype theory: More prototypical combinations of grammatical and lexical aspect are processed significantly faster than less prototypical combinations.
References


