Building Blocks for a New Lexicon
Masked Priming, Proficiency and AoA in L2

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International School for Advanced Studies (SISSA), Trieste

Psychonomic Society, 58th meeting
Vancouver, November 12, 2017
Morphology

- Cat-s, deal-er, basket-ball
- Breach into the arbitrariness of form-to-meaning mapping

cat, cats, catfish
Morphological Priming

- See a prime word, you’re quicker processing a morphologically related target
- dealer–DEAL vs. corner–CORN vs. dialog-DIAL

Diependaele et al., 2011

- No statistically reliable difference between L1 and L2
- Transparent (35ms) > Opaque (25ms) > Form (14ms)

Heyer and Clahsen, 2015

- L1 statistically different from L2
- Transparent (19ms) = Form (17ms)
Orthography–to–Semantics Consistency

Marelli et al., QJEP 2015

▶ How semantically consistent is any morphological family

▶ How we compute it:
  ▶ corn
  ▶ corn, corns, cornfield, corner, cornwall, cornish, . . .
  ▶ Take their vector semantics representations
  ▶ Compute the semantic similarity between each family member and the stem
  ▶ Compute the mean
A few of things on OSC

- Between 0 (totally inconsistent) and 1 (perfectly consistent)
- Characterizes morphology in a **graded** fashion, away from the classic “rule” approach
- It’s a **stem** measure
- Potentially, it’s even non-morphological
The experiment

dea-l–DEAL vs. corner–CORN vs. dialog–DIAL

- Check morphological priming in L2
- Check OSC effects on stem RTs (i.e., primes irrelevant)

- Italian (L1) and English (L2) materials and participants
- Wide array of proficiency tests
- Questionnaire on age/method of acquisition
- 82 subjects
Age/method of acquisition

- What age were you first exposed to English?
- Were you primarily exposed to ENG at home or in school?
- Please rate the relevant dominance of ITA vs. ENG in your current everyday life experience
- Do you speak any other language other than IT and ENG?
Proficiency

- Phonemic discrimination
- Phonemic fluency
- Spelling to dictation
- Vocabulary
- Morphological awareness
- Oral comprehension
- Reading comprehension
Masked priming, L1
Masked priming, L2, overall

![Graph showing the relationship between Relatedness, RT (in ms), and Prime Type. The graph includes three lines labeled OR, OP, and TR, each representing different Prime Types. The x-axis represents Relatedness ranging from 0 to 1, and the y-axis represents RT in ms ranging from 640 to 600. The lines show a negative correlation between Relatedness and RT, with OR having the steepest slope, followed by OP and TR.](image-url)
<table>
<thead>
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<th>Variable</th>
<th>$p(\chi^2)$</th>
<th>$p$(interaction)</th>
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<tr>
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</table>
Masked priming, L2, proficiency

VERY LOW PROFICIENCY

LOW PROFICIENCY

HIGH PROFICIENCY

VERY HIGH PROFICIENCY
Age of Acquisition

It just doesn’t work
OSC effect grows with proficiency
Conclusions

▶ L2 masked priming is quite different from L1 masked priming

▶ L2 masked priming is modulated by proficiency, not much by AoA

▶ For low-proficiency L2, not much more than letter orthography

▶ As proficiency increases, form priming vanishes (lexical inhibition)

▶ No morpho-orthography for L2, even at high proficiency, as far as our proficiency tests can tell
Conclusions

- Readers capture graded, probabilistic regularities in form-to-meaning mapping
- Their sensitivity to these regularities increases with their proficiency
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L2 proficiency, distributions

Fluency

Phonetic comprehension

Morphological comprehension

Spelling

Reading comprehension

Vocabulary

Oral comprehension
L2 proficiency, overall
L2 proficiency, correlations

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Orthography–Semantics Consistency (OSC)

\[
OSC(t) = \frac{\sum_{x=1}^{k} f_{r_x} \cos(\vec{t}, \vec{r}_x)}{\sum_{x=1}^{k} f_{r_x}}
\]
**Table 6.** Results of the regression analysis on the lexical decision latencies extracted from the BLP for a large set of random words

<table>
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(Marelli et al., 2015)