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

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





- 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 morpholgically 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

dealer-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?

Profiency

- Phonemic discrimination
- Phonemic fluency
- Spelling to dictation
- Vocabulary
- Morphological awareness
- Oral comprehension
- Reading comprehension

Masked priming, L1



Masked priming, L2, overall



Masked priming, L2, proficiency

Variable	p(χ ²)	p(interaction)
Phonemic fluency	< .001	.14
Phonemic discrimination	.003	.62
Morph awareness	< .001	.26
Spelling	< .001	.41
Reading comprehension	.001	.39
Vocabulary	< .001	.42
Oral comprehension	.02	.40

Masked priming, L2, 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

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

Acknowledgments





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L2 proficiency, distributions









Reading comprehension





Oral comprehension



L2 proficiency, overall



L2 proficiency, correlations

	PF	PD	MA	Sp	RC	Vo	OC
Phonemic fluency							
Phonemic discrimination	.24						
Morph awareness	.54	.40					
Spelling	.61	.45	.63				
Reading comprehension	.34	.43	.38	.49			
Vocabulary	.46	.41	.52	.64	.35		
Oral comprehension	.42	.44	.66	.61	.52	.48	

Orthography–Semantics Consistency (OSC)

$$OSC(t) = \frac{\sum_{x=1}^{k} f_{r_x} \cos(\vec{t}, \vec{r_x})}{\sum_{x=1}^{k} f_{r_x}}$$

OSC gets unique variance in RTs

 Table 6. Results of the regression analysis on the lexical decision
 latencies extracted from the BLP for a large set of random words

	Estimate	Std error	t <i>value</i>	p <i>value</i>
Intercept	6.5922	.0109	602.89	.0001
Word frequency	-0.0308	.0009	33.41	.0001
Word FS	-0.0041	.0021	1.97	.0495
Word length	0.0035	.0013	2.74	.0061
OSC	-0.0254	.0066	3.84	.0002

(Marelli et al., 2015)