Distinguishing Between Semantic And Morpho-Syntactic Language Processing In Sentence Reading

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Results

First-of-many fixation duration
Semantic priming effect: F(1, 1142)=17, p=68
Morpho-syntactic priming effect: F(1, 1142)=22, p=64
Interaction: F(1, 1142)=.001, p=.97

First run gaze duration
Semantic priming effect: F(1, 2736)=6.4, p<.01
Morpho-syntactic priming effect: F(1, 2736)=3, p=.5
Interaction: F(1, 2736)=.5, p=.4

Total viewing time
Semantic priming effect: F(1, 2105)=20.2, p<.00001
Morpho-syntactic priming effect: F(1, 2105)=61, p=.9
Interaction: F(1, 2105)=3, p=.5

Conclusion

- Cross-word priming at the semantic level
- Morpho-syntax does not seem to play any role, not even in modulating the semantic effect
- No effect in earlier measures of eye movement behaviour (first-of-many fixations)
- Novel design:
  - allows for comparison with the well-established priming paradigms with words in isolation
  - makes the transition from isolated-word identification to the natural sentence reading
- Insight into how priming influences eye movement during normal reading
- Contribution towards understanding of the influence of higher order language processing on the identification of words during reading
- Study seeks to the debate between sequential and parallel models of reading? (e.g., Reichle et al., 2001; 2006; Polatsek et al., 2006; Engbert et al., 2002, 2008)

References


Research challenge

- Usually addressed
- Non-ecological designs
- Semantic/syntactic violations
- Rapid serial stimul presentation
- Word in isolation
- Self-paced reading
- Design & Task
- Priming effect in eye-tracking during natural reading
- When target preceded by related prime word:
  - faster & more accurate processing
  - cf. unrelated prime word
- Observed in behavioural, FMRI, ERP, eye-tracking studies
- In sentence context:
  - Yields mixed results in semantic priming
  - No clear evidence in morphological priming

- 4 conditions:
  1. semantically +, morpho-syntactically +
  - Sicer pogumega Marka je strah pajkov in kaž in popolnoma ničesar drugega.
  - Otherwise brave Mark is afraid of spiders (PL) and snakes (PL) and of nothing else.
  2. semantically +, morpho-syntactically –
  - Sicer pogumega Marka je strah pajkov in kaž in popolnoma ničesar drugega
  - Otherwise brave Mark is afraid of a spider (SG) and snakes (PL) and of nothing else.
  3. semantically –, morpho-syntactically +
  - Sicer pogumega Marka je strah divgali in kaž in popolnoma ničesar drugega
  - Otherwise brave Mark is afraid of elevators (PL) and snakes (PL) and of nothing else.
  4. semantically –, morpho-syntactically –
  - Sicer pogumega Marka je strah divgali in kaž in popolnoma ničesar drugega
  - Otherwise brave Mark is afraid of an elevator (SG) and snakes (PL) and of nothing else.
  - 160 grammatically correct sentences (40 sentences/condition)
  - Manipulation on the prime only, target word same in all conditions
  - No determiners preceding the noun
  - Grammatical number expressed only in the suffix of the word eg. hiša (a house) – hiši (two houses) – hiše (3+ houses)

Participants:
- N = 44 [F = 28]
- Native Slovenian speakers

Will there be semantic / morpho-syntactic cross-word priming effect?

Would match/mismatch in the morpho-syntactic property (grammatical number) modulate semantic priming effect?

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