INVESTIGATING SEMANTIC INTEGRATION’S EFFECT ON THE FUNCTIONAL AND POSITIONAL LEVELS OF GRAMMATICAL ENCODING DURING PRODUCTION

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INTRODUCTION

How deeply into grammatical encoding does semantic integration penetrate?

Semantic Integration
Degree of conceptual-level relatedness between utterance elements to be planned
Reflects how closely linked parts of a message are

Integration effects on subject-verb agreement errors in sentence completions:
More integrated preambles vs. Less integrated preambles
The pizza with the zesty toppings vs. The pizza with the zesty seasonings

Subject-verb agreement errors more likely for more integrated preambles

Pearlmutter & Solomon (2007)
Integration effects on exchange errors in picture descriptions:
More integrated phrases vs. Less integrated phrases
The spot on the apple vs. The shelf above the sink

Exchange errors more likely for more integrated pictures

How does semantic integration affect the functional and positional levels of grammatical encoding (Bock & Levelt, 1994)?

Functional Level
Lexical selection and grammatical function assignment
All phrase exchanges happen at this level.
Word exchanges can happen at this level.

Positional Level
Constituent assembly
Word and morphological slots ordered
Word exchanges can happen at this level.

Intented response
The spot on the apple

Phrase exchange
The apple on the spot

Word exchange
The apple on the spot

Word exchanges or phrase exchanges? Unclear whether functional or positional level was affected

GOALS
- Replicate integration effects on error rates
- Determine which processing levels are affected by examining pattern within phrase and word exchanges separately

PREDICTION
Exchange errors more likely in integrated than in un-integrated conditions, at each level affected by integration

EXPERIMENT 1

Method
36 pictures featuring an object and a character or two common objects
Varied in integration level and description preference
18 integrated pictures
Preferred
Unpreferred
The green spot on the blue apple
The blue apple with the green spot

Flexible
The green spot on the blue apple

Differentiable word and phrase exchanges

Target response
The green spot on the blue apple

Two familiarization phases
Black-and-white version of each picture presented with noun labels below it.
Ss instructed to focus on/learn labeled parts of pictures.

Test phase
Colored version of each picture appeared
Linking word appeared below — 2000 ms SOA.
Ss described pictures using noun labels, color words, and linking word.

100 original Ss, 14 excluded for too many unusable trials

Results
95% of errors were phrase errors: only phrase errors analyzed
Exchange error rate = Exchanges/Exchanges + Correct Responses + Close Matches

Phrase Errors (81% of errors)

Word Errors (5% of errors)

EXPERIMENT 2

Method
Experiment 1 used long positive (2000 ms) SOA.
Ss viewed picture for relatively long period of time before speaking.
Time to thoroughly plan N + Adj together may have decreased likelihood of word errors.

Visualize picture during initiation of response did not explain lack of word errors.

Phrase exchanges showed integration effects: Errors increased with greater integration.
Integration—a conceptual variable—appears to penetrate sentence production processes at least as far as the functional level.

REFERENCE


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EXPERIMENT 3

In Experiment 1, pictures remained on screen while Ss initiated responses.
Ss could refer to picture as they began to speak.
Constant cue as to which Adj modified which N may have decreased likelihood of word errors.

Method
Picture disappeared upon appearance of linking word
- 2000 ms SOA
- Picture appeared before linking word: linking word was cue to speak
- Linking word remained on screen: picture disappeared
- Removed indicator of which Adj modified which N

71 original Ss, 19 excluded

RESULTS

Phrase Errors (78% of errors)

Word Errors (7% of errors)

DISCUSSION

Phrase exchanges showed integration effects: Errors increased with greater integration.
Integration—a conceptual variable—appears to penetrate sentence production processes at least as far as the functional level.

Integration effects were present with greater and lesser opportunity to plan N + Adj together.
Positional level effects are unclear:
- Current paradigm did not generate enough word errors for analysis
- Two potential reasons for lack of word errors ruled out
- Future experiments will explore alternative paradigm changes

REFERENCES


