

Variability and consistency in L2 morphology: An EEG production study

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Background and Research questions

L2 speakers tend to produce grammatical morphology less consistently than L1 speakers. Is this due to 'processing difficulties' and to 'lower processing resources' (Hopp 2013, White 2003, among others)?

→ This study investigates both internal processes involved in encoding morphologically complex words (through ERPs) and the corresponding overt output.

The phenomenon: Plurals-inside-Compounds in English

Regular plurals are unacceptable as compound non-heads

**boys eater* vs. *boy eater*

Irregular plurals are marginally acceptable

? *men eater* vs. *man eater*

Semantic Constraint

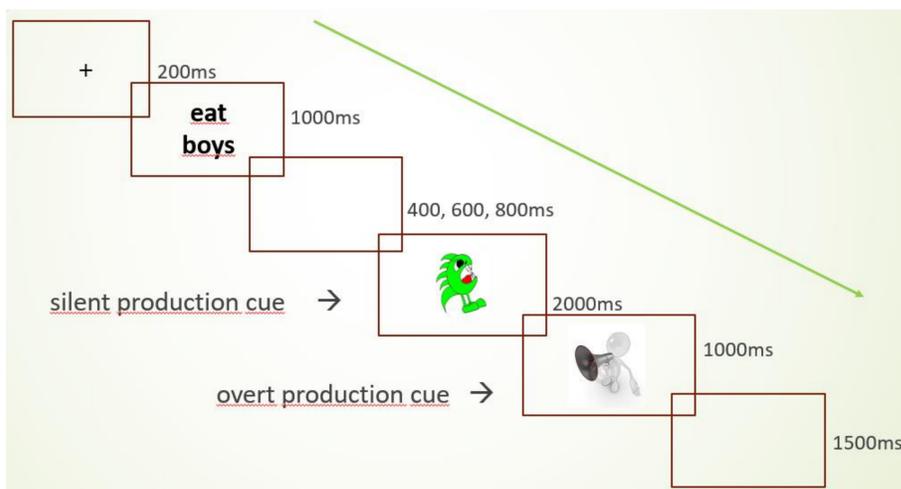
Compound-internal modifiers should not encode plural number semantics (Haskell, MacDonald & Seidenberg 2003).

Morphological constraint:

Regular plurals ([N+-s]) may not feed lexical compounding (Kiparsky 1982).

Procedure & materials

- Nouns that take regular -s plurals
- Nouns that take irregular plurals
- presented in either plural or singular form, together with transitive verbs, e.g. *eat boys* (=40 items per condition)
- Task: first silently and then overtly produce an acceptable English compound, e.g. „*boy eater*“



Participants

- 31 advanced L2 speakers of English (L1 German)
- 20 adult L1 English speakers (mean age: 23;6)
- 53 child L1 English speakers (age range: 8 – 12 years)

ERP results: silent production

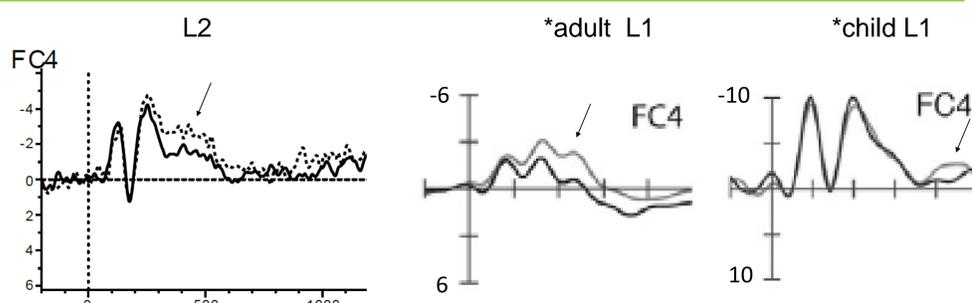


Figure 1: Grand average ERPs time-locked to the onset of the silent production cue for the regular plural (dotted line/grey line) and the irregular plural (solid line) conditions.
* from Budd et al. (2015), p. 54f.

- Results are parallel for the two adult groups:
A significant RF negativity for the regular plural condition 300-450ms post-onset
- Children also showed this negativity, but more globally distributed and delayed (800-900ms)

Spoken output

Condition	L2	*adult L1	*child L1
Regular s-plurals (PI_R)	31.4	12.5	5.1
Irregular plurals (PI_I)	68.7	91.1	83.6
Bare (singular) nouns (Sg)	98.8	98.8	97.2

Table 1: Mean percentages of regular plural, irregular plural, and singular forms maintained as compound-internal non-heads, *from Budd et al. (2015).

- Child L1 vs. adult L1: no between-group interactions:
→ both groups maintain regular plurals significantly less often than irregular ones inside compounds.
- L2 vs. L1: significant Condition x Group interaction for (reg vs. irreg) plural non-head, but not for plural vs. sing. non-head:
→ L2 maintain reg plurals less than irreg ones inside compounds (like L1 group).
→ L2 maintain reg plurals more often and irreg plurals less often than L1 group.

Harmonic Grammar (Goldrick et al. 2016; Veríssimo, 2016)

L1 group	*MORPHSTEM	*SEM SING	*PHONFINAL SIB	*PARSE		
Input	-4.25	-1	-0.25	-3.5	H	Prob.
PI-R: eat boys						
boys eater	-4.25	-1	-0.25		-5.5	0.12
boy eater				-3.5	-3.5	0.88
PI-I: eat men						
men eater		-1			-1	0.92
man eater				-3.5	-3.5	0.08

- MorphStem**: non-head should be a stem.
- SemSing**: non-head should be semantically singular.
- PhonFinalSib**: non-head should not end in /s/ or /z/
- Parse**: every element of input should be overtly expressed

L2 group	*MORPHSTEM	*SEM SING	*PHONFINAL SIB	*PARSE		
Input	-1.25	-1	-0.25	-1.75	H	Prob.
PI-R: eat boys						
boys eater	-1.25	-1	-0.25		-2.5	0.32
boy eater				-1.75	-1.75	0.68
PI-I: eat men						
men eater		-1			-1	0.68
man eater				-1.75	-1.75	0.32

→ L2 speakers give less weight to the constraints *MorphStem* and *Parse* than L1 speakers

Summary

- Similar brain responses for the two **adult** groups, broader and later for **children**.
- Similar spoken output for the two **L1** groups, more variable for **L2** speakers.

Conclusions

L2 speakers rely less on structural (in our case: morphological) constraints during language production than L1 speakers (Clahsen & Felser, 2006).

L2 speakers' more variable spoken output is not due to processing difficulties or processing resource limitations (contra e.g., Hopp, 2013; White, 2003).

References

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