1. Introduction

Agreement attraction in comprehension: the number mismatch at the verb elicits reduced processing difficulty when an interfering noun, the so-called attractor (test tubes), bears the same number marking as the ungrammatical verb [1,2,3].

*The chemist with the test tubes are conducting an experiment.*

Most agreement attraction research has focused on non-obligatory PP-modifier attractors. Obligatory Direct Object (DO) attractors have mainly been investigated in production studies [4].

Research question: Can DOs elicit agreement attraction in comprehension?

2. Design

2 × 2 fully-crossed factorial design
• Factor 1: Number of attractor NP (sg vs pl)
• Factor 2: Grammaticality of verb (gram vs ungram)

Bayesian LMM with predictors: attraction (-0.5 vs 0.5), grammaticality (-0.5 vs 0.5), their interaction

• 26 participants
• 120 experimental items (German SOV structures) + 140 filler items
• Items presented in RSVP mode (SOA = 450ms)
• ERP recordings with acceptability judgments

3. Materials

Item structure: matrix clause + subordinate clause I (SOV) + subordinate clause II (...)

ERPs were recorded at the verb (underlined) of subordinate clause I.

Grammarical sentences (singular DO/ plural DO)

Pia erzählt, [CP dass der MannNOM.SG die FrauAACC.SG gestern heimlich beobachtetesg], ... [CP dass der MannNOM.SG die FrauenAACC.PL gestern heimlich beobachtetenpl], ...

Pia says [CP that the manSG the womanSO/ the womenDO yesterday secretly watchedSG], ...

Ungrammatical sentences (singular DO/ plural DO)

Pia erzählt, [CP dass der MannNOM.SG die FrauAACC.SG gestern heimlich *beobachtetenpl], ... [CP dass der MannNOM.SG die FrauenAACC.PL gestern heimlich *beobachtetensg], ...

Pia says [CP that the manSG the womanSO/ the womenDO yesterday secretly *watchedPl], ...

‘Pia says that the man secretly watchedSG/PL the woman/women...’

References


4. Results & Conclusion

Analysis: mean amplitude at Pz from 600-1000ms

1. Reliable effect of grammaticality (Est. = 3.03µV, 95% CrI = [1.64, 4.43])

• Increased positivity for ungrammatical sentences (Ungram, DO singular; Ungram, DO plural) → P600 effect

2. Reliable interaction of grammaticality and attractor number (Est. = -2.07µV, 95% CrI = [-3.59, -0.55])

• Decreased positivity for ungrammatical sentences with plural attractors (Ungram, DO plural) → agreement attraction

No comparable effect for grammatical sentences

Behavioral Results

1. Reliable effect of grammaticality (Est. = -0.97 log odds, 95% CrI = [-1.64, -0.28] log odds)

• Decreased judgment accuracy for ungrammatical conditions (Ungram, DO singular; Ungram, DO plural)

2. Reliable effect of attractor number (Est. = -0.75 log odds, 95% CrI = [-1.03, -0.46] log odds)

• Decreased judgment accuracy for plural attractor conditions (Gram, DO plural; Ungram, DO plural) → agreement attraction

Conclusion

1. Evidence for attraction in DO configurations

• Reduced P600 if attractor number matches with the ungrammatical verb → asymmetrical attraction.

• Attraction can be elicited by obligatory constituents.

• Results are consistent with [2].

2. Evidence for long lasting effect of agreement attraction

• Plural attractor reduced accuracy in both grammatical and ungrammatical sentences → symmetrical attraction.

3. First ERP evidence for agreement attraction in German