Executive function for agreement processing
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Background

Errors occur in subject-verb number agreement
- Production: Increased rate of (erroneous) plural verbs given plural local nouns (Attraction Error)¹
  - The sentence on the posters... ['are" production frequency increases]
- Comprehension: Reduced reading time on ungrammatical plural verbs given plural local nouns ('Illusion of Grammaticality')²
  - The sentence on the poster(s) are... ['are is read faster after posters]

Role of local noun irregularity in number agreement
- Production: Irregular plural local nouns impact attraction minimally³-⁴
- Comprehension: Unknown

Role of memory mechanisms in number agreement processing
- Cue-based memory retrieval⁶

Q1: How do irregular nouns & misleading orthography affect agreement comprehension?
Q2: Is there a direct role of executive function in agreement comprehension?

Self-Paced Reading
- At the local noun (and spillover), reading time slowdown on plural items for irregular nouns
  - Highest effect for reversed orthography condition (cactus/cacti)
- At the main verb (and spillover), attraction observed for both regular and irregulars (reading time slowdown on singular nouns with ungrammatical verbs)
  - Smallest effect for frequent, depleted orthography items (man/men)

Executive Function and Local Noun Boggle
- Individual differences in cognitive control (as measured by Stroop) predict reading time slowdown on plural local nouns:
  More Control → Larger Boggle

Executive Function and Agreement Attraction
- Attraction predicted by working memory (as measured by Reading Span):
  High WM → Larger Attraction Effects
- Attraction predicted by selection demands (as measured by Verb Generation):
  Larger Selection Demands → Larger Attraction Effects

Concluding Remarks
- Irregular nouns cause processing difficulty, but do not consistently impact agreement attraction.
  - Production and comprehension behave similarly
- Role for working memory and lexical selection in attraction
  - Supports cue-based retrieval model

Methods

Tasks:
1. Stroop (Cognitive Control)⁶
2. Reading Span (Working Memory Maintenance)⁷
3. Verb Generation (Retrieval & Selection Demands)⁸
4. Self-Paced Reading of Relative Clauses (Agreement Attraction)

Sentence Stimuli:
- Local Noun Type (Depleted, Excessive, Reversed)
- Local Noun Number (Singular, Plural)
- Local Noun Regularity (Irregular, Regular)—frequency-matched controls
- Main Verb Number (Singular, Grammatical, Plural, Ungrammatical)

Depleted Orthography: man (-s/-s)
Irregular: The physician who cured the man/men occasionally was/were incorrect...
Regular: The physician who cured the boy/boys occasionally was/were incorrect...

Excessive Orthography: dress/dresses (+s/+s)
Irregular: The celebrity who promoted the dress/dresses seldom was/were seen...
Regular: The celebrity who promoted the skirt/skirts seldom was/were seen...

Reversed Orthography: cactus/cacti (+s/-s)
Irregular: The landscaper who planted the cactus/cacti already was/were excited...
Regular: The landscaper who planted the yucca/yuccas already was/were excited...

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