Silent articulation affects error patterns in inner speech
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b
(45x376) errors (58x1500) errors
Onset 
Three perspectives:
1. Abstract linguistic representations. Awareness of inner speech, and therefore inner speech errors, occurs at the phonological level. (Oppenheim & Dell, 2008; Brocklehurst & Corley, 2009).
2. Embodied sensory-motor imagery. Inner speech is like overt speech, minus the sound or motor movement. (e.g., Dell, 1978; Portnoy & Newmark, 1986).
3. Flexible abstraction. Inner speech varies in the extent to which sensory-motor representations are used.

Compared to overt speech (from Oppenheim & Dell, 2008)
Lexical bias suggests intact phoneme processing
Lack of phonemic similarity effect suggests phonemes are abstract

Where is the crucial difference between inner and overt speech?
New experiment
Mouthed speech X -

Three predictions:
Abstract linguistic representations
Embodied sensory-motor imagery
Flexible abstraction

Stronger phonemic similarity effect in mouthed inner speech

Methods
“lean reed reef leech”

Results

Discussion
The big picture
Combined data from the current study and Oppenheim & Dell (2008)

• Silent articulation, without auditory monitoring, is sufficient to create a phonemic similarity effect in speech errors
• Inner speech tends to be specified to at least the phoneme level, but not necessarily to the level of articulatory representations
  • This finding replicates Oppenheim & Dell (2008)
  • Argues against a strong embodiment account of inner speech, where cognition is necessarily based in sensory-motor processes
• Additional motor planning or execution, can create a form of inner speech that incorporates articulatory information
  • Argues against a strong abstraction account of inner speech
• Speakers can flexibly adjust the abstractness of their imagery
  • This claim explains variable results in the field (e.g., Brocklehurst & Corley, 2009; Dell, 1978)

Lexical bias in both mouthing conditions
(No significant interactions)

Similar overall error distributions
2462 total self-reported errors
1285 mouthed
1177 unmouthed

Minimal error-repair biases because competing errors show a distribution similar to target errors

References