

Repetition reduction across multiple mentions in ASL signs

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Overview

Goal:

- Determine what strategies are used by signers to reduce core signs in American Sign Language (ASL) within the context of repetition

Motivation:

- Fit ASL reduction processes within theories of language production
- Add depth to our understanding of how modality shapes articulation

ROADMAP

Theoretical and empirical backdrop

Data and Methodology

Results

Discussion

Background: Repetition reduction

Repetition reduction: Repeated forms exhibit reduction



GIF from: <https://www.lifeprint.com/asl101/pages-signs/m/movie.html>

Background: Repetition reduction

Repetition reduction: The *givenness* of a word influences its articulation such that words already that are given, and thus more predictable, within the discourse are reduced

➤ Largely treated as a binary, *given vs. new* distinction¹

Explanation: Language users can articulate repeated forms more efficiently because their existing support within the discourse context aids comprehension²

1. Fowler & Housum 1978, Bell et al. 2009 2. Fowler & Housum 1978, Lindblom 1990, Aylett & Turk 2004

Background: Repetition in context

Explanation: Language users can articulate repeated forms more *efficiently* because of their existing support within the discourse context aids *comprehension*¹

*Although there are many dimensions along which signs can reduce, here I focus on **duration** and **repeated movements**.*



These can be modulated by *modality*

1. Fowler & Housum 1978, Lindblom 1990, Aylett & Turk 2004

Background: Duration reduction

Duration reduction: Duration provides a gradient measure of reduction that encompasses multiple processes including deletion and coarticulation

Spoken words:

- Reduction occurs between 1st and subsequent mentions, but doesn't continue following second mentions¹
- Increased distance between repetitions associated with less reduction²

ASL signs:

- Reduction likely *at least* occurs between 1st and subsequent mentions³

Background: Duration reduction



AUSTRALIA - Mention 1: 634ms



AUSTRALIA - Mention 2: 367ms

Example from: <https://www.youtube.com/watch?v=T7-Gw3-7drk>

Background: Repeated movements

Internal segment reduction: Provides a categorical measure of reduction and encompasses the total deletion of a segment.

Spoken languages:

- Segment deletion more likely in higher predictability contexts¹

ASL Signs:

- Maybe occurs?

1. Coetzee & Kawahara 2013, Turnbull 2015

Background: Internal movements



MONEY - Mention 1: 600ms



MONEY - Mention 2: 216ms

Example from: <https://www.youtube.com/watch?v=fFoU8bCoGI0>

Background: Why does this matter?

Reduction processes could change the type and quality of information available in the linguistic signal

- Could impact how people perceive and understand these signs

Duration:

- Decreased duration means less substance available to decode the linguistic signal

Repeated movements:

- Provide redundancy in the signal
- Can also provide lexical or morphological information, for example sometimes distinguishing between noun-verb pairs¹

1. Supalla & Newport 1978

Methods: Corpora

Two study corpora, encompassing a set of narrative retellings, elicited in a lab environment, and a naturalistic corpus drawn from online sources:

Tweety Corpus:

- Corpus of retellings of the Canary Row Corpus by 14 signers of ASL
- Includes 889 tokens of 75 different signs

Online Corpus:

- Corpus of online videos, encompassing vlogs, educational and news stories, comprising videos from 30 signers of ASL
- 1013 individual tokens of 188 signs



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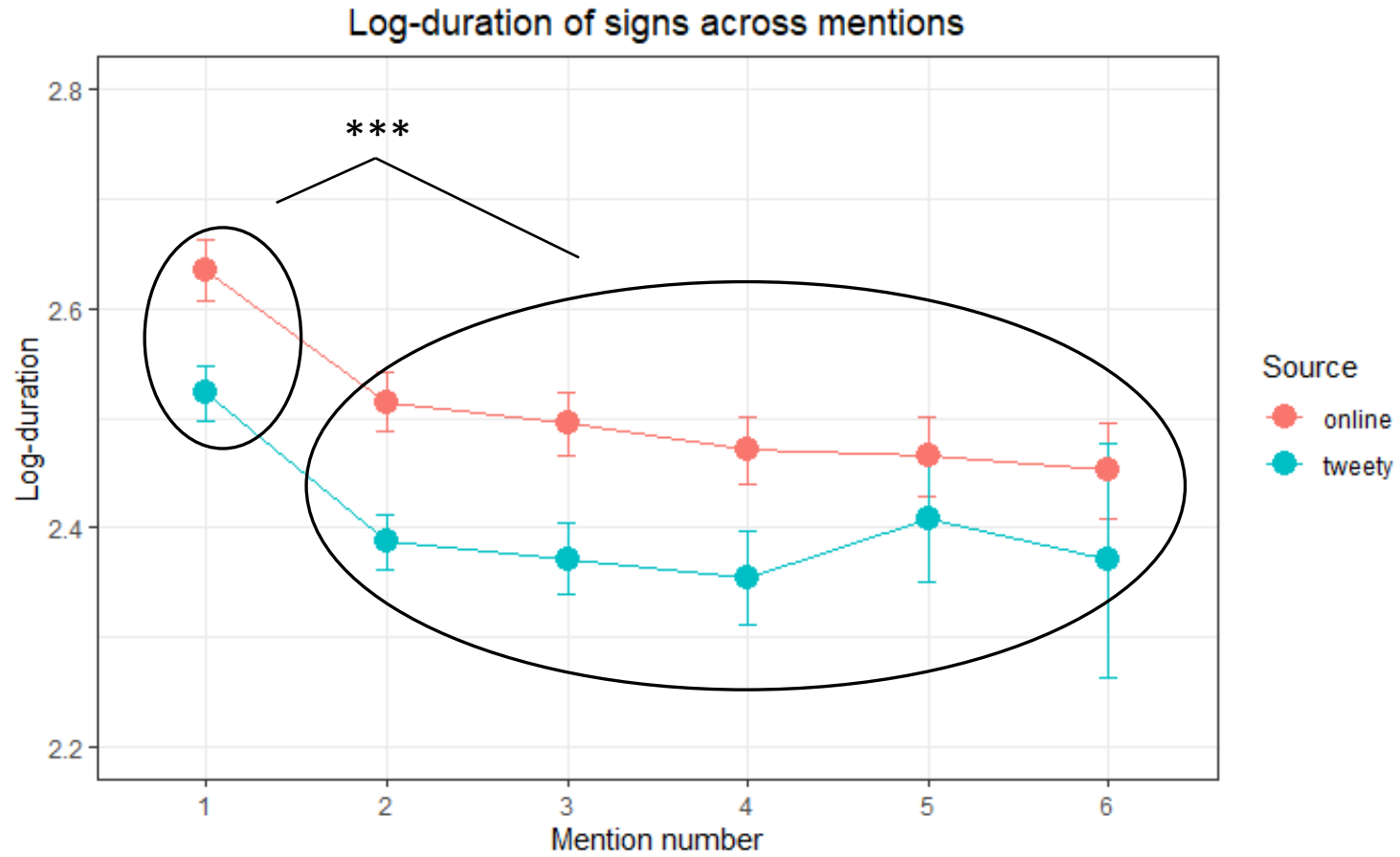
Online Corpus:

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Images from <https://www.youtube.com/watch?v=uhVofTNP-kU> and <https://www.youtube.com/watch?v=1nupnlwjgk0&t>

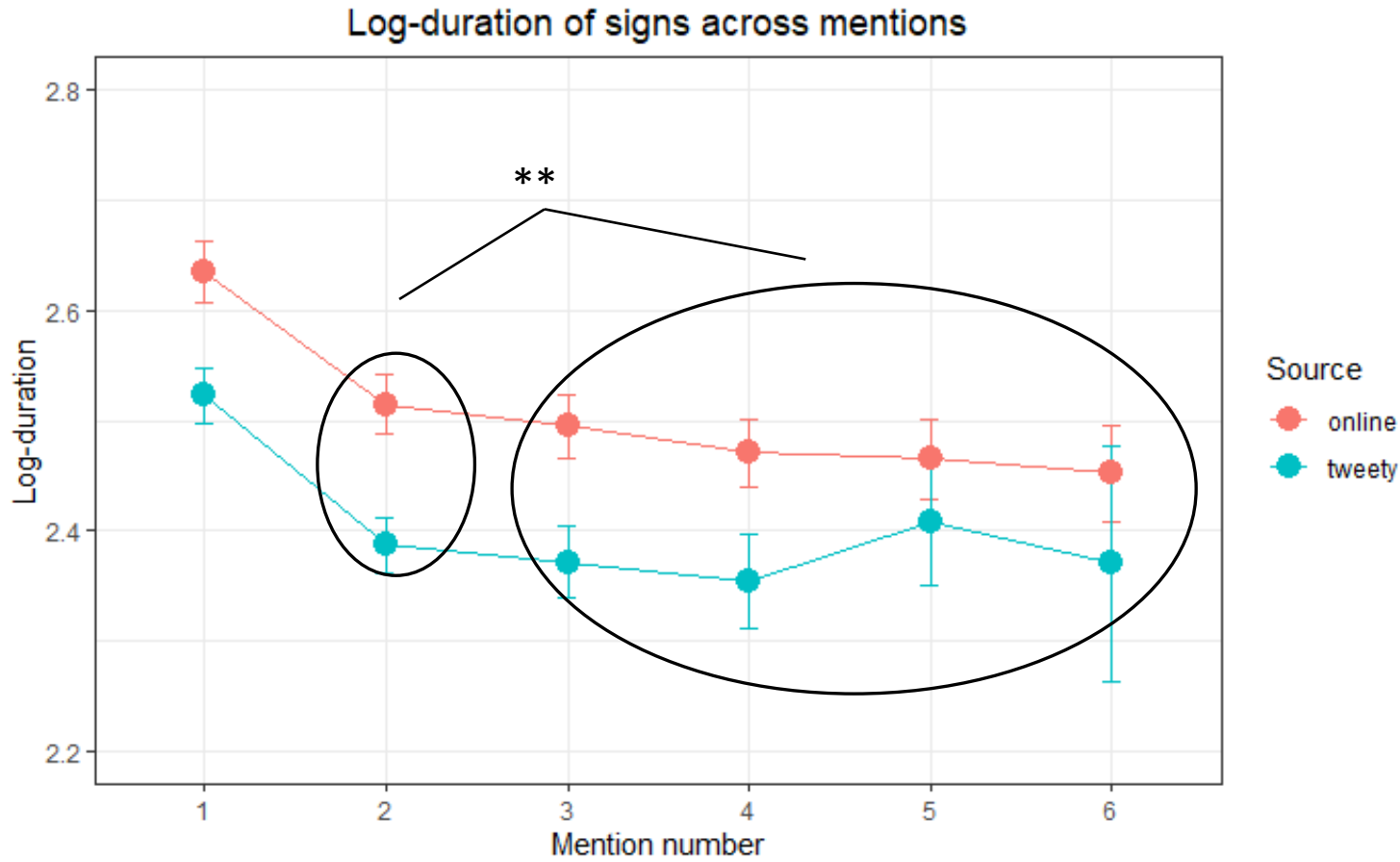
Results: Duration



Analysis showed:

- Significant reduction between 1st and subsequent mentions

Results: Duration



Analysis showed:

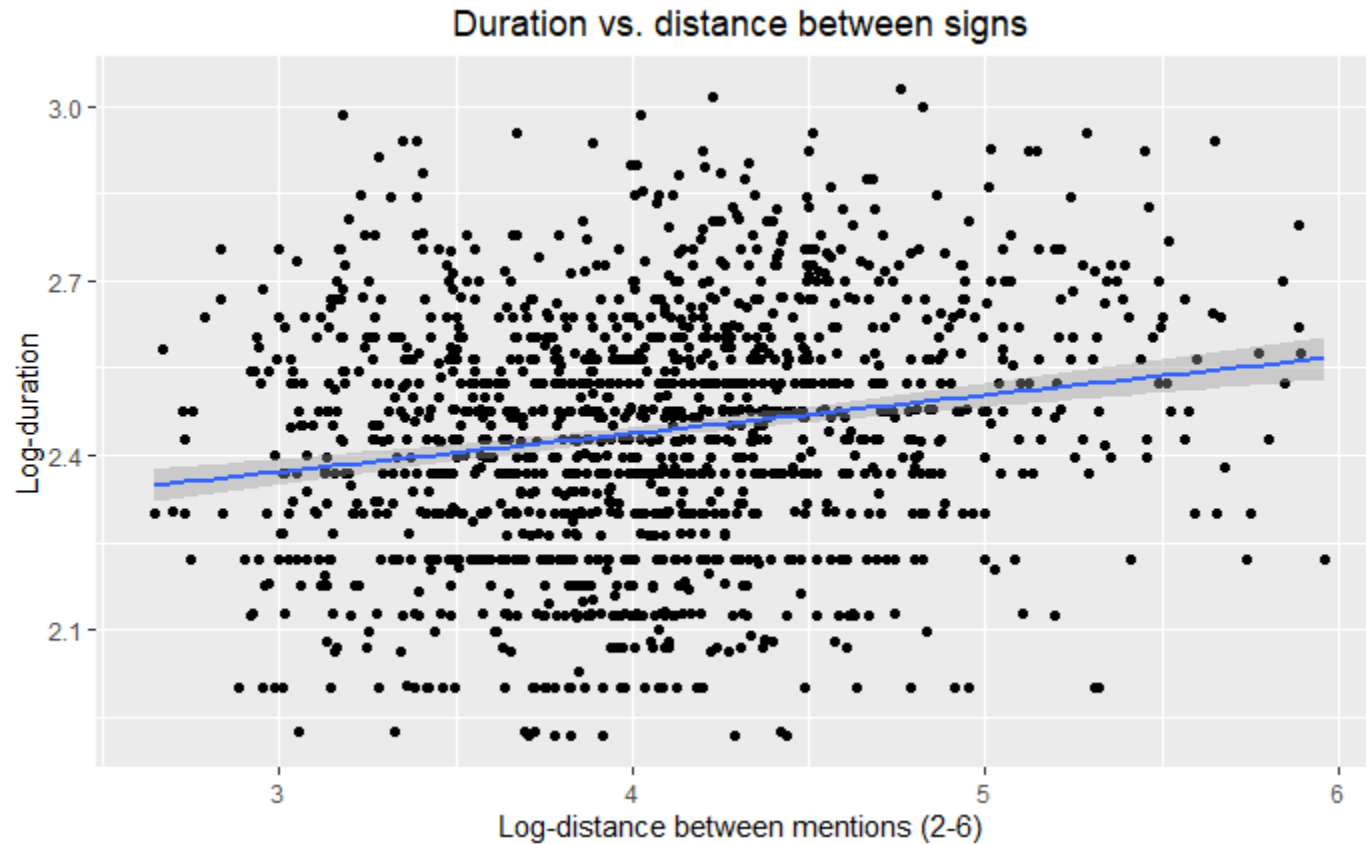
- Significant reduction between 1st and subsequent mentions

AND

between 2nd and subsequent mentions

- Reduction following 3rd mentions was not significant
- Online dataset signs significantly longer

Results: Duration and distance between mentions

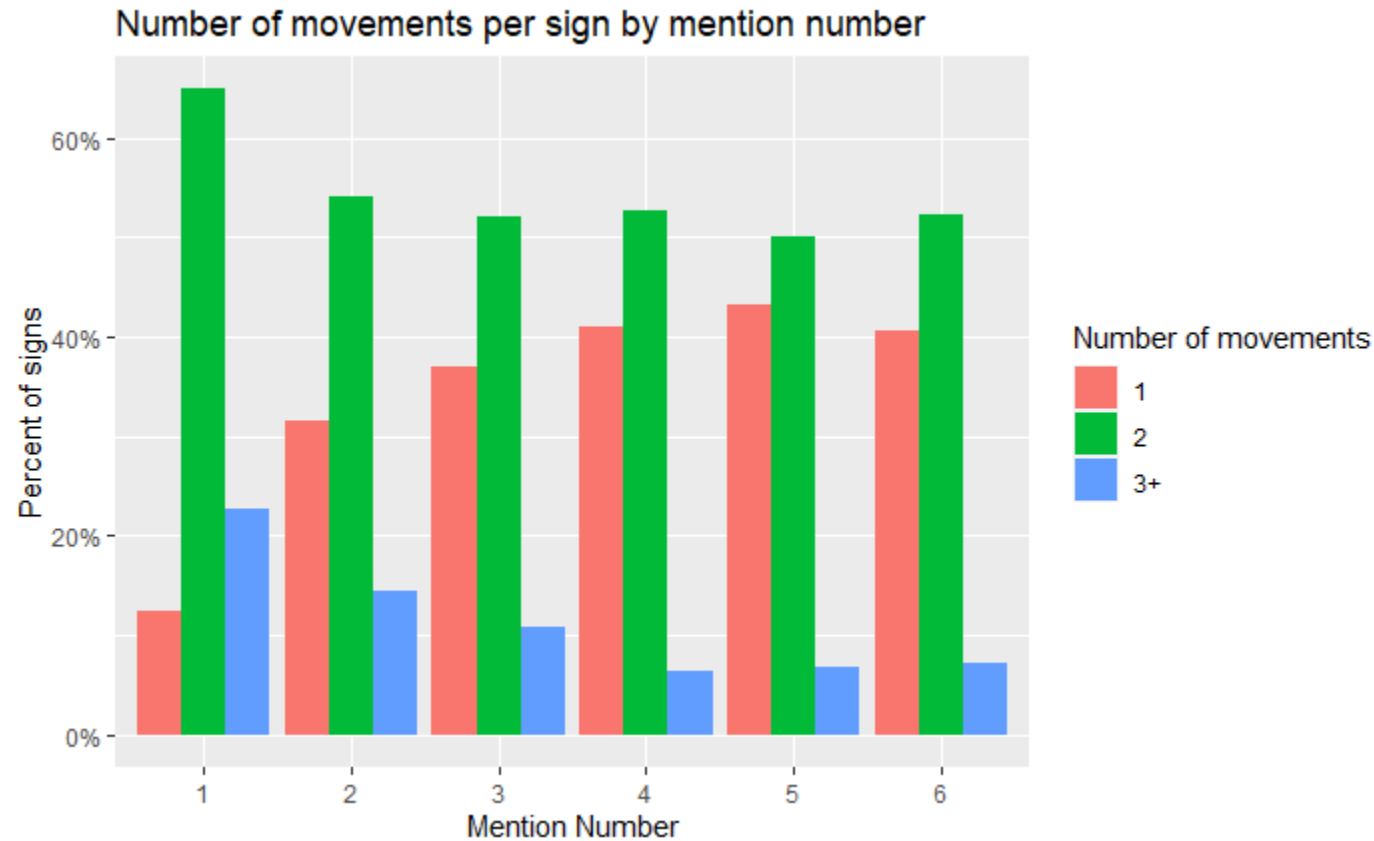


Analysis showed:

- Significant relationship between distance between mentions and duration

Farther apart = less reduction

Results: Movement repetitions across mentions

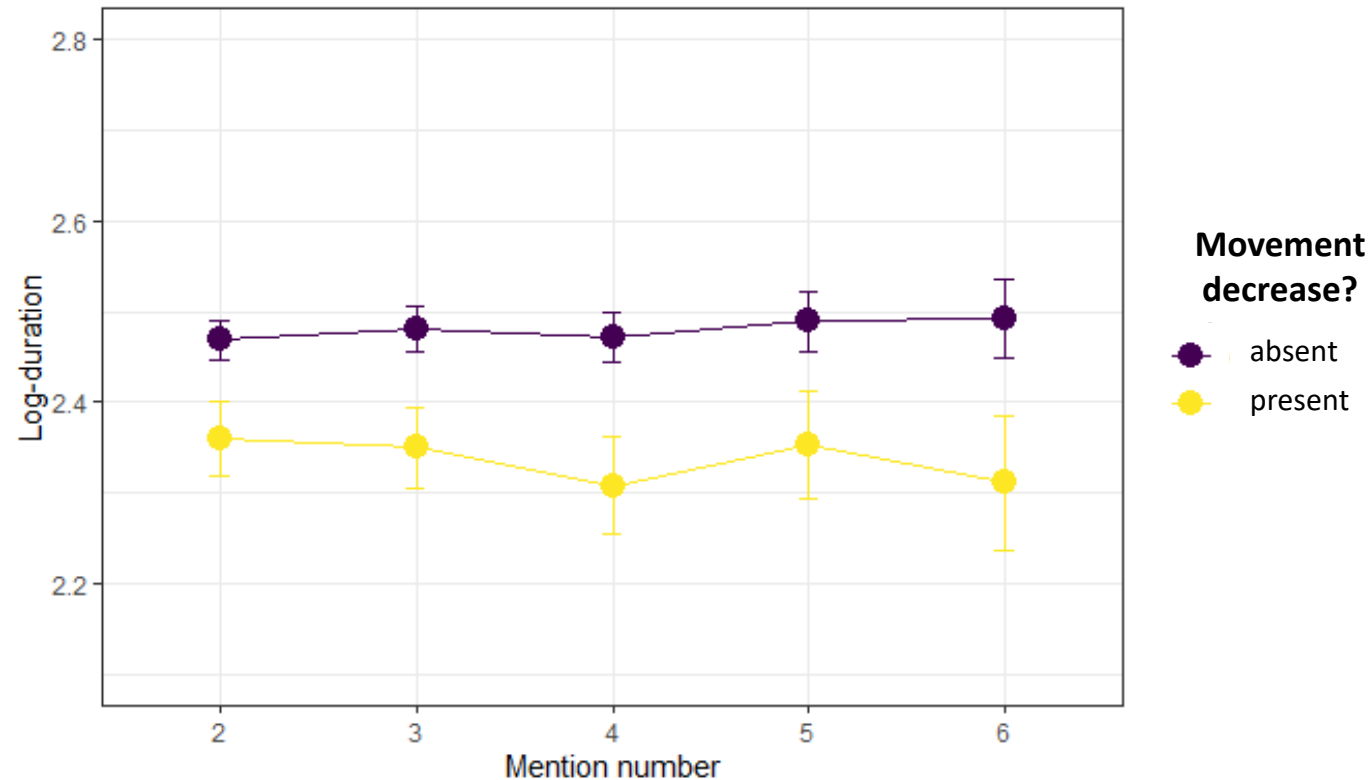


Analysis of signs with repeated movements showed:

- Significant difference between mentions in number of movements
- Later mentions exhibited fewer movements

Results: Duration and movement repetitions

Sign duration across mentions, by presence of movement decrease



Analysis, showed:

- Signs that lost an internal movement in comparison to their first mentions were significantly shorter

Discussion: Results overview

Duration – shaped by:

Mention number:

- Duration reduces significantly between 1 vs 2+ AND 2 vs 3+ mentions

Distance between mentions:

- More distance = less reduction

Loss of movement repetitions:

- Resulted in shorter signs!

Movement repetitions - shaped by:

Mention number:

- Increased likelihood of loss of repeated movements at later mentions

Discussion: Implications

Duration reduction:

Although duration reduces across multiple mentions, *only significant* for early mention numbers

- Might indicate a potential limit on the degree to which signs reduce

Less duration = less material to aid comprehension of the signal

Repeated movement reduction:

Removes a degree of redundancy and, possibly, morphological information from the linguistic signal

- This can potentially impact comprehension → people might have to rely more on context

Conclusion

By focusing on how core signs reduce in the context of repetitions we gain a more detailed picture of how increased predictability shapes the production of ASL.

This shows patterns in both gradient and categorical reduction processes, which have the potential to shape the perception of these forms.

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