The effect of gesture on fluency

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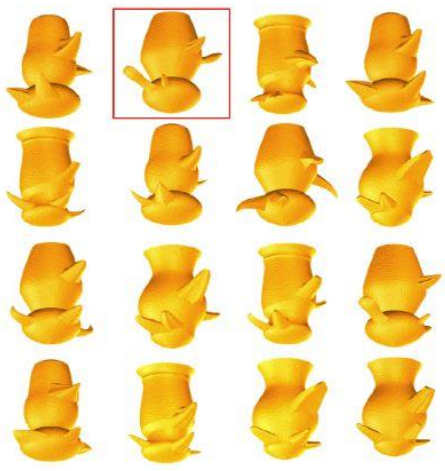
Background

There is a close relationship between speech and gesture (e.g. McNeill, 1992). It has been suggested that gesture may help in aspects of speech production (e.g. Kita, 2000; Krauss, Chen & Gottesman, 2000). Does this mean that gesture also helps people speak more fluently? Previous research showed that gestures tend to occur during fluent speech (Graziano & Gullberg, 2013; Seyfeddinipur, 2006). What about people who naturally do *not* gesture? Is their speech somehow less fluent than speech of people who *do* gesture?

Method

We used a previously collected dataset containing descriptions of complex objects



Example description
'Eh, here at the bottom again a ball and [it runs out below like this].'
[makes diamond shaped movement with hands]

From this dataset we selected descriptions without any iconic gestures (No Gesture group, N=19), which were matched to descriptions with many (>5) iconic gestures (Gesture group, N=19)

These were analysed for the following fluency measures:

1. Speech rate (words/second)
2. Utterance length (words/utterance)
3. Filled pauses ('uh', 'uhm', per 100 words)
4. Self corrections (per 100 words)
5. Hedges (mitigating words, per 100 words)
6. Total disfluencies (i.e. 3&4&5)

Discussion

The mean scores showed consistent differences between the groups, with speakers who gestured speaking more and faster while producing fewer disfluencies than people who did not gesture. However, not all differences in scores were statistically significant.

The results showed that speakers who gestured produced **longer** utterances with **fewer disfluencies** than speakers who did not gesture.

The significant difference in total number of disfluencies seems to be caused by the differences in number of **hedges** used.

Possible explanation: gestures can fulfil role of hedges.

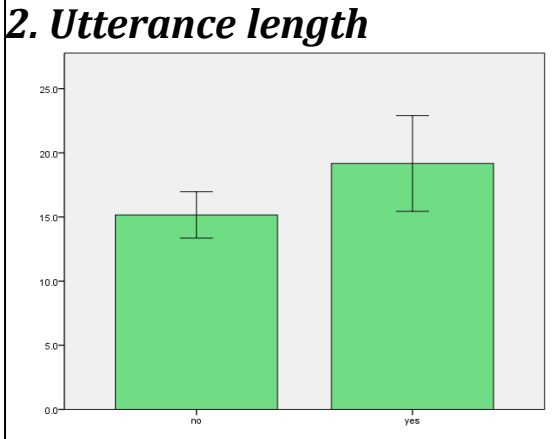
But…
There is no information yet about timing of gestures in relation to speech and in relation to specific disfluencies.
This is a small dataset → larger dataset and more detailed analyses are necessary.

Results

No Gesture (NG/no) vs. Gesture (G/yes)

1. Speech rate
NG: *M*=1,87, *SD*=.44
G: *M*=2,11, *SD*=.41
$t_{(36)}$=1.677, *p*=.102

2. Utterance length

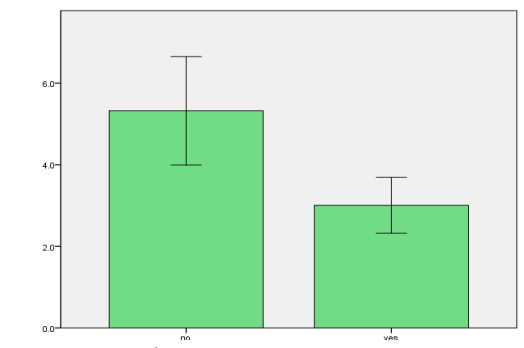


$t_{(36)}$=2.028, *p*=.05

3. Filled pauses
NG: *M*=6,66, *SD*=2,79
G: *M*=5,53, *SD*=3,78
$t_{(36)}$=1.044, *p*=.303

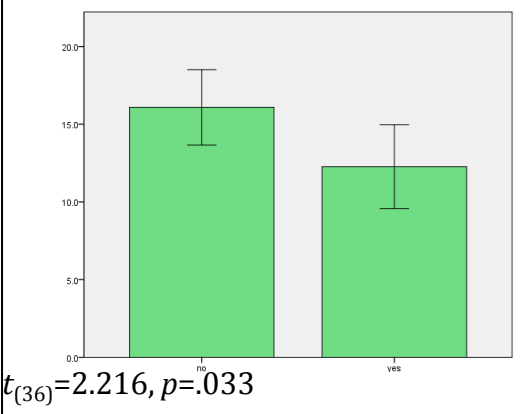
4. Self corrections
NG: *M*=4,10, *SD*=3,34
G: *M*=3,72, *SD*=2,44
$t_{(36)}$=.401, *p*=.691

5. Hedges



$t_{(26,948)}$=3.256, *p*=.003

6. Total number of disfluencies



$t_{(36)}$=2.216, *p*=.033

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References

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