Lying, in a manner of speaking

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Introduction

A **speaker's manner of delivery** often varies with the context of production and may influence a **listener's interpretation** of the utterance. How do **listeners** rely on prosodic information when *judging deception?* Do their expectations align with cues produced by **speakers** when *lying/truth-telling?*

Previous work on deception

For speakers

1. *Pitch variation* due to various emotions associated with deception (the *emotional hypothesis*) [1]
2. Increased *speech disturbances* due to greater mental load (the *cognitive hypothesis*) [2]
3. *Rigid or unnatural-seeming* speech due to increased effort to mask deception (the *attempted control hypothesis*) [3]

- Studies fail to identify a consistent pattern, e.g., [2] and [3]
- Behaviour may be modulated by *additional factors*, e.g., speaker's culture [4], listener's state of mind [5]

For listeners

- *Speech rate* and *speech disturbances* often perceived as cues to deception
- Direction of correlation inconsistent across studies, e.g., [6] and [7]
- Paralinguistic cues such as *disfluencies* often *analysed collectively*

Current study

Investigate the **production** and **perception** of *paralinguistic cues to deception* in the context of an *interactive*, two-person dialogue game.

Motivations

- Different *disfluency types* may arise from *distinct processes* (evidence from non-deception studies)
- Interactive element of task adds *ecological validity* (problems associated with cued lying paradigms or using scripted utterances)

Experiment

Participants

- 24 same-sex, native British English speaking dyads
  - Two roles: **Speaker** (liar) and **Guesser** (lie detector)

Stimuli

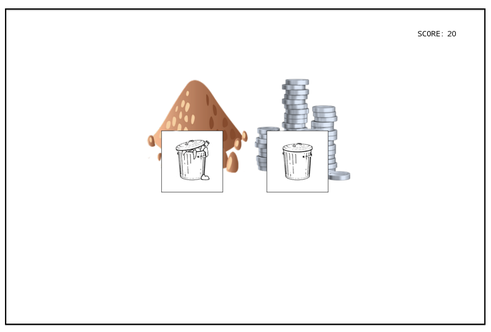
- Visually-related object pairs
- *Motivation manipulation*: Gold coins (20 points) and silver coins (5 points)

Design

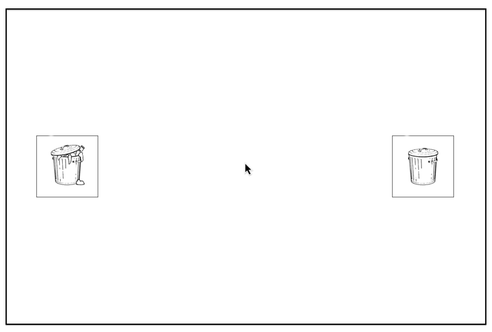
- 48 trials; 8 lists
- Objects counterbalanced for *role* (treasure/non-treasure image), *position* (treasure on left/right) and *motivation to lie* (gold/silver coins)

An example trial:

Speaker's perspective



Guesser's perspective



Task

- **Speakers** *specified an object* as the one concealing the treasure (free to lie or tell the truth)
- **Guessers** clicked on object with the aim to *find the treasure*
- Players awarded points for treasure retained (Speakers) or found (Guessers)
  - Winner recieved £1 cash reward

Cues analysed

Cue	Example	Raw count
Filled pause	behind *um* the banana that's not peeled	288
Silent pause	behind the camel with *(.32)* two humps (minimum .25 s)	588
False start	the money is *th-* behind the one with the big tail fin	109
Repetition	behind the- *the* cut cake	55
Prolongation	behind *thee* leaf that looks like the ace of spades	334
Substitution	behind the necklace which has beads *coming-* falling off it	36
Insertion	behind the open- *more* open book	12
Other speech error	behind the squashed *turtoise-* tor- tortoise	18
Silent pause dur	*total* silent pause duration across utterance	-
Onset latency	time taken for speaker to *initiate utterance*	-
Speech rate	syllables per second	-

Analysis: Linear and logit mixed models with maximal converging by-subject random intercepts and slopes & by-item random intercepts

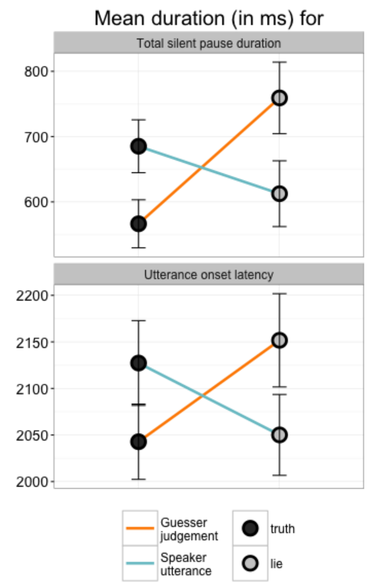
Results

Across 1,149 utterances

- **53.9%** truthful; **55.8%** judged to be truthful
- In line with *truth bias* observed by lie production/perception studies

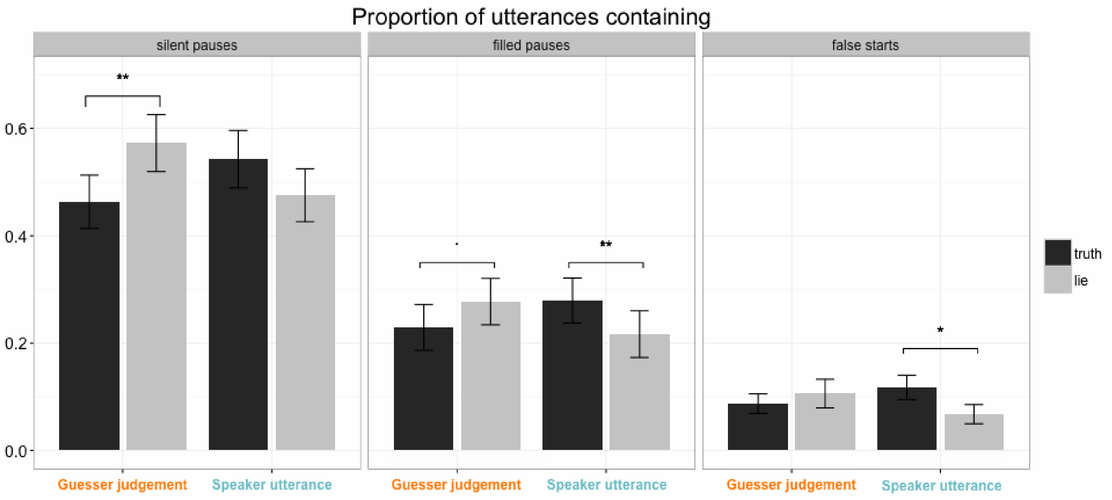
For Guessers

- Utterances *characterised by disfluency* were more likely to be *judged as deceptive*
  - (a) Silent pauses, $p < .01$
  - (b) Filled pauses, $p = .07$
  - (c) Silent pause duration, $p < .05$
  - (d) Onset latency, $p = .08$



For Speakers

- Utterances were more likely to *contain disfluencies* when speaker *told the truth*
  - (a) Filled pauses, $p < .01$
  - (b) False starts, $p < .05$
- No effect of motivation on any cues



Conclusions

1. There appears to be a *disconnect* between **Guessers' expectations** and **Speakers' production** of paralinguistic cues to deception
2. Pattern aligns with the *attempted control approach* to deception — **S**s took into account **G**'s stereotypes of deceit and *manipulated their manner* to project an *image of perceived veracity*
3. Differences in mapping of individual cues between **G**s and **S**s may be due to
   (a) Different disfluencies arising from *separate causes* (cf. Ekman & Friesen's 'leaky channels')
   (b) Too few occurrences of some disfluencies for a difference to be observed
4. **G**'s persistent (misguided) interpretation of cues reflects the *ingrained nature* of stereotypes of deceit

References

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