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Lying about where the treasure lies

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Introduction

Research on deception shows that: (a) **speakers** produce *verbal and nonverbal cues* that signal deceit when lying, and (b) **listeners** attend to certain cues when attempting to recognise deceit.

Are the cues that **listeners** rely on in **perceiving deception** the same as those **speakers produce** when **lying**?

Previous work on deception

Behavioural cues to deception

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 behaviour* due to increased effort to mask deception (the *attempted control hypothesis*) [3]
4. Cue behaviour may be *more pronounced* when **speaker's motivation** increases—the *Motivation Impairment Effect* [4]

Limitations

- Inconsistencies across studies often lead to *conflicting results* e.g., [2] and [3]
- **Production studies** tend to employ *cued lying paradigms*
- **Perception studies** tend to rely on *post-hoc judgements*
- Studies frequently overlook the *interactive* component of deception

Current study

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

Motivations for design

- **Speakers** given *free choice* to lie or tell the truth
- **Listeners** judge speakers' utterances in *real time*
- Interactive element of task adds *ecological validity* to findings

Experiment

Should I lie to you?

The treasure is behind the closed bin.

Would she lie to me?

clicks on one of the bins

Participants

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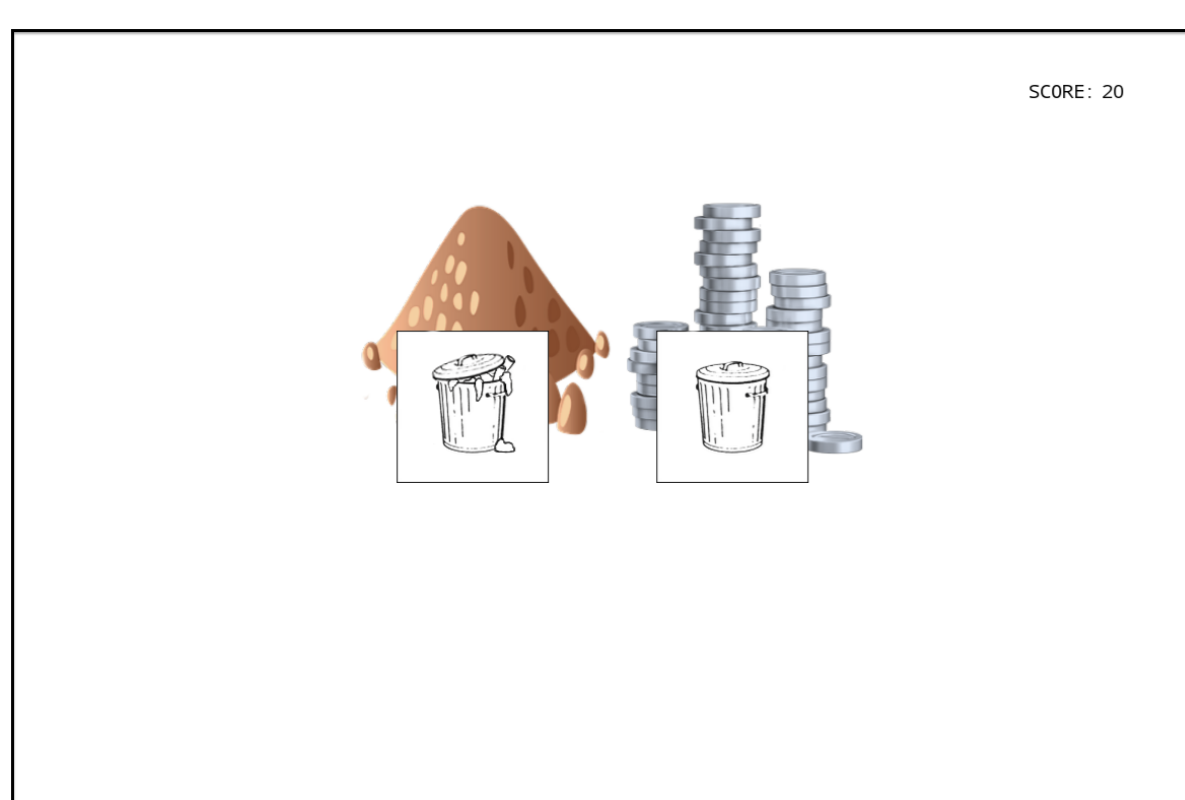 - Two roles: **Speaker** (liar) and **Guesser** (lie detector)

Stimuli

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

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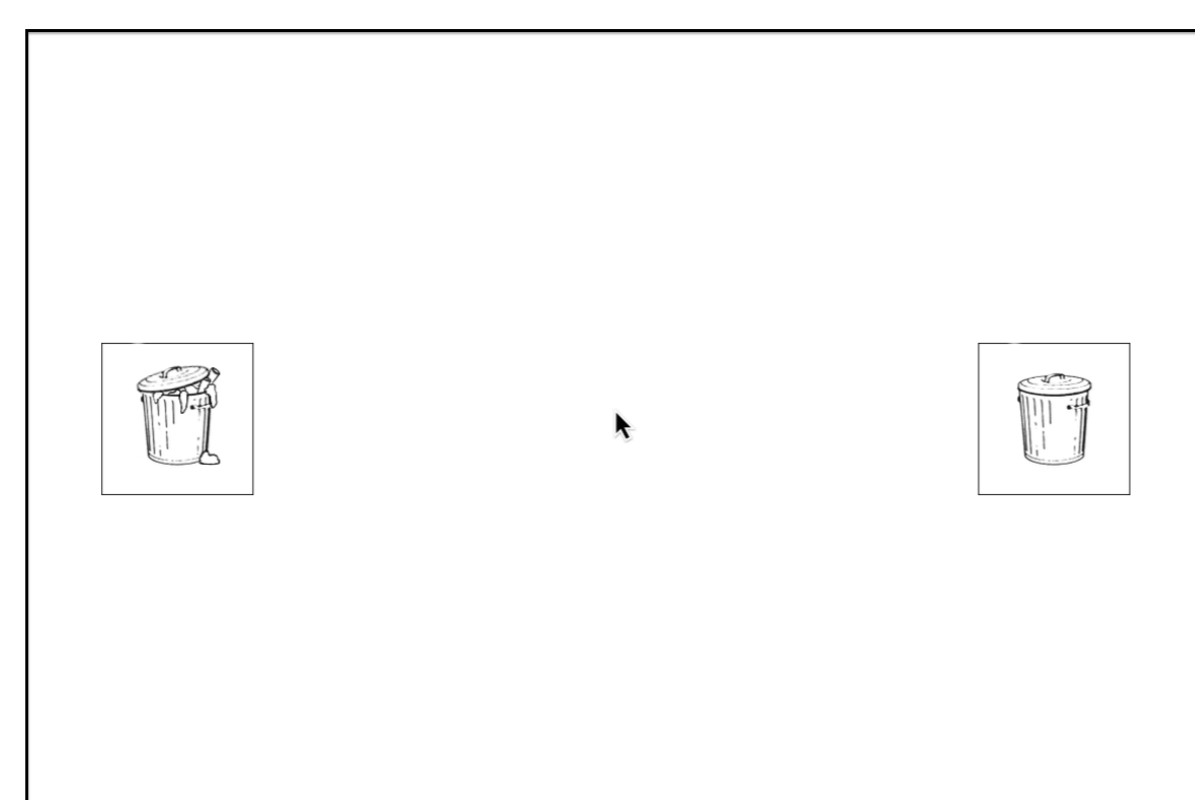
- 48 trials; 8 lists
- Objects counterbalanced for *role* (treasure/non-treasure image), *position* (treasure on left/right) and *motivation to lie* (gold/silver coins)

An example trial:

Speaker's perspective

Guesser's perspective

Task

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

Analysis

Verbal cues	
Filled pauses	behind *um* the peeled banana
Silent pauses	behind the *(.32) taller house*
False start	the money is *th-* behind the one...
Repetitions	behind *the- the* cut cake
Prolongations	behind *thee* broken fence
Substitutions	behind the *shorter- lower roof*
Insertions	behind the open- *more* open book
Other speech errors	behind the squashed *turtoise-* tortoise
Silent pause dur	Total silence across utterance
Onset latency	Time taken to initiate utterance
Speech rate	Syllables per second

Nonverbal cues
Head movements
Hand movements (illustrator)
Hand movements (adaptor/other)
Eyebrow movements
Lip/mouth movements
Smile/laugh
Body/trunk movements
Shoulder movements
Gaze

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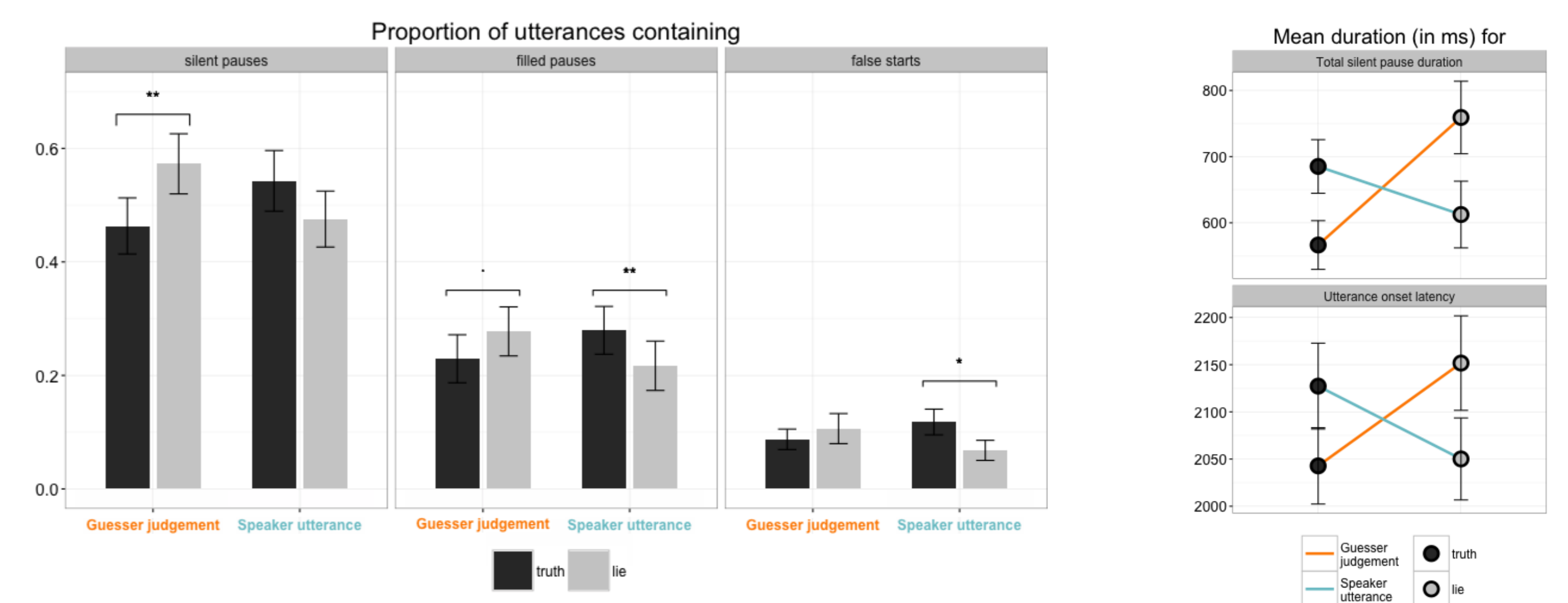
Results: Verbal cues

Guessers

- More likely to perceive utterances characterised by disfluency as lies
  - a) Silent pauses, $p < .01$
  - b) Filled pauses, $p = .07$
  - c) Silent pause duration, $p < .05$
  - d) Onset latency, $p = .08$

Speakers

- More likely to be disfluent when telling the truth
  - a) Filled pauses, $p < .01$
  - b) False starts, $p < .05$
- No effect of motivation on any verbal cues
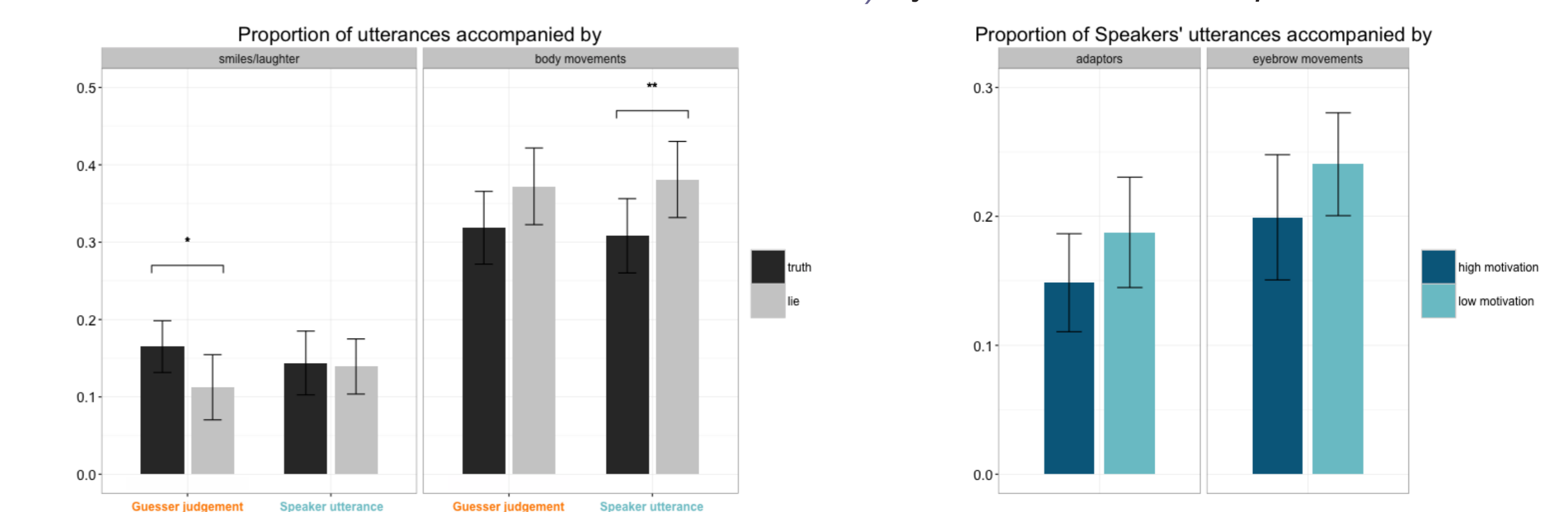

Results: Nonverbal cues

Guessers

- More likely to perceive utterances characterised by smiling/laughter as truthful, $p < .05$

Speakers

- More likely to produce body movements when lying, $p < .01$
- Lower motivation associated with an increase in
  - a) Adaptors, $p < .05$
  - b) Eyebrow movements, $p = .05$

Conclusions

1. There appears to be a *disconnect* between **Guessers' perception** and **Speakers' production** of behavioural cues to deception
2. **G**s behaviour suggests expectations based on the **cognitive hypothesis**; **S**s behaviour supports the **attempted control hypothesis**
3. Verbal behaviours appear *easier to control* than nonverbal (cf. Ekman & Friesen's 'leaky channels')
4. Motivation results do not support the Motivational Impairment Effect
   - May be due to *different operationalisations of motivation* across studies
   - More work would be needed to explore the motivation effect *within speakers*

References

[1] Vrij, A., Edward, K. & Bull R. (2001). Stereotypical verbal and non-verbal responses while deceiving others, *Personality and social psychology bulletin, 27*(7), 899—909.

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[3] Arciuli, J., Mallard, D. & Villar, G. (2010). "Um, I can tell you're lying": Linguistic markers of deception versus truth-telling in speech, *Applied Psycholinguistics, 31*(3), 397—411.

[4] DePaulo, B. M., Kirkendol, S. E., Tang, J. & O'Brien, T. P. (1988). The motivational impairment effect in the communication of deception: Replications and extensions, *Journal of nonverbal behaviour, 12*(3), 177–202.