IVIP

Time to reflect on voice parades

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Voice identification

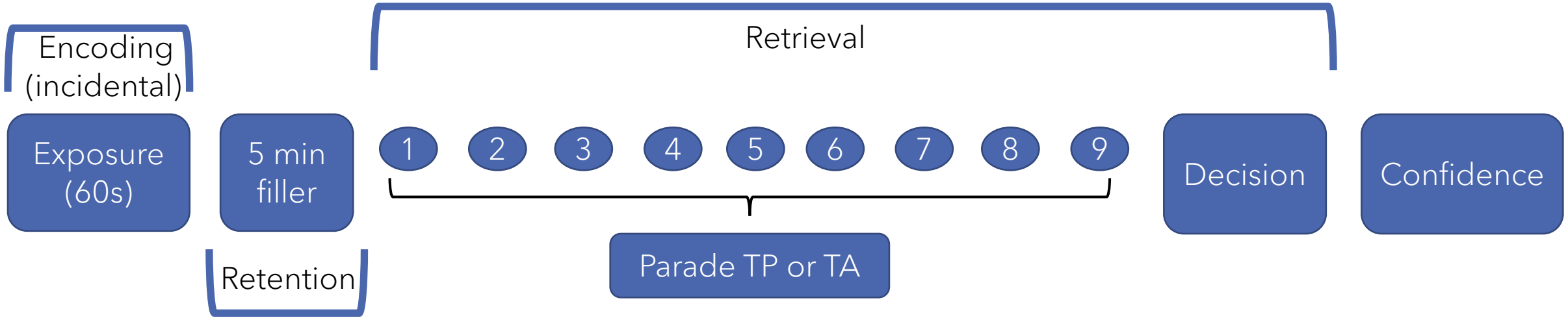
There are crimes that occur where the perpetrator is never seen, but is heard (masked attack, telephone fraud)

In such cases, **the voice** of the perpetrator may be the only evidence available to confirm their identity

Voice parades involve an **"earwitness"** trying to identify the perpetrator from a series of voices

Used around the world & earwitness evidence has been crucial in numerous cases (see Nolan, 2003)

Voice parades



Voice Parades - decisions

Several possible outcomes to the voice parade

Possible results:	Earwitness says the voice is present	Earwitness says the voice is absent
Perpetrator's Voice is present [target present]	Hit	Miss
Perpetrator's Voice is absent [target absent]	False Alarm	Correct Rejection

What are the issues?

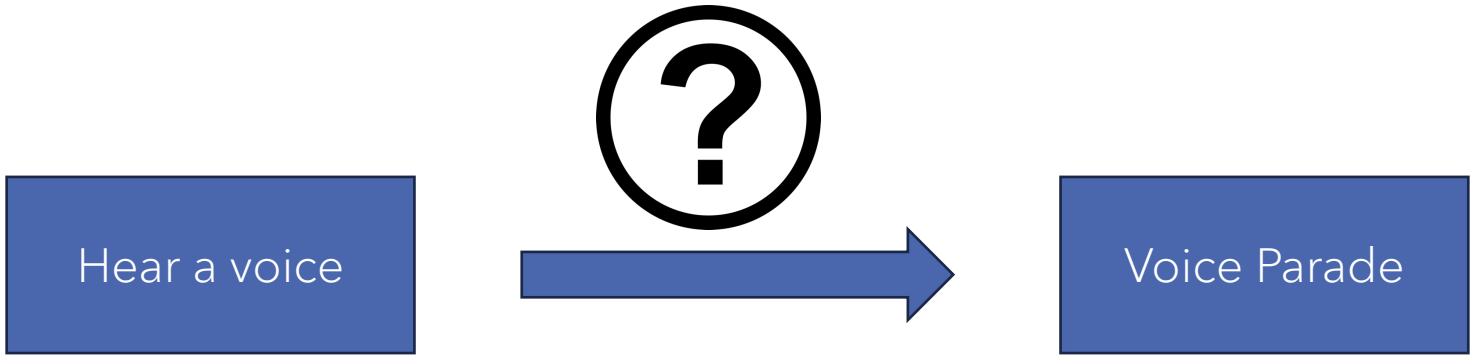
- Experiment-based parades often result in
  - low hit-rates (Kerstholt et al., 2006)
  - high false alarm rate (Smith et al., 2020; Pautz et al., 2023)
- Leads to conclusions of 'use with caution' (Smith et al., 2020)
- Results from lab-based experiments can influence policy (Clark, 2012)
- Importance of alignment between experimental procedures and real-life
- Are we missing something in the design?

Something missing?

Encoding phase simulates overhearing a crime

Directly after encoding, participants enter retention phase before VP

May not simulate memorisation process in a real crime situation (lack of alignment)



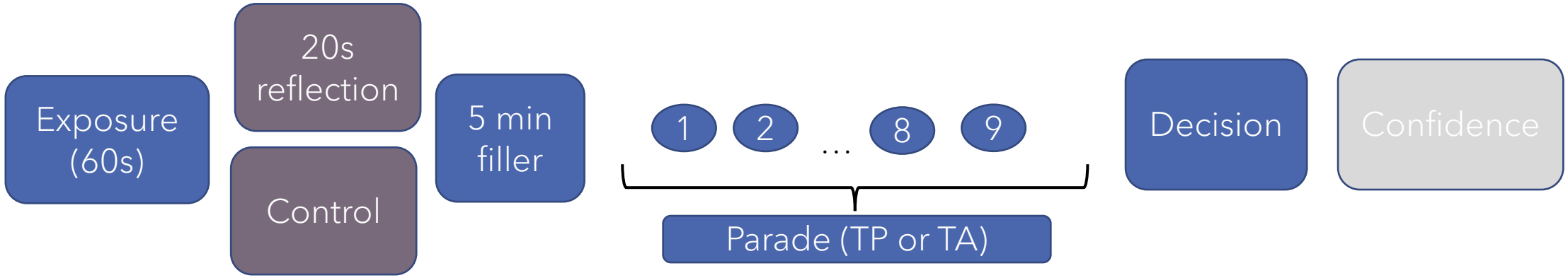
Rationale

- Possible missing component of **reflection**
- Reflection may prompt attention to things thought to be 'less likely to be remembered' (Weilbächer et al., 2020)
- May promote self-directed cue-utilization (Koriat, 1997)
- Provides an advantage for additional processing, solidifying perceptual representation (Cowan, 2001)

Reflection

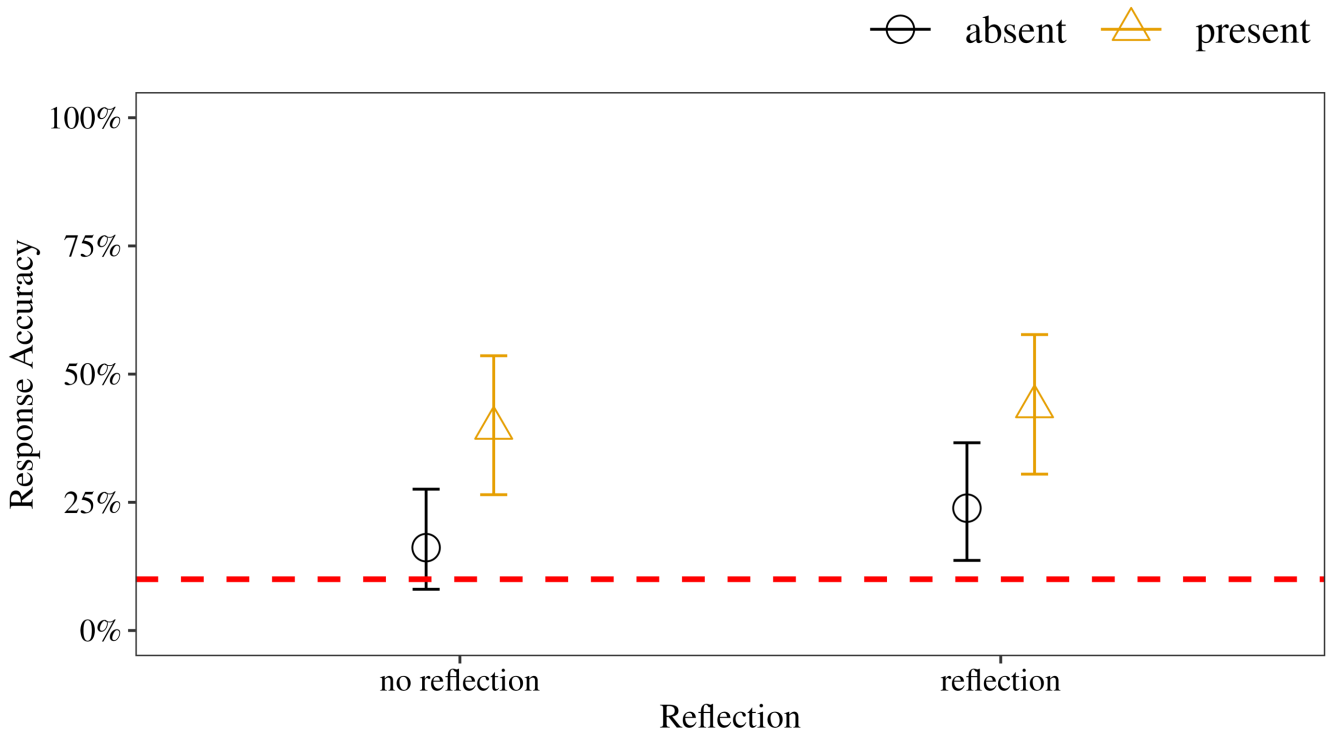
- Reflection may encourage a stronger and more holistic internal representation of the voice
- Without reflection, possibly less alignment between experimental procedures and real-life
- Excluding this process may produce results which underestimate performance in a real scenario
- Aim: to investigate if the inclusion of self-directed reflection facilitates later identification performance
- Hypothesis: parades which include self-directed reflection will support more accurate identification

Method



- Reflection manipulation: "Imagine the voice you have just heard is that of a criminal. Take a few moments now to reflect on the voice" - 20s duration.
- Control: basic attention probe task, same duration

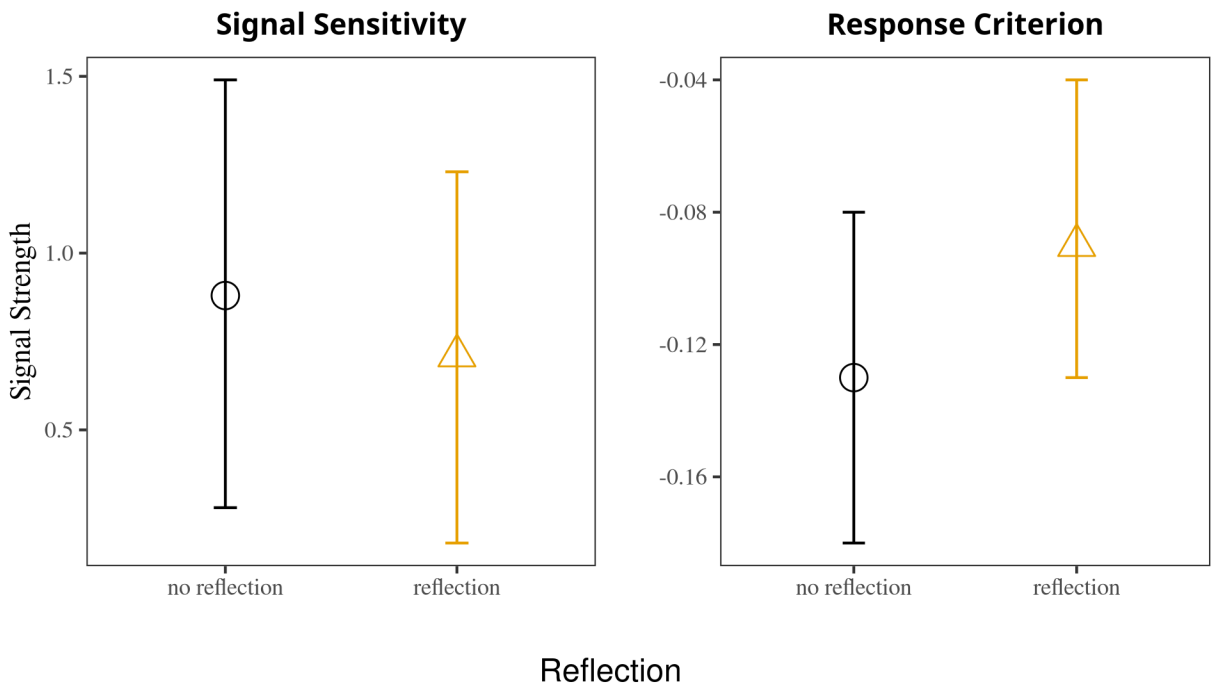
E1: Accuracy



Dashed lines indicate chance-level (10%) accuracy rates
Bars represent 95% HDIs

- Target present accuracy > target absent accuracy (BF = 15.92)
- No meaningful difference between reflection vs control (BF = 0.57)
- No interaction effect (BF = 0.53)

E1: SDT



- d' for both conditions was > chance (BF > 10)
- c was below zero for both conditions (BF > 10) suggesting liberal criterion
- No pairwise differences between reflection conditions for either metric

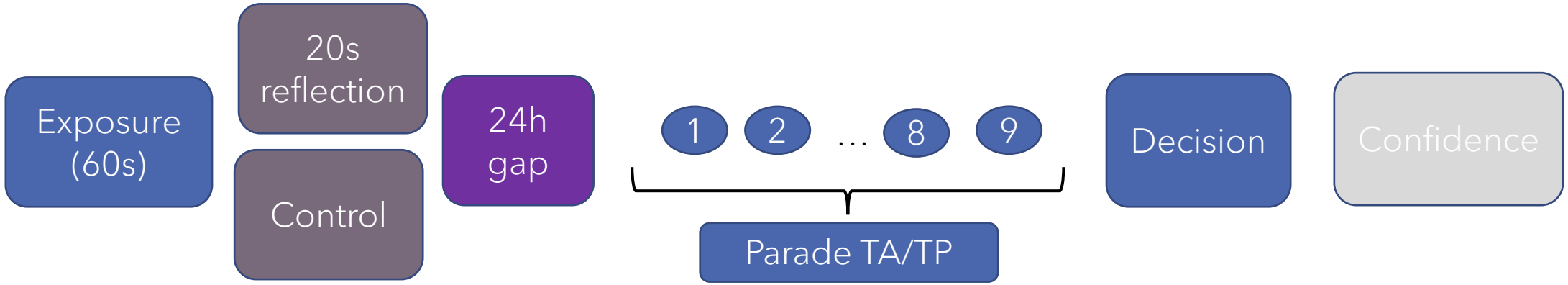
So...

- Typical TP vs TA results compared to prior research using these voices (Pautz et al., 2023)
- No meaningful effect of reflection vs control
- Two possibilities:
  - Reflection is not important as an explicit experimental control?
  - Or does it manifest under different conditions?
- Time

Time

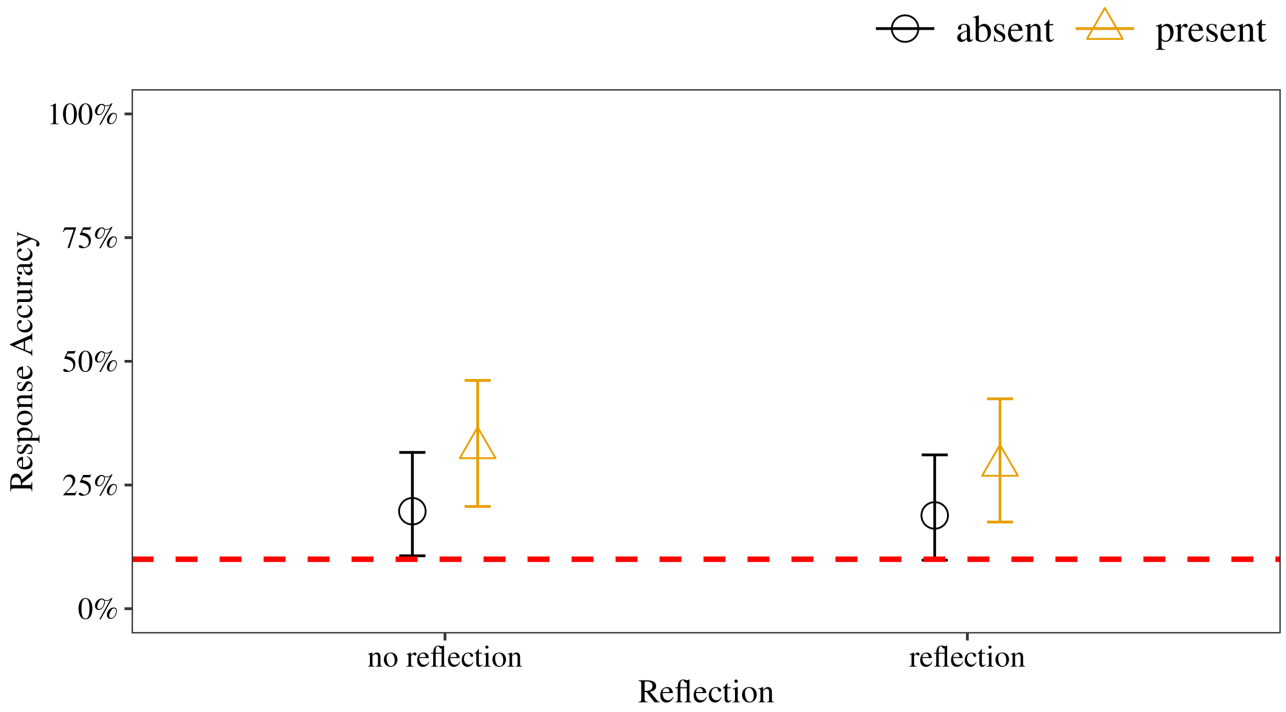
- Experimental retention intervals are highly controlled
- In a real life, up to three weeks between apprehending a suspect and VP construction (Kerstholt et al., 2006).
- Memory consolidation is a time-dependent, off-line process, that occurs mainly during sleep (Stickgold, 2005; Payne et al., 2009).
- Reflection + consolidation = high fidelity preserved memory trace
- Benefits of reflection may manifest under more realistic retention intervals

Method



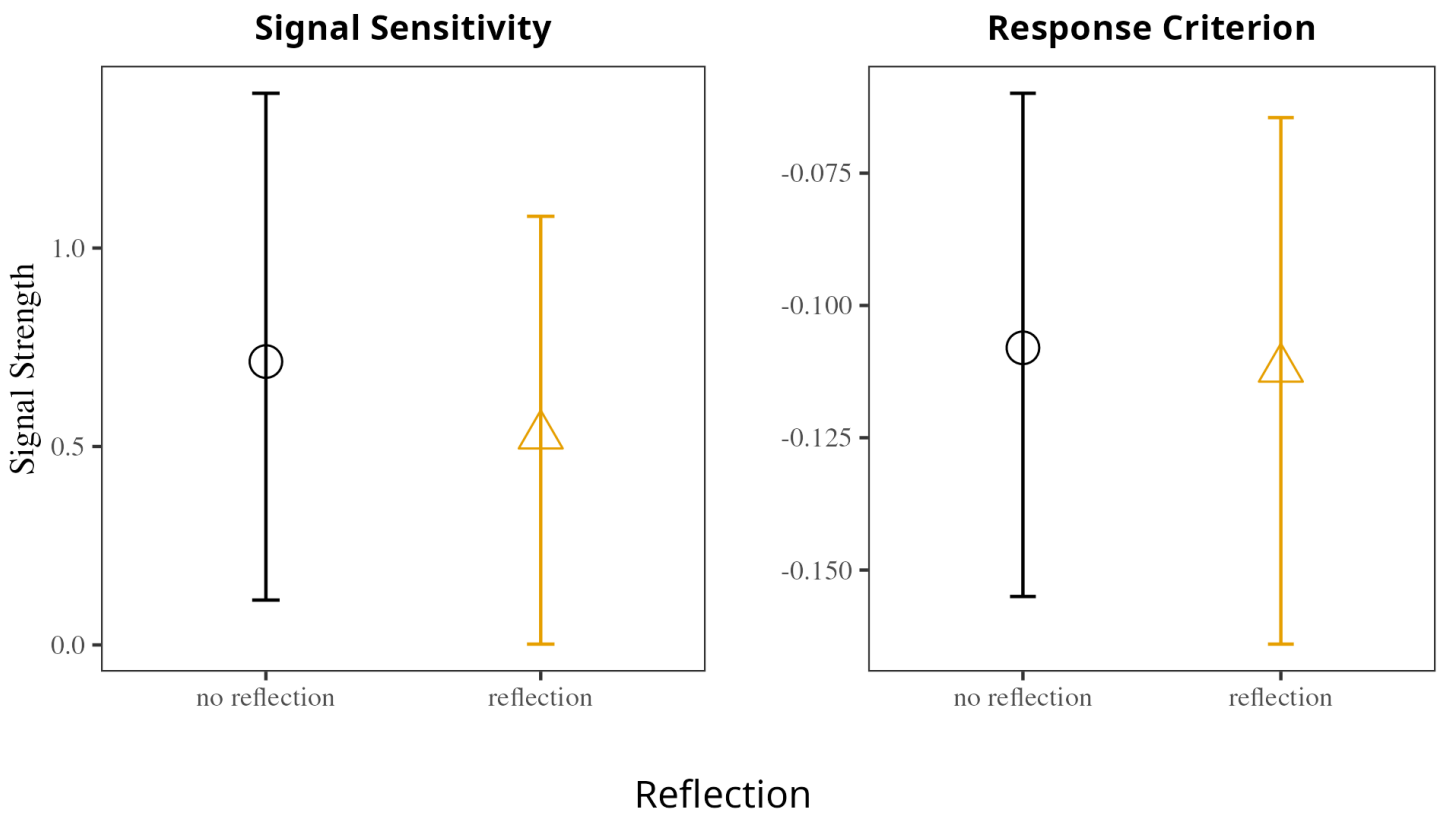
"*... receive an invitation in approximately 20 hours to complete the final stage of the study. During the next stage of the study, you will be asked a series of questions*".

E2: Accuracy



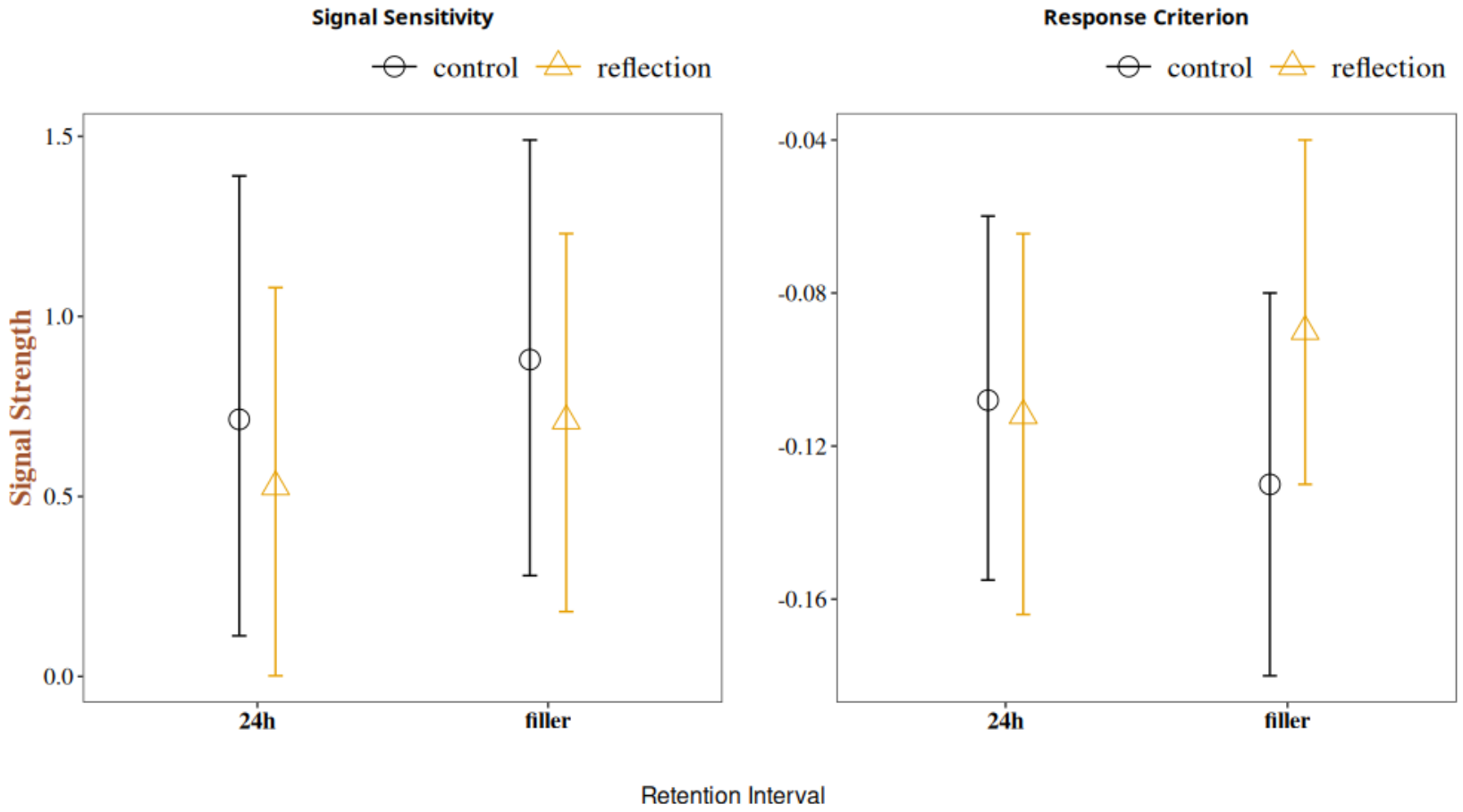
- No meaningful differences between reflection and control conditions, target presence, and no interaction between target presence and reflection (BF < 1)
- Numerical dip in performance in TP, TA remains relatively stable

E2: SDT



- d' > chance in control only (BF = 6.11); negligible evidence for reflection condition (BF = 1.9).
- Criterion below 0 for both (BF > 100); liberal decision criterion.
- Both conditions likely to respond 'present' even when target was absent, but only control has above chance likelihood of identifying the target voice

Pooled data



- Pooled the data to compare retention types
- Descriptive differences only, no statistically meaningful pairwise differences
- d' results hint at impairment rather than facilitation

To conclude

- Data do not support hypotheses…
- Could relate to what listeners are doing when they reflect
- [non]verbal overshadowing effect might occur
  - Overwrite the original memory (Meissner et al., 2001)
- Descriptors have limited usefulness
- Impairment from VOE limited by short reflection manipulation
- Reflection might have been useful in other areas (content)
- Good news: filler task appears to be a valid alternative for longer retention durations

The end

Thanks for listening!

Pautz, N., McDougall, K., Mueller-Johnson, K., Nolan, F., Paver, A., & Smith, H. M. (2024). **Time to reflect on voice parades: The influence of reflection and retention interval duration on earwitness performance**. *Applied Cognitive Psychology*, *38*(1), e4162.

https://osf.io/vf857/

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