ES/S015965/1

Evaluating Earwitness Identification Procedures: Adapting Pre-Parade Instructions and Parade Procedure

Nikolas Pautz

Nottingham Trent University

Harriet Smith, Jens Roeser, Josh Davis, Jeremy Robson, David Wright, Natalie Braber, Paula Stacey

Voice identification

- "The circumstances in which voice identification can provide crucial evidence in a criminal trial are infinitely variable." (Robson, 2018, p. 220)
  - A masked perpetrator;
  - A blindfolded witness;
  - Offences committed over the phone or captured using audio surveillance.
- At least 150 cases of voice parades being used in England & Wales
  - E.g., *R v Khan and Bains*, discussed in Nolan, 2007
- While England and Wales does have some guidance, Voice ID parades are largely based on Face ID procedures
- Memory for voices and faces differs (Stevenage et al., 2011; Stevenage & Neil, 2014; Stevenage, 2019).

Why focus on system variables?

- For some unknown reason, most (but not all) previous earwitness research has focused on variables that we can't actually control (estimator variables).
- The results presented here add to the slowing growing literature focusing on how system variables (variables we can control) can be manipulated to increase voice identification performance.
- We focused on the system variables of:
  - Parade procedures
  - Pre-parade instructions

Parade procedures

- Serial procedure: the witness listens to all nine voices at least once before making a decision (the target is present in positions 1-9 or they are not present at all)
  - This procedure may have high WM demands, contributing to task difficulty
  - Recommended by the Home Office
- Sequential procedure: the witnesses responds either 'YES' or 'NO' after listening to each voice, potentially reducing cognitive load and task difficulty.
  - Smith et al (2020) found higher hits and lower false alarms when comparing a sequential voice parade to a serial voice parade.
  - Sequential procedures may lead to a more conservative criterion in procedures (as has been found in face ID research) rather than increasing discriminability per se (Ebbesen & Flowe, 2002; Wixted, 2012),

Pre-parade instructions

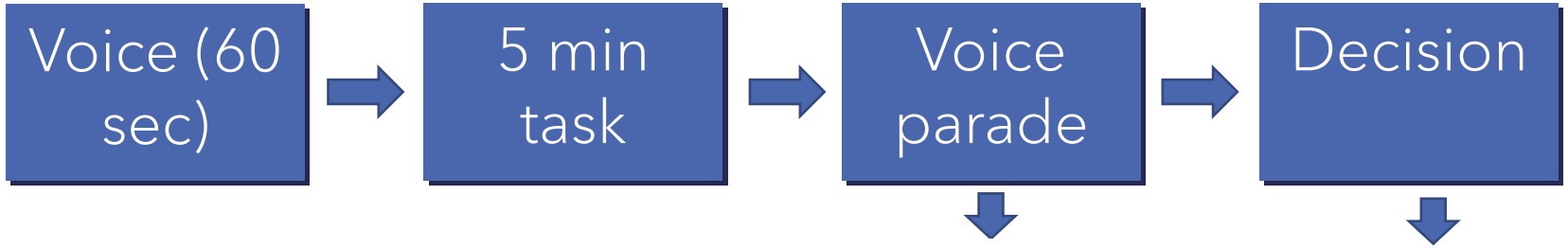
- Content of pre-parade instructions has been found to influence the decisions of eyewitnesses
  - Stronger warnings reduce false alarms (Brewer & Wells, 2006; Meissner et al., 2005)
- Important to consider the form a warning should take:
  - Complex instructions may not have an effect (Wilcock et al., 2005)
  - Simple, criterion-based instructions have been found to improve discrimination (Meissner et al., 2005; Steblay, 1997)
- Standard warning: **"the voice you heard in the original recording may or may not be present"**
  - Such 'unbiased' instructions are mandatory in England and Wales
- Strong warning: **"Please consider your response(s) carefully. In a real case, selecting someone from the lineup when the perpetrator is not present could lead to a wrongful conviction"**

Hypotheses

- We expected that the strong warning would make participants less likely to false alarm in both types of parade.
- We expected that accuracy on target-present and target-absent parades would be higher for the sequential compared to the serial procedure.

Experiment 1 *N* = 526

- University of Greenwich Face and Voice Recognition Lab volunteer participant database
- 2 (parade type: serial, sequential) by 2 (parade instructions: strong, standard) by 2 (target presence: absent, present) between-subjects
- Three different target-groups with stimuli taken from the DYVIS forensic speech database (Nolan et al., 2009)



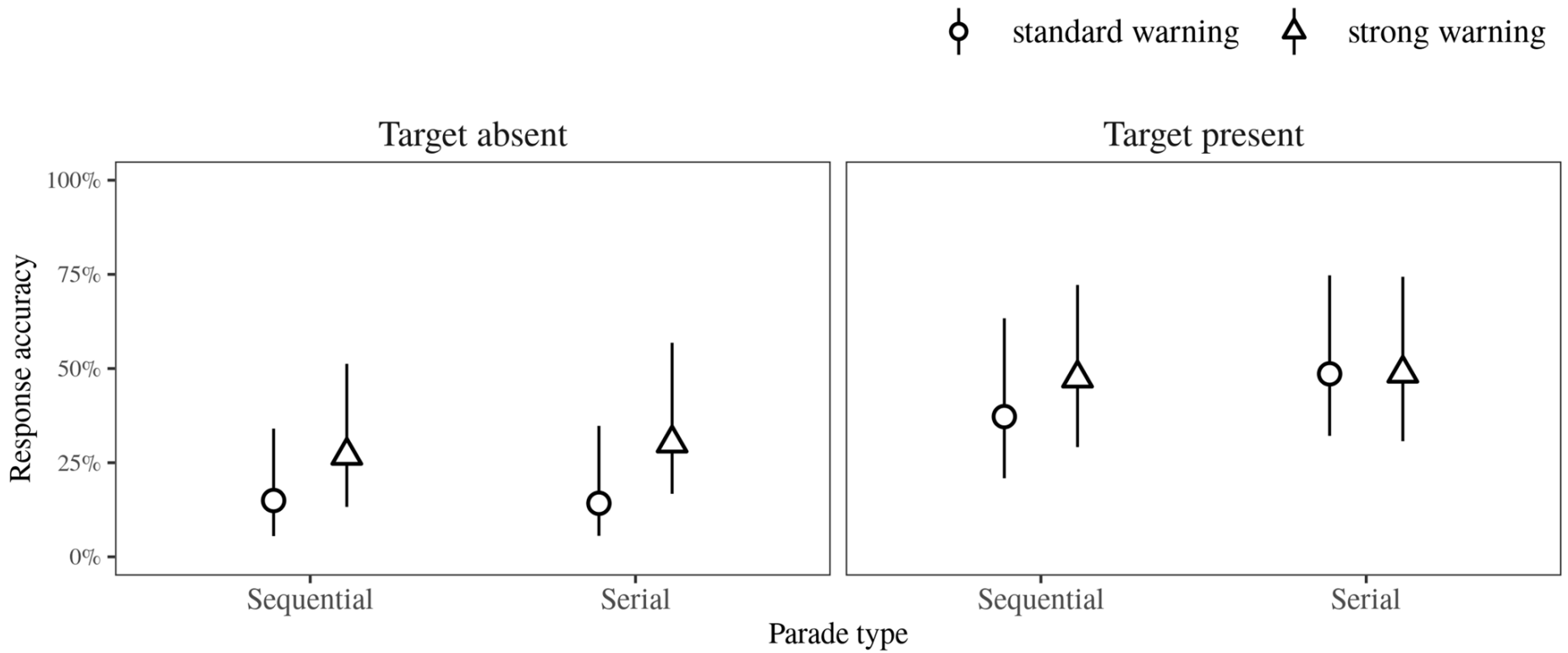
Decision frequency

Hit

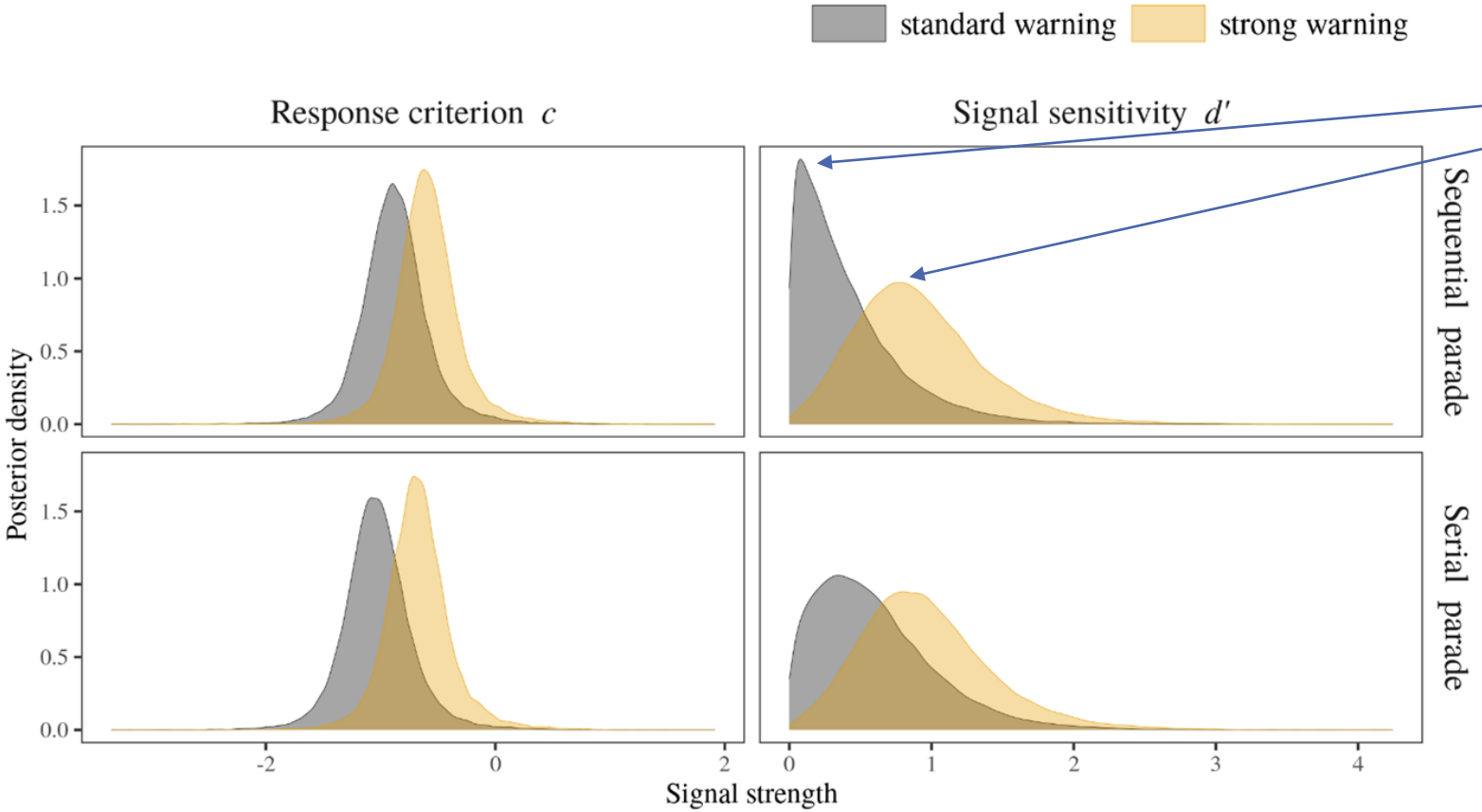
False alarm

		Target-present			Target-absent	
Parade Type	Pre-parade Instructions	Target	Foil	Reject	Foil	Reject
Sequential	Standard Warning	25 (38%)	38 (58%)	3 (5%)	55 (85%)	10 (15%)
	Strong Warning	30 (46%)	32 (49%)	3 (5%)	48 (73%)	18 (27%)
Serial	Standard Warning	32 (47%)	30 (44%)	6 (9%)	53 (85%)	9 (15%)
	Strong Warning	28 (45%)	21 (34%)	13 (21%)	52 (72%)	20 (28%)
Total		115 (44%)	121 (46%)	25 (10%)	208 (78%)	57 (22%)

Accuracy


standard warning
strong warning
Target absent
Target present
Response accuracy
100%
75%
50%
25%
0%
Sequential
Serial
Sequential
Serial
Parade type

Signal Detection Model



The peaks of the posterior distribution represent the most likely parameter

Experiment 1 conclusions

- Strong warnings improved participants' ability to distinguish between targets
- Suggests that the wording used is sufficient to produce an effect in both serial and sequential procedures
- Did not observe differences between serial and sequential parades – in contrast with previous results (Smith et al., 2020)
    - This leads us to the second experiment

The number of ‘laps’

- Home Office (2003) guidelines recommend that participants listen to each serial parade voice **at least** once before making a decision.
- Smith et al. (2020) compared a serial parade with 2 ‘laps’ of the parade against a sequential parade and found a sequential superiority effect (not replicated in Exp1).
- In order to see if this may have been due to the number of passes, we compared identification performance between serial parades with 1 and 2 laps.
- The ‘lap effect’ has not been previously studied in earwitness identification
  - In the eyewitness literature, no evidence of performance benefit, and possibly can cause a more lenient response criterion (Steblay et al., 2011; Horry et al., 2015).

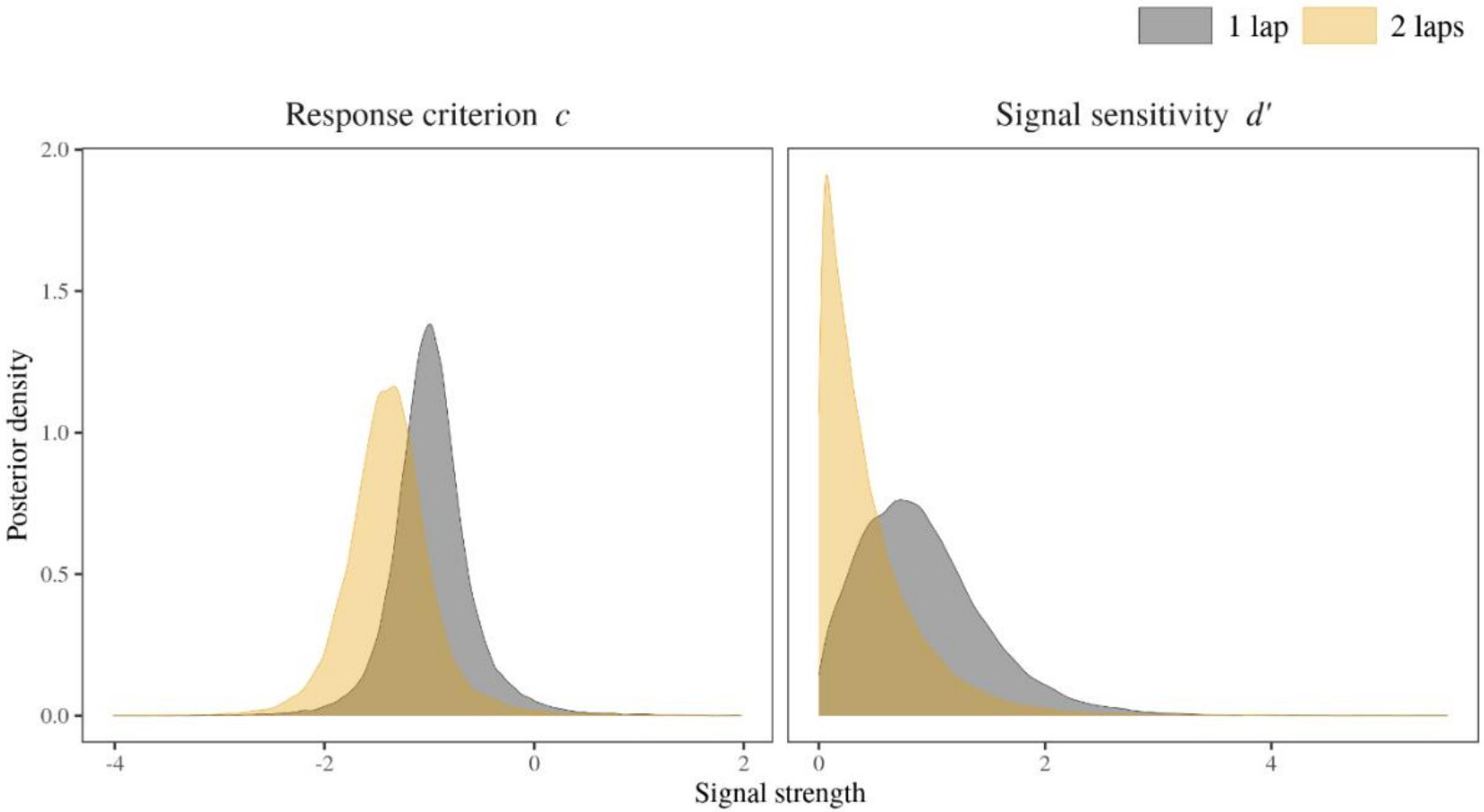
Experiment 2 *N* = 225

- Exactly the same procedure as Exp 1, but two laps of a standard warning serial parade
- 1-lap data were taken from Exp 1, standard warning condition.
- 2 (laps: 1 lap, 2 laps) by 2 (target presence: absent, present) between-subjects

Decision frequency

	Target-present			Target-absent	
Number of laps	Target	Foil	Reject	Foil	Reject
1 lap	32 (47%)	30 (44%)	6 (9%)	53 (85%)	9 (15%)
2 lap	24 (45%)	23 (43%)	6 (11%)	50 (93%)	4 (7%)
Total	56 (46%)	53 (44%)	12 (10%)	103 (89%)	13 (11%)

Signal Detection Model



Conclusions

- Our results underline the value of system variable research in voice ID as well as the need for replication and thorough testing before policy recommendations are made
- The serial procedure recommended by the Home Office can be easily adapted to provide increased levels of protection for innocent suspects by adapting pre-parade instructions that encourage more conservative response behaviour, without decreasing the probability of successful identification
    - As an extrinsic cue (based on the cue-belief model – Leippe et al., 2009) the strong warning may communicate task difficulty
- We did not find any accuracy differences between serial and sequential parades
    - it is unlikely to be due to the number of laps that participants have been exposed to in the serial parade

The end

Thanks for being earwitnesses to this presentation ☺

Preprint: https://psyarxiv.com/nxr3e/