

Variability of background colour in suspect line-ups and identification accuracy

THIRKETTLE, Martin <<http://orcid.org/0000-0002-6200-3130>>, HAVARD, C and RICHTER, S

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Variability of background colour in suspect line-ups and identification accuracy

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Martin Thirkettle, Catriona Havard, Stephanie Richter

Suspect line ups

- Viper



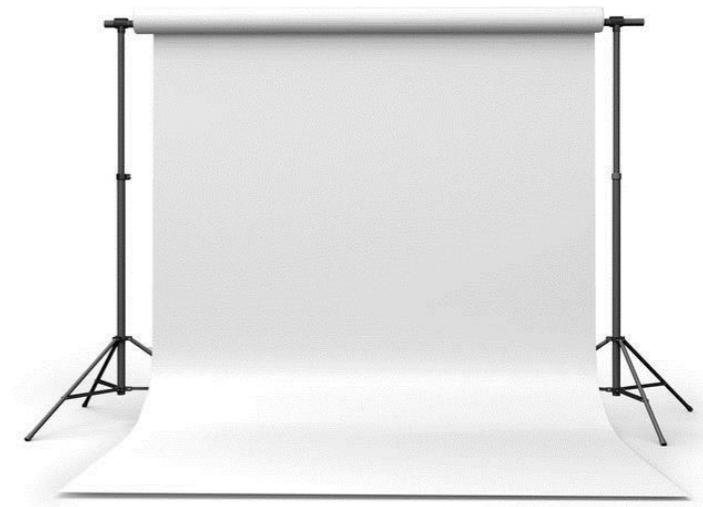
- Promat



Promat images

Two ways to collect images

- Custom built photo booth
 - Uniform lighting +
 - Uniform background +
 - Expensive -
- Photographers backdrop
 - Use anywhere +
 - Cost-effective +
 - Non uniform lighting –
 - Backdrop doesn't produce uniform background colour -

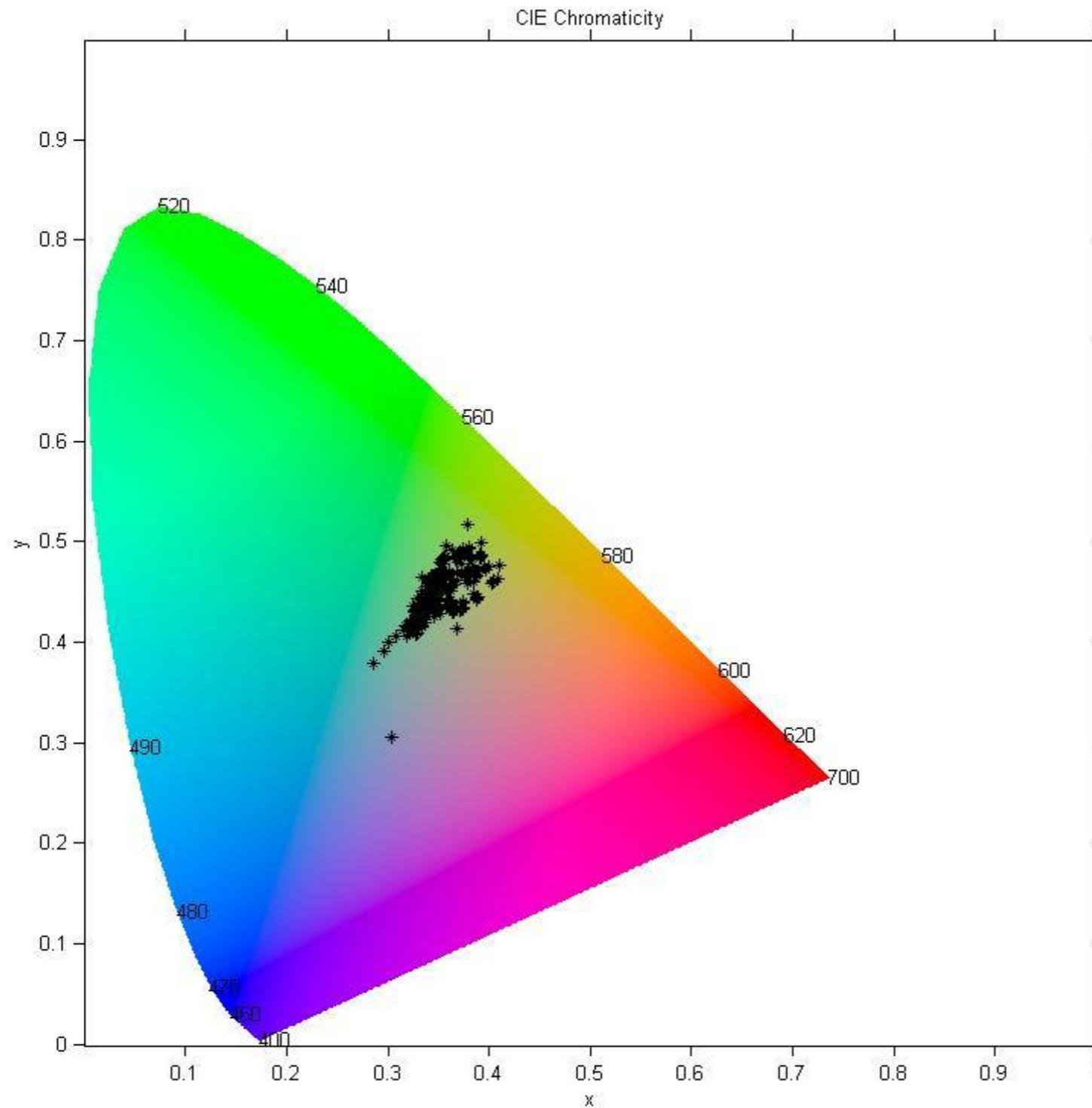


Promat Background variation

- 100 each of Asian, Oriental, Black and Caucasian faces from Promat database
 - 18 – 35 yrs
 - Medium build
 - No glasses
 - Black hair
- Average colour of background calculated
- Large variations
- Could these variations affect ID performance and even drive false positive rates?

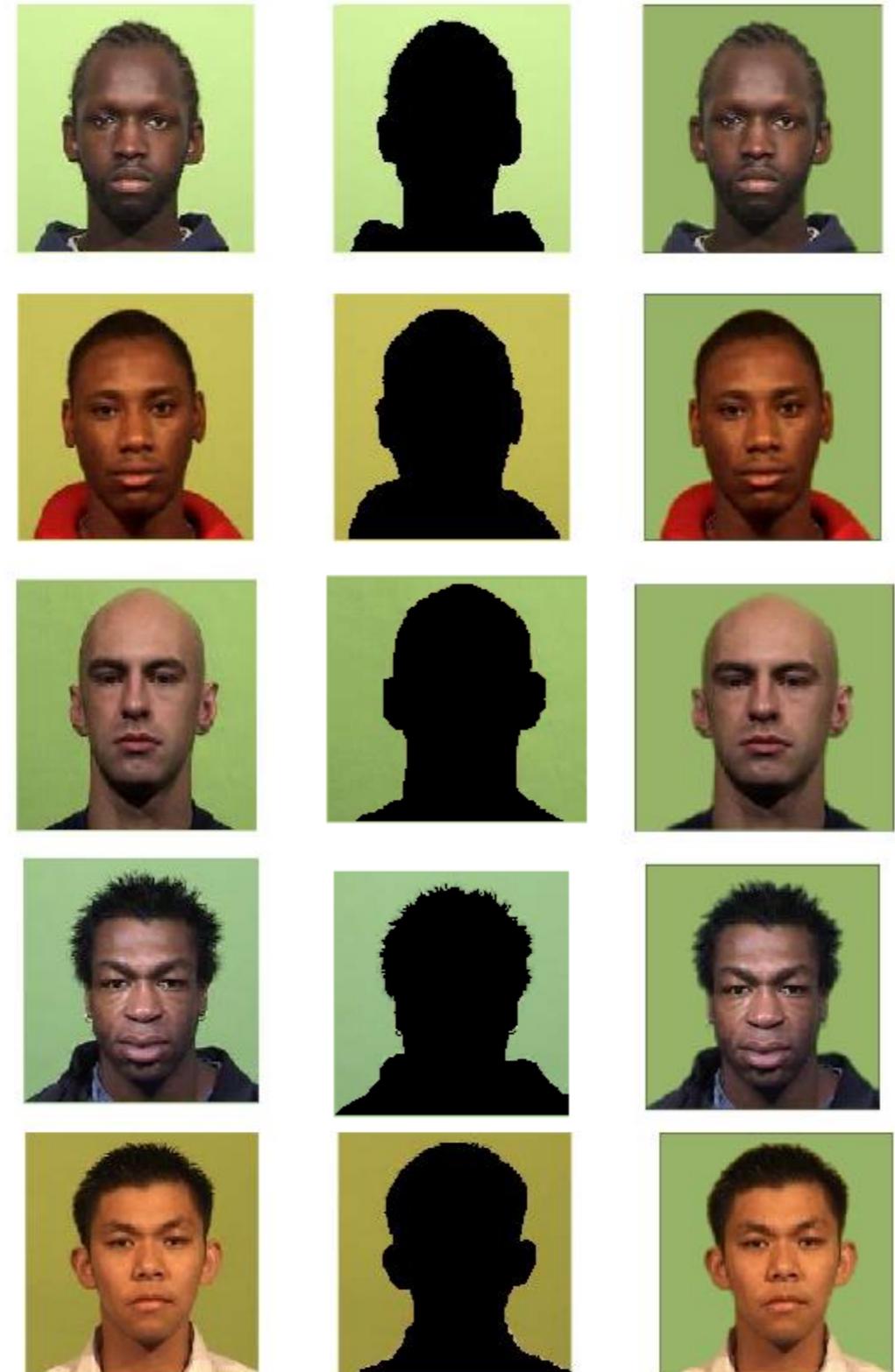


Background variation



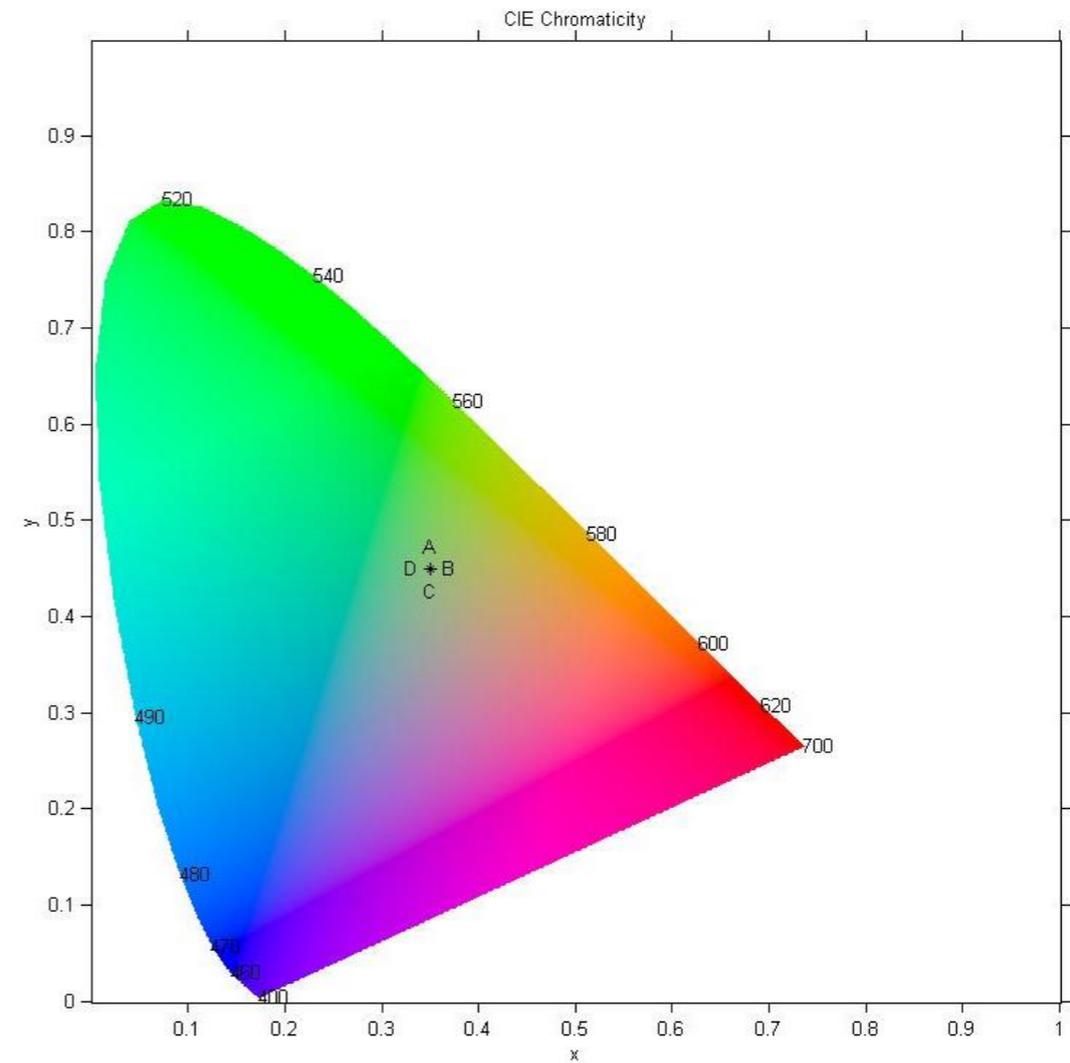
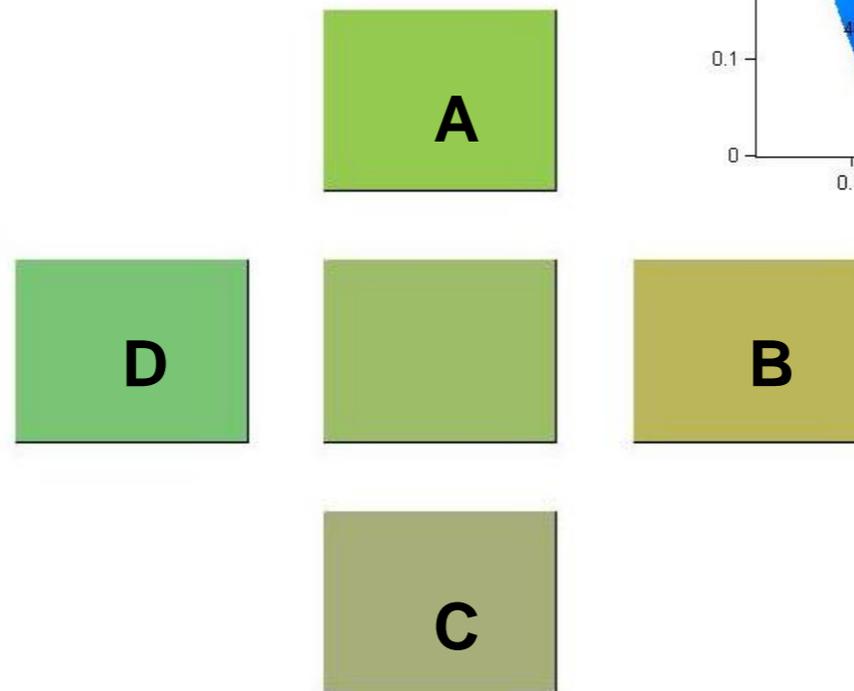
Stimuli creation

- Each face was segmented from its background
- Allows background to be manipulated independently
- Control set of all images placed onto mean background colour



Background variation

- We created four backgrounds 2 standard deviations away from the mean background colour of image set
- Pilot testing led us to use backgrounds B and D as the most noticeably different of the four



Experiment 1 & 2

- 80 trials
- White faces only
- Half TP half TA.
- Half all mean background
- Half with either target or target replacement (TA) with a background 2SD away from the mean.
- 20 ppt (14 female)



1



2



3



4



5



6



7



8

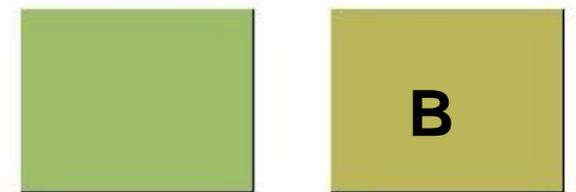
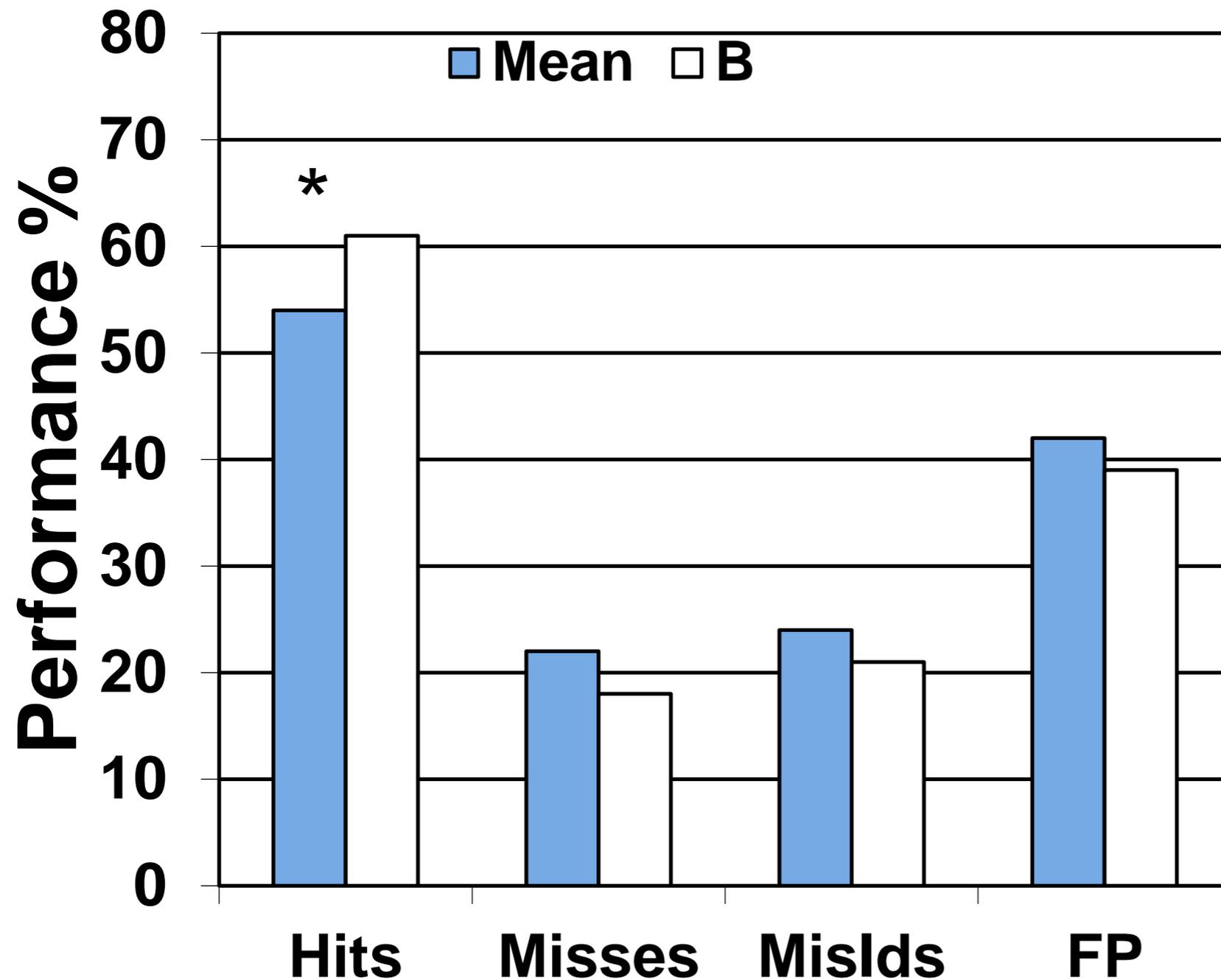


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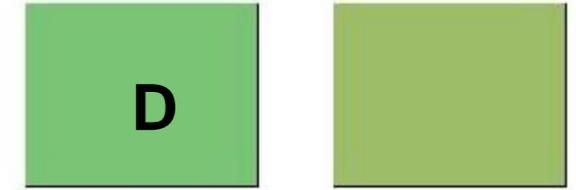
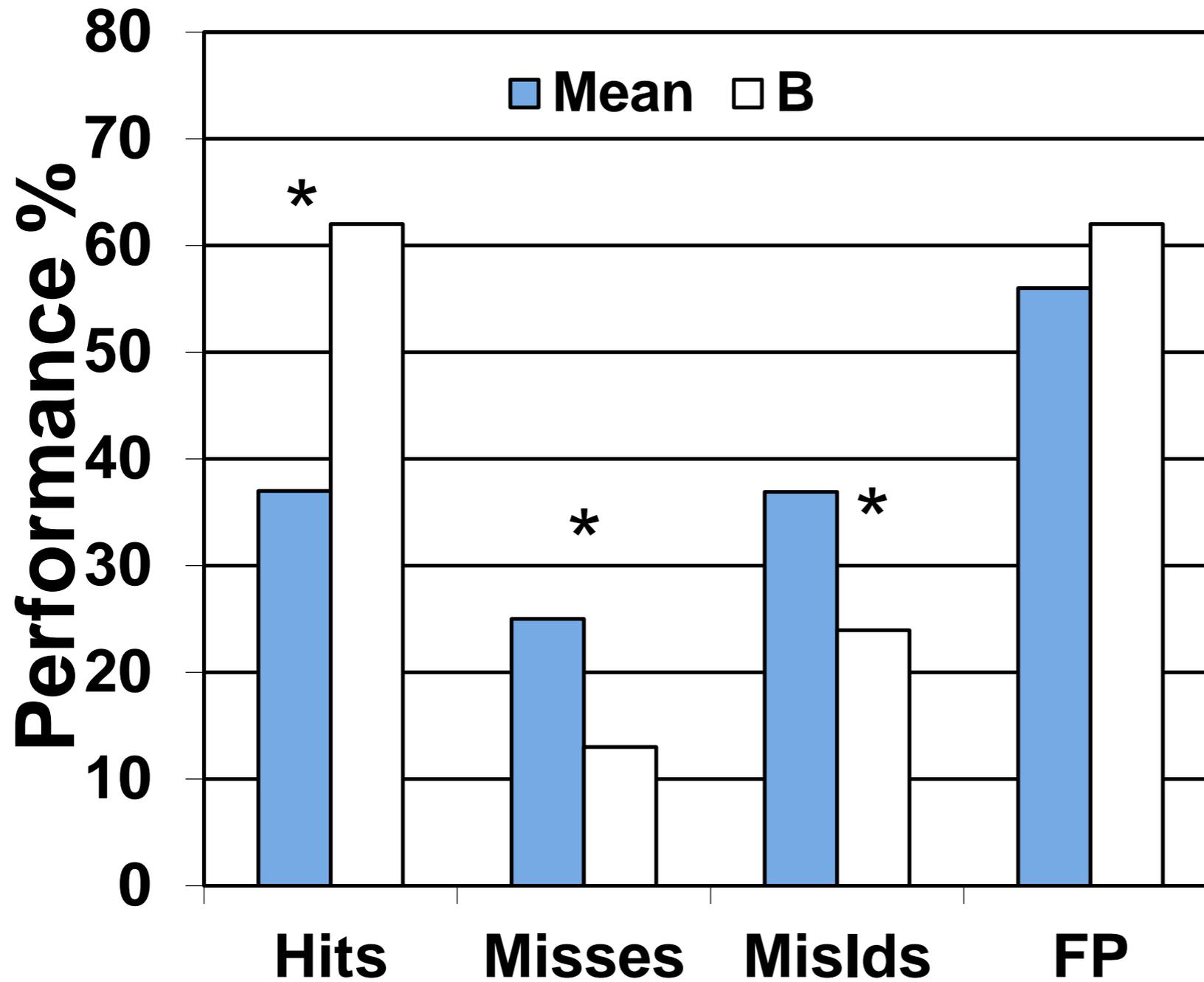


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Experiment 1 – 2SD B



Experiment 2 – 2SDD

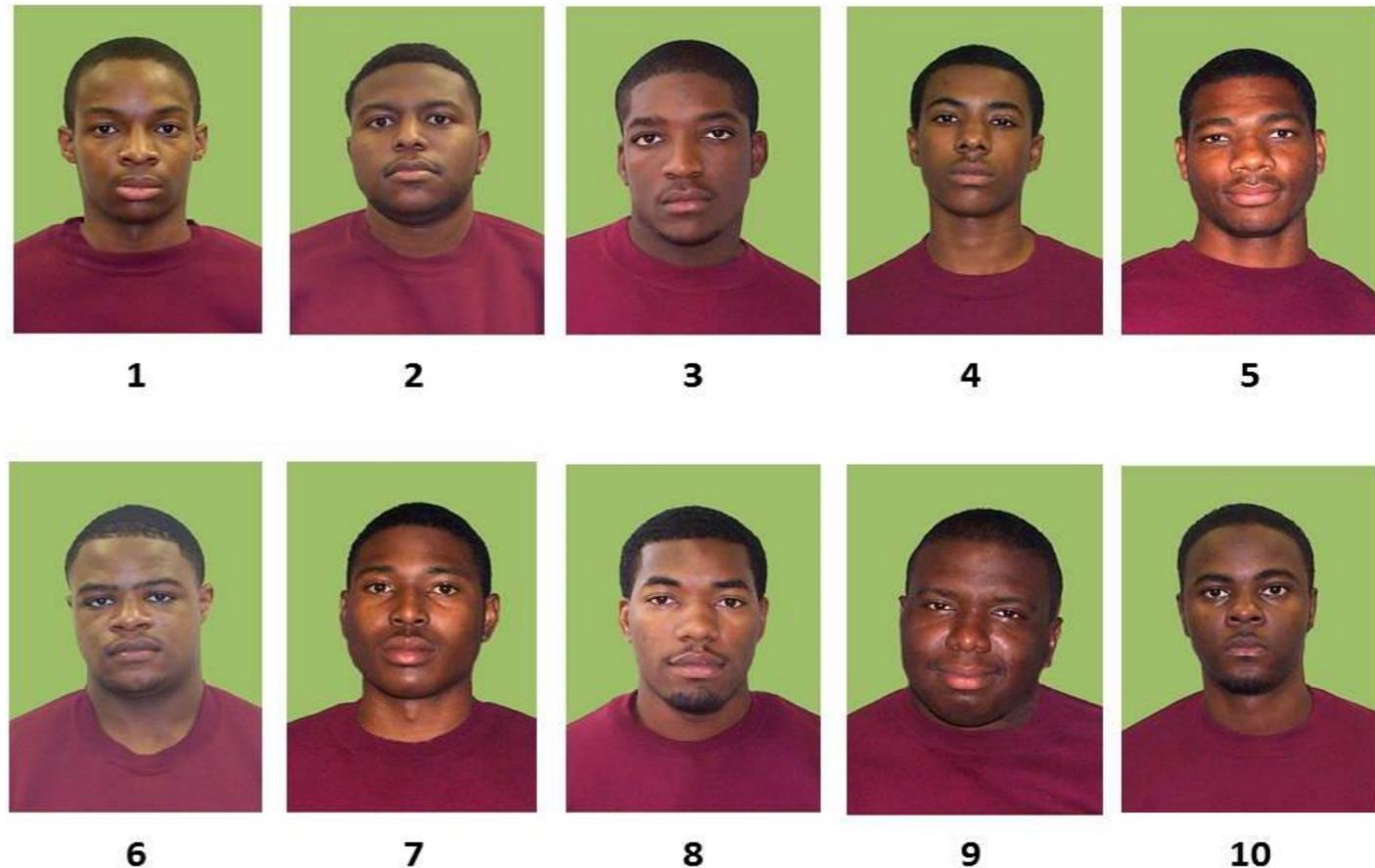


Interim findings

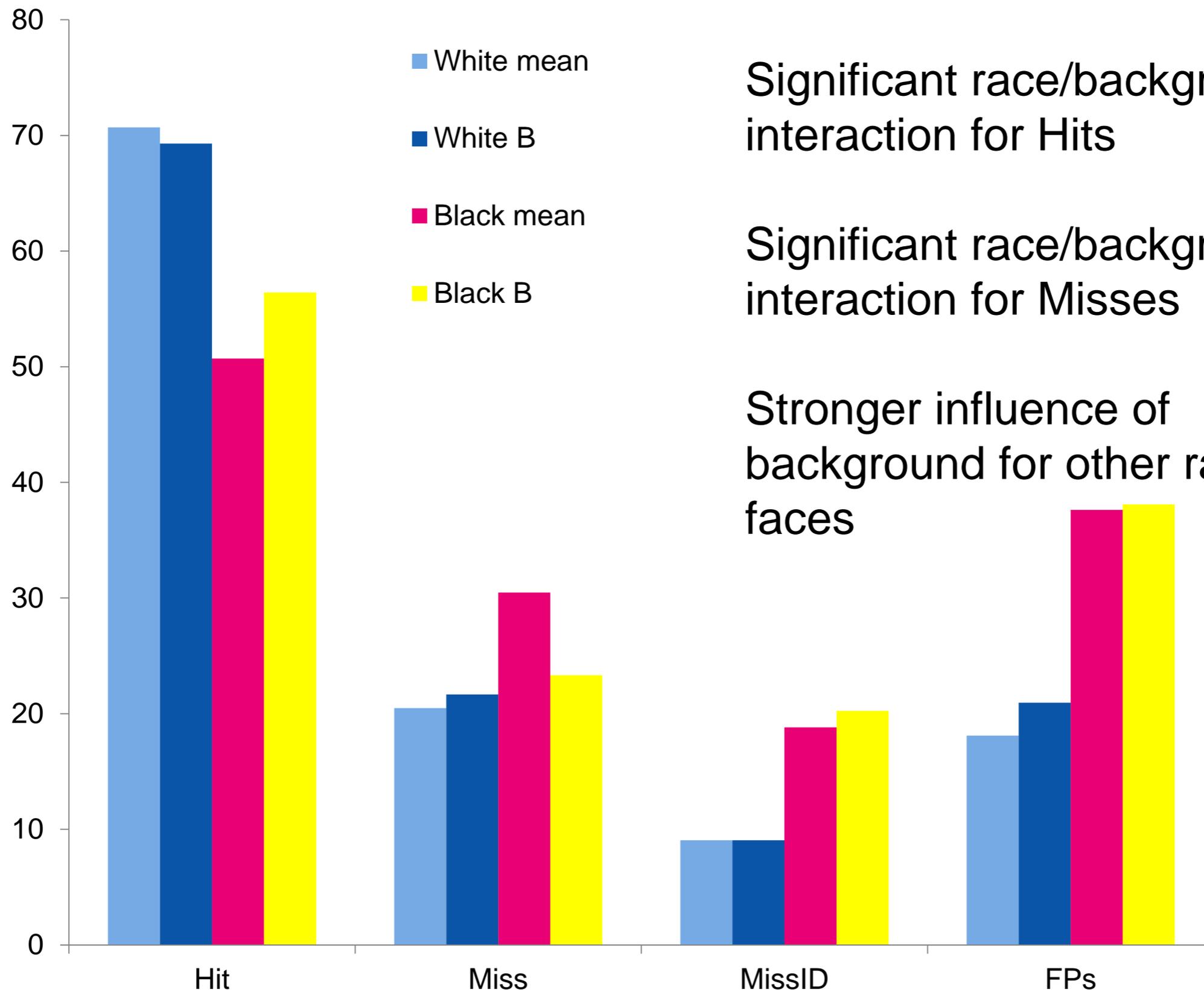
- Significantly more accurate at identifying target when target presented on manipulated background
 - Larger effect for colour D than B
- Less likely to make a misidentification or say the target wasn't there when target presented on manipulated background
 - Only significant for colour D, not B
- Although the manipulation of the background colour appeared to slightly reduce accuracy for the TA arrays, this was not found to be statistically significant.
- No significant difference in false positive rates

Own race bias

- 160 trials
- White and Black faces
- Half TP half TA.
- Half all mean background
- Half with either target or target replacement (TA) with a background 2SD away from the mean.
- 20 ppt (17 female)



Experiment 3 – 2SD B



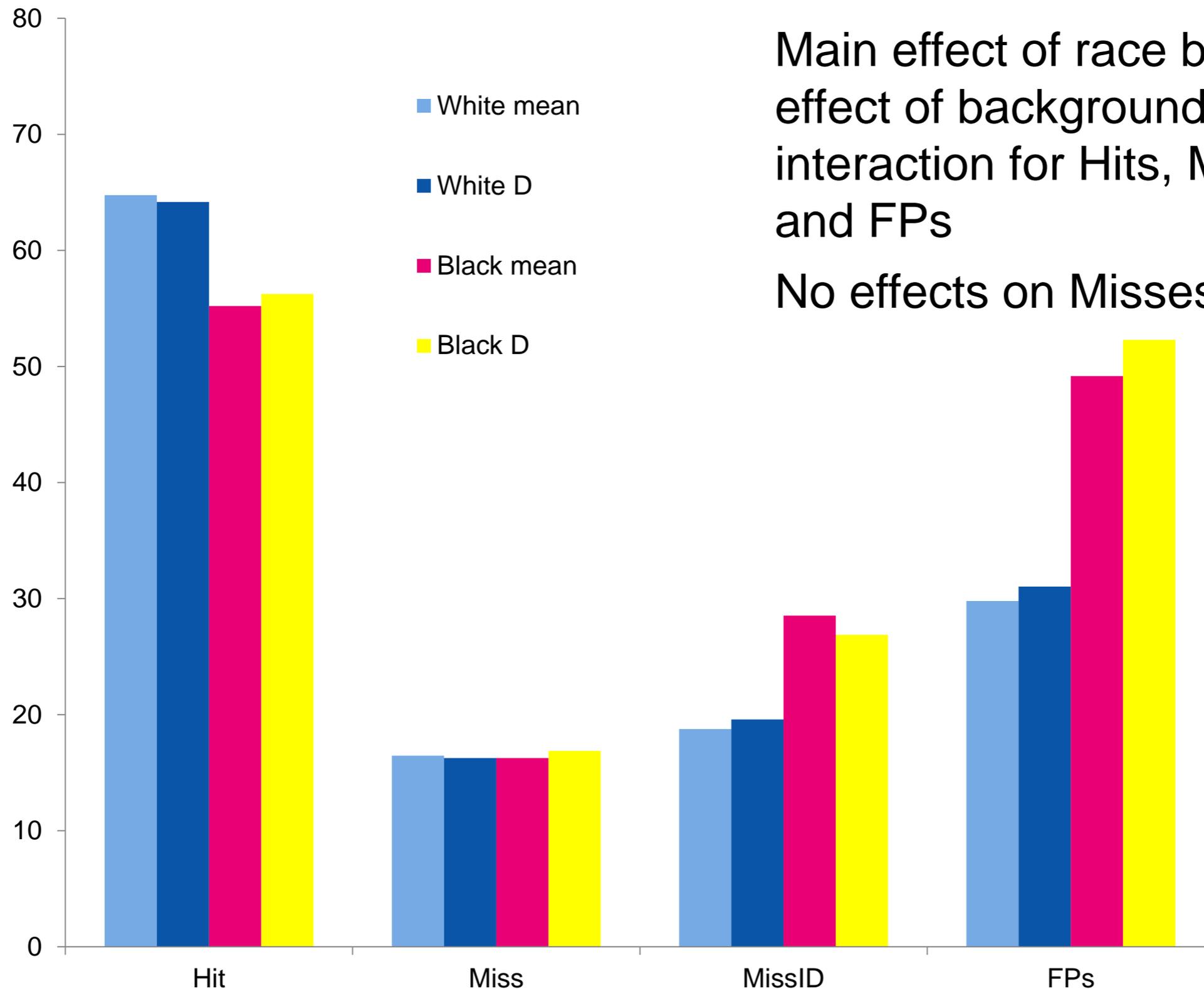
Significant race/background interaction for Hits

Significant race/background interaction for Misses

Stronger influence of background for other race faces



Experiment 4 – 2SD D



Main effect of race but no effect of background or interaction for Hits, MissID's and FPs

No effects on Misses



Conclusions / Next Steps

- Varying background colour did not increase False Positives.
- Exp 1 & 2 varying background colour increased Hits
- Exp 3 (but not 4) background colour increased the hit rate for other race faces
- Huge individual differences – small sample (20 per Ex).

- Now collecting larger data sets of participants
- Also looking for systematic relationship between race and background variability

