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First Author · Second Author

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Abstract Insert your abstract here. Include keywords, PACS and mathematical subject classification numbers as needed.

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1 Introduction

Target Contrast Signal Theory: "precise mathematical model that allows one to make specific point predictions about how components of visual complexity combine to impact human performance".

Model predicts search performance in heterogeneous scenes based on parameters estimated in homogeneous scenes.

Buetti (2019): Parallel search efficiency (logarithmic search slope) to find target amongst homogeneous distractors estimated: different colours (red target in orange, blue, yellow distractors) or shapes (semicircle target in circle, diamond, triangle distractors) tested. New group of participants searched for same target in heterogeneous displays that contained multiple types of distractors (e.g. blue circles, orange diamonds, yellow triangles). Observed RTs in latter experiment compared to predicted reaction times from model.

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Current extension ideas:

- 1a. Direct replication, online?
- 1b. Now with a different feature? Non independent features e.g. orientation and shape
- 2. Extend number of distractors (does loglinear relationship hold)
- 3. Overall harder (where does the model break down, if it's only supposed to do "parallel" search?)

Incorporate within subject predictions - have the same participants do homogeneous and heterogeneous versions.

Do we want to also re-analyse any of their data? Incorporating accuracy? (Calculate the range of Ds for both sets - speculate if one explains the other?)

2 Reanalysis of Buetti et al (2019)

In our proposed experiments, we would like to make use of multi-level models, and work within a Bayesian framework. To start, we will re-analysis previous data to verify that this does not invalidate the original conclusions. And, how to phrase, something about these new results (on the old data) being the ones we want to replicate.

2.1 Methods

2.1.1 Data

Data taken from OSF... using the exclusion criteria originally used. What about incorrect trials etc?

Do we want to re-do any of the other papers while we're at it?

2.1.2 Modelling Approach

R, brms, details.

Funky equation from Buetti.

2.2 Results

2.3 Discussion

3 Experiment 1

H0: confirm collinear method is best (compared to orthogonal contrast combination and best feature guidance models)

[If this is indeed the case, we will use only the collinear contrast integration model in the following experiments].

3.1 Methods

3.2 Results

3.3 Discussion

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References

1. Author, Article title, Journal, Volume, page numbers (year)
2. Author, Book title, page numbers. Publisher, place (year)