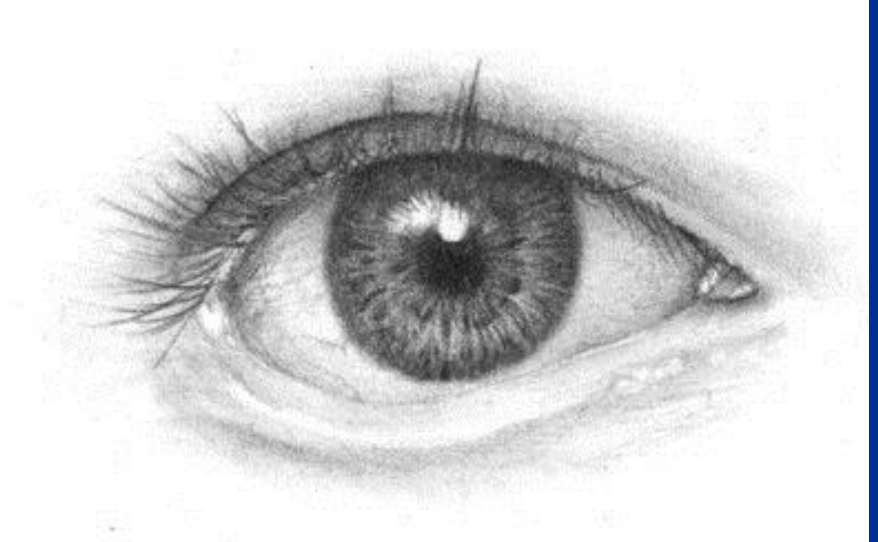
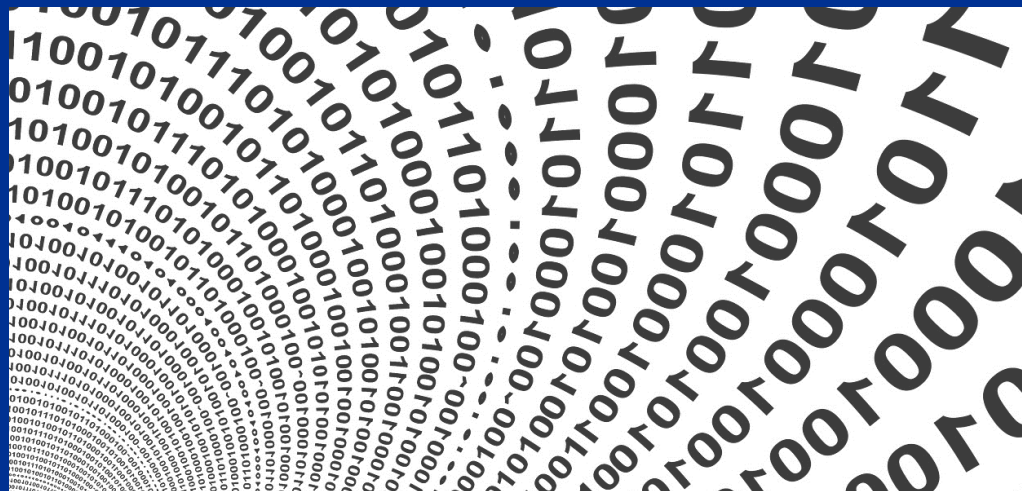


Stick to your colors!

Perceptual continuity for colors?

Digital Open Science Workshop

22 September 2017



Freie Universität Berlin

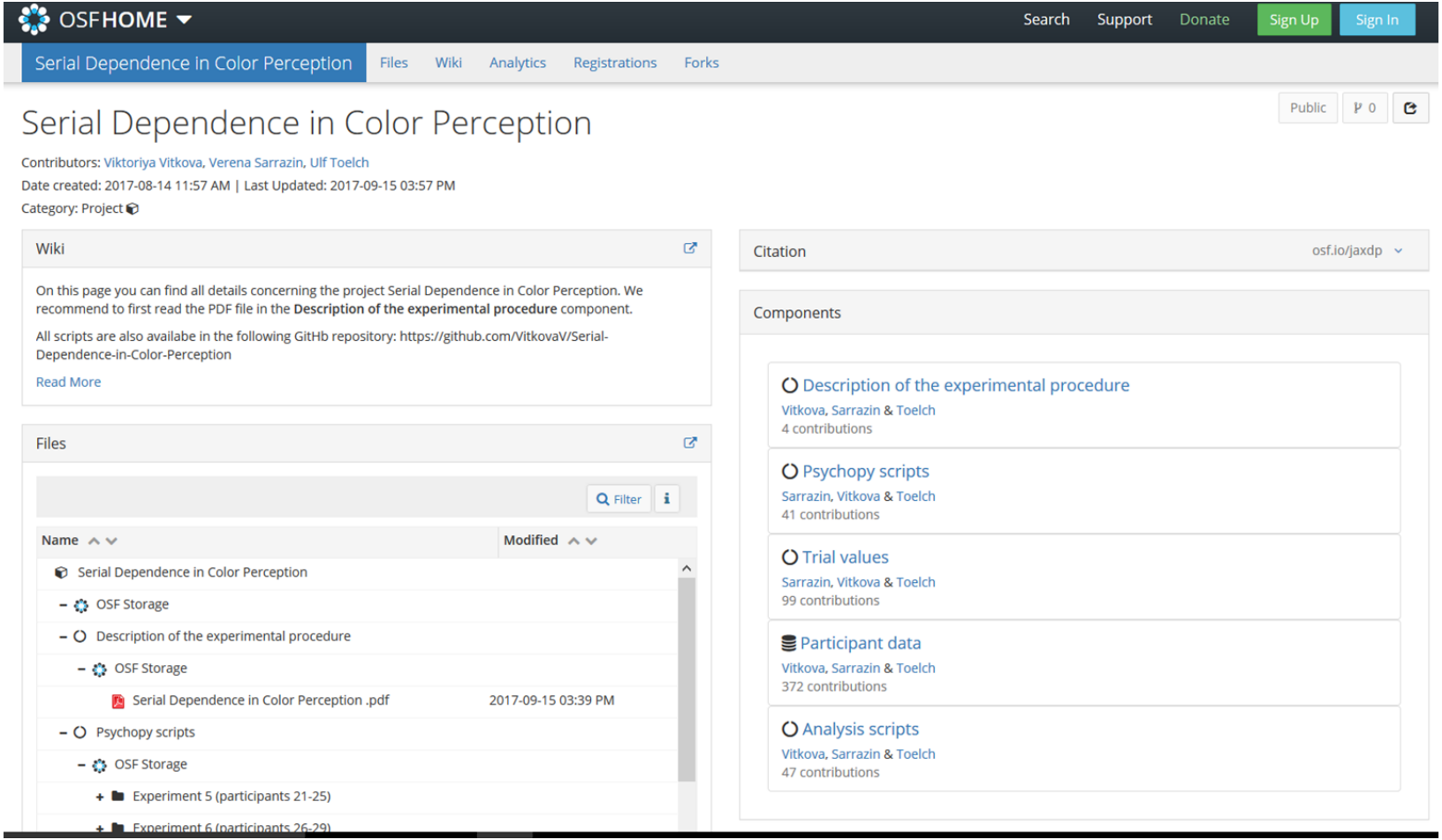
Verena Sarrazin
Viktoriya Vitkova

Objectives of the Module

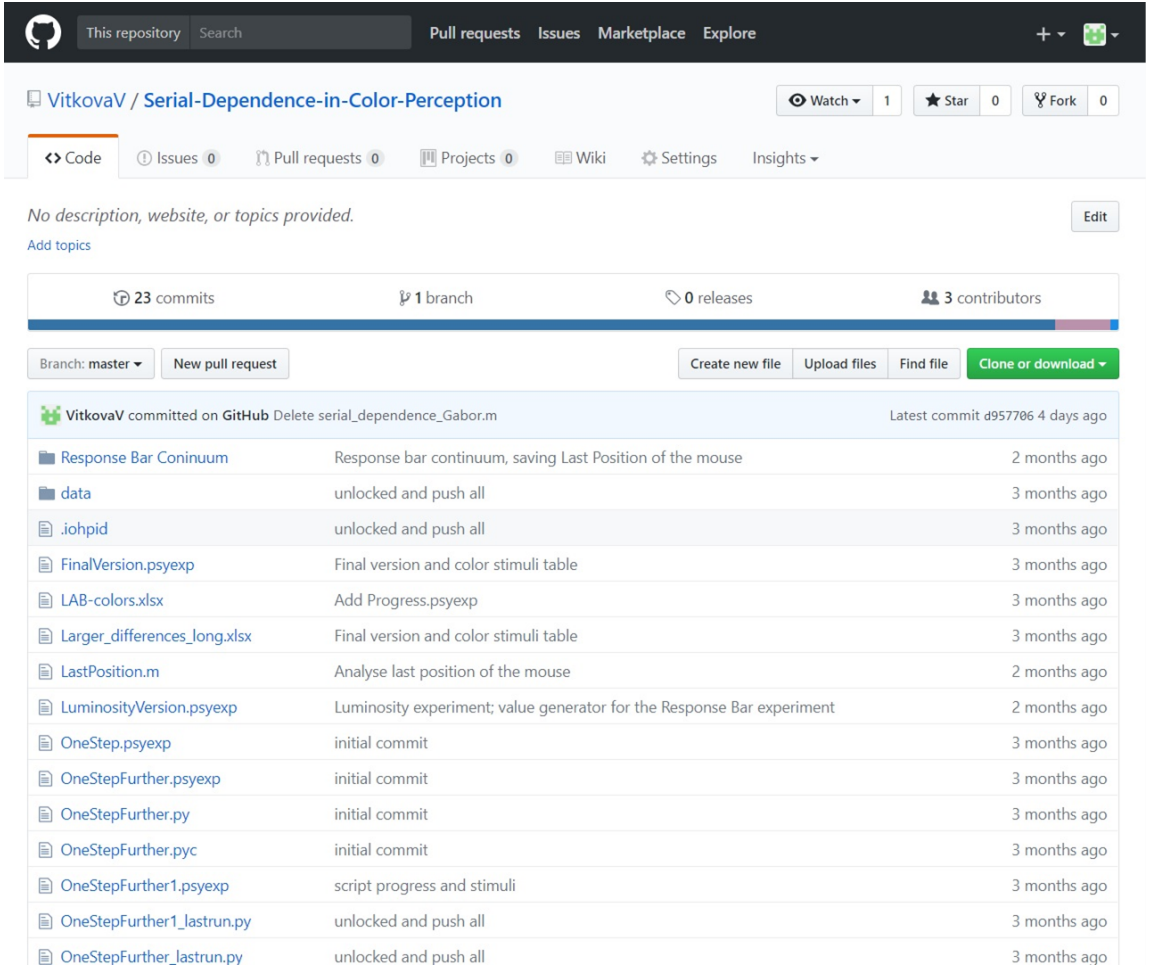
- Carry out a replication study, organize and analyze data sets or come up with a novel experiment.
- Become familiar with the Open Science Framework and GitHub.

Open Science Framework

Open Access: https://osf.io/jaxdp/

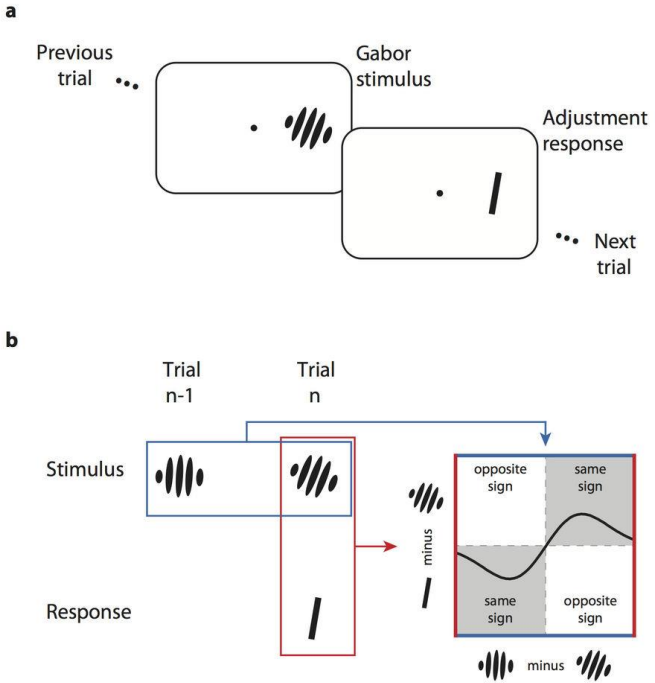


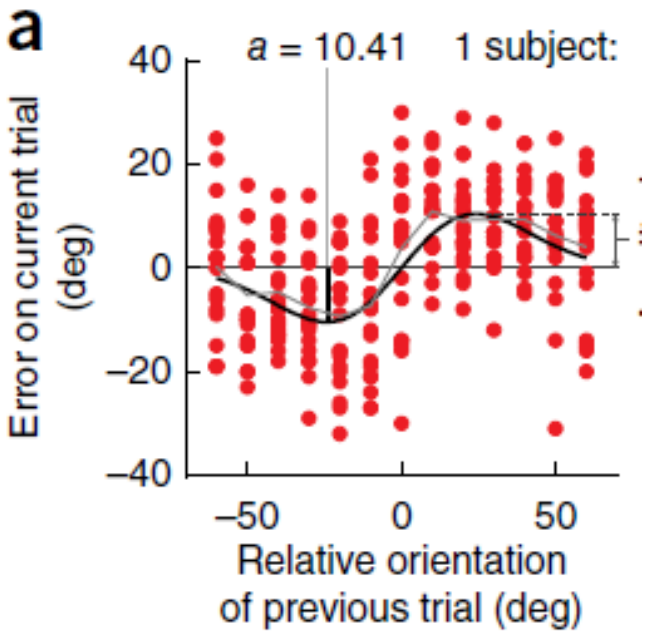
Open Access: https://github.com/VitkovaV/Serial-Dependence-in-Color-Perception



Background: serial dependence for orientation

Fischer & Whitney (2014)





Serial dependence for color?

Pilot Experiments

Experiment 1 – hue

Experiment 2 – luminosity

All scripts and participant data are available on OSF and GitHub

Experiment 1

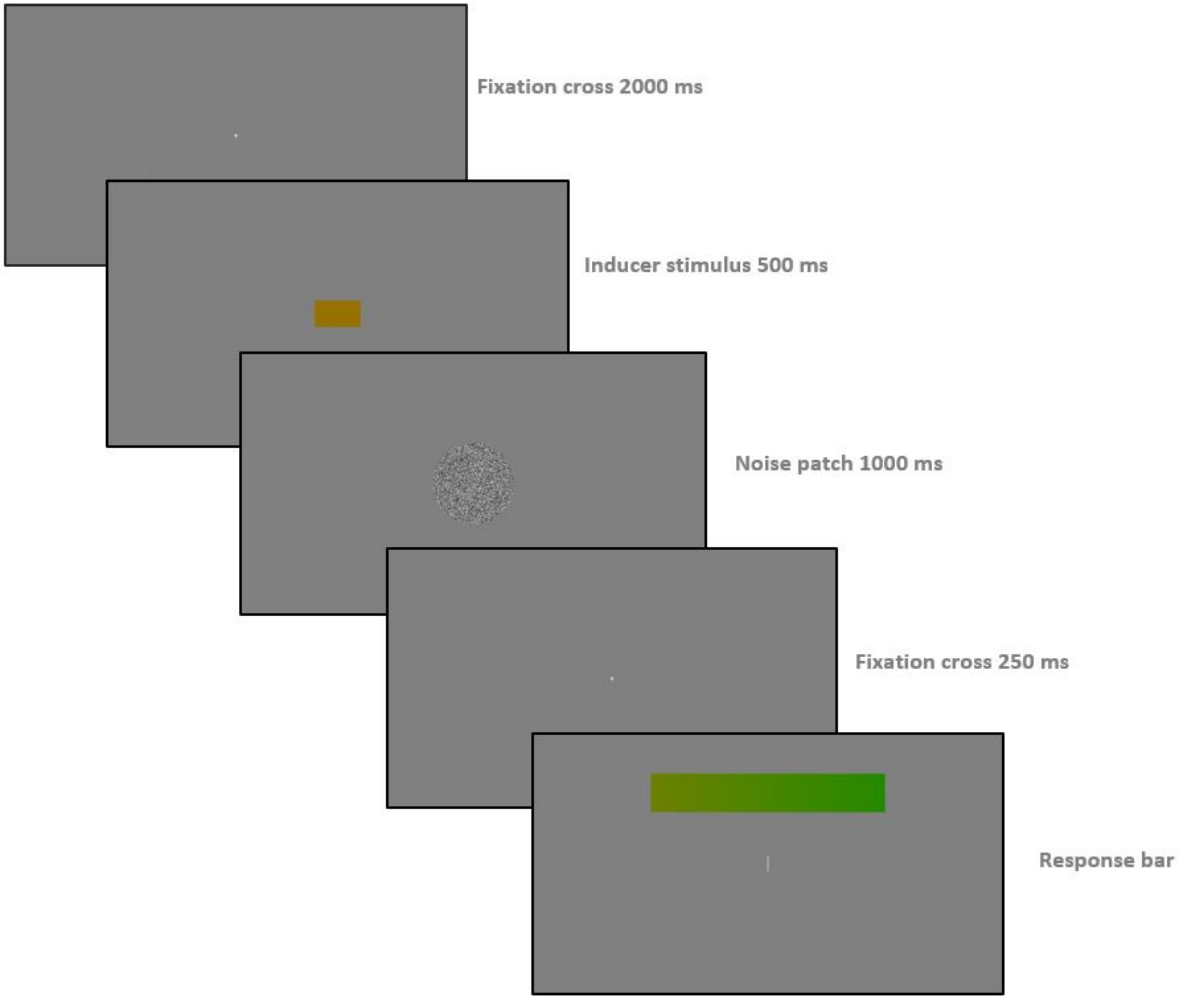
5 participants

8 blocks (red, green, yellow, blue, each presented twice)

504 trials

Manipulation:

Hue



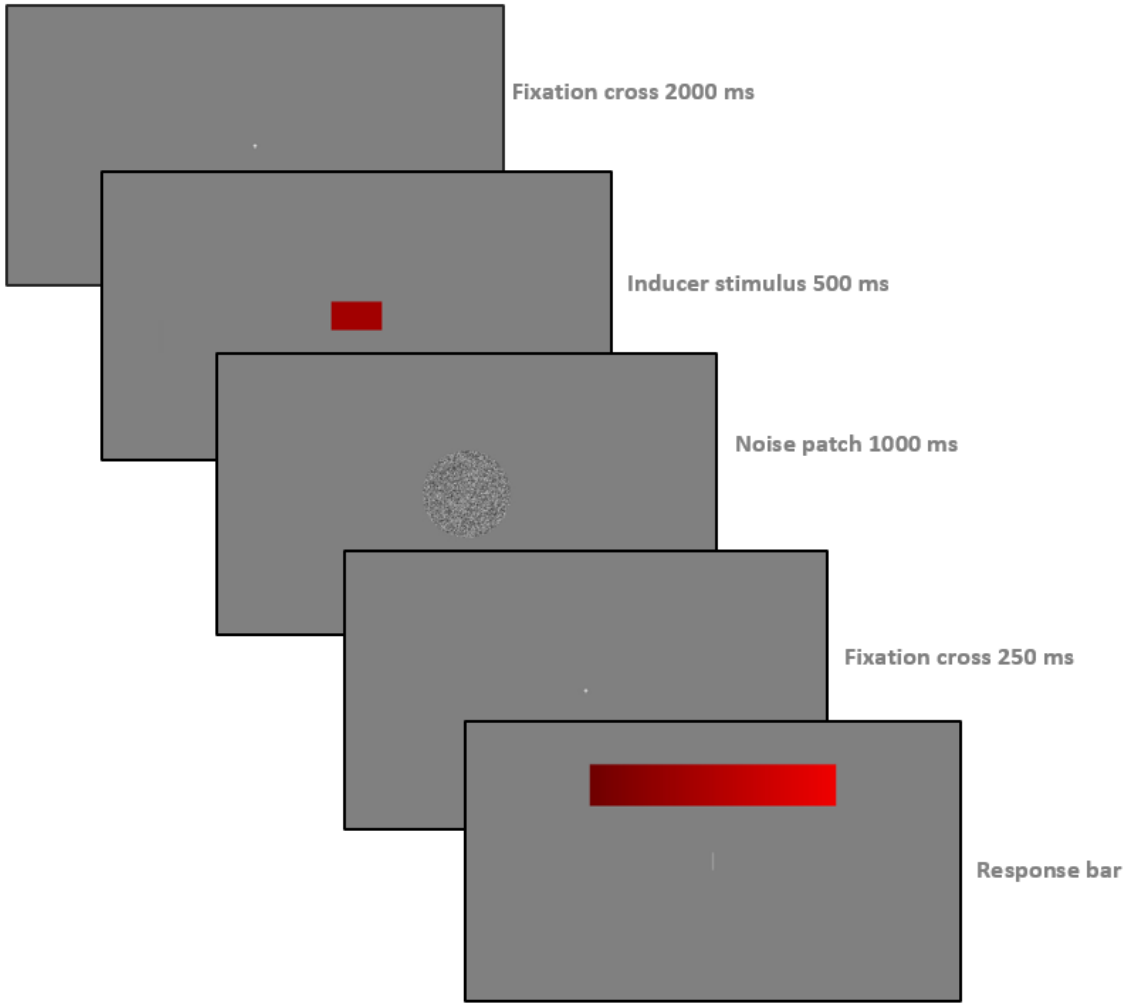
Experiment 2

4 participants

Identical procedure

Manipulation:

Luminosity

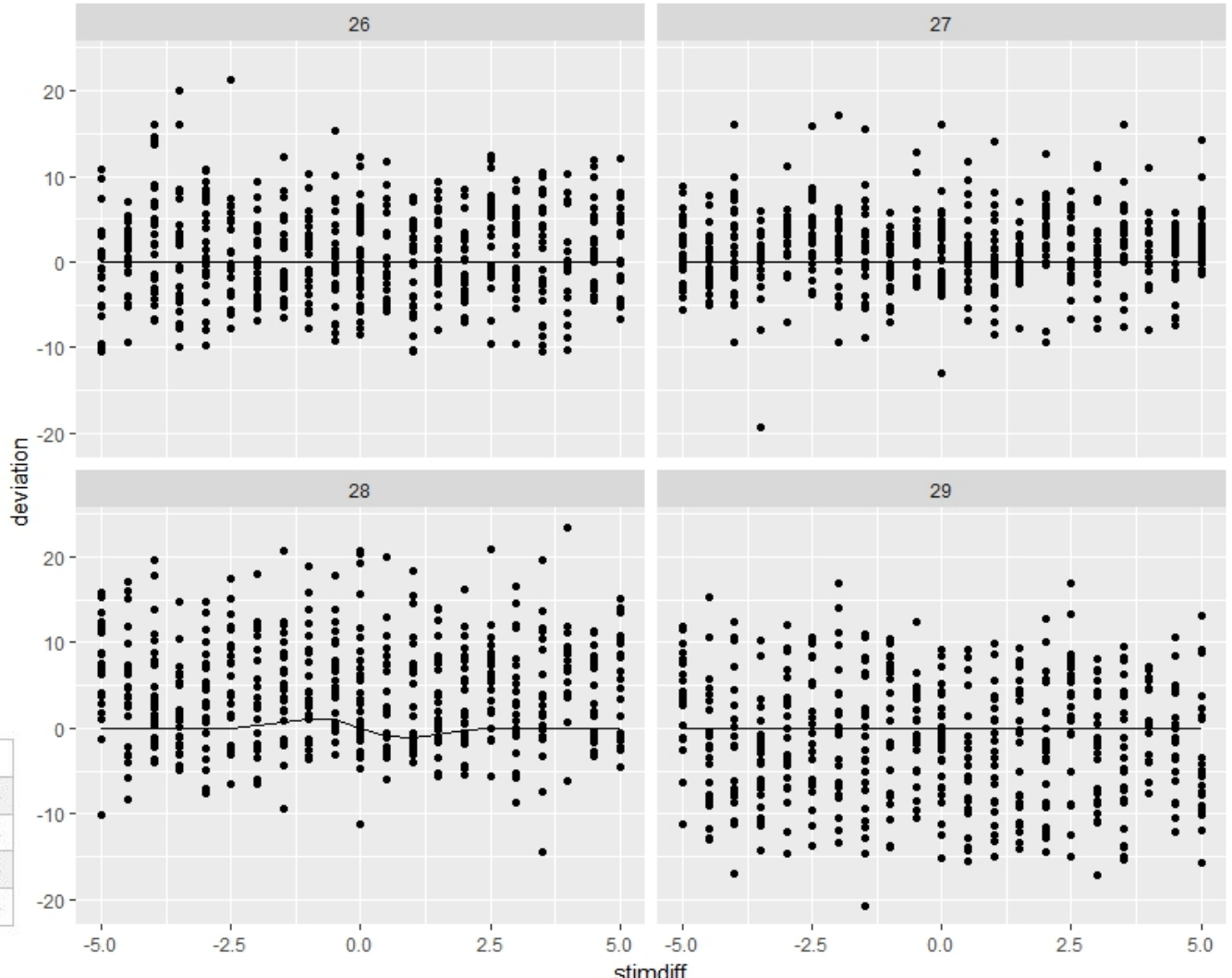


Results

All conditions

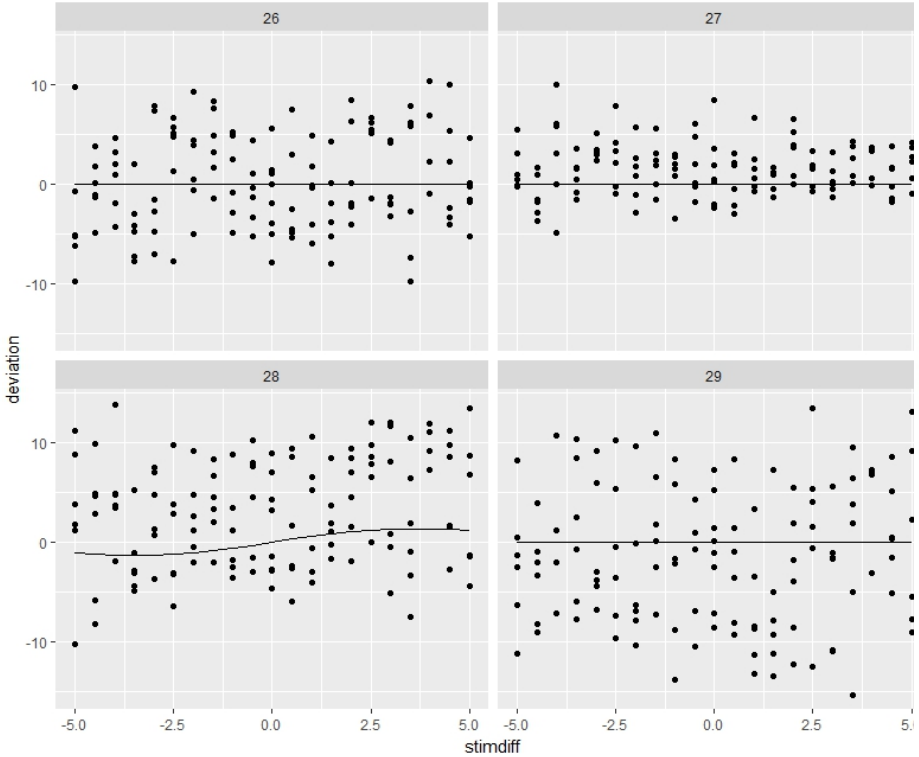
The Expected derivative of a Gaussian curve is not observed for any of the 9 participants regardless of condition or response accuracy

id	mean_acc	sd_acc	N_trials
26	4.527025	3.26269	504
27	3.532412	3.066683	504
28	6.039802	4.694799	504
29	6.238789	4.123716	504

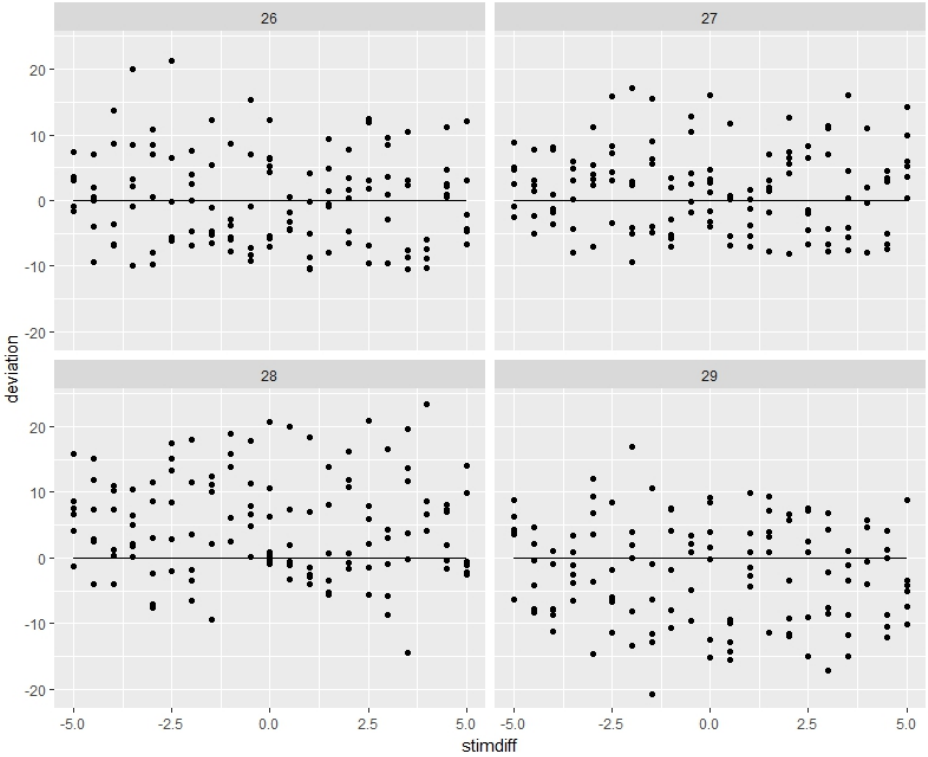


Results per condition

Blue condition



Red condition



Discussion

→ Fraser Aitken, European Conference on Visual Perception 2017

Serial dependence occurs only when the past is assumed to be a good predictor of the present
=> comes into play only in a very noisy context

Color is a very salient characteristic of the physical world
=> more extreme obstruction of perception is necessary when it comes to colors

→ Different structural and functional characteristics of the cortical regions specialized in processing of the corresponding type of information

Color is processed in several regions of the visual cortex
Single- and double-opponent cells

Evaluation

- \+ We learned a lot about programming and about organizing the data
- \+ We learned much about the process of research (sometimes expected effects are not found)
- \+ We hope that publishing our data can help to make science more transparent to encourage others to follow our example
- \+ Potential contact with researchers who also failed to find serial dependence effects
- − Difficult to get used to GitHub
- − More Work

Thank you for your attention!

References

Aitken, F. & Ales, J. (2017); Adaptive serial dependence of visual estimates. Presentation on 40th European Conference on Visual Perception, Berlin

Fischer, J. & Whitney, D. (2014). Serial dependence in visual perception. *Nature Neuroscience*, 17, 738-743

Shapley, R. & Hawken, M. (2011). Color in the Cortex—single- and double-opponent cells. *Vision Research*, 5, 701-717