

Digital Open Science Workshop

22 September 2017

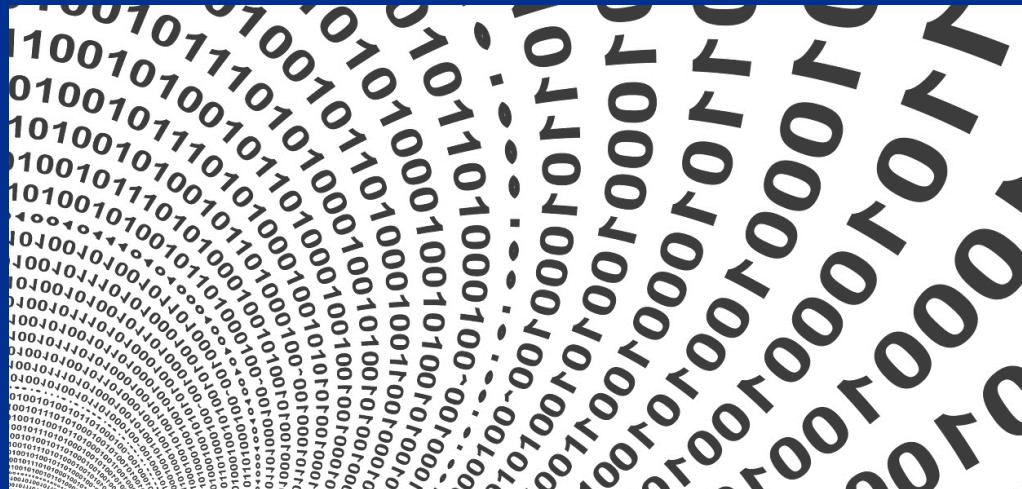


Freie Universität

Verena Sarrazin Viktoriya Vitkova

Stick to your colors!

Perceptual continuity for colors?



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



GitHub

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

OSFHOME ▾

Serial Dependence in Color Perception

Files Wiki Analytics Registrations Forks

Search Support Donate Sign Up Sign In

Public P 0

Serial Dependence in Color Perception

Contributors: [Viktoria Vitkova](#), [Verena Sarrazin](#), [Ulf Toelch](#)

Date created: 2017-08-14 11:57 AM | Last Updated: 2017-09-15 03:57 PM

Category: Project

Wiki

On this page you can find all details concerning the project Serial Dependence in Color Perception. We recommend to first read the PDF file in the **Description of the experimental procedure** component.

All scripts are also available in the following GitHub repository: <https://github.com/VitkovaV/Serial-Dependence-in-Color-Perception>

[Read More](#)

Files

Name	Modified
Serial Dependence in Color Perception	2017-09-15 03:39 PM
- OSF Storage	
- Description of the experimental procedure	
- OSF Storage	
Serial Dependence in Color Perception.pdf	2017-09-15 03:39 PM
- Psychopy scripts	
- OSF Storage	
Experiment 5 (participants 21-25)	
Experiment 6 (participants 26-29)	

Citation

osf.io/jaxdp ▾

Components

- **Description of the experimental procedure**
Vitkova, Sarrazin & Toelch
4 contributions
- **Psychopy scripts**
Sarrazin, Vitkova & Toelch
41 contributions
- **Trial values**
Sarrazin, Vitkova & Toelch
99 contributions
- **Participant data**
Vitkova, Sarrazin & Toelch
372 contributions
- **Analysis scripts**
Vitkova, Sarrazin & Toelch
47 contributions

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

The screenshot shows a GitHub repository page. At the top, there's a navigation bar with links for 'This repository', 'Search', 'Pull requests', 'Issues', 'Marketplace', and 'Explore'. On the right of the bar are buttons for 'Watch' (with 1 watch), 'Star' (with 0 stars), and 'Fork' (with 0 forks). Below the bar, the repository name 'VitkovaV / Serial-Dependence-in-Color-Perception' is displayed, along with a 'Code' tab (which is selected) and other tabs for 'Issues' (0), 'Pull requests' (0), 'Projects' (0), 'Wiki', 'Settings', and 'Insights'.

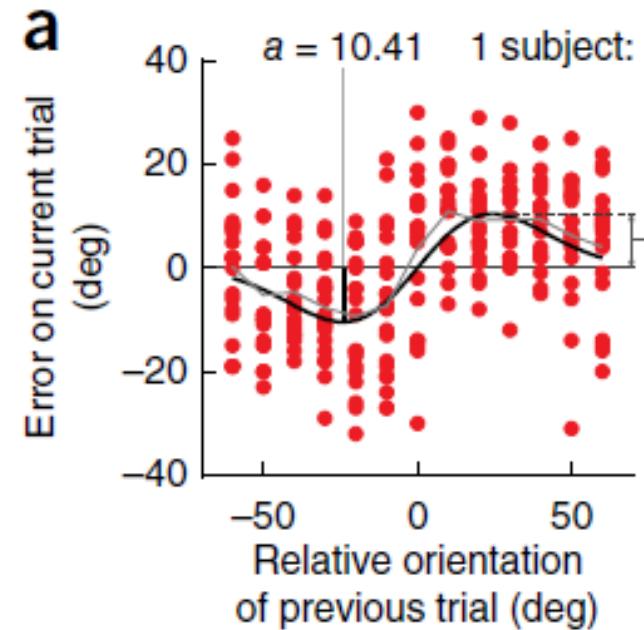
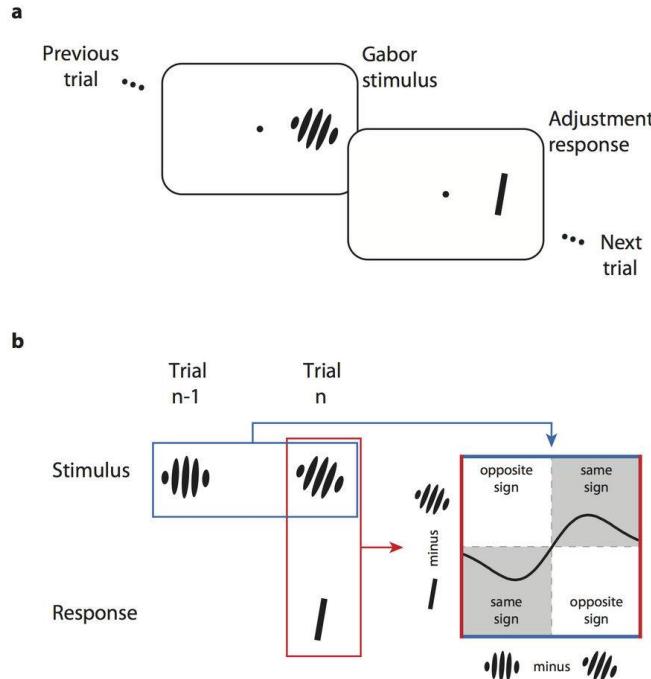
The main content area starts with a message: 'No description, website, or topics provided.' There's an 'Edit' button and a 'Add topics' link. Below this, a summary bar shows '23 commits', '1 branch', '0 releases', and '3 contributors'. It also includes dropdowns for 'Branch: master' and 'New pull request', and buttons for 'Create new file', 'Upload files', 'Find file', and 'Clone or download'.

The commit history table lists 23 commits, all made by 'VitkovaV' on GitHub. The commits are:

Commit	Description	Date
Delete serial_dependence_Gabor.m	VitkovaV committed on GitHub	Latest commit d957706 4 days ago
Response Bar Continuum	Response bar continuum, saving Last Position of the mouse	2 months ago
data	unlocked and push all	3 months ago
.iohpid	unlocked and push all	3 months ago
FinalVersion.psyexp	Final version and color stimuli table	3 months ago
LAB-colors.xlsx	Add Progress.psyexp	3 months ago
Larger_differences_long.xlsx	Final version and color stimuli table	3 months ago
LastPosition.m	Analyse last position of the mouse	2 months ago
LuminosityVersion.psyexp	Luminosity experiment; value generator for the Response Bar experiment	2 months ago
OneStep.psyexp	initial commit	3 months ago
OneStepFurther.psyexp	initial commit	3 months ago
OneStepFurther.py	initial commit	3 months ago
OneStepFurther.pyc	initial commit	3 months ago
OneStepFurther1.psyexp	script progress and stimuli	3 months ago
OneStepFurther1_lastrun.py	unlocked and push all	3 months ago
OneStepFurther_lastrun.py	unlocked and push all	3 months ago

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

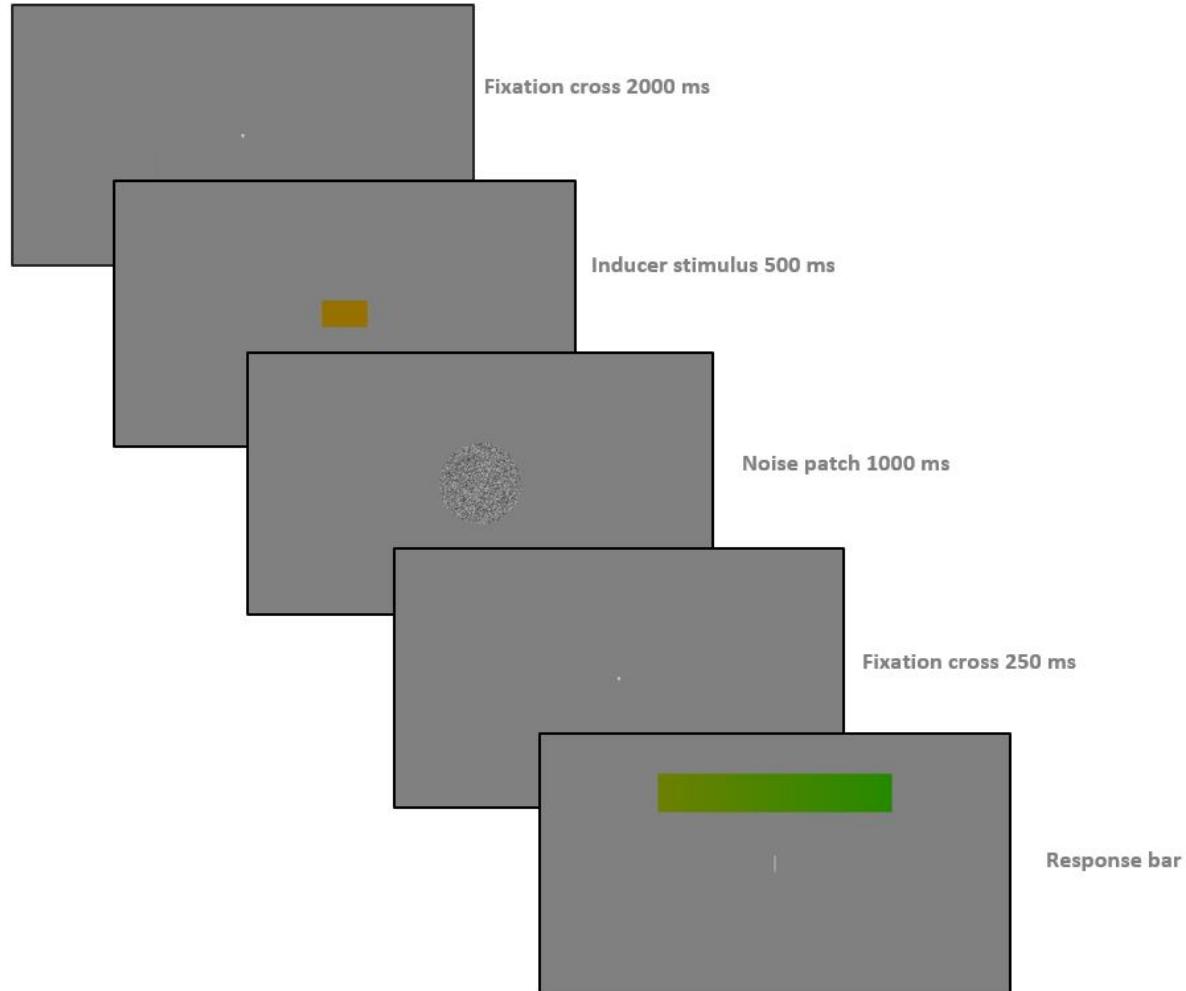
5 participants

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

504 trials

Manipulation:

Hue





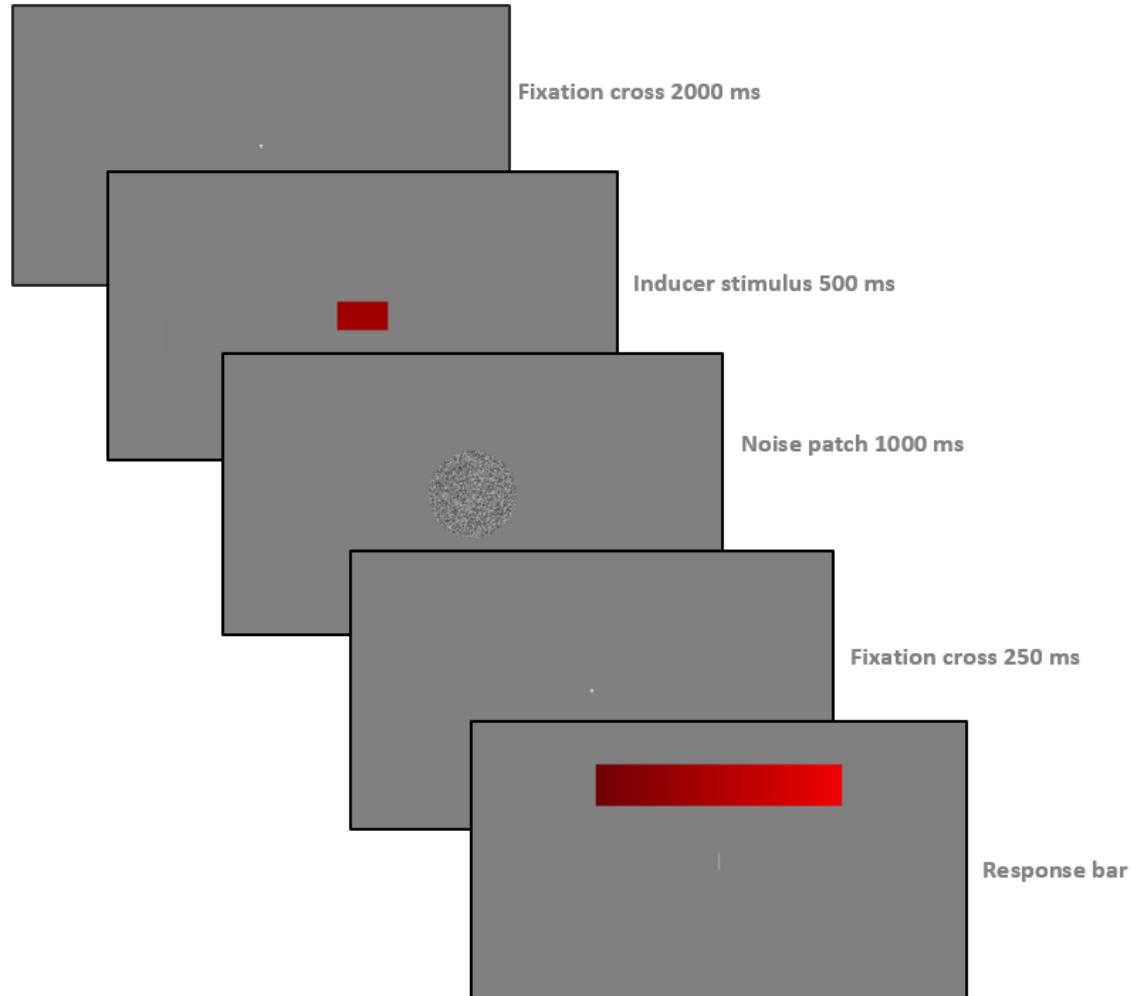
Experiment 2

4 participants

Identical procedure

Manipulation:

Luminosity

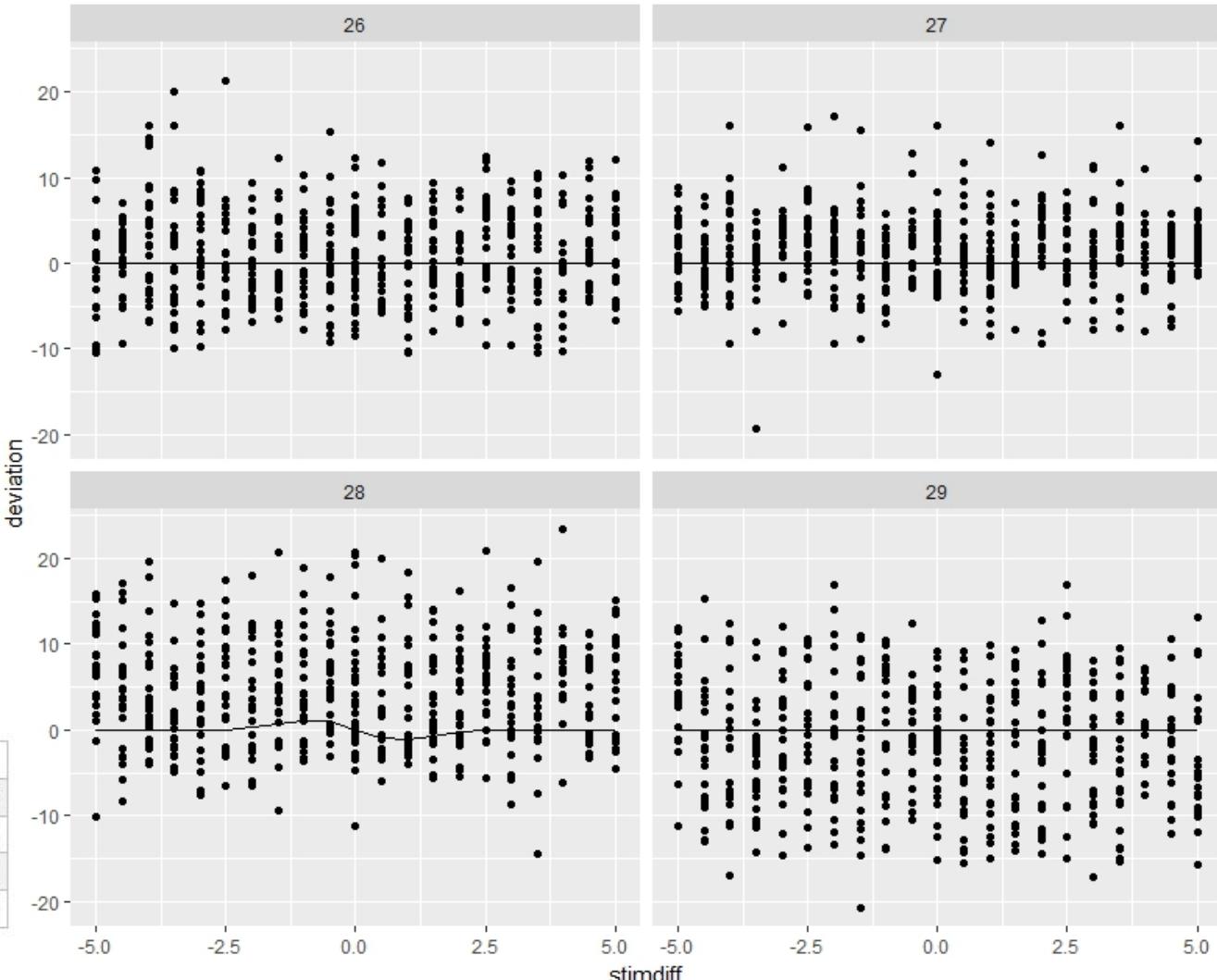


R

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

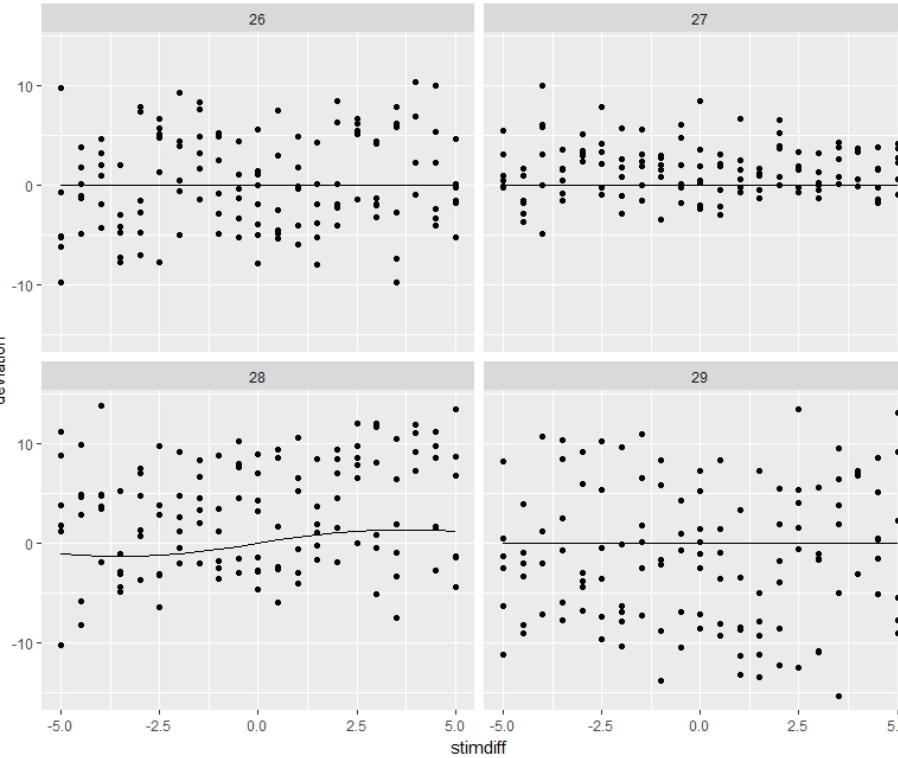


id	mean_acc	sd_acc	N_trials
26	4.527025	3.26269	504
27	3.532412	3.066683	504
28	6.039802	4.694799	504
29	6.238789	4.123716	504

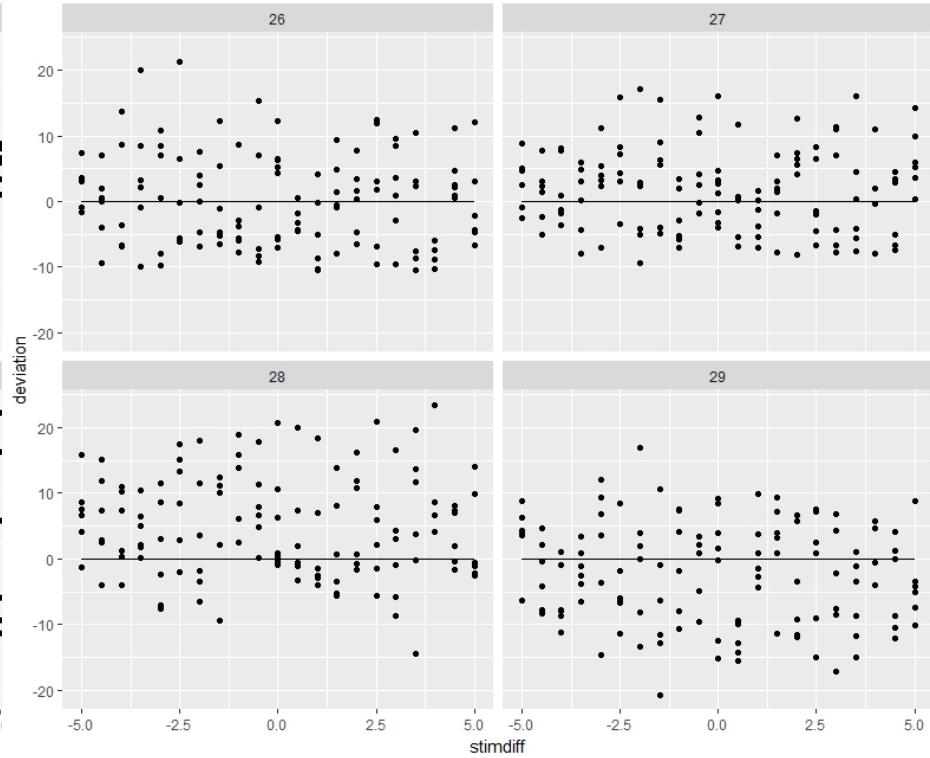


Results per condition

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

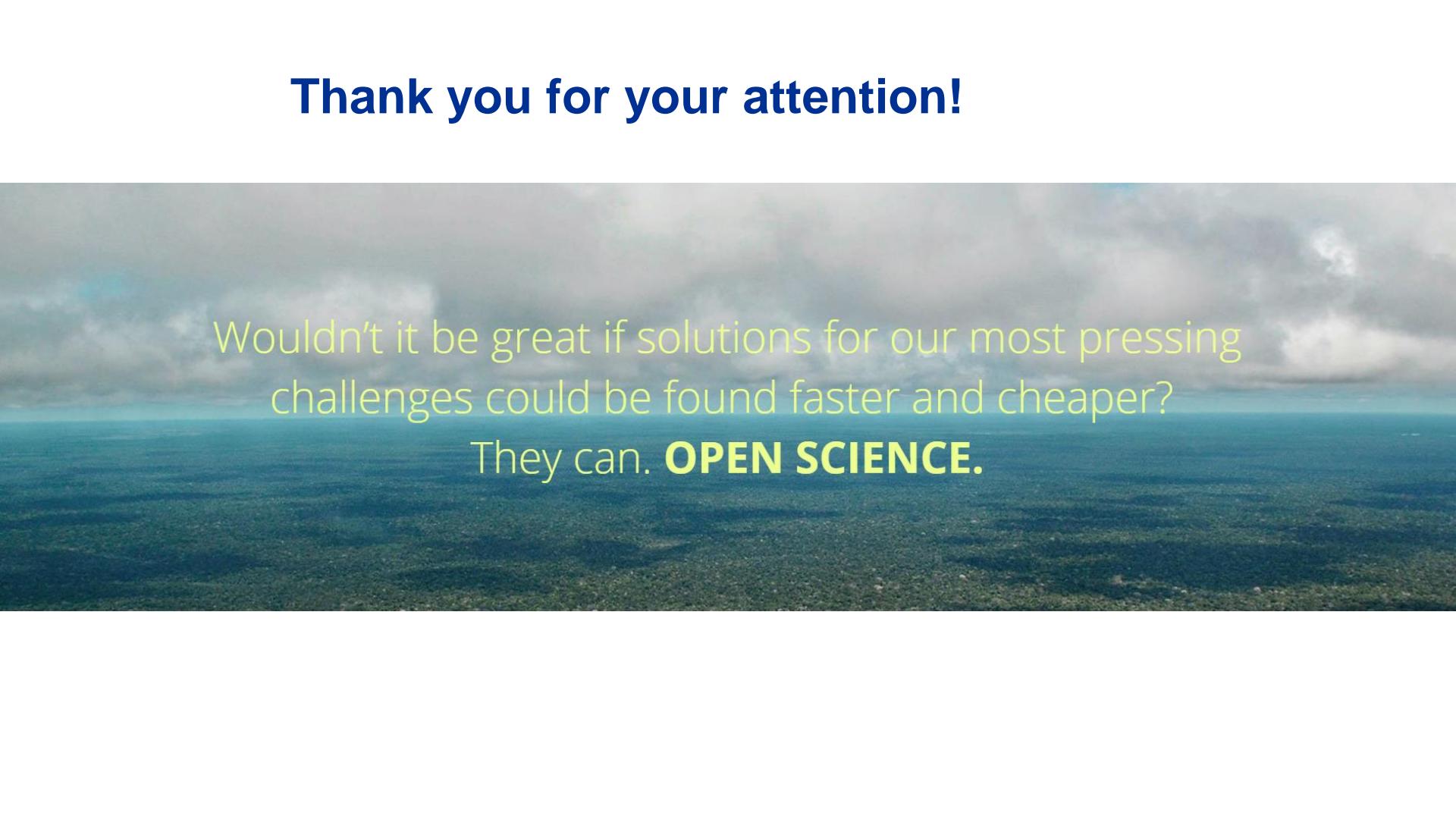
Color is processed in several regions of the visual cortex
Single- and double-opponent cells



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!



Wouldn't it be great if solutions for our most pressing challenges could be found faster and cheaper?
They can. **OPEN SCIENCE.**



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