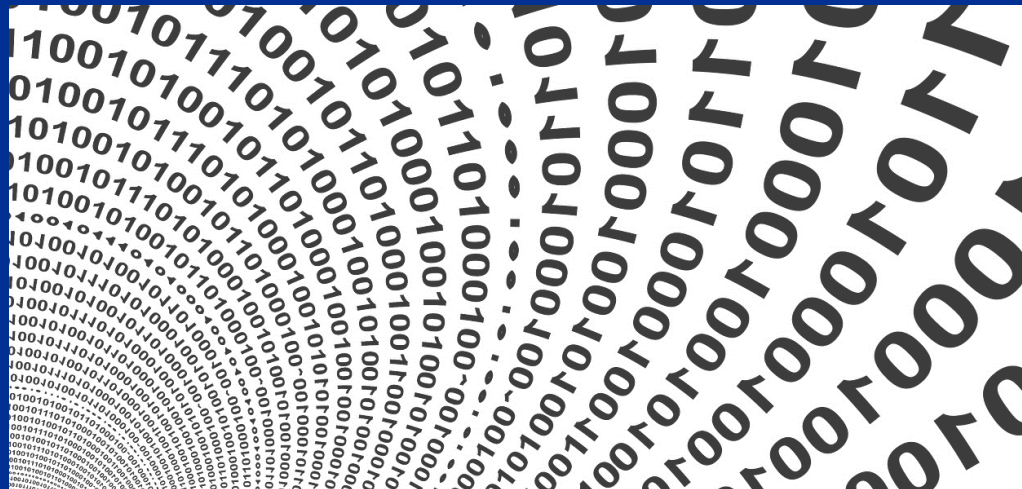


# Stick to your colors!

## Perceptual continuity for colors?

## Digital Open Science Workshop

22 September 2017



# 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/>

## Serial Dependence in Color Perception

Public

P 0



Contributors: [Viktoriya 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



Filter



Name ^ v

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Serial Dependence in Color Perception	
- 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 the GitHub interface for the repository 'Serial-Dependence-in-Color-Perception' by user 'VitkovaV'. The repository has 1 watch, 0 stars, and 0 forks. It is currently on the 'master' branch. The commit history shows 23 commits by 3 contributors. The most recent commit is by VitkovaV, deleting 'serial\_dependence\_Gabor.m' 4 days ago. The file list includes folders like 'Response Bar Coninuum' and 'data', and various files such as '.iohpid', 'FinalVersion.psyexp', 'LAB-colors.xlsx', 'Larger\_differences\_long.xlsx', 'LastPosition.m', 'LuminosityVersion.psyexp', 'OneStep.psyexp', 'OneStepFurther.psyexp', 'OneStepFurther.py', 'OneStepFurther.pyc', 'OneStepFurther1.psyexp', 'OneStepFurther1\_lastrun.py', and 'OneStepFurther\_lastrun.py'.

This repository Search Pull requests Issues Marketplace Explore

VitkovaV / Serial-Dependence-in-Color-Perception Watch 1 Star 0 Fork 0

<> Code Issues 0 Pull requests 0 Projects 0 Wiki Settings Insights

No description, website, or topics provided. Edit

Add topics

23 commits 1 branch 0 releases 3 contributors

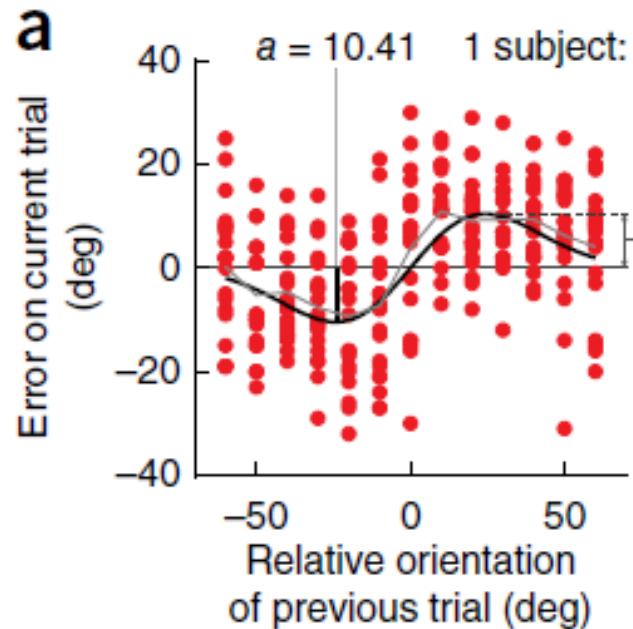
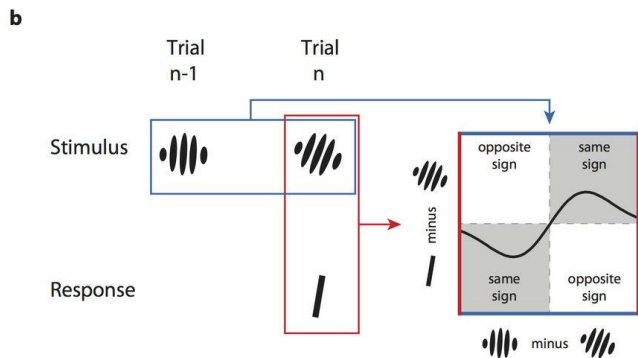
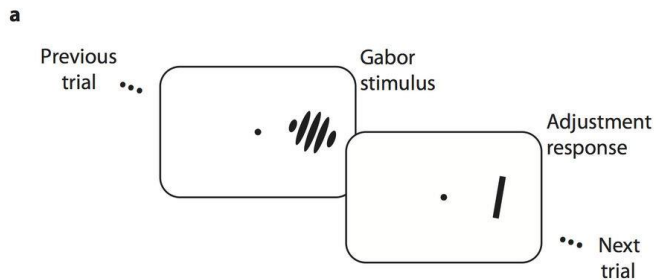
Branch: master New pull request Create new file Upload files Find file Clone or download

VitkovaV committed on GitHub Delete serial\_dependence\_Gabor.m Latest commit d957706 4 days ago

File	Description	Time
Response Bar Coninuum	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

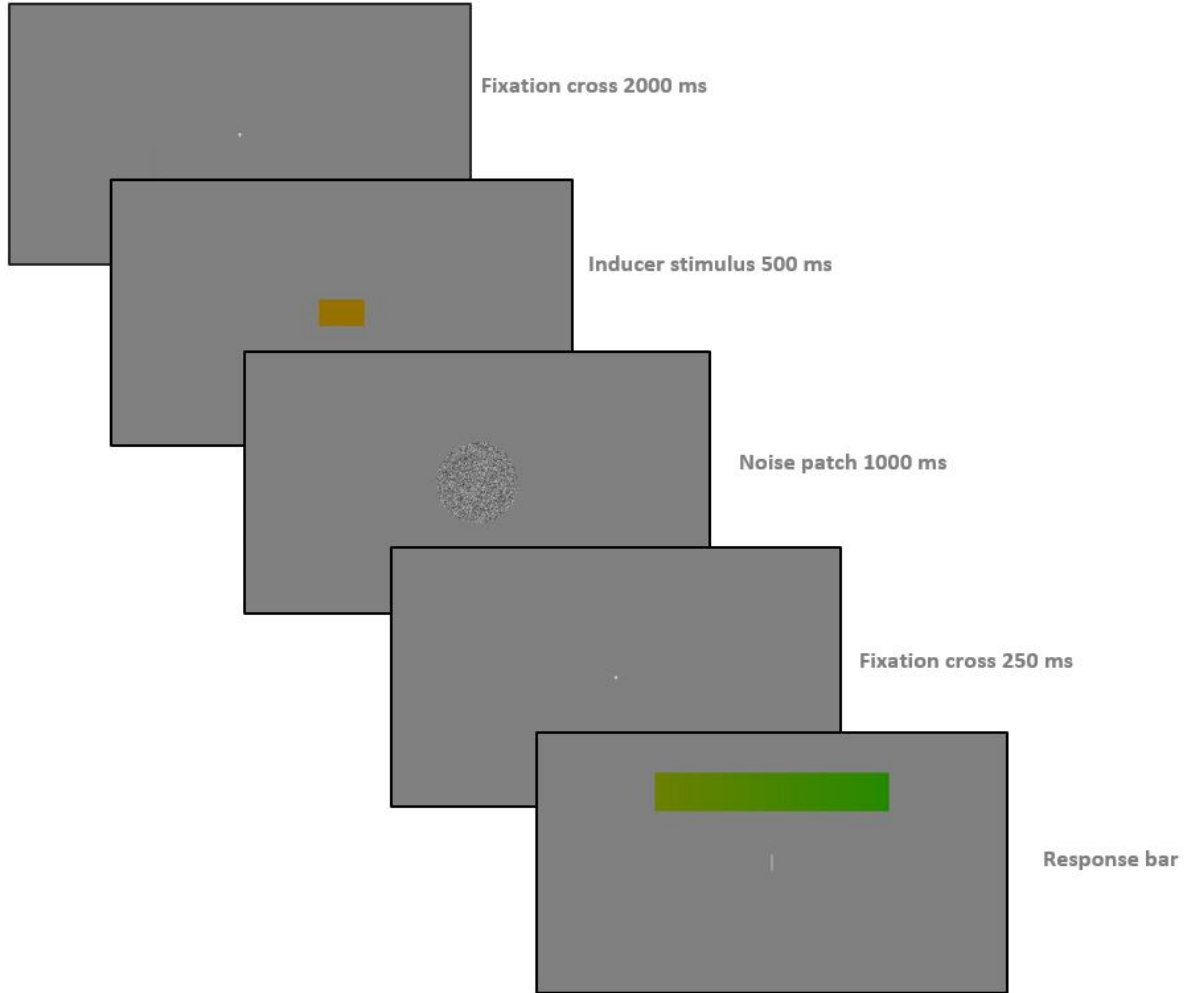
5 participants

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

504 trials

Manipulation:

Hue



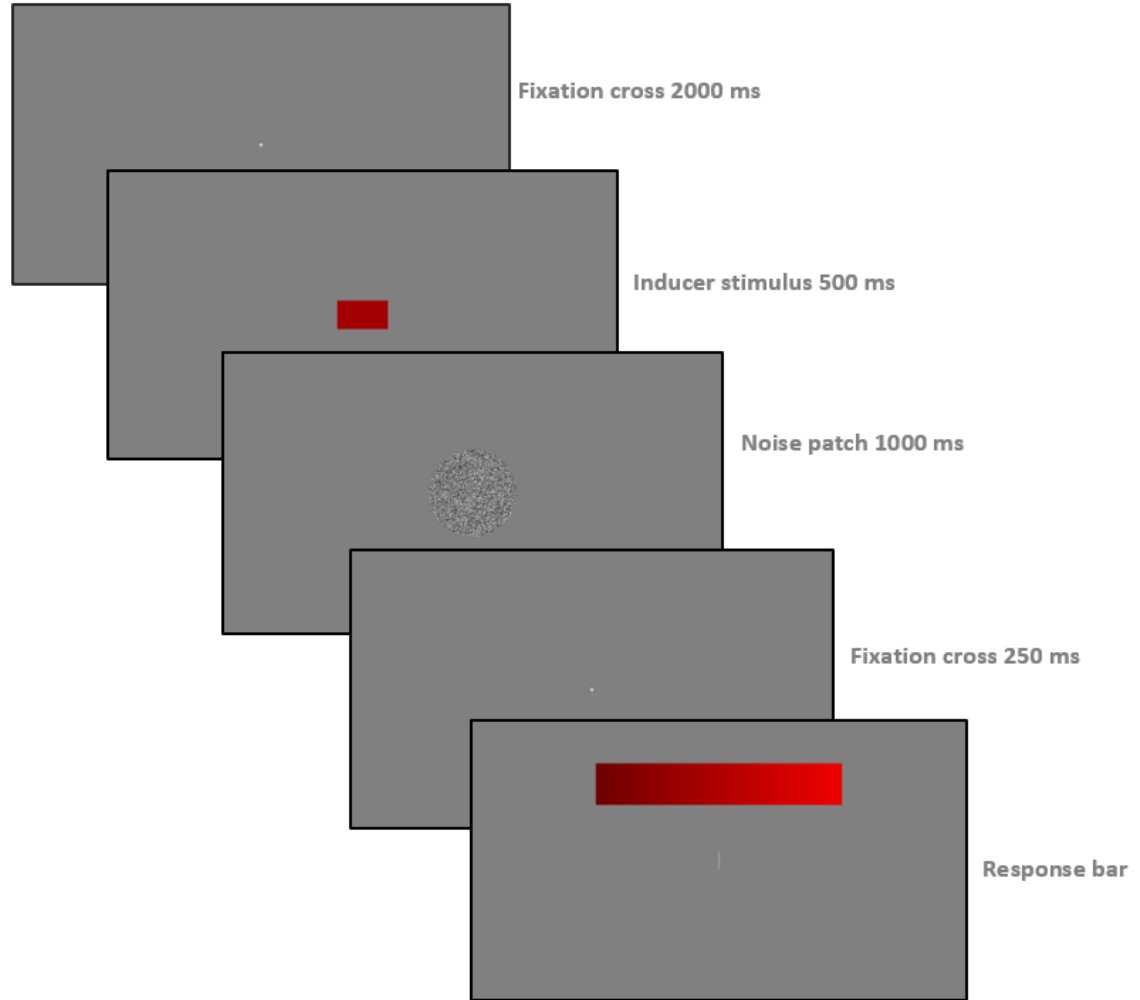
# Experiment 2

4 participants

Identical procedure

Manipulation:

Luminosity



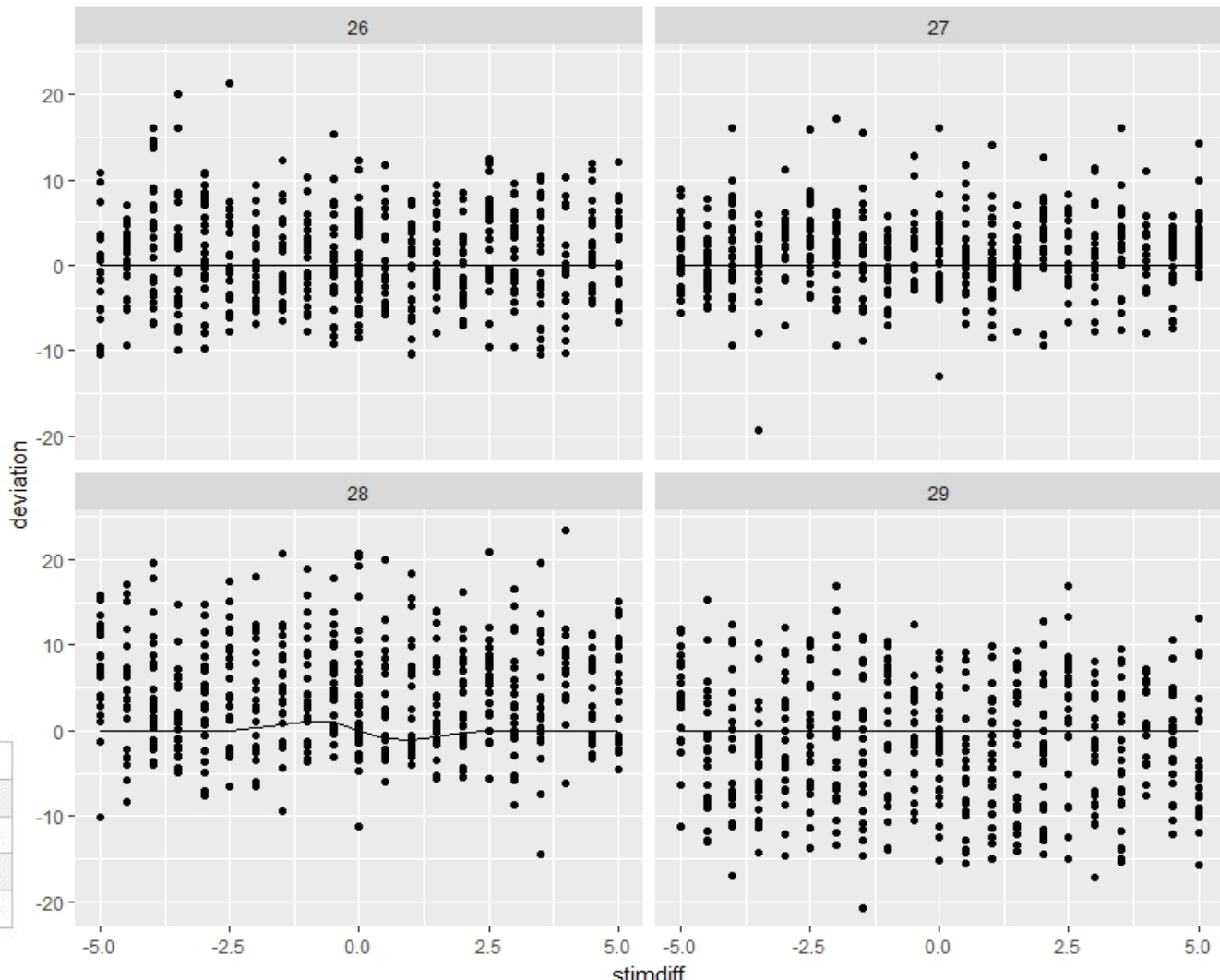


# Results

All conditions

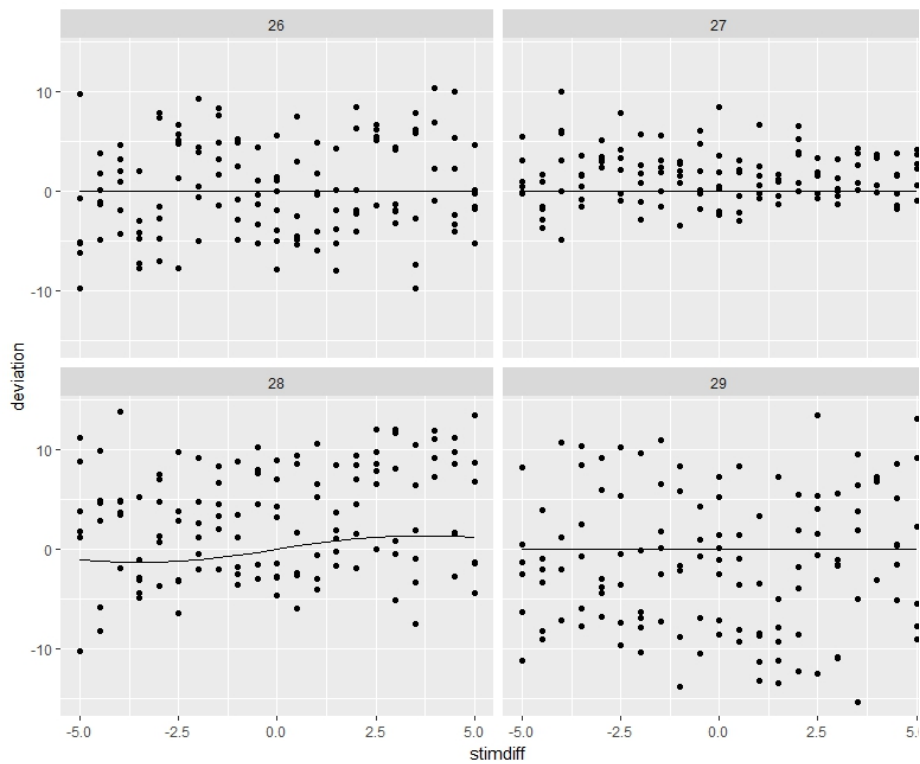
The Expected derivative of a Gaussian curve is not observed for any of the 9 participants regardless of condition or response accuracy

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

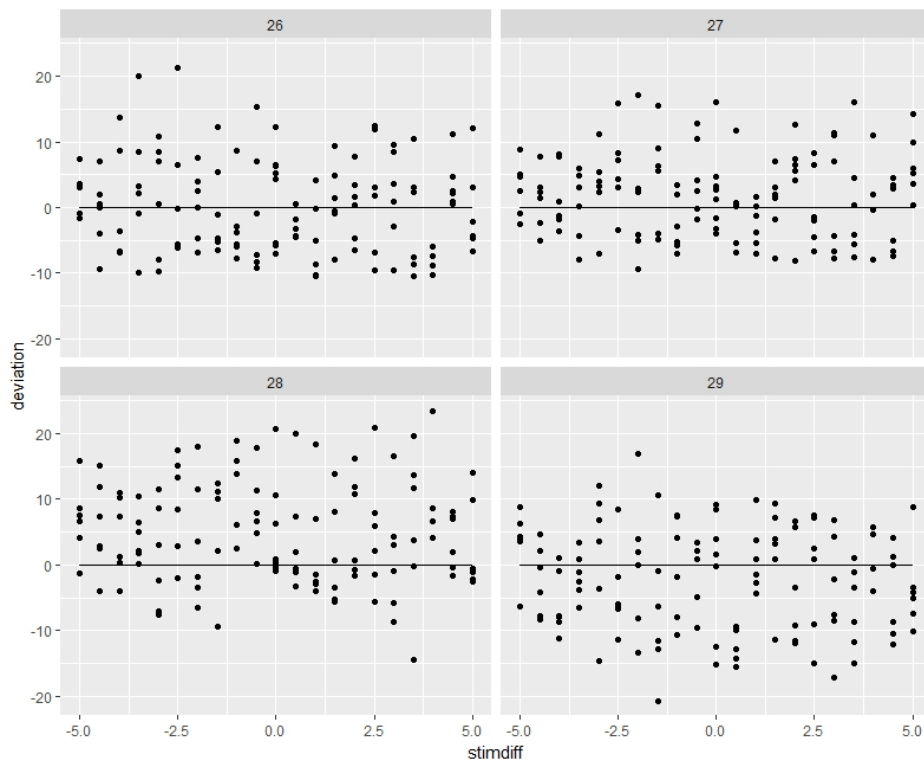


# Results per condition

## 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!**

An aerial photograph of a vast, dense green forest stretching to the horizon under a cloudy sky. The text is overlaid on the center of the image.

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