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## Questions left

positive feedback & verbal reward

## ToTEST with Pilot

The thresholding of Easy & Hard Condition  
trials with certain YS parameter -> until 90 % red spheres dodged  
trials with certain YS parameter -> until 75 % red spheres dodged

What if subject notices mismatch? Is conditioning still working as the stressor?  
pilot among SP members, more or less knowing which trials are mismatched

ergo time pressure

needed, as the assurance that subjects don't just dodge the YS & they must leave some YS  
undodged to finish the trial

## Main question

How does the cognitive stress (CS) influence the spatial navigation (SN)?

## Hypothesis

The cognitive stress impairs the path integration (PI) performance in Triangle Completion Task (TCT).

### Hypothesis Questions

- EGxER = low stress increases performance in easy task
- EGxHR = difficulty level works on low stress level
- HGxHR = low stress increases performance in hard task
- ERxHR = difficulty level works on high stress level

## TCT conditions

- Left/Right (30/60/90 deg) = 6 conditions
- There should be a variation of +/- 5 deg or even 15 deg, to avoid anticipation or uncontrollable strategies
- Not important for analysis of experiment
  - purpose = take care of learning & anticipation effect, ergo some differentiality in the basic task
  - the difference between subjects or those basic conditions (TCT<sub>cond</sub>) doesn't give us information about stress influence
- Stimulus outside of the field of view
  - Create the cue
    - arrow in the MIDDLE of the screen pointing into the direction of rotation
    - attached to the middle of the screen
- The distractor / stressor would be the Yellow Sphere flaying at the subject - to dodge it, subject needs to gaze on it for 500 ms
- At first the conditioning would connect ambient light with difficulty level
  - Connections
    - Green (G) => Easy (E) => high performance (HP)
    - Red (R) => Hard (H) => low performance (LP)
- Secondly, the mismatch between conditioned information would disentangle the difficulty level and stress level
  - Connections
  - the main variable of interest would be the difference between the cued stress and the actual difficulty level

<i>difficulty lvl vs stress lvl</i>	<i>Green</i>	<i>Red</i>
<i>Easy</i>	Baseline	Worse Performance
<i>Hard</i>	Better performance	Baseline

- Checking if stress was induced:
  - behavioral level would tell us (EGxER, HGxHR) that there is a significant different in mismatch trials, which could be explained by stress OR distractors
  - BIOFEEDBACK would tell us, which OR alternative that was
- The thresholding of Easy & Hard Condition
  - trials with certain YS parameter -> until 90 % red spheres dodged
  - trials with certain YS parameter -> until 75 % red spheres dodged
- What if subject notices mismatch? Is conditioning still working as the stressor?
  - pilot among SP members, more or less knowing which trials are mismatched

## Number of Trials (nT)

- *G\*power* calculation software shows, that to achieve the statistical power of min. 0.8, with effect size  $f = 0.25$ , we need 60 trials per condition
- $nT = \text{training (TCT)} + \text{conditioning} + \text{mismatch}$
- We would have 4 conditions (2diff lvls x 2 stress lvls)
  - $4 \times 60 + \text{thresholding trials (5)} + \text{training (4)} = \text{ca. 250 Trials}$

## Motivation / attention 'keeper'

- when money involved  $\Rightarrow$  performance drops
- positive feedback & verbal reward  $\Rightarrow$  performance increases
- ergo time pressure needed, as the assurance that subjects don't just dodge the YS & they must leave some YS undodged to finish the trial

## One Trial flow

