

# GazeCon V2

*Felicia Zhang*

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## Experimental Design

### 1. Subjects

- Tested 52 babies but 4 had bad calibration and 1 parent interacted with baby during the experiment so automatically excluded them.
- We start off data analysis with  $n = 47$

### 2. Design:

- 2 blocks (AV and VA) counterbalanced
- 12 trials per block, for a total of 24 trials
- Familiarization = first 3 trials of each block
- Omissions = 3 trials out of the 9 remaining trials (or 33% of the time)

### 3. Trial:

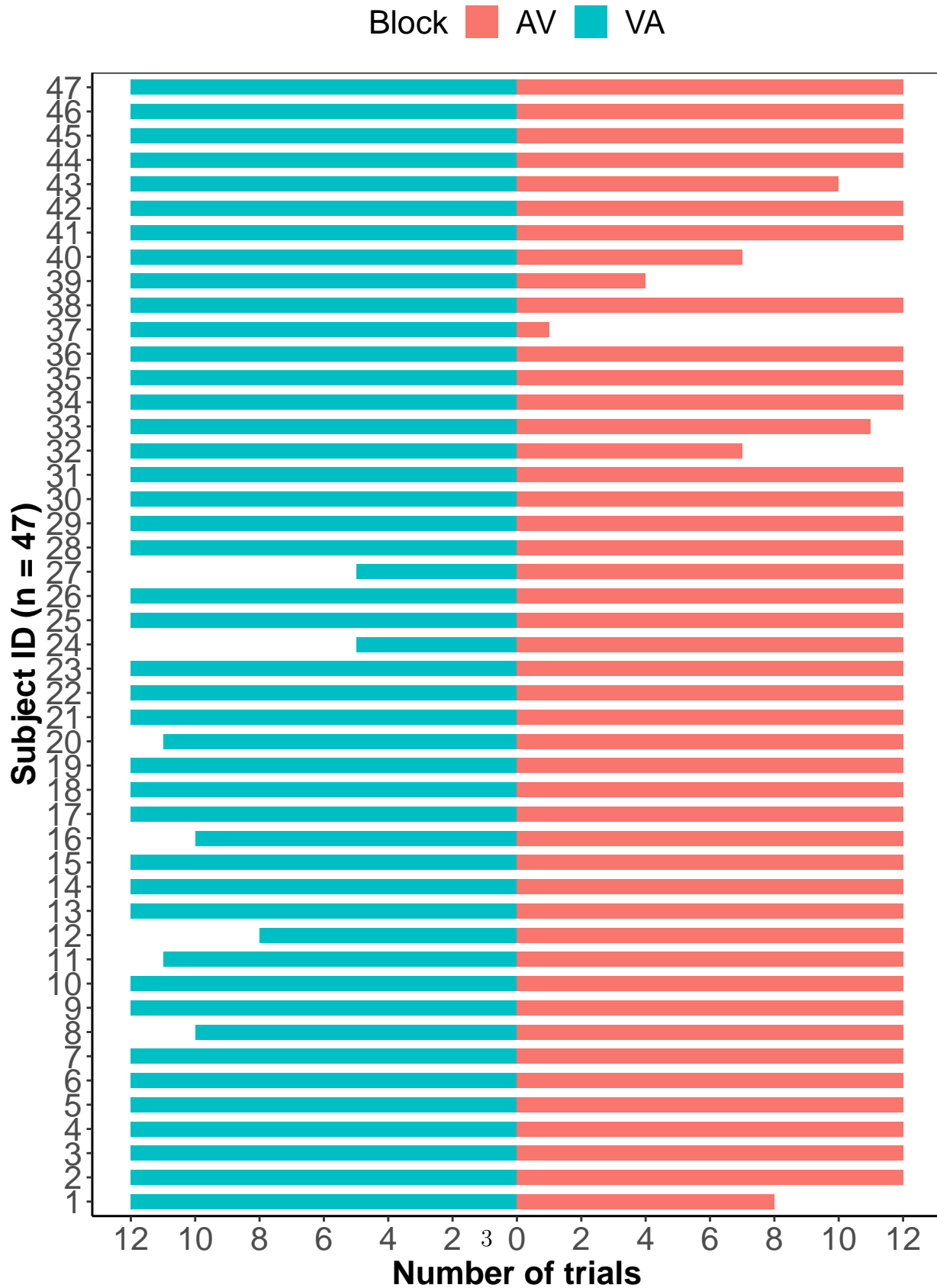
- 10s view targets + 6s baseline video
- A is 1000ms, V is 1000ms

## Preprocessing

1. For gazes that are off the screen, replace pupil size with NA
2. Fill in blinks (interpolate)
3. Calculated PDR from baseline (500ms before trial starts)

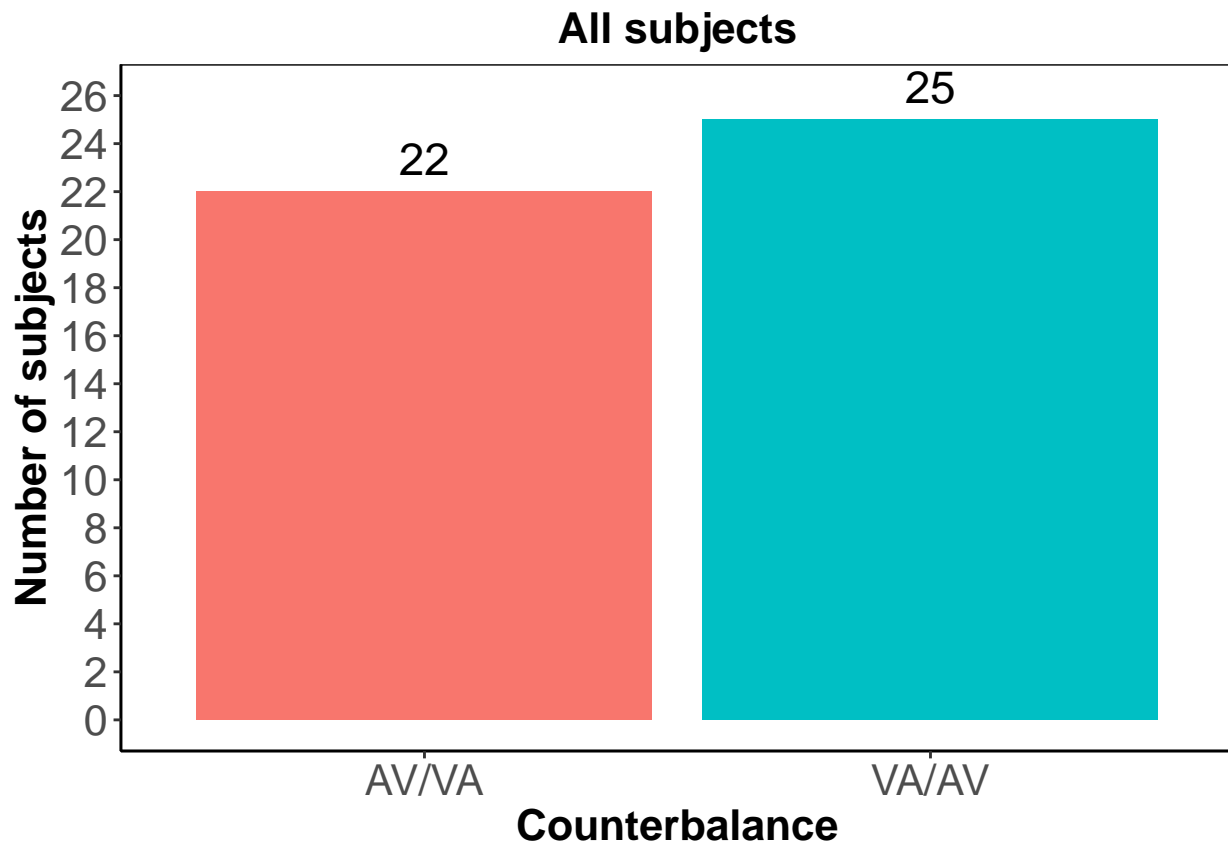
n = 47

Number of trials completed



This graph shows the number of trials each subject completed for each block.

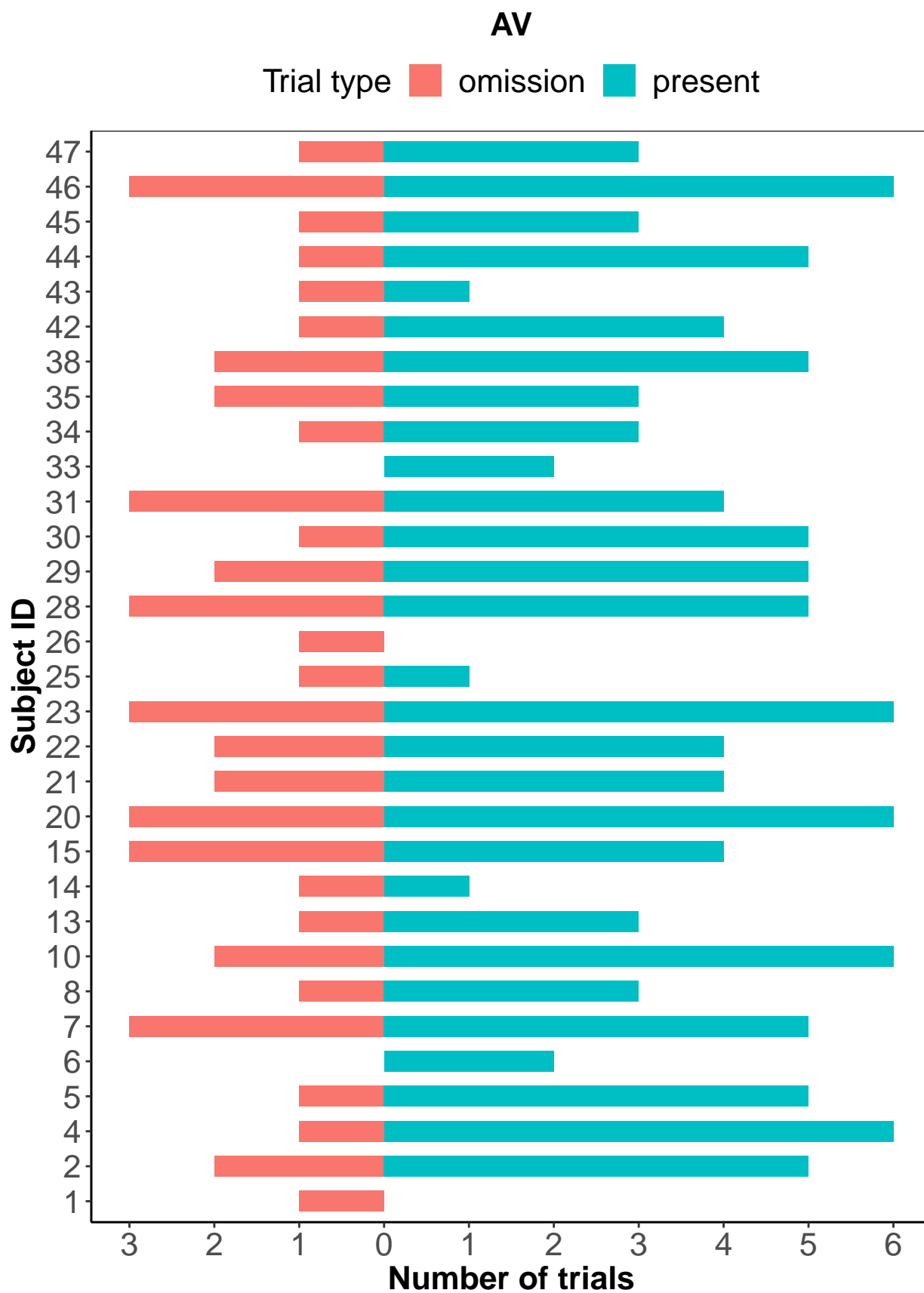
## Counterbalancing

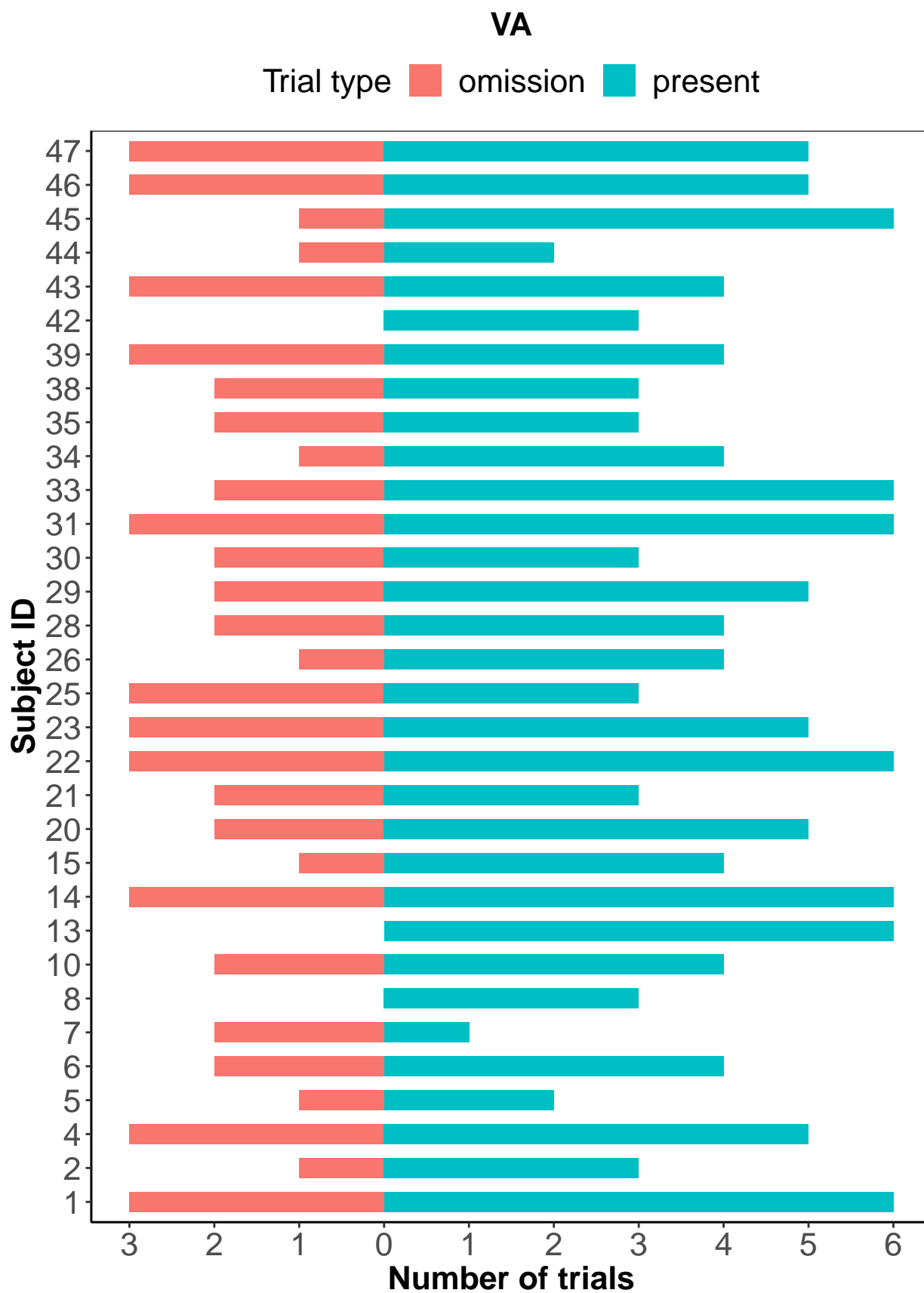


This graph shows the number of subjects in each counterbalancing order. Pretty evenly split.

## Filtering

1. Remove subjects that are missing more than 50% of data ( $n = 32$ )
  2. Remove trials that are missing more than 50% of data
  3. Remove trials that have pupil size larger than 2.5 SD of subject's mean pupil size
- Check number of omission and present trials subjects completed after familiarization.



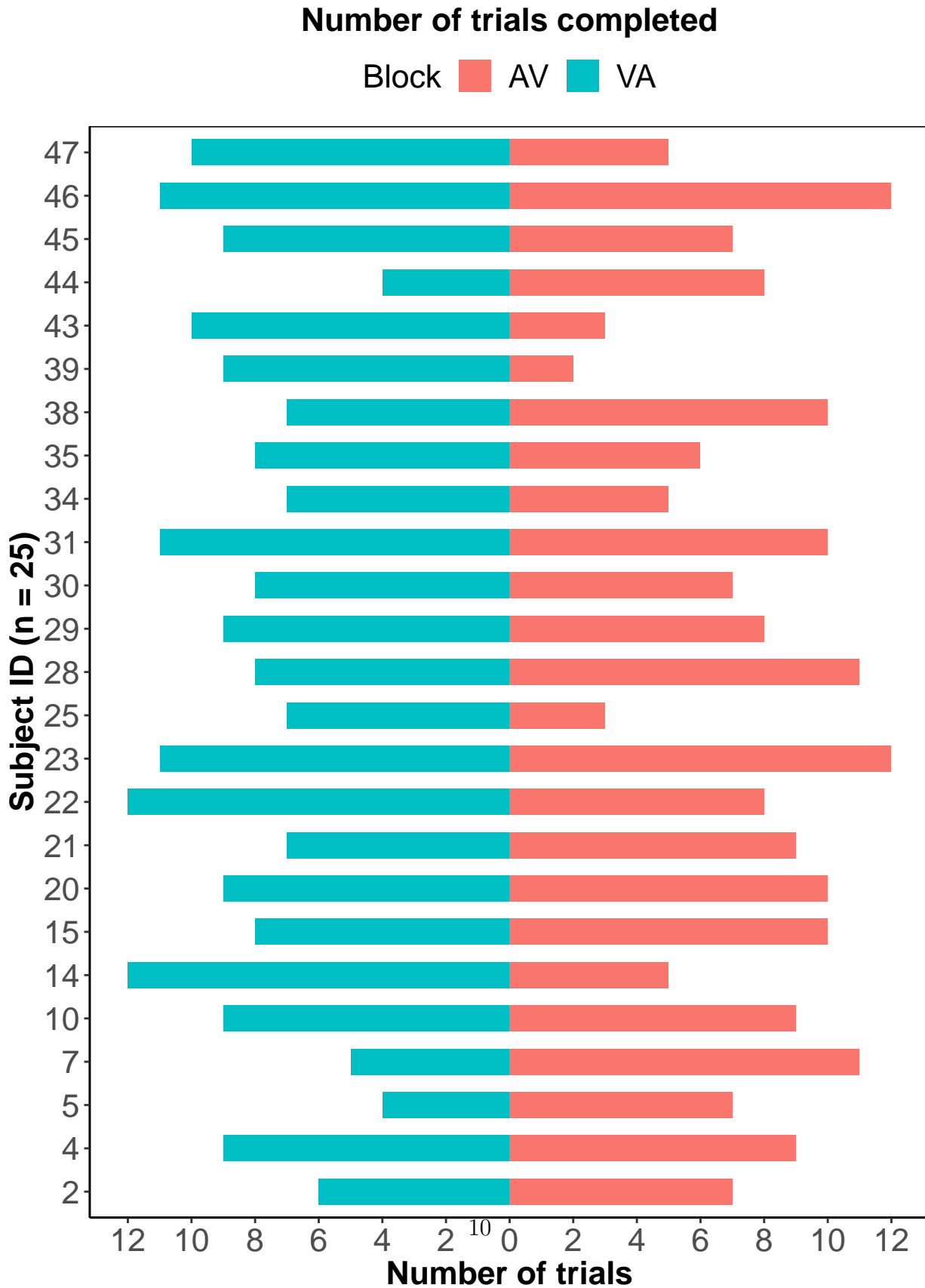




4. Remove subjects who don't have at least 1 omission or present trial for each block (n = 25)

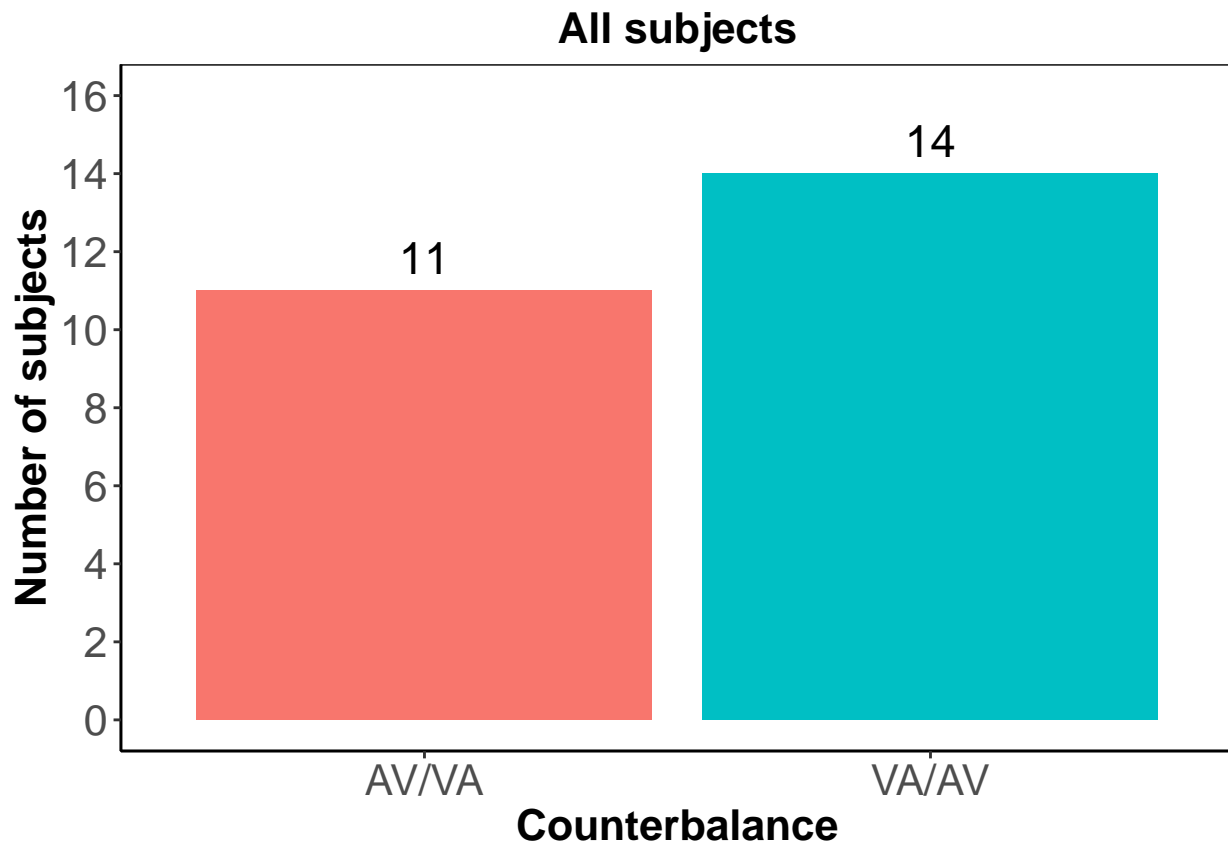
n = 25

Number of trials completed



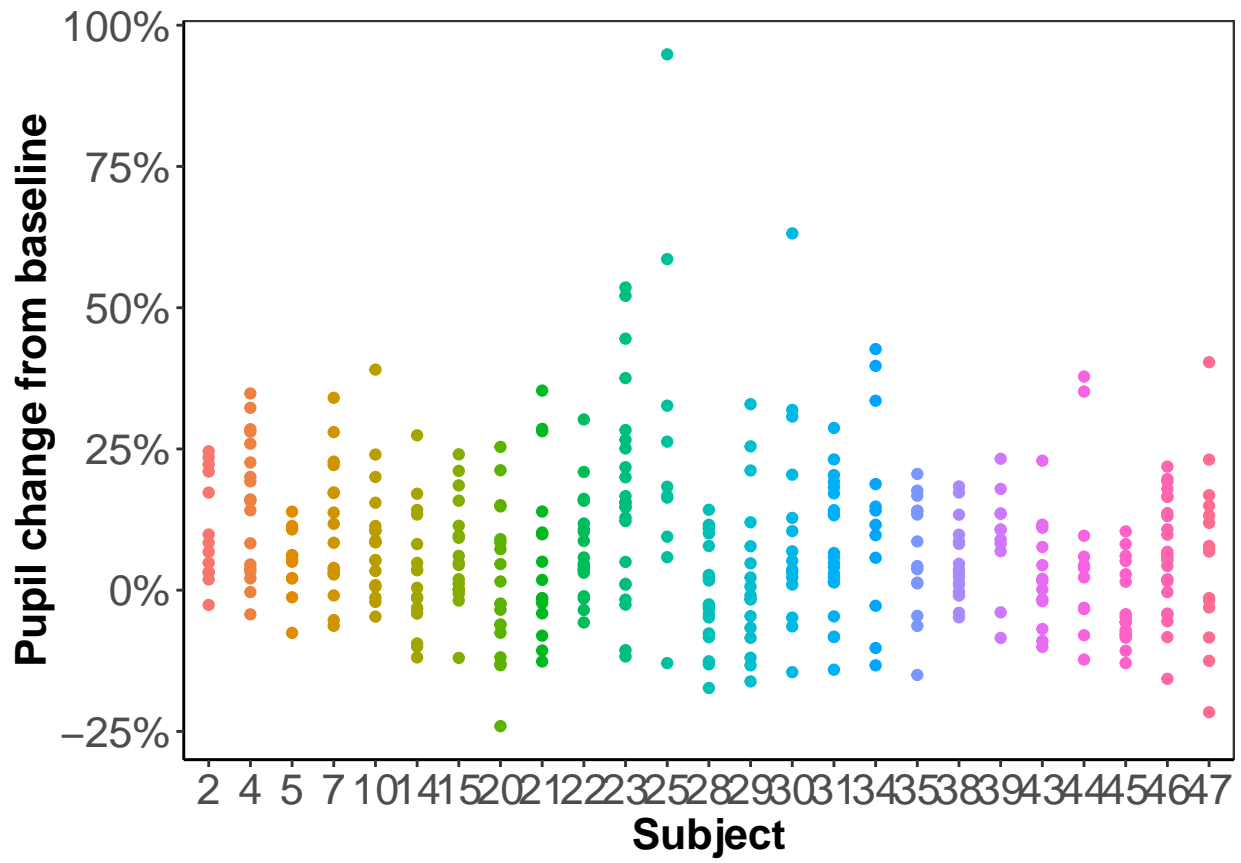
This graph shows the number of trials each subject completed for each block.

## Counterbalancing

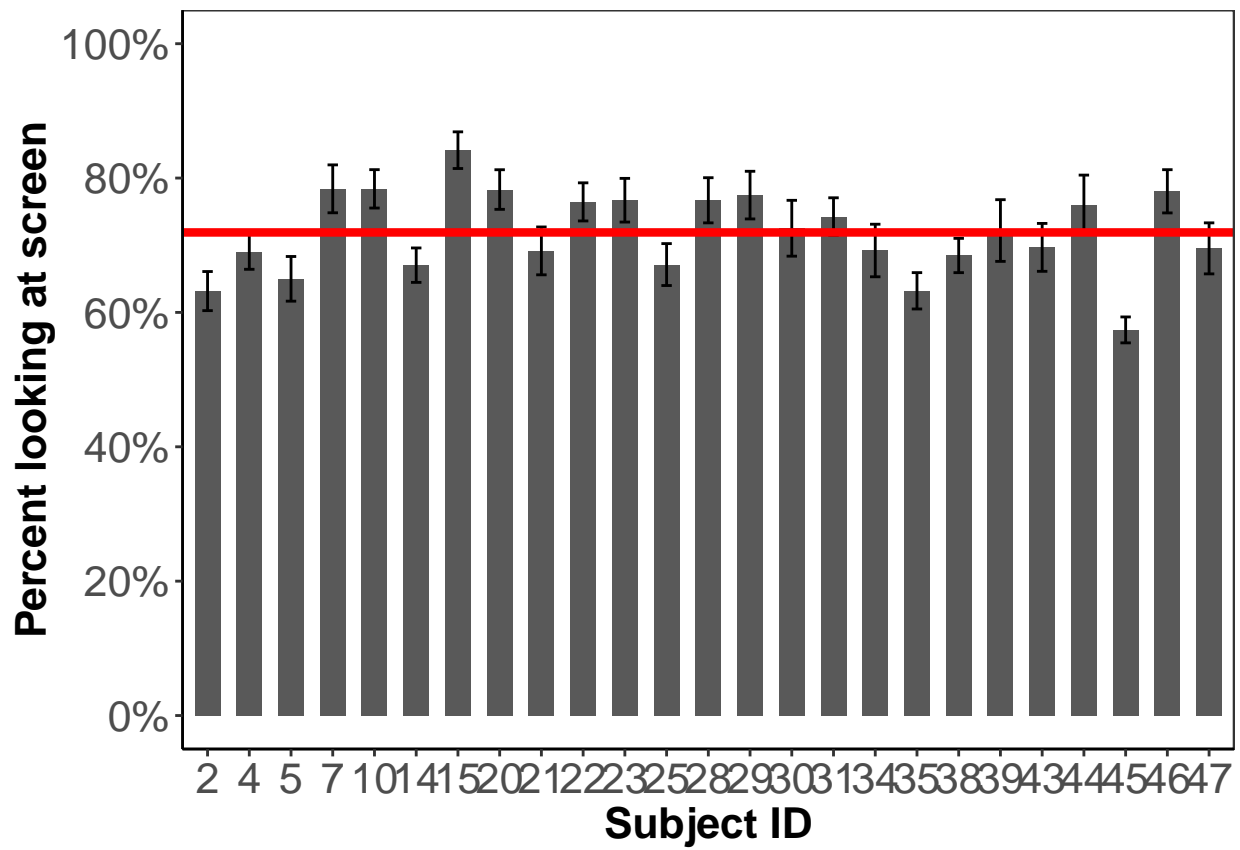


This graph shows the number of subjects in each counterbalancing order. Pretty evenly split.

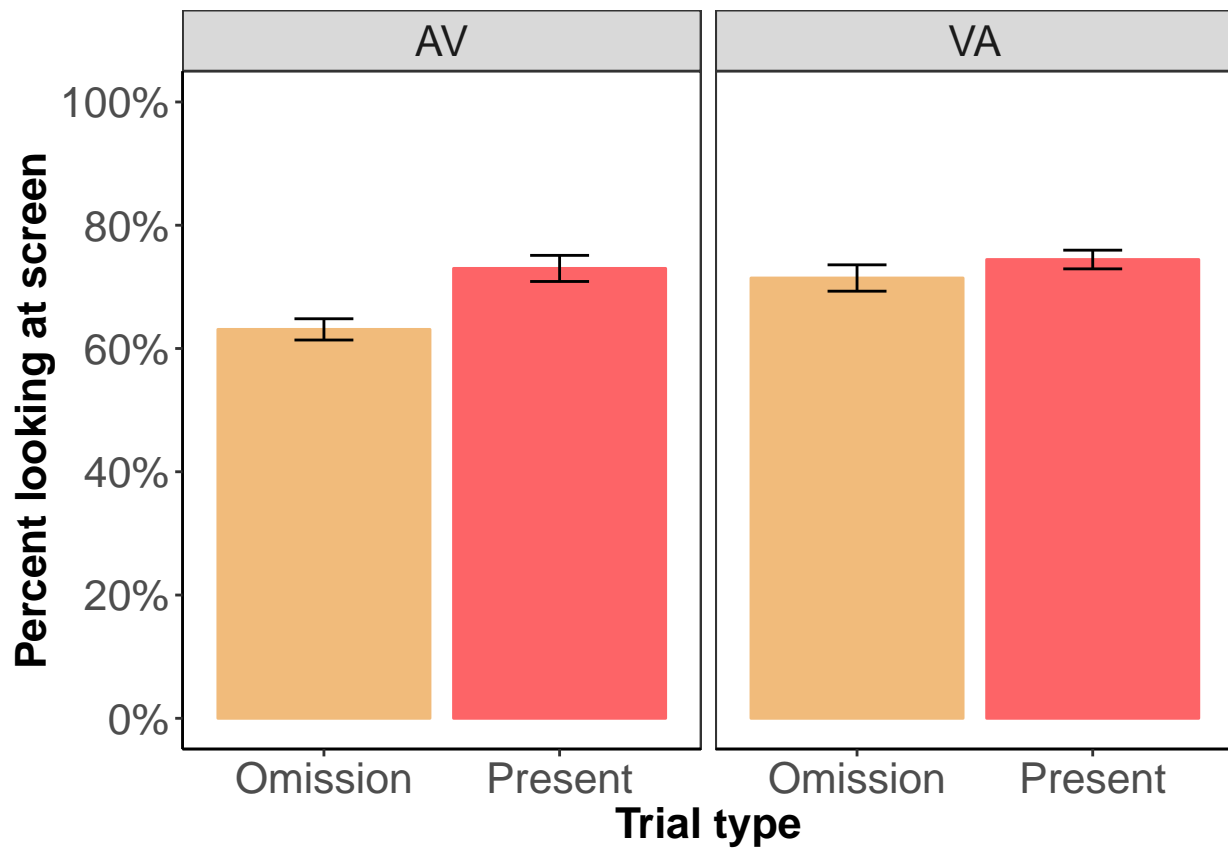
Distribution of pupil size



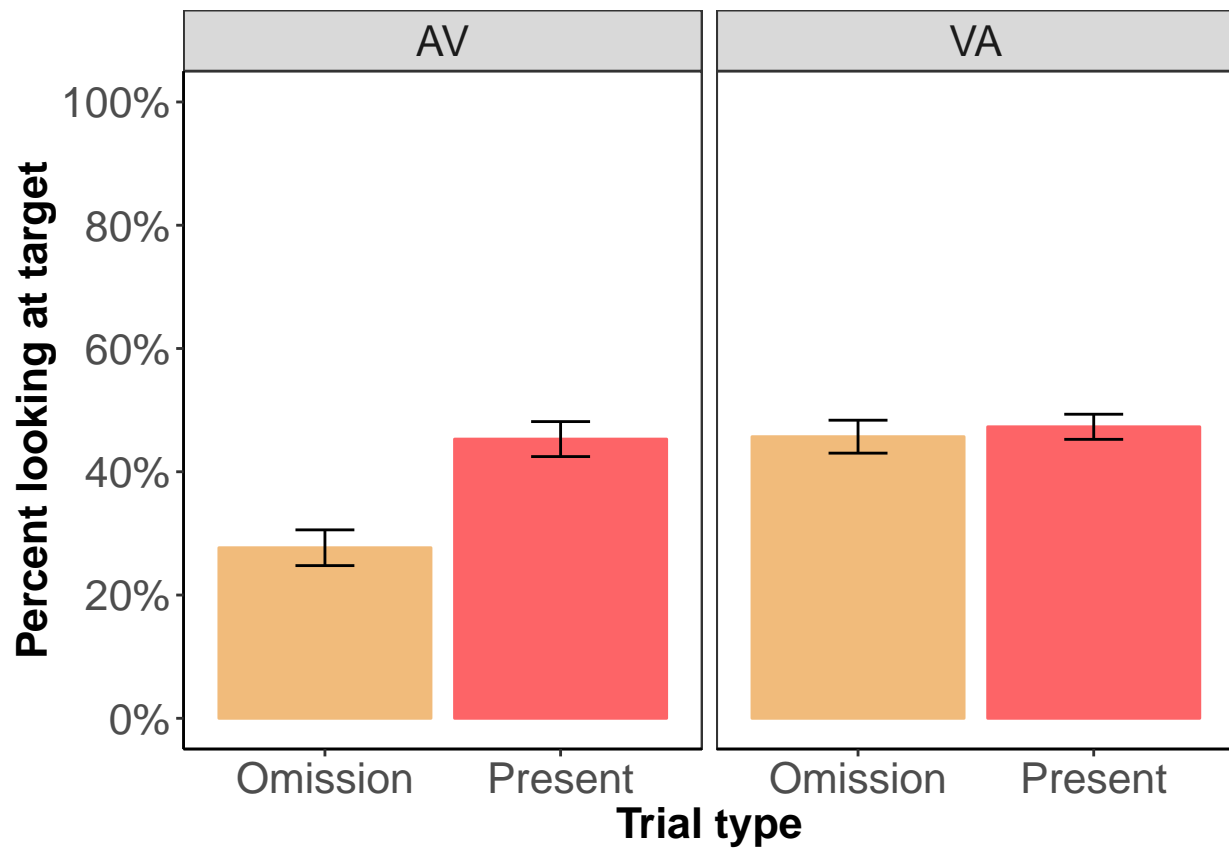
Data quality for each subject



Percent looking at screen

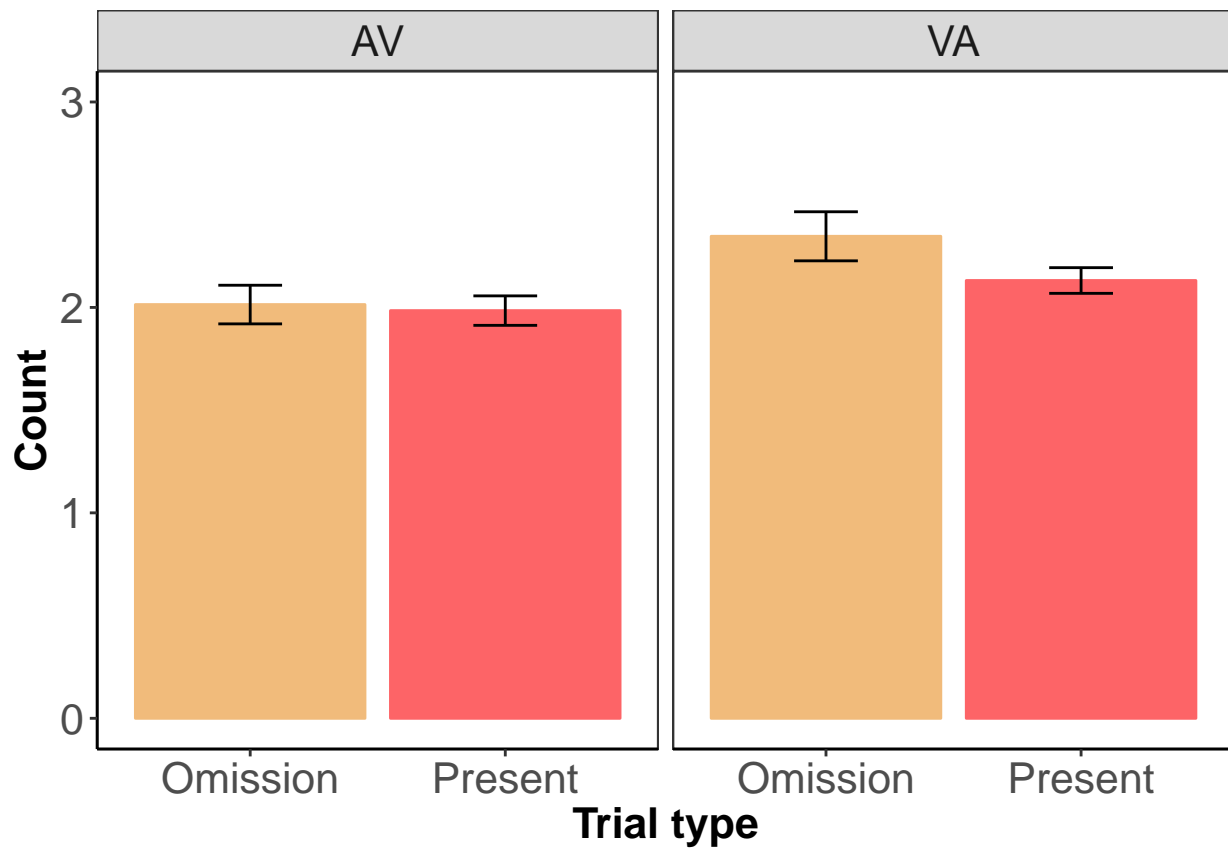


Percent looking at target



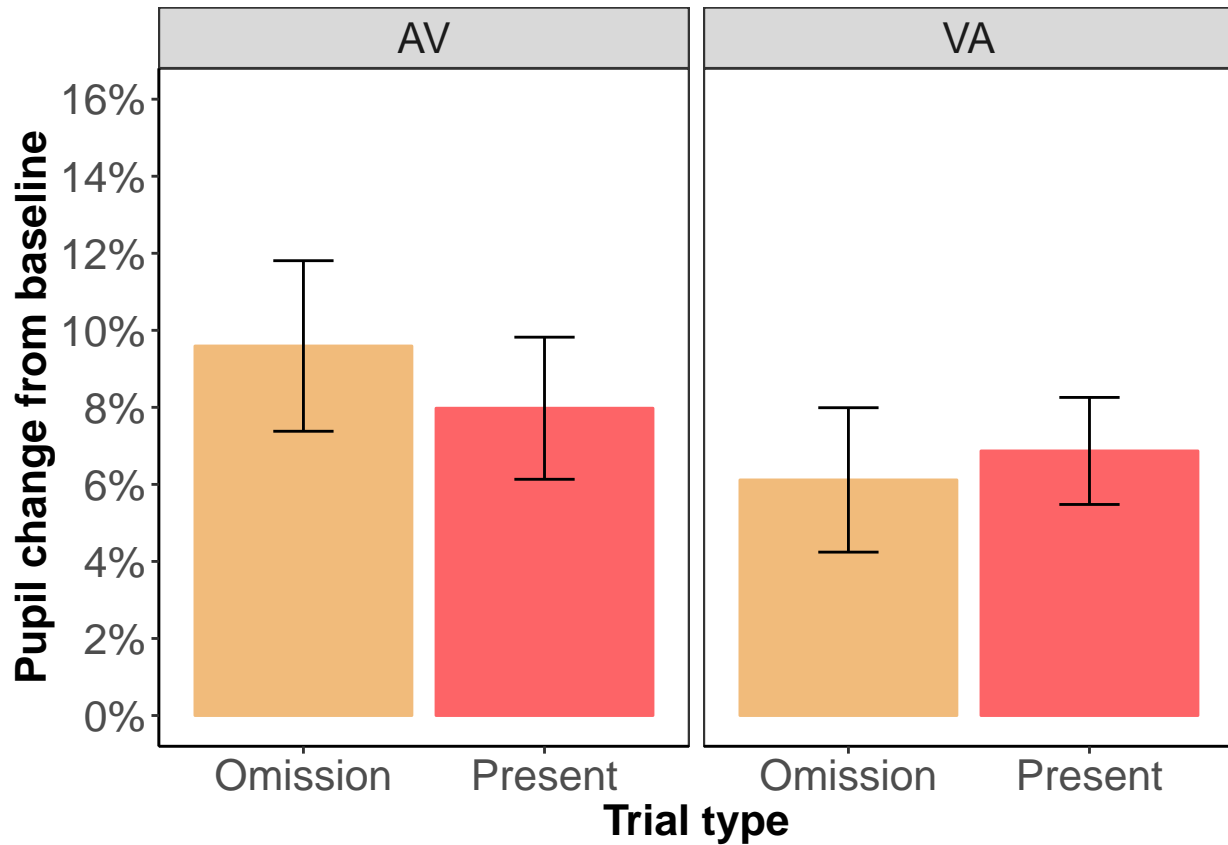


How many times do babies look at target in one trial?



# Pupil Change

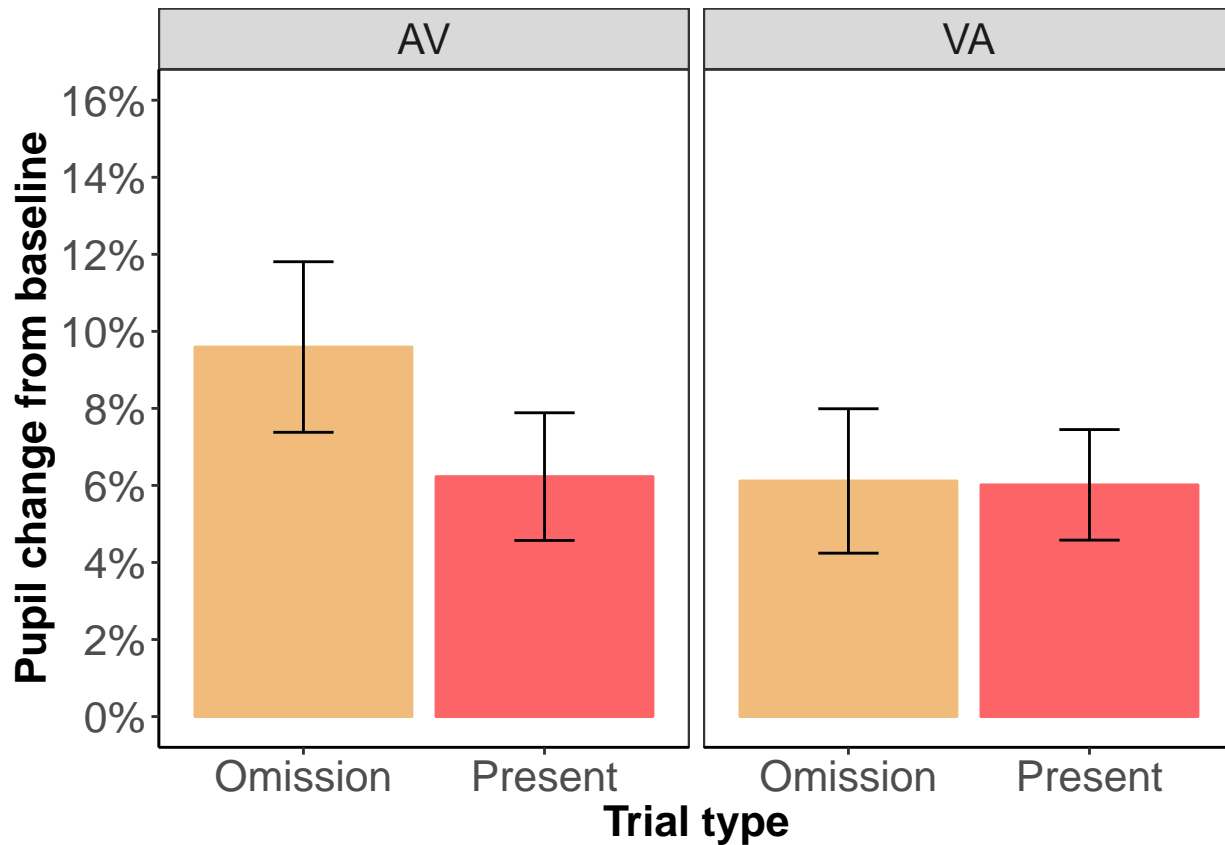
With all trials



```
##
## Error: subID
##           Df Sum Sq Mean Sq F value Pr(>F)
## Residuals 25  0.4343  0.01737
##
## Error: subID:condition
##           Df  Sum Sq  Mean Sq F value Pr(>F)
## condition  1  0.01367  0.013670   2.023  0.167
## Residuals 25  0.16894  0.006758
##
## Error: subID:trialtype
##           Df  Sum Sq  Mean Sq F value Pr(>F)
## trialtype  1  0.00048  0.000485   0.112  0.741
## Residuals 25  0.10820  0.004328
##
## Error: subID:condition:trialtype
##           Df  Sum Sq  Mean Sq F value Pr(>F)
## condition:trialtype  1  0.00365  0.003645   0.5  0.486
```

## Residuals 25 0.18225 0.007290

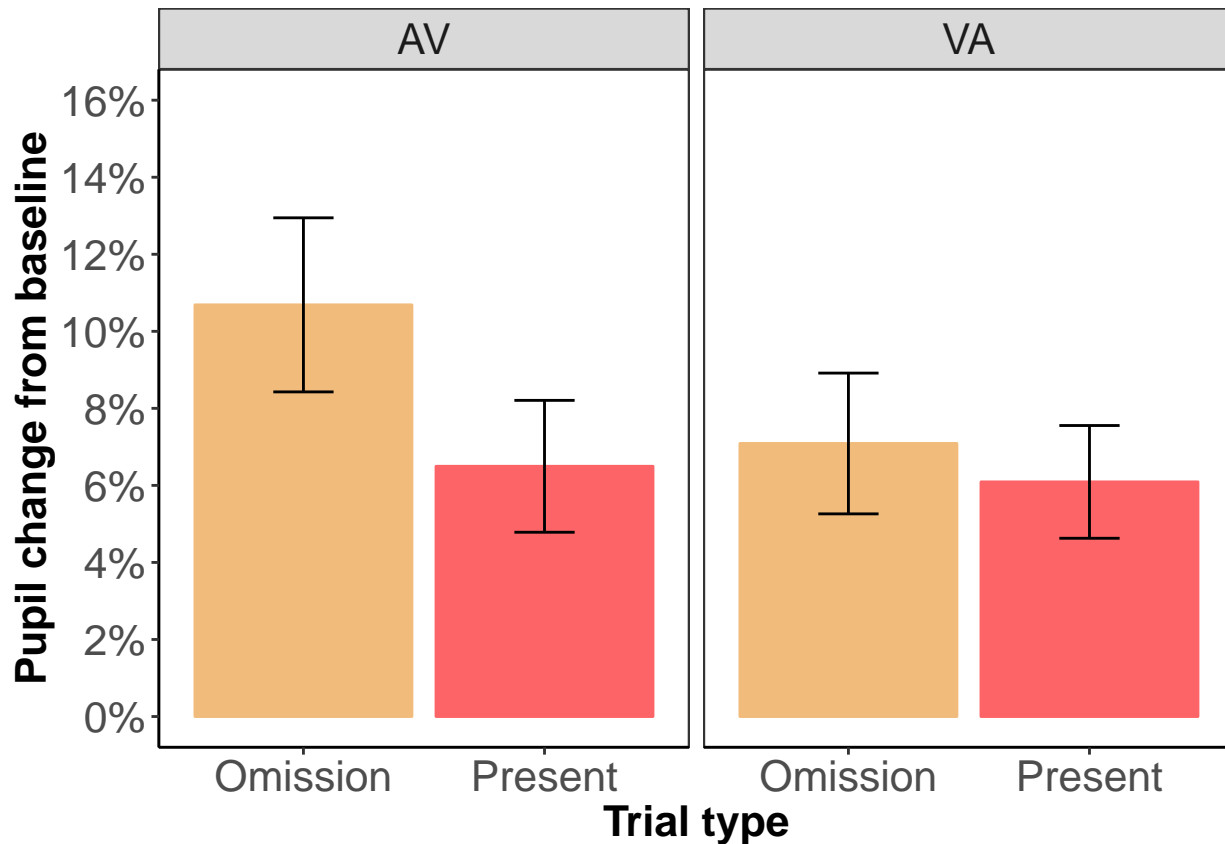
## Without familiarization trials



```
##
## Error: subID
##           Df Sum Sq Mean Sq F value Pr(>F)
## Residuals 23  0.3686   0.01603
##
## Error: subID:condition
##           Df Sum Sq Mean Sq F value Pr(>F)
## condition  1  0.00762  0.00762    0.909    0.35
## Residuals 23  0.19273   0.00838
##
## Error: subID:trialtype
##           Df Sum Sq Mean Sq F value Pr(>F)
## trialtype  1  0.00626  0.006258    1.512    0.231
## Residuals 23  0.09520   0.004139
##
## Error: subID:condition:trialtype
##           Df Sum Sq Mean Sq F value Pr(>F)
```

```
## condition:trialtype  1 0.00595 0.005955  1.261  0.273
## Residuals          23 0.10864 0.004724
```

Without familiarization trials and babies must look at target



```
##
## Error: subID
##           Df Sum Sq Mean Sq F value Pr(>F)
## Residuals 23  0.3778  0.01643
##
## Error: subID:condition
##           Df  Sum Sq  Mean Sq F value Pr(>F)
## condition  1 0.00966 0.009659  1.384  0.251
## Residuals 23 0.16053 0.006979
##
## Error: subID:trialtype
##           Df  Sum Sq  Mean Sq F value Pr(>F)
## trialtype  1 0.01364 0.013644  3.501 0.0741 .
## Residuals 23 0.08963 0.003897
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
##
## Error: subID:condition:trialtype
##           Df  Sum Sq  Mean Sq F value Pr(>F)
## condition:trialtype  1 0.00818 0.008180    1.416  0.246
## Residuals           23 0.13286 0.005777
```