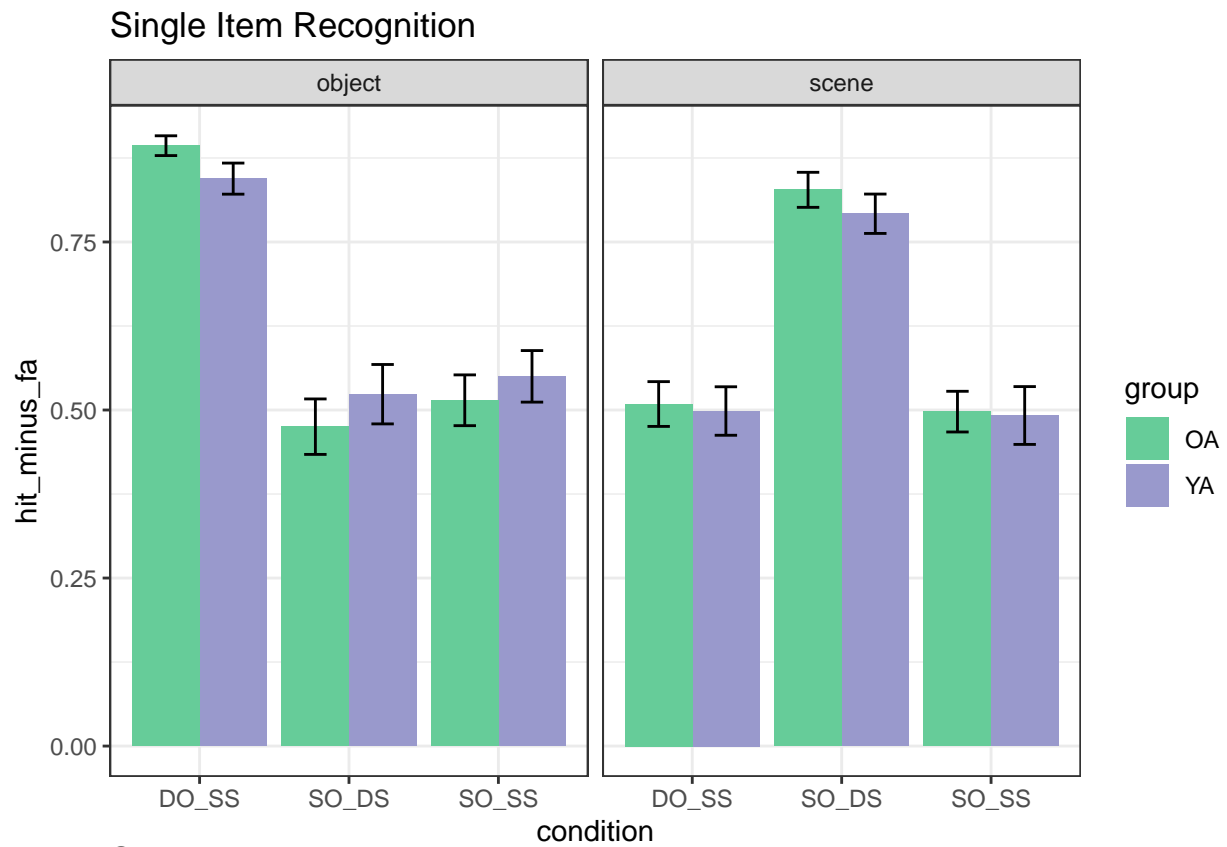# Project 2 - BOTB analysis

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This script runs the anovas and t tests for single item recognition and associative memory. It also plots the results using ggplot.

SINGLE ITEM RECOGNITION

Summary stats

```
## # A tibble: 12 x 7
## # Groups:   condition, stimulus [6]
##    condition stimulus group  mean     sd     n     se
##    <chr>     <chr>    <chr> <dbl>  <dbl> <int>  <dbl>
##  1 DO_SS     object   OA    0.893 0.0779    28 0.0147
##  2 DO_SS     object   YA    0.844 0.129     31 0.0231
##  3 DO_SS     scene    OA    0.509 0.176     28 0.0333
##  4 DO_SS     scene    YA    0.498 0.201     31 0.0361
##  5 SO_DS     object   OA    0.475 0.218     28 0.0413
##  6 SO_DS     object   YA    0.524 0.246     31 0.0442
##  7 SO_DS     scene    OA    0.828 0.138     28 0.0261
##  8 SO_DS     scene    YA    0.792 0.163     31 0.0293
##  9 SO_SS     object   OA    0.514 0.200     28 0.0378
## 10 SO_SS     object   YA    0.550 0.213     31 0.0383
## 11 SO_SS     scene    OA    0.498 0.160     28 0.0303
## 12 SO_SS     scene    YA    0.492 0.240     31 0.0430
```

Single Item Recognition

Single Item Recognition

Anova results

```
## Converting to factor: group
```

```
## Anova Table (Type 3 tests)
##
## Response: hit_minus_fa
##                           num Df den Df      MSE        F      ges  Pr(>F)
## group                     1.0000  57.00 0.119624   0.0058 0.00006 0.93952
## condition                 1.9484 111.06 0.017942  56.9561 0.14244 < 2e-16
## group:condition           1.9484 111.06 0.017942   0.9445 0.00275 0.38993
## stimulus                  1.0000  57.00 0.023125   3.6061 0.00691 0.06263
## group:stimulus            1.0000  57.00 0.023125   0.7976 0.00154 0.37557
## condition:stimulus        1.9248 109.71 0.016929 206.1103 0.35909 < 2e-16
## group:condition:stimulus  1.9248 109.71 0.016929   1.7446 0.00472 0.18075
##
## group
## condition                 ***
## group:condition
## stimulus                    .
## group:stimulus
## condition:stimulus        ***
## group:condition:stimulus
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Posthoc comparisons

```
## NOTE: Results may be misleading due to involvement in interactions
```

```
##  contrast       estimate     SE  df t.ratio p.value
##  DO_SS - SO_DS    0.0317 0.0172 114   1.837  0.1624
##  DO_SS - SO_SS    0.1727 0.0172 114  10.023  <.0001
##  SO_DS - SO_SS    0.1411 0.0172 114   8.187  <.0001
##
## Results are averaged over the levels of: group, stimulus
## P value adjustment: tukey method for comparing a family of 3 estimates
```

ASSOCIATIVE MEMORY

Summary stats

```
## # A tibble: 24 x 7
## # Groups:   condition, stimulus [12]
##    condition stimulus        group  mean     sd     n      se
##    <chr>     <chr>           <chr> <dbl>  <dbl> <int>   <dbl>
## 1 SO_DS     New Sce-New Obj OA   0.0387 0.0863    28  0.0163
## 2 SO_DS     New Sce-New Obj YA   0.0323 0.0634    31  0.0114
## 3 SO_DS     New Sce-Old Obj OA   0.0446 0.0671    28  0.0127
## 4 SO_DS     New Sce-Old Obj YA   0.0242 0.0426    31 0.00766
## 5 SO_DS     Old Sce-New Obj OA   0.182  0.204     28  0.0386
```

```
##  6 SO_DS    Old Sce-New Obj YA    0.0438 0.0535    31 0.00962
##  7 SO_DS    Old-Old Recomb  OA    0.315  0.240     28 0.0454
##  8 SO_DS    Old-Old Recomb  YA    0.118  0.0932    31 0.0167
##  9 SO_SS    New Sce-New Obj OA    0.0476 0.0575    28 0.0109
## 10 SO_SS    New Sce-New Obj YA    0.0242 0.0652    31 0.0117
## # ... with 14 more rows
```

Associative Memory

Associative Memory
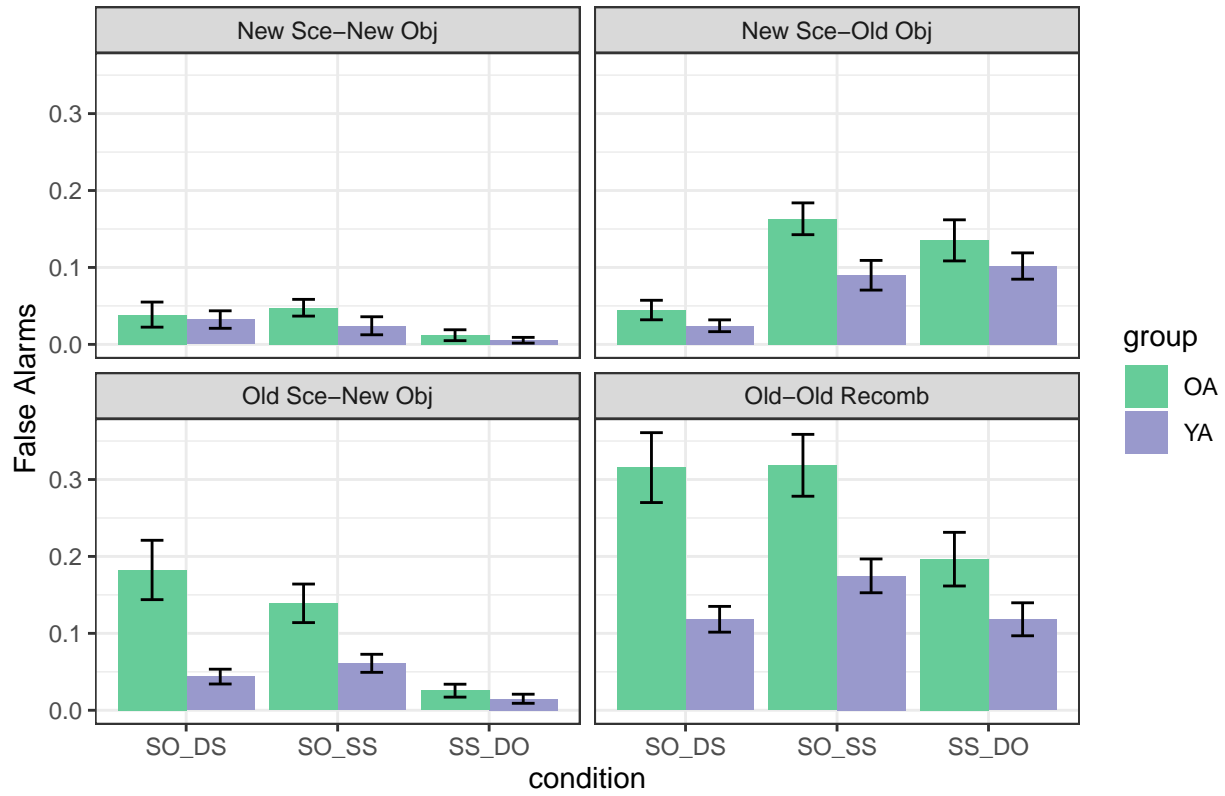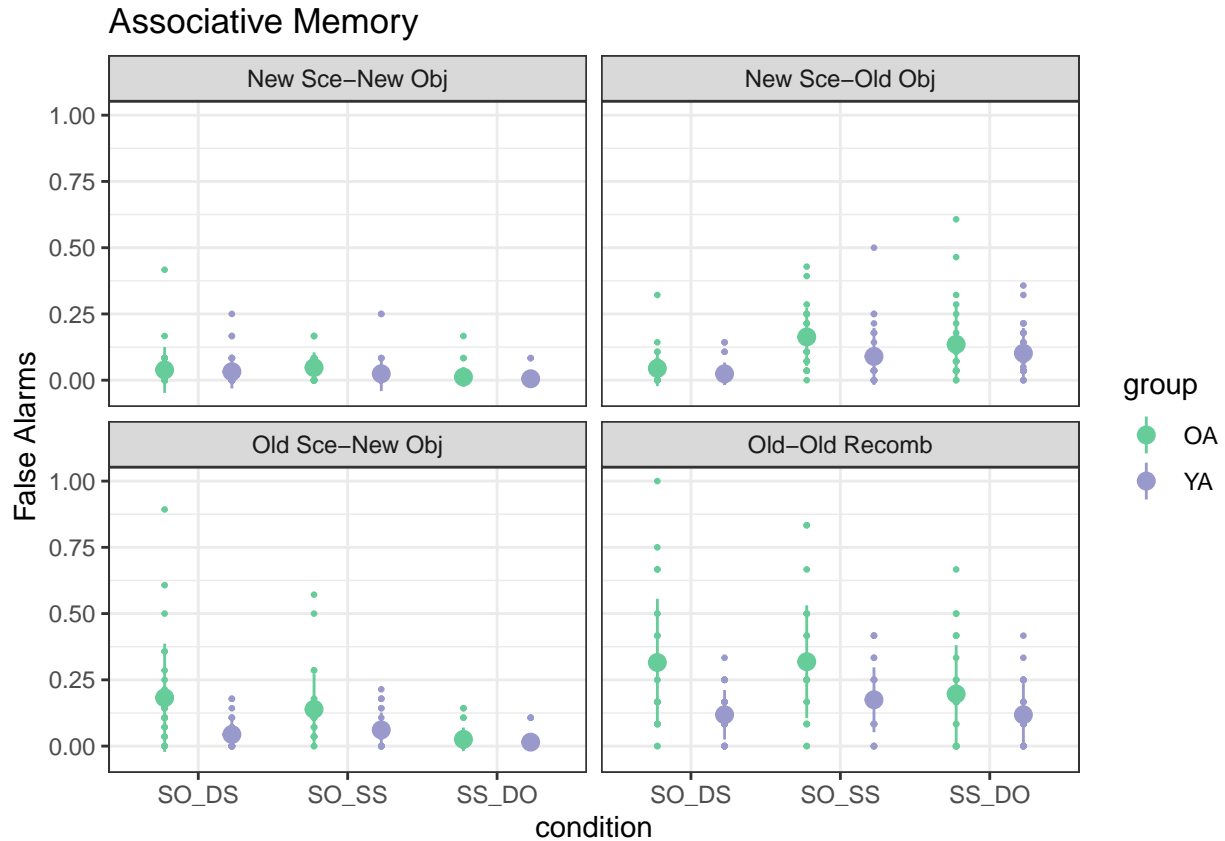
Anova results

```
## Converting to factor: group

## Anova Table (Type 3 tests)
##
## Response: fa
##                         num Df  den Df      MSE       F      ges
## group                   1.0000  57.000 0.070349 11.4281 0.082112
## condition               1.7427  99.336 0.010697 16.5036 0.033100
## group:condition         1.7427  99.336 0.010697  6.1062 0.012508
## stimulus                2.0447 116.547 0.015177 98.6931 0.254169
## group:stimulus          2.0447 116.547 0.015177 12.7640 0.042213
## condition:stimulus      4.0435 230.481 0.009310 15.0892 0.059447
## group:condition:stimulus 4.0435 230.481 0.009310  3.6347 0.014996
##                           Pr(>F)
## group                   0.001312 **
## condition               2.176e-06 ***
## group:condition          0.004669 **
## stimulus                < 2.2e-16 ***
## group:stimulus          8.228e-06 ***
## condition:stimulus      4.705e-11 ***
## group:condition:stimulus  0.006605 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Posthoc comparisons

```
## NOTE: Results may be misleading due to involvement in interactions

##  contrast      estimate     SE  df t.ratio p.value
##  SO_DS - SO_SS  -0.0273 0.0089 114 -3.069  0.0075
##  SO_DS - SS_DO   0.0238 0.0089 114  2.672  0.0234
##  SO_SS - SS_DO   0.0511 0.0089 114  5.741  <.0001
##
## Results are averaged over the levels of: group, stimulus
## P value adjustment: tukey method for comparing a family of 3 estimates
```