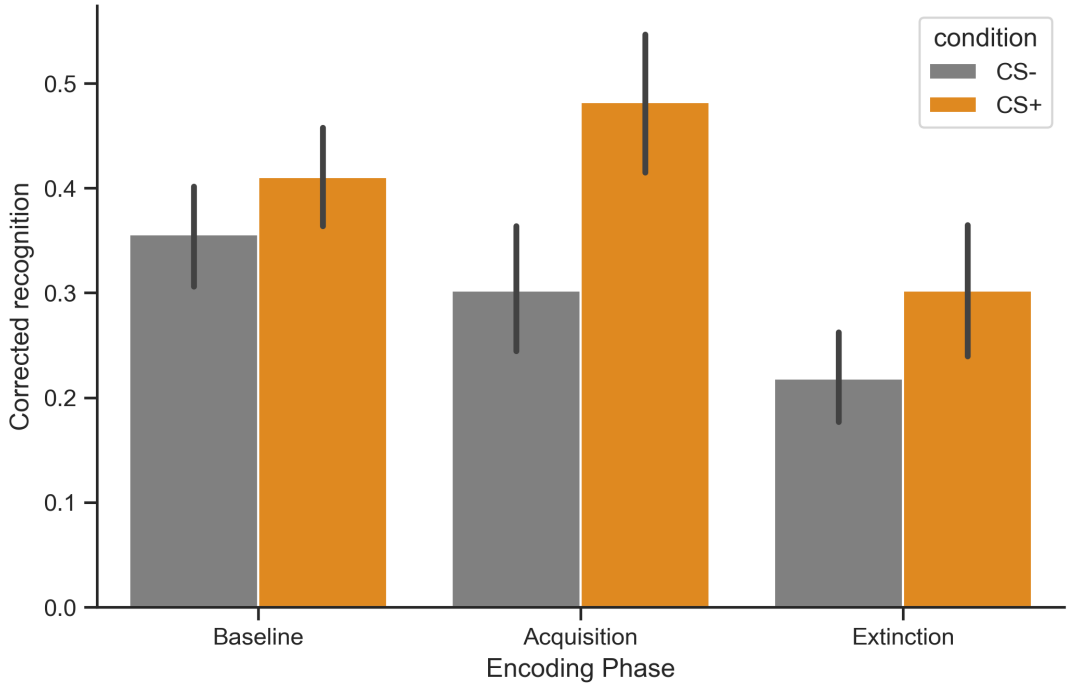
group collapse

In this document I copy/paste a lot of tables that are statistical outputs, so that this can be easily referenced during MS writing. All non-parametric things here have k=10,000 iterations

Corrected recognition

High confidence corrected recognition collapsed across groups



First, data are non-normal

```
                            W      pval  normal
corrected_recognition  0.963772  0.000003   False   ***
```

From the full ANOVA, there was no significant main effect of Group (F (1,43) = 0.46, P_perm = 0.50). There were also no significant interactions with group.

Therefore, we collapsed across group. I'm not sure if we should just report the full ANOVA, or the one without Group? But anyways I'm preliminarily going with the collapsed ANOVA.

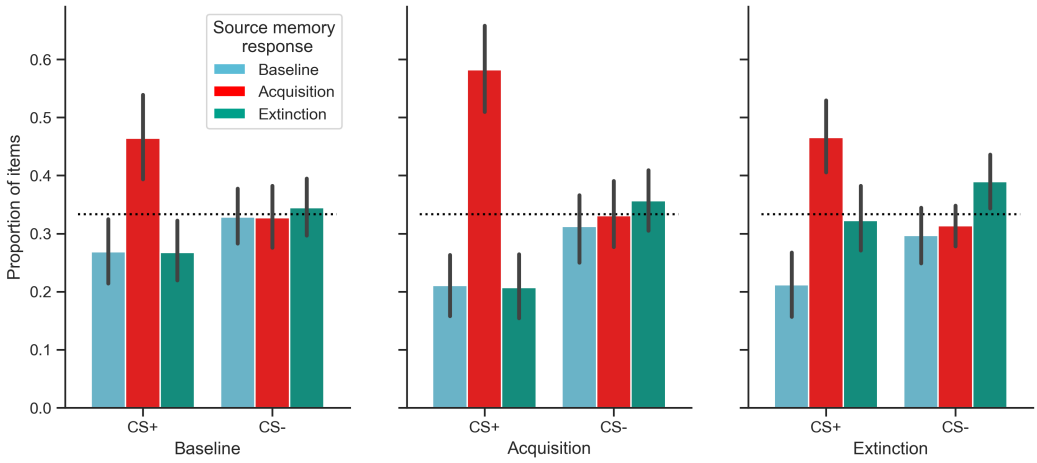
```
                      dfn dfd      F permutation P(>F)
condition               1  44 28.663            0.0001   ***
encode_phase            2  88 19.717            0.0001   ***
condition:encode_phase  2  88  9.043            0.0003   ***
```

Follow up tests using 1-sided wilcoxon ranked sign tests confirm CS+ > CS- for all encoding phases.

```
             W-val     tail     p-val
Baseline     733.5  greater  0.002733   **
Acquisition  852.0  greater  0.000002   ***
Extinction   734.5  greater  0.002639   **
```

Source memory

source memory reported as proportion of total stims for each CS type in encoding phase (1.0 = 24)



Data are non-normal

```
                  W          pval  normal
proportion  0.966516  1.339272e-10   False    ***
```

Again, no main effect nor interaction with Group, so we collapse:

```
                                    dfn dfd      F permutation P(>F)
response_phase                        2  66 10.237            0.0002   ***
condition                             1  33  7.448            0.3057
encode_phase                          2  66  8.869            0.0856   ~
response_phase:condition              2  66 17.873            0.0001   ***
response_phase:encode_phase           4 132  6.089            0.0002   ***
condition:encode_phase                2  66  7.720            0.3498
response_phase:condition:encode_phase 4 132  3.146            0.0189   *
```

Starting by looking for where responses are significantly different from chance (1/3). Since these are 1-sample against a fixed value I did bootrap resampling of means. These are all two-tailed, with minimum p-value of 0.0001

```
condition    encode_phase    response_phase       avg    CI_l    CI_u       p   direction
      CS+        baseline          baseline    0.2684  0.2145  0.3235  0.0252   *   <
      CS+        baseline       acquisition    0.5821  0.5086  0.6556  0.0001   *** >
      CS+        baseline        extinction    0.2672  0.2194  0.3186  0.0146   *   <

      CS+     acquisition          baseline    0.2108  0.1605  0.2647  0.0001   *** <
      CS+     acquisition       acquisition    0.5821  0.5086  0.6556  0.0001   *** >
```

```
      CS+     acquisition        extinction    0.2071  0.1569  0.2659  0.0004   *** <

      CS+      extinction          baseline     0.212  0.1618  0.2647  0.0001   *** <
      CS+      extinction       acqsuitiion    0.4657  0.4069   0.527  0.0001   *** >

      CS-      extinction        extinction    0.3897  0.3419  0.4375   0.017   *   >
```

And then just looking at our comparison of interest, which is CS+ vs. CS- that were sourced to acquisition from each phase. Using 1-tailed here as we have pretty clear directionality.

In reference to the graph above this is comparing the red bars in each panel.

```
             W-val     tail     p-val
baseline     445.5  greater  0.000354   ***
acquisition  470.0  greater  0.000061   ***
extinction   341.5  greater  0.000834   ***
```

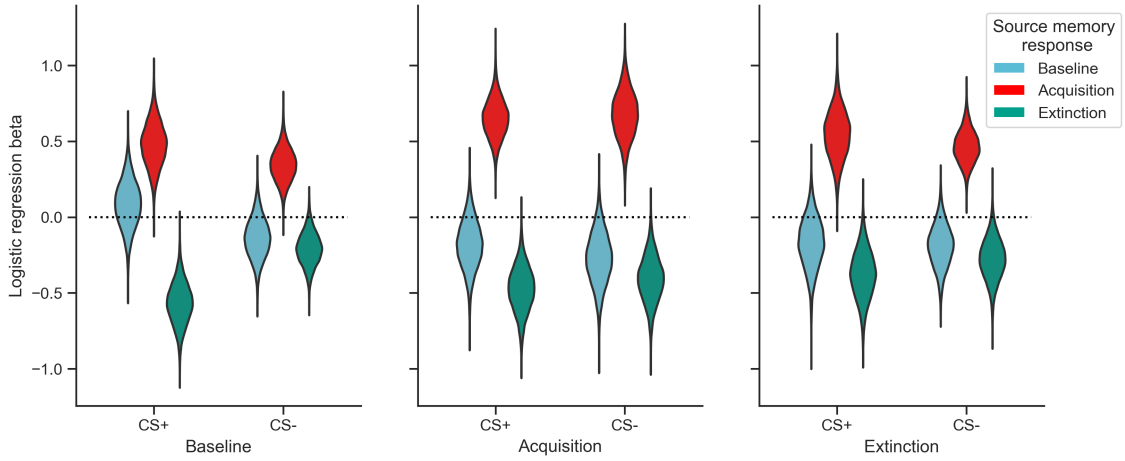
So in summary - the only items that people are able to accurately source above chance are CS+A and CS-E. Additionally, CS+ from each phase were endorsed as being from acquisition more than CS- from same phase.

Source memory X recognition memory

Next we move on to relating source memory to recognition memory. Just to summarize, we are using the source memory responses in a multiple logistic regression (as in 3 inputs) to predict binary recognition memory. So no longer using corrected recognition. I'm graphing it again grouped by CS type, as 1. it mirrors the source memory which makes more sense this way, and 2. its important to communicate that each logistic model produced 3 betas simultaneously, that is the weights were all evaluated relative to each other.

Just to be clear, if you look at the very left grouping of violins, those correspond to the model that was using source memory to predict recognition memory for CS+B

items. All 3 responses on the source memory test are considered at the same time, not in separate tests. I can add means and CI here, but in general if it looks significant it probably is...



Statistical significance is determined by seeing if the bootstrap distribution is reliably different from 0. Two-tailed. I am *not* doing post hoc testing here yet, but I can. The CS+ and CS- acquisition betas are probably not different, and a lot of the other ones are significant in different directions from 0 already.

```
condition encode_phase response_phase      beta                  ci       p
      CS+     baseline    acquisition  0.480137     [0.2004, 0.762]  0.0014   **  >
      CS+     baseline     extinction -0.567121  [-0.8346, -0.3007]  0.0001   *** <

      CS-     baseline    acquisition  0.345314    [0.1346, 0.5645]  0.0018   **  >
      CS-     baseline     extinction -0.207968    [-0.4173, 0.003]  0.0546   ~   <

      CS+  acquisition    acquisition  0.652453    [0.4102, 0.9041]  0.0001   *** >
      CS+  acquisition     extinction -0.473061  [-0.7714, -0.1895]  0.0012   **  <

      CS-  acquisition    acquisition  0.677348    [0.3748, 0.9787]  0.0001   *** >
      CS-  acquisition     extinction -0.407015  [-0.7058, -0.1144]  0.0052   **  <

      CS+   extinction    acquisition  0.546087     [0.234, 0.8563]  0.0004   *** >
      CS+   extinction     extinction -0.376568  [-0.6921, -0.0679]  0.0154   *   <

      CS-   extinction    acquisition  0.465960    [0.2659, 0.6884]  0.0001   *** >
      CS-   extinction     extinction -0.276577  [-0.5447, -0.0186]  0.0354   *   <
```

Typicality

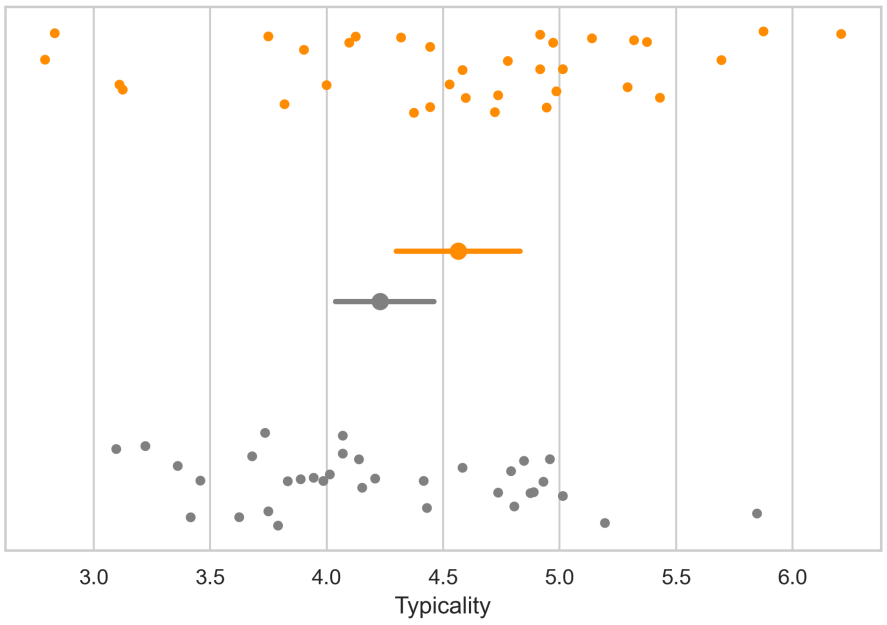
Last we have typicality. Interestingly, data here are normally distributed, like never happens to me.

```
                   W      pval  normal
typicality  0.992379  0.368745    True
```

Anyways there are no interactions *at all* with Group, or encode phase. Just a significant main effect of CS condition.

```
   Effect DFn DFd    F     p p<.05   ges
condition   1  32 6.23 0.019     * 0.044
```

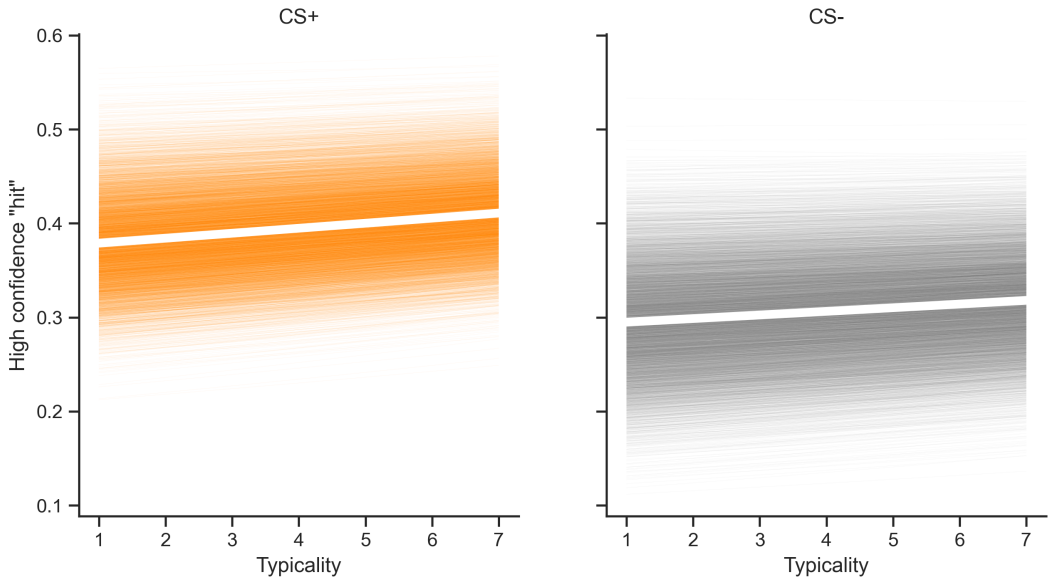
Since nothing else of interest, we are going to collapse across groups and encoding phase. Forgot the legend but CS+ is orange yall know the drill.




```
              T  dof       tail     p-val         CI95%   cohen-d   BF10     power
T-test  2.499574   33  two-sided  0.017584  [0.06, 0.61]  0.453493  2.682  0.727989
```

Typicality X recognition memory

We relate typicality to recognition memory in the same way we did for source memory. A lot simpler here, as we are collapsed to just CS condition. I'm showing it here using the logistic curves as 1. its very pretty and 2. it also drives home that CS+s are remembered more than CS-s (higher intercepts). I could show these as betas but it would be pretty boring. The slopes (betas) aren't different from each other here.




```
condition      beta                ci         p
      CS+    0.1358    [0.0680, 0.2003]    0.0001   *** >
      CS+    0.1137    [0.0299, 0.2046]    0.0062   **  >

CS+ - CS-    0.0221    [-0.0902,0.1307]    0.6914   n.s.
```

This shows that perceived typicality predicts recognition memory, regardless of CS type.