

# Memory qualities

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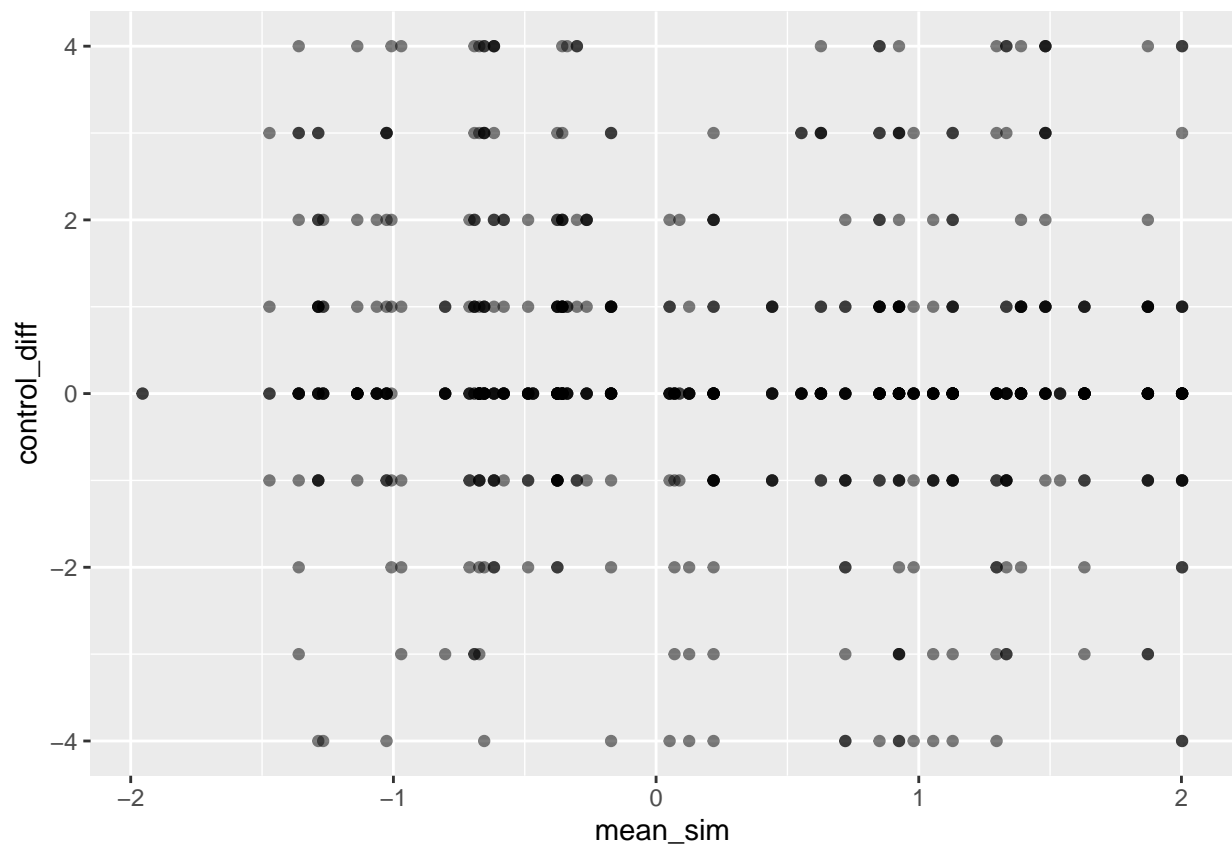
2025-02-11

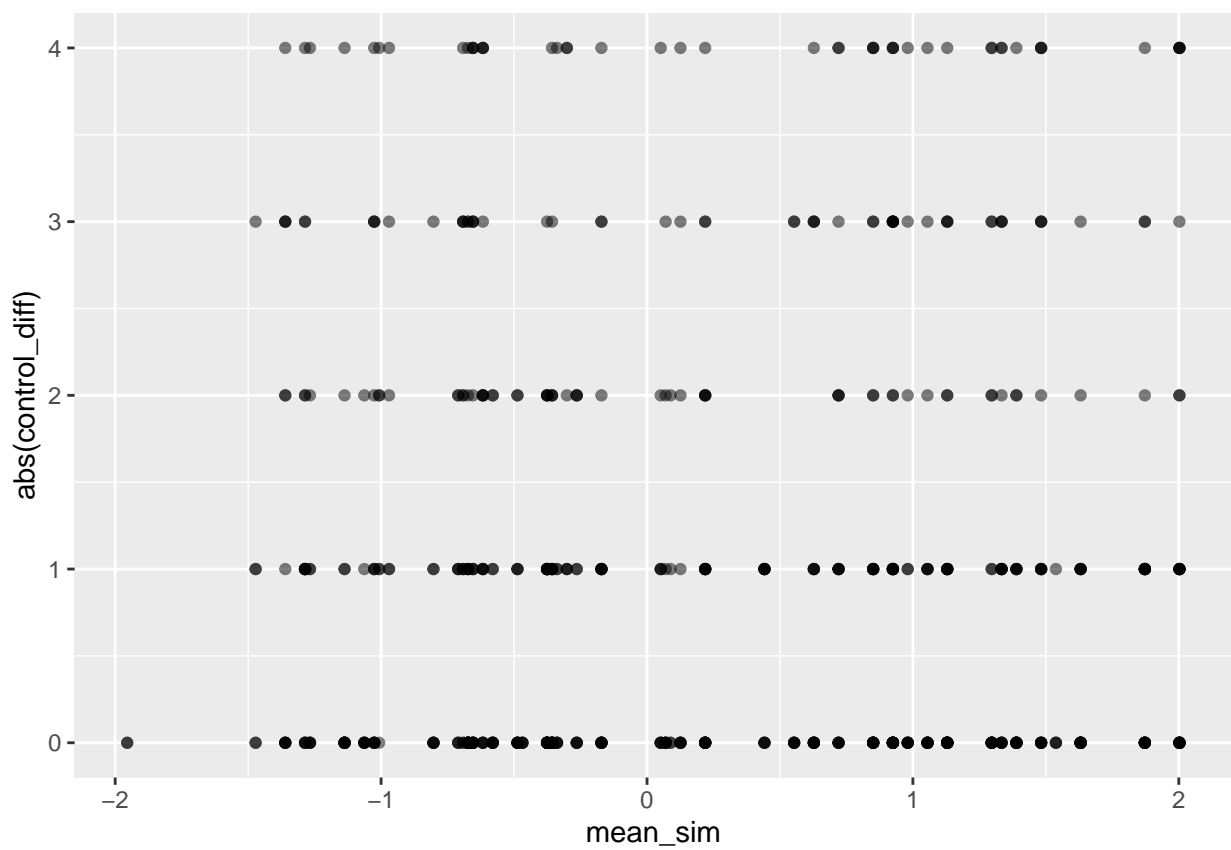
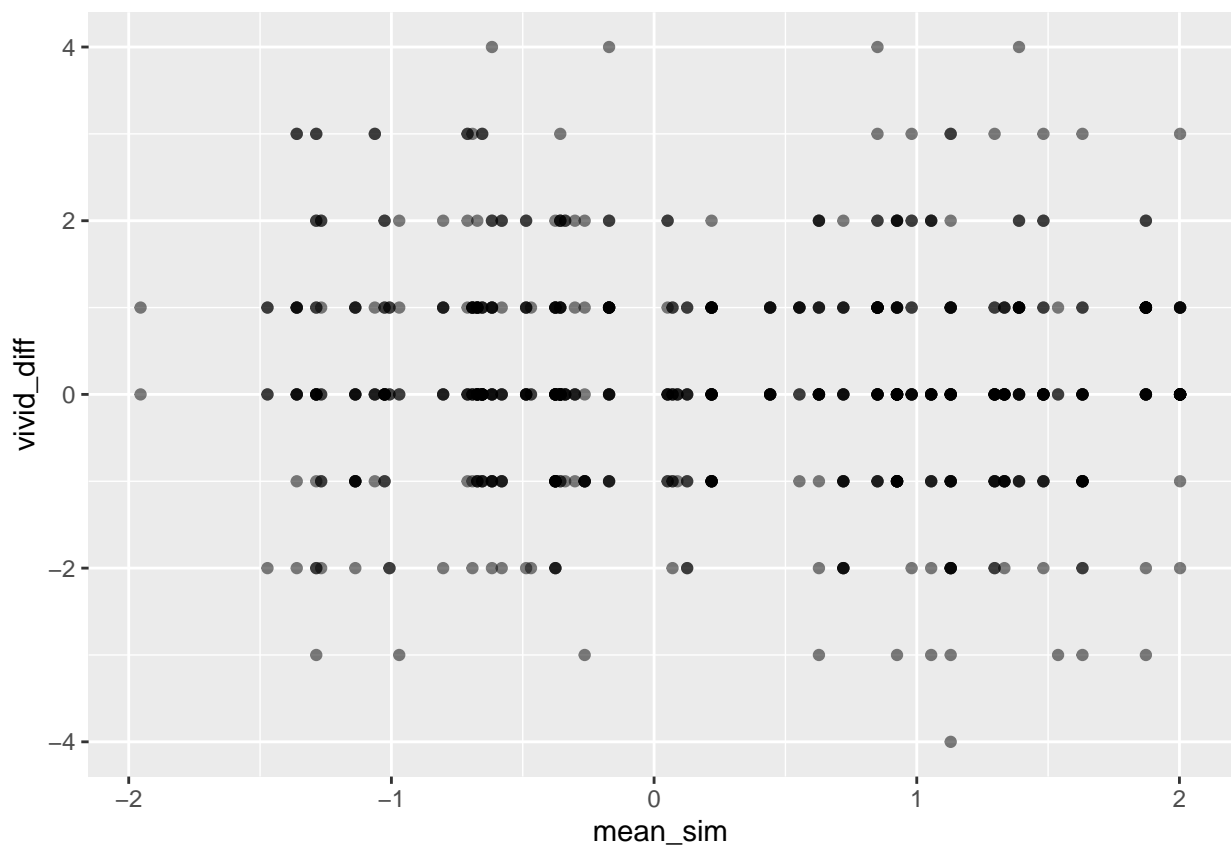
This notebook looks at memory qualities (vividness, how spontaneous, etc) for pairs of original-cover memories, as predicted by perceptual similarity of the clips evoking the memories.

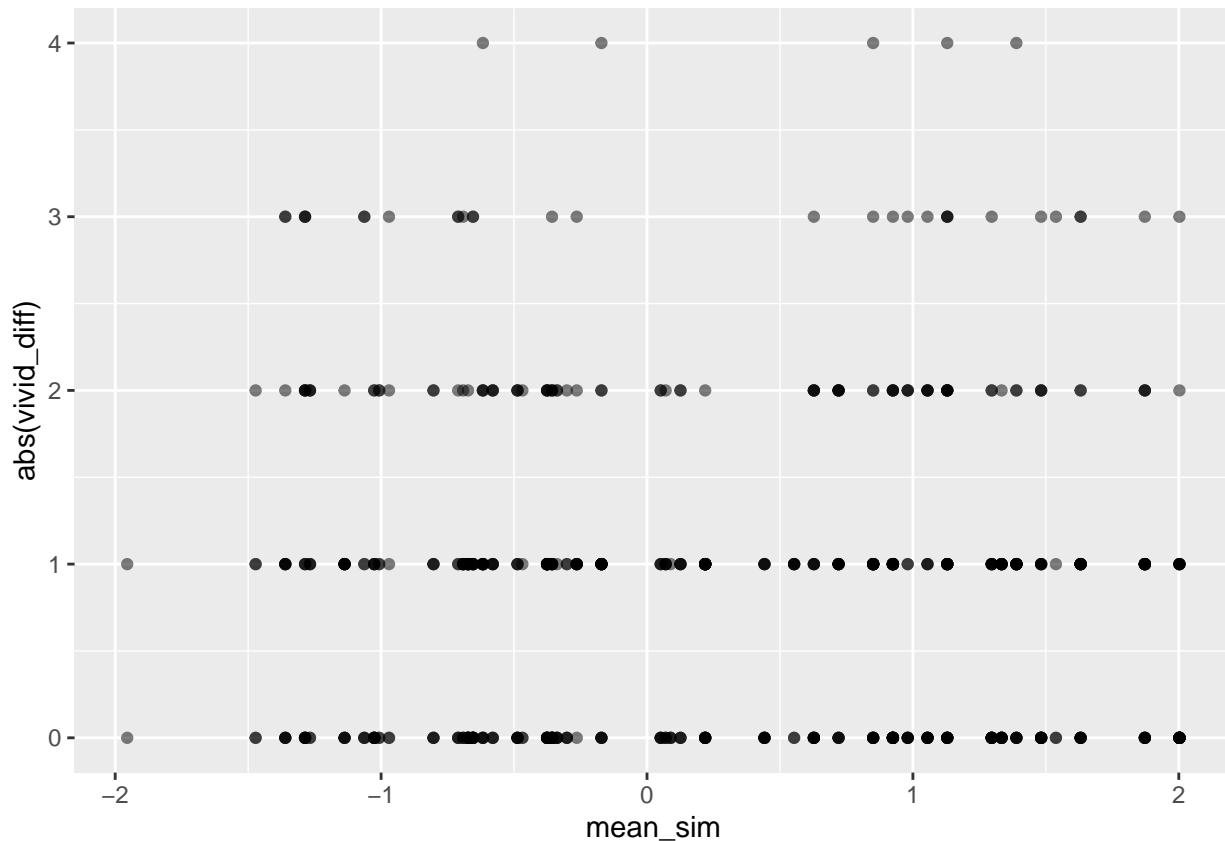
Load the data.

Load just the features and similarity for song-wise analysis.

Visualize.







```
## Linear mixed model fit by REML. t-tests use Satterthwaite's method [
## lmerModLmerTest]
## Formula: control_diff ~ mean_sim + (1 | internal_id) + (1 | song_id)
##   Data: data
##
## REML criterion at convergence: 2410.9
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -2.74426 -0.34656 -0.08872  0.43920  2.54633
##
## Random effects:
##   Groups      Name      Variance Std.Dev.
##   internal_id (Intercept) 0.03473  0.1864
##   song_id      (Intercept) 0.10394  0.3224
##   Residual                2.57187  1.6037
## Number of obs: 629, groups:  internal_id, 82; song_id, 50
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)  0.25226    0.08703 37.83754   2.898  0.00621 **
## mean_sim     -0.12823    0.08145 41.51509  -1.574  0.12300
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr)
```

```

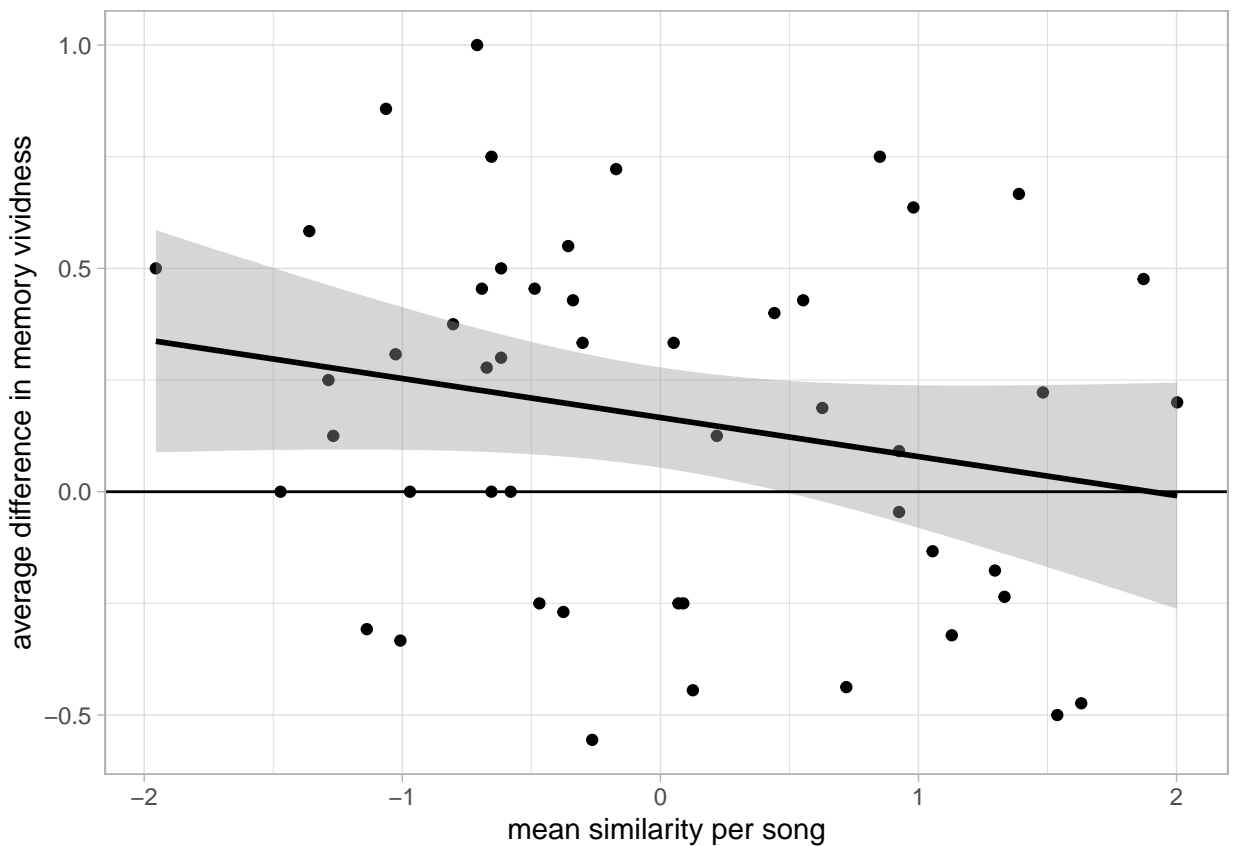
## mean_sim -0.179

## Linear mixed model fit by REML. t-tests use Satterthwaite's method [
## lmerModLmerTest]
## Formula: vivid_diff ~ mean_sim + (1 | internal_id) + (1 | song_id)
## Data: data
##
## REML criterion at convergence: 2048.3
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.2123 -0.6416 -0.0949  0.6436  3.0403
##
## Random effects:
## Groups      Name                Variance Std.Dev.
## internal_id (Intercept) 0.02968  0.1723
## song_id      (Intercept) 0.04779  0.2186
## Residual                    1.44091  1.2004
## Number of obs: 629, groups:  internal_id, 82; song_id, 50
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)  0.17202    0.06502 51.37456   2.646   0.0108 *
## mean_sim     -0.07868    0.05901 48.23363  -1.333   0.1887
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr)
## mean_sim    -0.185

```

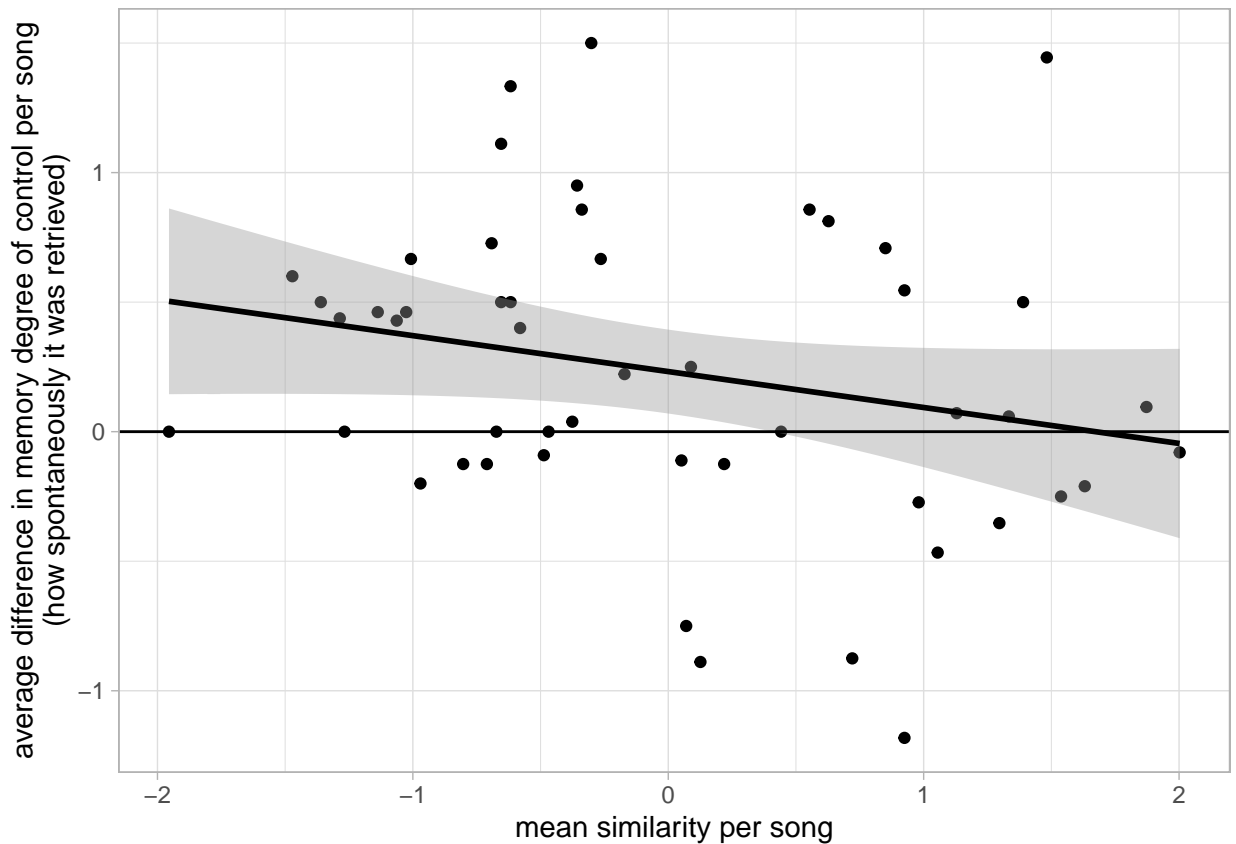
Compute average vividness and degree of control difference for each song.

```
##
## Call:
## lm(formula = avg_vivid_diff ~ mean_sim, data = data_by_song_vividness)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.74469 -0.29220  0.05246  0.26590  0.77190
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.16605    0.05585   2.973  0.0046 **
## mean_sim     -0.08739    0.05642  -1.549  0.1280
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.3949 on 48 degrees of freedom
## Multiple R-squared:  0.0476, Adjusted R-squared:  0.02776
## F-statistic: 2.399 on 1 and 48 DF,  p-value: 0.128
```



Visualize.

```
##
## Call:
## lm(formula = avg_control_diff ~ mean_sim, data = data_by_song_control)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -1.28556 -0.36054  0.01946  0.37227  1.41799
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.23200    0.08054   2.880  0.00592 **
## mean_sim    -0.13867    0.08136  -1.704  0.09477 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.5695 on 48 degrees of freedom
## Multiple R-squared:  0.05707,    Adjusted R-squared:  0.03742
## F-statistic: 2.905 on 1 and 48 DF,  p-value: 0.09477
```



Visualize.