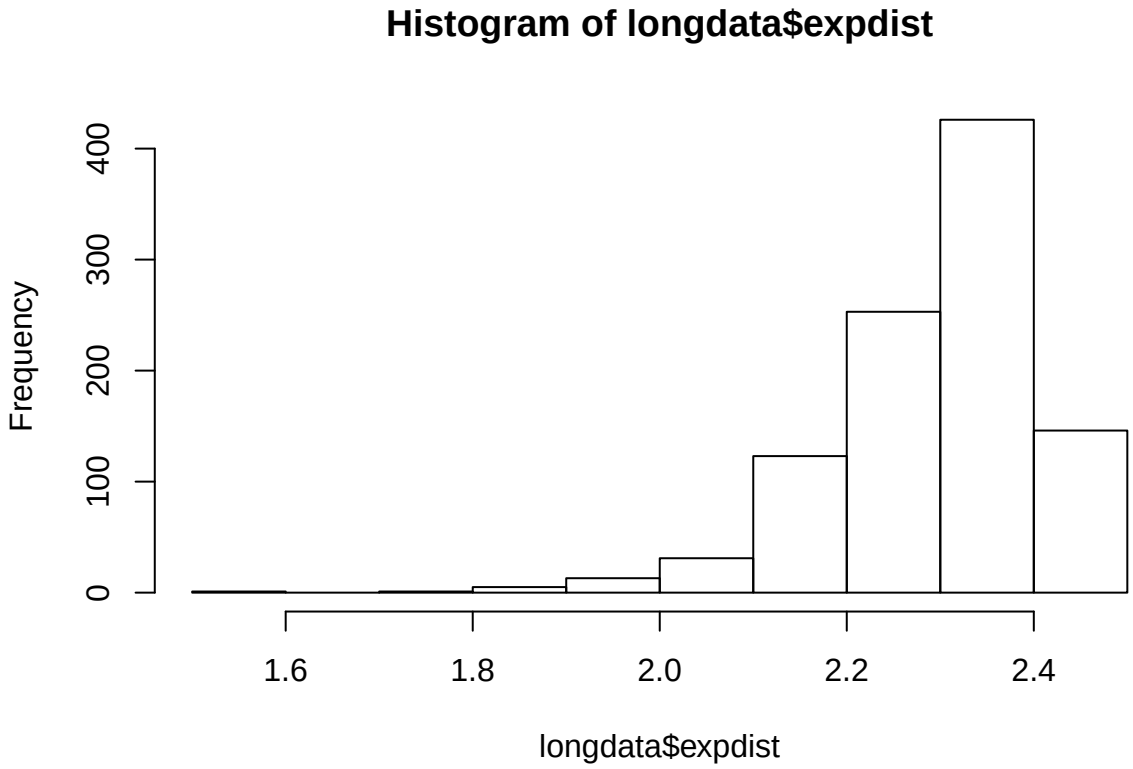
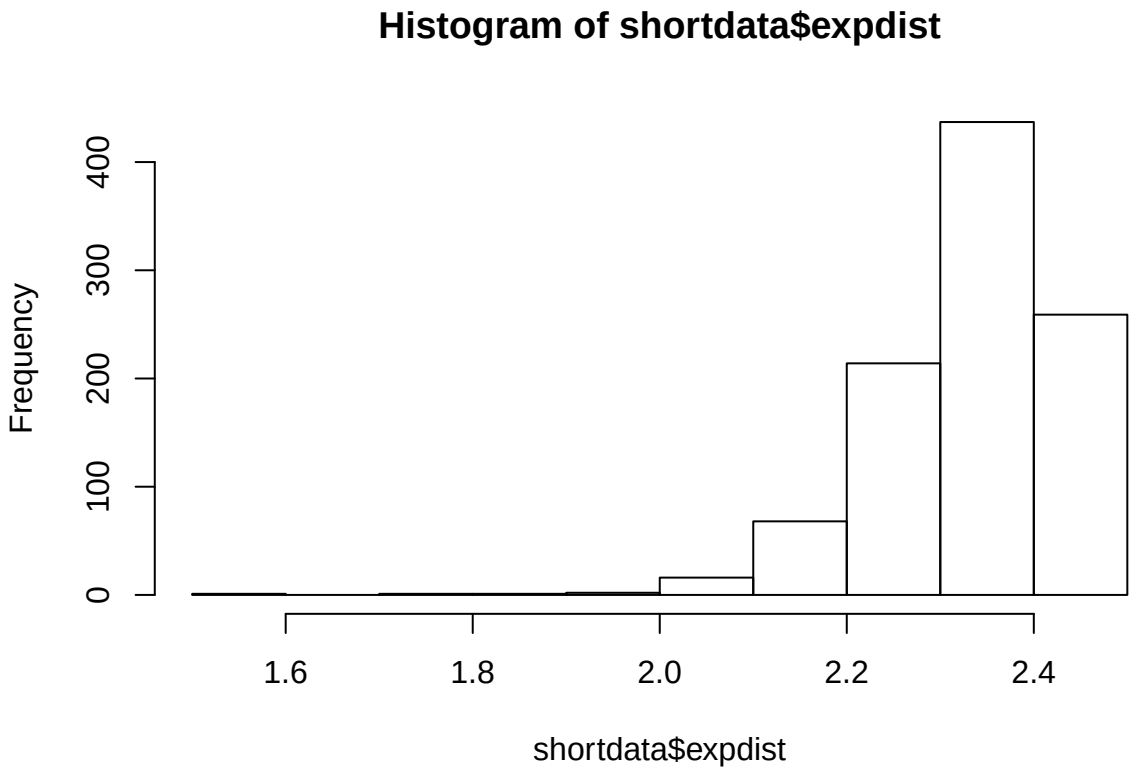
spacetimeadultanalysis

Below: A histogram of exponentiated word distances from “long”. These are the closest 999 words.

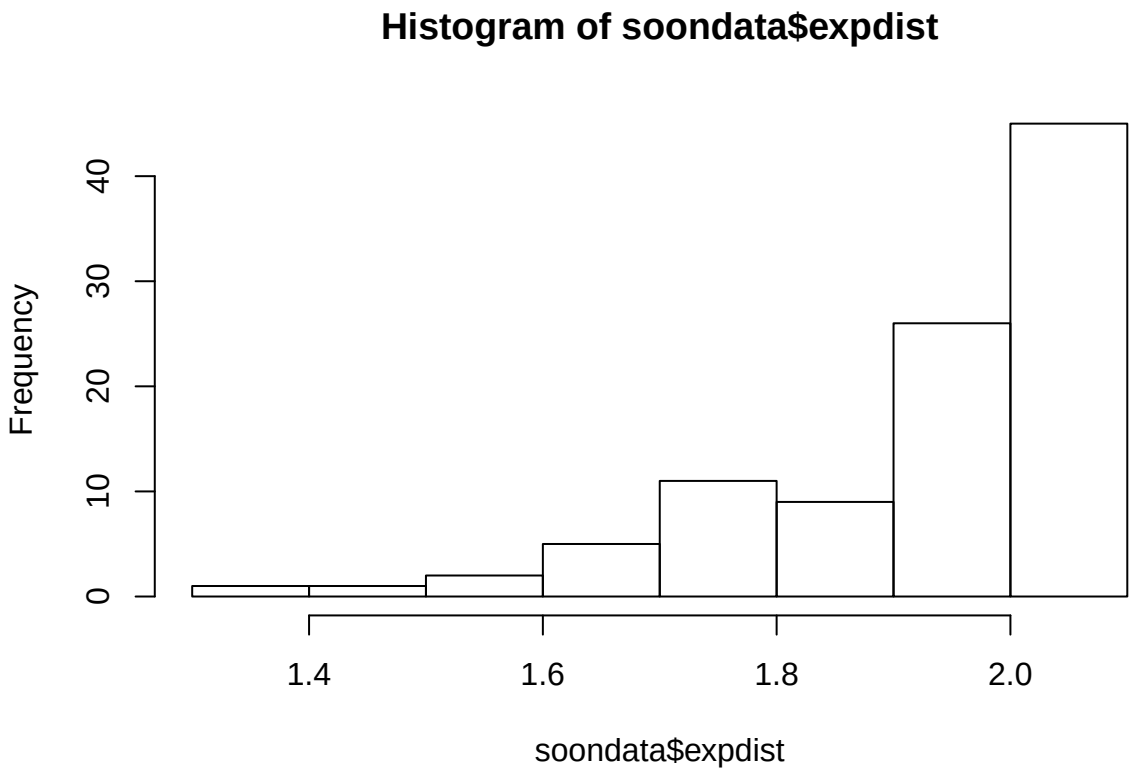
Exponentiating the distances spaces out further distances. This helps deal with the fact that in any space, there are more things further from you than closer to you: a unit increase in radius corresponds to a unit squared increase in area covered. The transformation helps normalize the distribution of words over distance. Throughout, we will be using exponentiated distances.



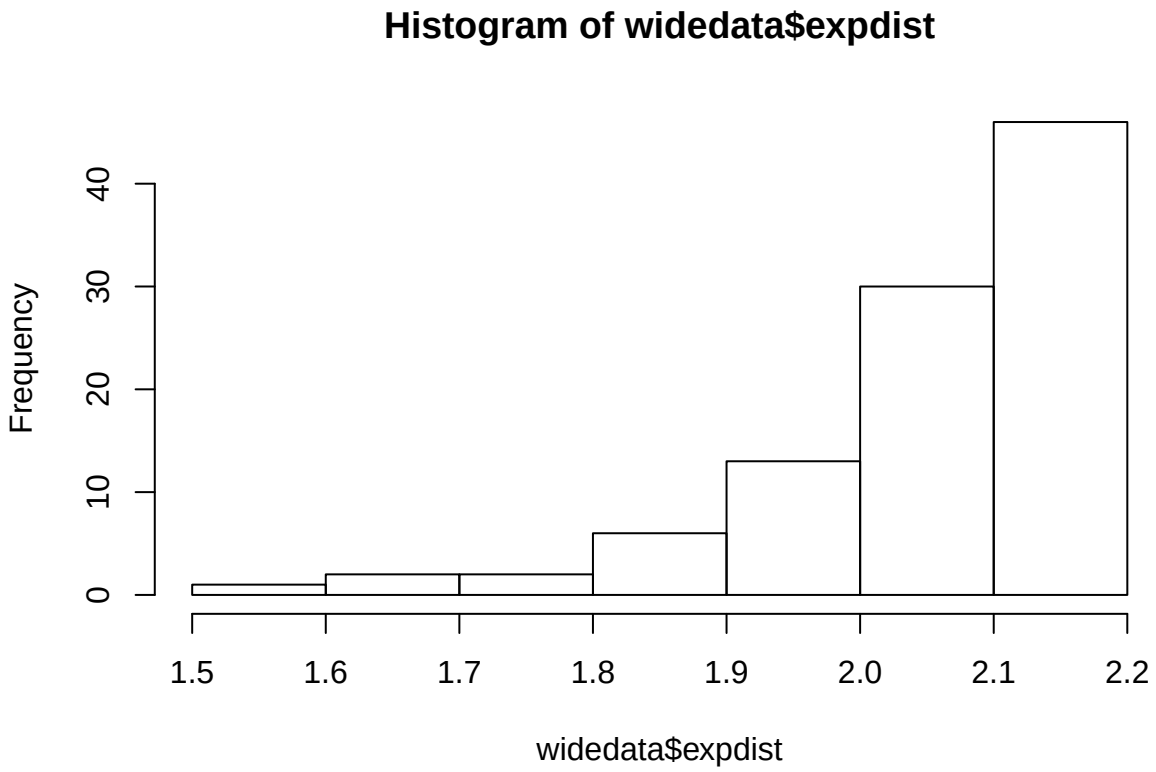
Below: A histogram of exponentiated word distances from “short”. These are the closest 999 words.



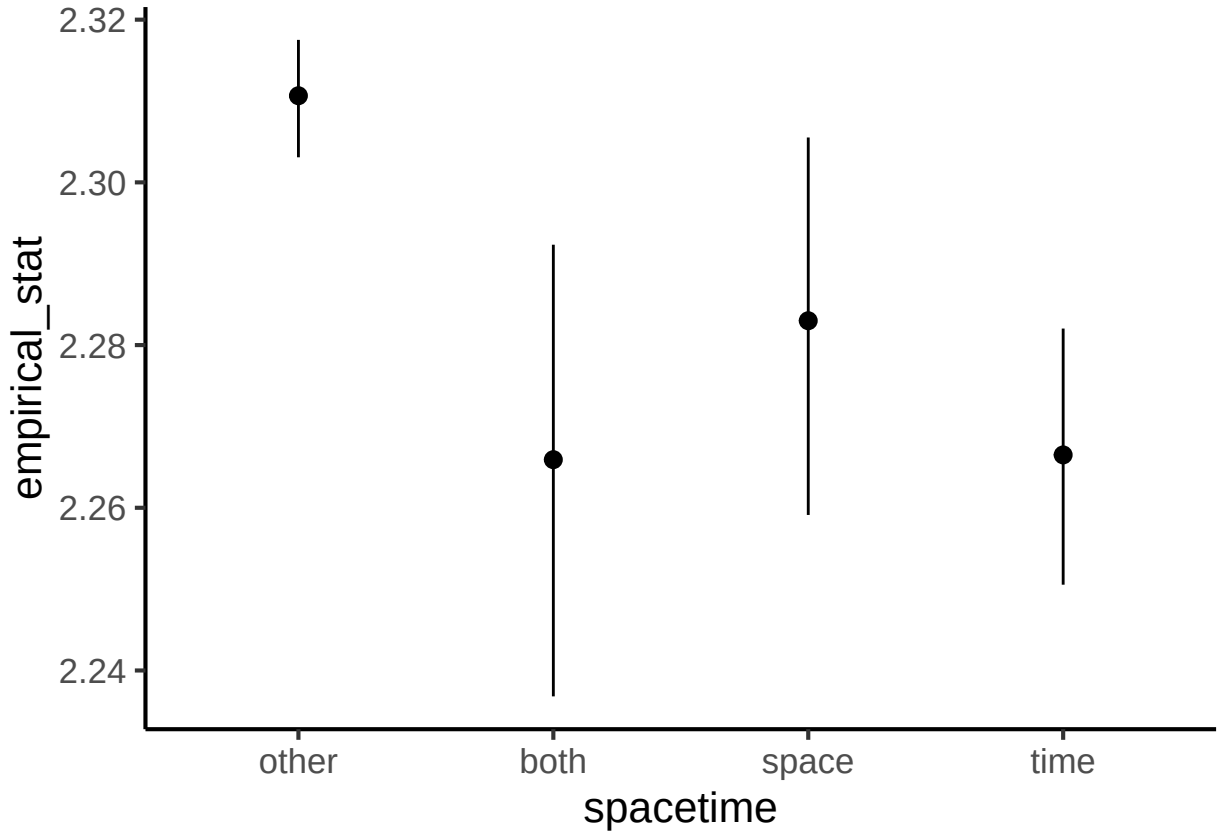
Below: A histogram of exponentiated word distances from "soon". These are the closest 100 words.



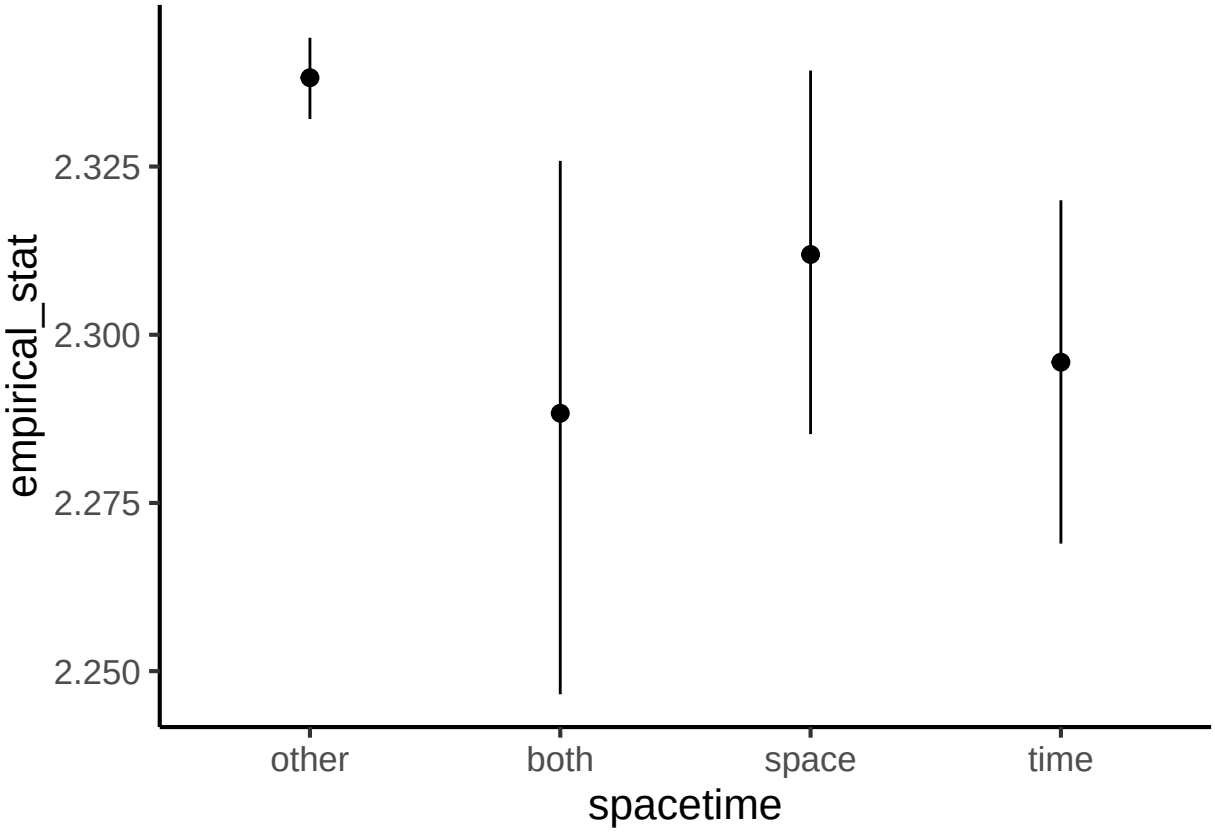
Below: A histogram of exponentiated word distances from "wide". These are the closest 100 words.



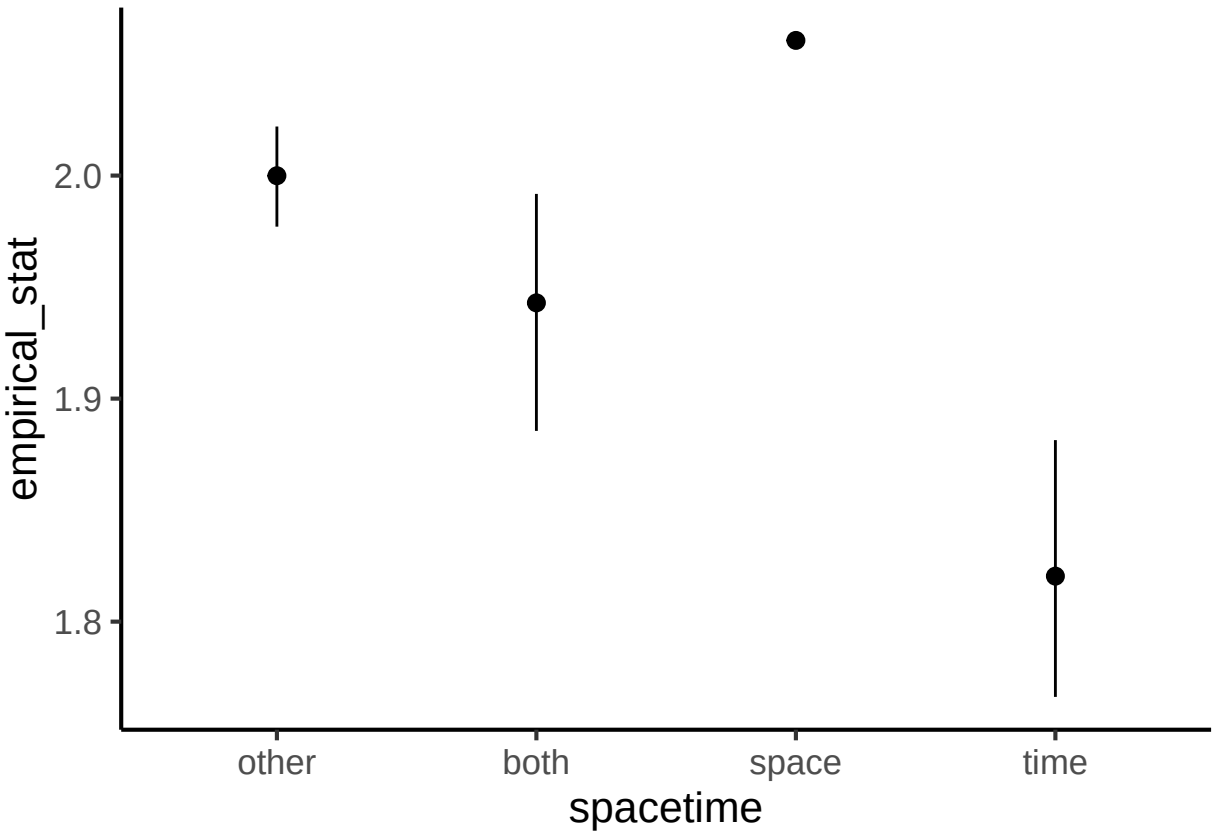
Below: Mean distances of space, time, both and other words from "long". Error bars here and throughout are 95% bootstrapped confidence intervals.



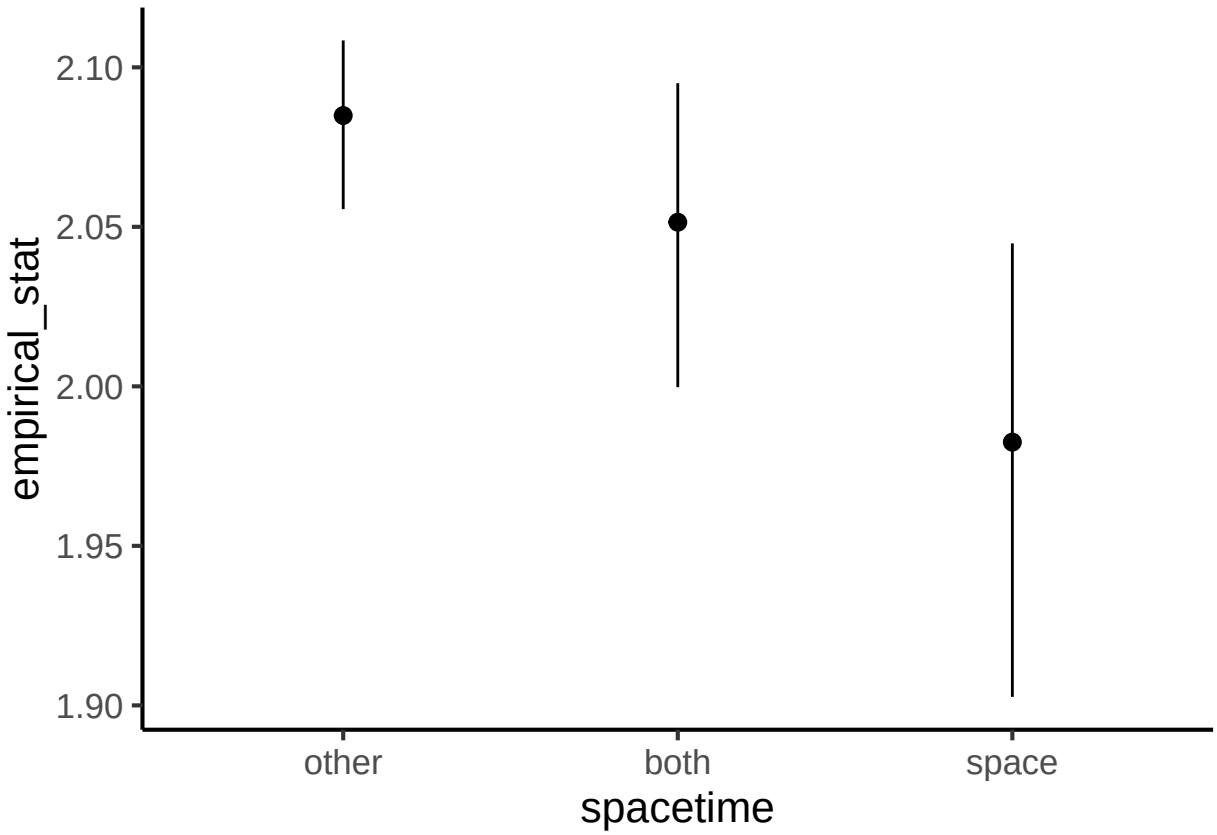
Below: Mean distances of space, time, both and other words from “short”.



Below: Mean distances of space, time, both and other words from “soon”.



Below: Mean distances of space, time, both and other words from "wide". Note: there were no pure time words for 'wide'.



Below: A plot of mean distances of space, time, both and other words from "long" within the closest 20, 100, and 999 neighbors. The numbers on the plot denote the number of words of that type in that range of neighbors.

```
## Warning: `cols` is now required.
## Please use `cols = c(strap)`

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```
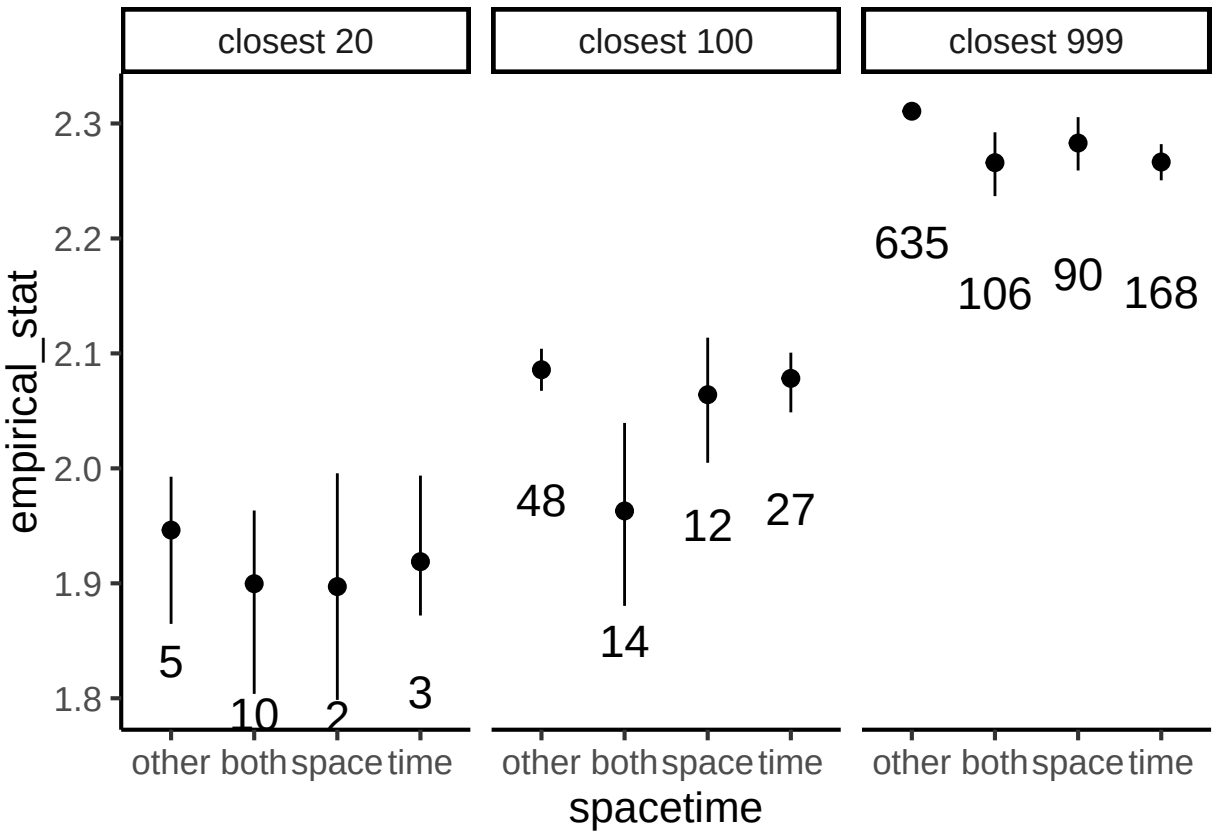
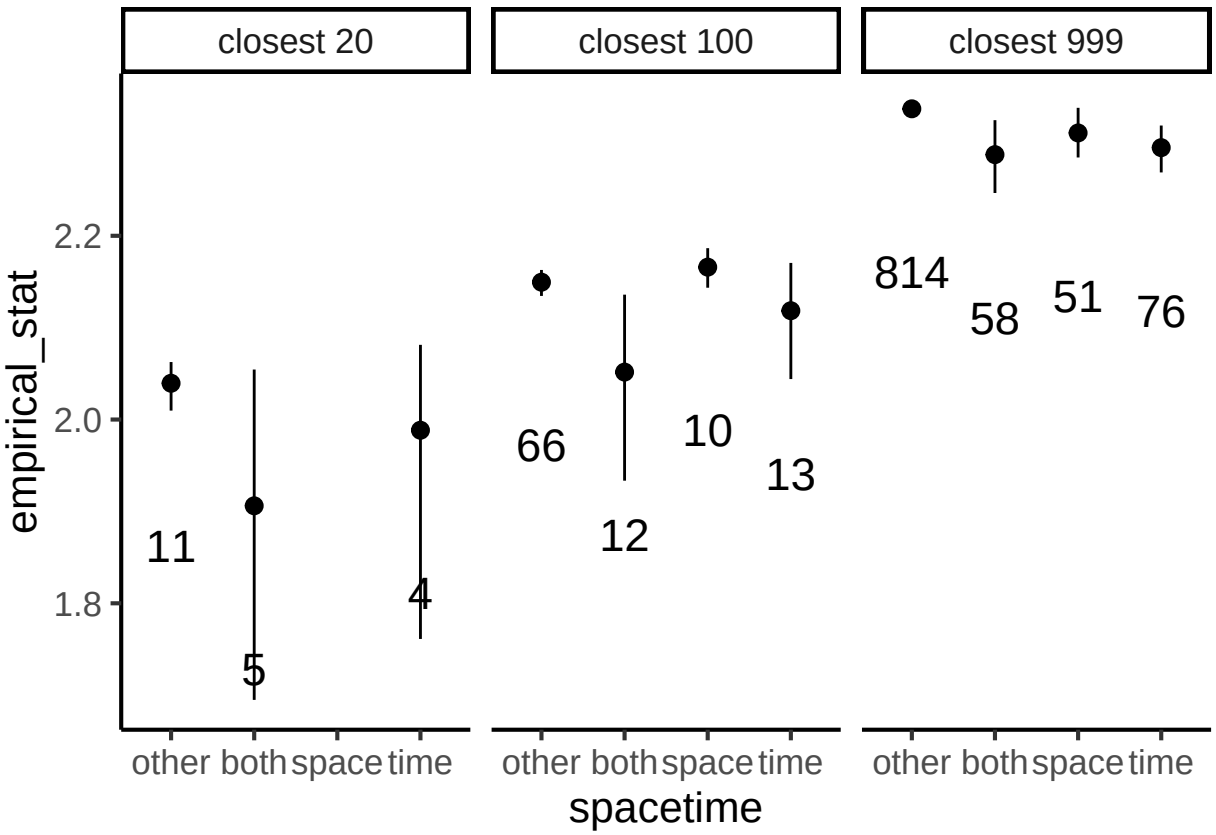



Below: A plot of mean distances of space, time, both and other words from "short" within the closest 20, 100, and 999 neighbors.

```
## Warning: `cols` is now required.
## Please use `cols = c(strap)`

## Warning: `cols` is now required.
## Please use `cols = c(strap)`
```



Below: Linear model predicting distance from "long" by word type (space, time, etc.) in the closest 100 words, where we're more likely to see differences. Space is the reference category. Space and time are not significantly different.

```
##
## Call:
## glm(formula = expdist ~ spacetime, family = gaussian, data = longmodeldata)
##
## Deviance Residuals:
##      Min        1Q    Median        3Q       Max
## -0.44707  -0.02927   0.01767   0.04510   0.18819
##
## Coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)     2.06407    0.02546  81.074  < 2e-16 ***
## spacetimeboth  -0.10112    0.03469  -2.914  0.00442 **
## spacetimeother  0.02169    0.02846   0.762  0.44799
## spacetimetime   0.01419    0.03060   0.464  0.64389
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for gaussian family taken to be 0.007777961)
##
##     Null deviance: 0.92562  on 100  degrees of freedom
## Residual deviance: 0.75446  on  97  degrees of freedom
## AIC: -197.96
##
## Number of Fisher Scoring iterations: 2
```

Below: Linear model predicting distance from "short" by word type (space, time, etc.) in the closest 100 words, where we're more likely to see differences. Space is the reference category. Space and time are not significantly different.

```
##
## Call:
## glm(formula = expdist ~ spacetime, family = gaussian, data = shortmodeldata)
##
## Deviance Residuals:
##      Min        1Q    Median        3Q       Max
## -0.53576  -0.02826   0.02327   0.04950   0.13638
##
## Coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)     2.16587    0.02908  74.482   <2e-16 ***
## spacetimeother -0.01637    0.03120  -0.525   0.6011
## spacetimeboth  -0.11421    0.03937  -2.901   0.0046 **
## spacetimetime  -0.04740    0.03868  -1.226   0.2233
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for gaussian family taken to be 0.008455896)
##
##     Null deviance: 0.93051  on 100  degrees of freedom
## Residual deviance: 0.82022  on  97  degrees of freedom
## AIC: -189.52
##
## Number of Fisher Scoring iterations: 2
```

Below: Linear model predicting distance from "soon" by word type (space, time, etc.) in the closest 100 words. Time is significantly different from 'both' and 'other'; there's only one space word, so the difference in distance probably can't be reliably predicted.

```
##
## Call:
## glm(formula = expdist ~ spacetime, family = gaussian, data = soonmodeldata)
##
## Deviance Residuals:
##      Min        1Q    Median        3Q       Max
## -0.57542  -0.07623   0.02796   0.08450   0.24639
##
## Coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)     1.82041    0.02312  78.730  < 2e-16 ***
## spacetimeother  0.17953    0.03185   5.637 1.73e-07 ***
## spacetimeboth   0.12253    0.03582   3.421 0.000919 ***
## spacetimespace  0.24020    0.13873   1.731 0.086595 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for gaussian family taken to be 0.01871209)
##
##     Null deviance: 2.4245  on 99  degrees of freedom
## Residual deviance: 1.7964  on 96  degrees of freedom
## AIC: -108.15
```

```
##
## Number of Fisher Scoring iterations: 2
```

Below: Linear model predicting distance from "wide" by word type (space, time, etc.) in the closest 100 words. Space is significantly different from 'other', marginally from 'both'; there are no time words to predict from.

```
##
## Call:
## glm(formula = expdist ~ spacetime, family = gaussian, data = widemodeldata)
##
## Deviance Residuals:
##      Min        1Q    Median        3Q       Max
## -0.44372  -0.02325   0.03096   0.07110   0.18157
##
## Coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)     1.98252    0.02579  76.872  < 2e-16 ***
## spacetimeother  0.10237    0.03060   3.346  0.00117 **
## spacetimeboth   0.06893    0.03570   1.931  0.05646 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for gaussian family taken to be 0.01463258)
##
##     Null deviance: 1.5834  on 99  degrees of freedom
## Residual deviance: 1.4194  on 97  degrees of freedom
## AIC: -133.71
##
## Number of Fisher Scoring iterations: 2
```