Word Association RT First Look

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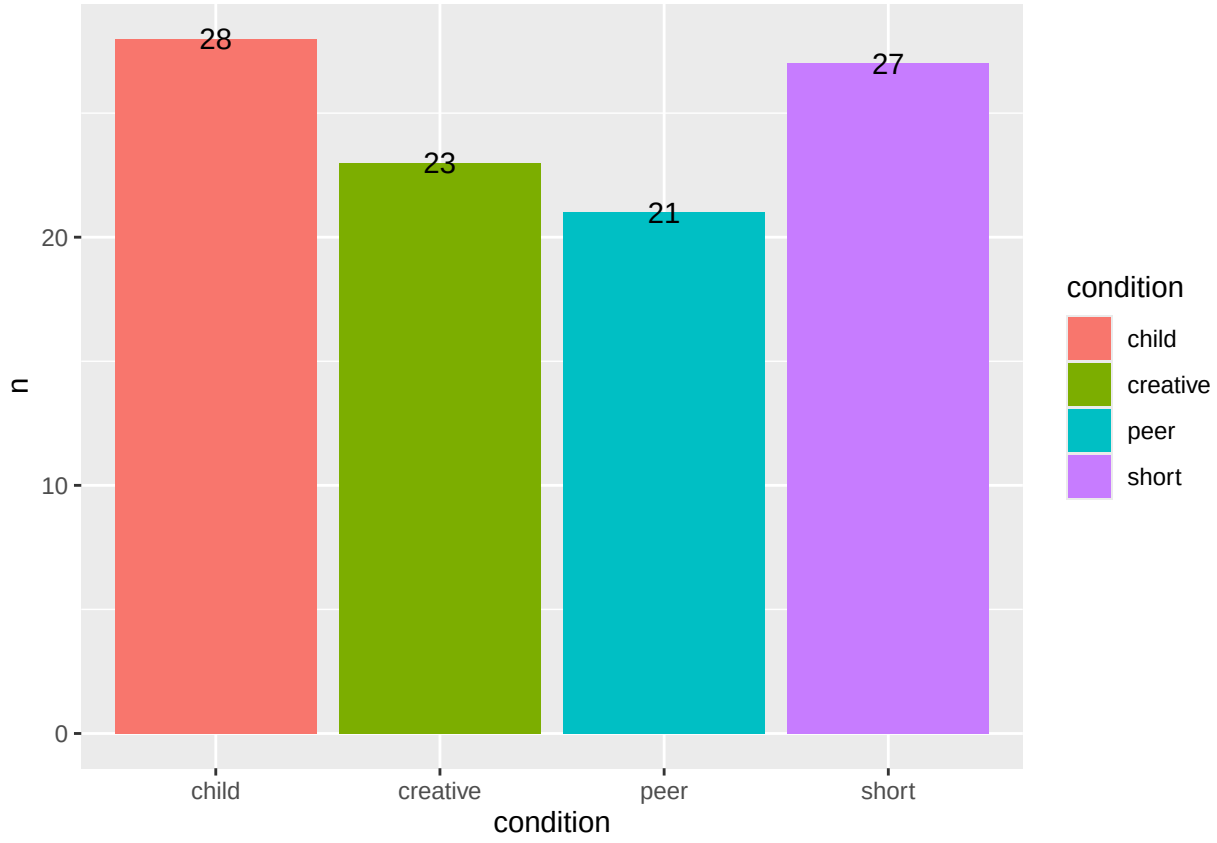
Ideas in the lab have been circulating around an idea of "semantic warping", or the context-driven shifting of semantic weights that make concepts related to the context more available. Below, we describe a study investigating how response times to association generation may differ between conditions where you are given a coherent context to guide associative behavior versus explicit rules as to what kinds of responses are appropriate.

Condition completion

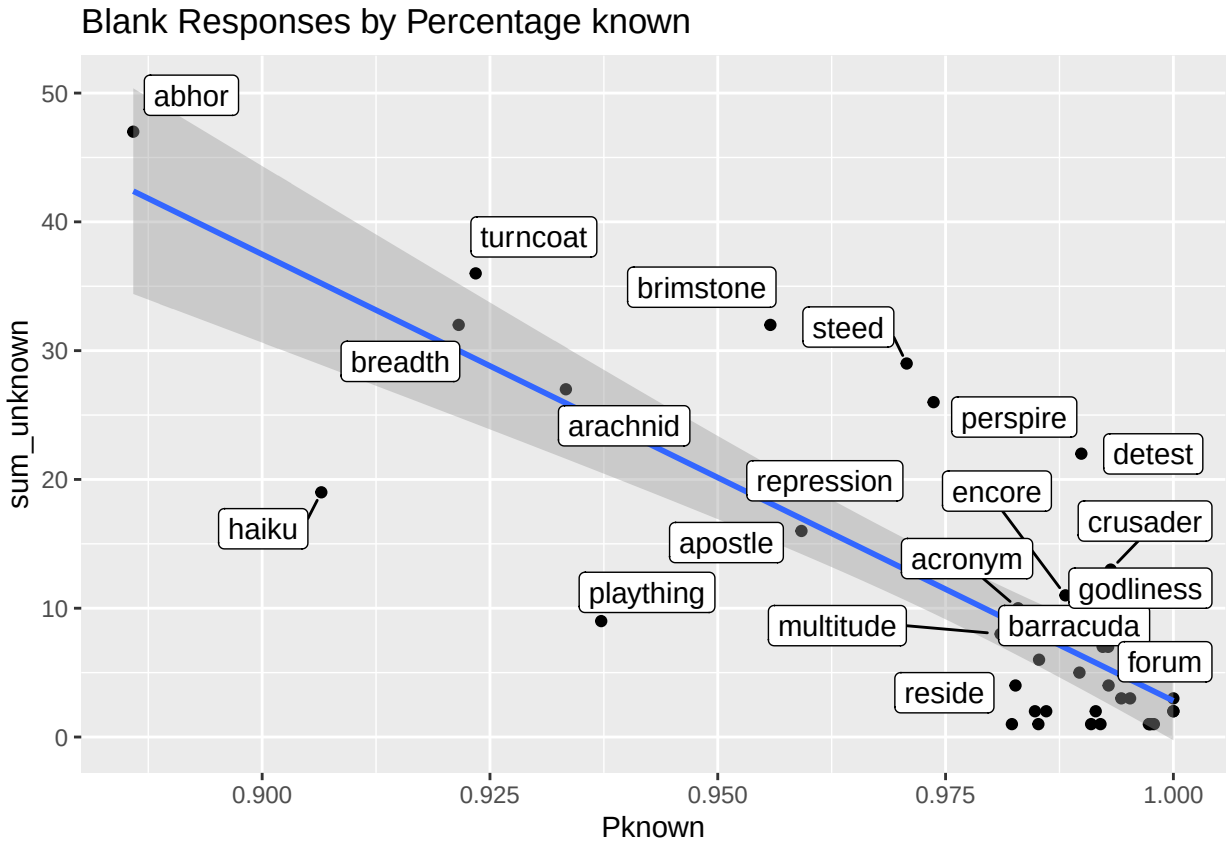
Target sample size is 30 per condition

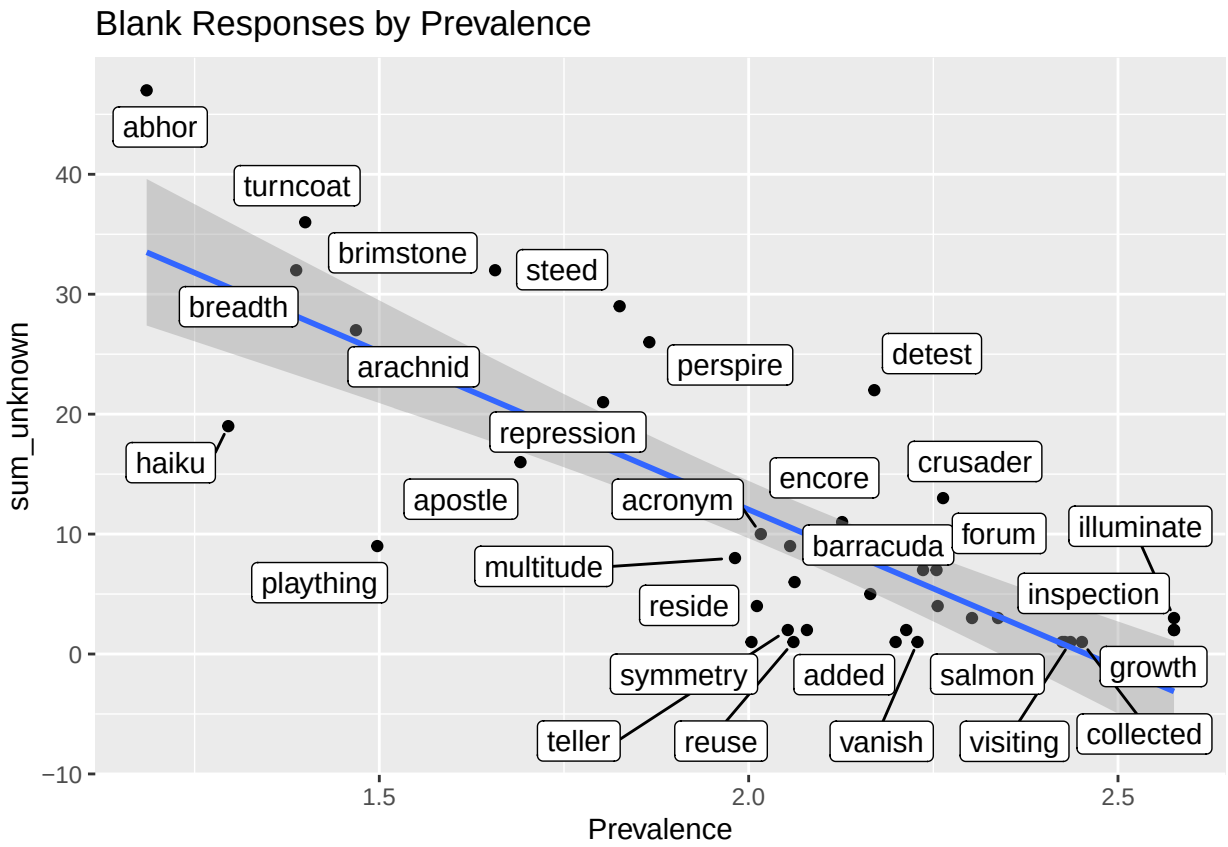


Participant-wise behavior over cues

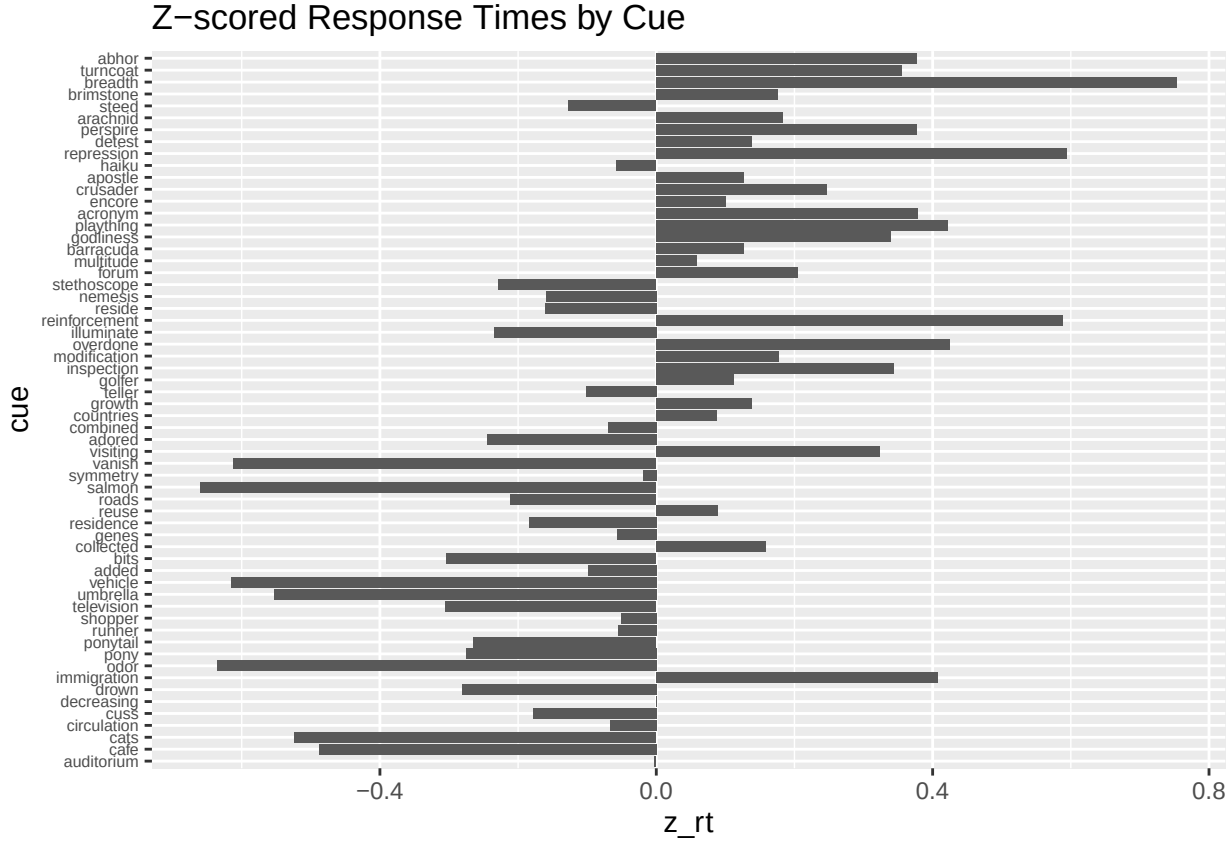
Regressing blank response cues with Prevalence. Removing responses faster than 150 ms and anything further than 3SDs from the participant-wise mean

This was accomplished by filtering out response latencies less than 150ms, grouping by participant and computing z-scores, and filtering out responses that are more than three standard deviations away from the participant means. I then plot the cues in terms of their Prevalence in the MOESM database and their missingness in our response set.




Blank Responses by Prevalence
sum_unknown
Prevalence
40
30
20
10
0
−10
1.5
2.0
2.5
abhor
turncoat
brimstone
steed
breadth
arachnid
perspire
detest
repression
haiku
crusader
encore
apostle
acronym
forum
illuminate
barracuda
multitude
playthings
inspection
reside
growth
symmetry
added
salmon
teller
reuse
vanish
visiting
collected

Participant Z-scored response time by cue. In descending order of number of missing responses. Same procedure as above, but did not filter on standard deviations from the particpant means.



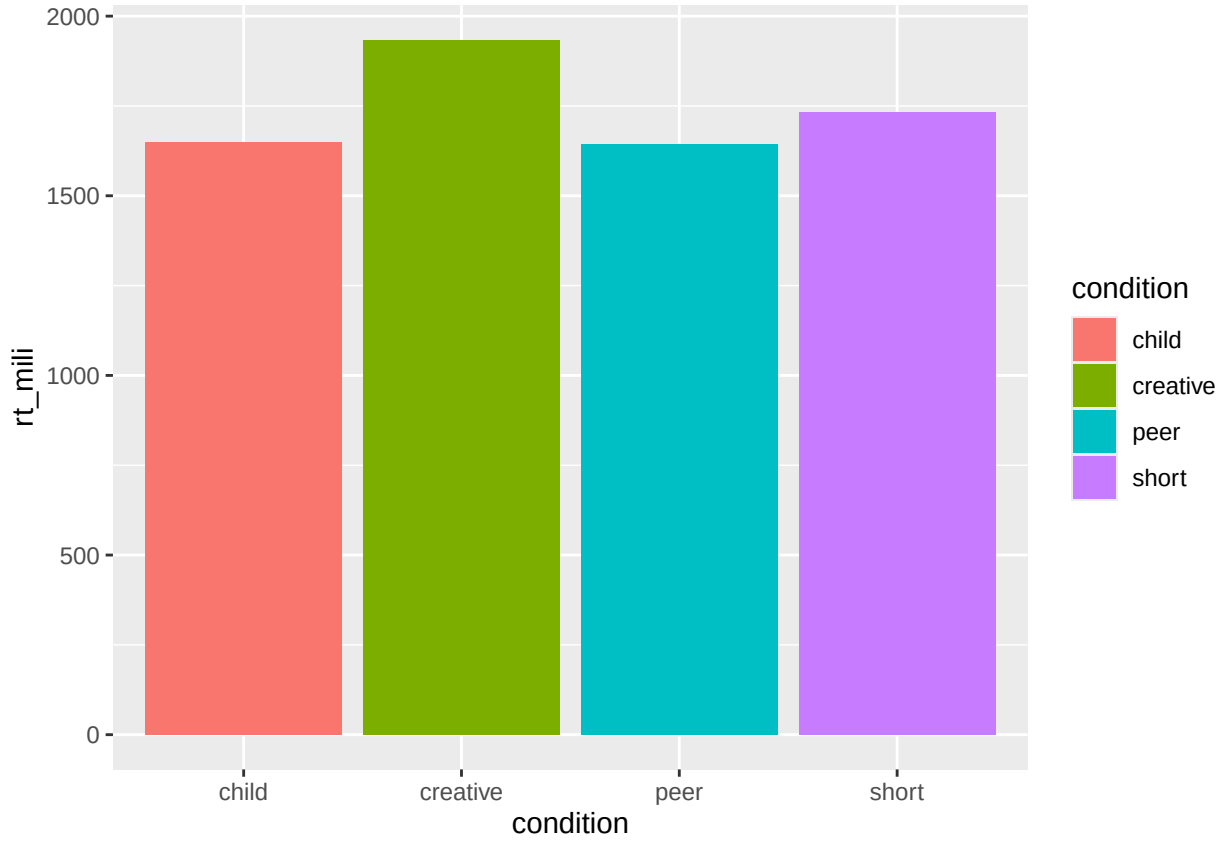
cue	sum_unknown
abhor	47
turncoat	36
breadth	32
brimstone	32
steed	29
arachnid	27
perspire	26
detest	22
repression	21
haiku	19
apostle	16
crusader	13
encore	11
acronym	10
plaything	9
barracuda	9
multitude	8
godliness	7
forum	7
stethoscope	6
nemesis	5

cue	sum_unknown
reinforcement	4
reside	4
illuminate	3
overdone	3
modification	3
teller	2
growth	2
inspection	2
countries	2
golfer	2
combined	2
visiting	1
collected	1
roads	1
salmon	1
added	1
adored	1
bits	1
symmetry	1
vanish	1
genes	1
residence	1
reuse	1

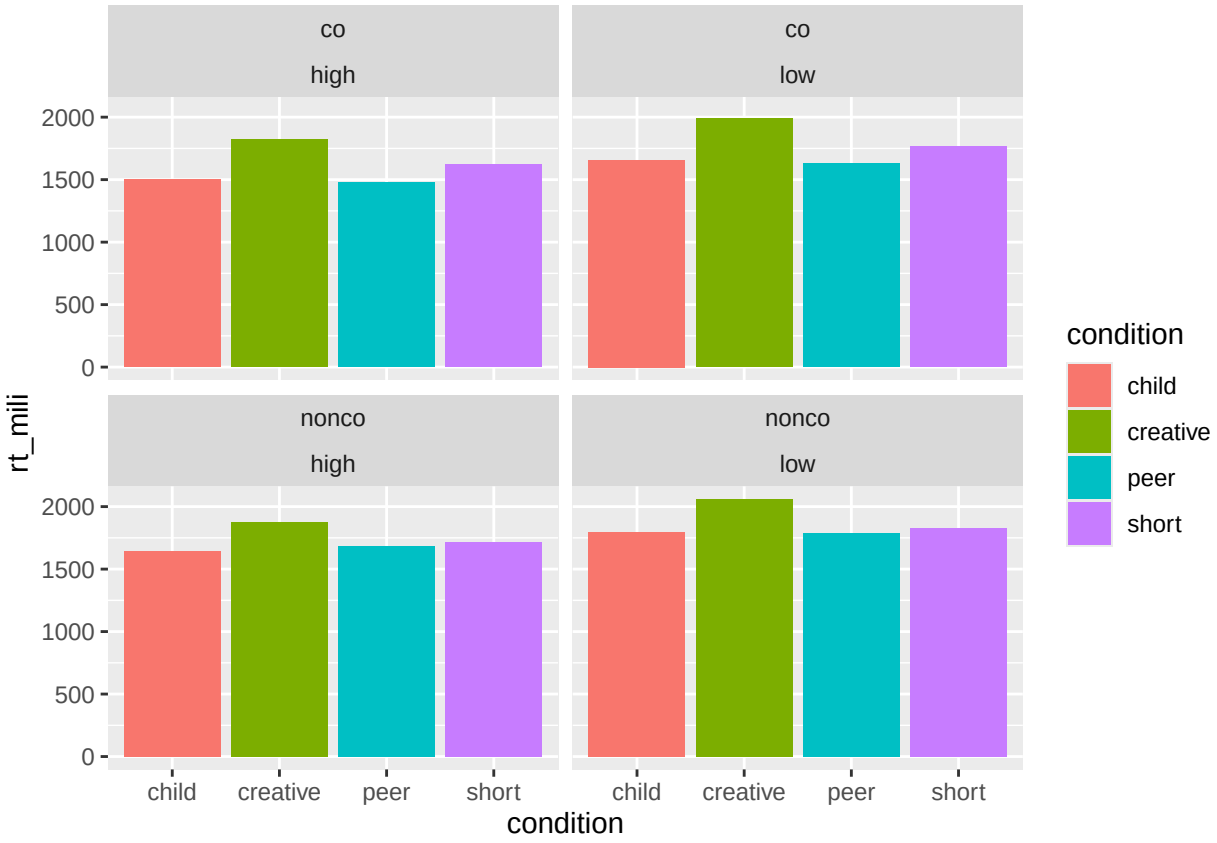
Reaction time

Data presented henceforth is excluding response quicker than 150 ms and more than 3 standard deviations from the participant-wise mean. Also excluded responses above the 90th percentile of all responses.

Reaction time by condition



Reaction time by condition and word-type



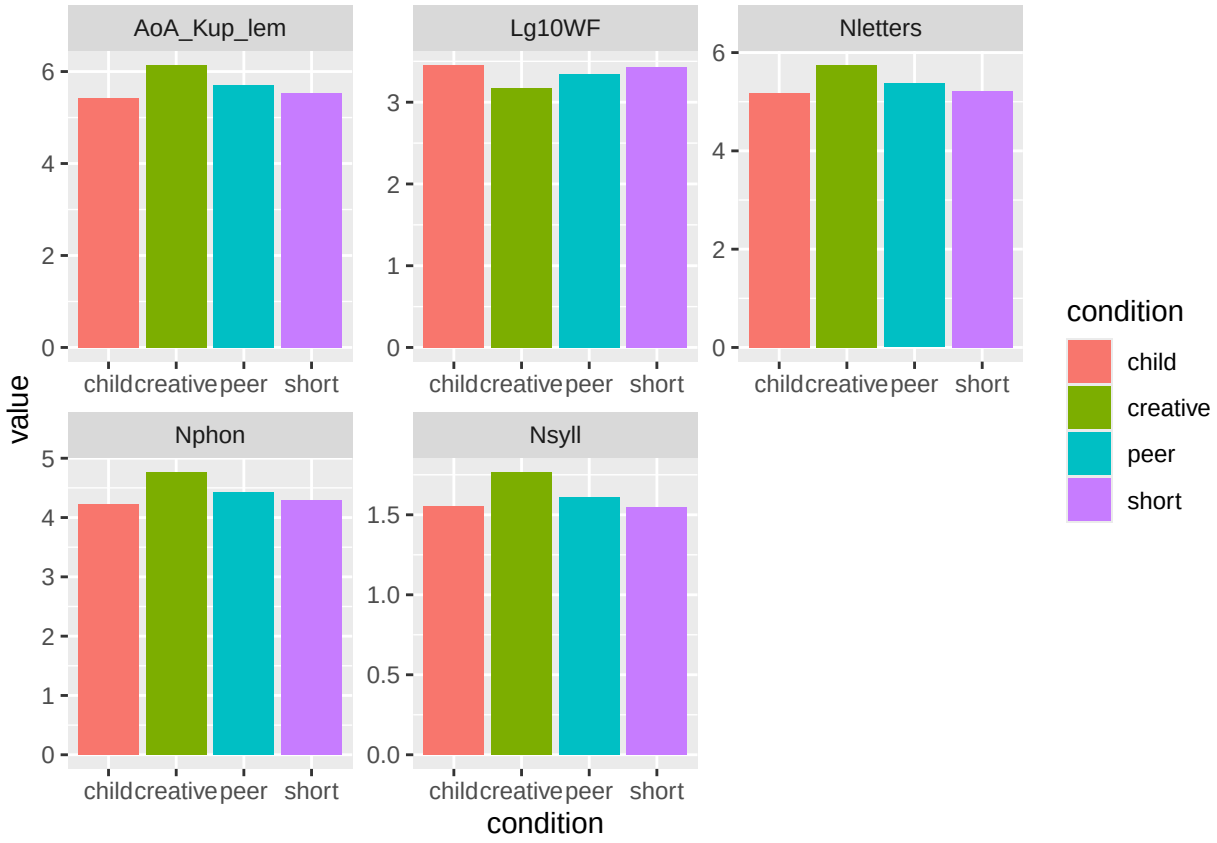
Psycholingusitc measures

##Same dataframe as above, but looking at distribution of psycholinguistic measures by condition.

```
rt_df_long_psychling <- rt_df %>%
  pivot_longer(cols = c("Lg10WF","AoA_Kup_lem","Nphon","Nsyll","Nletters"),
               names_to = "metric",
               values_to = "value")

ggplot(rt_df_long_psychling, aes(x = condition, y = value, fill = condition))+
  geom_bar(stat = "summary", fun = "mean")+
  facet_wrap(~metric, scales = "free")
```

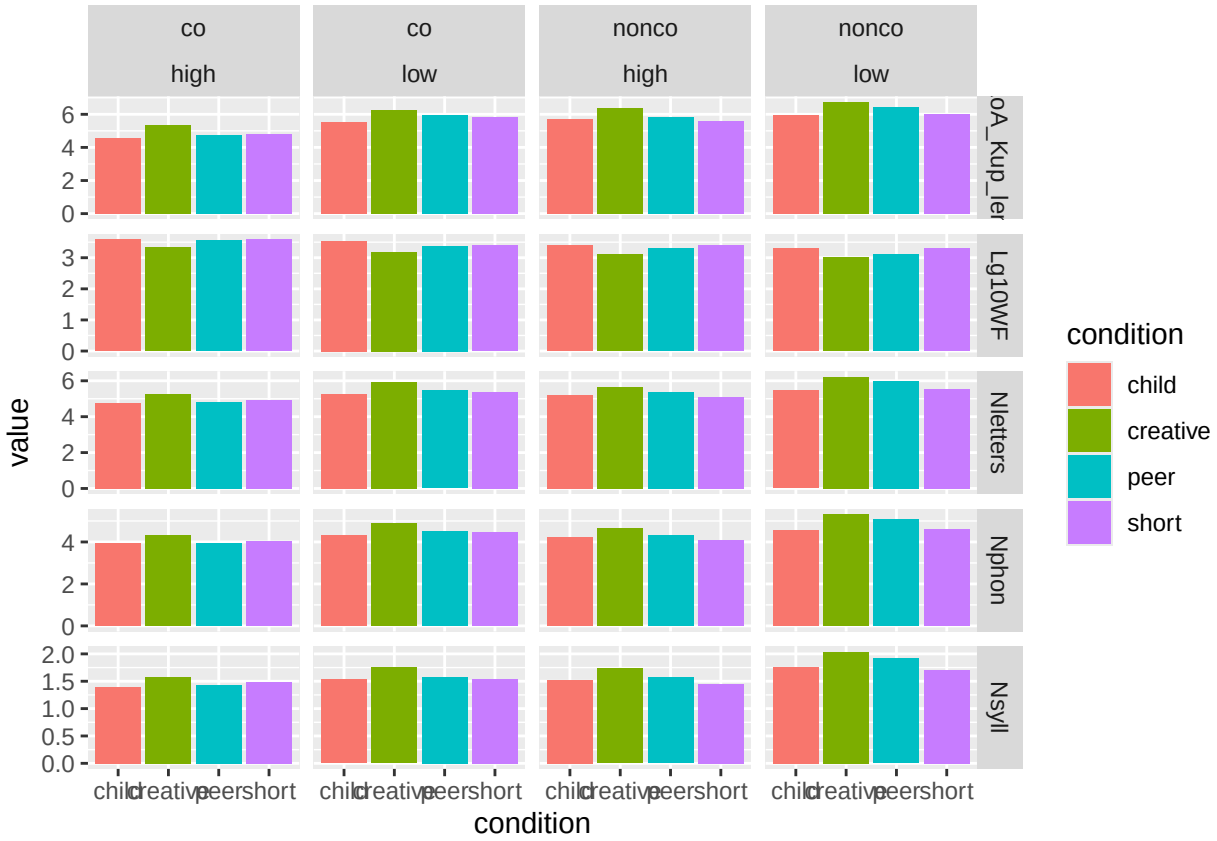
```
## Warning: Removed 4095 rows containing non-finite outside the scale range
## (`stat_summary()`).
```




```
rt_df_long_psychling <- rt_df %>%
  pivot_longer(cols = c("Lg10WF","AoA_Kup_lem","Nphon","Nsyll","Nletters"),
               names_to = "metric",
               values_to = "value")

ggplot(rt_df_long_psychling, aes(x = condition, y = value, fill = condition))+
  geom_bar(stat = "summary", fun = "mean")+
  facet_grid(metric~type+strength_strat, scales = "free")
```

```
## Warning: Removed 4095 rows containing non-finite outside the scale range
## (‘stat_summary()‘).
```


co
high
co
low
nonco
high
nonco
low
oA_Kup_le
Lg10WF
Nletters
Nphon
Nsyll
value
condition
child
creative
peer
short