132017_Sternberg_singleNEUROIMAGING.rnw
compiled November 27, 2018
This file summarizes 132017's behavioral performance on the DMCC Sternberg task, NEUROIMAGING version.

Quality Control: expected stimuli and responses?

The first block of code reads in the eprime output files (e-recovery or .csv), and then checks whether the expected number and types of trials was present in each run and block. Unless a run was known to end early, any error messages printed below should be investigated. NOTE: if you have more than two runs you will need to update this code.

This checks if for NN trials the probe word was not in the words of this trial or the previous; for NP trials the probe word was in the current trial but not the previous; for RN trials the probe word was in the previous trials but not the current.

```
## [1] "was there an error with the NN, NP, or RN trial words? FALSE"
```

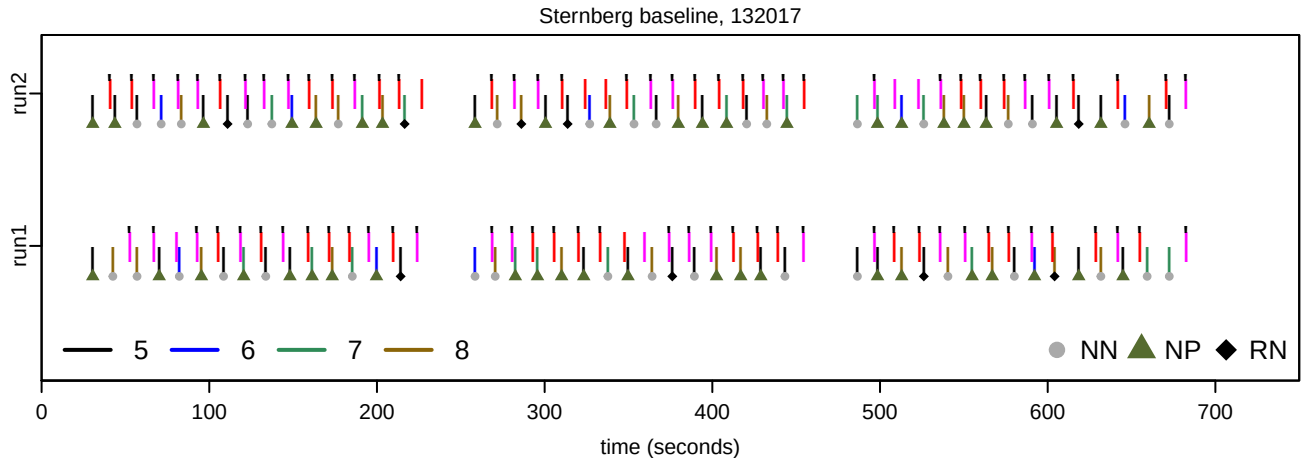
This code checks if the number of trials in each run is correct (e.g., 9 NP list length 5 in baseline run 2).

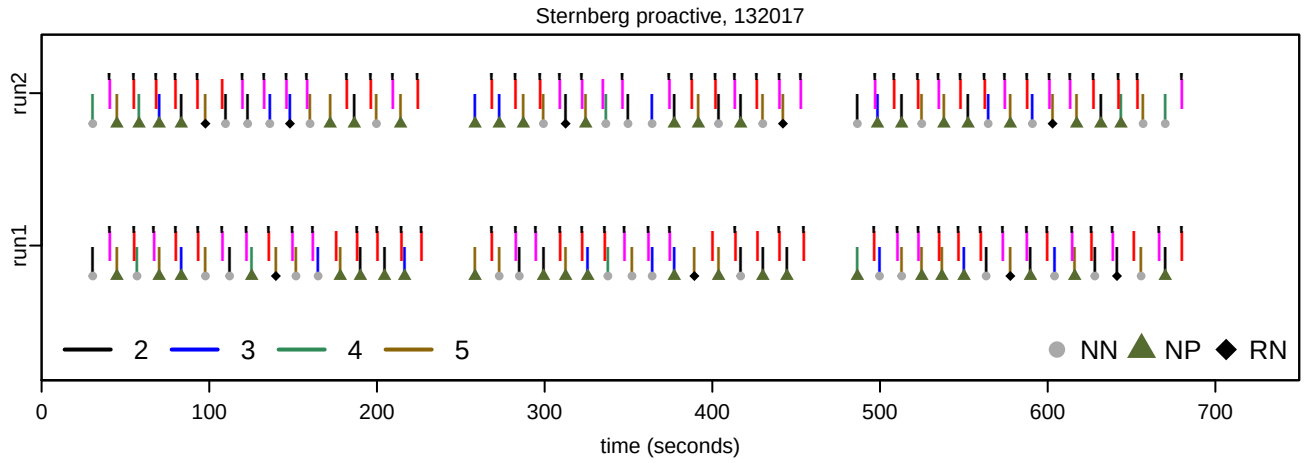
```
## [1] "was there an error with the number of trials? FALSE"
```

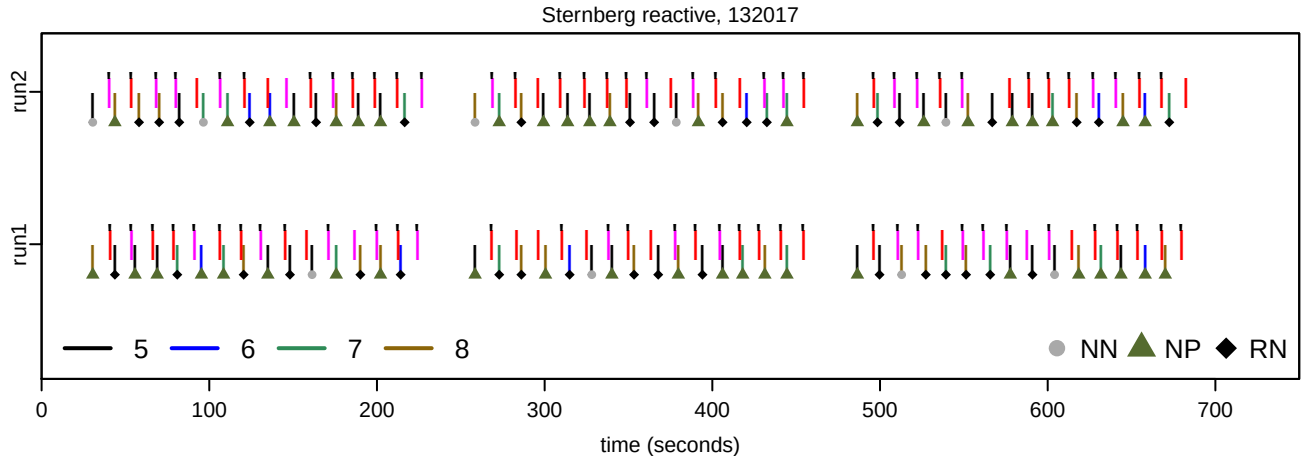
This code checks if the expected words were presented.

```
## [1] "was there an error with the presented words? FALSE"
```

These plots show the time and type of every trial (blues and greens) and response (red and pink); black tick marks indicate correct trials. The trial types and responses should be random, and errors should be approximately equal across the runs within each session (check if a participant appears to have stopped responding or suddenly increased in errors). Proactive should have list lengths of 2, 3, 4, and 5; Baseline and Reactive should have list lengths of 5, 6, 7, and 8.

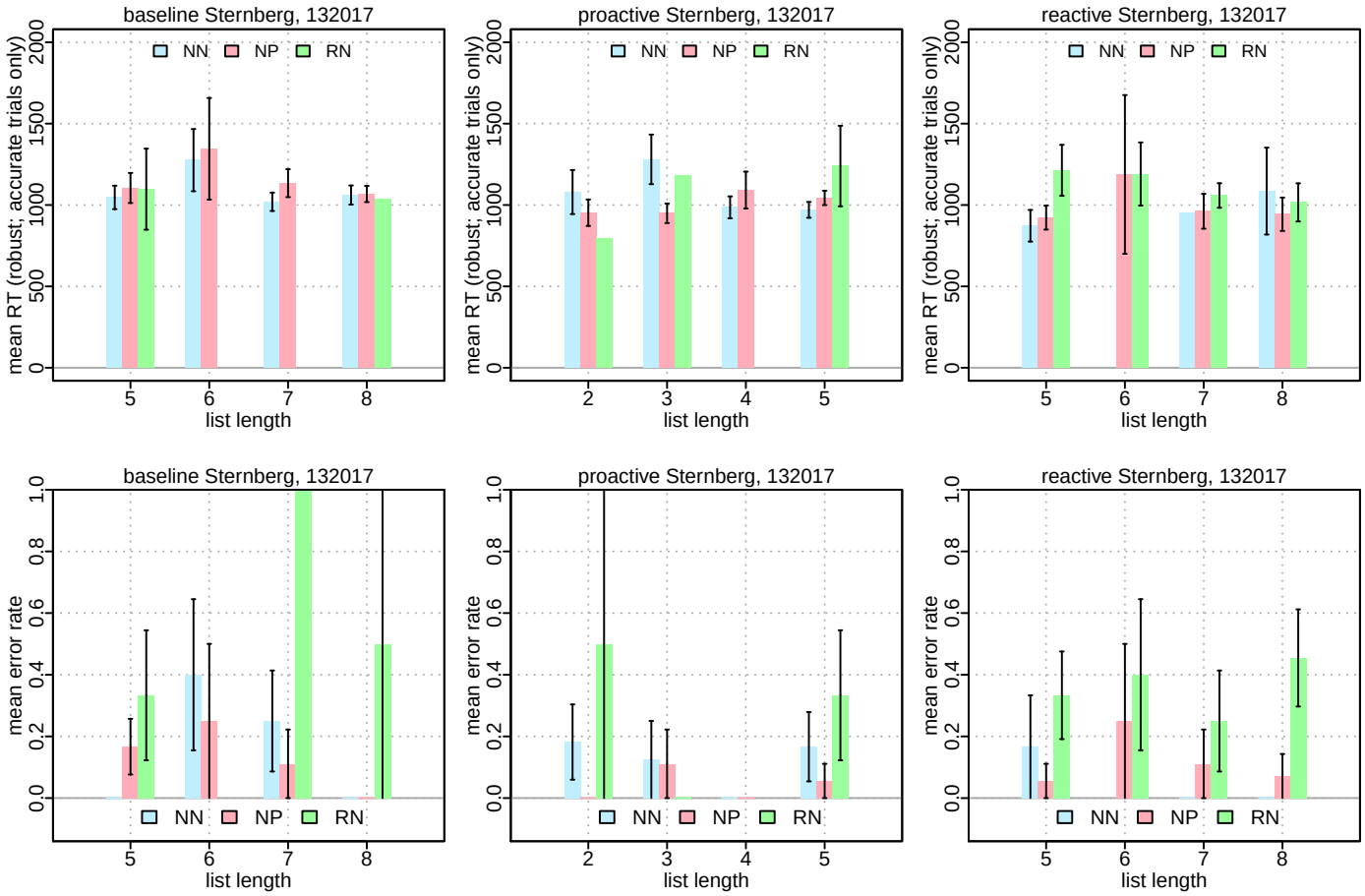




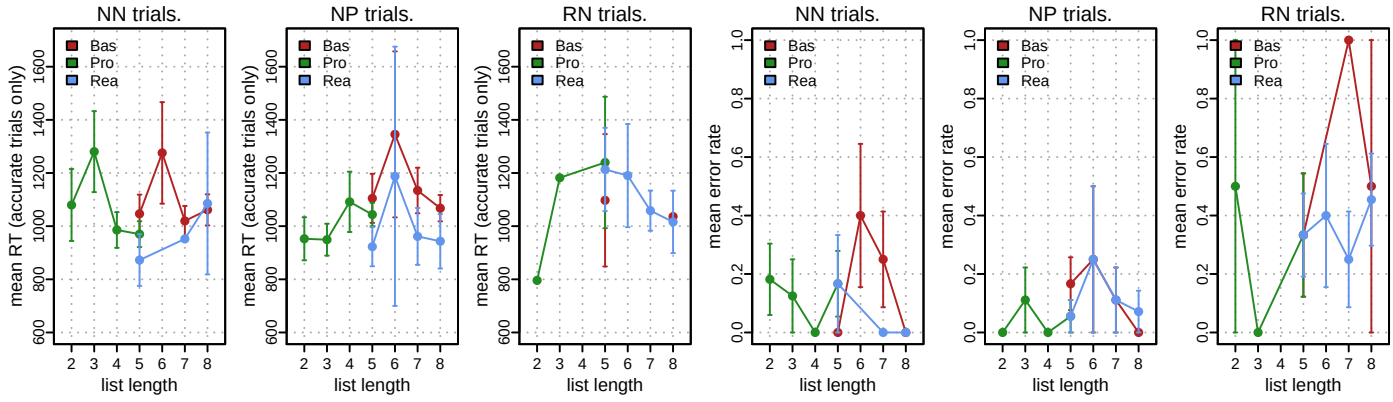


Single-subject statistics for 132017

We hope that the NN trials (blue) will have the lowest error rate, and that the RN (green) trials will be slower (bigger RT) than NN and NP trials. The error rate might be higher and RT slower with longer list lengths.
Robust statistics for RT? TRUE (Robust statistics never used for ERR, since typically very few errors.)



The following figures have the same means and SEMs as in the above barplots, rearranged to facilitate across-session comparisons.



```
##      session trial.type list.len num.trials   ERR.mean  ACC.mean    ACC.sem   RT.mean
## 1   baseline         NN        5         12 0.00000000 1.0000000 0.00000000 1046.6000
## 2   baseline         NN        6          5 0.40000000 0.6000000 0.24494897 1275.6667
## 3   baseline         NN        7          8 0.25000000 0.7500000 0.16366342 1019.6667
## 4   baseline         NN        8         11 0.00000000 1.0000000 0.00000000 1061.3333
## 5   baseline         NP        5         18 0.16666667 0.8333333 0.09038769 1104.6923
## 6   baseline         NP        6          4 0.25000000 0.7500000 0.25000000 1345.3333
## 7   baseline         NP        7          9 0.11111111 0.8888889 0.11111111 1134.2500
## 8   baseline         NP        8         14 0.00000000 1.0000000 0.00000000 1067.5833
## 9   baseline         RN        5          6 0.33333333 0.6666667 0.21081851 1097.2500
## 10  baseline         RN        7          1 1.00000000 0.0000000         NA       NaN
## 11  baseline         RN        8          2 0.50000000 0.5000000 0.50000000 1036.0000
## 12 proactive         NN        2         11 0.18181818 0.8181818 0.12196734 1079.6667
## 13 proactive         NN        3          8 0.12500000 0.8750000 0.12500000 1280.4286
## 14 proactive         NN        4          5 0.00000000 1.0000000 0.00000000  985.6000
## 15 proactive         NN        5         12 0.16666667 0.8333333 0.11236664  970.0000
## 16 proactive         NP        2         14 0.00000000 1.0000000 0.00000000  952.5833
## 17 proactive         NP        3          9 0.11111111 0.8888889 0.11111111  949.1250
## 18 proactive         NP        4          4 0.00000000 1.0000000 0.00000000 1091.5000
## 19 proactive         NP        5         18 0.05555556 0.9444444 0.05555556 1043.6667
## 20 proactive         RN        2          2 0.50000000 0.5000000 0.50000000  796.0000
## 21 proactive         RN        3          1 0.00000000 1.0000000         NA 1182.0000
## 22 proactive         RN        5          6 0.33333333 0.6666667 0.21081851 1239.5000
## 23  reactive         NN        5          6 0.16666667 0.8333333 0.16666667  872.4000
## 24  reactive         NN        7          1 0.00000000 1.0000000         NA  952.0000
## 25  reactive         NN        8          2 0.00000000 1.0000000 0.00000000 1085.5000
## 26  reactive         NP        5         18 0.05555556 0.9444444 0.05555556  922.7333
## 27  reactive         NP        6          4 0.25000000 0.7500000 0.25000000 1187.6667
## 28  reactive         NP        7          9 0.11111111 0.8888889 0.11111111  961.5000
## 29  reactive         NP        8         14 0.07142857 0.9285714 0.07142857  943.1818
## 30  reactive         RN        5         12 0.33333333 0.6666667 0.14213381 1213.3750
## 31  reactive         RN        6          5 0.40000000 0.6000000 0.24494897 1190.3333
## 32  reactive         RN        7          8 0.25000000 0.7500000 0.16366342 1058.3333
## 33  reactive         RN        8         11 0.45454545 0.5454545 0.15745916 1016.0000
```

Sternberg derived measures for 132017

Calculated from the mean RT and error rates in the above table.

```
## [1] "Critical Trial, baseline NN RT: 1046.6 ERR: 0 IES: 1046.6"
## [1] "Critical Trial, baseline NP RT: 1104.692 ERR: 0.167 IES: 1325.631"
## [1] "Critical Trial, baseline RN RT: 1097.25 ERR: 0.333 IES: 1645.875"
## [1] "Critical Trial, proactive NN RT: 970 ERR: 0.167 IES: 1164"
## [1] "Critical Trial, proactive NP RT: 1043.667 ERR: 0.056 IES: 1105.059"
## [1] "Critical Trial, proactive RN RT: 1239.5 ERR: 0.333 IES: 1859.25"
## [1] "Critical Trial, reactive NN RT: 872.4 ERR: 0.167 IES: 1046.88"
## [1] "Critical Trial, reactive NP RT: 922.733 ERR: 0.056 IES: 977.012"
## [1] "Critical Trial, reactive RN RT: 1213.375 ERR: 0.333 IES: 1820.062"
## [1]
## [1] "Recency Effect, baseline RT: 50.65 ERR: 0.333 IES: 599.275"
## [1] "Recency Effect, proactive RT: 269.5 ERR: 0.167 IES: 695.25"
## [1] "Recency Effect, reactive RT: 340.975 ERR: 0.167 IES: 773.183"
```