Slides - Stroop

April 7, 2020

1 Studies of Interference in Serial Verbal Reactions (Stroop, 1935)

[2]:
```
import glob
import seaborn as sns
import pandas as pd
import matplotlib.pyplot as plt
#%matplotlib inline
import numpy as np

path = '/Users/ethan/Documents/GitHub/Learn-PsychoPy/Labs/Stroop/experiments/
 ↪stroop/data/'
all_files = glob.glob(path + "/*.csv")

# assemble data from all participants into one dataframe

temp = [] # make a list to hold all the individual dataframes

for filename in all_files:
    df = pd.read_csv(filename, index_col=None, header=0) # read in each␣
 ↪dataframe
    df = df[df['resp.rt'].notna()] # remove trials with no participant response
    temp.append(df) # add each dataframe to the list of dataframes

df = pd.concat(temp, axis=0, ignore_index=True) # concatenate all participants'␣
 ↪data
```

[3]:
```
# inspect concatenated data
df
```

[3]:
```
      text letterColor corrAns congruent  practice.thisRepN  \
0    green        blue   right    incong                0.0
1     blue        blue   right      cong                0.0
2    green       green    down      cong                0.0
3      red       green    down    incong                0.0
4    green       green    down      cong                0.0
..     …         …     …       …                 …
139   blue       green    down    incong                NaN
```

```
140    red       green    down    incong                NaN
141   blue        blue   right      cong                NaN
142    red         red    left      cong                NaN
143   blue         red    left    incong                NaN

     practice.thisTrialN  practice.thisN  practice.thisIndex  trials.thisRepN  \
0                    0.0            0.0                 7.0              NaN
1                    1.0            1.0                10.0              NaN
2                    2.0            2.0                 5.0              NaN
3                    3.0            3.0                 2.0              NaN
4                    4.0            4.0                 6.0              NaN
..                   …              …                   …                …
139                  NaN            NaN                 NaN              4.0
140                  NaN            NaN                 NaN              4.0
141                  NaN            NaN                 NaN              4.0
142                  NaN            NaN                 NaN              4.0
143                  NaN            NaN                 NaN              4.0

     trials.thisTrialN  …  instrText.stopped  thanksText.started  \
0                  NaN  …                NaN                 NaN
1                  NaN  …                NaN                 NaN
2                  NaN  …                NaN                 NaN
3                  NaN  …                NaN                 NaN
4                  NaN  …                NaN                 NaN
..                 …  …                  …                   …
139                7.0  …                NaN                 NaN
140                8.0  …                NaN                 NaN
141                9.0  …                NaN                 NaN
142               10.0  …                NaN                 NaN
143               11.0  …                NaN                 NaN

     thanksText.stopped  participant  session              date expName  \
0                   NaN          1.0      1.0  2020_Apr_04_1338  stroop
1                   NaN          1.0      1.0  2020_Apr_04_1338  stroop
2                   NaN          1.0      1.0  2020_Apr_04_1338  stroop
3                   NaN          1.0      1.0  2020_Apr_04_1338  stroop
4                   NaN          1.0      1.0  2020_Apr_04_1338  stroop
..                  …            …        …                …     …
139                 NaN          2.0      1.0  2020_Apr_04_1340  stroop
140                 NaN          2.0      1.0  2020_Apr_04_1340  stroop
141                 NaN          2.0      1.0  2020_Apr_04_1340  stroop
142                 NaN          2.0      1.0  2020_Apr_04_1340  stroop
143                 NaN          2.0      1.0  2020_Apr_04_1340  stroop

     psychopyVersion  frameRate  Unnamed: 33
0             2020.1.2  59.741897          NaN
1             2020.1.2  59.741897          NaN
```

```
2           2020.1.2  59.741897          NaN
3           2020.1.2  59.741897          NaN
4           2020.1.2  59.741897          NaN
..               …         …           …
139         2020.1.2  59.519953          NaN
140         2020.1.2  59.519953          NaN
141         2020.1.2  59.519953          NaN
142         2020.1.2  59.519953          NaN
143         2020.1.2  59.519953          NaN

[144 rows x 34 columns]
```

[14]:
```
# get the mean RT values for each particpant grouped by condition
data = df['resp.rt'].groupby([df['participant'], df['congruent']]).mean()
df = data.reset_index(level=['participant', 'congruent']) # re-assign indices
↪to column names
```

[15]:
```
# inspect the aggregated data
df
```

[15]:
```
   participant congruent   resp.rt
0          1.0      cong  0.817494
1          1.0    incong  0.881451
2          2.0      cong  0.685641
3          2.0    incong  0.969093
```

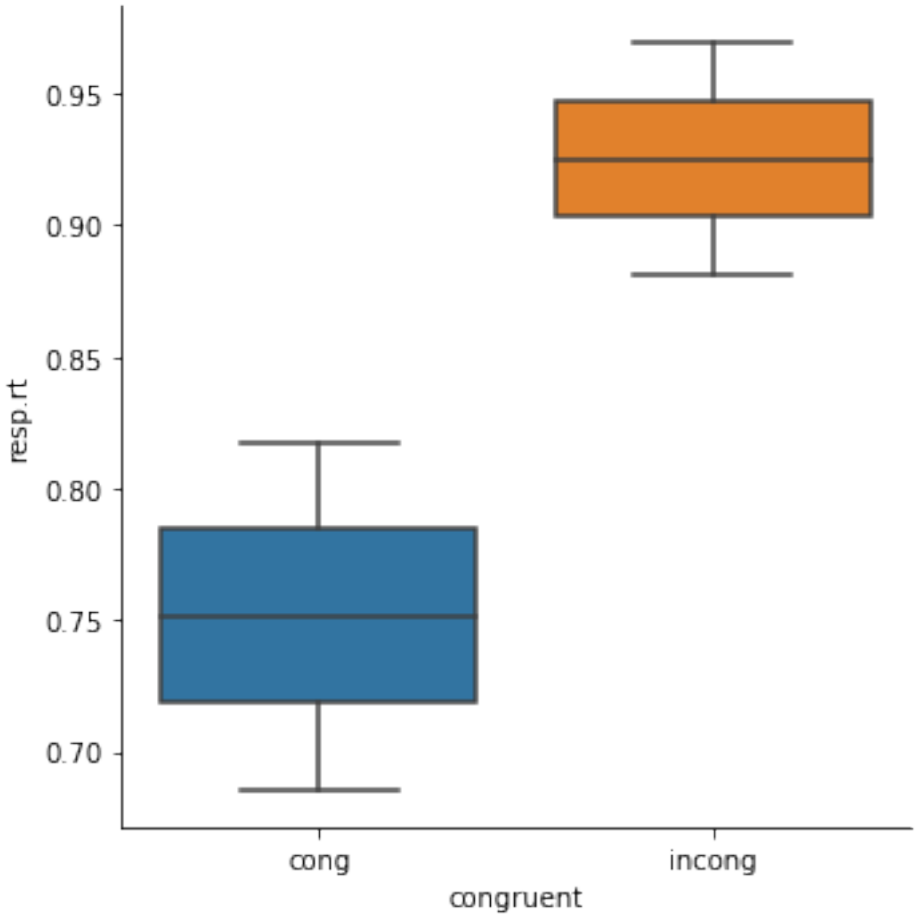
[18]:
```
incongruent = df.loc[(df.congruent == 'incong')]
congruent = df.loc[(df.congruent == 'cong')]

incong = incongruent['resp.rt'].to_numpy()
cong = congruent['resp.rt'].to_numpy()
```

[21]:
```
from scipy import stats
res = stats.ttest_rel(cong, incong)
#res
print("t-statistic: ", res[0])
print("p-values: ", res[1])
```

```
t-statistic:  -1.5827755653993056
p-values:  0.358719547937977
```

[22]:
```
boxplot = sns.catplot(x="congruent", y="resp.rt", kind="box", data=df)
```


0.95
0.90
0.85
0.80
0.75
0.70
resp.rt
cong
incong
congruent

[ ]: