

## Minimal Analyses and charts expected for Lab 2

---

### RESPOND TO COLOR, UPRIGHT

- HISTOGRAM
- BAR CHART on RT
- 1-way ANOVA on RT (three levels: CTL, CON, INCON)
- Pairwise T-tests between individual conditions (if the ANOVA is significant)
- 1-way ANOVA on HIT RATE (three levels: CTL, CON, INCON), checking for speed/accuracy tradeoff
- Pairwise T-tests between individual conditions (if the previous ANOVA is significant)
- BAR CHART on hit rate

### RESPONSE TO COLOR, UPSIDE DOWN

- HISTOGRAM
- BAR on RT
- 1-way ANOVA on RT (three levels: CTL, CON, INCON)
- Pairwise T-tests between individual conditions (if the ANOVA is significant)
- 1-way ANOVA on HIT RATE (three levels: CTL, CON, INCON), checking for speed/accuracy tradeoff
- Pairwise T-tests between individual conditions (if the previous ANOVA is significant)
- BAR CHART on hit rate

**Finally, 2-way ANOVA comparing inconsistent and consistent between upright, respond-to-word and upright respond-to-color.**

### Code for 2-way ANOVA:

```
# get the data from the respond to COLOR for upright words
coloronlydata=cleandata[cleandata$respto==COLOR, ]

# get RT by condition
rtbycondition=tapply(coloronlydata$rt,list(coloronlydata$subj,coloronlydata
$trialtype,coloronlydata$rotate),median)

# reformat data for ANOVA
found = which(rtbycondition!=-999,arr.ind=T)
rtANOVA = data.frame(cbind(found,rtbycondition[found]))

# rename columns
names(rtANOVA) = c('subj','cond','rotate','rt')

# set of factors (i.e., columns that refer to discrete, experimenter conditions)
rtANOVA$subj=factor(rtANOVA$subj)
rtANOVA$cond=factor(rtANOVA$cond)
rtANOVA$rotate=factor(rtANOVA$rotate)

# run a 2-way ANOVA where both condition and rotation are a within-subjects factor
myaov = aov(rtANOVA$rt~rtANOVA$cond*rtANOVA$rotate+Error(rtANOVA$subj))
```

```
# print out ANOVA table  
summary(myaov)
```

**How to report results of 2-way ANOVA:**

Main effect of condition  $F(2,80)=120.05$ ,  $p<.001$ . No effect of rotation  $F(1,80)=XX$ ,  $p=.38$  and no interaction  $F(2,80)=2.79$ ,  $p=.07$