Adjs Subj-Obj: Graphs for Accuracy

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```
table(d$Task,d$Label)
```

```
##
##           test_so test_val
##   SubjObj    2520        0
##   Valence       0     2520
```

```
print(unique(d$Word))
```

```
##  [1] "unstable"   "effective"  "efficient"  "reliable"   "beautiful"
##  [6] "authentic"  "toxic"      "refreshing" "arrogant"   "hostile"
## [11] "pointless"  "unfit"      "deadly"     "delicious"  "profitable"
## [16] "passionate" "selfish"    "incurable"  "brilliant"  "defective"
## [21] "impatient"  "annoying"   "accurate"   "hopeless"   "optimistic"
## [26] "cynical"    "valuable"   "harmonious" "thoughtful" "adverse"
## [31] "bankrupt"   "successful" "healthy"    "admirable"  "pathetic"
## [36] "corrupt"    "disgusting" "faulty"
```

Summary Stats

```
agr <- d %>%
  group_by(Task) %>%
  summarize(MeanAccuracy = mean(Accuracy),
            SD = sd(Accuracy))
print(agr)
```

```
## # A tibble: 2 x 3
##   Task    MeanAccuracy    SD
##   <chr>          <dbl> <dbl>
## 1 SubjObj        0.652 0.476
## 2 Valence        0.965 0.183
```

```
print(unique(d$Word))
```

```
##  [1] "unstable"   "effective"  "efficient"  "reliable"   "beautiful"
##  [6] "authentic"  "toxic"      "refreshing" "arrogant"   "hostile"
## [11] "pointless"  "unfit"      "deadly"     "delicious"  "profitable"
## [16] "passionate" "selfish"    "incurable"  "brilliant"  "defective"
## [21] "impatient"  "annoying"   "accurate"   "hopeless"   "optimistic"
## [26] "cynical"    "valuable"   "harmonious" "thoughtful" "adverse"
## [31] "bankrupt"   "successful" "healthy"    "admirable"  "pathetic"
## [36] "corrupt"    "disgusting" "faulty"
```

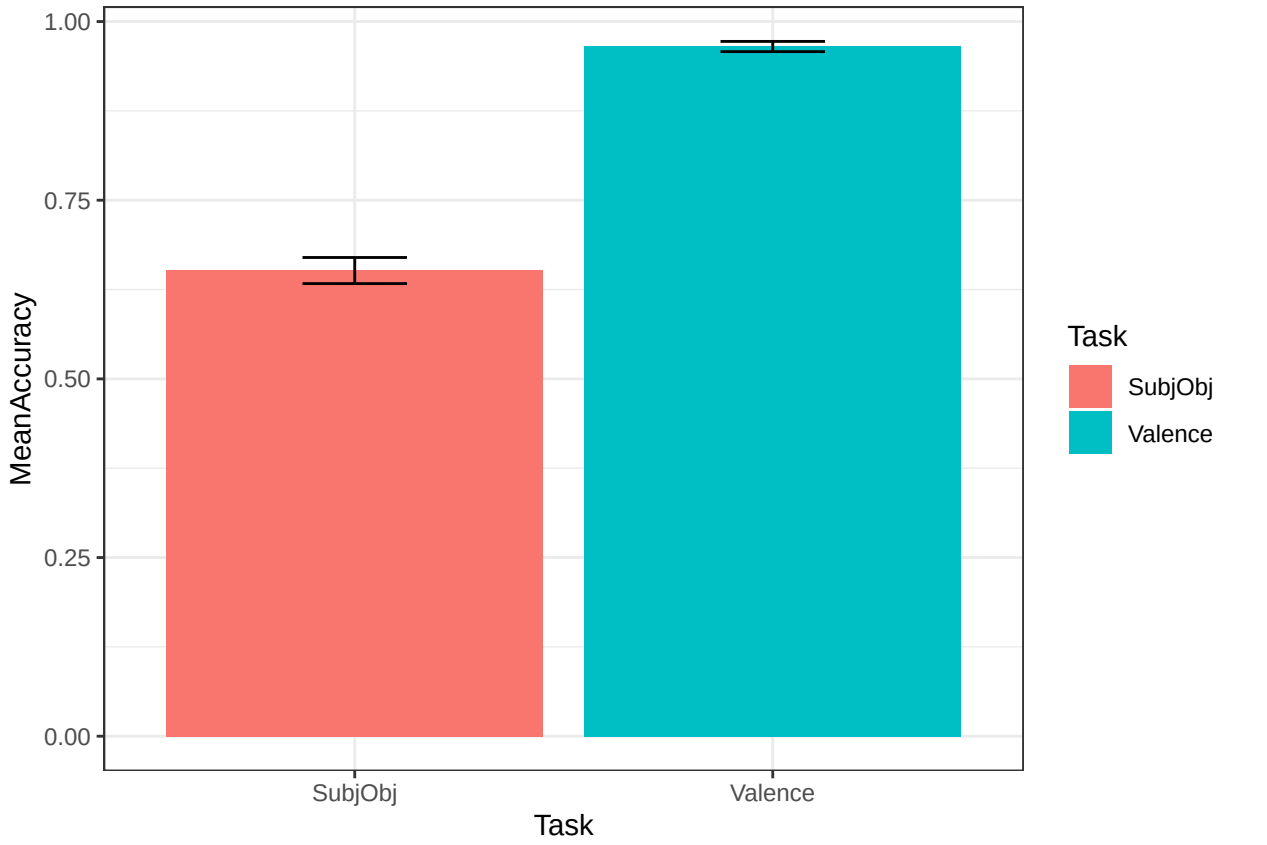
Graph Accuracy by Word

Values for valence/concreteness were gathered/normed first from Warriner et al and Brysbaert et al. From those studies, we can establish what an Accurate response is.

A response is accurate (coded as 1) if the participant response was consistent with the norming study; innacurate (or 0) otherwise.

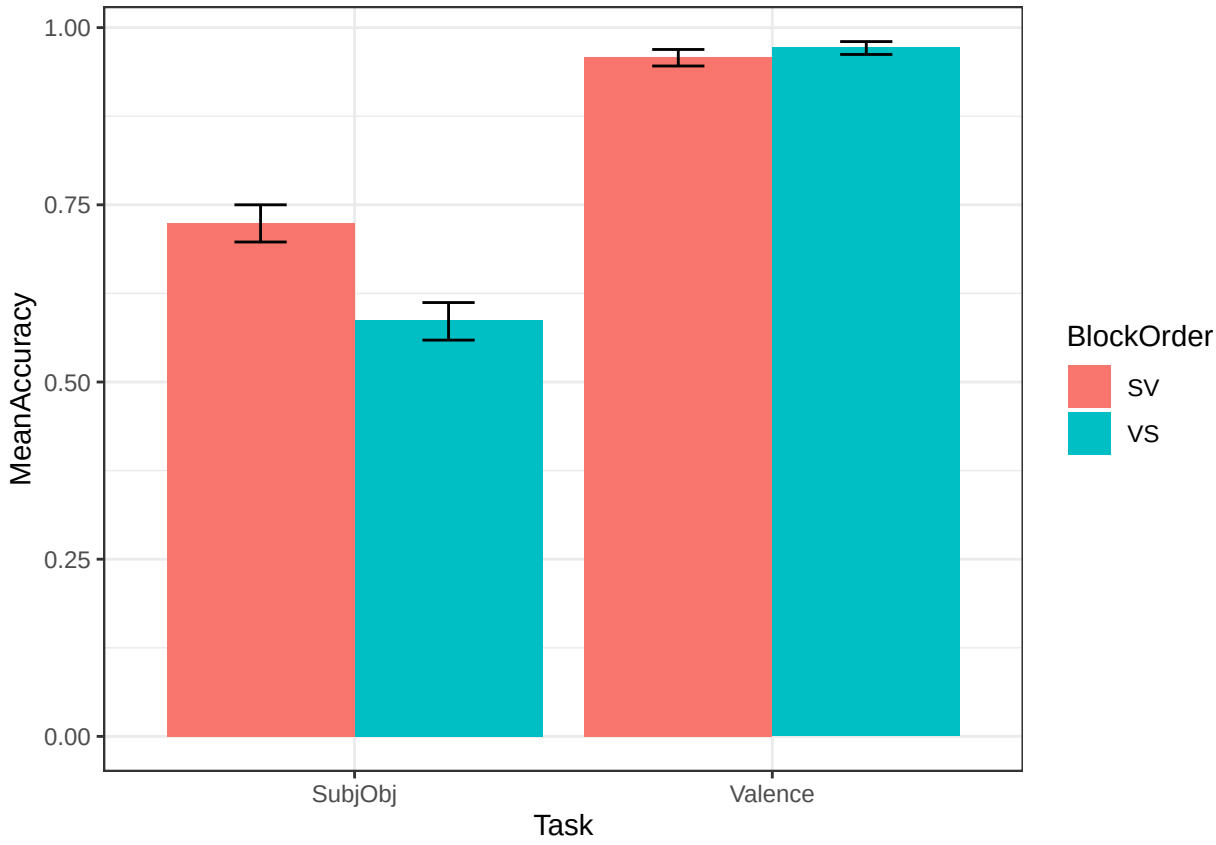
Overall Accuracy

```
agr <- d %>%
  group_by(Task) %>%
  reframe(MeanAccuracy = mean(Accuracy),
          CILow = ci.low(Accuracy),
          CIHigh = ci.high(Accuracy)) %>%
  mutate(YMin = MeanAccuracy - CILow,
         YMax = MeanAccuracy + CIHigh)
# View(agr)

dodge = position_dodge(.9)
ggplot(data=agr, aes(x=Task,y=MeanAccuracy, fill=Task)) +
  geom_bar(position=dodge,stat="identity") +
  geom_errorbar(aes(ymin=YMin,ymax=YMax),width=.25,position=position_dodge(0.9))
```




```
agr <- d %>%
  group_by(Task,BlockOrder) %>%
  reframe(MeanAccuracy = mean(Accuracy),
          CILow = ci.low(Accuracy),
```

```
          CIHigh = ci.high(Accuracy)) %>%
  mutate(YMin = MeanAccuracy - CILow,
         YMax = MeanAccuracy + CIHigh)
# View(agr)

dodge = position_dodge(.9)
ggplot(data=agr, aes(x=Task,y=MeanAccuracy, fill=BlockOrder)) +
  geom_bar(position=dodge,stat="identity") +
  geom_errorbar(aes(ymin=YMin,ymax=YMax),width=.25,position=position_dodge(0.9))
```

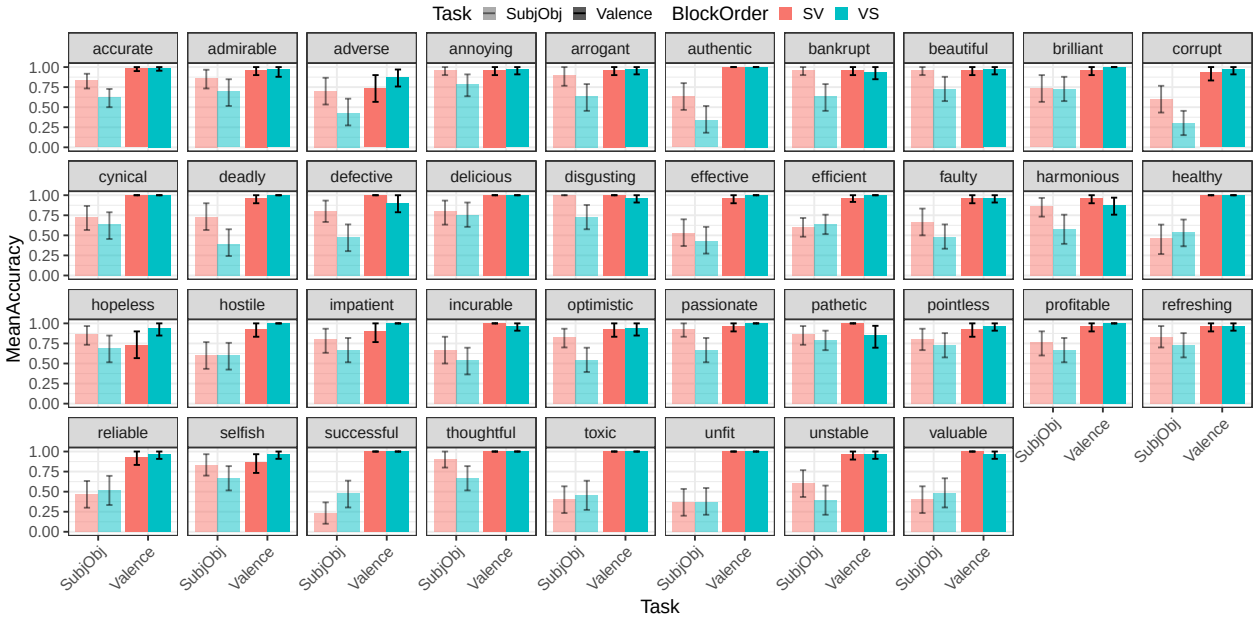


Mean Accuracy by Word / Task

```
agr <- d %>%
  group_by(Word,Task,BlockOrder) %>%
  reframe(MeanAccuracy = mean(Accuracy),
          CILow = ci.low(Accuracy),
          CIHigh = ci.high(Accuracy)) %>%
  mutate(YMin = MeanAccuracy - CILow,
         YMax = MeanAccuracy + CIHigh)
# View(agr)

# dodge = position_dodge(.9)
# ggplot(data=agr, aes(x=Task,y=MeanAccuracy,fill=BlockOrder,alpha=Task)) +
#   geom_bar(position=dodge,stat="identity",alpha = 0.8) +
#   facet_wrap(~Word,ncol=10) +
#   geom_errorbar(aes(ymin=YMin,ymax=YMax),width=.25,position=position_dodge(0.9)) +
```

```
#   theme(axis.text.x = element_text(angle = 45, hjust = 1))

ggplot(agr,aes(x=Task, y=MeanAccuracy, alpha=Task, fill=BlockOrder)) +
  geom_bar(position="dodge",stat="identity") +
  geom_errorbar(aes(ymin=YMin,ymax=YMax),width=.25,position=position_dodge(0.9)) +
  facet_wrap(~Word, ncol=10) +
  xlab("Task") +
  ylab("MeanAccuracy") +
  # guides(fill=FALSE) +
  guides(alpha=guide_legend(title="Task")) +
  theme(legend.key.size = unit(0.3, "cm"),
        legend.position = "top", # c(.5,1)
        legend.direction = "horizontal",
        legend.margin=margin(0,0,0,0),
        legend.box.margin=margin(0,0,-5,-5),legend.spacing.y = unit(0.001, 'cm')) +
    # scale_fill_manual(values=cbPalette) +
    # scale_color_manual(values=cbPalette) +
    scale_alpha_discrete(range = c(.5,1)) +
    theme(axis.text.x = element_text(angle = 45, hjust = 1))
```

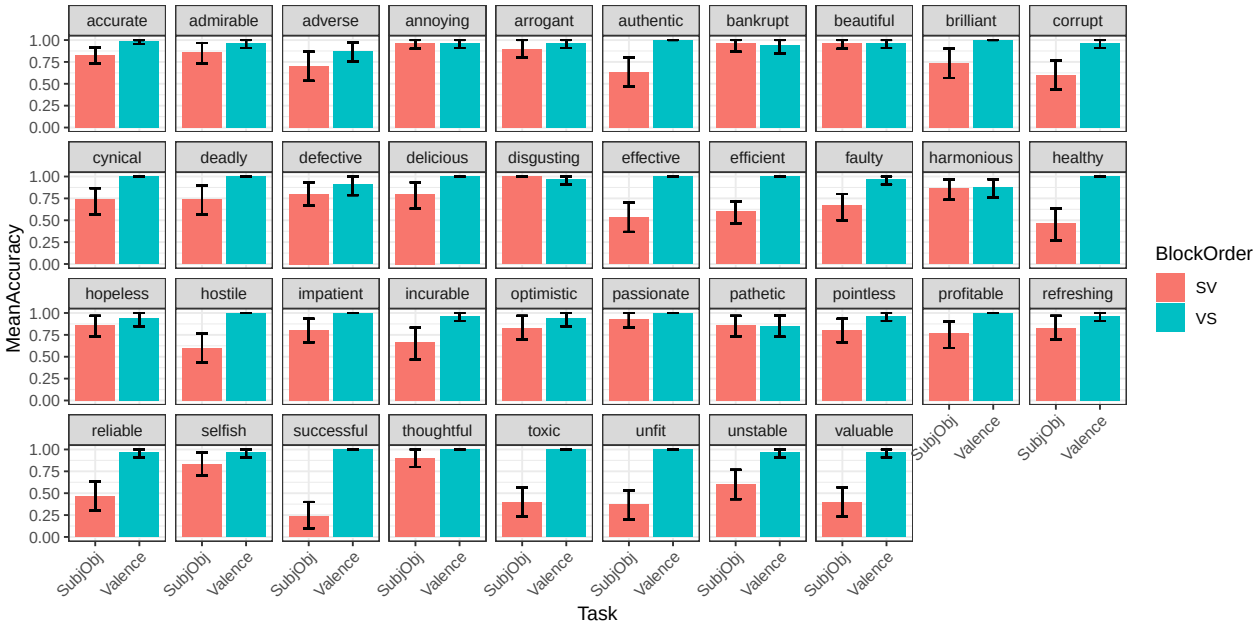
```
## Warning: Using alpha for a discrete variable is not advised.
```



Looking at only the first block

```
agr <- d %>%
  group_by(Task,Word,BlockOrder) %>%
  filter((Task == "Valence") & (BlockOrder == "VS") |
           (Task == "SubjObj") & (BlockOrder == "SV")) %>%
  mutate(MeanAccuracy = mean(Accuracy),
          CILow = ci.low(Accuracy),
          CIHigh = ci.high(Accuracy)) %>%
  mutate(YMin = MeanAccuracy - CILow,
         YMax = MeanAccuracy + CIHigh)

agrr <- agr %>%
```

```
  group_by(Word,Task) %>%
  select(Word,Task,MeanAccuracy) %>%
  unique()
View(d)

dodge = position_dodge(.9)
ggplot(data=agr, aes(x=Task,y=MeanAccuracy,fill=BlockOrder)) +
  geom_bar(position=dodge,stat="identity") +
  facet_wrap(~Word,ncol=10) +
  geom_errorbar(aes(ymin=YMin,ymax=YMax),width=.25,position=position_dodge(0.9)) +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```




```
m <- lmer(MeanAccuracy ~ BlockOrder + (1|Word), data =agr)
summary(m)
```

```
## Linear mixed model fit by REML. t-tests use Satterthwaite's method [
## lmerModLmerTest]
## Formula: MeanAccuracy ~ BlockOrder + (1 | Word)
##    Data: agr
##
## REML criterion at convergence: -4265.3
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -2.75023 -0.67310 -0.06093  0.71602  2.41029
##
## Random effects:
##  Groups   Name        Variance Std.Dev.
##  Word     (Intercept) 0.00725  0.08514
##  Residual             0.01011  0.10054
## Number of obs: 2520, groups:  Word, 38
##
## Fixed effects:
##               Estimate Std. Error        df t value Pr(>|t|)
```

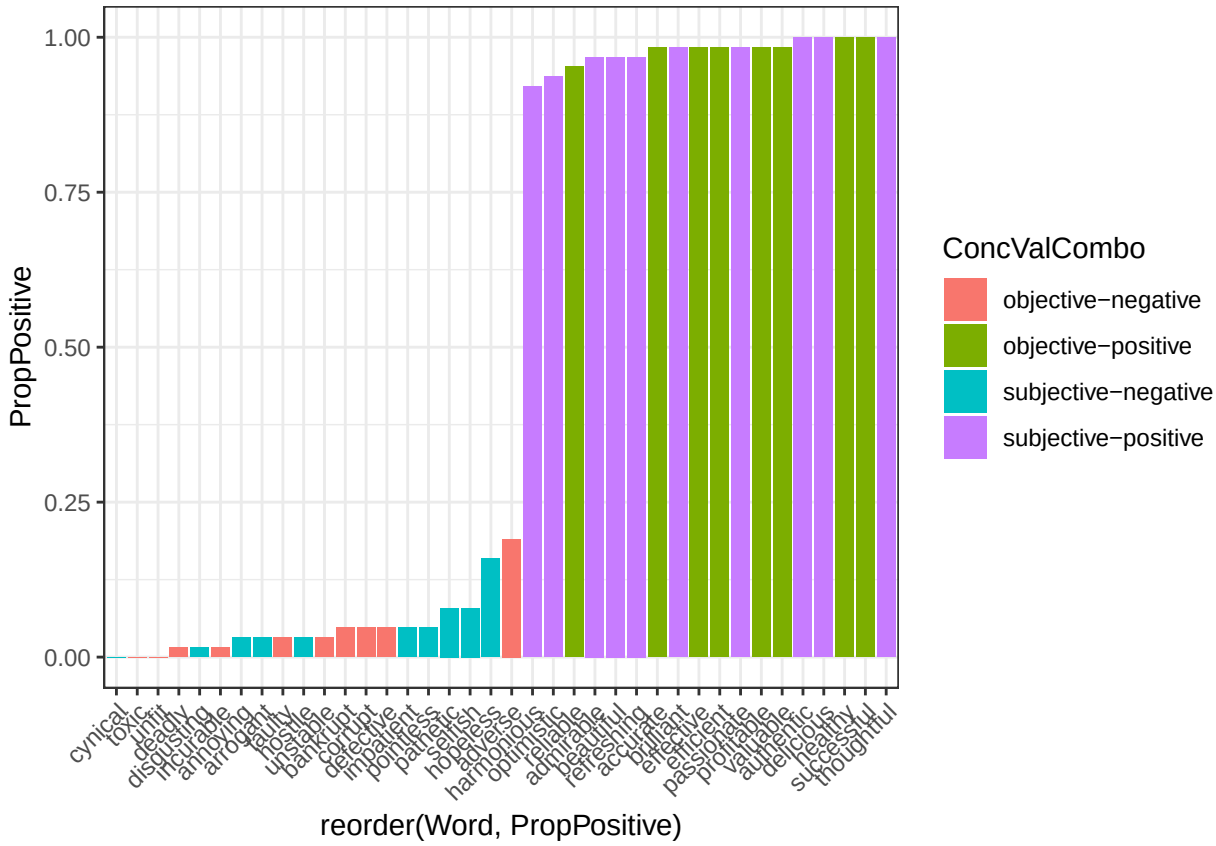
```
## (Intercept)  7.238e-01  1.412e-02 3.867e+01   51.27   <2e-16 ***
## BlockOrderVS 2.478e-01  4.010e-03 2.481e+03   61.79   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##             (Intr)
## BlockOrdrVS -0.149
```

PropPositive and PropObjective

```
val <- d %>%
  filter(Task == "Valence") %>%
  # filter(Word %in% conc$Word) %>%
  group_by(Word,ConcValCombo) %>%
  mutate(Response.n = as.numeric(factor(Response, levels = c("negative", "positive"))) - 1) %>%  # Conv
  summarize(PropPositive = mean(Response.n))
```

```
## `summarise()` has grouped output by 'Word'. You can override using the
## `.groups` argument.
```

```
  # filter(PropPositive > .1 | PropPositive < .9)

dodge = position_dodge(.9)
ggplot(data=val, aes(x=reorder(Word,PropPositive),y=PropPositive,fill=ConcValCombo)) +
  geom_bar(position=dodge,stat="identity") +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```

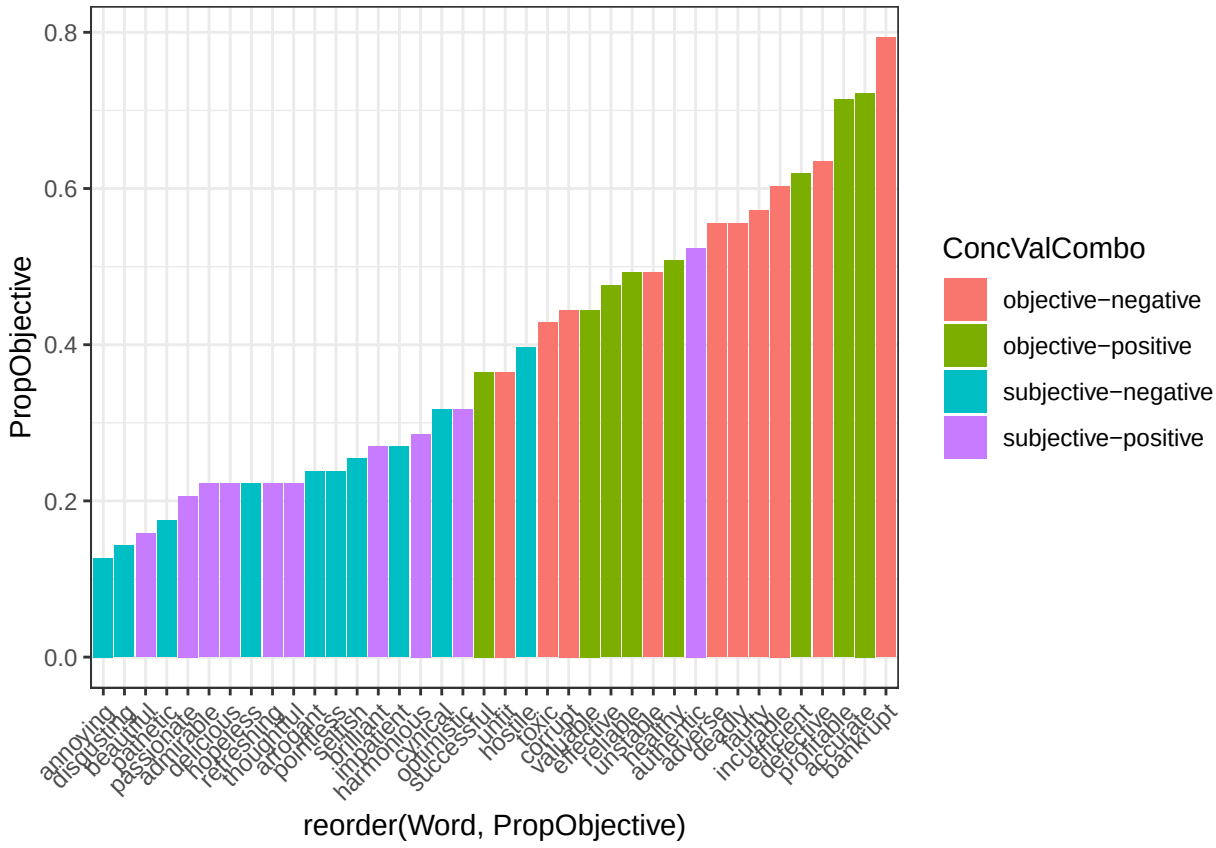



```
  # guides(fill = "none")
```

```
conc <- d %>%
  filter(Task == "SubjObj") %>%
  # filter(Word %in% conc$Word) %>%
  group_by(Word,ConcValCombo) %>%
  mutate(Response.n = as.numeric(factor(Response, levels = c("subjective", "objective"))) - 1) %>%  # C
  summarize(PropObjective = mean(Response.n))
```

```
## `summarise()` has grouped output by 'Word'. You can override using the
## `.groups` argument.
```

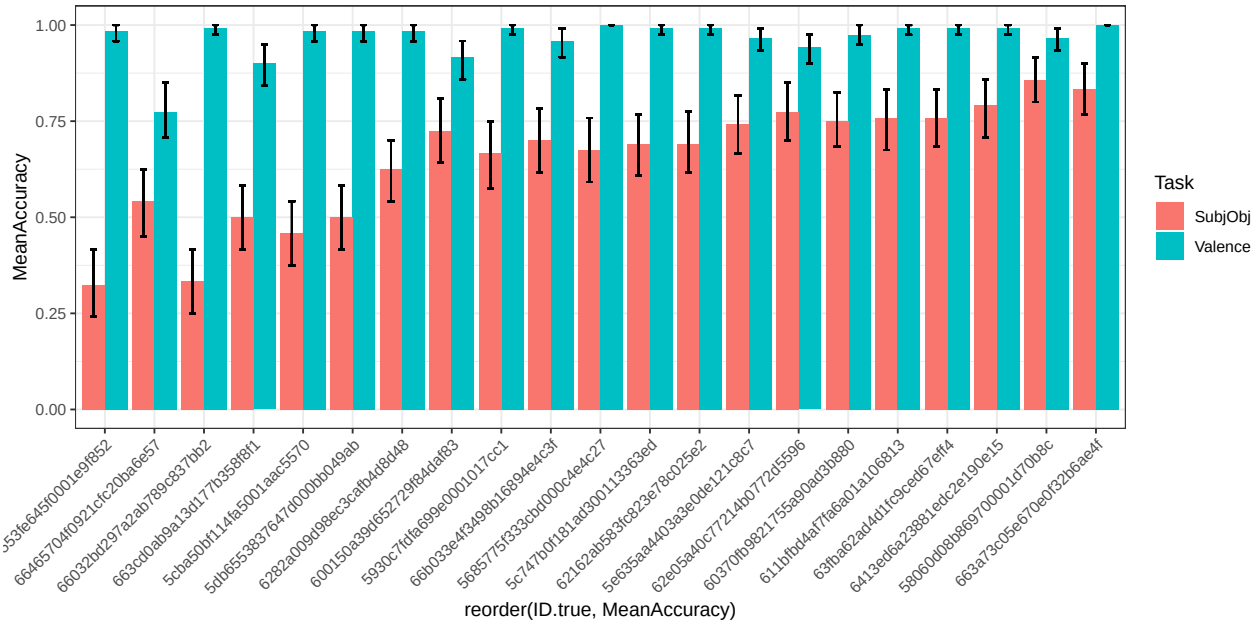
```
  # filter(PropPositive > .1 | PropPositive < .9)

dodge = position_dodge(.9)
ggplot(data=conc, aes(x=reorder(Word,PropObjective),y=PropObjective,fill=ConcValCombo)) +
  geom_bar(position=dodge,stat="identity") +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```




```
  # guides(fill = "none")
```

Accuracy by Participant

```
agr <- d %>%
  # filter(PennElementType == "Selector") %>%
  select(ID.true,Task,Accuracy) %>%
  group_by(ID.true,Task) %>%
  mutate(MeanAccuracy = mean(Accuracy),
         CILow = ci.low(Accuracy),
         CIHigh = ci.high(Accuracy)) %>%
  mutate(YMin = MeanAccuracy - CILow,
         YMax = MeanAccuracy + CIHigh)

dodge = position_dodge(.9)
ggplot(data=agr, aes(x=reorder(ID.true,MeanAccuracy),y=MeanAccuracy,fill=Task)) +
  geom_bar(position=dodge,stat="identity") +
  geom_errorbar(aes(ymin=YMin,ymax=YMax),width=.25,position=position_dodge(0.9)) +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```



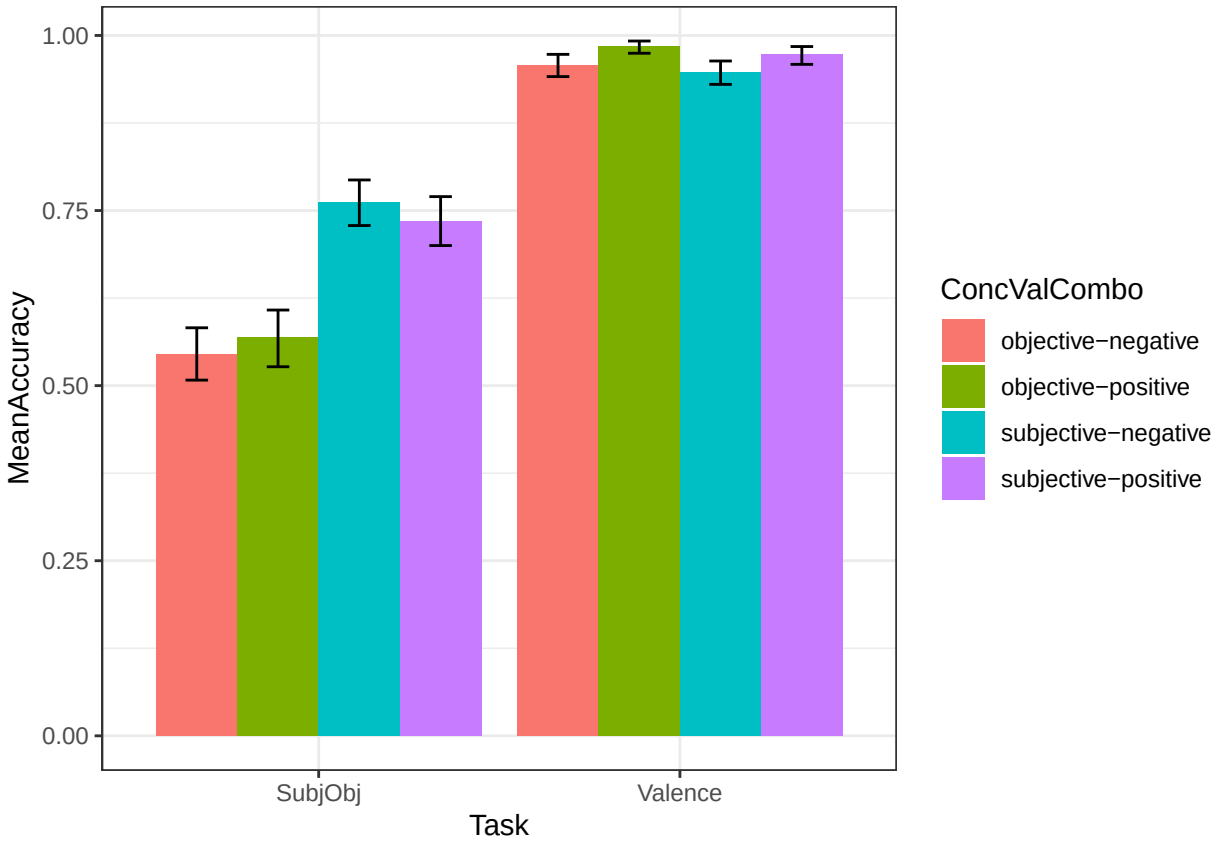

```
  # guides(fill = "none")
```

Mean Accuracy by ConcValCombo

```
agr <- d %>%
  group_by(Task,ConcValCombo) %>%
  summarize(MeanAccuracy = mean(Accuracy), CILow = ci.low(Accuracy), CIHigh = ci.high(Accuracy)) %>%
  mutate(YMin = MeanAccuracy - CILow, YMax = MeanAccuracy + CIHigh)
```

```
## `summarise()` has grouped output by 'Task'. You can override using the
## `.groups` argument.
```

```
dodge = position_dodge(.9)
ggplot(data=agr, aes(x=Task,y=MeanAccuracy,fill=ConcValCombo)) +
  geom_bar(position=dodge,stat="identity") +
  # facet_wrap(~Task) +
  geom_errorbar(aes(ymin=YMin,ymax=YMax),width=.25,position=position_dodge(0.9))
```




```
  # theme(axis.text.x = element_text(angle = 45, hjust = 1))
  # guides(fill = "none")
```

Remove participants who aren't accurate

```
length(unique(d$ID.true))
```

```
## [1] 21
```

```
inacc.parts <- d %>%
  group_by(ID.true,Task) %>%
  summarise(MeanAccuracy = mean(Accuracy)) %>%
  filter(MeanAccuracy < .75)
```

```
## `summarise()` has grouped output by 'ID.true'. You can override using the
## `.groups` argument.
```

```
# How many participants have Accuracy < .75?
length(unique(inacc.parts$ID.true))
```

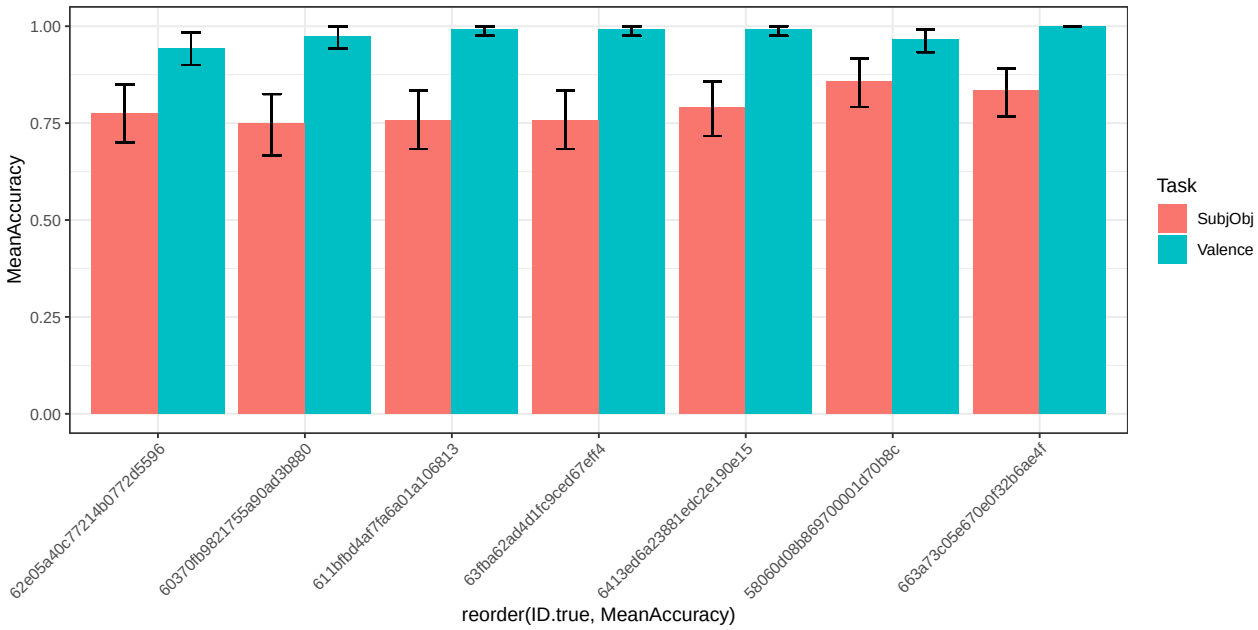
```
## [1] 14
```

```
d.inaccurate.removed <- d %>%
  anti_join(inacc.parts, by = "ID.true")

# Sanity check
length(unique(d.inaccurate.removed$ID.true))
```

```
## [1] 7
```

Accuracy by Participant

```
agr <- d.inaccurate.removed %>%
  # filter(PennElementType == "Selector") %>%
  select(ID.true,Task,Accuracy) %>%
  group_by(ID.true,Task) %>%
  mutate(MeanAccuracy = mean(Accuracy),
         CILow = ci.low(Accuracy),
         CIHigh = ci.high(Accuracy)) %>%
  mutate(YMin = MeanAccuracy - CILow,
         YMax = MeanAccuracy + CIHigh)

dodge = position_dodge(.9)
ggplot(data=agr, aes(x=reorder(ID.true,MeanAccuracy),y=MeanAccuracy,fill=Task)) +
  geom_bar(position=dodge,stat="identity") +
  geom_errorbar(aes(ymin=YMin,ymax=YMax),width=.25,position=position_dodge(0.9)) +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```




```
  # guides(fill = "none")
```

Mean Accuracy by Word / Task

Looking at only the first block

```
agr <- d.inaccurate.removed %>%
  group_by(Task,Word,BlockOrder) %>%
  # filter((Task == "Valence") & (BlockOrder == "VC") |
  #          (Task == "Concrete") & (BlockOrder == "CV")) %>%
  mutate(MeanAccuracy = mean(Accuracy),
         CILow = ci.low(Accuracy),
         CIHigh = ci.high(Accuracy)) %>%
  mutate(YMin = MeanAccuracy - CILow,
```

```
          YMax = MeanAccuracy + CIHigh)

agrr <- agr %>%
  group_by(Word,Task) %>%
  select(Word,Task,MeanAccuracy) %>%
  unique()

dodge = position_dodge(.9)
ggplot(data=agr, aes(x=Task,y=MeanAccuracy,fill=BlockOrder)) +
  geom_bar(position=dodge,stat="identity") +
  facet_wrap(~Word,ncol=10) +
  geom_errorbar(aes(ymin=YMin,ymax=YMax),width=.25,position=position_dodge(0.9)) +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```