Design a stroop effect test

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Backgroung Information

In a Stroop task, participants are presented with a list of words, with each word displayed in a color of ink. The participant's task is to say out loud the color of the ink in which the word is printed. The task has two conditions: a congruent words condition, and an incongruent words condition.

- In the congruent words condition, the words being displayed are color words whose names match the colors in which they are printed: for example RED, BLUE.
- In the incongruent words condition, the words displayed are color words whose names do not match the colors in which they are printed: for example PURPLE, ORANGE.

In each case, we measure the time it takes to name the ink colors in equally-sized lists. Each participant will go through and record a time from each condition.

1. What is our independent variable? What is our dependent variable?

Answer:

The independent variable is the congruency condition and incongruency condition - whether the name of the color matches with the ink color or not. The dependent variable is the time it takes to name the ink colors in equally-sized lists.

2. What is an appropriate set of hypotheses for this task? What kind of statistical test do you expect to perform? Justify your choices.

Answer:

3. Report some descriptive statistics regarding this dataset. Include at least one measure of central tendency and at least one measure of variability.

```r
# Read in the data
library(readr)
dat <- read.csv("stroopdata.csv")
# Tidy up the data for later analysis
library(tidyr); suppressMessages(library(dplyr))
# Add a column identifying subjects
dat.subject <- mutate(dat, subject = 1:nrow(dat))
# Tidy up data by keeping one variable in one column
tidy.dat <- gather(dat.subject, congruency, time, -subject)
# Calculate the average time for both groups
tidy.dat %>%
    group_by(congruency) %>%
    summarise(round(mean(time), 2), round(median(time), 2), round(sd(time), 2), round(var(time), 2))
```

```
## # A tibble: 2 x 5
##    congruency `round(mean(time), 2)` `round(median(time), 2)`
##         <chr>                  <dbl>                    <dbl>
## 1   Congruent                  14.05                    14.36
## 2 Incongruent                  22.02                    21.02
## # ... with 2 more variables: `round(sd(time), 2)` <dbl>, `round(var(time),
## #   2)` <dbl>
```