Simon Experiment

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Introduction

The Simon experiment is designed to study the effect of object congruency on reaction time.

INDEPENDENT VARIABLE

The variable in an experiment that is manipulated and whose effect we see in the experiment. In this experiment we have Congruency as Independent Variable.

DEPENDENT VARIABLE

The variable on which the change we study corresponding to the independent variable. In this experiment we have Reaction Time as Dependent Variable.

CONTROL PARAMETERS

The external environmental features or variables that can have some effect on the outcome of the experiment and must be kept under check as much as possible. An ideal experiment has full control over these parameters. Here we take into account things like Noise Free Environment, Fatigue, etc

DETAILS OF STIMULUS

In this Experiment, we have used two shapes (Square and Circle) and two positions (Left and Right). This combination will give us 4 sets of possible stimuli.

- Circle & Left
- Circle & Right
- Square & Left
- Square & Right

PROCEDURE

We have total of 40 sets of trials. Display them on the screen, and the response is mapped to ‘x’ and ‘m’ keys for left and right respectively.

For the code file : click here

Response Data

```
data <- read.csv("Simon_data_P.S_S1.csv")
library(dplyr)

##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union

data_con1 <- data %>% filter(data$Position == 200 & data$Response == "m")
data_con2 <- data %>% filter(data$Position == -200 & data$Response == "x")
data_con <- rbind(data_con1, data_con2)

data_noncon1 <- data %>% filter(data$Position == 200 & data$Response == "x")
data_noncon2 <- data %>% filter(data$Position == -200 & data$Response == "m")
data_noncon <- rbind(data_noncon1, data_noncon2)

library(ggplot2)

mean_con <- mean(data_con$RT)
mean_noncon <- mean(data_noncon$RT)
means <- c(mean_con, mean_noncon)
status <- c("Congurent", "Non-congurent")
final <- data.frame("status" = status, "Mean" = means)
```

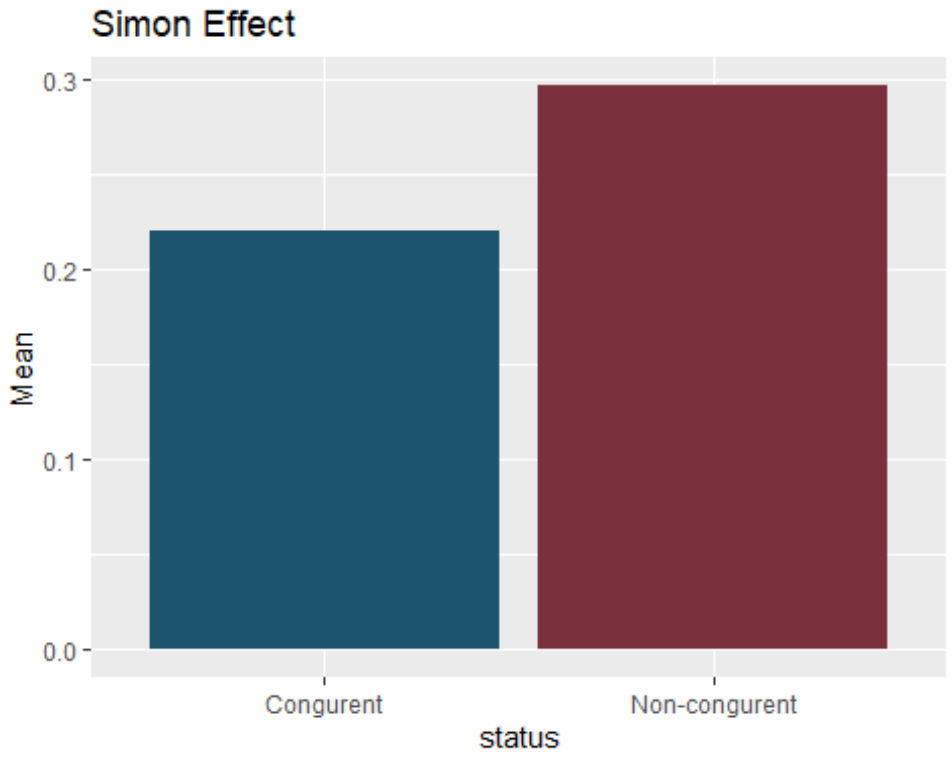
Here is the Means of congruent trials and non-congruent trials:

```
final

##          status      Mean
## 1     Congurent 0.2205940
## 2 Non-congurent 0.2968804
```

The graph for the above data is given below:

```
ggplot(final, aes(x = status, y = Mean)) +
  geom_bar(stat = "identity", fill = c("#1c546d", "#79303c")) +
  ggtitle("Simon Effect")
```


Simon Effect
0.3
0.2
0.1
0.0
Mean
Congurent
Non-congurent
status