Go-No Go Tutorial

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Go-No Go Task Tutorial

This tutorial will demonstrate how the *gonogo* package is used. The package contains two functions: play_gonogo() for playing the Go-No Go Task, and check_rt() for checking for irregularities in the output data, specifically the reaction time column.

Go-No Go Task in Short

The Go-No Go Task is a widely used test to measure inhibitory control, a cognitive process that enables humans to cancel motor activity after its initiation. It requires the participant to perform an action given certain stimuli (Go stimuli), and inhibit that action under a different set of stimuli (No Go stimuli).

There are two parameters in the experimental design that are especially important: the length of each trial and the relative proportion of the Go and No-Go trials. Fortunately, both these parameters can be easily manipulated in the gonogo() function: length of the trial with the *inter* argument, and the relative proportion of the Go and No-Go trials with the *prb* argument.

In addition to these two arguments, you can specify the participant *id* (name or unique id number), *n_trial* (number of trials), *n_block* (number of blocks), and *stimuli* (the Go and No Go stimuli).

How to Use the play_gonogo() Function

The following code gives an example of how the play_gonogo() function can be used.

```
# Load package
library(gonogo)

# Run the Go-No Go Task and save the output in an object
p1_data <- play_gonogo(id = "p1",  # id
                       n_trial = 5,  # number of trials
                       n_block = 3,  # number of blocks
                       stimuli = c("A", "X"),  # Go and No Go stimuli
                       inter = 0.6,  # interval (length of trials)
                       prb = c(0.8, 0.2))  # relative proportion
```

What the Output data looks like

```
##    id response correct             SDT          rt stimulus block
## 1  p1     none       1 correctrejection          NA        X     1
```

```
## 2  p1     none       1 correctrejection          NA        X     1
## 3  p1    space       1               hit  0.47666382        A     1
## 4  p1    space       1               hit  0.55146193        A     1
## 5  p1     none       0              miss          NA        A     1
## 6  p1    space       0       falsealarm  0.56809711        X     2
## 7  p1     none       0              miss          NA        A     2
## 8  p1    space       1               hit -0.01646210        A     2
## 9  p1    space       1               hit  0.59251689        A     2
## 10 p1     none       1 correctrejection          NA        X     2
## 11 p1     none       0              miss          NA        A     3
## 12 p1    space       1               hit -0.01505090        A     3
## 13 p1     none       0              miss          NA        A     3
## 14 p1    space       1               hit -0.02203418        A     3
## 15 p1     none       0              miss          NA        A     3
```

How to Read the Output

The play_gonogo() function returns a dataframe consisting of n_trial*n_block (number of trials times number of blocks) rows and seven columns:

id = participant's name or id as specified

response = response key used on the trial (space when participant responded, none when no response was given)

correct = whether the response was correct or not (1=correct, 0=incorrect)

SDT = responses categorized according to Signal Detection Theory; click here to read more about Signal Detection Theory

rt = reaction time in seconds (NA when participant did not respond during that trial)

stimulus = the stimulus shown on the trial

block = the block number