Running the Flanker Task

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Flanker task

This document describes how to collect data on yourself performing a "Flanker" task. You can then analyze this data as described in the FlankerAnalysis.R script

In the Flanker task, participants are presented with a stimulus comprised of an array of arrows like:

```
>>>>>
```

or

```
>><>>
```

and are asked to indicate whether the arrow in the middle of the array points to the left or right. Participants are rewarded with points for correct responses and in some blocks of trials for responding fast. There are three factors in the experiment:

- `E` (Emphasis): The instruction that tells the participant whether to focus on accuracy (getting more points for a correct answer), or whether to focus on speed (getting a bonus for responding fast);
- `S` (Stimulus): Is the target arrow pointing to the left or right;
- `CI` (Congruent/Incongruent): Are the arrows that surround the target arrow pointing in the same direction (congruent) or in the opposite direction (incongruent) as the target arrow.

This experiment consists of 800 trials (100 trials in each cell of the 2 × 2 × 2 design).

Familiarise yourself with the experiment

To familiarize yourself with the experiment, run the `FlankerTask.R` script, open R Studio, and run it like this:

```r
source("FlankerTask.R")
practice <- doExperiment("your name", nblocks=4, ntrials=4) # 4 blocks of 4 trials each
```

NB1: you must click in the console window to be able to respond.

NB2: adjust your plot window so be large enough to see displays clearly

NB3: never press a button twice or it will be used as the next-trial response.

NB4: By default you respond with the z and m keys (this can be adjusted, see the FlankerTask.R code)

After the experiment ends, you will find the recorded data in the `practice` data frame. Each row of the data set represents one trial, and contains the condition (`E`, `S`, `CI`, columns), the recorded response (`R`: `left` or `right`), the response time (`rt`: in seconds), and points awarded (`score`).

Before you do the full experiment make sure you understand the task. You can repeat the practice if you want.

Collect your data

Run the full experiment (800 trials) like so:

```
data <- doExperiment("your name") # 10 blocks of 80 trials
```

NB. The full experiment takes about an hour to complete. You can also break it up into smaller sessions if you like, e.g.,

```
data1 <- doExperiment("your name", ntrials=40) # 10 blocks of 40 trials
data2 <- doExperiment("your name", ntrials=40) # another 10 blocks of 40 trials
```

or

```
data1 <- doExperiment("your name", nblocks=5) # 5 blocks of 80 trials
data2 <- doExperiment("your name", nblocks=5) # another 5 blocks of 80 trials
```

and then merge the data sets

```
data <- rbind(data1, data2)
```

NB: Remember, only press one key per trial, if you press twice it will be used as your response on the next trial, which will be recorded as a spuriously fast response.

You can save the data on your disk as

```
save(data, file = "MyFlankerData.RData")
```

Other conflict tasks

The experiments code has some flexibility to define different types of conflict tasks.

```
# Stroop
doExperiment("ajh",4,4,
             instruction="Choose the colour in which the word is printed.",
             stim=c("RED","GREEN","RED","GREEN"),
             stimcol=c("red","green","green","red"),
             responses=c("red","green"),
             correct=c("red","green","green","red"),
             jitter=FALSE, fastrt = 0.6)

# Simon (easy/practice)
doExperiment("ajh",4,4,
             instruction="Choose left for red and right for green.",
             stim=c("XXX","XXX","XXX","XXX"),
             stimcol=c("red","green","red","green"),
             responses=c("red","green"),
             correct=c("red","green","red","green"),
             offset=c(-.3,.3,.3,-.3),
             jitter=FALSE, fastrt = 0.6)
```

```r
# Simon where labels have to be remembered (hard/experiment)
doExperiment("ajh",4,4,
             instruction="Choose left for red and right for green.",
             stim=c("XXX","XXX","XXX","XXX"),
             stimcol=c("red","green","red","green"),
             responses=c("left","right"),
             correct=c("left","right","left","right"),
             offset=c(-.3,.3,.3,-.3),
             jitter=FALSE, fastrt = 0.6)
```