

### **Task Setup**

*To get to the appropriate directory*

>>cd stopsig\_fmri (or whatever name given to the directory where all the stop signal files are)

*To test the volume of the sound*

>>test\_sound

(If it's too loud or soft, you can change the volume on the computer and replay the program until the sound is OK. Do this while the subject is wearing his or her headphones.)

### **Task Instructions**

You will see an arrow in the middle of a circle pointing either left or right. As soon as you see the arrow, respond ***as quickly and as accurately as possible***, by pressing the left button (blue on the MRI button box, 1 on the keyboard) if it's pointing left and the right button (yellow on the MRI button box, 2 on the keyboard) if it's pointing right. Use the index and middle fingers of your right hand. When you hear a beep, that signals to you stop your response immediately and not to respond to that particular arrow. Still respond to the others after it, unless there is another tone. ***Both going and stopping are equally important.***

This task is designed to be difficult and for subjects to make mistakes, because we are interested in looking at those mistakes. So don't get frustrated if it's difficult. ***Just make sure not to slow down your responses to wait for the beep so that you are no longer going when you are supposed to, because then you are no longer doing the task.***

You won't always be able to stop when you hear a beep, so just try your best. As long as you go quickly all of the time without making too many mistakes, and can stop some of the time you're doing the task correctly.

It's also important to concentrate and not to talk while you're doing the task.

Do you have any questions?

If not, let's begin the demo program.

### **Run Demo**

*To start the demo*

>> stopfmriOSX\_2stairs\_demo

Is the subject in the scanner? 1 if yes, 0 if no: <self-explanatory>  
(make sure subject is using correct keys and fingers!!)

Do you understand the task? If so, let's get started.

### **Run Task**

*Actual Task-run 1 (this assumes you have run at least one behavioral session before this so staircases have converged—see stopsig\_behav instructions)*

>> stopfmriOSX\_2stairs

Enter subject number: <must be a number, no letters (use digits at end of subject code on consent form>

Is this the subject's first or second session? (Enter 1 or 2).

1 if first behavioral, 2 if 2nd behavioral or fMRI: 2

Enter scan number: 1

Are you scanning? 1 if yes, 0 if no: 1

Enter name of subject's previous #stop\_behavX...mat file to open: <Find subject's behavioral subject number and use that to input the file, use the last behavioral run they did>

NB: It's a good idea to give the subject feedback between runs. Typical RT for healthy adults is usually between 400 and 500 ms, and fewer than 4 discrimination errors is good.

*If the feedback pops up and RT is N/A and/or there are a ton of errors but the subject seemed to be doing the task correctly, it could be because they were using the wrong keys.*

*Analyze Program to check on subject's strategy*

>>ls (this is to see a list of all files in the directory)

>> analyse\_2stairs\_quantile

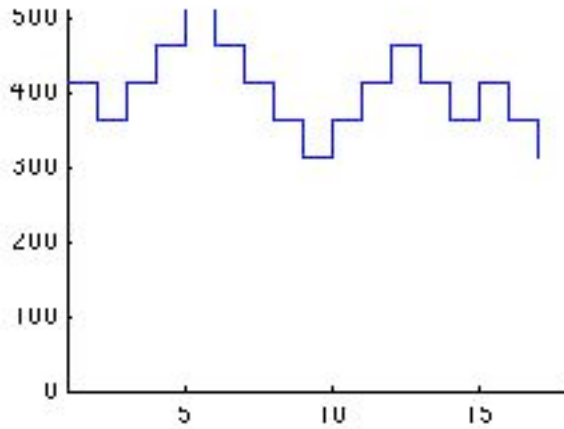
Enter behavioral filename: <copy and paste appropriate .mat file, should be names like: #stop\_behav1\_orderX\_date\_time.mat – date will be from day 1>

How many steps of the ladder do you want included in the SSRT estimation? 8 is half the run, 16 is entire run: <16>

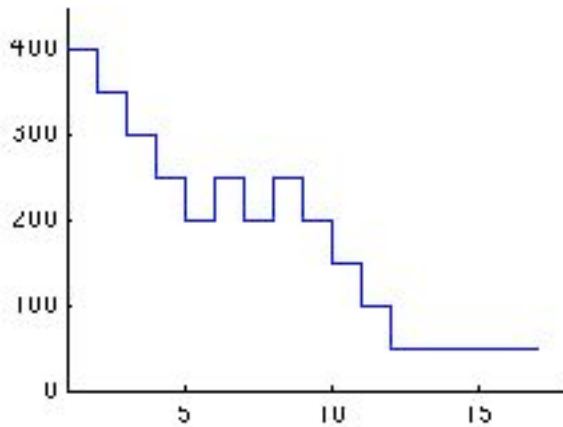
Is this to put the data in the behavioral spreadsheet? 1 if yes, 0 if no: <0>

A graph will pop up. This plots the staircase values, give appropriate feedback strategy based on the graph.

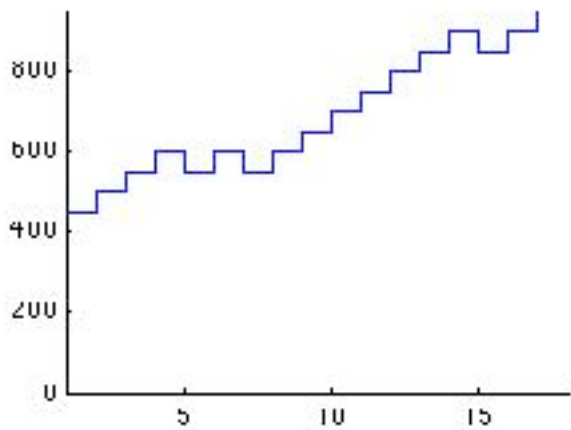
Example graphs:



This is a good example of a converged staircase, meaning the subject has a good strategy. Tell the subject they found a good balance between responding quickly on the go task and stopping the best they can on the stop task.



This is an example of a participant who never stops. Suggest that they try going slightly slower on the go task and not to forget to try to inhibit as best they can on the stop task.



This is an example of a participant who is paying too much attention to trying to stop and not maintaining their speed while going. They are likely slowing down their responses so much in order to stop more that they are no longer doing the go task quickly. Tell them to try to keep their speed up and not slow down, and that it's OK not to inhibit on every single stop trial. Remind them that both going and stopping are equally important, and by slowing down on the go task they are no longer doing the go portion of the task.

#### *Actual Task-run 2*

We will do one more run of the stop-signal task. We will start the task for you just after the scan starts, are you ready? Press the squeezeball if you are, and remember to keep your head as still as possible during the scan.

```
>> stopfmriOSX_2stairs
```

```
Enter subject number: <same as used for run 1>
```

```
Is this the subject's first or second session? (Enter 1 or 2).
```

```
1 if first behavioral, 2 if 2nd behavioral or fMRI: 2
```

```
Enter scan number: 2
```

```
Are you scanning? 1 if yes, 0 if no: 1
```

```
Enter name of prior scan_file to open: <copy and paste the .mat file from the  
previous run; will look something like: #stop_fmri1_date_time.mat>
```