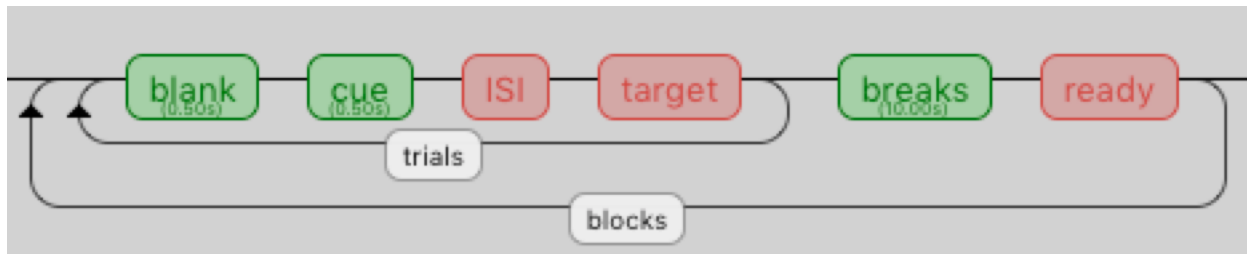


How to Create Randomized Blocks Using Multiple Excel Files

This solution will help you present blocks randomly, while still maintaining random presentation of trials within those blocks. In order to do this, you will need the following things:

- 1) An **outer blocks loop** that reads in an Excel sheet containing file names for your different blocks
- 2) An **inner trials loop** that reads in the column name from the file in your blocks loop that lists the file names
- 3) A **routine(s)** inside the trials loop that reads in appropriate values, using column names in your Excel sheets for each block

In order to explain how this works, I present an example from an experiment I have been working on. My experiment is essentially the same as the cueing experiment we created in class. The only difference is that I want my ISI blocks presented in a random order instead of consecutively. I have 4 ISI blocks with the values of .5, 1, 1.5, and 2 seconds. Each block uses a different ISI, but besides that, each is the same. I want all the trials to be randomized within my blocks, and I want my blocks to also be presented randomly, so people do not all get the same ordering of ISIs. Below is a diagram of what my loop looks like:



The outer loop, titled **blocks**, determines the random ordering of blocks by using an additional Excel sheet. This sheet contains one column only, called **files**, which contains the file names of my individual Excel sheets for each ISI. Below is what this Excel sheet looks like:

	A	E
1	files	
2	sCueConditions500.csv	
3	sCueConditions1000.csv	
4	sCueConditions1500.csv	
5	sCueConditions2000.csv	
6		

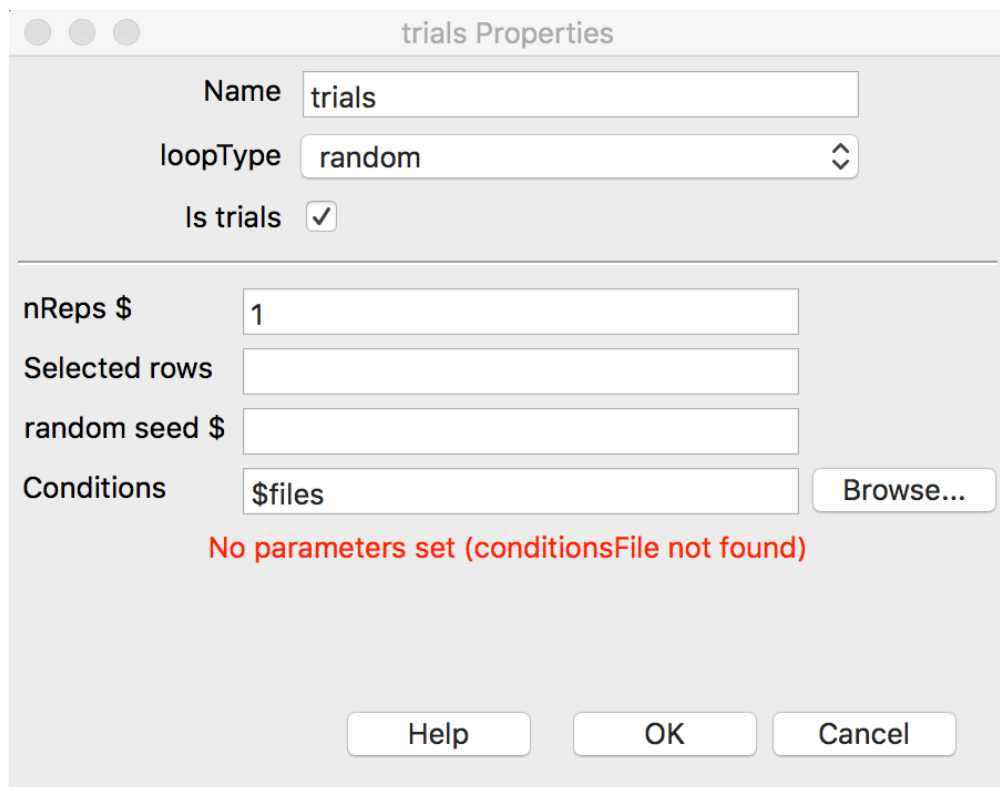
You must set the **conditions file** of the blocks loop to this file, titled *SblockOrder.xlsx*. The **blocks loop** then reads in this sheet and randomly selects one of the files each time. This file is subsequently used by the **trials loop** to present the stimuli in that file randomly. The set up for the blocks looks like this:

The screenshot shows a dialog box titled "blocks Properties". It contains the following fields and controls:

- Name:** A text input field containing "blocks".
- loopType:** A dropdown menu currently set to "random".
- Is trials:** A checkbox that is checked.
- nReps \$:** A text input field containing "1".
- Selected rows:** An empty text input field.
- random seed \$:** An empty text input field.
- Conditions:** A text input field containing "SblockOrder.xlsx" and a "Browse..." button to its right.
- Summary:** Text below the conditions field reads "4 conditions, with 1 parameters [files]".
- Buttons:** "Help", "OK", and "Cancel" buttons at the bottom.

I have loaded in my spreadsheet, *SblockOrder.xlsx*, and set the loopType to random, so that the files are selected in a random order. My nReps is set to one, so each block is only presented once. If you want your blocks presented multiple times, you can change this value.

The **trials loop** is what goes into each one of my ISI files and reads in the stimuli, which are in this case images. On each go around of the blocks loop, one file is selected. The trials loop then randomly presents all the trials in that file only. After all of these are presented, there is a break before the next file is read in. The set up for the trials loop can be seen below:



In the trials loop, instead of reading in an Excel sheet for our conditions, we use the column name that lists the files in *SblockOrder.xlsx*. This ensures that a random file is selected each time and used to present only those trials. Below is what one of these files looks like:

A	B	C	D	E	F	G	H
cuePic	targetPic	type	cue	target	letter	correctResp	isi
Ccue.png	TLx.png	invalid	C	TL	x	f	0.5
Ccue.png	TLo.png	invalid	C	TL	o	j	0.5
Ccue.png	TRx.png	invalid	C	TR	x	f	0.5
Ccue.png	TRo.png	invalid	C	TR	o	j	0.5
Ccue.png	BRx.png	invalid	C	BR	x	f	0.5

This sheet contains the image used for the cue and target, several codes, and the value for the ISI of this block. By adding a column for ISI, I can set the ISI to this duration, by using the column name. So, instead of setting a fixed duration, I use **\$isi** for the duration. This changes the value each time a different block is presented, depending on the file in that column. In my case, my 4 files are identical other than this column.

Going through the routines in the trial loop, we have:

- 1) **Blank:** displays a blank image for .5 seconds always

- 2) **Cue:** displays a cue image selected from the column *cuePic* in my spreadsheet. This is what the setup looks like:

The screenshot shows a dialog box titled "cueImage Properties" with a "Basic" tab. The fields are as follows:

- Name: cueImage
- Start: time (s) 0.0
- Expected start (s):
- Stop: duration (s) .5
- Expected duration (s):
- Image: \$cuePic
- set every repeat: set every repeat
- Position [x,y]: (0, 0)
- constant:
- Size [w,h]: (0.25, 0.25)
- constant:
- Orientation: 0
- constant:
- Opacity: .75
- constant:
- Units: from exp settings

Buttons: Help, OK, Cancel

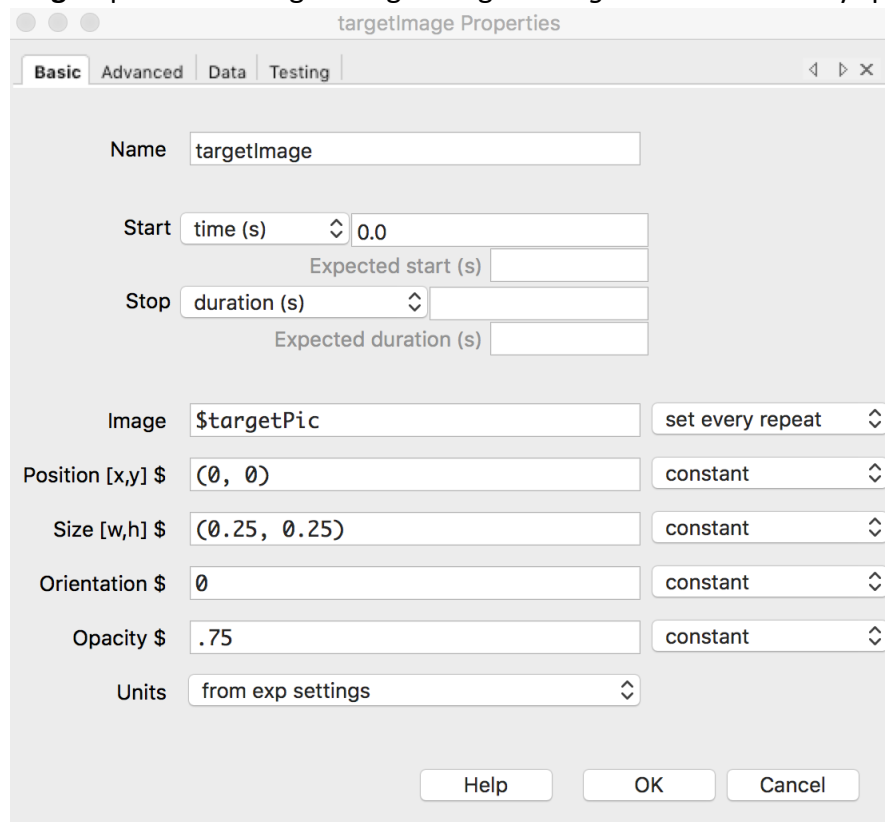
- 3) **ISI:** this reads in a blank image for some duration depending on the value listed in the *isi* column on the spreadsheet that is presented each block:

The screenshot shows a dialog box titled "isiPic Properties" with a "Basic" tab. The fields are as follows:

- Name: isiPic
- Start: time (s) 0.0
- Expected start (s):
- Stop: duration (s) \$isi
- Expected duration (s):
- Image: blank.png
- constant:
- Position [x,y]: (0, 0)
- constant:
- Size [w,h]: (0.25, 0.25)
- constant:
- Orientation: 0
- constant:
- Opacity: .75
- constant:
- Units: from exp settings

Buttons: Help, OK, Cancel

4) **Target:** presents a target image using the *targetPic* column in my spreadsheet.



So, now that everything is setup, the experiment is ready. I have **routines** that reference column names in my spreadsheets. A **trial loop** that reads in 4 different files, depending on which is selected by the blocks loop. A **blocks loop** that reads in a sheet with a column listing my 4 files.

When the experiment is run, a random block is selected by the blocks loop, say 1 second. Then, the trials loop finds the file for 1 second and reads in that file. Then, my routines randomly present the images for cue/target and an ISI of 1 second, using the \$isi column in my spreadsheet. So using one small loop, and I can do everything I need to create a beautiful experiment with 4 random blocks of 100 randomly presented trials!