

Advanced Tutorial: Sound

This tutorial will modify the Tutorial.es3 experiment file created in the Getting Started Guide to present a sound (i.e., spoken color word) in addition to the color word presented in a congruent or incongruent ink color. The task remains the same as in the original Tutorial.es3 experiment; to name the color of the ink, regardless of the color word or the audio file presented. This tutorial is based on a variant of the Stroop effect, examining the effect of auditory-visual Stroop interference.



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Task 1: Open Tutorial.es3 and save to a new filename

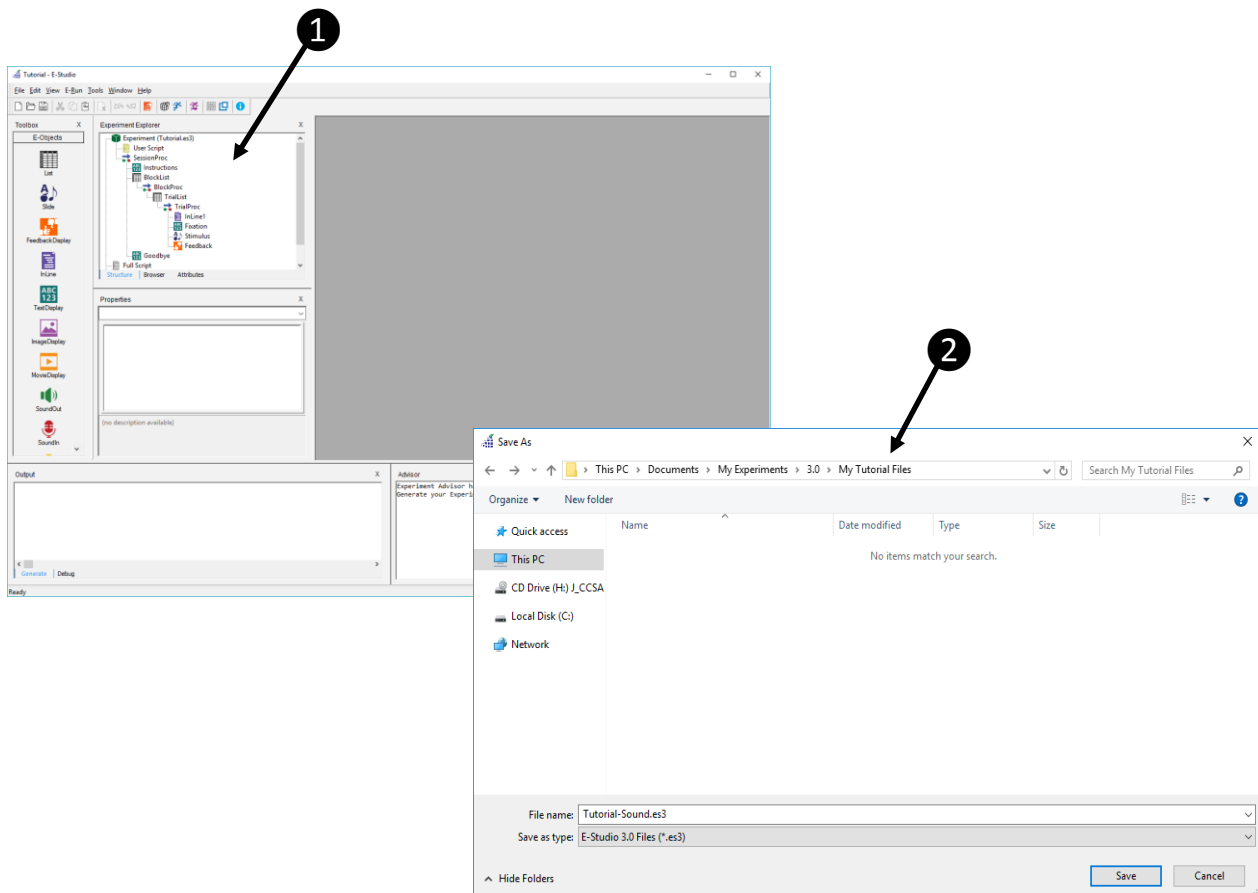
This task will build upon the experiment file created in the Getting Started Guide (i.e., Tutorial.es3). A completed version of the Tutorial experiment (AdvancedTutorialStart.es3) is included as part of the E-Prime installation in (\Documents\My Experiments\3.0\Tutorials).

- 1) **Open** the **Tutorial.es3** experiment file in E-Studio and **review** the **structure** of the experiment in the Experiment Explorer window.

Open the .es3 file created while working through the Getting Started Guide, or use the completed version of the file included in the E-Prime installation as the starting point (AdvancedTutorialStart.es3). The experiment provides instructions to the subject, followed by a series of trials presenting a fixation, a stimulus, and feedback regarding response accuracy and reaction time.

- 2) **Save** the Tutorial.es3 experiment file as **Tutorial-Sound.es3**.

Use the Save As command from the File menu. The \Documents\My Experiments\3.0 folder is a good place to create sub-folders (e.g., \My Tutorial Files) to organize your experiments for convenient access.



Task 2: Modify the instructions

- 1) Open the Instructions object in the workspace, and modify the instructions to be relevant to the new task.

The tasks in this tutorial will modify the Stimulus object to concurrently present a sound file with the color word. The task will be to name the ink color of the object. Enter the following instructions in the Text field:

You will be shown a series of color words printed in red, green, or blue ink. At the same time, you will hear a color word that may or may not match either the color word or the ink color. Your job is to respond to the color of the ink regardless of the color word, or what you hear. For example, if the word "red" is printed in blue ink, and you hear "green", your response should be "blue."

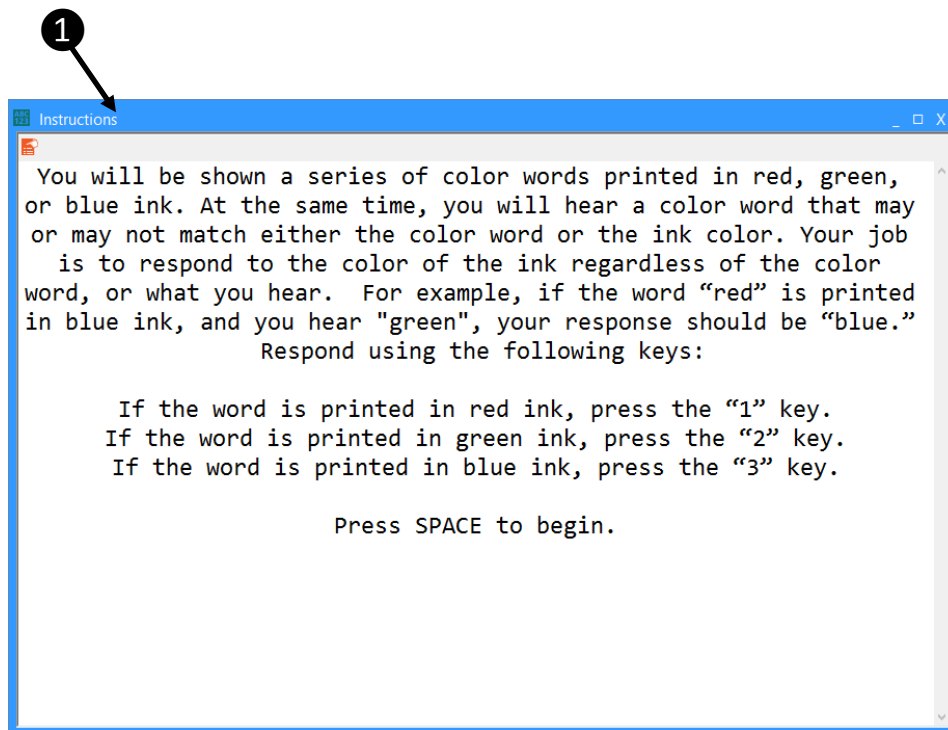
Respond using the following keys:

If the word is printed in red ink, press the "1" key.

If the word is printed in green ink, press the "2" key.

If the word is printed in blue ink, press the "3" key.

Press SPACE to begin.



Task 3: Modify the TrialList

This task will modify the TrialList to organize the sounds to be presented in a trial level attribute (i.e., "SoundFile").

- 1) **Open** the TrialList object in the workspace.

In the next few steps, an attribute will be added to store the information for the images. As the SoundFile will simply add another factor to the experiment, the existing attributes will still be relevant and will not be removed or modified.

- 2) **Add** an attribute to the TrialList and **name** it **SoundFile**.

Three sound files (i.e., red.wav, green.wav, blue.wav) are provided as part of the E-Prime installation and will be used for stimulus presentation during the trials.

- 3) **Enter** values in the **SoundFile** column/attribute as indicated in the image of the TrialList below.

The values entered for SoundFile are consistent with the Congruence attribute (e.g., Congruent values match Word and InkColor), but due to the limited number of trials, the design will not contain the full crossing of factors. Additional trials/levels may be added to accommodate the full crossing.

The screenshot shows the TrialList workspace with a table of trial parameters. A callout box labeled '3' shows the values entered in the SoundFile column. A second callout box shows the 'Add Attribute' dialog with 'Name' set to 'SoundFile' and 'Default Value' set to '?'.

ID	Weight	Nested	Procedure	Word	InkColor	Congruence	CorrectAnswer	SoundFile
1	2		TrialProc	red	red	Congruent	1	red
2		1	TrialProc	red	green	Incongruent	2	blue
3		1	TrialProc	red	blue	Incongruent	3	green
4		1	TrialProc	green	red	Incongruent	1	blue
5		2	TrialProc	green	green	Congruent	2	green
6		1	TrialProc	green	blue	Incongruent	3	red
7		1	TrialProc	blue	red	Incongruent	1	green
8		1	TrialProc	blue	green	Incongruent	2	red
9		2	TrialProc	blue	blue	Congruent	3	blue

SoundFile values: red, blue, green, blue, green, red, green, red, blue

Add Attribute dialog: Name: SoundFile, Default Value: ?

Task 4: Locate and Place Resource Files

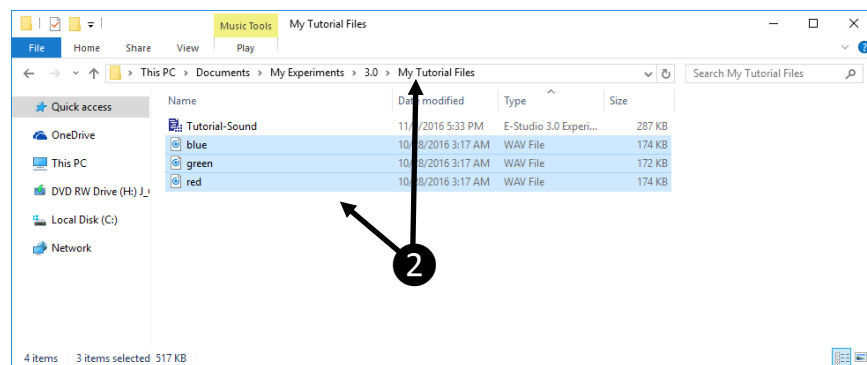
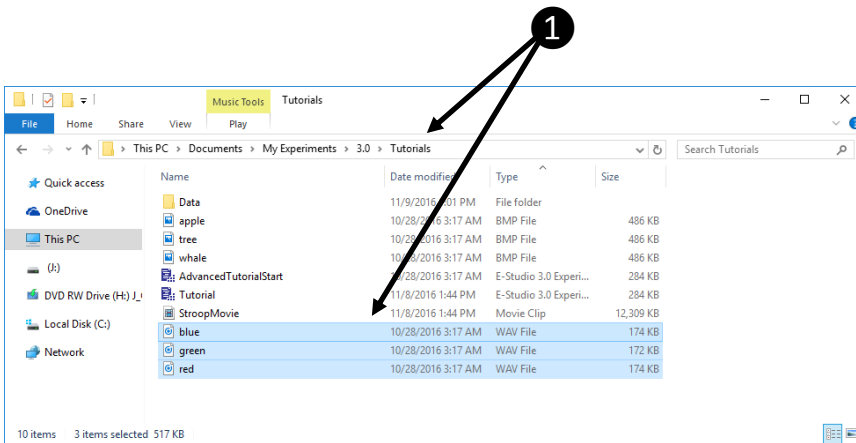
This task will copy the sound files from their location as part of the E-Prime installation to the folder in which the experiment file is located.

- 1) Using Windows Explorer, **locate** the **sound files** needed for the experiment, and **right-click** to **copy** them to the clipboard.

The red.wav, blue.wav, and green.wav files are installed to \Documents\My Experiments\3.0\Tutorials, and must be copied to the experiment folder.

- 2) **Navigate** to the **experiment folder**, and **right-click** to **paste** the sound files.

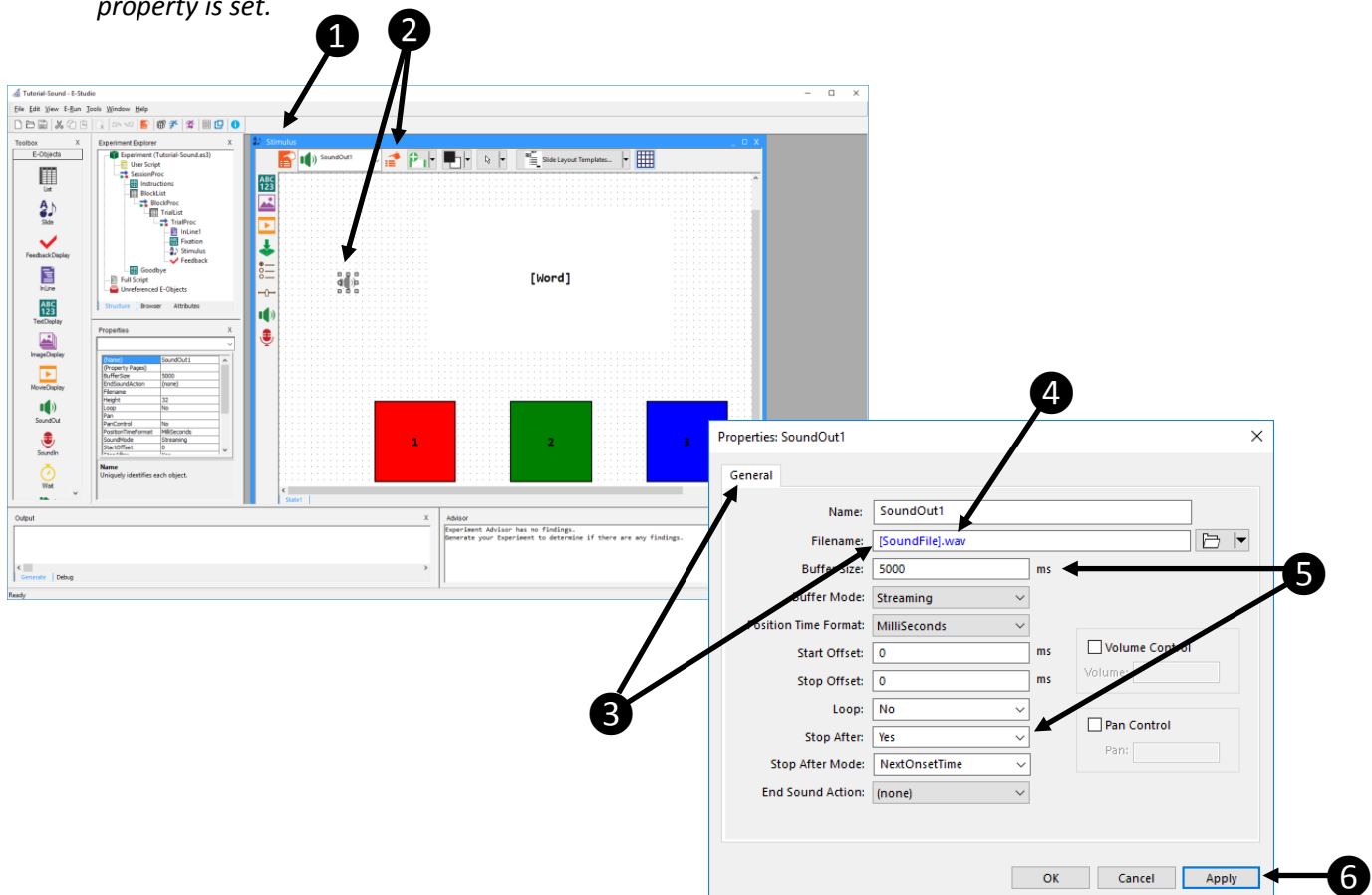
All resource files required by an experiment file must either be placed in the folder with the experiment file, or the experiment file must be directed to their location.



Task 5: Add a SlideSoundOut Sub-object

This task will add a SlideImage sub-object to the Stimulus object in order to present the images during the trial.

- 1) Returning to E-Studio, **open** the **Stimulus** object in the Workspace.
The Stimulus object currently contains multiple SlideText sub-objects to present a text stimulus and provide response options. The next step will add a SlideSoundOut object to allow presentation of the audio stimulus.
- 2) **Add** a **SlideSoundOut** sub-object to the Stimulus object and display the properties for the sub-object.
A SlideSoundOut sub-object (i.e., SoundOut1) will be added to the SlideState (i.e., State1). While the sub-object may be repositioned within the design environment, a SlideSoundOut is not visible at runtime.
- 3) On the General tab, **enter** a reference to the **SoundFile** attribute in the Filename field.
Recall that the SoundFile attribute on the TrialList contains the names of the audio files that will be played during each trial. At runtime, the value of SoundFile attribute will be resolved to provide the actual filename.
- 4) In the Filename field, **append “.wav”** to the attribute reference.
At runtime, the value of [SoundFile] is resolved (i.e., to “red,” “green,” or “blue”), and “.wav” is appended to indicate the full name of the sound file to use. Alternatively, the full name of the sound file (e.g., “red.wav”) could be entered into the TrialList as the value for the SoundFile attribute.
- 5) **Review** the other **properties** of the sub-object.
The Buffer Size property must accommodate the size of the audio file. The Stop After property determines whether the playback of the audio file will continue when the object terminates (e.g., upon input). Refer to the SoundOut Object and SlideSound out Sub-object articles in the online documentation for a complete listing of property definitions.
- 6) **Apply** the **properties**, and **close** the SoundOut1 property pages.
Notice that the speaker icon representing the SlideSoundOut sub-object changes to green after the Filename property is set.



Task 6: Test the Experiment

This task will run the experiment file in E-Studio to test the modifications.

- 1) Click the Run button (or press F7) to test the experiment.

As in the experiment used as a template (i.e., *Tutorial.es3* or *AdvancedTutorialStart.es3*) the *Tutorial-Sound.es3* experiment will run a series of trials presenting a Stroop task. This variation of the Stroop experiment will present a color word (e.g., "blue") displayed in a congruent or incongruent ink color concurrently with a sound file (i.e., spoken color word). The task is to respond to the color of the ink using the keyboard, and feedback will be provided concerning reaction time and accuracy.

You will be shown a series of color words printed in red, green, or blue ink. At the same time, you will hear a color word that may or may not match either the color word or the ink color. Your job is to respond to the color of the ink regardless of the color word, or what you hear. For example, if the word "red" is printed in blue ink, and you hear "green", your response should be "blue." Respond using the following keys:

If the word is printed in red ink, press the "1" key.
 If the word is printed in green ink, press the "2" key.
 If the word is printed in blue ink, press the "3" key.

Press SPACE to begin.

+

red



Correct!

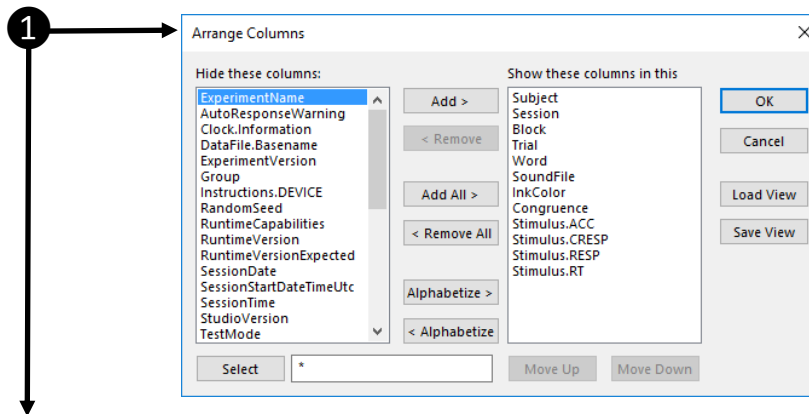
1.175 Seconds Response Time

100.00% Average Percent Correct

Task 7: Examine Results

This task will view the data file generated by the test run, and perform an analysis.

- 1) Open the data file in E-DataAid and use Arrange Columns to limit the display to desired variables.
As in the experiment used as a template (i.e., Tutorial.es3 or AdvancedTutorialStart.es3) the Tutorial-Script.es3 experiment will run a series of trials presenting a Stroop task. This variation of the Stroop experiment will present a fixation of varying duration prior to the stimulus.
- 2) Perform any desired analysis using the Analyze command.
The analysis defined below examines the average reaction time in response to the stimulus by congruence (when comparing Word and InkColor).



Tutorial-Sound-1-1 - E-DataAid

File Edit View Tools Help

Load Column Definition...

	Subject	Session	Block	Trial	Word	SoundFile	InkColor	Congruence	Stimulus.ACC	Stimulus.CRESP	Stimulus.RESP	Stimulus.RT
1	1	1	1	1	blue	green	red	Incongruent	1	1	1	389
2	1	1	1	2	red	green	blue	Incongruent	1	3	3	259
3	1	1	1	3	green	green	green	Congruent	0	2	3	501
4	1	1	1	4	green	green	green	Congruent	1	2	2	681
5	1	1	1	5	green	red	blue	Incongruent	1	3	3	562
6	1	1	1	6	blue	blue	blue	Congruent	1	3	3	391
7	1	1	1	7	blue	red	green	Incongruent	1	2	2	458
8	1	1	1	8	blue	blue	blue	Congruent	0	3	1	614
9	1	1	1	9	red	red	red	Congruent	1	1	1	574
10	1	1	1	10	red	red	red	Congruent	1	1	1	541
11	1	1	1	11	red	blue	green	Incongruent	1	2	2	403
12	1	1	1	12	green	blue	red	Incongruent	1	1	1	417

For Help, press F1

Rows Displayed: 12

NUM

