

OpenSesame Tutorial

Ting Y R Kan



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Mathôt, S., Schreij, D., & Theeuwes, J. (2012). OpenSesame: An open-source, graphical experiment builder for the social sciences. *Behavior Research Methods*, 44(2), 314-324. [doi:10.3758/s13428-011-0168-7](https://doi.org/10.3758/s13428-011-0168-7)

Why OpenSesame

- Free
- Open-source
- Graphic user interface or Python
- Platforms supported
 - Windows
 - Mac
 - Android
 - Linux

Supports

- Image and sound
 - WAV/OGG
 - PNG
- Devices
 - Eye tracker
 - Button box

Other experiments

- Discrimination
- Eye-tracking
- EEG

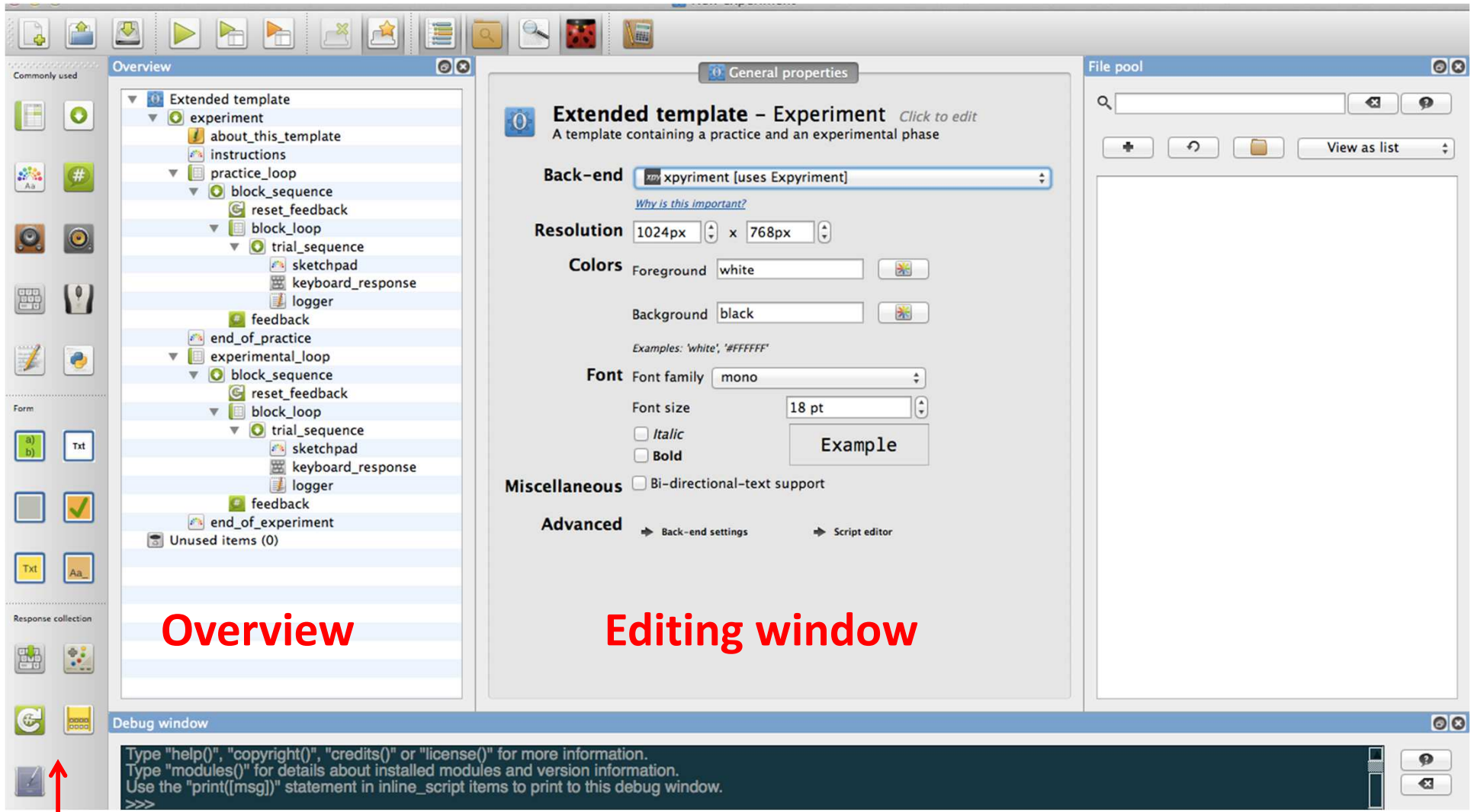
1. Open extended template

The screenshot displays the OpenSesame software interface. The main window is titled "Get started" and contains the following sections:

- Get started!** Select an item in the overview area to start right away.
- New** (highlighted):
 - Default template
 - Extended template** (highlighted)
 - Form template (questionnaires)
 - Runtime for Android template
 - PyGaze eye-tracking template
 - Stimulus set-up: ecological alternative to Endress & Mordant
- Open** Open an existing experiment
- Help**
 - Visit the documentation site
 - Ask a question on the forum

At the bottom of the main window, there are social media icons for Facebook, Twitter, and YouTube, followed by the text: "COGSciDotNL // cognitive science and more [Contribute](#) [Donate](#)". On the right side, the "File pool" panel is empty. At the bottom, the "Debug window" contains the following text:






















```
Type "help()", "copyright()", "credits()" or "license()" for more information.  
Type "modules()" for details about installed modules and version information.  
Use the "print([msg])" statement in inline_script items to print to this debug window.  
>>>
```

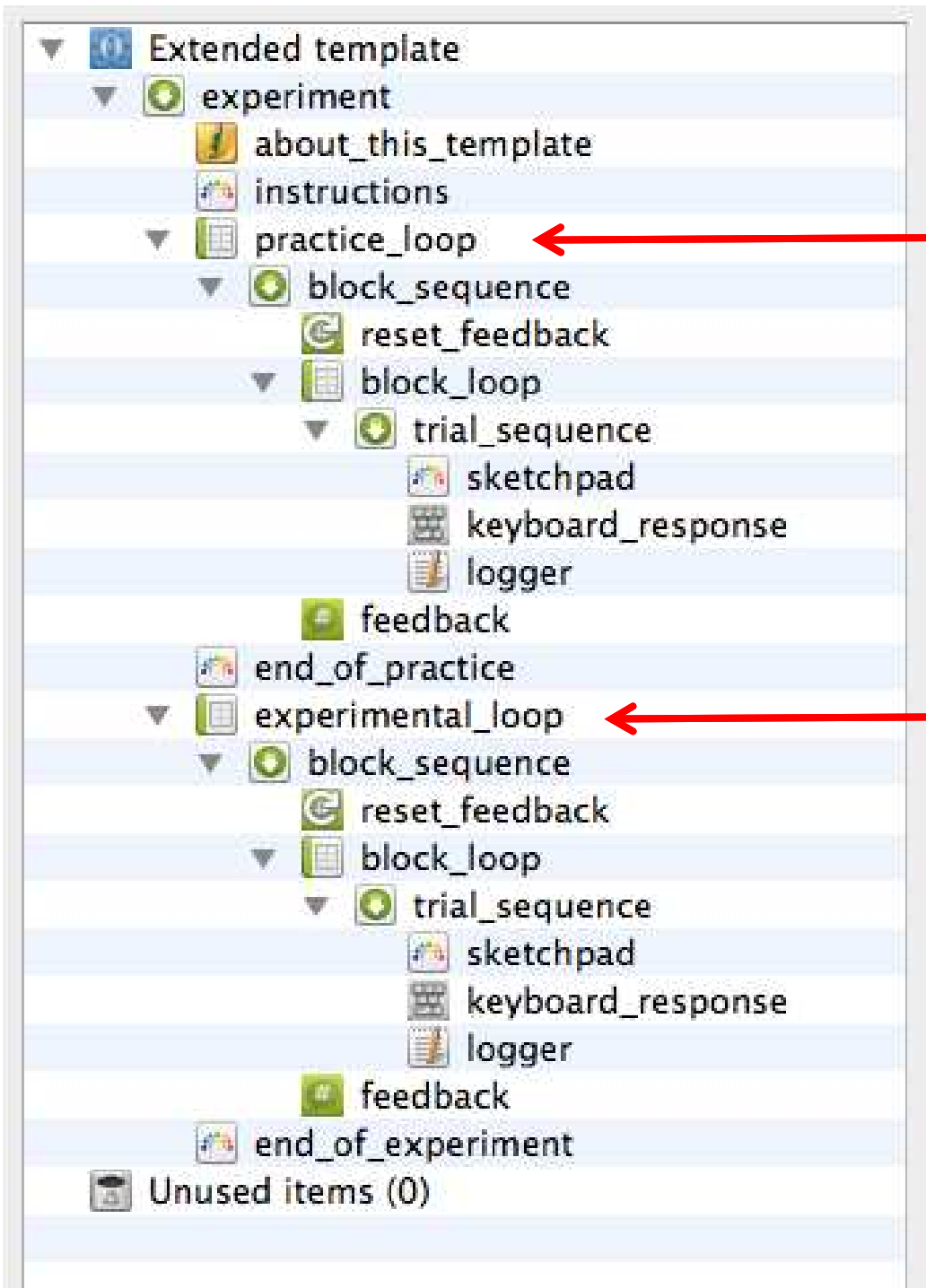


Overview

Editing window

Experiment components

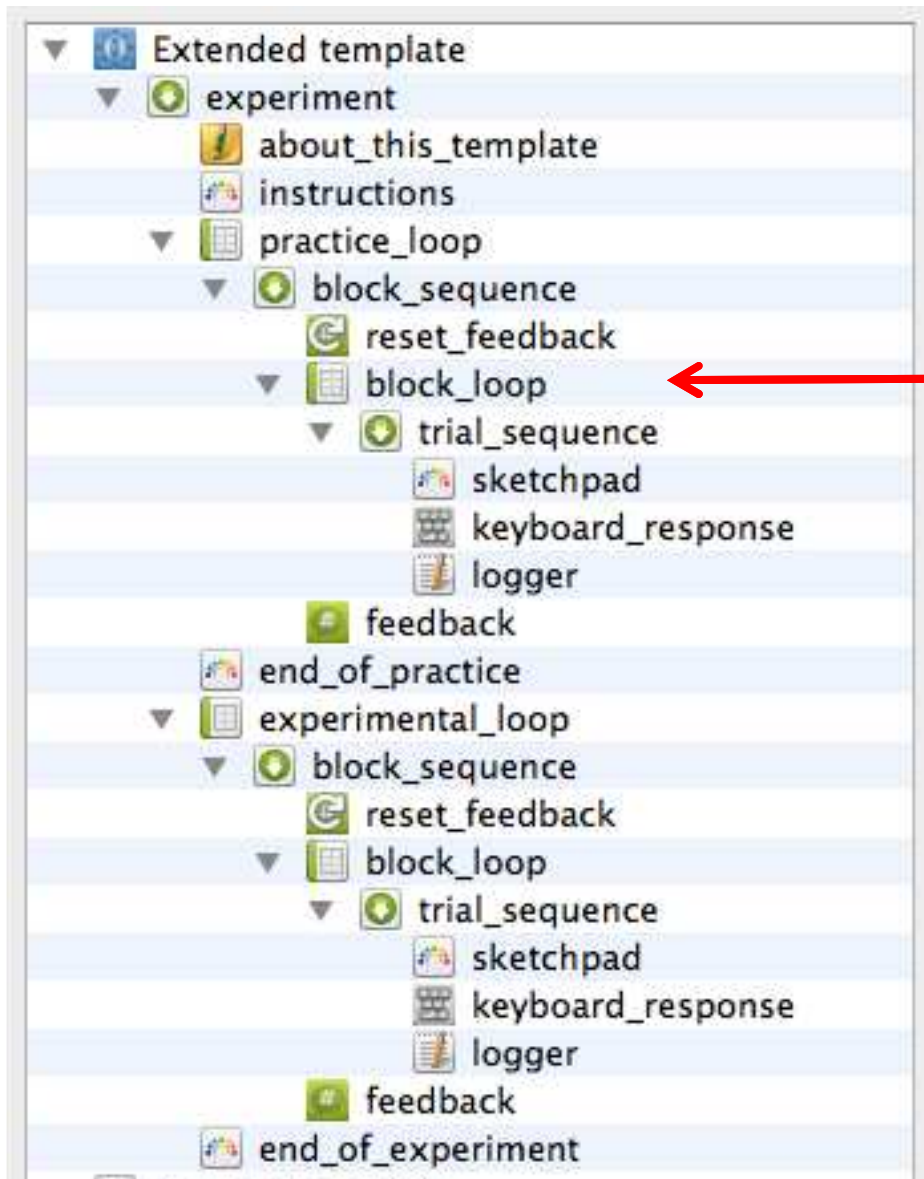
	Commonly used		
			
Display text/image			
Play sound			
Get keyboard response			Get mouse response
			
	Form		
Multiple choice item			
			
			Input text item
	Response collection		
			Collect joystick response
			
			



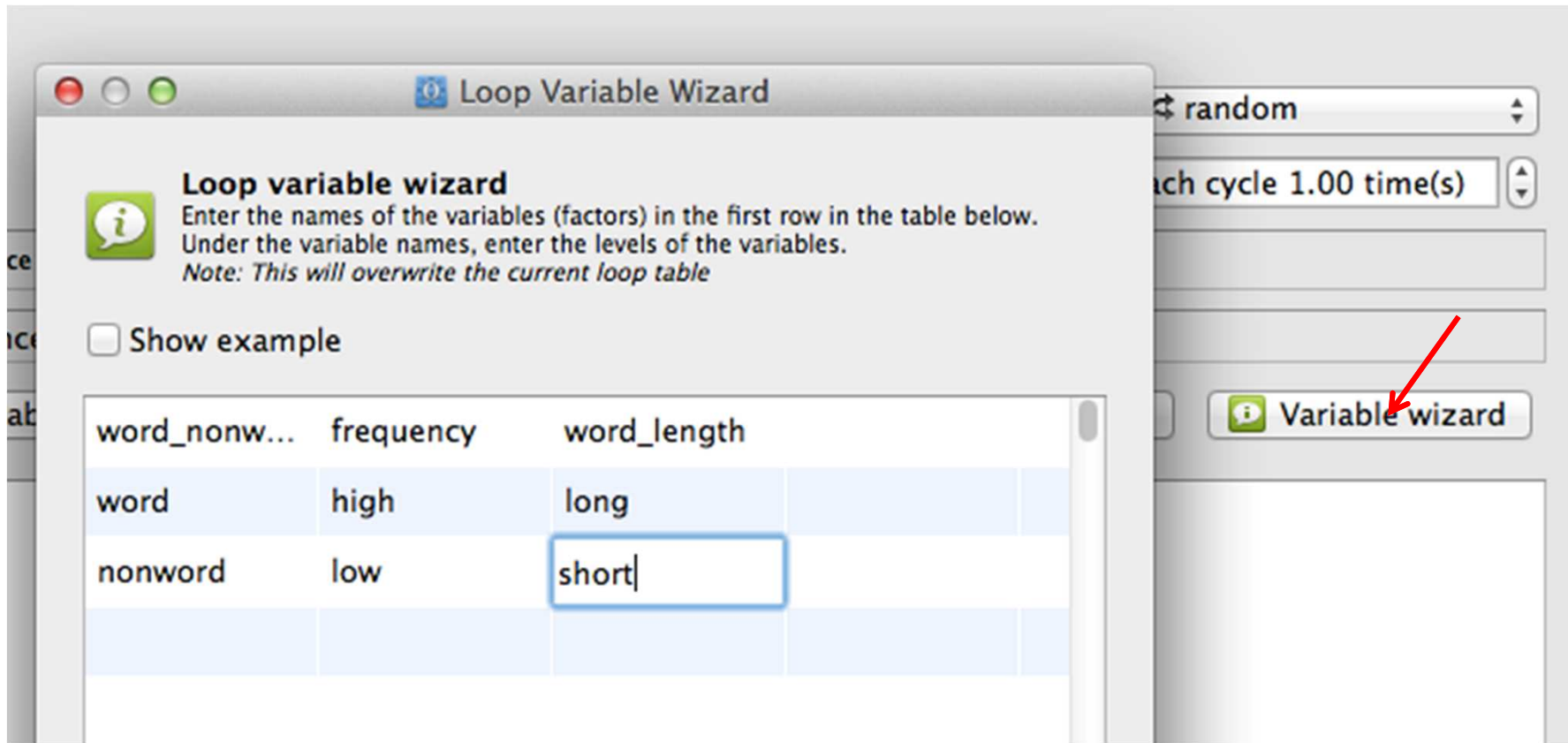
Training trials

Real trials

Variables



block_loop





block_loop – Loop

Click to edit

A single block of trials



Item to run



trial_sequence



Order

random



Cycles

8



Repeat

each cycle 1.00 time(s)



trial_sequence will be called 8 x 1 = 8 times in random order

Show advanced options



Add variable



Rename variable



Remove variable



Apply weights



Variable wizard

	word_nonword	frequency	word_length
1	word	high	long
2	word	high	short
3	word	low	long
4	word	low	short
5	nonword	high	long
6	nonword	high	short
7	nonword	low	long
8	nonword	low	short

Lexical decision:

pair: word or nonword

prime: form-related or unrelated

	Word	Non-word
Form-related	able-axle	cher-chir
Form-unrelated	corn-axle	kwon-chir



block_loop - Loop Click to edit

A single block of trials



Item to run

Order

Random/Sequential

Cycles

Repeat

trial_sequence will be called 4 x 1 = 4 times in random order

Show advanced options

+ Add variable

← Rename variable

✖ Remove variable

+ Apply weights

+ Variable wizard

	word	correct_response
1	able	a
2	corn	a
3	cher	l
4	kwon	l

a = word
l = non-word

Overview

Commonly used

- Extended template
- experiment
 - about_this_template
 - instructions
 - practice_loop
 - block_sequence
 - reset_feedback
 - block_loop
 - trial_sequence (highlighted with red arrow)
 - fixation_dot
 - mask
 - prime
 - target
 - keyboard_re...
 - logger
 - feedback
 - end_of_practice
 - experimental_loop
 - block_sequence
 - reset_feedback
 - block_loop
 - trial_sequence
 - fixation_dot
 - mask
 - prime
 - target
 - keyboard_re...
 - logger
 - feedback
 - end_of_experiment
 - Unused items (0)

Form

- Txt
- a) b)
- ✓
- Aa_
- Txt

Response collection

- Response collection icons

fixation_dot - Sketchpad



Displays stimuli



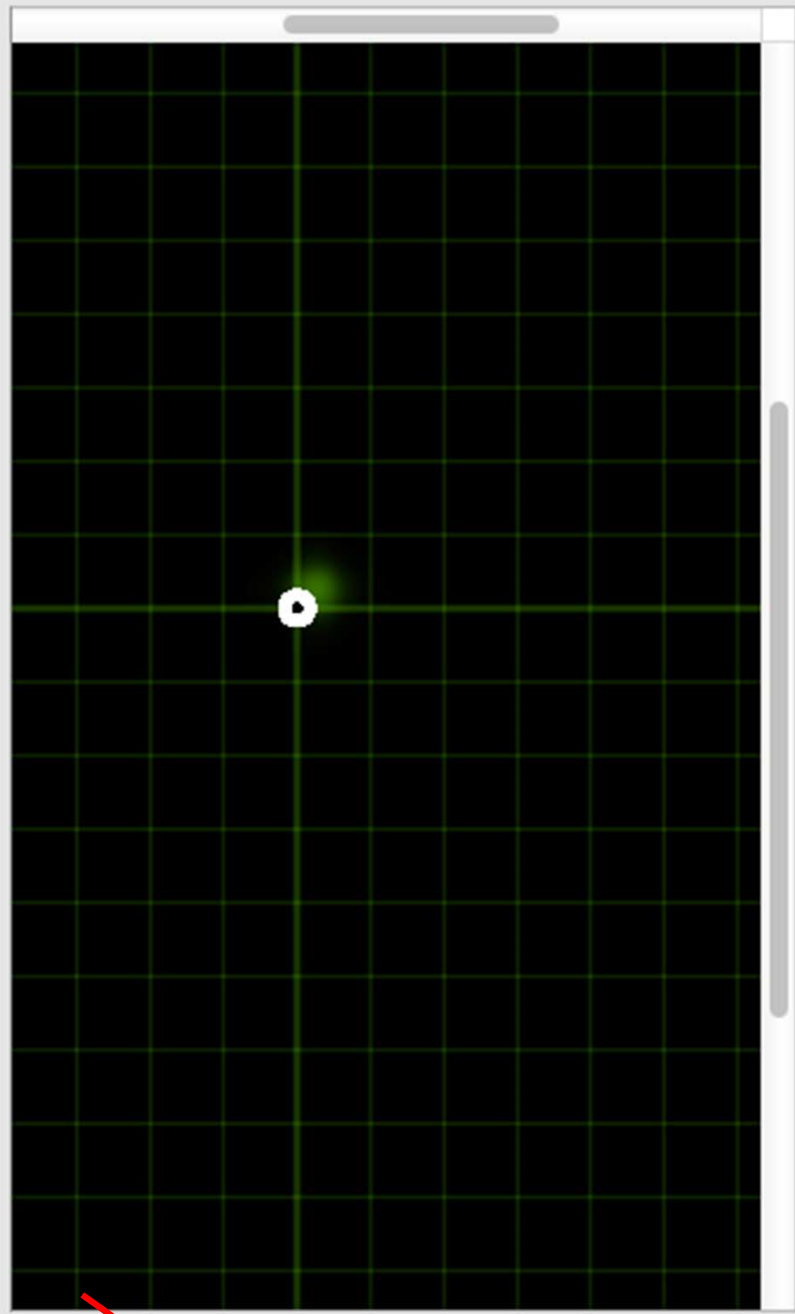
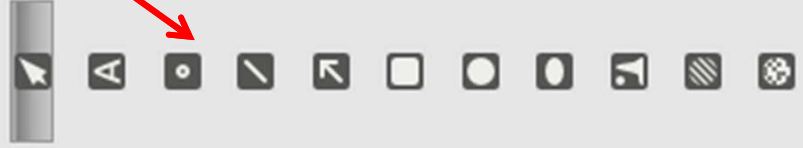
[Click to edit](#)

Duration



Show if

Grid



mask – Sketchpad

Click to edit

Displays stimuli



Duration

495

white



Show if
always

-224,-96

1.00 x

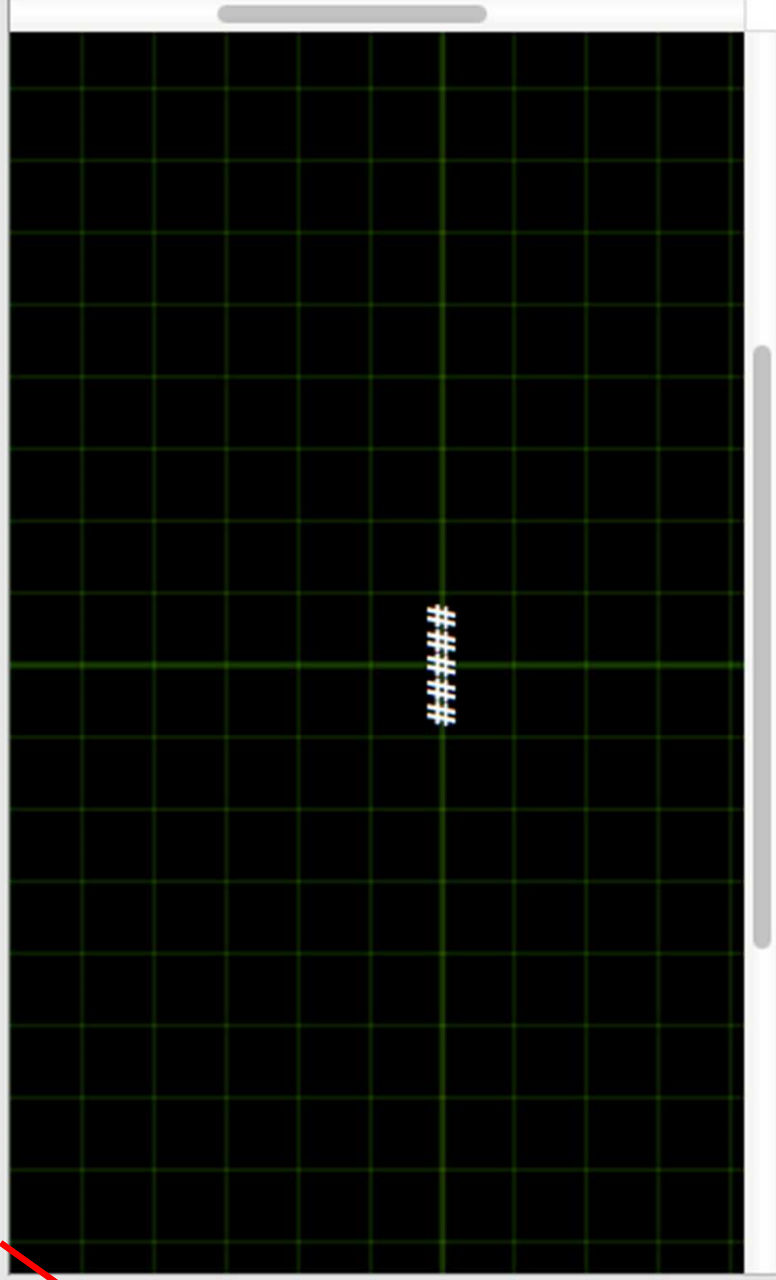
Example

mono

18 pt



32 px





prime – Sketchpad

Displays stimuli

[Click to edit](#)



Duration



Show if

Example

Bold

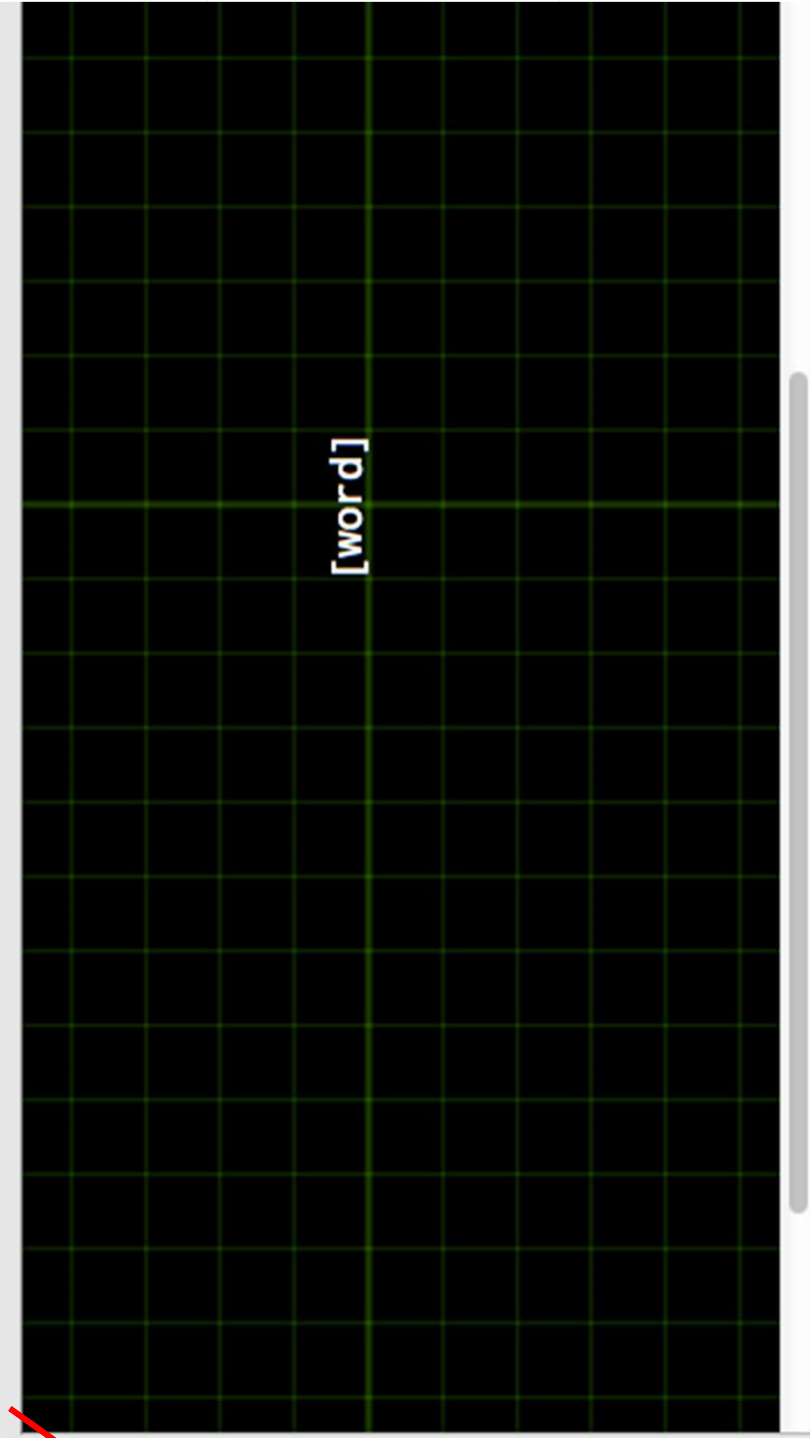
Italic

HTML

Grid



A



+ Add variable

word

1 able

2 corn

3 cher

4 kwon

5

6

- Choose a duration that is possible given your monitor's refresh rate. For example, if your monitor's refresh rate is 60 Hz, it means that every frame lasts 16.7 ms (= 1000 ms/60 Hz). Therefore, on a 60 Hz monitor, you should always select a duration that is a multiple of 16.7 ms, such as 16.7, 33.3, 50, 100, etc.
- In the duration field of the sketchpad specify a duration that is a few milliseconds shorter than what you're aiming for. So if you want to present a sketchpad for 50 ms, choose a duration of 45. If you want to present a sketchpad for 1000 ms, choose a duration of 995. Etcetera.
- <http://osdoc.cogsci.nl/tutorials/step-by-step-tutorial/>

Target words

	Word	Non-word
Form-related	able-axle	cher-chir
Form-unrelated	corn-axle	kwon-chir

Target words = axle; chir

Overview

- Extended template
 - experiment
 - about_this_template
 - instructions
 - practice_loop
 - block_sequence
 - reset_feedback
 - block_loop
 - trial_sequence
 - fixation_dot
 - mask
 - prime
 - target_axle**
 - target_chir
 - keyboard_response
 - logger
 - feedback
 - end_of_practice
 - experimental_loop
 - block_sequence
 - reset_feedback
 - block_loop
 - trial_sequence
 - fixation_dot
 - mask
 - prime
 - target_axle**
 - target_chir
 - keyboard_response
 - logger
 - feedback
 - end_of_experiment

Unused items (0)

target_axle Click to edit

Displays stimuli

Duration: 0

Color: white

Font: mono, 1.8 pt

Center: Show if: always

Grid: HTML: Italic: Bold: Scale: 1.00 x, 32 px

axle

Tools: A, [circle], [pen], [arrow], [square], [circle], [circle], [eraser], [fill], [lock]

able corn
 ↓ ↓
 axle

cher kwon
 ↓ ↓
 chir

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 - target_chir
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 - experimental_loop
 - block_sequence
 - reset_feedback
 - block_loop
 - trial_sequence**
 - fixation_dot
 - mask
 - prime
 - target_axle
 - target_chir
 - keyboard_response
 - logger
 - feedback
 - end_of_experiment

Unused items (0)

trial_sequence *Click to edit*

A single trial

Flush pending key presses at sequence start

Item name	Run if
trial_sequence	always
fixation_dot	always
mask	always
prime	always
target_axle	[word] = able or [word] = corn
target_chir	[word] = cher or [word] = kwon
keyboard_response	always
logger	always

Important: A sequence has a [variable preparation time](#).

keyboard_response – Keyboard Response

Collects keyboard responses

Click to edit



Correct response

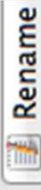
Allowed responses

Timeout

Flush pending keypresses

List available keys

+ Add variable



Rename

	word	correct_response
1	able	a
2	corn	a
3	cher	l
4	kwon	l

Overview

- Extended template
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 - target_chir
 - keyboard_response
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 - block_sequence
 - reset_feedback
 - block_loop
 - trial_sequence
 - fixation_dot
 - mask
 - prime
 - target_axle
 - target_chir
 - keyboard_response
 - logger
 - feedback
 - end_of_experiment
 - Unused items (0)

logger *Click to edit*
Logs experimental data

Automatically detect and log all variables
 Include variables with missing values
 Put quotes around values

Select all Deselect all Smart select Add custom variable

1	2	3
<input type="checkbox"/>	count_reset_feedback	reset_feedback
<input type="checkbox"/>	time_feedback	feedback
<input type="checkbox"/>	count_feedback	feedback
<input checked="" type="checkbox"/>	response	feedback
<input checked="" type="checkbox"/>	response_time	feedback
<input type="checkbox"/>	response_feedback	feedback
<input type="checkbox"/>	response_time_feedback	feedback
<input type="checkbox"/>	time_end_of_experiment	end_of_experim
<input type="checkbox"/>	count_end_of_experiment	end_of_experim
<input type="checkbox"/>	response_end_of_experim	end_of_experim
<input type="checkbox"/>	response_time_end_of_experim	end_of_experim



logger – Logger

Click to edit

Logs experimental data



Automatically detect and log all variables

Include variables with missing values

Put quotes around values

Select all

Deselect all

Smart select

Add custom variable

1	2	3
<input type="checkbox"/>	count_reset_feedback	reset_feedback
<input type="checkbox"/>	time_feedback	feedback
<input type="checkbox"/>	count_feedback	feedback
<input checked="" type="checkbox"/>	response	feedback
<input checked="" type="checkbox"/>	response_time	feedback
<input type="checkbox"/>	response_feedback	feedback
<input type="checkbox"/>	response_time_feedback	feedback
<input type="checkbox"/>	time_end_of_experiment	end_of_experim
<input type="checkbox"/>	count_end_of_experiment	end_of_experim
<input type="checkbox"/>	response_end_of_experim	end_of_experim
<input type="checkbox"/>	response_time_end_of_experim	end_of_experim

Overview

- Extended template
 - experiment
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 - instructions**
 - practice_loop
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 - reset_feedback
 - block_loop
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 - prime
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 - end_of_practice
 - experimental_loop
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 - reset_feedback
 - block_loop
 - trial_sequence
 - fixation_dot
 - mask
 - prime
 - target_axle
 - target_chir
 - keyboard_response
 - logger
 - feedback
 - end_of_experiment
- Unused items (0)

instructions

instructions – Sketchpad *Click to edit*
A sketchpad containing the instructions for the participant

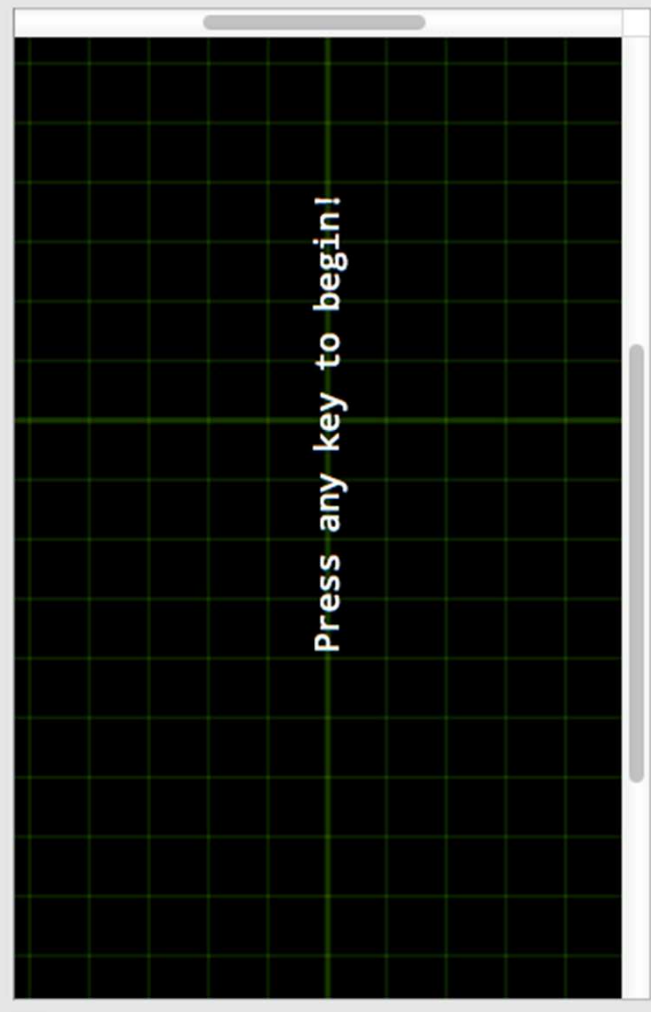


Duration

keypress

64,160 1.00 x

Grid 32 px



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 - target_chir
 - keyboard_response
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- feedback
 - end_of_practice
 - experimental_loop
 - block_sequence
 - reset_feedback
 - block_loop
 - trial_sequence
 - fixation_dot
 - mask
 - prime
 - target_axle
 - target_chir
 - keyboard_response
 - logger
- Unused items (0)

feedback

feedback [Click to edit](#)

Provides feedback to the participant



Duration

keypress

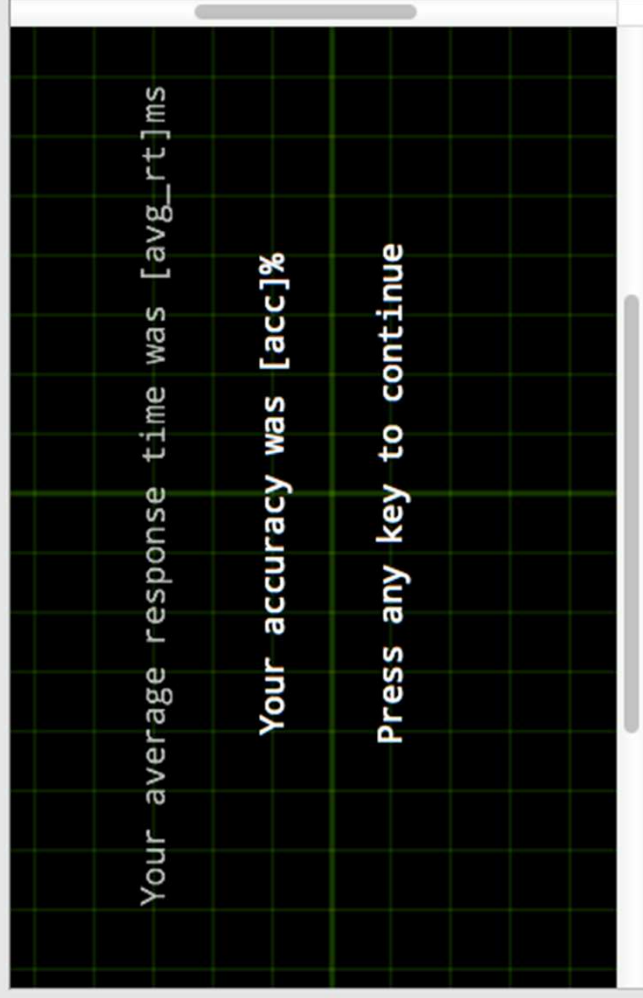
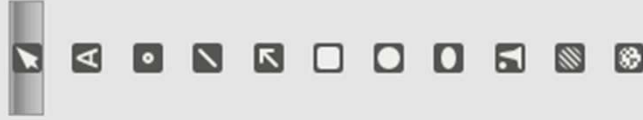
Reset feedback variables

-32,-96

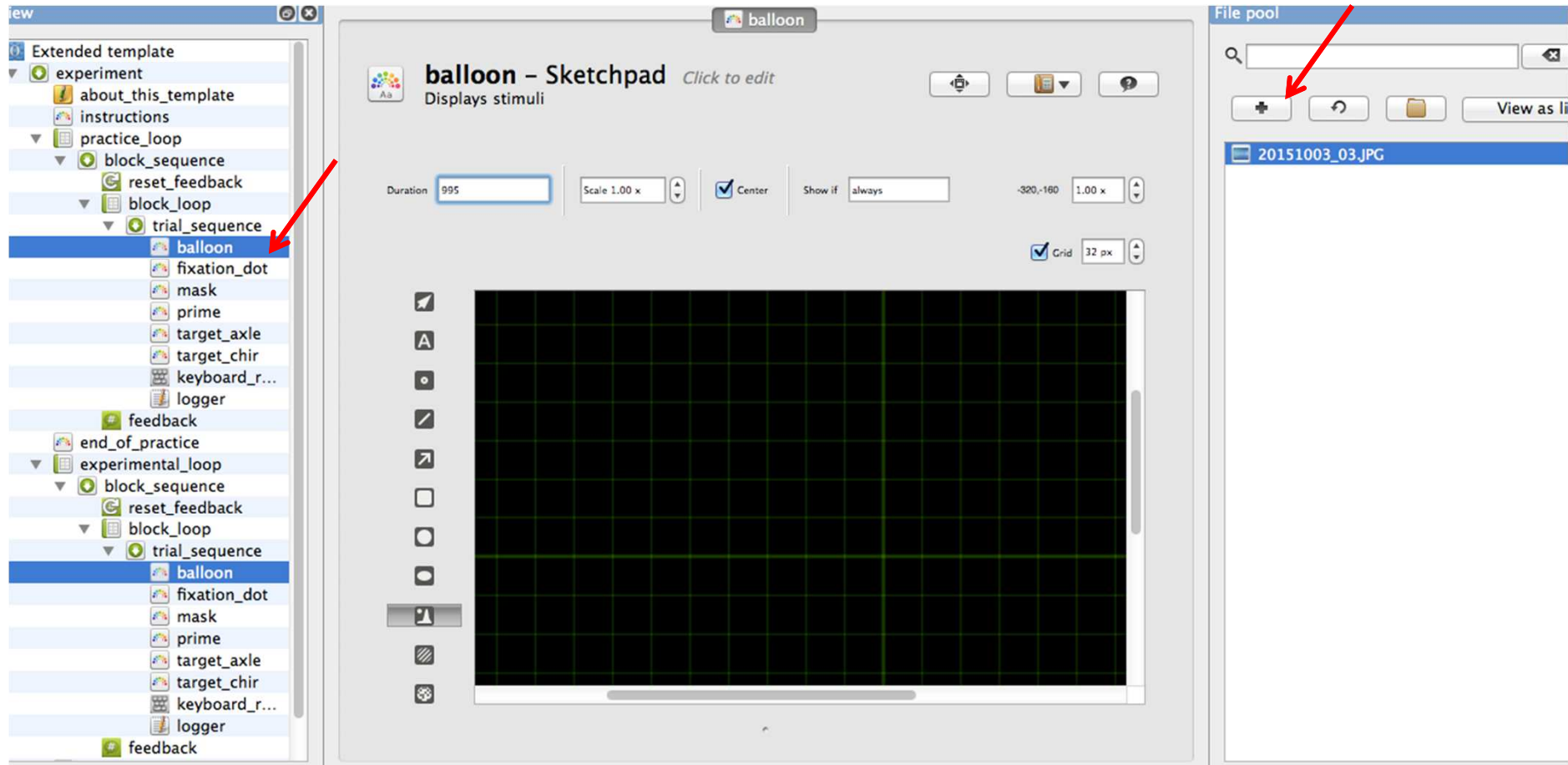
1.00 x

Grid

32 px



File pool



Save as .tar.gz

- Experiment file + contents of file pool (ie sounds and images)

balloon – Sketchpad

Click to edit

Displays stimuli



Duration 995

Select file from pool



View as list



20151003_03.JPG

/var/folders/sp/k8gzrg6113x_9dr8vwblvtcm0000gn/T/tmpMwGncU.ope



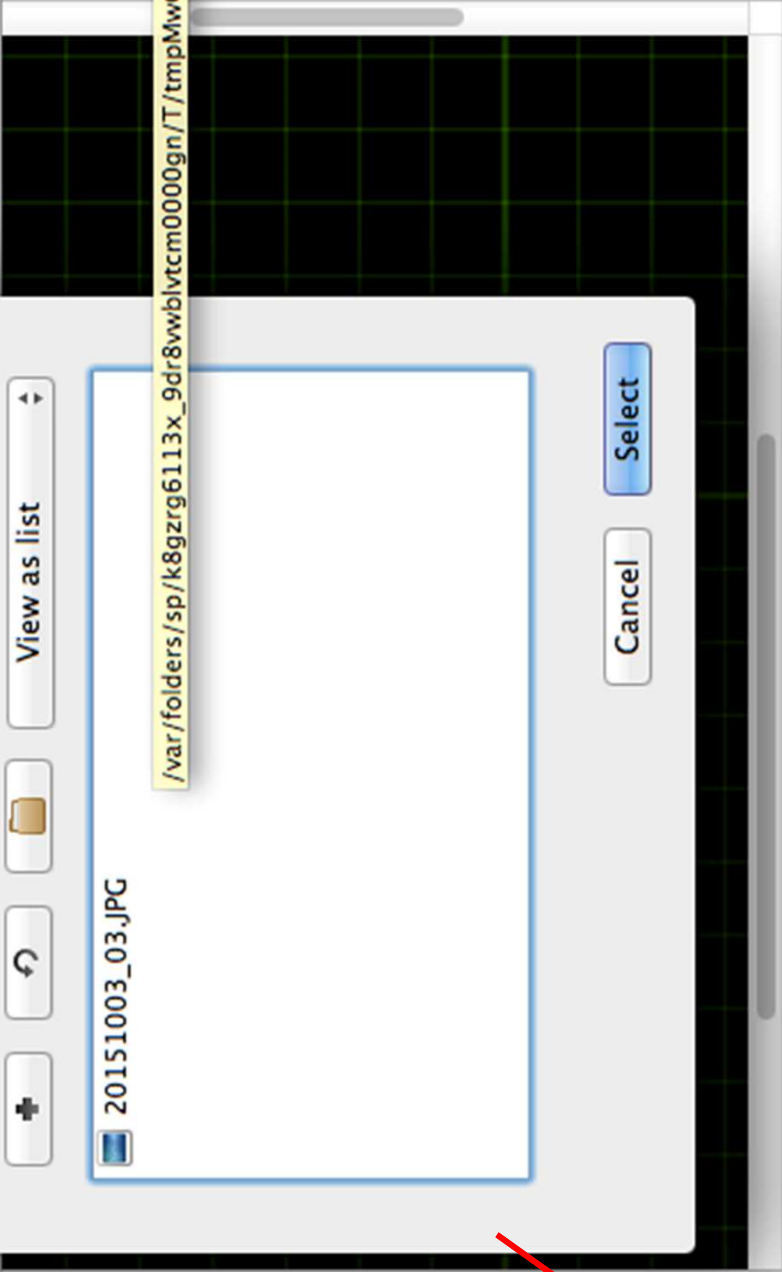
Cancel

Select



0,0 1.00 x

Grid 32 px





Commonly used

Overview

fixation_dot

fixation_dot – Sketchpad *Click to edit*
Displays stimuli

Duration 495

0,0 1,00 x

Grid 32 px

Subject number

Please enter the subject number

0

Cancel OK

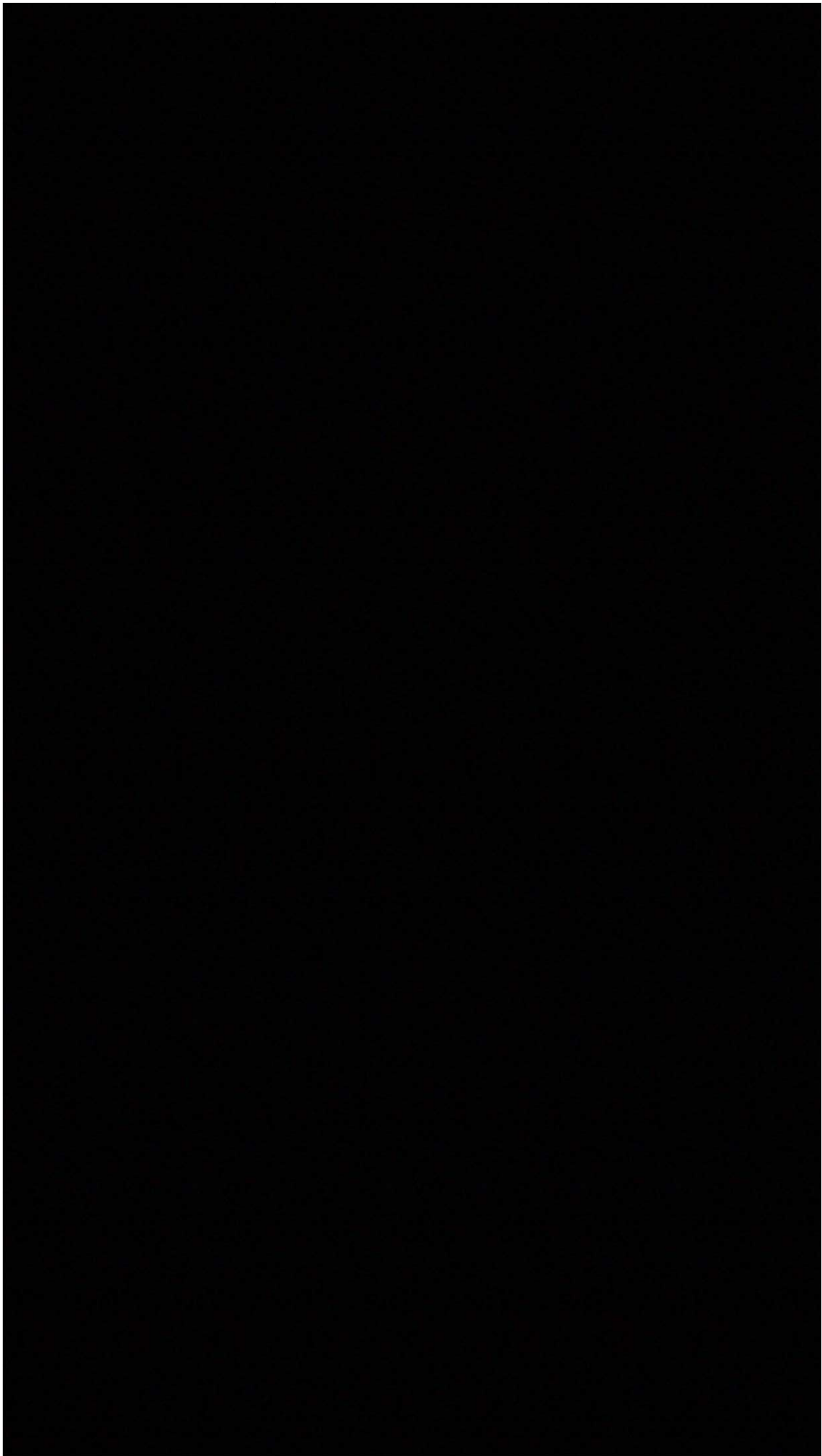
Extended tem...
experiment
about_t...
instructi...
practice...
bloc...
re...
bl...
fe...
end_of...
experim...
bloc...
re...
bl...
fe...

Form

Response collection

Debug window

Type "help()" "copyright()" "credits()" or "license()" for more information.
Type "modules()" for details about installed modules and version information.
Use the "print(msg)" statement in inline_script items to print to this debug window.



| accuracy | average_res | correct | correct_resp | practice | response | response_time | word |
|----------|-------------|---------|--------------|----------|----------|---------------|------|
| 100 | 560 | 1 | a | yes | a | 560 | corn |
| 100 | 571 | 1 | l | yes | l | 583 | cher |
| 100 | 650 | 1 | l | yes | l | 809 | kwon |
| 100 | 610 | 1 | a | yes | a | 490 | able |
| 100 | 602 | 1 | a | no | a | 602 | corn |
| 100 | 592 | 1 | a | no | a | 582 | able |
| 100 | 556 | 1 | l | no | l | 484 | kwon |
| 100 | 575 | 1 | l | no | l | 632 | cher |

- No difference between word and non-word
- No difference in response time between form-related and form-unrelated

Timing

- <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0085108#pone-0085108-t001>
- DMDX is more accurate in conditions that are more demanding on the hardware (eg display)
- OpenSesame 'good enough' for majority of experimental paradigms related to cognition
- Even for DMDX, depends on speed of computer, monitor, input devices...

For more information...

- <http://lpl.ucsd.edu/software-survey-results>
 - What researchers think about OpenSesame
- <http://forum.cogsci.nl/index.php?p=/categories/opensesame>
 - Ask other people on the forum
- <http://osdoc.cogsci.nl/publications/>
 - How to cite OpenSesame
 - Who else used OpenSesame