

Preferences

The **Preferences...** menu item in the **File** menu offers some essential customizations for your experiments. These can be saved as the default preferences for new document by clicking the **Save As Default** button once you have finished altering them. When you save a script, the preferences settings at the time of saving will be incorporated into that script and restored upon reopening that script. This will hopefully save time when running experiments.

Note that when you upgrade to a later version of **MacStim**, it looks at startup and upon opening previously created scripts for a correct set of preference settings and a version creation number. If this version is too low and important changes have been made to the format of the preferences variables, then **MacStim** will erase these, replace with default ones and inform you so you can reset the preferences for that script. You may need to re-register the user name and code too in some cases. Please follow the instructions under Registering to re-do this.

MacStim divides its preferences up into several smaller windows. Click on the selector pop up menu at the top of the window to choose between: **Experiments**, **Display**, **Timing**, **Resources**, **Scripts**, **Boards**, **Serial Messages** and **Serial Port Setup** preference options. These are explained below.

Experiments

During the test: you are reminded that command-period will instantly terminate at test, and other options that affect test behavior.

"Show initiation alert" will present a dialog once the resources are loaded, and MacStim is ready to go. Click the OK button to start the experiment. When this option is checked, no dialog will be presented.

"Indicate progress" is useful if the experimenter wishes to see which sounds are playing and when the stimulus pictures or sounds begin. It is not recommended to show the cursor at all if any picture resources are seen by a subject, in which case this option should not be checked.

"Repeat test continuously" will cause the whole experiment to back up and restart from the first trial, and will only be terminated by the command-period key combination.

"Don't hide cursor" will keep the cursor visible at all times during the test. Be aware that if you have multiple monitors, then it will not activate (ie pass mouse click events) outside the test window.

"Ignore stop events (&RTs)" will not keep any record of the user reaction times (stimulus onset to specified stop event). For mouse click events, the location of the mouse click will also be recorded (after the line number, reaction time, and stimulus file name). For key press events, the ASCII number of the actual key pressed is recorded instead. (You can also use the serial port output to record reaction times with third party equipment.)

Note that the next check box options only appear if this option is selected.

"End trial at user event" will end the whole current trial when the correct user stop event is encountered, and move instantly onto the next trial in the experiment (ie. the NEXT LINE ignoring the total time and repetition times). This allows you to move on at the user's own pace, but note that it will only work if you have unchecked "Ignore stop events..." (command-9).

"Await valid user event" will maintain the current trial stimulus until (and only if) the correct user stop event is encountered. This allows you to wait (even indefinitely) for a slow responder.

After Randomize: will allow you to either run the experiment (as you would normally do), or alternatively load all the resources and test the timings but write the output to a new untitled script editor. This is intended to allow you to see the result of a typical randomization before needing to implement it. You can, for example, check the timings to ensure they are what you expected (since they will reflect exactly how many trials will fit into the repetition time specified for the first line of the trial block), use the random order so obtained (or several of these) as alternate but fixed forms for your experiments, or allow you to use a Master Script with commented lines (or use in conjunction with the

Run Selected Lines menu item) to create multiple variants from a single script. Note that: this will not put comments into the new script; it will maintain the current preference settings but not save them until the script is saved; all trial types except random will be reproduced in the new script, but random trials will be retyped to single.


Note that some other options are not yet implemented (eg change by mouse rather than the current implementation).

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Display

Screen depth: will show you the range of colors available for your monitor(s) set up. You can select any depth up to the maximum available, though remember that deeper pixel maps take up more memory, and will consequently let you preload fewer PICT resources.

Background color: for the test window. It is useful if you wish to keep the actual stimulus pictures small (and hence use minimal memory), since you can just draw them in the center and color the background to match their own background color. To see more than the offered choices (in the pop up palette) click this control once to bring up the Apple Color Picker.

Use screen: will have more than one number if you have multiple monitors attached to your Macintosh (lucky you!). The numbering system is not the same as in your monitors control panel (under your  menu at top left). If you select any other number than 1 (which is always the main device with your menu at the top), then the screen you select will be used for presentation of the stimuli. Each screen's global pixel coordinates appear after its number (these are in the form **Left, Top, Right, Bottom** coordinates measured from the top left of the original main screen of your computer) to help you work out which one will be used. Note that if this is a very large monitor or a very "deep" one (in terms of multiple colors), then you may need to increase the RAM given to **MacStim** to show your PICTs. In any case, **MacStim** will try to run the experiment as requested, but will inform you of the likely RAM shortfall if it fails. Selecting another monitor will keep the script editor visible at all times on the main monitor.

Add Central Fixation: if one of the fixation point styles is selected (as opposed to **None**), then **MacStim** will add a central fixation symbol into every PICT in the experiment. This does not alter the original files or affect sound or movie files. This will always show in the centre of the test screen for pictures and text even if these are horizontally or vertically shifted. You can also specify the color of the fixation point using the color popup to the right of the fixation popup. Note that this is disabled during movie playback (at present).

Use VBL interrupt for PICTs: if this is checked, **MacStim** will synchronize the display of PICTs to the start of the VBL interrupts. In some cases (and machine configurations) this is an advantage since it will eliminate flicker of displayed PICTs. There are some exceptions so that you should try drawing with and without this option on. For example, PowerPCs need to switch into emulator mode to check the interrupts and this can take several hundred milliseconds on some machines making them most inefficient for drawing quick animations. Also some timings appear slower if VBL tasks are used, so try out both options and choose the best one for your task.

Flip pictures: will globally flip all PICTs & text (movies though) either horizontally, vertically or both. This is performed after loading the offscreen worlds and is reasonably fast. It needs to allocate a small extra bit of offscreen memory, and tries to use non-application temporary memory if possible. If you find it bombs out here, try reducing your screen depth (using the Monitors **Control Panel** under the **Apple** menu) or increase **MacStim's** RAM partition. Text flipping esp in the horizontal direction is always on-the-fly and is much slower than normal presentation.

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Timing & Events

You can set a minimum response time, which might usually be about 100ms. This is the time period after stimulus presentation, during which you wish to ignore valid stop events (because you might consider it impossible to respond that quickly). Alternatively, you can elect to leave this at 0.0 seconds.

Limits for trial seconds: will place global limits on the minimum and maximum seconds to be used for trials. This is helpful for randomized trial periods (eg which you may want to be more than 100 msecs). The real minimum is 0 secs. The absolute maximum is 1000.000 seconds. You can also cycle the trials of the whole experiment endlessly if you desire. This might be more useful for non-experimental purposes (eg screen saving, simple on-screen presentations etc.).

Absolute vs relative to block timing: if unchecked then all times will be measured relative to the actual start of each block (ie the total time taken for a single trial, or a block of trials eg a random block). This means that if it takes a while to get a specific trial started, then there may be an absolute delay from the start of the experiment. If you want each block to "catch-up" (if this is necessary), then check this check box. Then, each time a block is started, its end will be compared with that set for relative timing, and adjusted accordingly. Since timing is in microseconds (unless the extended time manager is not supported on your machine), then this should not be noticeable for most scripts.

Voice activated stop events: settings can be controlled from here, and tested using the [Test](#) button provided. The level to activate varies from instantaneous ("less than a pin drop") to full volume ("more than an earthquake" though I've not been able to trigger this at all with my equipment, on a scale of 0-255. You adjust it by dragging the slider. Default setting is 64 which was reasonable in my testing. The top end seemed a bit exponential and insensitive but you will need to test for your requirements. The quality popup menu has good, better or best. The better the quality the more memory/disc space is consumed and the shorter the time of recording for a given kilobytes (specified in the editable field). Best way to understand these relationships is to set and Test. [MacStim](#) is listening when the ear appears, and recording when the microphone cursor is on. The recording will be instantly replayed for your feedback. Be aware that saving recordings to disc may slow time critical expts down. Also if you set your timings to overlap stimuli, such that the next vox event overlaps on an unfinished recording, then the earlier recording will stop.

Sounds are saved with the session name (as seen top right window of the script editor) followed by the time in seconds since 1/1/1904 (Mac clock time) eg voice1-1299875915 would be Thurs 29 Sept 1995 at 00:03:01 (which is when I finished vox!). The shareware application [DeskMates](#) has a conversion calculator for these if you need them exactly. The sound's name is saved in the log window next to the line that triggered it. The format is [Finder](#) sounds, so you can double click them in the [Finder](#) to play them (tip: view files by date & they will appear in reversed creation order). If you intend to do multiple sessions with the same script, you might consider changing the session name for each one: eg sess1, sess2, sess3, etc. to help you later. Click the session name box to change it. Try the "Voice Test" sample for a demo.

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Resources

PICTURES (PICTs)

"Scale PICTs to full screen" will enlarge all picture resources to the full screen size. This scaling will variably reduce the resolution (especially if the original PICTs were small), and will use more memory to store the larger PICTs in the offscreen graphics world, but drawing time should not suffer (unless the enlargement reduces the drawing optimizations that [MacStim](#) does automatically). It is generally better to draw your pictures as you want to see them!

"Show PICTs/text for allotted times." will keep the stimulus picture or text resource showing, and not clear it to a background or blank screen when the valid stop event is encountered.

You can alter where the screen center for the test occurs by clicking on the arrows (which indicate which direction to shift the whole picture) or typing in the editable field an integer number of pixels to move. This is useful if you have an LCD or other projector which is slightly off center to the subject.

Sounds (sfil)

"Play sounds to next sound" will continue playing a sound through new pictures, but not beyond the next sound stimulus. If a sound is a stimulus, valid reaction times will still be recorded if requested. This is particularly useful when mixing sounds and pictures (since the sound will continue to play asynchronously whilst a following picture is presented).

Pictures and sounds are always preloaded at present, since performance definitely suffers otherwise. Be aware that if you play sounds for short periods, then their playback may be marred by audible clicks.

Movies are not preloaded into RAM, but are opened ready for instant playback. Timing decisions in your scripts should take into account the time it may take to initiate the quicktime movie, and as usual all scripts should be thoroughly tested before experimental use.

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Scripts

For new scripts: "Open as untitled" ensures you do not write results into script templates regarded as masters (and which may have taken considerable effort to create).

"Put file name into the first line" will record the file name of the file you have opened to obtain the current script. This assists if you are using a template script with multiple subjects.

"Insert column headings at top" will enter a commented header row after the file name to remind you of the trial fields and their order. (There is a menu item under the [Control](#) menu which does the same thing at the current insertion point).

Note you can name each session as recorded in the Log window (and used for saved recorded sound filenames) by clicking the [Session Name](#) box at top right of the script editor and typing a new session name.

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Boards

This is a specialized set of preferences. At present, the pop up menu at the top will only none or a National Instruments board in slot 6 option. This is primarily designed for using analog to digital or other interface boards. If you have such a board, and wish to use the triggering options, then select it in this pop up. You will then see other options, allowing you to use triggering at the start of an experiment only, and the number of initial pulses to ignore.

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Serial Messages

These pop up menus determine the characters which are sent out the modem port (see next topic) when the specified event occurs, or trigger the epochs of a trail. A zero character will send no signal, but indicate to receive all characters as possible triggers, whilst any other setting will send that character.

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Serial Port Setup

The default setting for serial port (ie modem or printer ports) is off. This is designed to allow you to interface with other equipment directly (and usually inexpensively) via the serial ports.

You can change the configuration of the port characteristics (ie from the default of: 9600 baud, 1 stop bit, no parity, 8 data bits) by selecting new options from the pop-up menus.

See the [Serial Ports](#) topic for more information.

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Movies

This view determines the playback options for all Quicktime movies played during experiments. Note that the scaling of a particular movie can be altered in the [Movie Preview...](#) menu item ([Control](#) menu), and saved along with the movie data using the [Save All As...](#) ([File](#) menu) option. At present the other movie playback options (available via the movie controller popup menu), must be set using the options in this view. They will then affect ALL movies played by [MacStim](#) for this session (if [OK](#) is clicked) or future sessions (if [Save Prefs](#) button is clicked). The options are:

Play movies continuously: ie loop the movie beginning to end until the time limit is expired or the command-period key combination is pressed. A sub-option is available which allows palindromic

looping, ie forward then backward etc.

Play ALL frames (speed hit): this option will force MacStim to play all frames, rather than skipping some to remain at the specified frames per second optimum. This may slow movie playback esp on slower CPU machines, but movies will still finish on time if running to a script.

Load all movie into RAM: this would be useful if multiple renditions of the same movie is expected, but may be a problem with limited RAM. It is best to try this option first, before running an actual experiment. At present, this does not mean that all movies will be pre-loaded into RAM, only the currently executing one.