BrainX

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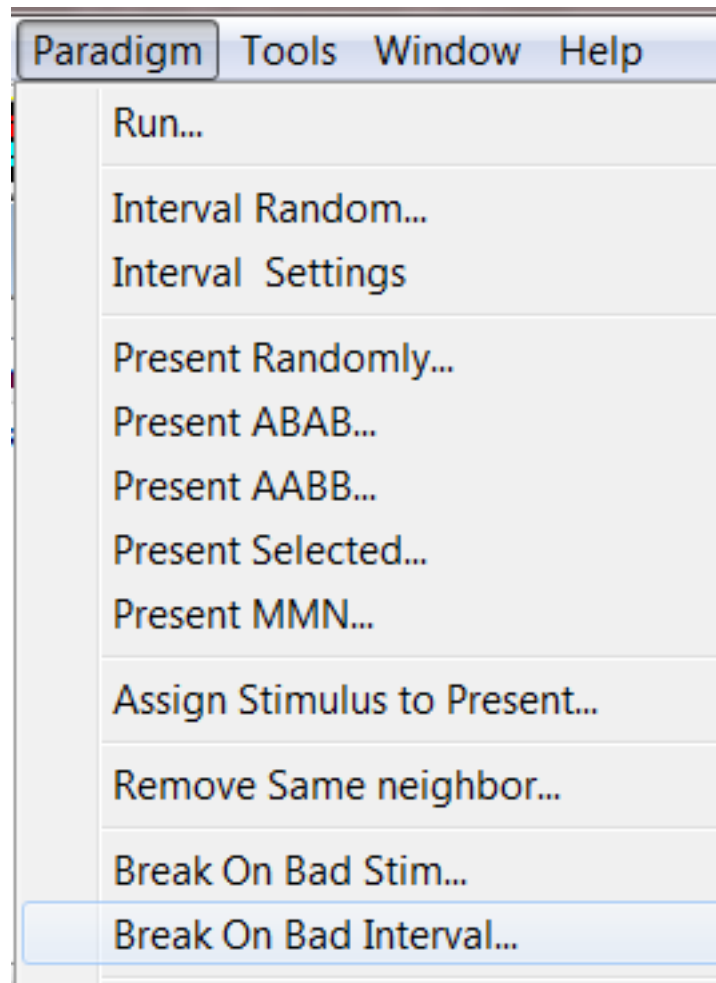
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Thank you.

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Warnings and Cautions

This software can be used to design paradigms for magnetoencephalography (MEG), electroencephalography (EEG) and functional resonance imaging (fMRI).

The following warnings and cautions appear in this guide. Please ensure you are aware of all the operations and interpretations.

General Information

      The Paradigm menu includes all the functions for arranging all stimuli as a paradigm or task. Typically,   stimuli will be repeated a few times in the paradigm. How and when the stimuli are presented or repeated will be determined by functions in this menu. In other words, the Paradigm menu includes all the functions for designing paradigm. Please note that all trials are produced from the stimulus list. The functions of the menus are to transform (or arrange) the stimuli to trails.

Run

      It starts to run the entire paradigm.

Interval Random

      It determines if the stimuli will be randomly presented. If it is checked; the interval will be random which will ignore the interval time of each individual stimulus' interval. In other words, It indicates that the interval of all the stimuli will be randomly presented. It can be found in the trial list.

Interval settings

      It shows a dialog for users to define the parameters of the random interval. It will randomly list all stimuli (not interval), the presentations will be exactly same as the trail list. The interval of all the stimuli can be random. To randomize all intervals, select the Random Interval checkbox and define the Minimum and Maximum values.
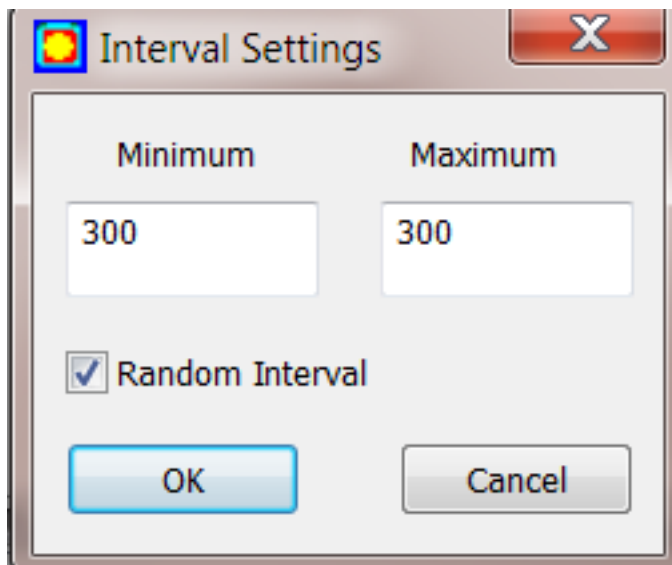
Minimum

It indicates the minimum time of random interval in milliseconds.

Maximum

It indicates the maximum time of random interval in milliseconds.

Random Interval

It determines the minimum and maximum values will be applied to perform randomization of interval.

Present Randomly

It arranges the enrolled stimuli in a randomized order for presentation.

Present ABAB

It arranges the enrolled stimuli in a "ABAB pattern" for presentation. For example, if there are two stimuli: Tone A, Picture B; the presentation will be: "Tone A -> Picture B->Tone A->Picture B…" until the end of all trials. Of note, the number of trials can be defined by users. In addition, the number of trial for all stimuli has to be the same. If the number of trials vary among stimuli, then a small number or a large number need to be picked by users. It will list all the stimuli as an ABAB pattern. For example, present stimulus 1, 2, 3…, , and then start again as stimulus 1, 2, 3… until all stimuli are presented. The presentations will be exactly same as the trail list.

Present AABB

It arranges the enrolled stimuli in a "AABB pattern" for presentation. For example, if there are two stimuli: Tone A, Picture B; the presentation will be: "Tone A -> Tone A… (until the end of Tone A) ->Picture B->Picture B…(until the end of Picture B)". Of note, the number of trials can be defined by users. In addition, the number of trial for all stimuli can be different. It will list all the stimuli as an AABB pattern. For example, present stimulus 1 for number of trials and then present stimulus 2. The presentations will be exactly same as the trail list.

Present Selected

It arranges the selected stimulus or stimuli for presentation. It will insert the selected stimulus item to the trial list. This function allows user to manually edit the paradigm.

Present MMN

It arranges the arranged stimuli in a mismatch negativity (MMN) pattern for presentation. MMN (in EEG) or mismatch field (MMF, in MEG) is a component of the event-related potential (ERP, ERF) to an odd stimulus in a sequence of stimuli. It arises from electrical activity in the brain and is studied within the field of cognitive neuroscience and psychology. It can occur in any sensory system, but has most frequently been studied for hearing and for vision. In the case of auditory stimuli, the MMN occurs after an infrequent change in a repetitive sequence of sounds (sometimes the entire sequence is called an oddball sequence.) For example, a rare deviant (d) sound can be interspersed among a series of frequent standard (s) sounds (e.g., s s s s s s s s s d s s s s s s d s s s d s s s s...). The deviant sound can differ from the standards in one or more perceptual features such as pitch, duration, or loudness. The MMN is usually evoked by either a change in frequency, intensity, duration or real or apparent spatial locus of origin.   The MMN can be elicited regardless of whether the subject is paying attention to the sequence.

Assign Stimulus to Presentation

It shows a dialog for users to assign the selected stimulus or stimuli to a specific position (Begin, end or specific ID number) for presentation.

Remove same neighbor

It removes the same stimuli in the presentation list (or trial list). In other words, the same stimuli cannot be presented sequentially. This function is useful for designing cognitive task such as MMN.

Break On Bad Stim

It indicates that the entire paradigm (task) will stop or break if the presentation of one of the stimuli is "bad" (e.g. trigger cannot be sent, no response, picture or sound is corrupted).

Break On Bad interval

It indicates that the entire paradigm (task) will stop or break if the interval of one of the stimuli is "bad" (e.g. the background color for interval is not correct).