NEUROBATCH
MANUAL and Tutorial
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(EEG segments were selected for illustrative purposes only)

INTRODUCTION

NeuroBatch is a program that provides for automatic processing of large numbers of edited EEG files in batch mode. Color topographic maps and tab delimited output is provided for each edited EEG file as well as NeuroGuide Analysis files that can be imported into NeuroStat for the purposes of individual and group statistics. NeuroStat is an independent software program which does not rely upon NeuroBatch except for the creation of Group Analysis Files (*.NGG) that NeuroStat uses to compute group statistics.

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cross-spectral export to LORETA or LORETA Individual Analysis file for NeuroStat and Browse to Output Folder.

2h – **Select Additional Edit Information** (Skip this step if you use edited *.ng files or edited *.dat files).

2i- **Select Additional Eyes Condition information** (Skip this step if you use edited *.ng files with the eyes open & closed conditions specified).

Step # 3 - Repeat Step # 2 to Process different Montages

3a - Parameters and/or Different Output

3b - and/or Different Edit Selections

Step # 4 - Individual Statistics and NeuroStat

4a - In NeuroBatch step # 2f Select Individual Analysis File (*.NGA).

4b - Click NeuroStat>Individual Differences for absolute differences, percent differences, paired t-test, individual t-test and ANOVA for comparisons between two individual NGA files.

Step # 5 - Group Statistics and NeuroStat

5a - In NeuroBatch Step #2f select Group Analysis File (*.NGG) . and proceed to the end of Step # 2.

5b - Click NeuroStat>Group Analyses for t-test group statistics (Descriptive statistics and absolute differences, percentage differences and other group statistics will be included in future updates of NeuroStat).

NEUROBATCH OVER VIEW
Steps 1 to 5
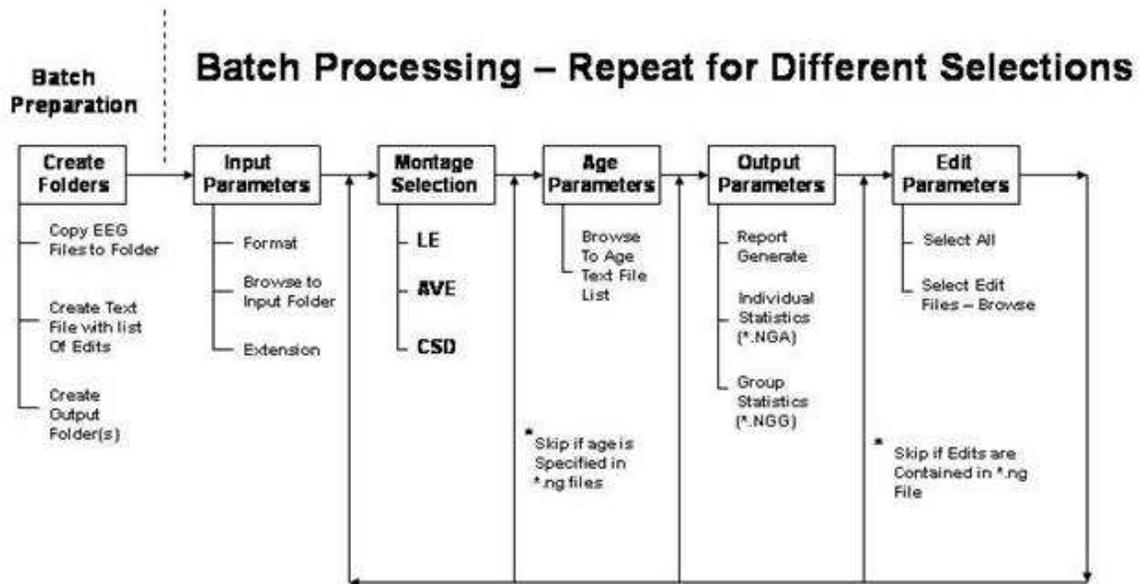
Step #1: Organize the EEG Files to be Used in the Batch Process:

1a – Create a Batch Input Folder and then copy and paste the *.ng or *.dat files that you want to process into this folder.

1b - If Group Statistics are planned then individual group folders must be created so that each folder contains only the selected subjects for a given group, e.g., ADD children or Alzheimer's patients, or Stroke patients, normal control subjects, etc.

1c – If age has not been specified in the NeuroGuide *.ng or in the *.dat files, then one must create a text file using word or notepad that lists the EEG file names and the ages that correspond to each file.   The best method is to use the NeuroGuide *.ng files with age entered in each *.ng file because one can skip this step and go directly to Step # 2.

1d – NeuroBatch assumes edited EEG files and/or files in which all of the EEG data has been selected by a competent person.   The competence of the professional is a critical factor in all statistical analyses and NeuroGuide requires a competent operator to select and organize the EEG files in a correct manner. If one does not use *.ng files, then one must specify the edit files that are to be used in the batch program. One can make a folder and then copy and paste each of the subject's *.edt EEG edit files for each analyzed EEG which were produced by clicking Edit>Save Edit file in the main NeuroGuide menu. As stated previously the best method is to use the NeuroGuide *.ng files because one can skip step 1c and go directly to Step # 2. If one wants to analyze all of the data without using edit selections and eliminating artifact then one can click "Select All EEG Time Points" in the NeuroGuide edit window. This is not advised because artifact is always present when selecting all time points and competent editing to select "real EEG" and not artifact is required in order to have valid results.

Step #2: Click Tools>Batch Analysis:

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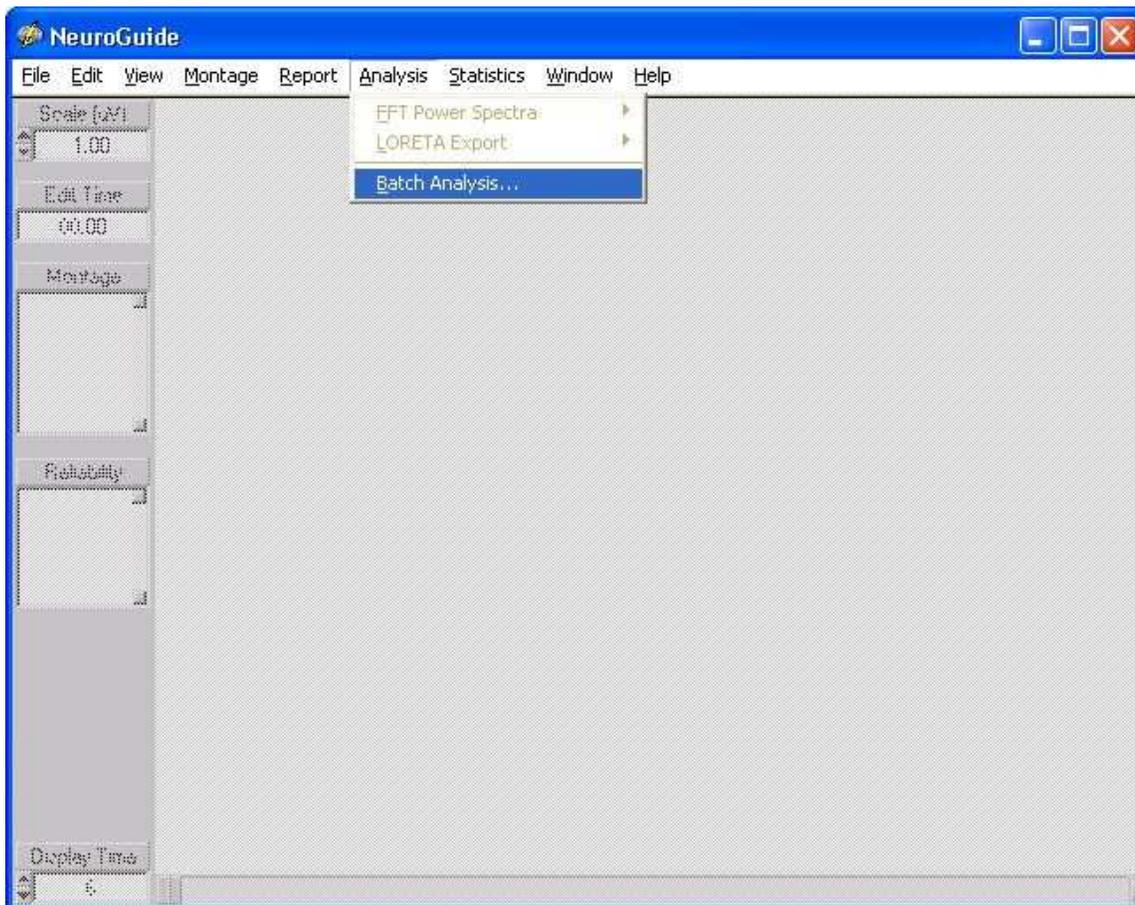
Step # 2a - Use the NeuroGuide Batch Analysis Window to Process the EEG files that were organized in Step #1
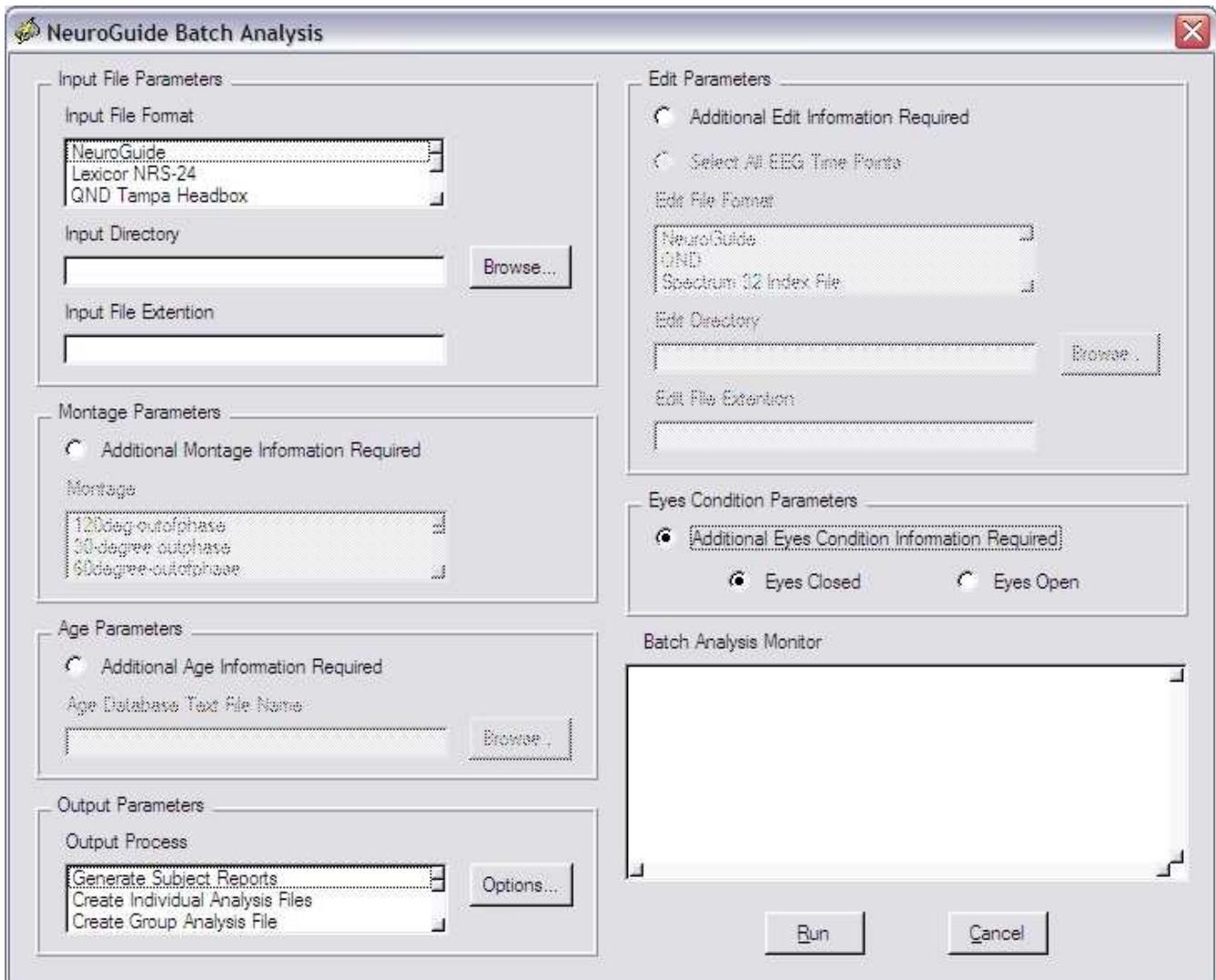
Step # 2b - Select Input File Format by clicking on NeuroGuide for the *.ng format or Lexicor NRS-24 for the Lexicor *.dat format (DeyMed, Mitsar and NeuroNavagator all export EEG time series in the Lexicor *.dat format).

Step # 2c - Click Input Directory and then Click "Browse". Browse to the input folder that contains the *.dat and/or *.ng files as was organized in Step #1a.

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Step # 2d - Type ng or dat for the Input File Extension

Step # 2e - The montage parameter (Linked Ears, Average Reference, Laplacian or CSD) is contained in the *.ng file and the Montage Parameter panel can be by-passed if one does not want to change the Montage. If a *.dat file was selected in Step #2c then one must select a Montage Parameter such as Linked Ears, Average Reference or Laplacian (i.e., Current Source Density or CSD). If one wants to change the Montage of a *.ng file from e.g., Linked Ears to Laplacian, then click the "Additional Montage Information is Required" button and then click Laplacian montage.

Step #2f - Select Output Parameters that are the processes that one wants performed on the files contained in Step #1.

Step 2g - Click "Report Generation" to produce topographic maps and tab delimited outputs which are the same as those produced in NeuroGuide Deluxe "Report>Generate Report" by hand. That is, NeuroBatch automates the NeuroGuide Deluxe "Report>Generate Report" process for each subject in the folder.   A subfolder will be produced within each subject's folder in which the bitmaps and text files are saved.

Click "Individual File Creation" to produce NeuroGuide Individual Analysis Files (*.NGA) that can be used by NeuroStat for the purposes of Pre-treatment vs Post-treatment, or Pre-medication vs. Post-medication comparisons in the same subject. Repeated measures analysis of variance and paired t-tests as well as absolute differences and percent differences are the statistical tests performed on *.NGA files in NeuroStat (see the NeuroStat Manual for details).

Click "Group Statistics" to produce NeuroGuide Group Analysis Files (*.NGG) that can be used by NeuroStat for purposes of comparing groups of subjects and not individual

subjects.   Examples are a group of ADD children vs. a group of Normal children or a group of Alzheimer Patients vs. a group of depressed patients, etc. The user must follow Step # 1b before selecting "Group Statistics". Correct selection and organization of groups by a competent person is necessary in order to obtain valid statistical results.

Step # 2h – Select Additional Edit Information or Edit Parmeters (Skip this step if you use edited *.ng files).

Step # 2i - Select Additional Eyes Condition information (Skip this step if you use edited *.ng files with the eyes open & closed conditions specified).

Step # 3 - Repeat Step # 2 to Process different Montages

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3a - Parameters and/or Different Output

3b - and/or Different Edit Selections

Step # 4 - Individual Statistics and NeuroStat

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4a - In NeuroBatch step # 2g Select Individual Analysis File (*.NGA).

4b – Click Statistics > Individual Statistics. Select the type of statistical comparison, e.g., for absolute differences, percent differences, paired t-test, individual t-test and ANOVA for comparisons between two individual NGA files. See the NeuroStat Manual for details.

Step # 5 - Group Statistics and NeuroStat

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5a - In NeuroBatch Step #2f select Group Analysis File (*.NGG) . and proceed to the end of Step # 2.

5b - Click <u>Statistics >Group Statistics</u> for t-test group statistics. See the NeuroStat Manual for details