

PEPPER GUIDE 6:

CREATE PEPPER FILE LISTS AND PEPPER VARIABLE LISTS

Overview

The PEPPER software program provides a platform for researchers, clinicians, instructors, and students to examine in detail the phonetic and phonologic aspects of speech samples obtained from participants of all ages. After samples are transcribed and entered into PEPPER, many options exist for analyzing speech production and for classifying speech sound and motor speech disorders; see [PEPPER Guide 7](#)).

This guide describes how to create a PepFile List (also called a PEPPER File List or *.pfl), which is used to run analyses and generate outputs in PEPPER. Also included in this guide are instructions on how to create a PEPPER Variable List (also called a *.pvl). Variable lists allow PEPPER users to retrieve specified values from among the thousands of variables stored in PEPPER's PepStore database. (For information about the PepStore database, see "PepStore menu commands" under the "PepFunctions menu commands" section of the PEPPER Help Contents tab.) Finally, this guide includes instructions on how to use a PepFile List and a PEPPER Variable List to retrieve and display (and optionally save) PepStore data in tabular form. These tables, when saved as tab delimited text files, can be opened in other programs (like Microsoft Excel); they are also used to run the PepStat and PepGraph utilities in PEPPER; see [PEPPER Guide 8](#)).

PepFile Storage Organization Guidelines

After the initial installation of PEPPER, C:\PEPPER\PepFiles\ is set up as the storage location for subdirectories containing the *.pep transcript files. These subdirectories need to be created by the PEPPER user. Within PEPPER, a subdirectory name is called "Study." If breaking the transcript files into studies is not useful, you can create just one subdirectory called, for example, "All." If you want to store the PepFiles on a network drive so they can be accessed by more than one computer, you need to modify the Config.txt file.

PepFile List Formatting Conventions

Each line in a PepFile List contains the path for a unique PepFile and typically includes a drive, one or more (sub)folders, and the PepFile name, separated by back slashes:

```
C:\pepper\pepfiles\amr\amr10-c1.pep
```

As covered in the “PepFile Storage Organization Guidelines” section above, if the first line in the file called *\\Pepper\\Config.txt* is **C:\\pepper\\pepfiles***, then the line for the PepFile in the example above could also be created to look like this, with the # symbol representing the beginning of the path where the PepFile is stored (C:\\pepper\\pepfiles\\):

```
#amr\\amr10-c1.pep
```

PepFile Lists are not case sensitive, so upper and/or lower case type can be used without affecting PEPPER's ability to locate and read the target PepFile(s). Typing the *.pep* extension is optional. PepFile Lists can contain one line, though they often contain more, and they can contain up to 4 groups of PepFiles. Descriptions and examples of various kinds of PepFile Lists, from simple to complex, are included in this guide.

Individual PepFiles can be opened directly from a PepFile List, without using *File > Open* in PEPPER. In an open PepFile List, double-click anywhere in the line that contains the path for a given PepFile; the window with the PepFile transcript will be displayed.

Create a PepFile List

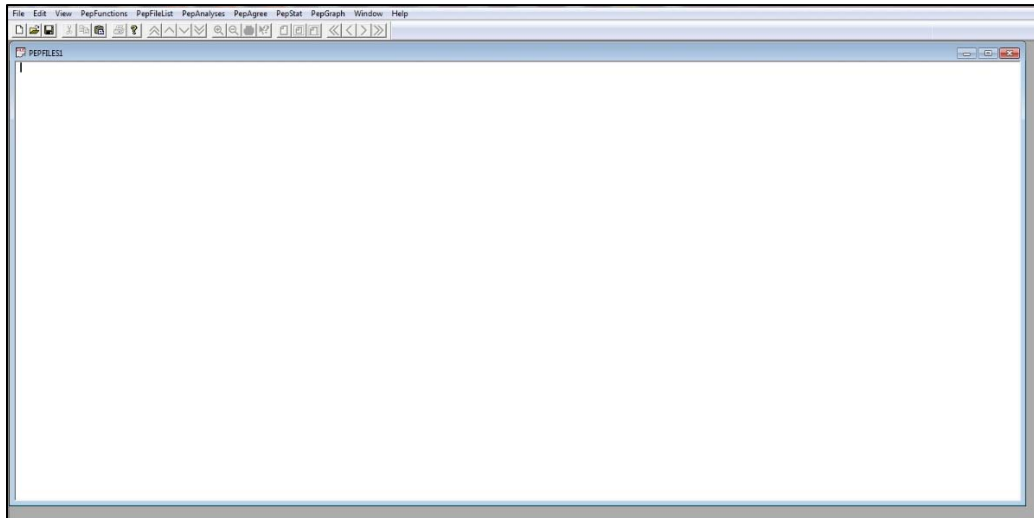
There are several ways to create PepFile Lists. These include

- manually typing into a PepFile List document
- creating a PepFile List from a table
- using PEPPER's PepFile List Generator

In some situations, PEPPER creates a PepFile List for you. For example, if you want to run PepAnalyses outputs on a single PepFile, you can open the PepFile, select the outputs of interest, and run them. PEPPER automatically opens the PepFile List document window and creates the PepFile List needed to run the selected PepAnalyses outputs for the open PepFile.

Manually Type a PepFile List Document

To create a simple *.pfl, by typing it, open PEPPER, select *File > New > PEPPER File List (*.pfl)* and click “OK.” A new PepFile List document window will appear; it looks like this:



Begin by typing the path for the first PepFile. If the list will contain more than one PepFile, hit Enter at the end of each line to separate the PepFiles. For example:

```
#OME\OME1-C1
#OME\OME2-C1
#OME\OME4-C1
```

If the PepFile List contains 2 groups of PepFiles (and/or participants), a series of 4 dashed lines is typed to separate the groups. For example, if you want to run PEPPER analyses in which a typically-developing group of participants is compared to a group of participants with delayed speech, the corresponding PepFile List may look something like this:

```
----Typical
#OME\OME1-C1
#OME\OME2-C1
#OME\OME4-C1
#OME\OME5-C1
#OME\OME9-C1
----Delayed
#OME\OME3-C1
#OME\OME6-C1
#OME\OME7-C1
#OME\OME8-C1
```

The dashes entered before the first group are optional, as are the group titles/labels following the dashes for both groups. In the example above, the dashes are entered

before the first group because a group title is being used. If group titles won't be assigned, the dashed lines before the first group can be omitted. Titles can be words, letters, or single-digit numbers. Note, however, that only the first letter of the title for each group will be displayed on certain PEPPER outputs. Despite this, the titles should be recognizable to the user (e.g., "T" for *Typical* and "D" for *Delayed*).

If you've created a PepFile List that will be used again, save the file before exiting or when prompted to do so.

Create a PepFile List From a Table

Occasionally you may have a file, such as an Excel spreadsheet, that already includes information for a group of PepFiles. To easily add additional variables from PEPPER to the spreadsheet, a PepFile List with the PepFiles listed in the same order as they occur in the spreadsheet is needed. Fortunately, a PepFile List can be created using a version of your existing spreadsheet that has been exported as a tab delimited text file.

The first row of the spreadsheet should include column names. These can optionally be variable names taken from the PepStore database. Additionally, a spreadsheet that will be used to create a PepFile List should include the following:

- A column with PepFile names
- A column with the subfolder (variable 43, termed "Study" in the PepStore database) where the PepFiles are stored (e.g., "OME" in the PepFile List examples in the previous section)

If your spreadsheet includes rows without PepFile names, sort the spreadsheet so that these rows are grouped together. *If you want to preserve the original order of your rows, first create a sequential values column that you can use to re-sort the rows after the new columns of PEPPER data have been added.*

After the spreadsheet has been set up based on the guidelines listed above, export (using *File > Save As...*) the spreadsheet as a tab delimited text file.

In PEPPER, go to *File > Open*, select *Tab Delimited Text File (.txt)* from the list of file types (found in the lower right hand corner of the *Open* dialog window; "PepFile Transcripts and PVSP Log" is the default file type and so needs to be changed), find the exported file, and click *Open*.

Once PEPPER has read and opened the table, go to the PepFile List menu and select "PepFile List from Table...." A window will open wherein you must select the label (from Row 1 of the spreadsheet) for the column that contains the PepFile names and the label for the column that contains the Study name (i.e., the subfolder(s) where the PepFiles are stored). After making these selections, click "OK." The PepFile List window will be

displayed with the newly generated PepFile List. This PepFile List, in conjunction with a PEPPER Variable List (to be described later in this guide) can be used to generate a table (saved as a tab delimited text file that can be opened in Excel) containing the additional values that you want to add to your spreadsheet. Use the Copy and Paste functions to add the values from the text file to your spreadsheet.

Create a New PepFile List Using PepFile List Generator

Overview

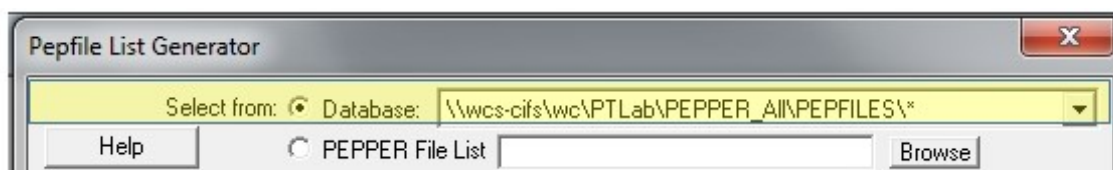
The “PepFile List Generator...” command on the *PepFileList* menu in PEPPER is very useful for generating lists of transcript files (i.e., PepFiles), especially when you have a large number of PepFiles and want to select a subset of those PepFiles that meet specific criteria. The PepFile List Generator allows PEPPER to do the work of creating the PepFile List for you: no laborious typing is required!

The following sections cover basic and advanced instructions for using the PepFile List Generator. The basic instructions are typically sufficient for PEPPER users who wish to use the generator to create PepFile Lists for PepAnalyses outputs based on perceptual data only (i.e., no acoustic data), or to create PepFile Lists to use in conjunction with PEPPER Variable Lists to create tables. The advanced instructions, which are an extension of the basic instructions, include using the PepFile List Generator to create PepFile Lists for higher-level PepAnalyses outputs (e.g., PepAssess and PepClass outputs that require reference data and/or acoustic data).

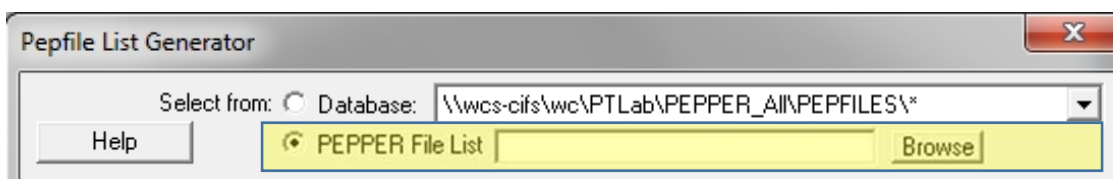
The PepFile List Generator: Basic Instructions

To use the PepFile List Generator to create a new PepFile List, open PEPPER, click the “File” menu tab, select “New,” and either double-click on “PEPPER File List (*.pfl)” or highlight it and click OK. This opens an empty [PEPPER File List](#) document.

Click the PepFileList menu tab, then select “PepFile List Generator...” This opens a dialog where you can specify the criteria you want to use to select the PepFiles (*.pep) for your PepFile List. At the top of the dialog, you can select either the entire “Database” of PepFiles to be scanned:



or the transcripts in a particular “PEPPER File List” to be scanned:



Scanning the entire database of transcripts requires that your PepFile storage be properly organized (see p. 1 of this guide). Selecting a subset of PepFiles from a PepFile List assumes that another PepFile List has already been created and saved. Use the Browse button to locate and select the source PepFile list.

“[PFL1](#)” [video](#) demonstrates the above procedures.

NOTE: For optimal viewing quality, download and save the demonstration videos on your computer.

The next set of radio buttons in the PepFile List Generator allows you to select some speech tasks from the Madison Speech Assessment Protocol ([MSAP](#)). If using this feature, the PepFile names for the MSAP tasks must conform to certain requirements in order for PEPPER to identify them for inclusion in your PepFile List (see [Pepper Guide 3](#) and/or [Pepper Guide 5](#)).

The top section allows the selection of “-C” files which are conversational speech files. The radio button for “CS Only” will retrieve the complete (all utterances) conversational speech files for the *.pfl. The “CS24” files are the CS transcripts truncated to contain just the 24 PVSP coded utterances. This is indicated in the transcript file name with “*CS24” added to the end of the file name. A CS24 file is available only if a [PVSP](#) has been completed and entered for the transcript file. Acoustic data are not required.



The next selection option relates to PepFiles entered for the VT1 (Vowel Task 1) and VT2 (Vowel Task 2) sources from the MSAP. If you wish to include these sources in your PepFile List, you have the option of including them "Separately," "Combined," or "Separately and Combined," depending upon the goal(s) of your PEPPER analyses.

The final set of radio buttons allows you to select either "All" PepFiles or PepFiles that meet certain criteria ("By Criteria"). If you would like to select files by specific criteria, simply start filling in the first criterion line (discussed below); The "By Criteria" radio button will automatically be selected.

["PFL2" video](#) demonstrates the above procedures.

Up to eight lines are available for PepStore value criteria selection. For each line, select (in the cell under the word "Variable") either a "database-only variable" or a "count name," which are both described under Search in PEPPER Help. To enter a variable, you may use either the PepStore variable number or name. To search for a PepStore variable, click the Browse button. This opens a list that includes all the variables in the PepStore database. (Some variable numbers are "Unused" and are labeled accordingly; see, for example, V286 through V300.) Use the scroll bars at the bottom and the right in the Dialog box to move through the variable list. To see a table of contents for the PepStore database, click the "Go To" button at the bottom of the dialog and then open the "Choose a Section" drop-down list in the "Go To" dialog.

In the cell(s) under the word "Value(s)," specify the value(s) or range of values for the variable or count. Directions for how to enter variable value(s) are at the bottom of the PepFile List Generator dialog. As indicated, <, <=, >, >= or <> may be used before a numeric value. Note, however, that these symbols do not necessarily work when specifying a range of values. For example, say you want to specify a range of values from 60 to less than 72. In this case, you must use the range notation: 60:71.99, not >=60 and <72, because a value is accepted if any condition is met, meaning that any number is going to be either >=60 or <72 or both. Also, these operators will not work in front of a range. For example, <>60:71.99 is interpreted as all values either <>60 or in the range 60:71.99 or both. Thus, all numbers are selected. To get values outside the range you must use: <60 or >=72.

To the left and right of each criterion line are additional drop-down lists that allow you to specify how the criteria should be connected. The default is to require that all criteria be true for a transcript to be selected. This is indicated by the AND at the end of each criterion line. If you want a transcript selected if either or both criteria are true, change the AND that comes between them to OR. For more complex cases where you are using both AND and OR, you must use parentheses to clarify the order in which the criteria are combined. Parentheses are available in the upper of the two drop-down lists at the beginning and end of each criterion line.

The lower of the two drop-down boxes at the left allows you to apply NOT to a criterion. This selects transcripts for which the criterion is false. NOT is not affected by the parentheses — it always applies only to the criterion that immediately follows.

For an example using AND, OR, NOT and parentheses, see "SDCS Database Variables" in the Search function of PEPPER Help.

If the PepFiles you want included in your PepFile List are in a specific "Study" subfolder, include the Study variable (V43) among your criteria. If the names of the PepFiles (ignoring the .pep extension) have a string of characters in common, such as "-C", include the Filename variable (V0) among your criteria (enter/select V0 in the "Variable" cell and enter *-C* in the "Value(s)" cell).

At the bottom of the dialog are "OK," "Cancel," and "Reset" buttons. Click "OK" to create your *.pfl based on your selected criteria. Click "Cancel" to exit the Pepfile List Generator without saving your work. Click "Reset" to clear your selections while leaving the PepFile List Generator window open. Once selection criteria have been entered into the PepFile List Generator, PEPPER "remembers" the information so that, if you leave the PepFile List Generator but then open it again in the same session, your previous selections will automatically be displayed. If you wish to specify different criteria, click the "Reset" button to clear the dialog of your previous selections.

["PFL3" video](#) demonstrates the above procedures with one specified criterion.

As demonstrated in the .PFL3 video, the list of PepFiles meeting the criteria specified in the PepFile List Generator is generated and displayed in the PepFile List document window after "OK" is clicked. Two lines from the video's generated PepFile List look like this:

```
$DEMO\DEMO-C1%  
$DEMO\DEMO-C1%*CS24
```

The \$ symbol indicates that these PepFiles include acoustic data. If no acoustic analyses have been completed (i.e., only perceptual data are available), a # symbol would appear at the beginning of the line instead of the \$ sign.

"DEMO" is the name of the subfolder (or "Study") where the PepFiles are saved. "DEMO-C1" is the PepFile name. Because this particular PepFile has PVSP and acoustic data, both the "-C1" (perceptual data) and "-CS24" (acoustic data) files are included in the generated PepFile List.

The % symbol is a Phonology Project in-house convention which indicates that the acoustic analysis of this sample is in process. When the acoustic analysis is complete, the % symbol is replaced with a \$ sign.

If there are any PepFiles in the generated PepFile List that you don't want included, highlight and delete them.

[“PFL4” video](#) provides an example of these procedures.

As mentioned previously, PepFile Lists can include up to 4 groups so that data between or among the groups can be compared and/or statistically analyzed (e.g., using PepStat; see [PG8](#)).

[“PFL5” video](#) demonstrates how to create groups in an existing *.pfl.

Finally, the PepFile List Generator can be used to add PepFiles to an existing PepFile List. To accomplish this, complete the following steps:

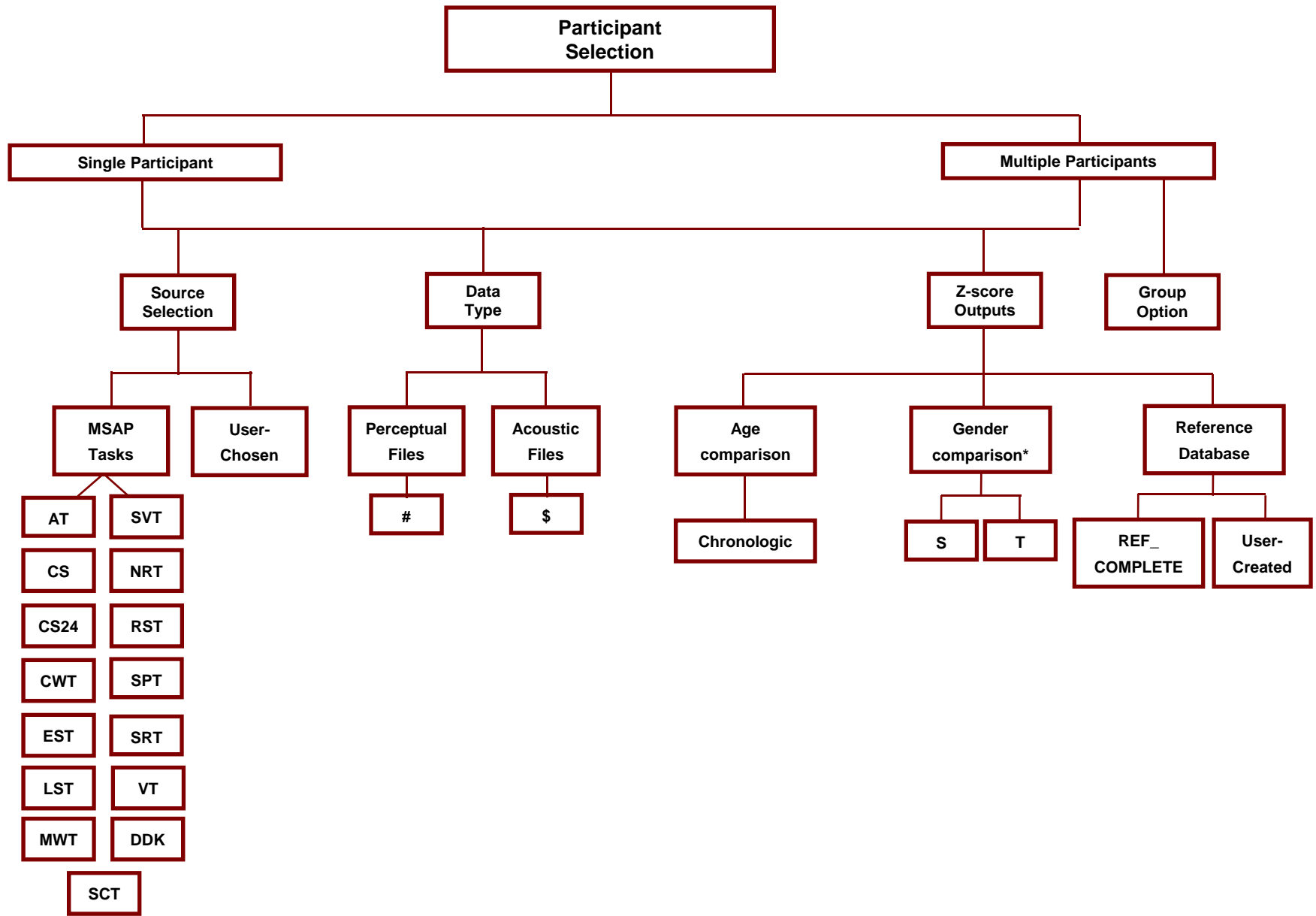
1. Go to *File > Open* and change the File Type to *PEPPER File List (*.pfl)*.
2. Find and open the existing PepFile List.
3. Go to the *PepFileList* drop-down menu and select *PepFile List Generator....*
4. In the PepFile List Generator dialog window, specify the criteria for the PepFiles you wish to add to the existing, open PepFile List.
5. Click the "OK" button to add the lines from the newly generated PepFile List to the existing PepFile List. The newly generated PepFile “paths” will appear following the last line of the existing PepFile List.

This concludes the basic instructions for creating PepFile Lists in PEPPER. The following sections include instructions and examples of more complex PepFile Lists using a hierarchy of selection criteria. If the information presented to this point seems sufficient to achieve your PepAnalyses goal(s), you may wish to skip to the instructions on how to create a PEPPER Variable List, beginning on p. 19.

The PepFile List Generator: Advanced Instructions

The following figure is an overview of the selection criteria used to create a PepFile List with the PepFile List Generator. It begins with “Participant Selection” and whether Single or Multiple participants will be included in the PepFile List. The subsequent options for speech assessment sources, data type, and z-score outputs are the same for both single and multiple participants. The ability to run multiple participants in sets of 1 to 4 “Groups” is only available when two or more participants are included in a PepFile List. The following two sections describe the options included in the PepFile List Selection Criteria Figure and include examples of PepFile Lists that include these selection criteria options.

PEPPER File List Selection Criteria



* S = Separate; T = Together

Selection Criteria

- **Participant**

Single participant. A single participant's PepFiles may be selected for the PepFile List. These files are saved in a designated folder on the PEPPER user's computer.

Multiple participants. Multiple participants' files may be selected for the PepFile List. Again, files are saved in a designated folder on the PEPPER user's computer which are then accessed in the PEPPER program at the time a PepFile List is created. Groups can be designated in PepFile Lists with multiple participants, as illustrated below in "PepFile List Sample 3."

- **Source**

Madison Speech Assessment Protocol (MSAP) Tasks. MSAP sources can be selected for the PepFile List. The sources recognized by PEPPER include CS, CS24, GF, VT1, VT2, VT3, RST, CWT, MWT1, MWT2, SPT, LST, EST, SRT, NRT, and SVT. A CS transcript is indicated by -C followed by a digit (e.g., for a single participant, there may be "-C1" and "-C2" PepFiles if two conversational samples have been collected). A CS24 transcript, as described previously, is a CS transcript that has been truncated to contain just the 24 PVSP coded utterances. This is indicated at the end of the PepFile name with "*CS24." For example:

\$GALT\C1\ABCDE-C1_1DW\$*CS24

A VT1+VT2 PepFile/transcript is the concatenation of the VT1 and VT2 PepFiles for a given participant. This is indicated by listing both separated by an *. For example:

\$GALT\VT1\ABCDE-VT1_1DW\$ * \$GALT\VT2\ABCDE-VT2_1DW\$

A PepFile name for an articulation test transcript includes the string "-GF":

\$GALT\GF\ABCDE-GF_1DW\$

User-Chosen. A PEPPER user can create PepFiles from non-MSAP sources to add to a PepFile List. For example, if an articulation test other than the *Goldman-Fristoe Test of Articulation-2* (Goldman & Fristoe, 2000) has been administered, the corresponding transcript can be entered and saved as a "GF" PepFile (i.e., the string of letters in the PepFile name that allows PEPPER to identify it as an articulation test). This file can then be used in any PepAnalyses outputs that use perceptual data.

- **Data Type**

Perceptual Only Files. These files have neither a # or \$ at the end of the file name.

Incomplete Acoustic Files. These are files that have been transcribed and entered into PEPPER and are coded with “#” at the end of the file name because acoustic analyses have not been completed. For example, the DDK and other sources may not be analyzed acoustically due to the nature of the task. These files include perceptual data only and are coded with a “#” at the beginning of the file name.

Acoustic Files. These files have been analyzed acoustically and can be included in a PepFile List. A “\$” symbol is included in their PepFile names.

Note: Perceptual data/analyses are available for all three data types.

- **Z-score Outputs**

Dynamic z-scores are available for specific PEPPER variables and in certain outputs. These variables must be programmed in order for PEPPER to generate z-scores; therefore, not all variables (only programmed ones) in PepStore can be retrieved as z-scores. The z level in PEPPER for a statistically significant deviation from the mean of the reference group is set to greater than 1.25 standard deviation units (i.e., typically a z-score < -1.25, but set to > 1.25 for variables where higher scores indicate lower performance). Dynamic z-scores are constrained to the interval -5 to 5. If all of the values for the reference group are the same (usually because the reference group participants had no speech errors), half an error (i.e., 0.5) is introduced so a non-zero standard deviation can be calculated.

There are specific parameters that must be included in a PepFile List in order to obtain z-scores. These include:

Age Comparison. Z-scores require comparing the target participant to a reference group. The reference group included with the PEPPER program includes participants with normal speech who range in age from 3 to 80 years. PEPPER uses chronological age for the comparison in the following manner:

Research completed and reference data reported at the Phonology Project use a participant’s rounded age in years (cut-off at 6 months) and the immediate age below for comparison to the reference group. For example, if a participant is 17 years of age, the age range selected for comparison is 16-17 years. This is designated in the line before the participants’ source transcripts in the PepFile List as *16-17, with an asterisk appearing before the age range. This will pull from the reference database any values for participants of that age range. A single age may also be used, so that a 5-year-old will be compared only to other 5-year-olds when *5 is used. A PEPPER user can determine other criteria for age comparison if desired. For example, if you would like to compare

a participant to a reference group which combines the data for participants in a 3-year range younger than the target participant, the age range (using the example above), would be *14-17.

Gender Comparison. In addition to specifying the age comparison for the z-score calculation, PEPPER also requires a gender selection. This selection is placed after the age comparison selection. One of two gender designations is available for comparison:

- a. Separate ("S"): PEPPER will use data from the same gender as the participant (which is entered as V2 in PepStore) for the specified age range. For example, an age/gender designation of *4S will use the participant's scores compared to the reference database scores for ages 4;0-4;11 of the same gender.
- b. Together ("T"): The program will use data from both genders of the age range selected. For example, an age/gender designation of *10-12T will use the participant's scores compared to the reference database scores for ages 10;0-12;11 for males and females combined.

Reference Database. The PepFile lists for the available reference groups for dynamic z-scores included with the PEPPER program are stored in the C:\PEPPER\DescrRpt directory on the same drive as the PEPPER program. A PEPPER user has two options for reference databases:

- a. REF_COMPLETE: The default reference database file is the already compiled REF_COMPLETE. The REF_COMPLETE PepFile List is empty to protect the privacy of the speakers. Thus, the REF_COMPLETE.bin cannot be recompiled. Do not delete the REF_COMPLETE.bin file. It contains speech and demographic data for 5 males and 5 females for ages 3 through 17 (Potter et al., 2012); data for 4 males and 4 females for the age decades 20s through 70s (Scheer-Cohen et al., 2013); and data for 5 males and 5 females for participants 70-80 years of age (Scheer-Cohen et al., 2013).
- b. User-Created: You can construct your own reference files by adding PepFile Lists to the \PEPPER\DescrRpt directory. These lists must not have any "*" records. In normal PepFile lists, "*" records specify age and gender of data in the selected reference file to be used to calculate Z scores. "*" records are not appropriate in a PepFile list that defines the reference data. If a normal PepFile list is created and the user wants all the reference data to be used for z-scores (that is, no specific ages or age ranges), the first line should read:

*0-99

This command instructs PEPPER to use all of the files as the source for comparison data for z-score calculations.

Go to *PepFunctions > PepTools > Select Reference Database...* to select the reference list. Go to *PepFunctions > PepStore > Reference Database Values Table* to view the values within the reference database.

The first time one of these reference *.pfl files is used, it is "compiled" into a *.bin file. Thereafter, the *.bin file, rather than the *.pfl file, is used to calculate the z-scores. If a change is made to the PepFile List or to any of the PepFiles it contains, you must delete the existing *.bin file to force the PepFile List to be recompiled.

Advanced PepFile List Examples

PepFile List Sample 1: The PepFile List example below includes PepFiles from multiple MSAP sources for a single participant. (Some PEPPER analyses use data from only one of these sources.) PepFiles with both perceptual and acoustic data (i.e., both # and \$ files, respectively), are included in the list. The participant's age is not included because none of the analyses that will be run using this PepFile List include z-score outputs.

The "path" for each PepFile for the sources listed in the *.pfl below includes the following:

- \$ = signifies the file is obtained from a folder containing files with acoustic data
- DSEW = the "Study" folder where the PepFile is saved
- c1 = the subfolder where the conversational sample with acoustic data is saved
- DSEW01 = The part of the PepFile name that designates the participant (in this example, the PepFile name includes the study name, DSEW, and an assigned participant number, 01)
- -c1 = indicates that the PepFile source is the conversational sample. Other MSAP sources in this PepFile List example include the CWT, EST, GF, LST, MWT, etc; they are listed alphabetically in the *.pfl
- _1 = signifies an in-house convention at the Phonology Project which is used when a file is copied from the perceptual PepFile directory to the acoustic directory. This is optional and depends on how your PepFile storage is organized.
- CT = letters preceding the second acoustic symbol "\$" are the initials of the acoustic analyst (an in-house convention at the Phonology Project) responsible for the acoustic data. These initials are optionally included when the acoustic PepFile is saved.
- \$ = signifies that the PepFile includes acoustic data

PFL Sample 1 - Single Participant

\$DSEW\c1\DSEW01-c1_1CT\$
\$DSEW\c1\DSEW01-c1_1CT\$*CS24
\$DSEW\CWT\DSEW01-CWT_1CT\$
\$DSEW\EST\DSEW01-EST_1CT\$
\$DSEW\GF\DSEW01-GF_1CT\$
\$DSEW\LST\DSEW01-LST_1CT\$
\$DSEW\MWT1;MWT2\DSEW01-MWT2_1CT\$
\$DSEW\RST\DSEW01-RST_1CT\$
\$DSEW\SVT\DSEW01-SVT_1CT\$
\$DSEW\VT1\DSEW01-VT1_1CT\$
\$DSEW\VT2\DSEW01-VT2_1HK\$
\$DSEW\VT1\DSEW01-VT1_1CT\$ * \$DSEW\VT2\DSEW01-VT2_1HK\$
#DSEW\DSEW01-SPT
#DSEW\DSEW01-SRT
#DSEW\DSEW01-VT3

PepFile List Sample 2: This *.pfl contains PepFiles for multiple participants (e.g., DSEW01; DSEW03; DSEW05), multiple MSAP sources (although only one of these sources is used for some analyses), and PepFiles with both perceptual and acoustic data. Again, no age designations are specified in this example. If your analyses include z-score outputs, and the participants' ages in your *.pfl differ from each other, use separate age designations for the participants (e.g., *3-4S, *14-15S) following the instructions above.

PFL Sample 2 - Multiple Participants

```
$DSEW\c1\DSEW01-c1_1CT$
$DSEW\c1\DSEW01-c1_1CT$*CS24
$DSEW\CWT\DSEW01-CWT_1CT$
$DSEW\EST\DSEW01-EST_1CT$
$DSEW\GF\DSEW01-GF_1CT$
$DSEW\LST\DSEW01-LST_1CT$
$DSEW\MWT1;MWT2\DSEW01-MWT2_1CT$
$DSEW\RST\DSEW01-RST_1CT$
$DSEW\SVT\DSEW01-SVT_1CT$
$DSEW\VT1\DSEW01-VT1_1CT$
$DSEW\VT2\DSEW01-VT2_1HK$
$DSEW\VT1\DSEW01-VT1_1CT$ * $DSEW\VT2\DSEW01-VT2_1HK$
#DSEW\DSEW01-SPT
#DSEW\DSEW01-SRT
#DSEW\DSEW01-VT3
$DSEW\c1\DSEW03-c1_1HK$
$DSEW\c1\DSEW03-c1_1HK$*CS24
$DSEW\CWT\DSEW03-CWT_1CT$
$DSEW\EST\DSEW03-EST_1CT$
$DSEW\GF\DSEW03-GF_1CT$
$DSEW\LST\DSEW03-LST_1CT$
$DSEW\MWT1;MWT2\DSEW03-MWT2_1CT$
$DSEW\RST\DSEW03-RST_1CT$
$DSEW\SVT\DSEW03-SVT_1CT$
$DSEW\VT1\DSEW03-VT1_1CT$
$DSEW\VT2\DSEW03-VT2_1HK$
$DSEW\VT1\DSEW03-VT1_1CT$ * $DSEW\VT2\DSEW03-VT2_1HK$
#DSEW\DSEW03-SPT
#DSEW\DSEW03-SRT
#DSEW\DSEW03-VT3
$DSEW\c1\DSEW05-c1_1HK$
$DSEW\c1\DSEW05-c1_1HK$*CS24
$DSEW\CWT\DSEW05-CWT_1HK$
$DSEW\EST\DSEW05-EST_1CT$
$DSEW\GF\DSEW05-GF_1CT$
$DSEW\LST\DSEW05-LST_1CT$
$DSEW\MWT1;MWT2\DSEW05-MWT1_1CT$
$DSEW\RST\DSEW05-RST_1HK$
$DSEW\SVT\DSEW05-SVT_1HK$
$DSEW\VT1\DSEW05-VT1_1HK$
$DSEW\VT2\DSEW05-VT2_1HK$
$DSEW\VT1\DSEW05-VT1_1HK$ * $DSEW\VT2\DSEW05-VT2_1HK$
#DSEW\DSEW05-SPT
#DSEW\DSEW05-SRT
#DSEW\DSEW05-VT3
```


PepFile List Sample 3: This *.pfl contains PepFiles for multiple participants, divided into 2 groups; multiple MSAP sources (although some analyses use data from only one source); and PepFiles with both perceptual and acoustic data.

As described previously, groups in a .pfl are separated by adding 4 dashes (----), optionally followed by one or more letters or numbers for each group title. (In this example, “S” and “C” are the titles used for the PepFile group with delayed speech and the control group, respectively.) The lines with the dashes and group titles are followed by a list of multiple source PepFiles for each participant. Although this example contains only 2 groups, remember that this format can be repeated for up to 4 groups.

PFL Sample 3 – Groups (up to 4 groups can be designated)

```
----S
$DSEW01DSEW01-c1_1CT$
$DSEW01DSEW01-c1_1CT$*CS24
$DSEWCWT0DSEW01-CWT_1CT$
$DSEW01DSEW01-EST_1CT$
$DSEW01DSEW01-GF_1CT$
$DSEW01DSEW01-LST_1CT$
$DSEWMWT1;MWT2DSEW01-MWT2_1CT$
$DSEWRST0DSEW01-RST_1CT$
$DSEWSVT0DSEW01-SVT_1CT$
$DSEWVT1DSEW01-VT1_1CT$
$DSEWVT2DSEW01-VT2_1HK$
$DSEWVT1DSEW01-VT1_1CT$ * $DSEWVT2DSEW01-VT2_1HK$
#DSEWDSEW01-SPT
#DSEWDSEW01-SRT
#DSEWDSEW01-VT3
$DSEW03DSEW03-c1_1HK$
$DSEW03DSEW03-c1_1HK$*CS24
$DSEWCWT0DSEW03-CWT_1CT$
$DSEW03DSEW03-EST_1CT$
$DSEW03DSEW03-GF_1CT$
$DSEW03DSEW03-LST_1CT$
$DSEWMWT1;MWT2DSEW03-MWT2_1CT$
$DSEWRST0DSEW03-RST_1CT$
$DSEWSVT0DSEW03-SVT_1CT$
$DSEWVT1DSEW03-VT1_1CT$
$DSEWVT2DSEW03-VT2_1HK$
$DSEWVT1DSEW03-VT1_1CT$ * $DSEWVT2DSEW03-VT2_1HK$
#DSEWDSEW03-SPT
#DSEWDSEW03-SRT
#DSEWDSEW03-VT3
$DSEW05DSEW05-c1_1HK$
$DSEW05DSEW05-c1_1HK$*CS24
$DSEWCWT0DSEW05-CWT_1HK$
$DSEW05DSEW05-EST_1CT$
$DSEW05DSEW05-GF_1CT$
$DSEW05DSEW05-LST_1CT$
$DSEWMWT1;MWT2DSEW05-MWT2_1CT$
$DSEWRST0DSEW05-RST_1HK$
$DSEWSVT0DSEW05-SVT_1HK$
$DSEWVT1DSEW05-VT1_1HK$
$DSEWVT2DSEW05-VT2_1HK$
$DSEWVT1DSEW05-VT1_1HK$ * $DSEWVT2DSEW05-VT2_1HK$
#DSEWDSEW05-SPT
#DSEWDSEW05-SRT
#DSEWDSEW05-VT3
----C
$DSEW06DSEW06-c1_1HK$
$DSEW06DSEW06-c1_1HK$*CS24
$DSEWCWT0DSEW06-CWT_1CT$
$DSEW06DSEW06-EST_1CT$
$DSEW06DSEW06-GF_1CT$
$DSEW06DSEW06-LST_1CT$
$DSEWMWT1;MWT2DSEW06-MWT2_1CT$
$DSEWRST0DSEW06-RST_1CT$
$DSEWSVT0DSEW06-SVT_1CT$
$DSEWVT1DSEW06-VT1_1CT$
$DSEWVT2DSEW06-VT2_1CT$
$DSEWVT1DSEW06-VT1_1CT$ * $DSEWVT2DSEW06-VT2_1CT$
#DSEWDSEW06-SRT
```

PepFile List Sample 4: This *.pfl example contains PepFiles for multiple participants divided into two groups (labeled “H” and “C”), multiple MSAP sources, PepFiles with perceptual and acoustic data, and age comparisons and gender designations, used for z-score outputs.

PFL Sample 4 – Groups with age-gender match

```

----H
*16-17S
$DSEWlc1DSEW01-c1_1CT$
$DSEWlc1DSEW01-c1_1CT$*CS24
$DSEWlcWT1DSEW01-CWT_1CT$
$DSEWlcEST1DSEW01-EST_1CT$
$DSEWlcGF1DSEW01-GF_1CT$
$DSEWlcLST1DSEW01-LST_1CT$
$DSEWlcMWT1;MWT2DSEW01-MWT2_1CT$
$DSEWlcRST1DSEW01-RST_1CT$
$DSEWlcSVT1DSEW01-SVT_1CT$
$DSEWlcVT1DSEW01-VT1_1CT$
$DSEWlcVT2DSEW01-VT2_1HK$
$DSEWlcVT1DSEW01-VT1_1CT$ * $DSEWlcVT2DSEW01-VT2_1HK$
#DSEWlcDSEW01-SPT
#DSEWlcDSEW01-SRT
#DSEWlcDSEW01-VT3
*13-14S
$DSEWlc1DSEW03-c1_1HK$
$DSEWlc1DSEW03-c1_1HK$*CS24
$DSEWlcWT1DSEW03-CWT_1CT$
$DSEWlcEST1DSEW03-EST_1CT$
$DSEWlcGF1DSEW03-GF_1CT$
$DSEWlcLST1DSEW03-LST_1CT$
$DSEWlcMWT1;MWT2DSEW03-MWT2_1CT$
$DSEWlcRST1DSEW03-RST_1CT$
$DSEWlcSVT1DSEW03-SVT_1CT$
$DSEWlcVT1DSEW03-VT1_1CT$
$DSEWlcVT2DSEW03-VT2_1HK$
$DSEWlcVT1DSEW03-VT1_1CT$ * $DSEWlcVT2DSEW03-VT2_1HK$
#DSEWlcDSEW03-SPT
#DSEWlcDSEW03-SRT
#DSEWlcDSEW03-VT3
*10-11S
$DSEWlc1DSEW05-c1_1HK$
$DSEWlc1DSEW05-c1_1HK$*CS24
$DSEWlcWT1DSEW05-CWT_1HK$
$DSEWlcEST1DSEW05-EST_1CT$
$DSEWlcGF1DSEW05-GF_1CT$
$DSEWlcLST1DSEW05-LST_1CT$
$DSEWlcMWT1;MWT2DSEW05-MWT1_1CT$
$DSEWlcRST1DSEW05-RST_1HK$
$DSEWlcSVT1DSEW05-SVT_1HK$
$DSEWlcVT1DSEW05-VT1_1HK$
$DSEWlcVT2DSEW05-VT2_1HK$
$DSEWlcVT1DSEW05-VT1_1HK$ * $DSEWlcVT2DSEW05-VT2_1HK$
#DSEWlcDSEW05-SPT
#DSEWlcDSEW05-SRT
#DSEWlcDSEW05-VT3
----C
*11-12S
$DSEWlc1DSEW06-c1_1HK$
$DSEWlc1DSEW06-c1_1HK$*CS24
$DSEWlcWT1DSEW06-CWT_1CT$
$DSEWlcEST1DSEW06-EST_1CT$
$DSEWlcGF1DSEW06-GF_1CT$
$DSEWlcLST1DSEW06-LST_1CT$
$DSEWlcMWT1;MWT2DSEW06-MWT2_1CT$
$DSEWlcRST1DSEW06-RST_1CT$
$DSEWlcSVT1DSEW06-SVT_1CT$

```

Create a PEPPER Variable List

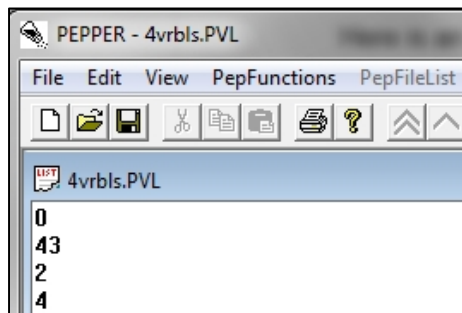
A PEPPER Variable List (*.pvl) is a list of variables from PEPPER's PepStore database that is created and used in conjunction with a PepFile List to retrieve PepStore data specified by the PEPPER user. To view all available variables in the PepStore database, first open a PepFile, either by going to *File > Open*, or, if a PepFile List is open, double-clicking on one of the lines containing a PepFile path. With a PepFile open, go to the *PepFunctions* menu and select *PepStore > Enter/Edit/View PepStore* from the drop-down menu. Use the scroll bars and/or the "Go to" function (type Control + G) to navigate the PepStore database.

Names/numbers for PepStore variables can also be identified by placing the question mark cursor over a value in a PepAnalyses speech profile output. Speech profiles are generated in PEPPER under the *PepAnalyses > PepAssess* menu.

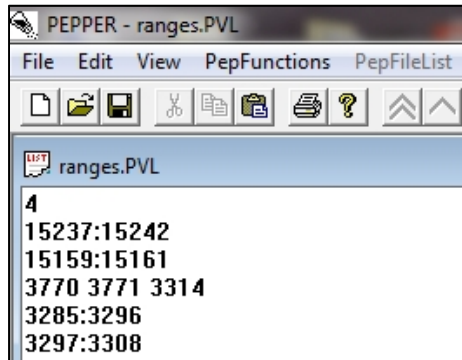
PepStore variable data may or may not be available for a given PepFile. This depends on what data have been manually entered and what data PEPPER has calculated and stored (the latter depending, in part, on the PepFile's source and whether or not PVSP and/or acoustic data are available). At any rate, use one or both of the methods described above to make a list of the variable names and/or numbers you wish to retrieve from the PepStore database. These variables are typed into the PEPPER Variable List document window. Over time you are likely to memorize certain variable numbers and names that are used repeatedly in your variable lists. We have found it helpful to create a Word document with a list of the most commonly retrieved variables (e.g., PepFile Name, Sex, Age, PCC, PVC, Intelligibility Index) for reference.

To create a PEPPER Variable List, begin by going to *File > New* in PEPPER. Highlight "PEPPER Variable List (*.pvl)" and either double-click on it or click OK to open a new PEPPER Variable List document window. Unfortunately, there is no PEPPER Variable List Generator in PEPPER, so the variable list must be manually typed using PepStore variable numbers and/or names. Use either the space key or the Enter key to separate individual variables or ranges of variable numbers. To specify a range of variable numbers, type a colon in between the beginning and ending variable numbers (e.g., 14208:14215). If your PEPPER Variable List consists of variables that are likely to be accessed frequently, save it for later use.

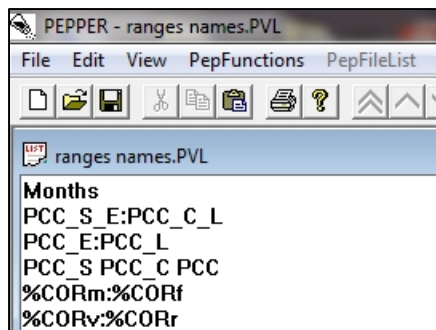
This *.pvl example contains 4 variables, separated by typing the Enter key:



This PEPPER Variable List example contains individual PepStore variables and ranges of variables, some separated by typing the Enter key, and others separated by typing the Space key:



Variable numbers are listed in the examples above. PepStore variable names can also be used:



As mentioned previously, the colon (:) is used to indicate a range of variables. Use :: to retrieve every other variable in a specified variable range, ::: to retrieve every third variable in a specified variable range, etc.

For some variables, the functions Z and/or STABLE can be used with a variable name or number. This allows you to retrieve z-scores and "Stability" scores for specific variables. For example:

```

Z(PVC)
-Z(RDI_E)
STABLE(VSQ)
Z(STABLE(MSCrnr))

```

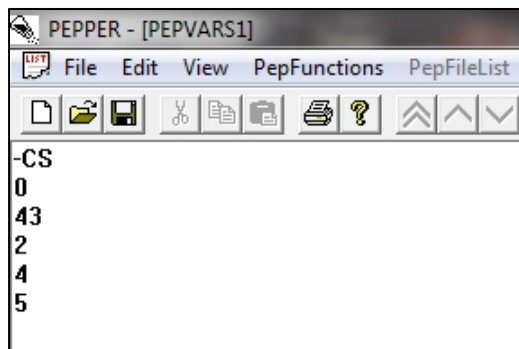
If you ask for a z-score value, you must specify a reference group if you would like to use one other than REF_COMPLETE, as discussed earlier in this guide.

A PEPPER Variable List can be constructed so that PEPPER only retrieves variables for a specified source type in a PepFile List. To do this, **first type a dash**, followed by the source abbreviation in the first line of the variable list document. The available sources/abbreviations are:

CS, CS24, AT, VT1, VT2, VT12, VT3, RST, CWT, MWT, SPT, LST, EST, SRT, SVT, All.

“All” combines all sources, except for VT12 and CS24 to avoid duplication.

Here is an example of a *.pvl specifying CS as the source:



Here, the data for variables 0 (Filename), 43 (Study), 2 (Sex), 4 (Age in months), and 5 (Age in Years rounded at 6 months) will be retrieved from the CS transcripts included the PepFile List. These data will not be retrieved for any other sources included in the PepFile List.

Use a PepFile List and a PEPPER Variable List to Retrieve PepStore Data

A PEPPER Variable list and a PEPPER File List can be used to retrieve database variables from PepStore and display them in tabular form. The table includes the retrieved variable names across the top with one row for each PepFile. *If you want the PepFile names to be displayed in the table, you must include variable 0 (FileName) in your PEPPER Variable List.* If the PepFile List contains more than one group of PepFiles, PEPPER adds a “Group” column to the left that contains the corresponding group name/number for each of the PepFiles.

To retrieve data from PepStore, complete the following steps:

1. Open or create a PepFile List.
2. Open or create a PEPPER Variable List.
3. Make sure the PepFile List is in the active window.
4. Go to *PepFunctions > PepStore* and click/select *Retrieve data from PepStore*.

The resulting table with the retrieved PepStore variables will be displayed. The table contents can be sorted by going to the *PepFileList* menu and selecting *Sort Table...* The table can be saved as a tab-delimited text file (*.txt) by using "Save As..." on the File menu; the .txt file can then be read into a spreadsheet or a statistics or database program for further analysis. The contents of the table can also be plotted using PepGraph (see [PEPPER Guide 8](#)).

If you are generating a "by person" table from a PepFile List that contains multiple sources (see first figure below), the variable names in the table are preceded by the source type followed by a colon. Empty cells indicate no source of that type was found. Suffix characters indicate that functions were used in the PEPPER Variable List (e.g., S indicates STABLE was used, and Z indicates that Z was used – see second figure below).

File Edit View PepFunctions PepFileList PepAnalyses PepAgree PepStat PepGraph Window Help																			
CS:FileName	CS:Study	CS:Sex	CS:Months	CS:YearsOld	CS:PCC	CWT:FileName	CWT:Study	CWT:Sex	CWT:Months	CWT:YearsOld	CWT:PCC	MWT:FileName	MWT:Study	MWT:Sex	MWT:Months	MWT:YearsOld	MWT:PCC		
JM01-c1	1CTS	MADSD	2	44	4	71.43 JM01-CWT	1JHS	MADSD	2	44	4	62.60 JM01-MWT1	1CTS	MADSD	2	44	4	49.52	
JM02-c1	1CTS	MADSD	2	42	4	72.96 JM02-CWT	1JHS	MADSD	2	42	4	54.81							
JM03-c1	1CTS	MADSD	1	44	4	81.96 JM03-CWT	1JHS	MADSD	1	44	4	66.92	JM03-MWT1	1CTS	MADSD	1	44	4	44.07
JM04-c1	1CTS	MADSD	2	45	4	72.82 JM04-CWT	1JHS	MADSD	2	45	4	64.93	JM04-MWT1	1CTS	MADSD	2	45	4	31.09
JM05-c1	1CTS	MADSD	2	40	3	62.30 JM05-CWT	1JHS	MADSD	2	40	3	59.23	JM05-MWT1	1CTS	MADSD	2	40	3	26.05
JM06-c1	1CTS	MADSD	1	62	5	42.29 JM06-CWT	1JHS	MADSD	1	62	5	41.98	JM06-MWT1	1CTS	MADSD	1	62	5	38.94
JM07-c1	1CTS	MADSD	2	53	4	80.30 JM07-CWT	1JHS	MADSD	2	53	4	83.33	JM07-MWT1	1CTS	MADSD	2	53	4	61.54
JM08-c1	1CTS	MADSD	2	62	5	76.21 JM08-CWT	1JHS	MADSD	2	62	5	75.56	JM08-MWT1	1CTS	MADSD	2	62	5	49.17
JM09-c1	1CTS	MADSD	2	67	6	75.24 JM09-CWT	1CTS	MADSD	2	67	6	76.52	JM09-MWT1	1CTS	MADSD	2	67	6	60.68
JM13-c1	1CTS	MADSD	2	45	4	73.58 JM13-CWT	1CTS	MADSD	2	45	4	56.72	JM13-MWT1	1CTS	MADSD	2	45	4	52.50
JM14-c1	1CTS	MADSD	1	53	4	60.06 JM14-CWT	1CTS	MADSD	1	53	4	44.70	JM14-MWT1	1CTS	MADSD	1	53	4	20.17
JM17-c1	1CTS	MADSD	2	49	4	59.58 JM17-CWT	1CTS	MADSD	2	49	4	47.37	JM17-MWT1	1CTS	MADSD	2	49	4	35.00
JM19-c1	1CTS	MADSD	2	70	6	73.11 JM19-CWT	1CTS	MADSD	2	70	6	82.96	JM19-MWT1	1CTS	MADSD	2	70	6	62.18
JM20-c1	1CTS	MADSD	1	65	5	78.99 JM20-CWT	1CTS	MADSD	1	65	5	82.96	JM20-MWT1	1CTS	MADSD	1	65	5	79.83
JM21-c1	1CTS	MADSD	1	79	7	82.78 JM21-CWT	1CTS	MADSD	1	79	7	81.82	JM21-MWT1	1CTS	MADSD	1	79	7	65.83
JM24-c1	1CTS	MADSD	1	41	3	71.50 JM24-CWT	1CTS	MADSD	1	41	3	48.51	JM24-MWT1	1CTS	MADSD	1	41	3	27.73
JM26-c1	1CTS	MADSD	2	65	5	67.59 JM26-CWT	1CTS	MADSD	2	65	5	67.67	JM26-MWT1	1CTS	MADSD	2	65	5	41.67
JM27-c1	1CTS	MADSD	2	56	5	76.54 JM27-CWT	1CTS	MADSD	2	56	5	78.03	JM27-MWT1	1CTS	MADSD	2	56	5	65.00
JM28-c1	1CTS	MADSD	2	67	6	80.39 JM28-CWT	1CTS	MADSD	2	67	6	78.13	JM28-MWT1	1CTS	MADSD	2	67	6	70.83
JM29-c1	1CTS	MADSD	2	53	4	75.62 JM29-CWT	1CTS	MADSD	2	53	4	53.79	JM29-MWT1	1CTS	MADSD	2	53	4	44.25
JM30-c1	1CTS	MADSD	1	50	4	69.37 JM30-CWT	1CTS	MADSD	1	50	4	49.62	JM30-MWT1	1CTS	MADSD	1	50	4	29.91
JM31-c1	1CTS	MADSD	2	65	5	78.25 JM31-CWT	1CTS	MADSD	2	65	5	64.12	JM31-MWT1	1CTS	MADSD	2	65	5	33.91
JM10-c1	1CTS	MADSD	1	42	4	61.67 JM10-CWT	1CTS	MADSD	1	42	4	46.97	JM10-MWT1	1CTS	MADSD	1	42	4	28.95
JM15-c1	1CTS	MADSD	1	53	4	42.07 JM15-CWT	1CTS	MADSD	1	53	4	17.91	*	*	*	*	*	*	*
JM16-c1	1CTS	MADSD	1	50	4	48.70 JM16-CWT	1CTS	MADSD	1	50	4	8.33	JM16-MWT1	1CTS	MADSD	1	50	4	5.08
JM18-c1	1CTS	MADSD	1	52	4	70.89 JM18-CWT	1CTS	MADSD	1	52	4	63.16	JM18-MWT1	1CTS	MADSD	1	52	4	48.72
JM32-c1	1CTS	MADSD	1	46	4	71.22 JM32-CWT	1CTS	MADSD	1	46	4	77.69	JM32-MWT1	1CTS	MADSD	1	46	4	63.48
JM11-c1	1CTS	MADSD	1	52	4	47.46 JM11-CWT	1CTS	MADSD	1	52	4	35.38	JM11-MWT1	1CTS	MADSD	1	52	4	25.93

CS:FileName	CS:Study	CS:Sex	CS:Months	CS:YearsOld	CS:PCCZ
JM01-c1	1CTS	MADSD	2	44	-2.52
JM02-c1	1CTS	MADSD	2	42	-2.28
JM03-c1	1CTS	MADSD	1	44	-0.44
JM04-c1	1CTS	MADSD	2	45	-2.30
JM05-c1	1CTS	MADSD	2	40	-3.95
JM06-c1	1CTS	MADSD	1	62	-5.00
JM07-c1	1CTS	MADSD	2	53	-1.12
JM08-c1	1CTS	MADSD	2	62	-3.06
JM09-c1	1CTS	MADSD	2	67	-5.00
JM13-c1	1CTS	MADSD	2	45	-2.18
JM14-c1	1CTS	MADSD	1	53	-3.46
JM17-c1	1CTS	MADSD	2	49	-4.38
JM19-c1	1CTS	MADSD	2	70	-5.00
JM20-c1	1CTS	MADSD	1	65	-1.82
JM21-c1	1CTS	MADSD	1	79	-4.10
JM24-c1	1CTS	MADSD	1	41	-1.88
JM26-c1	1CTS	MADSD	2	65	-4.60
JM27-c1	1CTS	MADSD	2	56	-3.00
JM28-c1	1CTS	MADSD	2	67	-5.00
JM29-c1	1CTS	MADSD	2	53	-1.86
JM30-c1	1CTS	MADSD	1	50	-2.18
JM31-c1	1CTS	MADSD	2	65	-2.70
JM10-c1	1CTS	MADSD	1	42	-3.24
JM15-c1	1CTS	MADSD	1	53	-5.00
JM16-c1	1CTS	MADSD	1	50	-5.00
JM18-c1	1CTS	MADSD	1	52	-1.97
JM32-c1	1CTS	MADSD	1	46	-1.92
JM11-c1	1CTS	MADSD	1	52	-5.00

References

- Potter, N. L., Hall, S., Karlsson, H. B., Fourakis, M., Lohmeier, H. L., McSweeney, J. L., Tilkens, C. M., Wilson, D. L., & Shriberg, L. D. (2012). *Reference Data for the Madison Speech Assessment Protocol (MSAP): A Database of 150 Participants 3-to-18 Years of Age with Typical Speech*. (Tech. Rep. No. 18). Phonology Project, Waisman Center, University of Wisconsin-Madison.
- Scheer-Cohen, A. R., Holt, A. S., Karlsson, H. B., Mabie, H. L., McSweeney, J. L., Tilkens, C. M., & Shriberg, L. D. (2013). *Reference Data for the Madison Speech Assessment Protocol (MSAP): A Database of Fifty 20-to-80 year old Participants with Typical Speech*. (Tech. Rep. No. 20). Phonology Project, Waisman Center, University of Wisconsin-Madison.