Program for International Student Assessment (PISA) 2003
Electronic Codebook Quick Guide

1. PISA 2003 Electronic Codebook

The Electronic Codebook (ECB) software tool enables analysts to review and extract United States PISA 2003 data. With this ECB software tool, an analyst can perform the following actions:

- Search the names and labels of variables in the PISA 2003 national data file catalog;
- Examine the unweighted response categories, frequencies, and percentages of responses for one or more catalog variables;
- Create a list of variables to be extracted from the catalog (taglist), save the list for later use, recall a previously saved taglist, print the list as a codebook, or taglist; and
- Automatically generate SAS and SPSS programs to extract selected variables from the whole data set or for a subset of defined cases.

The ECB software tool only works on personal computers running a Windows-based environment (Windows 95 or higher). It will not run with other computer operating systems, such as Macintosh and Linux. The ECB software tool is included on this CD-ROM along with the national data files (in ASCII format) and the PISA 2003 Data Analysis User's Guide.

2. PISA 2003 Electronic Codebook Tutorial

This tutorial provides specific directions for using PISA 2003 Electronic Codebook software tool.

2.1 Installation of Electronic Codebook and Data Files

The installation of the ECB has two parts: the ECB itself; and the raw data files. The raw data files are in ASCII format and can be accessed independently of the ECB. The disk space needed to install the ECB and raw data files varies according to what the user selects to install. For example:

Full installation	23 MB Required
Full installation of ECB	18 MB Required
Full installation of data files and documentation	5 MB Required

To install the ECB:

1. Select DOWNLOAD DATA from the HOME window.
2. Once in the DOWNLOAD DATA window, select ELECTRONIC CODEBOOK.
3. InstallShield will automatically start. Follow all prompts from within InstallShield.
4. Wait for the screen to display **"Setup is Complete."**
5. Click OK to end installation.
6. The ECB is ready to run.

The raw data files and programs may be accessed by selecting the DOWNLOAD DATA button from the HOME window.

To install the raw data and programs:

1. Select DOWNLOAD DATA from the HOME window.
2. Once in the DOWNLOAD DATA window, select the DATA FILES button.
3. The data files are in a self-extracting zip file. The installation process prompts the user to unzip the data files to a directory.
4. Enter a destination drive or accept the default drive and click UNZIP.
5. Wait for the screen to display a dialog box indicating that the files have been successfully unzipped.

6. Click OK to end installation, and then click CLOSE.

7. The data files are installed.

Note that the directories and subdirectories are created by the program.

Also included are SAS and SPSS macro files to assist users in statistical analysis. These macros are described in Chapter 5 of the User's Guide on this CD. They may be accessed by selecting the DOWNLOAD DATA button from the HOME window.

To install the macro files:

1. Select DOWNLOAD DATA from the HOME window.

2. Once in the DOWNLOAD DATA window, select the SAS MACROS button or the SPSS MACROS button.

3. The macros are in a self-extracting zip file. The installation process prompts the user to unzip the data files to a directory.

4. Enter a destination drive or accept the default drive and click UNZIP.

5. Wait for the screen to display dialog box indicating that the files have been successfully unzipped.

6. Click OK to end installation, and then click CLOSE.

7. The data files are installed.

Note that the directories and subdirectories are created by the program.

To create a shortcut, before closing the ECB folder move any or all icons onto the window by:

1. Selecting any or all icons;

2. Pressing the Control key; and

3. Dragging the icon to the desktop using the mouse.

2.2 Reading the Quick Guide and User's Guide

The Quick Guide and User's Guide are in Portable Document Format (PDF). The user will need Adobe Acrobat Reader to read this type of format. The program will check if you have Acrobat Reader available and will direct the user to load the program if it is not already installed on the machine. Users who have an older version of Acrobat Reader may install the latest version by selecting the ACROBAT READER button on the VIEW/DOWNLOAD REPORTS page.

2.3 Downloading the Quick Guide and User's Guide

The user may download any of these files once they have been opened to view. To download any of these files, go to the **File menu**, select **Save A Copy** from the drop-down list in the Acrobat Reader window menu, and save the document to any directory.

2.4 Starting the ECB

1. From the desktop, click on the **Start** button, select **All Programs**, and click on **Electronic Codebook.** Double clicking on the Electronic Codebook icon on the desktop will also invoke the software.

2. After the initial splash-screen appears, the **Select Catalog** dialog box will appear (Figure 1). Highlight the catalog (data file) to examine by clicking the desired catalog. Click the **OK** button.

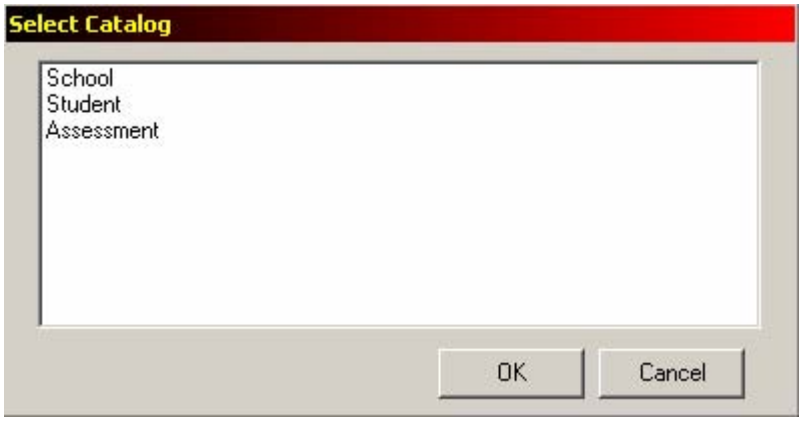

Figure 1. Select catalog dialog box

3. The **Main ECB screen** now appears (Figure 2). The Variable List comprises the left part of the screen, while the Working Taglist comprises the right part of the screen. The Title Bar sits on top of the screen, while the Menu Bar sits underneath the Title Bar.

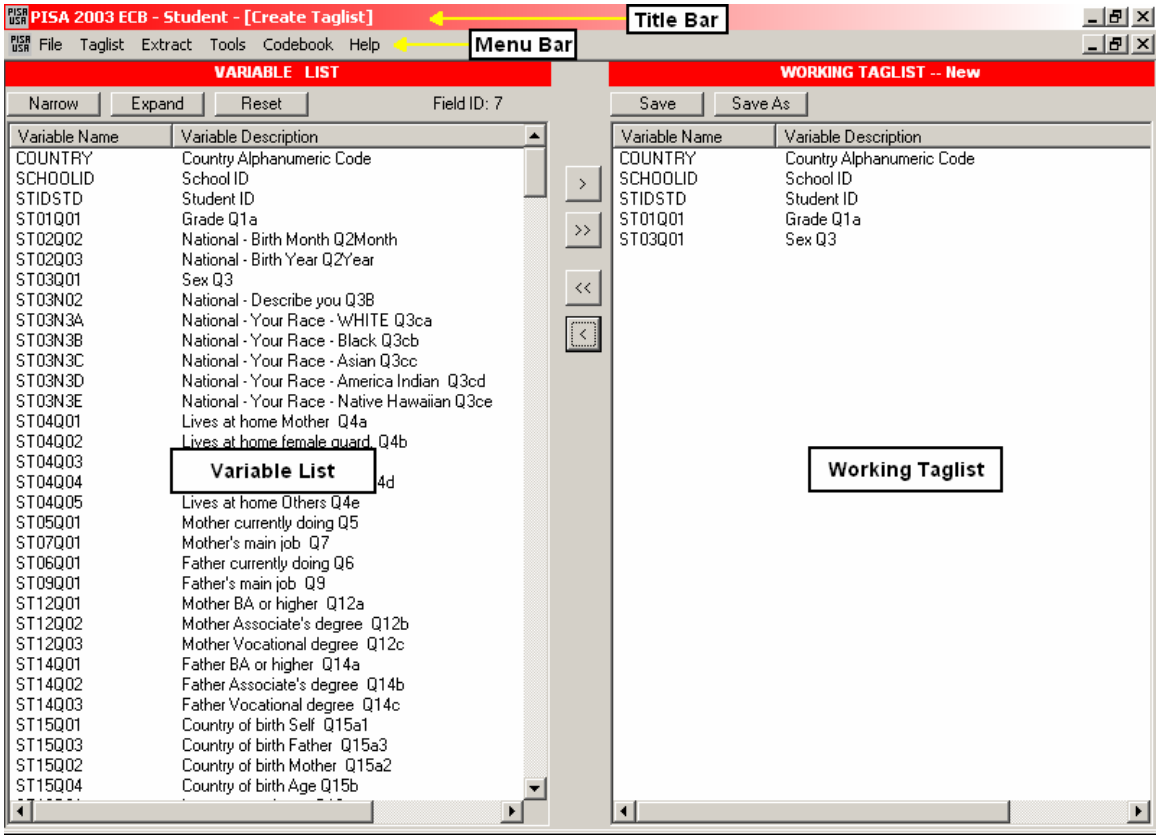

Figure 2. Main ECB Screen

2.5 Main ECB Screen

The ***Variable List*** appears on the left half of the Main ECB screen. It displays all variables for the catalog. Besides the variable names, the list also displays a brief description of the variables. From the variable list, an analyst can view codebook information for a variable, narrow or expand the variable list, or tag variables for extraction.

The ***Working Taglist*** appears on the right half of the Main ECB screen. It displays a list of variables that are currently selected (tagged) for extraction. The initial working taglist consists of a set of required variables for that catalog. Analysts may alter the working taglist by adding and dropping variables from the variable list, but they may not drop (untag) required variables. Required variables are variables that are necessary in most analyses. These would include the identification variables and sampling variables such as weights and replicate weights. From the working taglist, an analyst can view codebook information for a tagged variable, delete variables from the taglist, use predefined taglists, view codebook information for a taglist, and save taglists.

The ***Title Bar*** is the horizontal bar located at the top of the Main ECB screen. Common to all Windows-based programs, it gives the name of the application.

The ***Menu Bar*** lies underneath the title bar. The bar contains a series of pull-down menus (File, Taglist, Extract, Tools, Codebook, and Help). Selecting items from the pull-down menus provide access to the action commands available in the ECB.

To access the menus, follow these steps:

1. Point to an item on the menu bar and click.

2. Click on a command from the drop-down list.

Keystrokes can also be used to access menu bar items. All of the menus have one letter underlined; this letter is the hot key. Pressing <ALT> and the underlined letter at the same time opens that menu. Within the menu, use the arrow keys to move to menu items. Press the up and down arrows to move to the desired command and press <ENTER>. An item that appears in dimmed print is not available for the current screen.

2.6 Variable List Functions

2.6.1 Viewing Codebook Information for a Variable

To view codebook information for a variable, follow these steps:

1. Scroll through the variable list until the desired variable is found.

2. Click on the variable name to highlight it. The variable name is the only active field in the window. No action will be taken by clicking on the variable description.

3. Press <ENTER> or double-click on the highlighted variable name.

4. The **Variable Quick View** window opens, containing the codebook information for the highlighted variable (Figure 3).

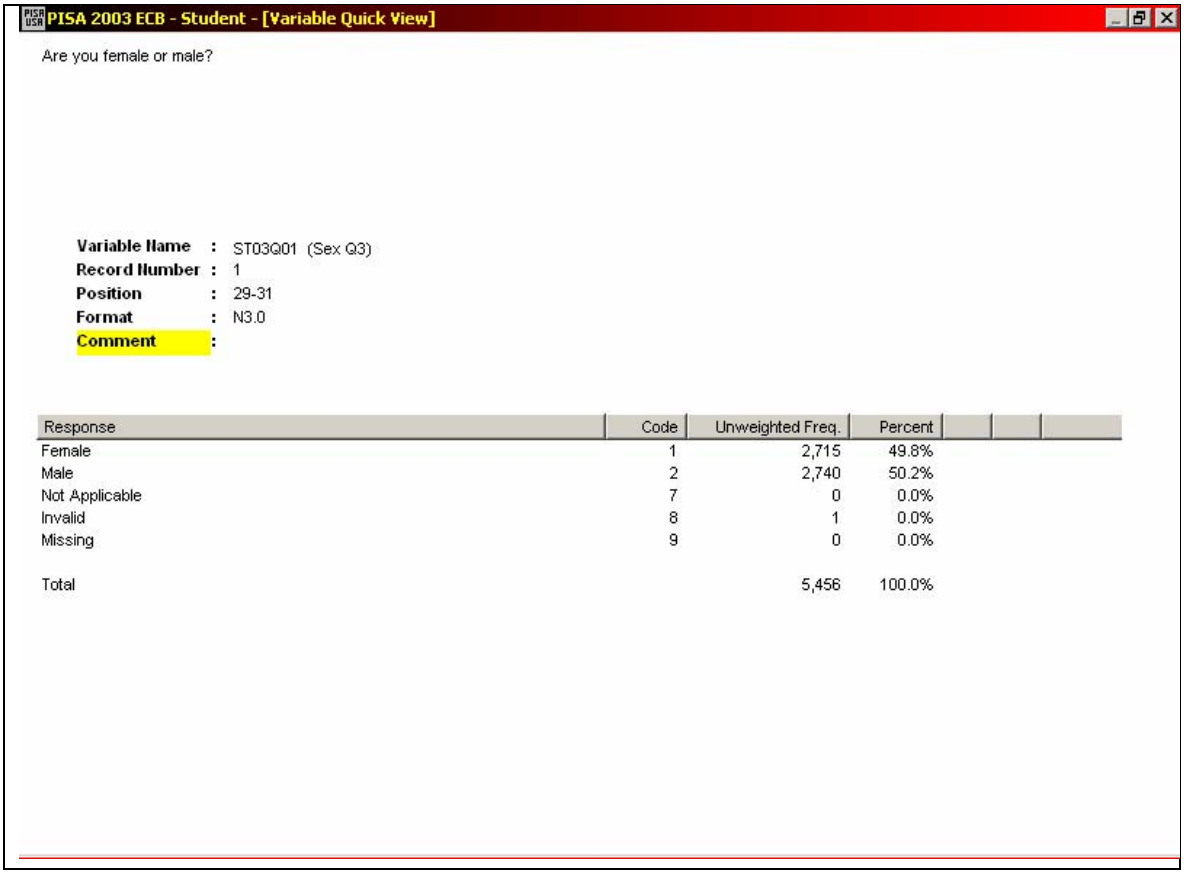

Figure 3. Variable Quick View

Information displayed in Variable Quick View window include the variable name and label, any question number and wording associated with the variable, the record number, position, and format of the variable on the data file, and any comment fields. The Variable Quick View window also displays values of discrete variables, ranges for continuous variables, unweighted frequencies, and unweighted percentage distributions.

5. To close the Variable Quick View window, click on the **X** button in the upper right-hand corner of the window. The Main ECB screen will reappear.

2.6.2 Narrowing or Expanding the Variable List

To narrow the list of variables to include only variables that contain a specific keyword, follow these steps:

1. Click the **Narrow** button under the menu bar. The **Narrow Text** dialog box will appear (Figure 4).

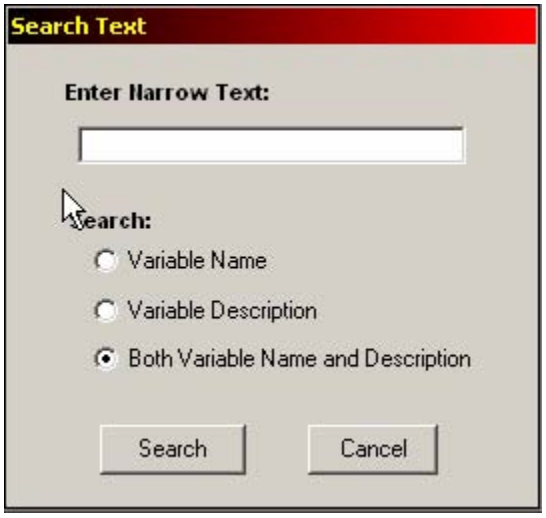

Figure 4. Narrow Text dialog box

2. Type the keyword in the text box underneath "**Enter Narrow Text**."

3. Click the circle beside **Variable Name**, **Variable Description**, or **Both Variable Name and Description** to specify where to search for the keyword.

4. Click the **Search** button.

To add to the list of variables any catalog variables that contain a specific keyword, follow these steps:

1. Click the **Expand** button under the menu bar. The **Expand Text** dialog box will appear (Figure 5).

Figure 5. Expand Text dialog box

2. Type the keyword in the text box underneath "**Enter Expand Text**."

3. Click the circle beside **Variable Name**, **Variable Description**, or **Both Variable Name and Description** to specify where to search for the keyword.

4. Click the **Search** button.

Because the initial variable list contains all variables for a catalog, selecting the Expand option is not necessary unless the original variable list has been narrowed. Note that altering the variable list has no effect on the working taglist.

Clicking the **Reset** button under the menu bar refreshes the variable list to show all catalog variables.

If a keyword specified in the search to narrow or expand the variable list does not appear in any of the catalog variable name and/or descriptions, the **No Matches Found** message box will appear and the variable list will disappear from the screen (Figure 6). Simply click the **OK** button, then the **Reset** button to retrieve all the catalog variables.

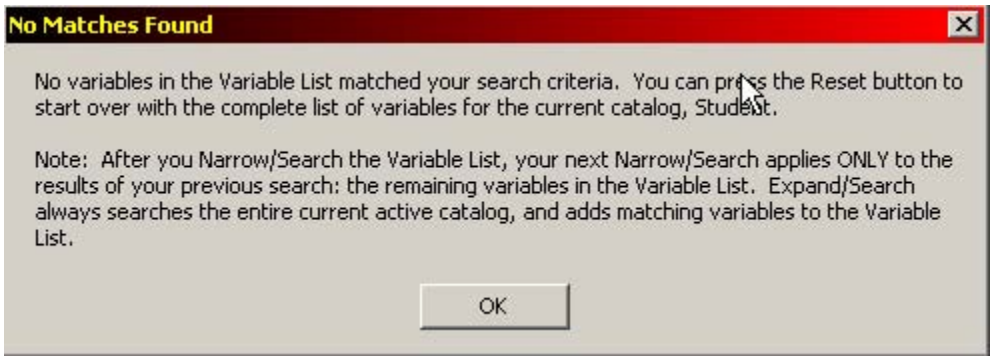

Figure 6. No Matches Found message box

2.7 Creating a Taglist

2.7.1 Adding Variables to a Taglist

While browsing the variable list, a variable can be selected for a taglist in the following ways:

1. To tag one or more variables, highlight the variables in the variable list. Click the **>** button on the vertical bar that separates the variable list and working taglist.

2. To tag all of the variables at one time, click the **>>** button. A prompt will appear. Click OK.

2.7.2 Deleting Variables from the Working Taglist

A variable can be deleted (untagged) from the working taglist in the following ways:

1. To untag one or more variables, highlight the variables in the working taglist. Click the < button.

   Note that each catalog contains a set of required variables for extraction. If one of these required variables is selected for deletion from the working taglist, the Required Variable message box will appear (Figure 7). Click **OK** to clear the message box and return to the working taglist.

Figure 7. Untag Variables message box

2. To untag all of the non-required variables at one time, click the << button.

2.7.3 User-defined Taglists

To aid analysts, one or more taglists may have been defined by the user for each catalog and saved for later use. These taglists can be accessed from the **Taglist** menu on the menu bar.

Select the **Add** command from the Taglist menu to expand the working taglist with additional variables from a user-defined taglist. A dialog box containing all user-defined taglists associated with the catalog will appear. Click on the desired taglist name, and press the **OK** button to start the merge the two taglists. Additional taglists may be added, but they must be added one taglist at a time.

Select the **Open** command from the Taglist menu to replace the current working taglist with a previous user-defined taglist. A prompt to save the current working taglist will appear; see the **Saving Taglists** section for more information about saving taglists. All previously tagged variables, except for the required variables, will disappear from the working taglist. A dialog box containing all predefined and user-defined taglists associated with that catalog will appear. Click on the desired taglist name, and press the **OK** button. The variables from the highlighted taglist will appear in the working taglist.

Select the **New** command from the Taglist menu to return the working taglist to its original state, eliminating all catalog variables except the required variables. If the current working taglist has been modified, a prompt to save the current working taglist will appear; see the **Saving Taglists** section for more information about saving taglists.

Select the **Delete** command from the Taglist menu to remove any user-defined taglists. A dialog box containing all user-defined taglists associated with that catalog will appear. Click on the

desired taglist name, and press the **OK** button to delete the list. A message box will appear to verify permanent deletion of the taglist. Press the **Yes** button to delete the taglist, or press the **No** button to keep the taglist. If there are no user-defined taglists associated with the catalog, an error message box will appear. Click **OK** to get rid of the message box. Note that predefined taglists can not be deleted.

2.7.4 Viewing Codebook Information for a Taglist

To view a codebook for the current working taglist, follow these steps:

1. Select the **Codebook** menu from the menu bar.

2. Choose the **View** command from the menu. A View Codebook screen will appear (Figure 8).

The View Codebook screen has a toolbar at the top. Use the arrow icons on this toolbar to move through the codebook. Click the right arrow to move to the next codebook page, click on the left arrow to move to the previous codebook page. Click the arrow icons containing a vertical line to move either to the first page (left arrow) or last page (right arrow) of the codebook.

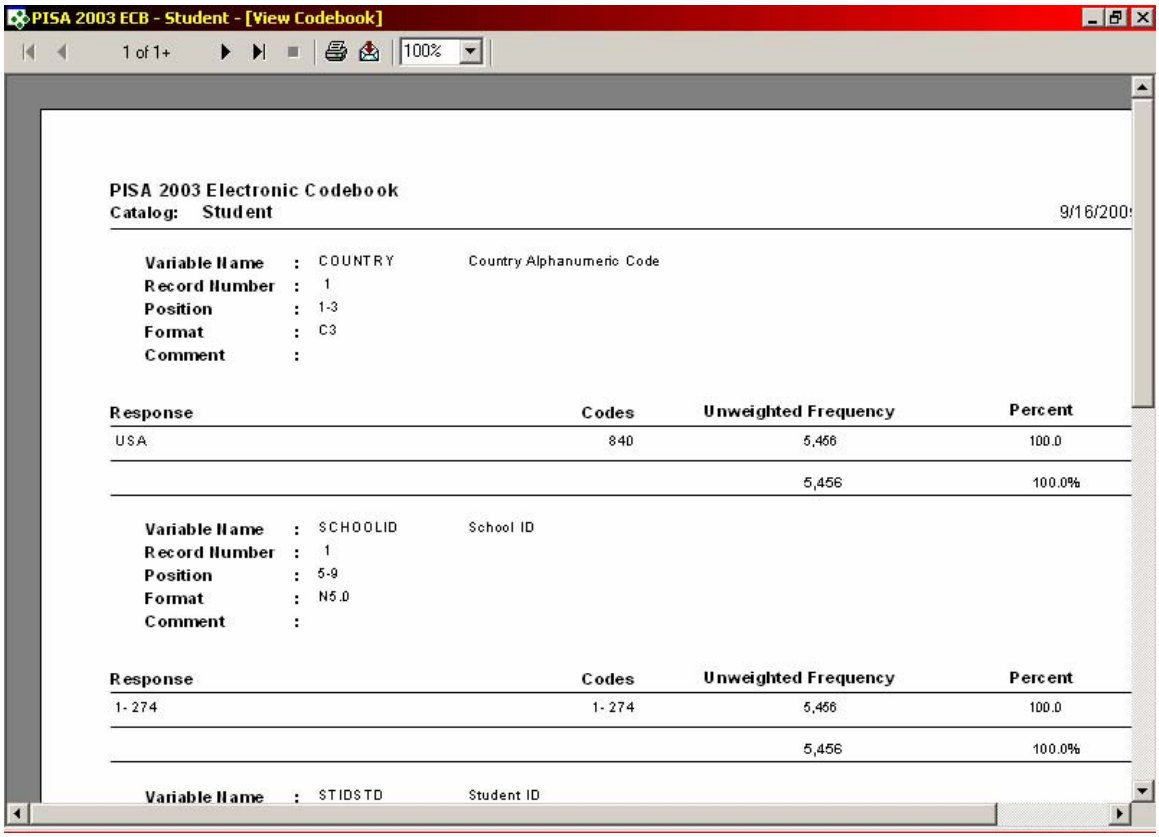

Figure 8. View Codebook screen

The numbers between the arrow buttons on the toolbar are page counters. If a "+" follows the page number, there are more pages to be seen in the codebook. On the last page of the codebook, the plus sign disappears, and the number of pages in the current codebook will be displayed. The stop icon (the button with the black square on it) is active when loading tagged items for viewing codebook information, when paging through the codebook, and when exporting the codebook. The scroll bar at the far right of the screen allows you to scroll the current page of the codebook, but it does not scroll from page to page. The arrow keys on the keyboard can also be used to scroll up or down the current page.

Information displayed in the View Codebook screen includes the variable name and label, any question number and wording associated with the variable, the record number, position, and format of the variable on the data file, and any comments in the comment fields. Like the Variable Quick View, the View Codebook screen also displays values of discrete variables, ranges for continuous variables, unweighted frequencies, and unweighted distributions.

Icons for printing and exporting are also available on the menu bar, as is a drop-down box for zooming in and out of the codebook view.

Click the Print icon (the button with the printer image) to send the displayed codebook to the default printer. The Print dialog box then will appear. Select the **Print Range** and number of **Copies** required, then click on the **OK** button to print the codebook.

Click the Export icon (the button with the envelope image) to export the displayed codebook in a format that can be read by another software application. The Export dialog box then will appear. The codebook can be exported to one of the three format choices available on the screen. Selecting Crystal Reports saves the data in a format that can be opened in Crystal Reports. The resulting file will have the extension *.rpt. Rich Text Format saves all formatting and converts it to instructions that other programs, including Microsoft compatible programs, can read and interpret. The resulting file will have the extension *.rtf. Word for Windows saves the document as a Word document; the file created will have the extension *.doc.

The only Destination option in the Export dialog box is to a disk file. Possible locations for the disk file cover floppy disk drives, read/write CD-ROM drives, hard drives, and any networked drives connected to your computer during the ECB session.

2.7.5 Saving Taglists

To save a new taglist, follow these steps:

1. Click on the **Taglist** menu from the menu bar, and then select the **Save As** command.

2. A **Save Taglist As** dialog box will appear that lists the names of user-defined taglists associated with the catalog (Figure 9). To replace a user-defined taglist with the current taglist, click on the name of the user defined taglist to be replaced. To save the taglist to a new name, enter the name in the Taglist Name box.

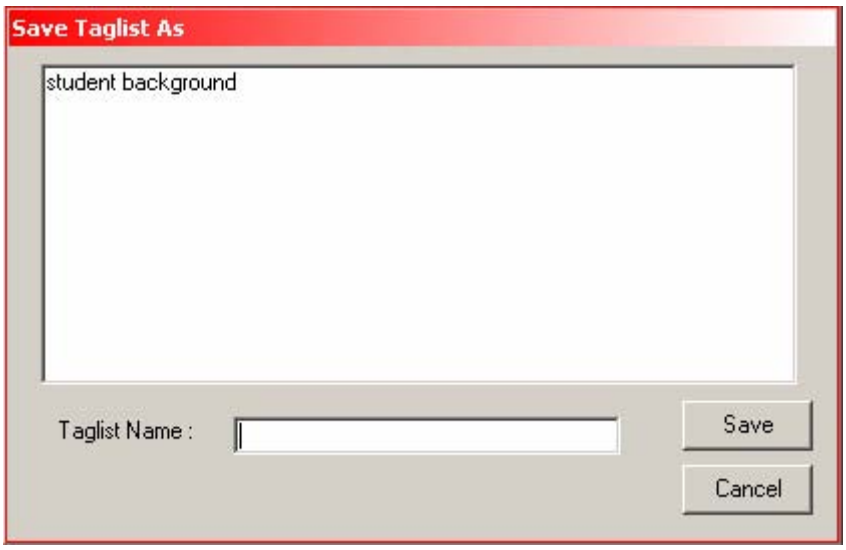

Figure 9. Save Taglist As dialog box

3. Press the <ENTER> key or click **Save** to save the taglist with the new name.

4. If a taglist with that name exists, a verification dialog box will appear (Figure 10). Click the **Yes** button only for replacement of the old taglist with the new taglist. Click the **No** button to keep the original taglist.

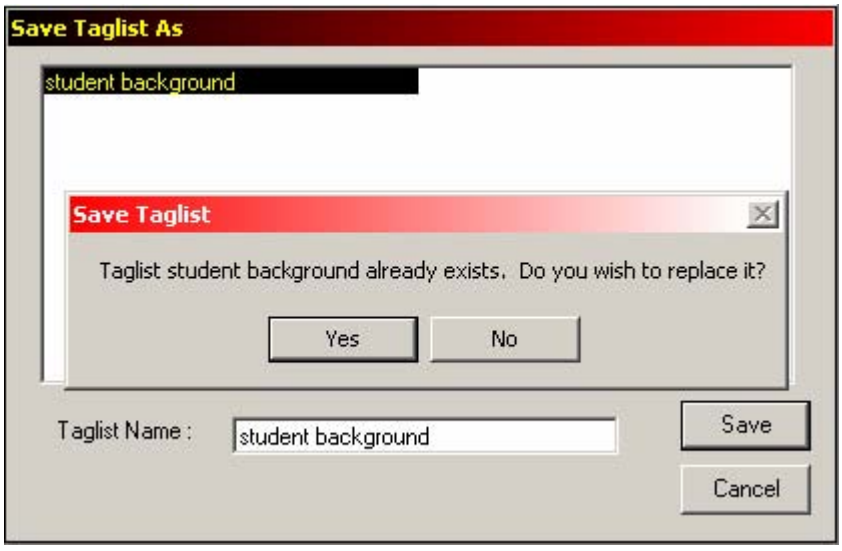

Figure 10. Replace Existing Taglist dialog box

To save changes to a user defined taglist currently residing in the working taglist, click on the **Save** button above the working taglist. It will save the modified taglist under the original user defined taglist's name. Clicking on the **Taglist** menu and selecting the **Save** command will accomplish the same task.

2.7.6 Importing and Exporting Taglists

The ECB is designed to save taglists to a default location but they may also be saved to a user-specified location using the **Export** option under the **Taglist** menu. To save a taglist to a specific location:

1. Click on the **Taglist** menu from the menu bar, and then select the **Export** command.

2. The **Export Working Taglist To** dialog box will next appear (Figure 11). Specify the name for the taglist file. The extension (*.tlt) will be added automatically. If a different folder is desired, select one from the Save In drop-down menu. A new folder can be created by clicking on the icon showing a folder with a star behind it.

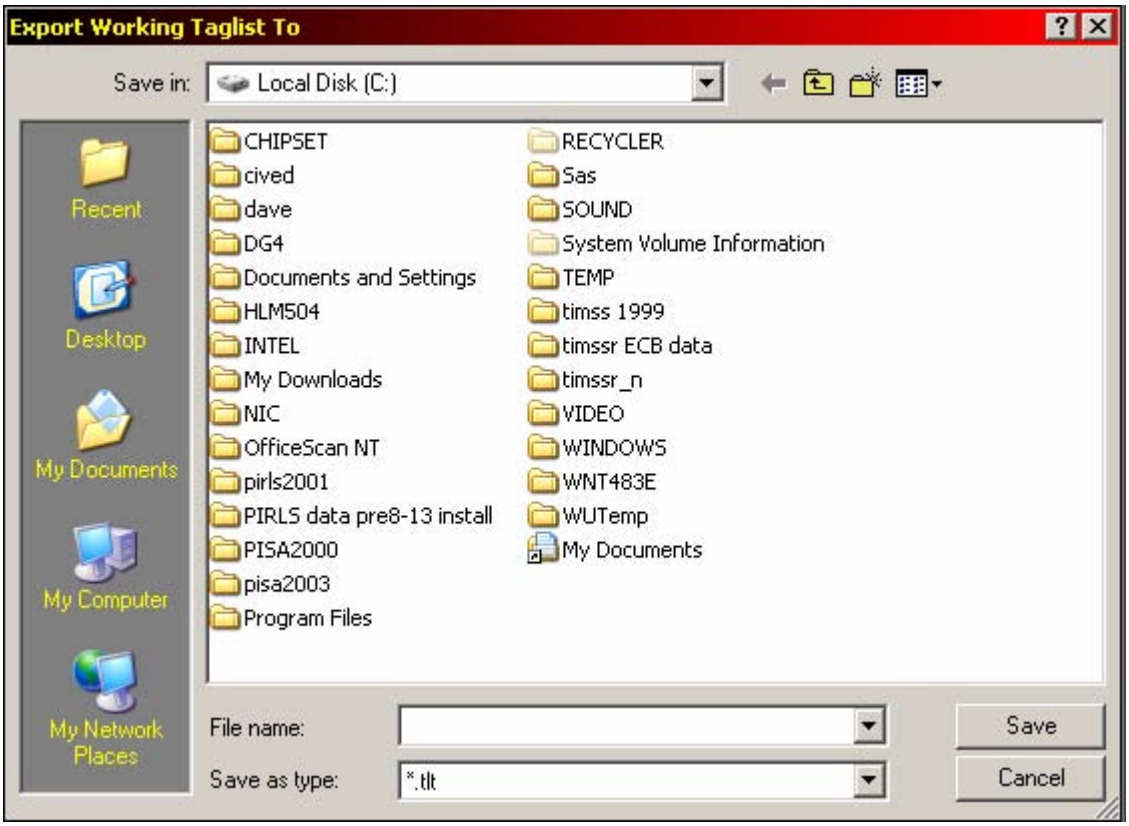

Figure 11. Export Working Taglist To dialog box

3. Enter a file name where the taglist will be stored in the File name dialog box.

4. Click on the **Save** button.

To retrieve a taglist that has been saved to a specific location:

1. Click on the **Taglist** menu from the menu bar, and then select the **Import** command.

2. The Import Taglist From dialog box will next appear. Select an existing file from the desired directory or specify the name for the taglist. If a different folder is desired, select one from the Look In drop-down menu.

3. Click on the **Open** button.

2.8 Extracting Data

The ECB software generates SAS and SPSS programming code necessary to extract the variables listed in the working taglist from the project's data files. The **Extract** menu on the menu bar accomplishes this task.

The **Extract** menu has two options. Selecting **SAS** will generate SAS program code to a file named by the analyst. The *.sas extension will be automatically added. Selecting **SPSS** will generate SPSS program code to a file named by the analyst, with the *.sps extension automatically added. Analysts will need SAS or SPSS software to run the extract programs. Reviewing an extract program before running it is recommended because it may need to be customized.

2.8.1 Creating an Extract Program File

To create an extract program file:

1. Click on the **Extract** menu on the menu bar.

2. Click on the statistical software package in which to create the extract program.

3. The Save As dialog box will next appear (Figure 12). Enter a file name for the extract program. The appropriate extension (*.sas for SAS programs, *.sps for SPSS) will be added automatically. Click on the **Save** button.

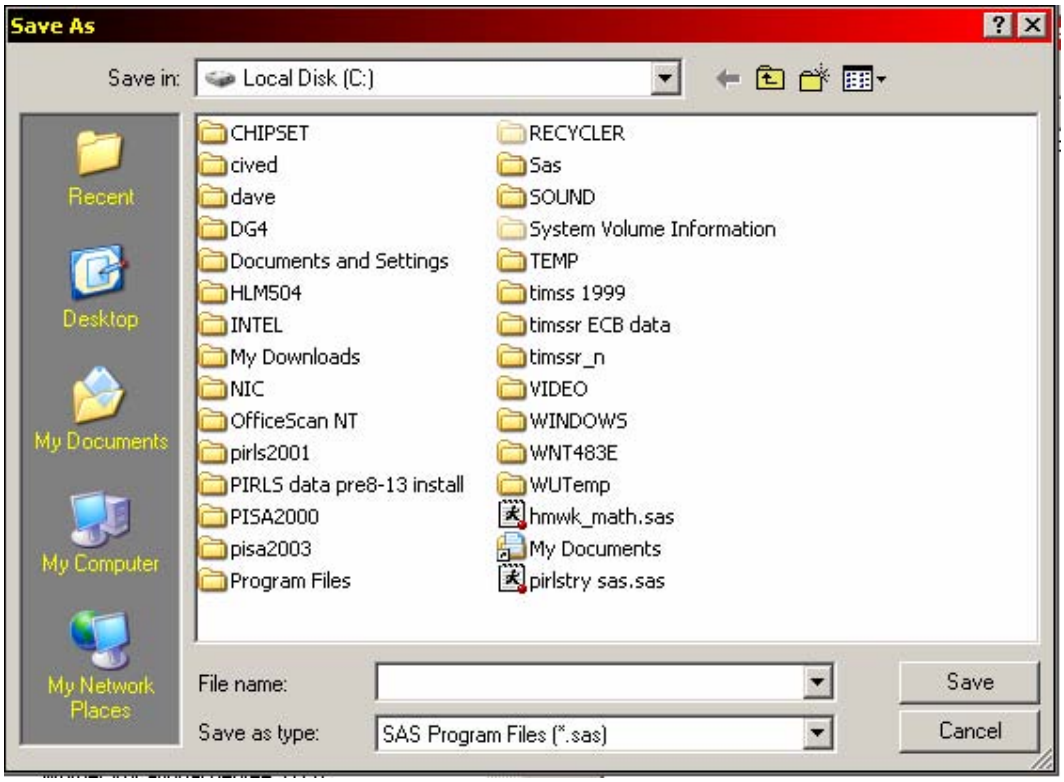

Figure 12. Extract Save As dialog box

4. If a file name that already exists is entered, a verification message box will appear (Figure 13). Click the **Yes** button to overwrite the existing file with the new file. Click the **No** button to prompt the input of a new name under which to save the file.

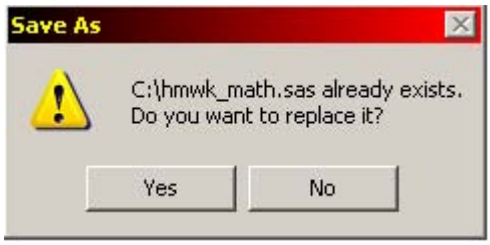

Figure 13. File already exists message box

5. The **Save Data File As** dialog box will next appear (Figure 14). Specify the name for the data file that will be created. The extension (*.sd2 for SAS data sets, and *.sav for SPSS data sets) will be added automatically. If a different folder for saved extract data files is desired, select one from the Save In drop-down menu. A new folder can be created by clicking on the icon showing a folder with a star behind it.

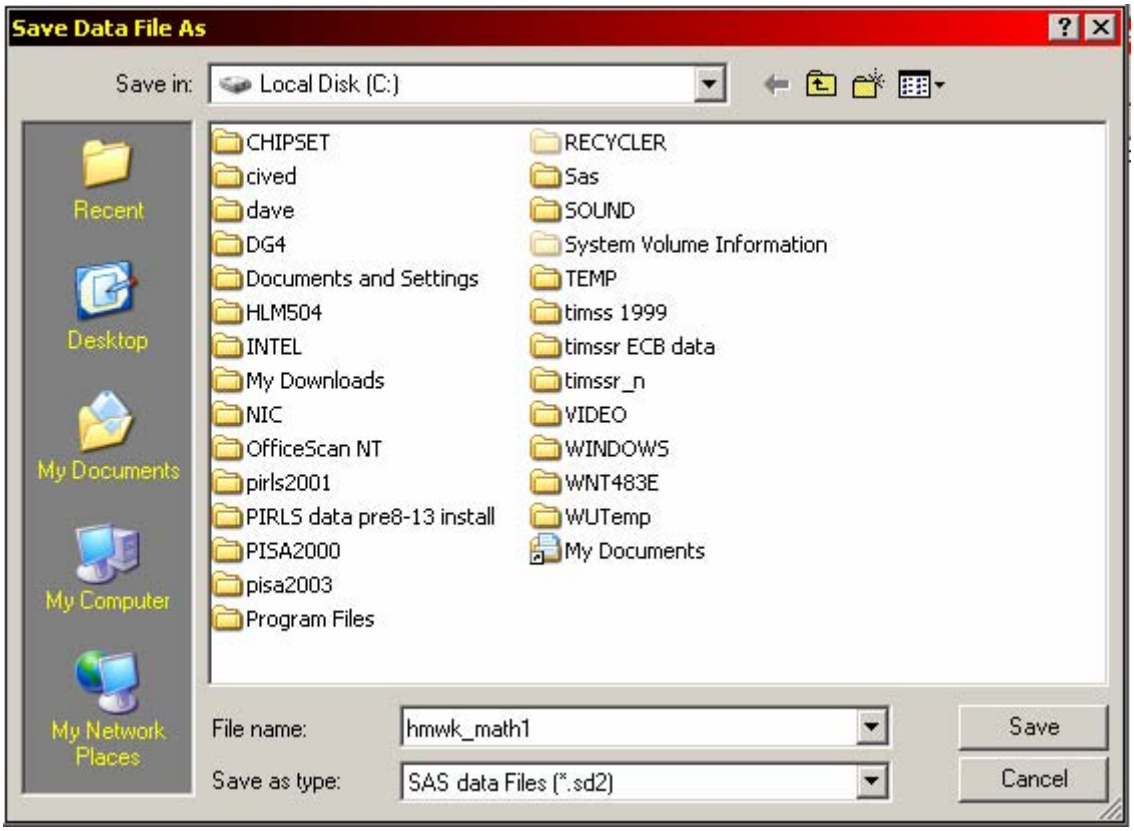

Figure 14. Save Data File As dialog box

6. Enter a file name where the extracted data will be stored in the **Save Data File As** dialog box. The default name for the data file is the name of the extract file. If another name is desired, enter it in the file name text box.

7. Click on the **Save** button.

2.8.2 Reviewing the Extract Program

It is recommended to review the generated SAS or SPSS program code before running it. Check that the line of code that defines the input data points to the data file's correct directory.

Check also that the data subsetting statements are correct. Code for generating frequencies and means are written in the program but "commented out." Remove the comment symbols to obtain that output.

It is easy to correct mistakes discovered after writing out or running the extract program if the working taglist was saved before exiting the ECB. Simply restart the ECB, select the appropriate catalog, open the saved taglist, then go through the extract process again writing out a new extract program.

2.9 Repair/Compact

The ECB program utilizes a relational database that sits behind the ECB windows and contains the information for all the catalogs and their variables. If many taglists are created and deleted on a regular basis, then the database will contain lingering references to old taglists that are no longer needed. Repairing and compacting of files allows the ECB program to "clean house" and make the database more efficient. It also decreases the size of the database, so space is conserved.

To repair and compact files:

1. Click on the **Tools** menu on the menu bar.

2. Select **Repair and Compact Database**.

3. The file repair and compact process will begin. As it runs, the ECB program will display an hourglass figure.

4. A confirmation message box will appear when the repair and compact process ends (Figure 15). Click the **OK** button to close the message box.

Figure 15. Repair and compact message box

2.10 Switching Catalogs

After completing work with one catalog, it is possible to access another catalog without quitting the ECB.

1. Click on the **File** menu on the menu bar.

2. Select the **Open Catalog** command. If the working taglist has not been saved, a Save Changes message box will appear. To save changes to the current working taglist, press the **Yes** button. Otherwise, press the **No** button. Pressing the **Cancel** button returns the Main ECB screen.

3. The Select Catalog screen will reappear. Choose another catalog with which to work and click OK.

2.11 Exiting the ECB Program

To exit the ECB program:

1. Click on the **File** menu on the menu bar.

2. Select the **Exit** command. If the working taglist has not been saved, a Save Changes message box will appear. To save changes to the current working taglist, press the **Yes** button. Otherwise, press the **No** button. Pressing the **Cancel** button returns the Main ECB screen.

Clicking on the square **X** button in the top right-hand corner of the Main ECB screen will also exit the ECB program.

2.12 A Sample ECB Session

2.12.1 Selecting Variables for Analysis from the ECB

The script below provides an example of a session with the PISA 2003 ECB software. In this example, a user wants to create a file of variables associated with students' mathematics achievement and time spent doing mathematics homework. The actions the user would perform are shown below in italics.

Select the PISA 2003 ECB by clicking the Start button and going to All Programs or double-click on the PISA 2003 ECB icon on the computer desktop.

The PISA 2003 ECB splash screen flashes on the computer screen. The Select Catalog screen then appears.

Select the Student catalog and click OK or Double-click on the Student catalog in the Select Catalog screen.

The variable list and initial working taglist associated with the PISA 2003 student catalog appear on the screen. The working taglist contains the variables required for all student catalog extracts.

Click on the Narrow button in the Variable List window.

Type the string HOMEWORK into the box, change the search option to Both Variable Name and Description, and click the Search button.

Three variables appear ST29Q01, ST33Q01 and RMHMWK . ST29Q01 asks how many hours the student spends doing all homework. ST33Q01 asks how many hours the student spends specifically on math homework. RMHMWK is a derived variable that measures the time a student spends doing math homework relative to other homework. The user decides to add ST33Q01 and RMHMWK to the taglist .

Highlight the variables ST33Q01 and RMHMWK by holding down the CNTL button and clicking on each variable. Next, click on the right arrow button (>) on the bar between the Variable List and Working Taglist windows.

The user knows that the student catalog also contains the plausible values variables for the mathematics achievement scores, but does not know the name of the variables. The user decides to search for this variable on the student catalog's variable list.

Click on the Expand button in the Variable List window.

Type the string PLAUSIBLE VALUE into the box, change the search option to Both Variable Name and Description, and click the Search button.

The ECB now searches all variable names and labels for the string PLAUSIBLE VALUE. Several plausible value variables appear in the variable list. These include the variables for the total mathematics scores, the mathematics subscales, science and reading. Note that the narrowed variable list does not affect the working taglist.

The user is interested in the total math score and so adds these plausible values to the working tag list.

Highlight the variables PV1MATH – PV5MATH in the Variable List window by pressing the Ctrl key and clicking on the variable names. (An alternative way of selecting a sequential chain of variables is to hold down the SHIFT key, select the first variable and the last the variable.)

Click on the right arrow button (>) on the bar between the Variable List and Working Taglist windows. The five plausible value variables have been added to the working taglist.

The user decides not to add any other variables to the working taglist. This set of variables, along with required variables initially in the taglist, will comprise the extract file. Since this set of variables may be needed in future analyses, the user saves the current working taglist to a user-defined taglist called HMWK_LIST.

Click on the Taglist menu on the menu bar, and click on the Save As option.

Type the new name HMWK_LIST into the Taglist Name box and click the Save button.

2.12.2 SAS Extract Code Generation

With the taglist saved, the user now wants to create an extract program from the taglist. The program will contain SAS statements that will extract only the currently tagged variables. The user wants to save these SAS program statements in a file named HMWK_MATH.SAS.

Click on the Extract menu on the menu bar, and click on the SAS option.

The Save As dialog box now appears.

Type the new name HMWK_MATH into the File name box, select the directory where the file should be saved, then click the Save button.

The SAS extract program will have the name HMWK_MATH.SAS in the specified directory. The Save Data File As dialog box now appears.

Click the Save button in the Save Data File As dialog box.

The SAS extract program will now create a SAS database called HMWK_MATH.SD2 that will store the variables the user selected in the working taglist.

With the SAS extract program written and saved, the user can now quit the ECB and run the SAS statistical software package. Using the program statements in HMWK_MATH.SAS, the software will extract a subset file of records and variables from the PISA 2003 national student data file. The user can also revise the SAS programming code to perform additional statistical analyses.

To quit the ECB, click the File menu on the menu bar, then click on the Exit option.

The user is now ready to run the extract code using the extracted variables from the ECB. Below is the extract code in SAS. A few lines of the code require editing before the extract program can be successfully run. These code lines are shown in **bold**. The required edits and explanations are indicated in *italics* below the code lines.

libname LIB 'C:\PISA 2003 ECB\';

The libname is assigned automatically by SAS with the directory path in which the program is saved. The libname LIB *may be changed to a different name if desired.*

filename in1 'C:\usa_stud.dat';

The filename *line points to the path were where the ASCII student data file has been saved. This initial code generated by the extract and may need to be changed to point to the directory that was specified when the data was saved from the self-extracting zip file on the CD-ROM. The default path would have been* C:\pisa2003\data\. *If the default path was chosen, the filename code would become:*

filename in1 'C:\pisa2003\data\usa_stud.dat';

```
footnote C:\PISA 2003 ECB\hmwk_math.sas';

proc format;
  value $country
    "840" = "USA"
  ;
  value StIDSch
    1- 274 = "1- 274"
  ;
  value StIDStd
    1- 5456 = "1- 5456"
  ;
  value ST0101F
    7 - 11 = "7 - 11"
```

```
    97 = "Not Applicable"
    98 = "Invalid"
    99 = "Missing"
  ;
  value ST0301F
    1 = "Female"
    2 = "Male"
    7 = "Not Applicable"
    8 = "Invalid"
    9 = "Missing"
  ;
  value ST3301F
    0 - 24 = "0 - 24"
    997 = "Not Applicable"
    998 = "Invalid"
    999 = "Mis"
  ;
  value RMHMWK
    0 - 1 = "0 - 1"
    997 = "Not Applicable"
    998 = "Invalid"
    999 = "Missing"
  ;
  value pv1matF
    177 - 797 = "177 - 797"
  ;
  value pv2matF
    181 - 750 = "181 - 750"
  ;
  value pv3matF
    183 - 803 = "183 - 803"
  ;
  value pv4matF
    147 - 773 = "147 - 773"
  ;
  value pv5matF
    142 - 762 = "142 - 762"
  ;

run;

data lib.hmwk_math;
  infile in1 lrecl=2662;
    input
  #1
    @1 COUNTRY $3.
    @5 SCHOOLID 5.
    @11 STIDSTD 5.
    @17 ST01Q01 3.
    @29 ST03Q01 3.
    @518 ST33Q01 8.
```

```
    @1121 RMHMWK 8.4
    @1413 PV1MATH 8.4
    @1422 PV2MATH 8.4
    @1431 PV3MATH 8.4
    @1440 PV4MATH 8.4
    @1449 PV5MATH 8.4
    ;


  label
    COUNTRY = "Country Alphanumeric Code"
    SCHOOLID = "School ID"
    STIDSTD = "Student ID"
    ST01Q01 = "Grade Q1a"
    ST03Q01 = "Sex Q3"
    ST33Q01 = "Hours Math  homework Q31a"
    RMHMWK = "Relative time spent on Maths homework"
    PV1MATH = "Plausible value in math"
    PV2MATH = "Plausible value in math"
    PV3MATH = "Plausible value in math"
    PV4MATH = "Plausible value in math"
    PV5MATH = "Plausible value in math"
    ;

/* format
    COUNTRY   $country.
    PV1MATH   pv1matF.
    PV2MATH   pv2matF.
    PV3MATH   pv3matF.
    PV4MATH   pv4matF.
    PV5MATH   pv5matF.
    RMHMWK   RMHMWK.
    ST01Q01   ST0101F.
    ST03Q01   ST0301F.
    ST33Q01   ST3301F.
    SCHOOLID   StIDSch.
    STIDSTD   StIDStd.
    ;
 */
```

To apply the formats defined in the PROC FORMAT statements the comment symbols (/*, */) *above and below the* format *statement line should be removed.*

```
run;

/*
proc contents;
run;

proc freq;
```

```
table
    COUNTRY
    SCHOOLID
    STIDSTD
    ST01Q01
    ST03Q01
;
run;


proc means;
var
    ST33Q01
    RMHMWK
    PV1MATH
    PV2MATH
    PV3MATH
    PV4MATH
    PV5MATH
;
run;
 */
```

As with the format *line above, to run the* PROC CONTENTS, PROC FREQ *and* PROC MEANS *statements here, remove the comment symbols* (/*, */). *Options to these statements or additional* PROC *statements may be added if desired. The SAS extract code is now ready to run.*

2.12.3 SPSS Code Generation

Users can also create an SPSS extract program. The program will contain SPSS statements that will extract only the currently tagged variables. The user wants to save these SPSS program statements in a file named HMWK_MATH.SPS.

Click on the Extract menu on the menu bar, and click on the SPSS option.

The Save As dialog box now appears.

Type the new name HMWK_MATH into the File name box, select the directory where the file should be saved, then click the Save button.

The SPSS extract program will have the name HMWK_MATH.SPS in the specified directory. The Save Data File As dialog box now appears.

Click the Save button in the Save Data File As dialog box.

The SPSS extract program will now create a SPSS database called HMWK_MATH.SAV that will store the variables the user selected in the working taglist.

With the SPSS extract program written and saved, the user can now quit the ECB and run the SPSS statistical software package. Using the program statements in HMWK_MATH.SPS, the software will extract a subset file of records and variables from the TIMSS 2003 national student data file. The user can also revise the SPSS programming code to perform additional statistical analyses.

To quit the ECB, click the File menu on the menu bar, then click on the Exit option.

The user is now ready to run the extract code using the extracted variables from the ECB. Below is the extract code in SPSS. A few lines of the code require editing before the extract program can be successfully run. These code lines are shown in **bold**. The required edits and explanations are indicated in *italics* below the code lines.

```
* C:\pisa2003 ECB\hmwk_math.sps
*
* SPSS program to create extract file
*
SET MORE=OFF/SCREEN=OFF.
```

FILE HANDLE FHAND /NAME='C:\usa_stud.dat' /LRECL=2662.

The FILE HANDLE *line points to the path were where the ASCII student data file has been saved. This initial code generated by the extract and needs to be changed to point to the directory specified when the data was saved from the self-extracting zip file on the CD-ROM. The default path would have been* C:\pisa2003\data\. *If the default path was chosen, the filename code would become:*

FILE HANDLE FHAND /NAME='C:\pisa2003\data\usa_stud.dat' /LRECL=2662.

```
DATA LIST FILE=FHAND TABLE
/1
  COUNTRY 1-3 (A)
  SCHOOLID 5-9
  STIDSTD 11-15
  ST01Q01 17-19
  ST03Q01 29-31
  ST33Q01 518-525
  RMHMWK 1121-1128  (4)
  PV1MATH 1413-1420  (4)
  PV2MATH 1422-1429  (4)
  PV3MATH 1431-1438  (4)
  PV4MATH 1440-1447  (4)
  PV5MATH 1449-1456  (4)
    .

  VARIABLE LABEL
    COUNTRY       "Country Alphanumeric Code"
    SCHOOLID      "School ID"
    STIDSTD       "Student ID"
    ST01Q01       "Grade Q1a"
```

```
    ST03Q01       "Sex Q3"
    ST33Q01       "Hours Math  homework Q31a"
    RMHMWK        "Relative time spent on Maths homework"
    PV1MATH       "Plausible value in math"
    PV2MATH       "Plausible value in math"
    PV3MATH       "Plausible value in math"
    PV4MATH       "Plausible value in math"
    PV5MATH       "Plausible value in math"
    .

VALUE LABELS
  / COUNTRY
    "840"  "USA"
  / SCHOOLID
    1- 274  "1- 274"
  / STIDSTD
    1- 5456  "1- 5456"
  / ST01Q01
    7 - 11  "7 - 11"
    97  "Not Applicable"
    98  "Invalid"
    99  "Missing"
  / ST03Q01
    1  "Female"
    2  "Male"
    7  "Not Applicable"
    8  "Invalid"
    9  "Missing"
  / ST33Q01
    0 - 24  "0 - 24"
    997  "Not Applicable"
    998  "Invalid"
    999  "Mis"
  / RMHMWK
    0 - 1  "0 - 1"
    997  "Not Applicable"
    998  "Invalid"
    999  "Missing"
  / PV1MATH
    177 - 797  "177 - 797"
  / PV2MATH
    181 - 750  "181 - 750"
  / PV3MATH
    183 - 803  "183 - 803"
  / PV4MATH
    147 - 773  "147 - 773"
  / PV5MATH
    142 - 762  "142 - 762"
  .

SAVE OUTFILE =  'C:\PISA 2003 ECB\hmwk_math.sav'.
```

This line writes out an SPSS data set that will be generated by the extract program. The default path for this data set is the location of the extract program. This may be changed as desired, for example, it may be that an SPSS folder has been created. The new code would be:

SAVE OUTFILE= 'C:\PISA 2003 ECB\SPSS\usa_stud.dat' /LRECL=2662.

DISPLAY DICTIONARY.

*** Frequencies /Variables =**
COUNTRY
SCHOOLID
STIDSTD
ST01Q01
ST03Q01
/MISSING=INCLUDE.

*** Descriptive VARIABLES=**
ST33Q01
RMHMWK
PV1MATH
PV2MATH
PV3MATH
PV4MATH
PV5MATH
.

The symbol '' in front of the Frequencies and Descriptive statements comments these statements out. This symbol needs to be removed from these lines. The SPSS extract code is now ready to run.*

3. Electronic Codebook (ECB) Troubleshooting Guide

What hardware and software requirements are needed to run the ECB software?

The Electronic Codebook (ECB) software is designed to run under Windows 95, Windows 98, Windows 2000 and Windows XP. The ECB alone, without the data files, requires approximately 18 MB (megabytes or million bytes) of available disk space on the hard drive. After being installed, the ECB can create and save personal taglists. These taglists will require minimal disk space. The ECB can also create SAS, and SPSS for Windows; these extract programs will require little disk space.

How do I uninstall/reinstall the ECB software from my computer?

Depending on the configuration of the computer it may be necessary to remove the software by finding the ECB setup executable in a subdirectory on the local disc. This will be located in **C:\Program Files\InstallShield Installation Information.** Within this subdirectory there will be a folder containing configuration settings and additional files as well as the setup executable. If the user has installed multiple ECBs there will be one folder for each ECB. The user can determine which folder is assigned to the ECB of interest by double clicking the **Setup.exe** file. Once this is determined, the user can remove the ECB by following the prompts. This process may automatically restart the computer. The ECB may be reinstalled from the CD-ROM at any time.

Why are the ECB window screens so hard to read? Why are the windows too small (large)?

The ECB program fits best visually on screens set to a desktop area of 800 x 600 pixels. It will still work on other screen settings, but it may not make the best use of the available screen space. To check and/or set your desktop area, follow these steps:

1. Click on the **Start** button.

2. Select **Settings**, **Control Panel**, and then **Display**.

3. Select the **Settings** tab.

4. Set the **Desktop Area** to 800 x 600 with the Desktop Area slidebar.

What do I need to run the extract programs generated by the ECB software?

The extract programs provide the SAS/SPSS code to generate SAS data sets or SPSS system files containing the variables of interest to the user. The ECB does not create a SAS or SPSS data file. It simply prepares the statements that can be used with these statistical software packages to create those files. The user must run the extract code in SAS/SPSS to create a SAS data set or SPSS system file.

Why can I not delete some variables from the working taglist?

A catalog may contain one or more "required variables." Required variables are deemed necessary for any analysis of that catalog's data, and they will be automatically included in all extracts. Examples of required variables are identification variables, such as the student or school id, and sampling variables such as weights or replicate weight variables. If a required variable is selected for removal from the working taglist, an error message box will appear. Click the **OK** button to remove the message box.

How many user defined taglists can you save for each catalog?

Each catalog can have an unlimited number of saved user defined taglists, dependent only upon the memory limitations of the hard drive. If many taglists are created and deleted on a regular basis, then the user should periodically repair and compact the Microsoft Access database the ECB program uses for all the catalogs. Taglist creation and deletion will lead to the database containing lingering references to old taglists that are no longer needed. Repairing and compacting files allows the ECB program to "clean house" and make the database more efficient. It also decreases the size of the database, so space is conserved.

For certain variables, why does the codebook list erroneous or nonsensical values in the Codes column?

Printing limitations may cause what looks to be erroneous or nonsensical data printed in the Codes column of the codebook. The ECB program uses the Crystal Reports report generation software to produce its codebooks. The codebook's printed format follows a layout designed in the Crystal Reports software. In the current codebook layout, the Codes column lists the actual value - or range of values - of a variable associated with the response category, which is listed in the Response column. Data for this column comes from the Format Value field in the Format Master table of the Microsoft Access database used by the ECB program. The Codes column has a maximum length of 12 characters. If the value(s) listed in the Format Value field take up more than 12 characters, then the Codes column only displays the last 12 characters of the field. It is possible, but not likely, that similar printing errors could occur in other fields and columns listed in the codebook. Future versions of the ECB software may contain a revised Crystal Reports codebook layout that increases the size of the Codes column.

Why can I not do cross tabulations of two or more catalog variables in a codebook?

The ECB does not actually calculate either the frequencies or percentages of variables listed in a codebook. Those unweighted values are stored in the Frequency Master table within the project's Microsoft Access database read by the ECB program. Once a variable is tagged for a codebook, the ECB program searches the Access database tables, including the Frequency Master table, to collect the codebook data for that variable. The data is then entered into a Crystal Reports report format to produce the codebook.

Why limit the choices of codebook export files?

An exported codebook can be saved in one of the three following formats: Crystal Reports, Rich Text Format, and Word for Windows. For other formats (like Excel, WordPerfect, etc.), save the exported codebook with Rich Text Format. Rich Text Format saves all format commands in the codebook and converts it to instructions that other programs, including Microsoft compatible programs, can read and interpret. Future versions of the ECB software may include additional options for codebook export files.

Can I subset a catalog on variables not listed on the Extract Specifications screen?

Not while generating an extract program. The ECB program utilizes a Microsoft Access database to store information about each catalog and its variables. Within the database, the Variable Master table lists which variables can be used to subset each catalog. If one of those variables appears on the working taglist, then it will appear on the Extract Specifications screen. If the variable in question is not marked as a subsetting variable in the Variable Master table, then that variable will never appear on the Extract Specifications screen.

It is possible to extract a subset of catalog records based on a variable not found on the Extract Specifications screen. Create an extract program from a working list that includes the subset variable. Before running the extract program, modify the programming code to include that variable in the subsetting commands. Use the values listed in the Codes column of that variable from the codebook to determine how to subset the catalog.

What if the ECB-generated extract programs do not run properly?

Review the generated SAS or SPSS program code before running it. The programs assume that the project data files used by the extraction program will be found on the local c:\ drive. If the project data files are in another location (extended path on the local hard drive, network drive, etc.), change the code that specifies where the project data file is located. At the top of the SAS program, edit the line that defines the filename. An example of that SAS line of code follows:

filename in1 'C:\usa_stud.dat';

At the top of the SPSS program, edit the line that assigns the handle FHAND to the input data set. An example of that SPSS line of code follows:

FILE HANDLE FHAND /NAME='c:\usa_schl.dat' /LRECL=91.

For each case, replace the directory listed in the specified line of code ("c:*data file name*" in the examples above) with the correct data directory.

When reviewing the extract programs, check also that any statements subsetting the data are correct. Code for generating frequencies and means are written in the program but "commented out." Remove the comment symbols to obtain that output.

4. Electronic Codebook (ECB) Glossary

Cancel A command button found in several windows and screens. Closes the current screen or window.

Catalog An ECB data file, usually corresponding with a project data file. Each catalog has a variable list and one or more predefined taglists.

Codebook (1) A detailed variable listing that can be either viewed or printed. Information displayed in a codebook includes variable name, variable label, any question number and wording associated with the variable, the record number, position, and format of the variable on the data file, and any comment fields. It also displays response categories, unweighted and weighted frequencies, and unweighted and weighted percentage distributions. (2) A menu listed on the menu bar that allows users to view and print codebooks.

Continuous Variable A catalog variable with an infinite number of possible values. Within a codebook or extract file, the response categories of continuous variables are represented by ranges of values.

Discrete Variable A catalog variable with a finite number of possible values. Within a codebook or extract file, the response categories of discrete variables are represented either by single values or ranges of values.

ECB Electronic Codebook. A software package that allows analysts a simple computerized interface to examine variables within a project's data files (called catalogs).

Expand A command button in the Variable List window. Adds to the current variable list any variables for the catalog whose name and/or description contains a specified keyword.

Export A command button in the View Codebook screen. Creates a copy of the codebook as either a Crystal Reports file, Microsoft Word file, or a rich text format (RTF) text file.

Extract (1) A subset of records and/or variables within a catalog. (2) A menu listed on the menu bar that allows users to create a statistical program (SAS, SPSS, STATA) that will pull out a defined subset of records and variables from a catalog.

Extract Program A software program that creates an extract from a catalog. The ECB software package can create an extract program for the SAS, SPSS, or STATA statistical software packages.

Extract Specifications A blueprint of what variables and/or records to choose for an extract. The Working Taglist defines which variables will appear in the extract, while the Extract Specifications screen limits the number of records in an extract based on selected response categories within subsetting variables.

File A menu listed on the menu bar that allows users to open a catalog, define the printer settings, or exit the ECB software.

Frequency The number of times the value(s) of a variable appears within a catalog.

Help A menu listed on the menu bar that calls up the ECB software's electronic help file.

Menu Bar The bar that lies underneath the title bar on the main ECB screen. The menu bar contains a series of pull-down menus (e.g., File, Taglist, Extract, Tools, Codebook, and Help). Selecting items from the pull-down menus provide access to the action commands available in the ECB.

Narrow A command button in the Variable List window. Keeps only those variables in the current variable list whose name and/or description contains a specified keyword.

Percentage A relative measure of how often the value(s) of a variable appears within a catalog as compared to all values of that variable.

Predefined Taglist A saved list of catalog variables that came with the original ECB software package. was created in an earlier ECB session, or was created and saved earlier in the current ECB session.

Print A command button in the View Codebook screen. Sends a copy of the codebook to a printer connected to the computer running the ECB software.

Repair/Compact An option under the Tools menu on the menu bar. Eliminates lingering references to deleted taglists within a catalog, which also decreases the size of the database.

Reset A command button in the Variable List window. Restores all of the variables within a catalog to the current variable list.

Response Category A possible value, or set of possible values, for a catalog variable, as defined by the ECB software. For continuous variables, which have an infinite set of possible values, a category will list a range of values. For discrete variables, which have a finite set of possible values, a category most likely will represent a single value, but it can also represent a range of values.

SAS One of three software statistical packages in which the ECB software creates extract programs. A SAS extract program will have an *.sas extension.

Save A common button in the Working Taglist window. Stores the working taglist as a user defined taglist.

SPSS One of three software statistical packages in which the ECB software creates extract programs. An SPSS for Windows extract program will have an *.sps extension.

STATA One of three statistical software packages in which the ECB software creates extract programs. A set of STATA extract programs will have *.dct and *.do extensions.

Tagged Variable A variable on either the variable list or the working taglist that has been "tagged," i.e. either highlighted or clicked.

Taglist (1) A list of data file variables. Taglists can be one of three types: predefined taglists (saved lists of variables that came with the ECB), user defined taglists (saved lists of variables created by users), and working taglists (the current list of variables defined on the main ECB

screen). (2) A menu listed on the menu bar that allows a user to manipulate the current working taglist.

Title Bar The horizontal bar located at the top of the main ECB screen. It gives the name of the application (ECB for Windows) and the catalog in use.

User Defined Taglist A saved list of catalog variables created by a user in an earlier session, or created and saved earlier in the current ECB session.

Variable List The window that forms the left half of the main ECB screen. It shows all of the variables listed within a catalog, as manipulated by the Narrow, Expand, and Reset command buttons.

Weighted Frequency The number of times the value(s) of a variable appears within a catalog, as defined by the weights assigned to the data file records.

Weighted Percentage A relative measure of how often the value(s) of a variable appears within a catalog as compared to all values of that variable, as defined by the weights assigned to the data file records.

Working Taglist The window that forms the right half of the main ECB screen. It shows the current catalog variables selected for creating either a codebook or an extract program.