A measurement model

Contents

1. Introduction

The data consist of indicators of alcohol and marijuana usage of 1608 high school students during 2001 as recorded in the Monitoring The Future (MTF) study which is conducted by the Institute for Social Research at the University of Michigan. More details about the data are available at http://www.icpsr.umich.edu/cgi/archive.prl?study=3088&path=SAMHDA.

The following variables are included:

- ALCLIFS: On how many occasions have you had alcoholic beverages to drink in your lifetime?
- ALC12MOS: On how many occasions have you had alcoholic beverages to drink in the past 12 months?
- ALC30DS: On how many occasions have you had alcoholic beverages to drink in the past 30 days?
- XMJLIFS: On how many occasions have you used marijuana in your lifetime?
- XMJ12MOS: On how many occasions have you used marijuana in the past 12 months?
- XMJ30DS: On how many occasions have you used marijuana in the past 30 days?
- TICK12MO: Within the last 12 months, how many times have you received a ticket (or been stopped and warned) for moving violations?
- ACCI12MO: Within the last 12 months, how many times you were involved in an accident while driving?

The raw data are listed in the file **select.LSF** in the **Complex survey data examples** folder. The first couple of lines are shown in the following below.

The four indicators are modeled to measure the alcohol usage (ALCUSAGE) and marijuana usage (MRJUSAGE). A path diagram of the model is shown below.
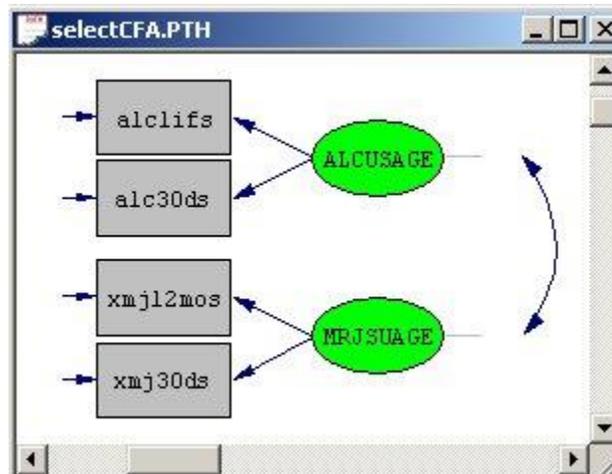
2. Specifying the complex survey design

Use the **Open** option on the **File** menu to load the **Open** dialog box. Select the **LISREL data (*.lsf)** option from the **Files of type:** drop-down list box. Browse for the file **select.PSF** and open it.

Click on the **Survey Design** option on the **Data** menu to load the **Survey Design** dialog box. Select the variable region from the **Variables in data:** list box. Click on the **Add** button of the **Stratification variable** section. Select the variable **school** and add it to the **Cluster variable** section. Add the variable newwgt to the **Design weight** section to produce the following **Survey Design** dialog box.
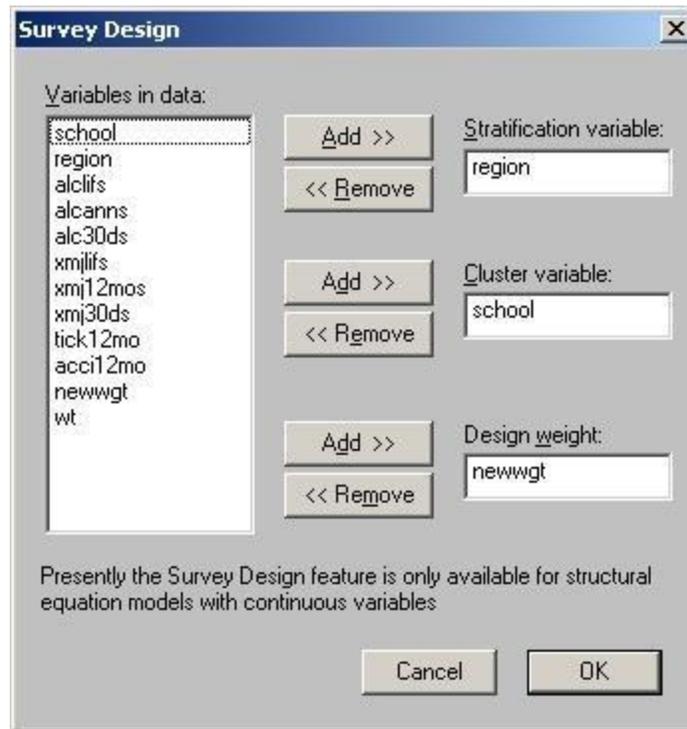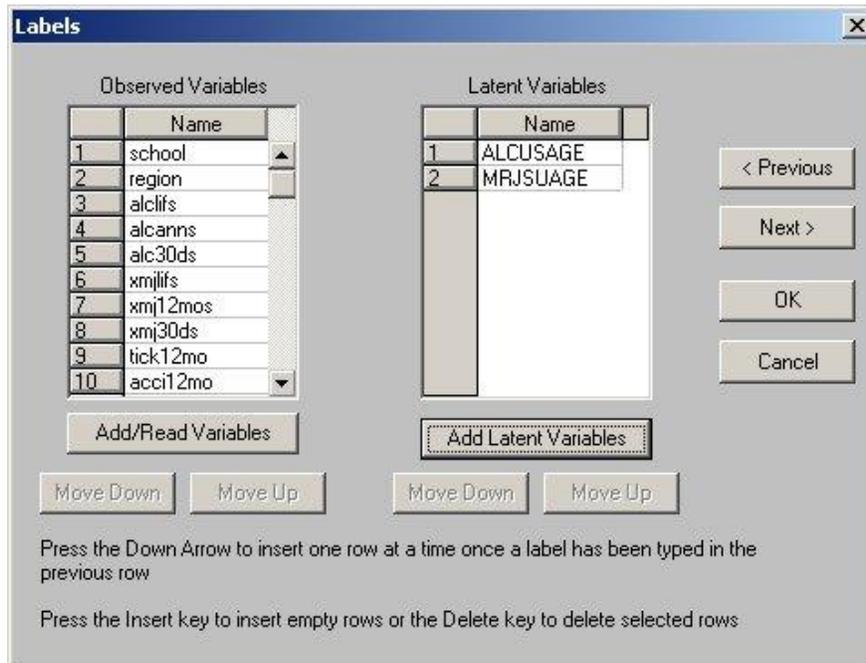
Click on the **OK** button to return to the LSF window. Click on the **Save** option on the **File** menu.

3. Fitting the measurement model

Select the **New** option on the **File** menu to load the **New** dialog box and select the **Path Diagram** option from the list box on the **New** dialog box. Enter the name **selectCFA.PTH** in the **File name** string field. Click on the **Save** button to open an empty **PTH** window.

Select the **Title and Comments** option on the **Setup** menu to load the **Title and Comments** dialog box. Click on the **Next** button to load the **Group Names** dialog box. Click on the **Next** button to load the **Labels** dialog box. Click on the **Add/Read Variables** button to load the **Add/Read Variables** dialog box. Select the **LISREL System File** option in the **Read from file:** drop-down list box. Click on the **Browse** button and select the file **select.LSF**. Click on the **Open** button to return to the **Add/Read Variables** dialog box. Click on the **OK** button to return to the **Labels** dialog box.

Click on the **Add Latent Variables** push button to load the **Add Variables** dialog box. Enter the label ALCUSAGE in the string field. Click on the **OK** button to return to the **Labels** dialog box. Click on the **Add Latent Variables** push button to load the **Add Variables** dialog box. Enter the label MRJSUAGE in the string field. Click on the **OK** button to produce the following **Labels** dialog box.

Click on the **OK** button to return to the **PTH** window for **depressCFA.PTH**. Click, drag and drop the labels of the observed variables: alclifs, alc30ds, xmj12mos and xmj30ds one at a time into the **PTH** window. Click, drag and drop the labels of the latent variables one at a time into the **PTH** window.

Select the arrow icon on the **Drawing** toolbar. Click and drag 2 indicator paths from the latent variable ALCUSAGE to alclifs and alc30ds respectively. Click and drag 2 indicator paths from the latent variable MRJUSAGE to xmj12mos and xmj30ds respectively to produce the following **PTH** window.
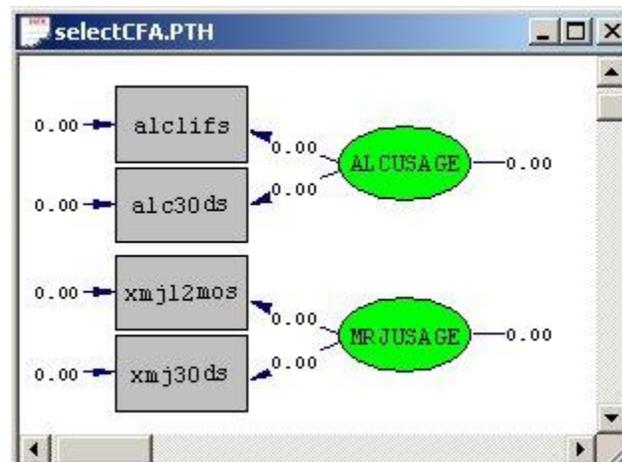
Select the **Build SIMPLIS Syntax** option on the **Setup** menu to open the **PJ** window. Then click on the **Run LISREL** icon on the main toolbar to produce the following **PTH** window.

selectCFA.PTH

1.15 →	alclifs
0.75 →	alc30ds
-0.26 →	xmjl2mos
0.63 →	xmj30ds

1.98 → ALCUSAGE 1.00

1.06

0.54

1.95 → MRJSUAGE 1.00

1.13

Chi-Square=18.02, df=1, P-value=0.00002, RMSEA=0.036