**Concatenating Variables in SAS, SPSS, and Excel**

The data here were collected by my brilliant graduate student, Grace Williams. The variables are Male (yes or no), College Student (yes or no), MorningPrepTime (how long does it take you to get ready in the morning), and SleepHours (how much sleep do you get per day).

When variables are concatenated, a new variable is created which has a value equal to the value of the first input variable followed by the value of the second input variable (etc.). Here the two variables are dichotomous, each coded 0,1. The new variable will have values of 00, 01, 10, and 11. It will be a character variable, not a numeric variable.

**Proc** **Format**; value $grp **00**='Fem Not' **01**='Fem Stud' **10**='Male Not' **11** = 'Male Stud';

**\*The format name starts out with $ because it is a character (not numeric) format;**

**data** Grace;

input Male CollegeStud MorningPrepMin SleepHours;

cards;

0 0 20 7

0 0 60 6

1 0 60 6

<snip, snip, I cut the rest of the data out of this document>

;

**data** Concatenated;

set Grace;

Sex\_Student=cats(of Male CollegeStud);

**run**;

**proc** **print**; **run**;

**proc** **GLM**; class Sex\_Student; Model MorningPrepMin = Sex\_Student / ss1;

Contrast 'Sex' Sex\_Student **.5** **.5** -**.5** -**.5**;

Means Sex\_Student; Format Sex\_Student $grp.; **run**; **quit**;

|  |
| --- |
| The SAS System |

| **Obs** | **Male** | **CollegeStud** | **MorningPrepMin** | **SleepHours** | **Group** |
| --- | --- | --- | --- | --- | --- |
| **1** | 0 | 0 | 20 | 7.0 | 00 |
| **2** | 0 | 0 | 60 | 6.0 | 00 |
| **3** | 1 | 0 | 60 | 6.0 | 10 |
| **4** | 1 | 0 | 60 | 7.0 | 10 |
| **5** | 0 | 1 | 60 | 7.5 | 01 |
| **6** | 1 | 0 | 30 | 8.0 | 10 |
| **7** | 0 | 0 | 180 | 5.0 | 00 |
| **8** | 0 | 1 | 60 | 6.5 | 01 |
| **9** | 0 | 1 | 20 | 6.0 | 01 |
| **10** | 0 | 0 | 30 | 6.0 | 00 |
| **11** | 0 | 0 | 60 | 7.0 | 00 |
| **12** | 0 | 0 | 60 | 6.5 | 00 |
| **13** | 1 | 1 | 10 | 7.0 | 11 |
| **Snip Snip** | | | | | |

|  |
| --- |
| Here I conducted a one-way ANOVA comparing the four groups created by concatenation. |

The GLM Procedure

| **Class Level Information** | | |
| --- | --- | --- |
| **Class** | **Levels** | **Values** |
| **Sex\_Student** | 4 | Fem Not Fem Stud Male Not Male Stud |

|  |  |
| --- | --- |
| **Number of Observations Read** | 50 |
| **Number of Observations Used** | 50 |

Dependent Variable: MorningPrepMin

| **Source** | **DF** | **Sum of Squares** | **Mean Square** | **F Value** | **Pr > F** |
| --- | --- | --- | --- | --- | --- |
| **Model** | 3 | 6928.66667 | 2309.55556 | 2.57 | 0.0659 |
| **Error** | 46 | 41393.33333 | 899.85507 |  |  |
| **Corrected Total** | 49 | 48322.00000 |  |  |  |

| **R-Square** | **Coeff Var** | **Root MSE** | **MorningPrepMin Mean** |
| --- | --- | --- | --- |
| 0.143385 | 69.11886 | 29.99758 | 43.40000 |

| **Source** | **DF** | **Type I SS** | **Mean Square** | **F Value** | **Pr > F** |
| --- | --- | --- | --- | --- | --- |
| **Sex\_Student** | 3 | 6928.666667 | 2309.555556 | 2.57 | 0.0659 |

| **Contrast** | **DF** | **Contrast SS** | **Mean Square** | **F Value** | **Pr > F** |
| --- | --- | --- | --- | --- | --- |
| **Sex** | 1 | 6400.034453 | 6400.034453 | 7.11 | 0.0105 |

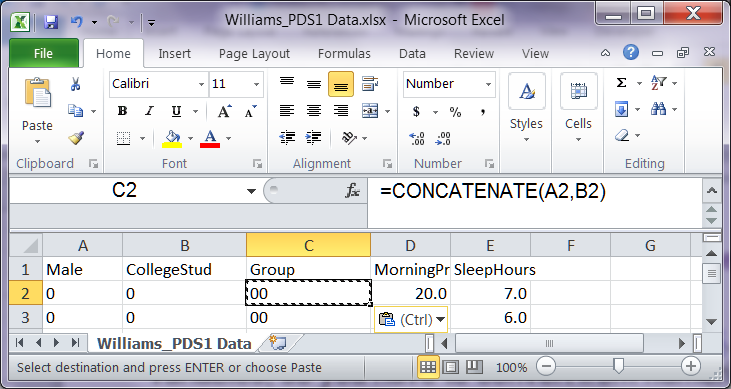
This contrast compares the two groups of women with the two groups of men.

| **Level of Sex\_Student** | **N** | **MorningPrepMin** | |
| --- | --- | --- | --- |
| **Mean** | **Std Dev** |
| **Fem Not** | **18** | 54.4444444 | 41.4760345 |
| **Fem Stud** | **9** | 52.7777778 | 26.5884269 |
| **Male Not** | **15** | 34.3333333 | 18.2117178 |
| **Male Stud** | **8** | 25.0000000 | 16.2568667 |

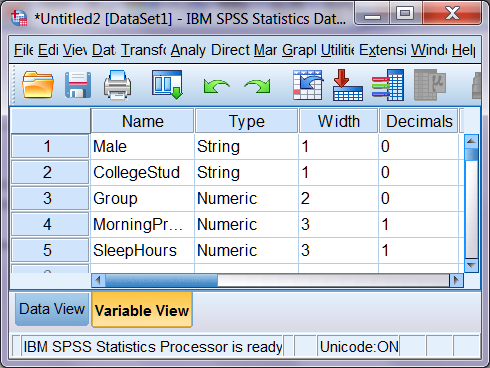
**Concatenation with SPSS**

It is a bit [more of a pain than with SAS](http://stackoverflow.com/questions/26260648/data-concatenation-in-spss). One can only do it with string (alphanumeric) variables, so if your classification variables are numeric you have to convert from numeric to string prior to the concatenation. This is a royal pain in the arse, IMHO. Here I shall illustrate how to use Excel to make it a bit less of a pain.

First, export the SPSS data to an Excel file. Open the exported file in Excel. Use Format Cells to change the number of decimal points for the two variables to 0 and then change their format to TEXT. Insert a new column. Then use the CONCATENATE function to put into that new column the joined text columns:



Save the Excel file and then import it into SPSS.



Now you are ready to go.

[Return to Wuensch’s SAS Lessons Page](http://core.ecu.edu/psyc/wuenschk/SAS/SAS-Lessons.htm)

[Karl L. Wuensch](http://core.ecu.edu/psyc/WuenschK/KLW.htm), January, 2017.