```
* Encoding: UTF-8.
*Final.
DATASET ACTIVATE DataSet1.

*Run descriptive statistics.
DESCRIPTIVES VARIABLES=group sex grade SSI1 GenApt JICS BELONG_AC
attendance SSI2 GPA
  /STATISTICS=MEAN STDDEV VARIANCE RANGE MIN MAX SKEWNESS.

*Check for skewness.
FREQUENCIES VARIABLES=SSI1 GenApt JICS attendance SSI2 GPA
  /STATISTICS=STDDEV VARIANCE RANGE MEAN SKEWNESS SESKEW
  /HISTOGRAM NORMAL
  /ORDER=ANALYSIS.

*Modify negative skewness.
COMPUTE SkewFixed_attendance=SQRT(attendance).
EXECUTE.

*See if skewness is corrected.
FREQUENCIES VARIABLES=SkewFixed_attendance
  /STATISTICS=STDDEV VARIANCE RANGE MEAN SKEWNESS SESKEW
  /HISTOGRAM NORMAL
  /ORDER=ANALYSIS.

*See if there is any data missed in categorical variables.
CROSSTABS
  /TABLES=grade BY group
  /FORMAT=AVALUE TABLES
  /CELLS=COUNT
  /COUNT ROUND CELL.

CROSSTABS
  /TABLES=group BY sex
  /FORMAT=AVALUE TABLES
  /CELLS=COUNT
  /COUNT ROUND CELL.

*set a missing value for grade and group.
MISSING VALUES grade (99).
MISSING VALUES group (22).

*calculate a difference of social skills index over the year.
COMPUTE SSI_change=SSI2 - SSI1.
EXECUTE.
VARIABLE LABELS SSI_change 'Observed change of social skills index.'.

*initial 5-way analysis of covarience to determine if there is a main
effect of group for any variable that suggests academic success
(SSI_change, GPA, attendance, BELNG_AC, JICS) when controlling for
```

```
GenApt, grade, sex.
GLM JICS BELONG_AC GPA SkewFixed_attendance SSI_change BY group sex
grade WITH GenApt
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PLOT=PROFILE(group grade sex) TYPE=BAR ERRORBAR=CI MEANREFERENCE=NO
  /EMMEANS=TABLES(OVERALL) WITH(GenApt=MEAN)
  /EMMEANS=TABLES(grade*group) WITH(GenApt=MEAN) COMPARE(grade)
ADJ(BONFERRONI)
  /EMMEANS=TABLES(group*sex) WITH(GenApt=MEAN) COMPARE(group)
ADJ(BONFERRONI)
  /EMMEANS=TABLES(group) WITH(GenApt=MEAN) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(sex) WITH(GenApt=MEAN) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade) WITH(GenApt=MEAN) COMPARE ADJ(BONFERRONI)
  /PRINT=ETASQ OPOWER HOMOGENEITY
  /CRITERIA=ALPHA(.05)
  /DESIGN=grade*group group*sex group sex grade GenApt.

*found multiple significant interactions of group and others, split
the file by group, sex, grade and determine what controls in moderator
or mediator using regression analysis later.
*analyze repeatedly measured items; SSI, academic achievement.
*Run an one-way repeated-measures ANCOVA for SSI as DV, group, grade,
sex as IVs.
GLM SSI1 SSI2 BY group grade sex
  /WSFACTOR=ssi 2 Repeated
  /METHOD=SSTYPE(3)
  /PLOT=PROFILE(group sex grade) TYPE=BAR ERRORBAR=CI MEANREFERENCE=NO
  /EMMEANS=TABLES(OVERALL)
  /EMMEANS=TABLES(group) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(sex) COMPARE ADJ(BONFERRONI)
  /PRINT=ETASQ OPOWER HOMOGENEITY
  /CRITERIA=ALPHA(.05)
  /DESIGN= group grade sex.

*Based on what I got, I would split file on group, grade, and sex.
SORT CASES  BY group.
SPLIT FILE LAYERED BY group.

GLM SSI1 SSI2 BY grade sex
  /WSFACTOR=ssi 2 Polynomial
  /METHOD=SSTYPE(3)
  /PLOT=PROFILE(grade*ssi sex*ssi) TYPE=BAR ERRORBAR=CI
MEANREFERENCE=NO
  /EMMEANS=TABLES(OVERALL)
  /EMMEANS=TABLES(grade) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(sex) COMPARE ADJ(BONFERRONI)
  /PRINT=ETASQ OPOWER
  /CRITERIA=ALPHA(.05)
```

```
  /DESIGN= grade sex.

UNIANOVA GPA BY sex grade WITH GenApt
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PLOT=PROFILE(sex grade) TYPE=BAR ERRORBAR=CI MEANREFERENCE=NO
  /EMMEANS=TABLES(OVERALL) WITH(GenApt=MEAN)
  /EMMEANS=TABLES(sex) WITH(GenApt=MEAN) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade) WITH(GenApt=MEAN) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade*sex) WITH(GenApt=MEAN) COMPARE(grade)
ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade*sex) WITH(GenApt=MEAN) COMPARE(sex)
ADJ(BONFERRONI)
  /PRINT ETASQ HOMOGENEITY OPOWER
  /CRITERIA=ALPHA(.05)
  /DESIGN=group grade GenApt grade*group.

UNIANOVA JICS BY sex grade
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PLOT=PROFILE(sex grade) TYPE=BAR ERRORBAR=CI MEANREFERENCE=NO
  /EMMEANS=TABLES(OVERALL)
  /EMMEANS=TABLES(grade*sex) COMPARE(grade) ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade*sex) COMPARE(sex) ADJ(BONFERRONI)
  /EMMEANS=TABLES(sex) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade) COMPARE ADJ(BONFERRONI)
  /PRINT ETASQ OPOWER
  /CRITERIA=ALPHA(.05)
  /DESIGN=grade*sex sex grade.

UNIANOVA BELONG_AC BY sex grade
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PLOT=PROFILE(sex grade) TYPE=BAR ERRORBAR=CI MEANREFERENCE=NO
  /EMMEANS=TABLES(OVERALL)
  /EMMEANS=TABLES(grade*sex) COMPARE(grade) ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade*sex) COMPARE(sex) ADJ(BONFERRONI)
  /EMMEANS=TABLES(sex) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade) COMPARE ADJ(BONFERRONI)
  /PRINT ETASQ OPOWER
  /CRITERIA=ALPHA(.05)
  /DESIGN=grade*sex sex grade.

UNIANOVA SkewFixed_attendance BY sex grade
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PLOT=PROFILE(sex grade) TYPE=BAR ERRORBAR=CI MEANREFERENCE=NO
  /EMMEANS=TABLES(OVERALL)
  /EMMEANS=TABLES(grade*sex) COMPARE(grade) ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade*sex) COMPARE(sex) ADJ(BONFERRONI)
```

```
  /EMMEANS=TABLES(sex) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade) COMPARE ADJ(BONFERRONI)
  /PRINT ETASQ OPOWER
  /CRITERIA=ALPHA(.05)
  /DESIGN=grade*sex sex grade.

SPLIT FILE off.

*Split file by sex.
SORT CASES BY sex.
SPLIT FILE LAYERED BY sex.

GLM SSI1 SSI2 BY group grade
  /WSFACTOR=ssi 2 Polynomial
  /METHOD=SSTYPE(3)
  /PLOT=PROFILE(group*ssi grade*ssi) TYPE=BAR ERRORBAR=CI
MEANREFERENCE=NO
  /EMMEANS=TABLES(OVERALL)
  /EMMEANS=TABLES(group) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade) COMPARE ADJ(BONFERRONI)
  /PRINT=ETASQ OPOWER
  /CRITERIA=ALPHA(.05)
  /DESIGN= group grade.

UNIANOVA GPA BY group grade WITH GenApt
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PLOT=PROFILE(group grade) TYPE=BAR ERRORBAR=CI MEANREFERENCE=NO
  /EMMEANS=TABLES(OVERALL) WITH(GenApt=MEAN)
  /EMMEANS=TABLES(group) WITH(GenApt=MEAN) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade) WITH(GenApt=MEAN) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade*group) WITH(GenApt=MEAN) COMPARE(grade)
ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade*group) WITH(GenApt=MEAN) COMPARE(group)
ADJ(BONFERRONI)
  /PRINT ETASQ HOMOGENEITY OPOWER
  /CRITERIA=ALPHA(.05)
  /DESIGN=group grade GenApt grade*group.

UNIANOVA JICS BY group grade
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PLOT=PROFILE(group grade) TYPE=BAR ERRORBAR=CI MEANREFERENCE=NO
  /EMMEANS=TABLES(OVERALL)
  /EMMEANS=TABLES(grade*group) COMPARE(grade) ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade*group) COMPARE(group) ADJ(BONFERRONI)
  /EMMEANS=TABLES(group) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade) COMPARE ADJ(BONFERRONI)
  /PRINT ETASQ OPOWER
  /CRITERIA=ALPHA(.05)
```

```
  /DESIGN=grade*group group grade.

UNIANOVA BELONG_AC BY group grade
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PLOT=PROFILE(group grade) TYPE=BAR ERRORBAR=CI MEANREFERENCE=NO
  /EMMEANS=TABLES(OVERALL)
  /EMMEANS=TABLES(grade*group) COMPARE(grade) ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade*group) COMPARE(group) ADJ(BONFERRONI)
  /EMMEANS=TABLES(group) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade) COMPARE ADJ(BONFERRONI)
  /PRINT ETASQ OPOWER
  /CRITERIA=ALPHA(.05)
  /DESIGN=grade*group group grade.

UNIANOVA SkewFixed_attendance BY group grade
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PLOT=PROFILE(group grade) TYPE=BAR ERRORBAR=CI MEANREFERENCE=NO
  /EMMEANS=TABLES(OVERALL)
  /EMMEANS=TABLES(grade*group) COMPARE(grade) ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade*group) COMPARE(group) ADJ(BONFERRONI)
  /EMMEANS=TABLES(group) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(grade) COMPARE ADJ(BONFERRONI)
  /PRINT ETASQ OPOWER
  /CRITERIA=ALPHA(.05)
  /DESIGN=grade*group group grade.

SPLIT FILE off.

*Split file by grade.
SORT CASES BY grade.
SPLIT FILE LAYERED BY grade.

GLM SSI1 SSI2 BY group sex
  /WSFACTOR=ssi 2 Polynomial
  /METHOD=SSTYPE(3)
  /PLOT=PROFILE(group*ssi sex*ssi) TYPE=BAR ERRORBAR=CI
MEANREFERENCE=NO
  /EMMEANS=TABLES(OVERALL)
  /EMMEANS=TABLES(group) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(sex) COMPARE ADJ(BONFERRONI)
  /PRINT=ETASQ OPOWER
  /CRITERIA=ALPHA(.05)
  /DESIGN= group sex.

UNIANOVA GPA BY group sex WITH GenApt
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PLOT=PROFILE(group sex) TYPE=BAR ERRORBAR=CI MEANREFERENCE=NO
```

```
  /EMMEANS=TABLES(OVERALL) WITH(GenApt=MEAN)
  /EMMEANS=TABLES(group) WITH(GenApt=MEAN) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(sex) WITH(GenApt=MEAN) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(sex*group) WITH(GenApt=MEAN) COMPARE(sex)
ADJ(BONFERRONI)
  /EMMEANS=TABLES(sex*group) WITH(GenApt=MEAN) COMPARE(group)
ADJ(BONFERRONI)
  /PRINT ETASQ HOMOGENEITY OPOWER
  /CRITERIA=ALPHA(.05)
  /DESIGN=group sex GenApt sex*group.

UNIANOVA JICS BY group sex
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PLOT=PROFILE(group sex) TYPE=BAR ERRORBAR=CI MEANREFERENCE=NO
  /EMMEANS=TABLES(OVERALL)
  /EMMEANS=TABLES(sex*group) COMPARE(sex) ADJ(BONFERRONI)
  /EMMEANS=TABLES(sex*group) COMPARE(group) ADJ(BONFERRONI)
  /EMMEANS=TABLES(group) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(sex) COMPARE ADJ(BONFERRONI)
  /PRINT ETASQ OPOWER
  /CRITERIA=ALPHA(.05)
  /DESIGN=sex*group group sex.

UNIANOVA BELONG_AC BY group sex
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PLOT=PROFILE(group sex) TYPE=BAR ERRORBAR=CI MEANREFERENCE=NO
  /EMMEANS=TABLES(OVERALL)
  /EMMEANS=TABLES(sex*group) COMPARE(sex) ADJ(BONFERRONI)
  /EMMEANS=TABLES(sex*group) COMPARE(group) ADJ(BONFERRONI)
  /EMMEANS=TABLES(group) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(sex) COMPARE ADJ(BONFERRONI)
  /PRINT ETASQ OPOWER
  /CRITERIA=ALPHA(.05)
  /DESIGN=sex*group group sex.

UNIANOVA attendance BY group sex
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /PLOT=PROFILE(group sex) TYPE=BAR ERRORBAR=CI MEANREFERENCE=NO
  /EMMEANS=TABLES(OVERALL)
  /EMMEANS=TABLES(sex*group) COMPARE(sex) ADJ(BONFERRONI)
  /EMMEANS=TABLES(sex*group) COMPARE(group) ADJ(BONFERRONI)
  /EMMEANS=TABLES(group) COMPARE ADJ(BONFERRONI)
  /EMMEANS=TABLES(sex) COMPARE ADJ(BONFERRONI)
  /PRINT ETASQ OPOWER
  /CRITERIA=ALPHA(.05)
  /DESIGN=sex*group group sex.
```

```
SPLIT FILE off.
```