Your seventh assignment shows you how to use two different tests to examine the difference in means between groups. In the first of these difference of means tests, you will use a t-test to examine whether or not groups differ in the means of their dependent variable. The t-test is used when the dependent variable is an interval/ratio scale variable and the independent variable is a two-level categorical variable. In the second test, a one-way analysis of variance (ANOVA), you will examine whether or not the mean values of two or more groups differ from one another. The one-way ANOVA is used when you have an interval or ratio level dependent variable, and a nominal (or ordinal) independent variable which has two or more categories. Go into the data you’ve been using (PSID 1992, 1999, and 2003 data, Child/Adolescent data, Child Development data).

TO ACCESS THE DATA FROM SPSS

1) Click the "Start" button visible in the bottom lefthand corner of your computer screen.
2) Click on Computer
3) Double Click on drive Academic Data(I):, then on Public Shares, then on Class Data, then on GSSW.
4) Double click on PSID1992to2009_1.sav, Adolescent_1.sav, or CDS1997to2007_1.sav (depending on which data you are working with). You can also use the alternative versions of these data sets, such as CDS1997to2007_2.sav, PSID1992to2009_5.sav, etc.).

TO RUN THE T-TEST
PSID1992to2009 Data:
Go to Analyze, then to Compare Means, then to Independent-Samples T Test. Right click to get the variables in alphabetical order and to use the variable names. Your test variable is BMI09 (body mass index in 2009), and your Grouping variable is smoke09. You will have to define the range for smoke09, so click on Define Groups…, then type 0, hit the tab key, and type 1 (this means that smoke09 can range in value from 0 to 1, with 0 meaning that the person does not smoke, and 1 meaning that the person smokes). Next click on continue, then on OK, and you'll get your output.

Child/Adolescent Sample:
Go to Analyze, then to Compare Means, then to Independent-Samples T Test. Your test variable is Income (average income as an adult) and your grouping variable is NMbirth (mother had the marital status of never married at the birth of this individual). You will have to define the range for NMbirth, so click on Define Groups…, then type 0, hit the tab key, and type 1 (this means that NMbirth can range in value from 0 to 1, with 0 meaning that person's mother did not have the marital status of never married at birth and 1 meaning that the person's mother had the marital status of never married at birth). Next click on continue, then on OK, and you'll get your output.
Child Development Supplement:
Go to Analyze, then to Compare Means, then to Independent-Samples T Test. Your test variable is numspkps (the number of times the primary caregiver has told another adult something positive about the child) and your grouping variable is Dropout (the head of household is a high school dropout). You will have to define the range for Dropout, so click on Define Groups…, then type 0, hit the tab key, and type 1 (this means that Dropout can range in value from 0 to 1, with 0 meaning that head of household is not a high school dropout and 1 meaning that the head of household is a high school dropout. Next click on continue, then on OK, and you'll get your output.

READING YOUR T-TEST RESULTS

Check the F-test to determine if the variances are the same for the two groups or not. If you can reject the null hypothesis of no difference between the two variances, then you will use the statistics from the unequal variance model. If the F-test is not significant, then you will use the statistics from the equal variances model.

Note that the dependent variable in this model is an interval scale or higher level variable. The independent variable is a nominal scale variable. Your research question for the 1992/1999 PSID is, do families whose head of household smokes have higher or lower levels of income than families whose head of household does not smoke? For the Child/Adolescent sample, the research question is, do individuals who are born to mothers who have never been married at the time of their birth have different income levels as adults relative to those who are born to mothers whose marital status is not never married at their birth? For the Child Development sample, your research question is, do parents who have different levels of education tell other adults more or less positive things about their children?

T-Test Questions
1. Which t-test will you use - the equal variances t-test or the t-test for unequal variances? Why?
2. What is the difference in mean for the two values of the independent variable -- poverty status?
3. Is this difference significant at the .05 level?

RUNNING THE ONE WAY ANOVA TEST

PSID1992to2009
To run the one way analysis of variance (Anova) model, go to Analyze, then to Compare Means, then to One-Way ANOVA. For your dependent variable (again, an interval or higher scale variable), choose BMI09 (body mass index in 2009). For your factor(s), choose Health09 (the health status of the person, with a 1 indicating excellent health, a 2 indicating very good health, a 3 indicating good health, a 4 indicating fair health, and a 5 indicating poor health). Click on Post-Hoc. Select the Scheffe test, then click on Continue, then click OK and you will get your output.
In this Anova model, you are testing to determine if the mean values for any of the groups are significantly different from one another. While the Group T-test model allowed us to examine whether or not there were differences in the mean value of the dependent variable for two groups, Anova models allow us to examine these differences for two or more groups. In this case, you are testing to determine if the mean level of income is significantly different for each of the five different groups. The groups are defined by their health status. Your research question is: Does health status affect family income? And if it does, by how much? Will knowing group membership allow us to better predict the level of income for the family? We are also asking if knowing group membership helps in explaining the variation in the dependent variable. If there is a significant relationship between the independent and dependent variables, then the answer is yes.

**One-Way Anova Questions for the PSID929903**
1. Is the health status of the head significantly related to family income?
2. What is the difference in family income for each group? Give a couple of examples.
3. Which group means are significantly different from the mean for group 1 (those with excellent health)?

**Child/Adolescent Sample**

To run the one way analysis of variance (Anova) model, go to **Analyze**, then to **CompareMeans**, then to **One-Way ANOVA**. For your dependent variable (an interval or higher scale variable), choose **Endinc** (average total income as an adult). For your factor(s), choose **NM** (the number of times this individual has been married -- a value of 4 indicates that the person has been married 4 or more times.). Click on **Post-Hoc**. Select the **Scheffe test**, then click on **Continue**, then click **OK** and you will get your output.

In this Anova model, you are testing to determine if the mean values for any of the groups are significantly different from one another. While the Group t-test model allowed us to examine whether or not there were differences in the mean value of the dependent variable for two groups, Anova models allow us to examine these differences for two or more groups. In this case, you are testing to determine if the mean level of income is significantly different for each of the five different groups. The groups are defined by their number of marriages. Your research question is: Is the level of income affected by the number of marriages? Will knowing group membership (where group is defined as number of marriages) help to predict the level of family income? We are also asking if knowing group membership helps in explaining the variation in the dependent variable. If there is a significant relationship between the independent and dependent variables, then the answer is yes.

**One-Way Anova Questions for the Child/Adolescent Data**
1. Is number of marriages significantly related to income?
2. What is the difference in the mean income level between each of the groups? Give a couple of examples.
3. Which group means are significantly different from the mean for group 1?
Child Development Supplement

To run the one way analysis of variance (Anova) model, go to Analyze, then to CompareMeans, then to One-Way ANOVA. For your dependent variable (an interval or higher scale variable), choose Incfam (average total income during the child's life). For your factor(s), choose Edlevel (the level of education for the head of household, with a 1 indicating a high school dropout, a 2 indicating a high school graduate, a 3 indicating some college, and a 4 indicating a college graduate). Click on Post-Hoc. Select the Scheffe test, then click on Continue, then click OK and you will get your output.

In this Anova model, you are testing to determine if the mean values for any of the groups are significantly different from one another. While the Group t-test model allowed us to examine whether or not there were differences in the mean value of the dependent variable for two groups, Anova models allow us to examine these differences for two or more groups. In this case, you are testing to determine if the mean level of income is significantly different for each of the different groups. The groups are defined by their level of education. Your research question is: Is the level of income affected by the level of education? Will knowing group membership (where group is defined as the level of education) help to predict the level of family income? We are also asking if knowing group membership helps in explaining the variation in the dependent variable. If there is a significant relationship between the independent and dependent variables, then the answer is yes.

One-Way Anova Questions for the Child Development Supplement
1. Is the level of education significantly related to income?
2. What is the difference in the mean income level between each of the groups? Give a couple of examples.
3. Which group means are significantly different from the mean for group 1?

What to email

Copy all results into a word document, answer the t-test and ANOVA questions, and email these to your instructor. Do not send your instructor a saved SPSS output file.