San Jose State University
School of Social Work
ScWk 242
Spring 2008

Lab Exercise #3:
One-Way ANOVA

Research Scenario

You are a school social worker in a large urban high school. Students who are referred to your program have been truant and displayed other behavior or academic problems. Your program is responsible for assessing student needs, locating services based on these needs, and facilitating communication between parents, students, teachers, and other service providers at regular case conference meetings.

You suspect that the level of participation at the case conference meetings by all the key people in the student's life is related to the number of truant episodes that a student experiences in a semester. To examine this question, you randomly select 40 case files of students who have participated in the program in the previous academic year.

You then conduct a case record review of the case notes from the case conferences and categorize participation level at the case conferences as: high level of participation (parents, teachers and service providers participate), medium level of participation (inconsistent participation, or some key people do not attend), and a low level of participation (most key people do not attend).

Step 1: Creating the Variables

You will need to create a Participant ID and two variables for this exercise:

1) Level of participation at case conferences (High, Medium, and Low).

2) Number of truant episodes in one semester

1) <u>Directions for creating the **level of participation** variable:</u>

- Open SPSS program, when the "SPSS for Windows" dialog box appears, click cancel.

- Click on "variable view" at the bottom of the screen

- In the "Name" field, type in the variable name: **level.participation**

- Use the tab button or the mouse to move the cursor to the "Label" field.

- In the "Label" field, type: Level of participation in the case conferences

- For this variable, you will need Value Labels for each of the three levels of participation (High, Medium, and Low).

- Use the tab button or the mouse to move the cursor to the "Value Labels" field.
  - o In the "Value Labels," click on the gray box and the "Value Labels" dialog box will appear. The Value Labels are:

> 1 = Low level of participation
>
> 2 = Medium level of participation
>
> 3 = High level of participation

- In the "Value" box, type in 1,
  - Hit tab or use mouse to move cursor to the "Label" box
    - Type: Low level of participation
      - Click "Add"

- Repeat this process for the Medium level of participation and the High level of participation.

- When all three value labels are entered Click "Ok"

- Use the tab button or the mouse to move the cursor to the "Measure" field.
  - In the "Measure" field, change the level of measurement to ordinal.

2) Directions for creating the **truant episodes** variable

- In the "Name" field, type: **truant**

- In the "Label" field, type: Truant episodes in one semester

- Use the tab button or the mouse to move the cursor to the "Missing" field.

- Click on the gray box in the "Missing" field so that the "Missing Values" dialog box appears.

- In the "Missing Values" dialog box, click on "Discrete Missing Values"
  - Then enter "999" this means that every time SPSS sees a value of 999 it will interpret that as a missing value.

- Leave the measurement level in the "Measures" field as scale.

Step 2: Entering the Data

- Click on "Data View" and enter the following data

Participant ID	Level of participation	Number of truant episodes
1	1	9
2	1	9
3	1	11
4	1	11
5	1	10
6	1	7
7	1	7
8	1	9
9	1	10
10	1	7
11	1	6
12	1	8
13	1	7
14	2	5
15	2	8
16	2	4
17	2	6
18	2	7
19	2	3
20	2	4
21	2	5
22	2	7
23	2	4
24	2	7
25	2	9
26	2	4
27	2	6
28	3	5
29	3	5
30	3	4
31	3	6
32	3	6
33	3	4
34	3	5
35	3	8
36	3	6
37	3	5
38	3	2
39	3	6
40	3	3

Step 3: Running the one-way ANOVA

- From the top drop down menu, choose "Analyze"
    - Choose "Compare Means"
        - Choose "One-Way ANOVA"

- In the One-Way ANOVA dialog box, use your cursor to highlight "Level of participation in case conferences" and use the arrow to place it in the "Factor" box.

- Then highlight "Truant episodes in one semester" and use the arrow to place it in the "Dependent List"

- Click on "Post-Hoc" in the lower part of the dialog box
    - In the "One-Way ANOVA: Post-Hoc Multiple Comparisons" dialog box and select the "Tukey" option by placing a check in the box.
        - Click "Continue"

- Click on "Options" in the dialog box and select "Descriptives" by placing a check in the box.
    - Click "Continue"
        - The click "OK"
            - The output should appear

Using an 8-Step Process for Hypothesis Testing

Once you have your output, use the 8-step process for hypothesis testing to describe and interpret your findings. Please refer to the research scenario and your SPSS output to answer the questions.

1. Identify the **independent variable and level of measurement**

2. Identify the **dependent variable and level of measurement**

3. State the **null hypothesis**

4. State the **alternative hypothesis**

5. Identify the **appropriate statistical test, and alpha level**

6. Present **table of results (SPSS Output)**

Descriptives

Truant episodes in one semester

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Low level of participation	13	8.5385	1.66410	.46154	7.5329	9.5441	6.00	11.00
Medium level of participation	14	5.6429	1.78054	.47587	4.6148	6.6709	3.00	9.00
High level of participation	13	5.0000	1.52753	.42366	4.0769	5.9231	2.00	8.00
Total	40	6.3750	2.23822	.35389	5.6592	7.0908	2.00	11.00

ANOVA

Truant episodes in one semester

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	92.930	2	46.465	16.782	.000
Within Groups	102.445	37	2.769		
Total	195.375	39			

Multiple Comparisons

Dependent Variable: Truant episodes in one semester

Tukey HSD

(I) Level of participation in case conferences	(J) Level of participation in case conferences	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Low level of participation	Medium level of participation	2.89560*	.64090	.000	1.3309	4.4604
	High level of participation	3.53846*	.65266	.000	1.9450	5.1319
Medium level of participation	Low level of participation	-2.89560*	.64090	.000	-4.4604	-1.3309
	High level of participation	.64286	.64090	.580	-.9219	2.2076
High level of participation	Low level of participation	-3.53846*	.65266	.000	-5.1319	-1.9450
	Medium level of participation	-.64286	.64090	.580	-2.2076	.9219

*. The mean difference is significant at the .05 level.

7. Describe **results** and **decision to accept or reject the null hypothesis**

8. Provide **<u>a discussion of these results</u>**