PSYC3301 – SPSS LAB EXAM NOTES

LAB 2 NOTES

- Lab 2 Outline:
  - Welch's F-test and a Brown-Forsythe test → used when testing the null hypothesis of equal means when the variances are unequal and the sample sizes are unequal.
  - Games-Howell multiple comparisons procedure → used when the variances and sample sizes are unequal.
  - Linear contrast and non-linear contrasts (i.e. quadratic contrast).

COHEN'S d IN THE MULTIPLE COMPARISONS CASE (FOR FISHERS LSD)

- For multiple comparisons, an alternative Cohen's d formula must be used.
- Fisher's LSD → best procedure when you only have 3 groups.

1. Need to get the mean difference and standard error between the means.
   - Analyse → compare means → one-way ANOVA.
   - Put the dependent variable in the dependent list and the independent variable in the factor list.
   - Click post-hoc and tick LSD. Once done click OK.
   - Check to see if F value in ANOVA table is statistically significant.
   - Multiple Comparisons Table → Fisher's LSD results.
   - In a multiple comparison's procedure → the Cohen's d denominator is based on an average across all the SD.
   - If difference between 2 means is not significant → still required to calculate Cohen's d.
   - If need to increase the decimal values, double click on the table and highlight the column, right-click, click on cell properties, format value, OK.
2. Calculate t-value:
   - Fisher's LSD *t* = Mean Difference / Standard Error – can do with a basic calculator.
3. Calculate Cohen's d:

$$d = t * \sqrt{\frac{1}{N_1} + \frac{1}{N_2}}$$

   - t-value associated with the multiple comparisons multiplied by the square root of the sum of 1 / N (sample size of each group) → can do with calculator.

MEAN DIFFERENCES – UNEQUAL VARIANCES AND UNEQUAL SAMPLE SIZES

BROWN FORSYTHE AND ETA SQUARED

- Conduct the analysis as you would for a regular one-way ANOVA: