11.3: C - Reporting Statistics in APA Style

Reporting Statistics in APA Style

APA style, much like any style guide, requires attention to detail (e.g., font, spaces, italics). The good news is that learning these guidelines now will help with your other Management coursework – APA style is required throughout this major.

Statistics will mainly be reported in the Results section when you write full-length research papers (for example, in Research Methods/MGT 301), but a few statistics may also be reported in the Method section of such papers (for example, describing the average age of your sample, along with the standard deviation).

General Guidelines

1. Choose a font and font size that is easily readable, and use this same font throughout your entire piece of work. The most common choice among APA style works is 12-point Times New Roman font. Other good options include 11-point Calibri, Arial, or Georgia. (And, always check specific class requirements: some instructors require a particular font and font size.)

2. All statistical symbols that are not Greek letters must be italicized (*M*, *SD*, *t*, *F*, *p*, …) each time you use them.

- However, parentheses and the numbers you report should NOT be italicized.
- And because CI is simply the acronym for the phrase "confidence interval," the letters CI will never be italicized.

3. Every equals sign (=) must have a space before and after it (the same holds for other mathematical operators, such as >, <).

- It helps to think of the equals sign as a representation of the word "equals" – just like you would have a space before and after each word, you must have a space before and after the symbol.
- For example, reporting ***M*=4.52** is not APA style, but ***M* = 4.52** is.

4. Means, *SD*s, test statistics, CIs and *p* values should be rounded to two decimal places.

- Report the exact *p* value to two or three decimal places, such as: ***p* = .03** or ***p* = .032.**
- If your exact *p* value is less than .001, it is conventional to report this as *p* < .001.

5. Put a zero before a decimal point when a number is less than 1 but that statistic can exceed 1 (*M*, *SD*, *t*, *F*...). Do not use a zero before a decimal when the statistic cannot be greater than 1 (proportion, *r*, *p*, *a* …).

- Report the test statistics with a zero before the decimal point (for example, ***t* = 0.25** is correct, but ***t* = .32** is not).
- Report the *p*-value or the correlation coefficient without a zero before the decimal point (for example, ***p* = .32** or ***r* = .32** is correct, but ***p* = 0.32** or ***r* = 0.32** is not).

6. Do not explain how or why you used a certain test unless it is unusual (assume your audience knows basic statistics).

7. Describe the finding in words, then support with appropriate statistics – for example:

- **There was a significant difference between the starting salaries of male and female employees, *t*(39) = 7.03, *p* = .02, 95% CI = [223.05, 530.61].**
- And add more details and supporting statistics where needed – for example, in the above statement, we are not yet clear on what group was higher or lower than the other (only have stated that there was a "difference"), so this needs to be added in another sentence:
  - **Specifically, male employees earned about $300 more per month on average (*M* = $903.31, *SD* = $156.67) than female employees (*M* = $595.75, *SD* = $133.22).**
  - You could also combine these two types of statements into one sentence – for example: **Male employees earned significantly more per month on average (*M* = $903.31, *SD* = $156.67) than female employees (*M* = $595.75, *SD* = $133.22), *t*(39) = 7.03, *p* = .02, 95% CI = [223.05, 530.61].**

Reporting Results of Specific Analyses

Report the appropriate statistics according to the type of statistical analyses you conduct (see general guideline #5 above).

One-sample *t*-test

Format your results by stating your finding and mentioning the values of the observed *t*-statistic, degrees of freedom and *p*-values using the general format *t*(df) = ____, *p* = ____

- Example: **The 125 subjects in our study had a mean age of 27.4 (*SD* = 1.8), and they were significantly older than the university norm of 19.5 years, *t*(124) = 2.65, *p* = 0.04, 95% CI = [0.2, 15.6].**

Independent-samples t-test

Format your results by stating your finding and mentioning the values of the observed *t*-statistic, degrees of freedom and *p*-values using the general format *t*(df) = ____, *p* = ____. If you find a significant difference between groups, indicate the direction of difference (which group has the higher mean?).

- Example: **Results indicate a significant preference for apple pie (*M* = 3.45, *SD* = 1.11) over cherry pie (*M* = 3.00, *SD* = .80), *t*(15) = 4.00, *p* = .001.**
- Example: **There was no significant difference between the severity of injuries of female athletes (*M* = 43.00, *SD* = 19.83) compared to male athletes (*M* = 41.95, *SD* = 16.81), *t*(88) = 0.25, *p* = .80.**
- Note: **See above (#7) for an example reporting a CI comparing two groups.**

Dependent-samples t-test

Format your results by stating your finding and mentioning the values of the observed *t*-statistic, degrees of freedom and *p*-values using the general format *t*(df) = ____, *p* = ____. If you find a significant difference between groups, indicate the direction of difference (which group has the higher mean?).

- Example: **The 228 college students had an average difference of -4.8 (*SD* = 5.5) between their college and high-school GPA scores, indicating a significant decrease in their college GPA scores, *t*(24) = -4.36, *p* = .003.**
- Example: **Children's second grade reading speed scores were typically higher (*M* = 58.09, *SD* = 34.67) than their first grade reading speed scores (*M* = 46.09, *SD* = 32.68), *t*(21) = -4.21, *p* < .001.**
- Note: **See above (#7) for an example reporting a CI comparing two groups.**

ANOVA

We report ANOVA results like *t*-tests, but with two degrees-of-freedom numbers and *F* statistic rounded off to 2 decimal places, in the format *F*(df between, df within) = _____, *p* =____.

- Remember: If the overall *F*-test is significant, there is a difference between at least one pair of group averages, but ANOVA does not tell <u>which</u> pair. You need to look at the results of the *post hoc t*-tests to find the two or more groups that are significantly different.
- If the overall F test <u>is</u> significant, describe the *post hoc t*-test results. Which pairs of group averages are significantly different? Report their *M*, *SD*, *t* and *p*-values to describe the differences (which group within each pair has the higher mean?).
- Example: **One-way analysis of variance showed that the average injury severity differed significantly across the various superhero costumes, *F*(3, 86) = 4.97, *p* = .003. Specifically, post-hoc comparisons show that children wearing Superman costumes had significantly more severe injuries (*M* = 54.17, *SD* = 17.82) than children in Ninja Turtle costumes (*M* = 34.42, *SD* = 17.85).**

Correlation

Correlations are reported using the general format *r*(df) = _____, *p* =____. Always mention the direction (positive, negative) and the strength of correlation (weak, moderate, strong).

- Example: **Hours spent studying and GPA were strongly positively correlated, *r*(123) = .61, *p* = .011.**
- Example: **Hours spent playing video games and GPA were moderately negatively correlated, *r*(123) = .32, *p* = .041.**
- Example: **There was a significant negative association between a child's age and severity of their injuries, *r* (88) = -.73, *p* < .001.**

Regression

Regression results are reported using the general format b = ____, t(df) = _____, p =____.

- Example: **As child's age increases by one year, the injury severity is predicted to decrease by 5.35 units, *t* (88) =, *p* < .001.** Or…. **There is a significant negative association between a child's age and injury severity, *b* = -5.35, *t*(88) = -9.88, *p* < .001**
- You may also choose to report the percentage of variance explained along with the corresponding F test. For example: **Social support explained a significant proportion of variance in depression scores, R^2 = .12, *F*(1, 225) = 42.64, *p* < .001.** Or…. **Child's age can explain 52.6% of the variability of their reading speed score, *F*(1, 88) = 97.65, *p* < .001.**