Sherri Stepp
LS 776 Research Article Critique

1. **Describe the primary purpose of the article.**

The authors of this study evaluated the relationship between junior high school computer science aptitude and general achievement, math achievement, and achievement in courses using computer assisted instruction (CAI). The authors also investigated the aptitude differences by gender. The intent was to determine if there were grounds to utilize computer science aptitude scores for placement in other courses.

2. **What kind of correlation statistic is the basis for the article?**

The results of this study were based on the Pearson's r Correlation statistic.

3. **Write a Null or Research hypothesis which is consistent with the primary purpose of the research.**

The computer science aptitude scores of junior high students have no significant relationship to the achievement scores (SRAC, SRAM, MATH1, MATH2 and PROG).

4. **Name the dependent variable in the study.**

The dependent variables in the study include all of the achievement scores including SRAC, SRAM, MATH1, MATH2 and PROG.

5. **Name the independent variable in the study.**

The independent variable in the study is the computer science aptitude scores.

6. **What is the most likely type of Scale of Measurement for the Math 1 variable?**

The most likely scale of measurement for the Math 1 variable is interval.

7. **In Table 1 explain the meaning of the notation, "**p<.01" in regard to the results of the study.**

In order for the results to be statistically significant for this study, the probability of the observed value must be less than .01.

8. **The authors note on p. 305 that the "r-square values ranged from 40 to 50% for 8th graders and from 15 to 35% for 7th graders." How were these range of values obtained? What exactly do these r-square values mean in regard to the Pearson r values in Table 1?**

The percentage is determined by squaring the Pearson r value and multiplying by 100. The derived percentage accounts for that percentage of the relationship and is the coefficient of determination or effect size. The purpose is to determine whether or not there is practical importance in the results. The remaining percentage is correlated by something other than the tested correlation.

9. **What is the purpose of the t-test for KSW Scores and Sex in Table 2?**

The t-test was used to determine if there was a significant difference in the computer science aptitude scores of males and females. It was determined to not be significant.

10. **What is the meaning of .116 in the 2-tail probability column in Table 2?**

To be statistically significant, the probability would need to be $p<.05$. In this case, it is not less than .05 and, therefore, the difference may have occurred by chance.

11. Why was the Pearson r Correlation method the appropriate statistic for the kind of data in the study and what is its scale of measurement?

The Pearson r Bivariate measures the correlation between two variables with an interval or ratio scale of measurement. The data here was interval data. Although there were multiple dependent variables, each was measured separately against the independent variable as noted in Table 1. A Pearson r Multivariate would have been used to determine the relationship among all the variables.