The purpose of this assignment is for you to become more familiar with extracting relevant information from a research article and gaining a further understanding of the One-way Analysis of Variance as it relates to the given study.

Review the applicable parts of the article *Personality Indicators and Emergency Permit Teachers’ Willingness to Embrace Technology*, by Chambers, S. M., Hardy, J. C., Smith, B. J., and Sienty, S. F. (2003).

You will not have to read the entire article to answer the following questions. Read the questions below and then make reference to the applicable sections in the article.

1. The authors contacted a sample of 200 emergency permit intermediate and secondary novice teachers to take part in the study. What was the final sample size used to assess the impact of personality types and teacher willingness to embrace technology? Indicate how you made this determination.
   - \( N = 159 \) This is determined by either Table 1 or Table 3
   - Table 1: Total \( df = N – 1 \) (159 – 1 = 158)
     - Within \( df = N – K \) (159 – 4 = 155)
   - Table 3: Adding the number in each group (43 + 23 + 30 + 63 = 159)

2. Identify (operationally define) the dependent variable (and its scale of measurement) used in the one-way ANOVA.
   - Scores on a 20-item technology survey test, measured on a continuous scale.

3. Identify (operationally define) the independent variable (and its scale of measurement) used in the one-way ANOVA.
   - Myers-Briggs Type, with four levels (measured on a categorical scale).
     - 1 – Intuitive/Feeling
     - 2 – Intuitive/Thinking
     - 3 – Sensory/Feeling
     - 4 – Sensory/Thinking
4. Identify/interpret each symbol and value associated with the results of this study: \([F(3, 155) = 6.017, p = .001, \eta^2 = .12]\).

- \(F\) Indicates the use of the \(F\) test (One-way ANOVA)
- \((3, 155)\) The between-subjects \((K - 1 = 4 - 1 = 3)\) and within-subjects \((N - K = 159 - 4 = 155)\) degrees of freedom associated with this \(F\) test
- 6.017 The obtained \(F\) ratio
- \(p = .001\) The probability of obtaining the \(F\) ratio by chance alone
- \(\eta^2 = .12\) Eta-squared, the measure of association (omnibus effect size) – indicating the proportion of total variance in the DV that is accounted for by the IV.

5. The authors use eta-squared \((\eta^2)\) as a measure of association for the analysis. Using the information from Table 1, calculate and interpret omega squared for this data.

\[
\omega^2 = \frac{SS_y - (K - 1)MS_w}{SS_u + MS_w} = \frac{3491.85 - (4 - 1)193.44}{33475.71 + 193.44}
\]

\[
= \frac{3491.85 - (3)193.44}{33669.15} = \frac{3491.85 - 580.32}{33669.15} = \frac{2911.53}{33669.15} = .0865 = .09
\]

Therefore, we conclude that approximately 9% of the total variance in dependent variable (teachers’ technology scores) is accounted for by the independent variable (four levels of Myers-Briggs types) for this sample.

6. The authors used the Tukey HSD post hoc comparison test. With respect to the assumption of homogeneity of variance, what can we most likely conclude?

- Typically, the Tukey HSD test is used when the assumption of homogeneity of variance has been met.
7. The authors did not report any pairwise effect sizes for this study. Using the formula below, calculate Cohen’s $d$ for Intuitive/Feeling vs. Sensory/Feeling.

\[ d = \frac{M_1 - M_2}{\sigma_{\text{pooled}}} \]

where \( \sigma_{\text{pooled}} = \sqrt{\frac{\sigma_1^2 + \sigma_2^2}{2}} \)

\[ \sigma_{\text{pooled}} = \sqrt{\frac{143.7601 + 171.3481}{2}} = \sqrt{\frac{315.1082}{2}} = \sqrt{157.5541} = 12.5521 \]

\[ d = \frac{100.81 - 91.03}{12.5521} = \frac{9.7806}{12.5521} = .7792 \]

\[ \text{ES for Intuitive/Feeling vs. Sensory/Feeling} = .78 \]