

Using the variables 'EC' (Empathic concern) and 'culture' from the 'L10_psych' dataset, explore the following research question:
 "Are there any differences in empathic concern across three cultural groups?"

1. Identify **the independent and dependent variables** in this analysis
 The independent variables are Culture and Gender, and the dependent variables are Empathic Concern and Support Seeking.
2. **Descriptive Statistics:** Use the summarize() function to calculate the mean, standard deviation, and sample size (n) for 'EC' within each 'culture' group,

```
< print(summary_stats)
# A tibble: 3 x 4
  culture mean_EC sd_EC      n
  <int>    <dbl> <dbl> <int>
1     -1     3.76 0.816    370
2      0     3.40 0.685    401
3      1     3.83 0.827    370
```

3. **One-Way ANOVA:** Conduct a one-way ANOVA to examine whether there are statistically significant differences in empathic concern across the three cultural groups, using aov() and summary()

```
          Df Sum Sq Mean Sq F value Pr(>F)
culture    1    1.0  1.0167    1.595  0.207
Residuals 1139  725.9  0.6373
```

4. **Effect Size:** Calculate the effect size for the above ANOVA model, using etaSquared()

```

      eta.sq eta.sq.part
culture 0.001398551 0.001398551

```

5. **Post Hoc Analysis:** If the ANOVA above reveals significant group differences, conduct a post-hoc test using the TukeyHSD() function to identify which pairs of cultural groups differ significantly

```

      diff      lwr      upr      p adj
0--1 -0.35728054 -0.48857643 -0.2259847 0.0000000
1--1  0.07413127 -0.05977814  0.2080407 0.3959227
1-0   0.43141182  0.30011594  0.5627077 0.0000000

```

- 6.
7. **Write up** the results for the question “Are there any differences in empathic concern across three cultural groups?”, based on all the above analyses, using the format presented in the slide (L10 One-Way ANOVA)

A one-way ANOVA was conducted to examine differences in emotional concern across three cultural groups. The results showed that the effect of culture on Emotional concern was not significant, $F(1, 1139) = 1.56$, $p < .21$, $\eta^2 = 0.001$. Subsequent post-hoc tests (Tukey's Honestly Significant Difference) indicated that Japanese participants reported significantly more emotional concern compared to the Canadians ($Md = -0.36$, 95% CI [-0.49, -0.23], $p < .001$), but less than Americans ($Md = 0.07$, 95% CI [-0.06, 0.21], $p < .4$). However, there was a significant difference in Emotional concern between Canadians and Americans ($Md = 0.43$, 95% CI [0.30, 0.56], $p < .001$) (Table 1).