Executive summary

Group 18

This study explored whether the gender achievement gap in academic performance depends on students' motivation, interest, and confidence in different subjects, specifically Math and Korean. Using both Two-way ANOVA and Simple Linear Regression, we examined how psychological factors influence achievement and whether gender moderates these relationships.

Hypothesis and variables

- **H_0**: The gender achievement gap does not depend on the level of confidence and interest in the subject.
- **H_1**: The gender achievement gap does depend on the level of confidence and interest in the subject.
- **variables**: Level of interest and Confidence about language and math, gender,grade of language and math

Process

We decided to use surveys to gather data. In our survey, students rated their confidence and interest in academic subjects on a 5-point scale.These scores were later used to analyze correlations between interest, achievement, and other variables such as gender and confidence. The sample size is n = 47. We used a two-way ANOVA to test our hypothesis. This method allows us to examine whether boys and girls differ in their mean achievement scores, whether mean scores vary across the five levels of interest, and whether the effect of interest on achievement depends on gender (i.e., whether there is an interaction between gender and interest).

Result analysis

According to the results of the two-way ANOVA, gender did not have a statistically significant effect on academic achievement, whereas confidence emerged as the strongest and most consistent positive factor influencing performance. Interest showed a weak correlation but was not statistically significant. In addition, the interaction effect between gender and confidence was not significant, indicating that the effect of confidence was consistent across both male and female students.

The simple regression analysis supported these findings. In Mathematics, both interest ($\beta = 0.77$, $p = 0.02$) and confidence ($\beta = 0.84$, $p = 0.006$) had significant effects, but confidence demonstrated a higher explanatory power ($R^2 = 0.176$), meaning it better accounted for variation in achievement. In Korean, interest was not significant ($\beta = 0.15$, $p = 0.62$), whereas confidence ($\beta = 0.95$, $p = 0.002$, $R^2 = 0.215$) had a very strong effect, explaining about 21.5% of the variance in achievement.

These results confirm that confidence, rather than gender or simple interest, is the key factor determining academic achievement. Therefore, education should not only aim to increase students' motivation or enjoyment but also focus on creating learning environments that strengthen self-efficacy and confidence.