

# Short Research Report Summary

## 1. Introduction

This study aims to analyze the factors affecting reading achievement among Turkish students using data from PISA 2022. The focus is on examining socio-economic, demographic, and emotional variables to understand their influence on student performance. By using a comprehensive regression approach, this report contributes to evidence-based educational insights.

## 2. Methodology

- Dataset: PISA 2022 (Turkey subset)
- Software: R (RStudio)
- Sampling: Stratified sampling by gender and school type
- Variables:
  - Dependent Variable: PV1READ (Reading performance)
  - Independent Variables: Book count, parental education, gender, school type, emotional indicators (BELONG, FEELSAFE, etc.)
- Statistical Techniques:
  - Descriptive analysis
  - Correlation matrix
  - Multiple linear regression (Model 5)
  - Residual diagnostics (normality, homoscedasticity)

## 3. Findings

- Book Count (recoded) -> Positive effect (Beta = +7.99,  $p < 0.001$ )
- Mother's Education -> Strong positive effect (Beta = +82.21,  $p < 0.001$ )
- School Type (Vocational) -> Negative effect (Beta = -35.86,  $p < 0.001$ )
- Gender (Female) -> Negative effect (Beta = -23.84,  $p < 0.001$ )
- Sense of Belonging (BELONG) -> Positive effect (Beta = +7.30,  $p < 0.001$ )

R-squared = 0.0828 (Model explains approx. 8.3% of variance)

Non-significant: Father's education, FEELSAFE, ANXMAT, FEELLAH

#### **4. Residual Diagnostics**

- Residuals vs Fitted Plot: Supports linearity and constant variance
- Histogram: Bell-shaped distribution
- QQ Plot: Normality confirmed (minor tail deviations)

Conclusion: Model assumptions are largely met.

#### **5. Conclusion & Discussion**

The study highlights that maternal education, book access, school type, gender, and emotional connection to school significantly affect students' reading achievement.

Students with greater book access, a stronger sense of belonging, and more educated mothers tend to perform better.

Students in vocational schools and female students, in this model, showed lower average performance.

Among emotional factors, only sense of belonging had a statistically significant effect.

#### **6. Educational Implications**

- Promote reading culture at home
- Strengthen emotional support in schools
- Provide targeted academic support in vocational schools
- Invest in parental education and engagement programs

#### **7. References**

All references and theoretical frameworks will be cited according to APA 7th edition guidelines in the full report.