

Student Well-Being and Reading Achievement: A Profile-Based Analysis of U.S. Students

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ABSTRACT

Student well-being is a critical factor influencing educational outcomes. Previous studies have highlighted the importance of school belonging, academic self-concept, and bullying in shaping students' well-being and academic achievement. However, little is known about how variations in well-being indicators predict students' academic success. Using a nationally representative sample of 4th graders from the PIRLS 2021 dataset, this study investigates (1) whether different student profiles exist based on well-being indicators and (2) how the profile membership predicted students' reading achievement. Latent Profile Analysis identified three distinct groups based on four well-being indicators: sense of school belonging, bullying experiences, feelings of tiredness or hunger, and absenteeism. Profile 1, with high absenteeism, tiredness, hunger, and bullying, and the lowest school belonging, showed the poorest reading performance. Profile 2, with moderate well-being and school belonging, performed better than Profile 1 but less well than Profile 3. Profile 3, with the highest well-being, strongest school belonging, and least bullying, achieved the best reading outcomes. These results suggest a clear link between a positive school environment and improved academic performance. The findings emphasize the need for schools to reduce bullying, foster inclusivity, and address students' basic needs, such as hunger and tiredness. By improving student well-being, educators and policymakers can enhance academic outcomes. Our future research will build on these results by comparing patterns across different countries to identify effective, globally relevant practices.

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INTRODUCTION

Background & Purpose

- Student well-being—especially school belonging and bullying experiences—strongly influences academic achievement.
- Positive environments (safe, supportive, with strong peer ties) help learning.
- Negative experiences (bullying, absenteeism, hunger, tiredness) hurt it

Research Question

To what extent do school belonging and bullying predict reading achievement in U.S. students?

Study Goals

- Identify student well-being profiles (based on belonging, bullying, hunger, tiredness, absenteeism).
- Examine how these profiles relate to reading achievement.

Framework

Guided by Ecological Systems Theory (Bronfenbrenner).

MATERIALS

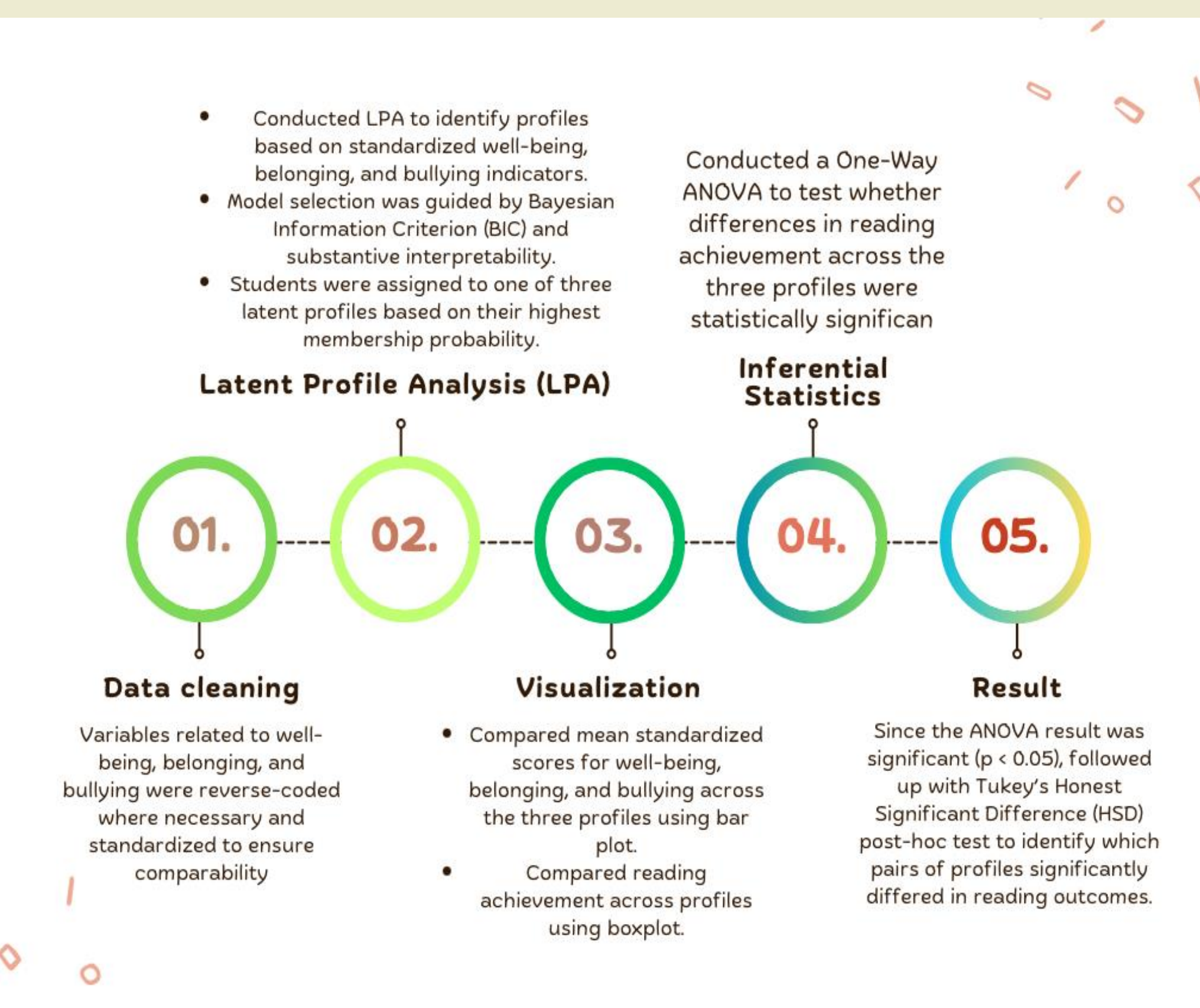
Data Source:

- PIRLS 2021 U.S. Fourth-Grade Student Datasets:
 - Student Achievement Data* (Reading scores)
 - Student Context Questionnaire* (Well-being, belonging, and bullying items)

Participants:

- 1,256 fourth-grade students from the United States.

METHODOLOGY



RESULTS

Latent Profile Analysis identified three distinct student profiles:

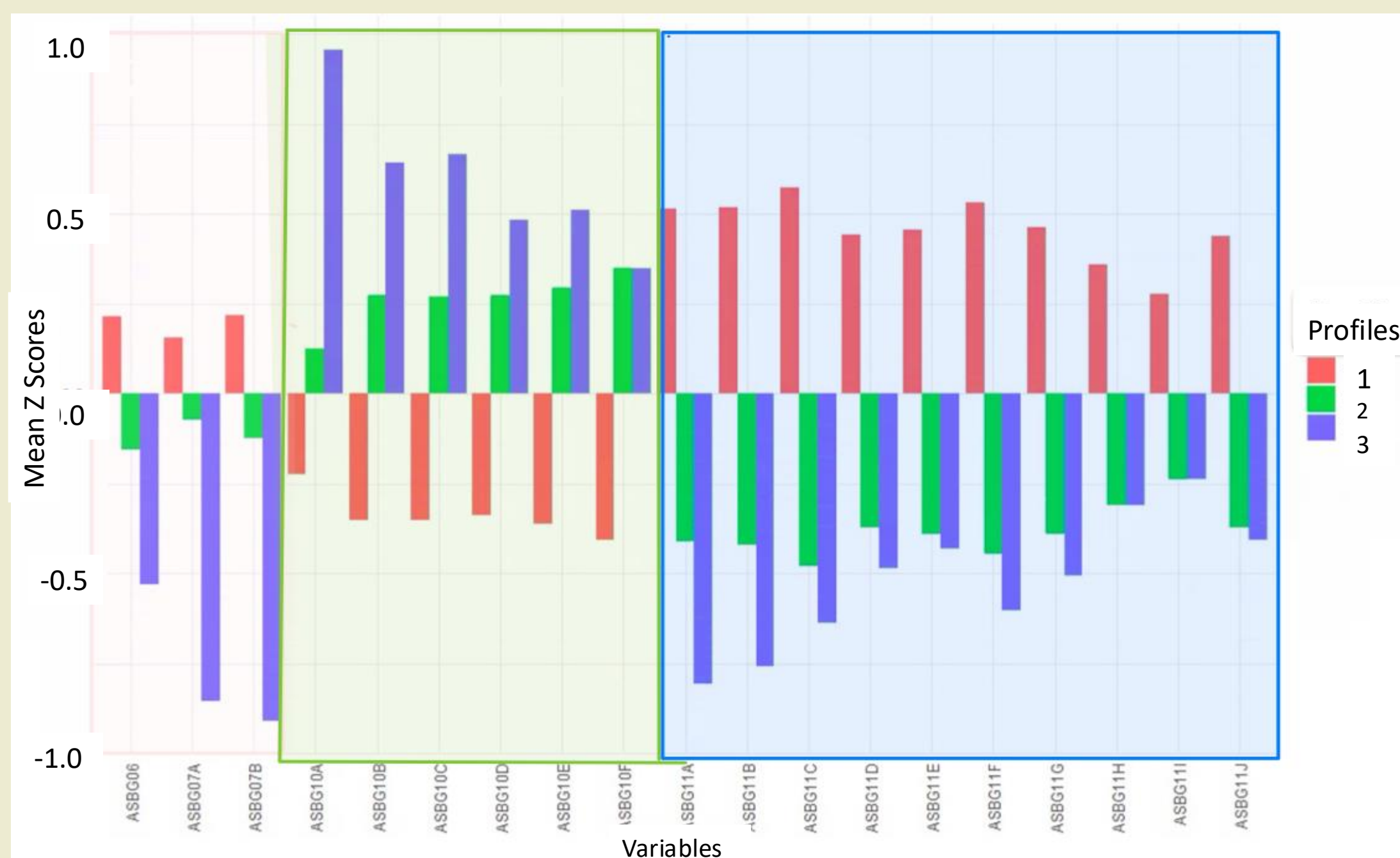
- Profile 1 (Low Well-being & Belonging, High Bullying):** Reported the highest absenteeism, tiredness, hunger, low school belonging, and high bullying.
- Profile 2 (Moderate Well-being):** Reported better well-being and lower bullying compared to Profile 1, but lower than Profile 3.
- Profile 3 (High Well-being & Belonging, Low Bullying):** Reported the lowest absenteeism, hunger, tiredness, highest school belonging, and least bullying.

Reading Achievement Comparison

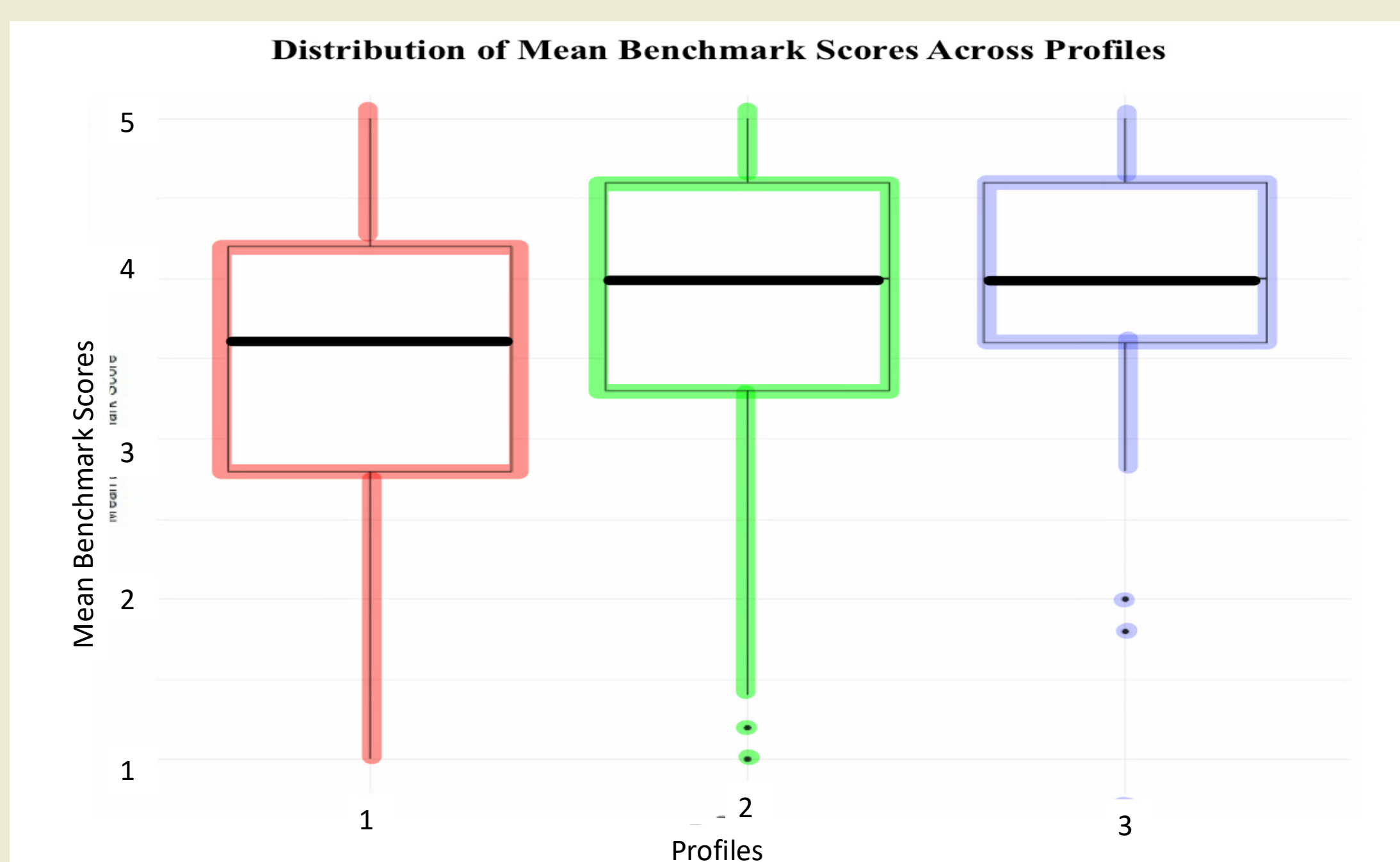
A one-way **ANOVA** revealed a statistically significant difference in reading achievement across the three profiles ($F(2, 1280) = 69.13, p < .001$).

Post-hoc **Tukey's HSD** tests showed:

- Profile 1 scored significantly lower** than both Profile 2 ($p < .001$) and Profile 3 ($p < .001$).
- There was **no significant difference** between Profiles 2 and 3 ($p = .30$).



Graph 1. Comparison of Variables across profiles.



Graph 2. Distribution of mean benchmarks across profiles.

DISCUSSION

The results were consistent with our expectations, showing that students with higher well-being and school belonging and fewer bullying experiences had significantly better reading achievement. This aligns with previous research suggesting that positive school environments contribute to academic success. The study highlights the importance of fostering inclusive, supportive, and safe school climates to boost student well-being and achievement. Addressing basic needs like hunger and tiredness is also crucial for supporting learning outcomes.

COMPARISON	MEAN DIFFERENCE	95% CI (LOWER-UPPER)	P-VALUE	SIGNIFICANT?
2 vs 1	0.42	0.29 – 0.54	< 0.000001	✓
3 vs 1	0.61	0.30 – 0.92	0.0000102	✓
3 vs 2	0.19	–0.11 – 0.50	0.301	✗

Table 1. Comparison of profiles based on Turkey Honest Significant Difference test.

CONCLUSIONS

This study shows a strong link between **student well-being, school belonging, bullying experiences, and reading achievement**. Schools aiming to improve academic outcomes should focus on reducing bullying, building inclusive environments, and supporting students' physical and emotional well-being. Future research will expand on these findings by examining cross-national patterns to inform global educational practices.

REFERENCES

- PIRLS 2021 Database, International Association for the Evaluation of Educational Achievement (IEA)
- Bronfenbrenner, U. (1979). *The Ecology of Human Development: Experiments by Nature and Design*. Harvard University Press