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Introduction

- A key desired outcome of undergraduate education is improvement in critical thinking, but barriers exist for student confidence in its achievement.
- Previous research has described that first generation college students have greater financial concerns (Lohfink and Paulsen, 2005), lesser parental engagement (Davis, 2010), and poorer academic preparation (Pascarella et al., 2004) than their peers.
- Meanwhile, students who have had at least one guardian or grandparent as an alum of the University may have fewer of these barriers to limit learning.
- It is not well understood how this demographic difference impacts student confidence in critical thinking, particularly over a specific class period emphasizing the subject.

Objective

- Evaluate how demographic classifications impact a student's confidence of critical thinking proficiency, as well as its growth over time in an experiential research course.

Procedures

- Procedures for this experiment were identified by the Kansas State University Research Compliance Office as exempt under the criteria set forth in the Federal Policy for the Protection of Human Subjects, 45 CFR 46.101(b)(1)(i); URCO proposal # 8609.
- Students in an experiential course-based undergraduate research class completed a 20-question survey ranking their confidence of critical thinking proficiency at the beginning and end of the semester. Response options were:
 - 1 = Limited/no proficiency
 - 2 = Some proficiency
 - 3 = Proficiency (indicated by dotted line)
 - 4 = High proficiency
- Class topics emphasized the development of critical thinking by conducting an experiential course-based undergraduate research project on replacing antimicrobials in a broiler diet.
- Respondents were classified as first generation students or legacy (at least one guardian or grandparent as an alum of the University) and responses blinded for analysis.
- Data were analyzed using the GLIMMIX procedure of SAS v 9.4.
- Results were considered significant if $P < 0.05$.

Results

Figure 1: Overall impact of confidence of critical thinking proficiency of students.

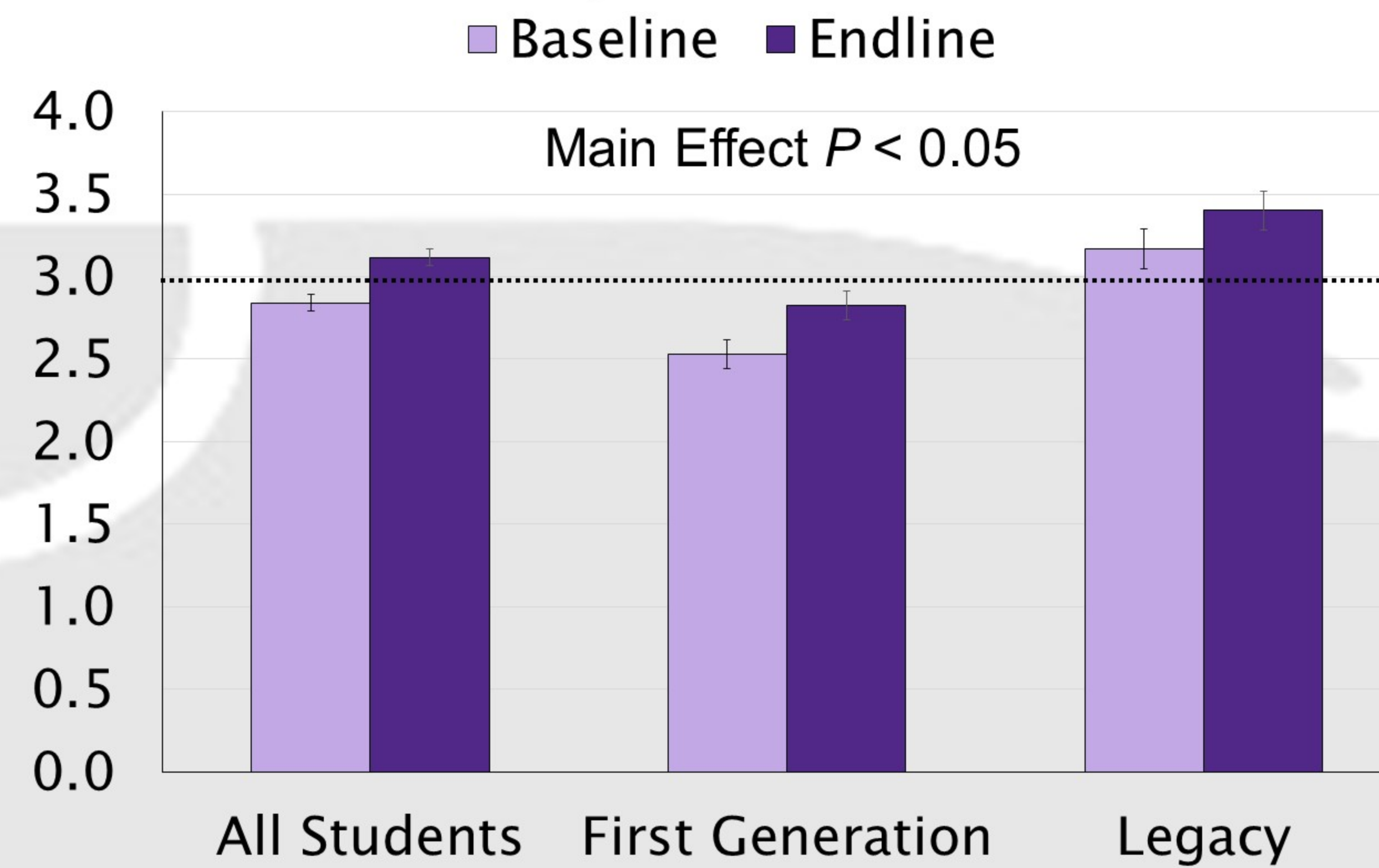


Figure 2: Confidence in offering constructive criticism.

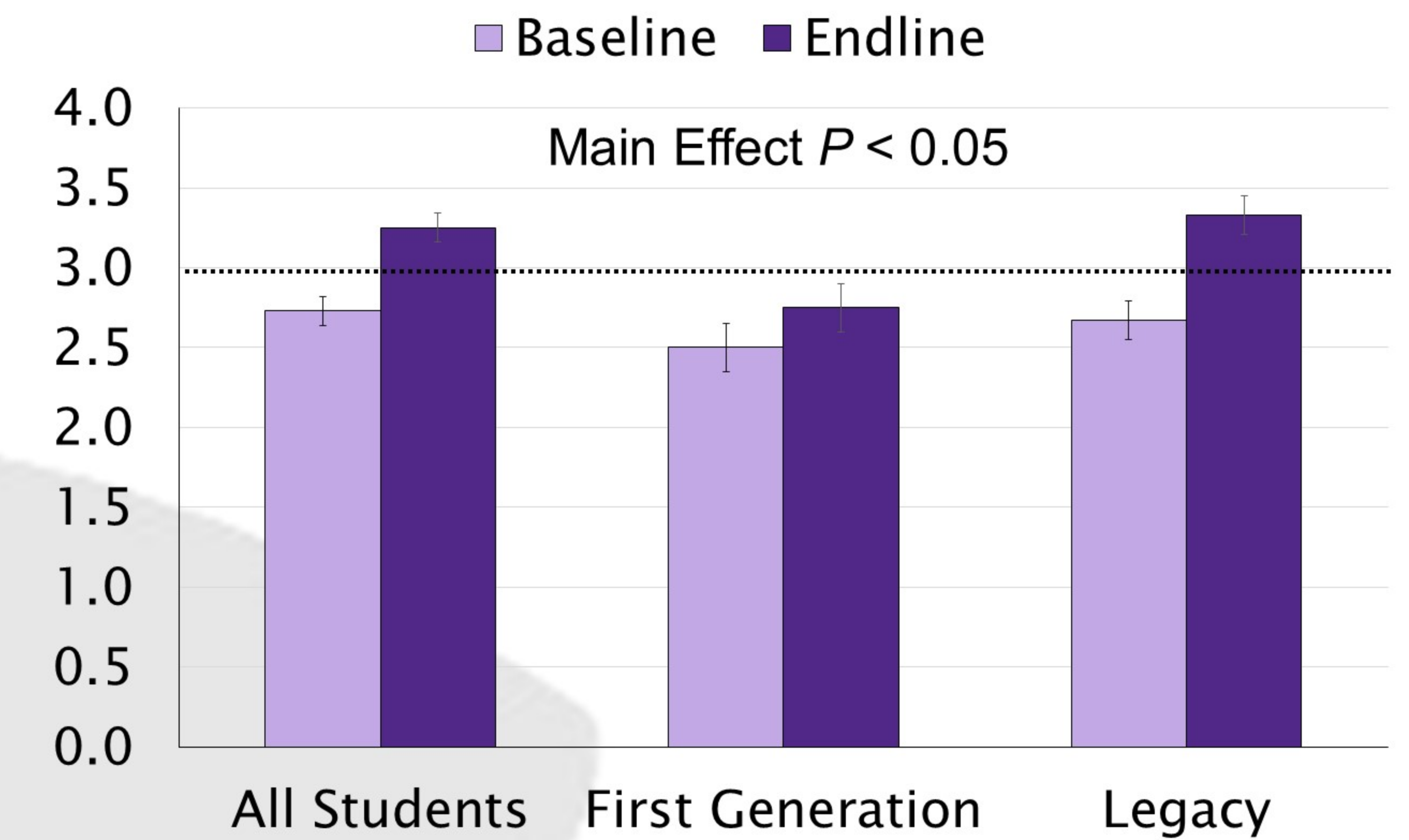


Figure 3: Confidence in fairly evaluating different points of view.

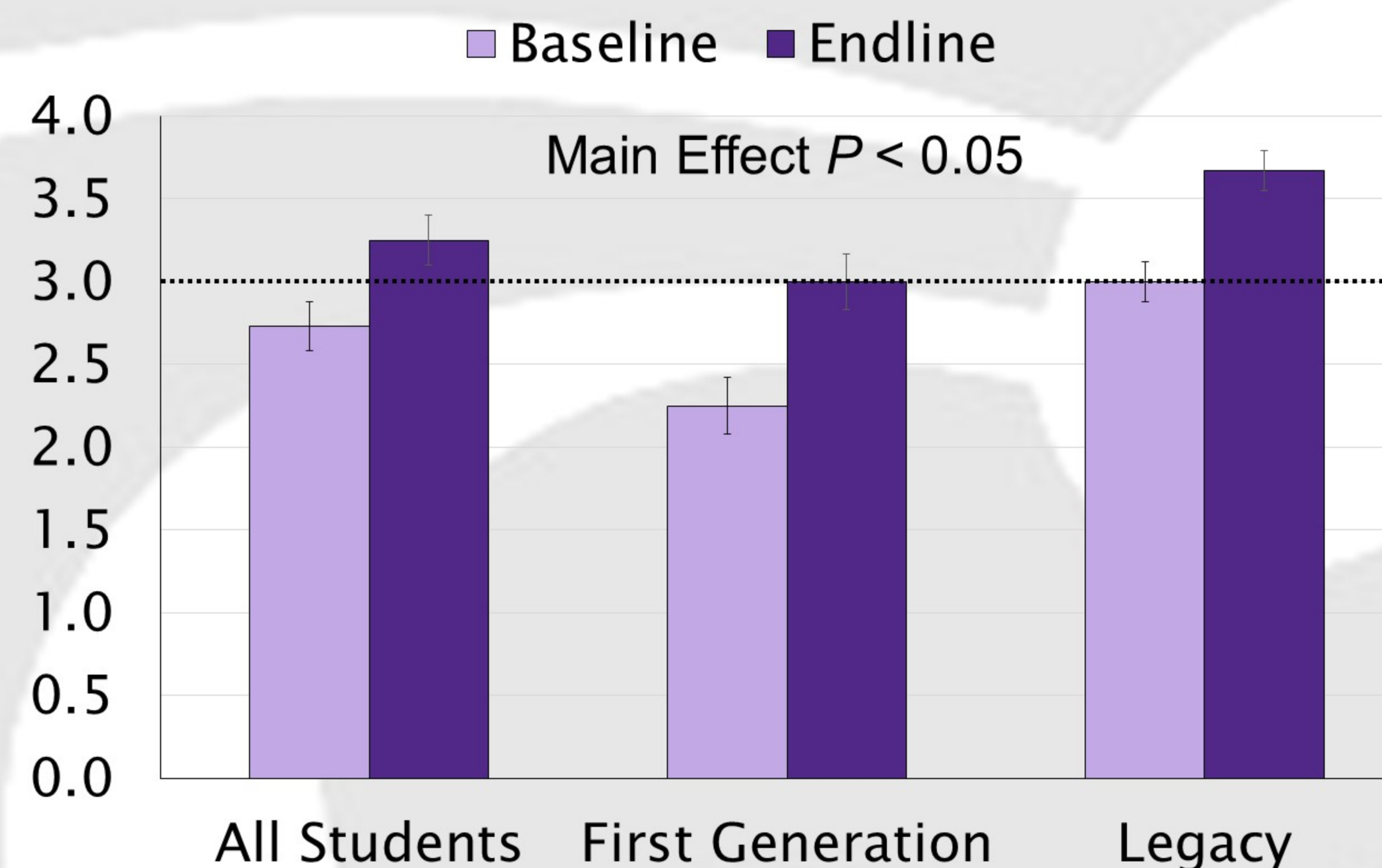
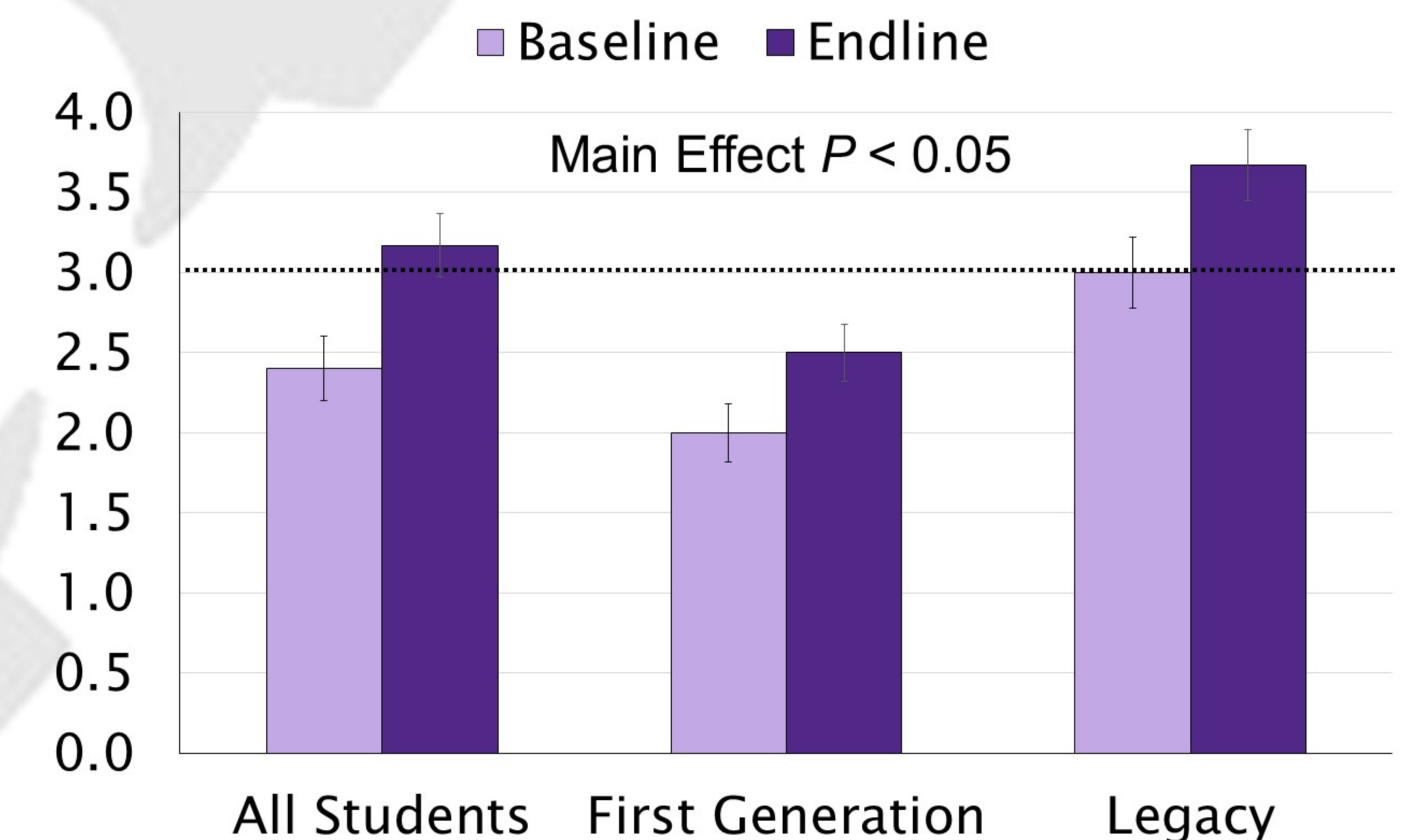


Figure 4: Confidence in differentiating descriptive from analytical writing



Conclusions

- There was no impact of gender, transfer status, state of residency, number of academic hours completed, GPA, or ACT on any measured variable ($P > 0.10$).
- An experiential course-based undergraduate research experience improved ($P < 0.05$) overall student confidence in critical thinking proficiency across measured student demographic categories.
- First generation college students had lower initial confidence in critical thinking compared to their peers in most measured categories. While an undergraduate research experience improved this confidence, most self-reported measures were still below proficiency, including overall confidence in critical thinking.
- Students who had at least one guardian or grandparent as an alum of the University reported having greater initial and ending overall confidence in critical thinking.
- An experiential undergraduate research course improves student confidence in their critical thinking proficiency. This net improvement was not impacted by measured student demographic information.