



Retention of Underrepresented Students in STEM: Lessons from Stony Brook's Simons STEM Scholars Program

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Introduction

Science, technology, engineering, and mathematics (STEM) programs provide critical opportunities for education and training needed for advanced STEM careers. Despite their importance for advancement, there are significant and persistent racial disparities in the recruitment and retention of underrepresented minority (URM) students in competitive STEM education programs (e.g., Hansen et al., 2023). The lack of numeric representation of URM scholars in STEM undermines opportunities for equality in STEM fields and advancement in the STEM domains where diverse scholars could contribute.

In an attempt to address these disparities at a local-level, Stony Brook University recently launched the Simons STEM Scholars Program.

The Simon STEM Scholars Program aims to recruit URM students pursuing STEM and provides financial and academic support via summer training, as well as social support throughout the entirety of the students' undergraduate training. Students participate in a residential program on campus before freshman year for 6 weeks, allowing them to create a sense of community prior to the transition to college. The inaugural class began Summer 2023, consisting of 29 entering scholars following a competitive recruitment process.

Method & Analytical Approach

Research aim: to explore the academic; social; and emotional well-being of Simons Scholars during the transition to college through the Summer bridge Program. Simons STEM Scholar students completed a series of weekly quantitative online surveys on their summer bridge experiences, academic efficacy, identity, belonging and more. Course grades were assessed along with overall well-being by averaging scores across 6 weeks and correlating key variables to academic performance.

The scale was used to assess the well-being of the scholars. (sample item)

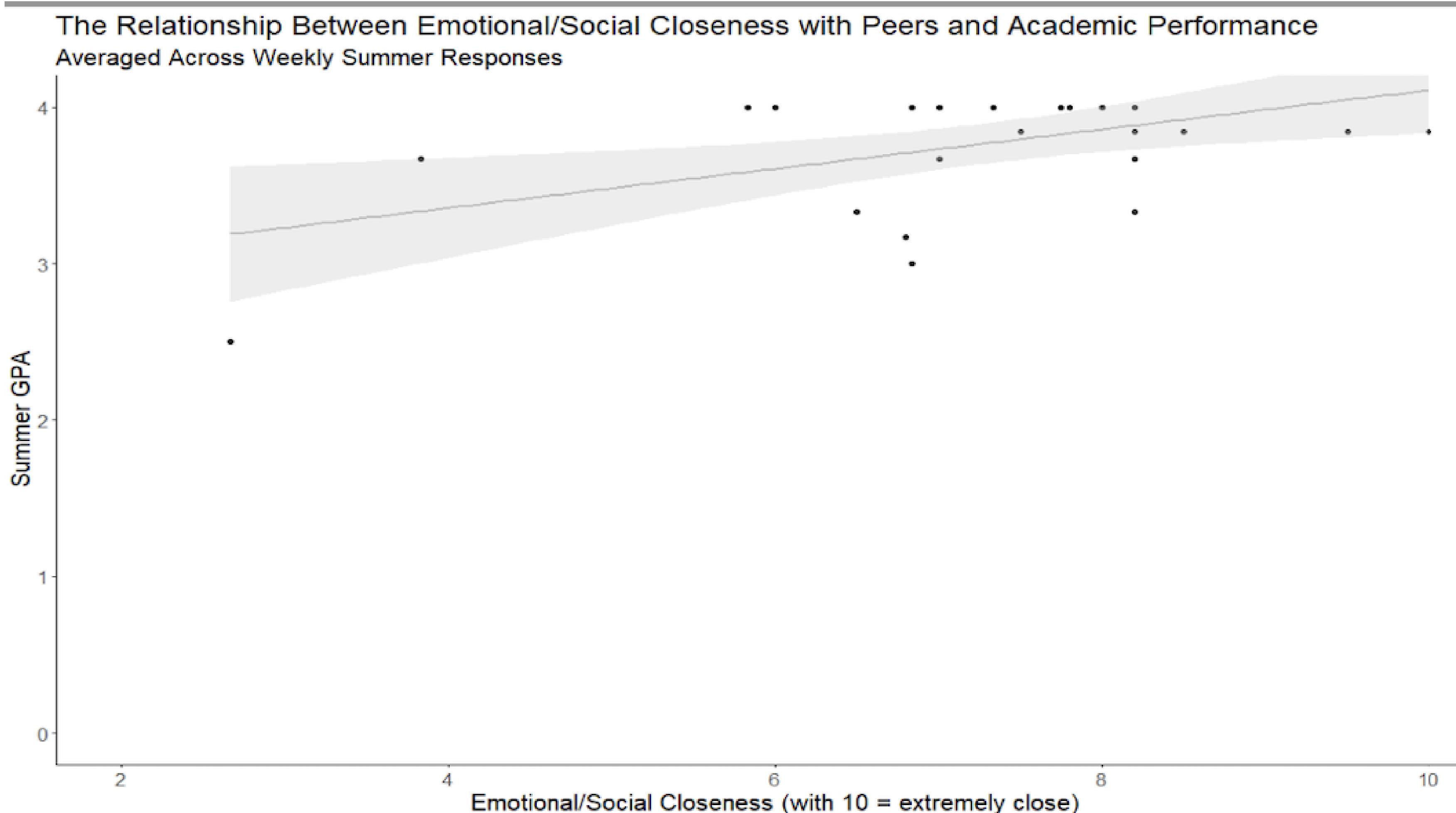
How socially and emotionally close/connected do you feel to your peers at the Simon's STEM Scholars Program (SSS)?



Demographics

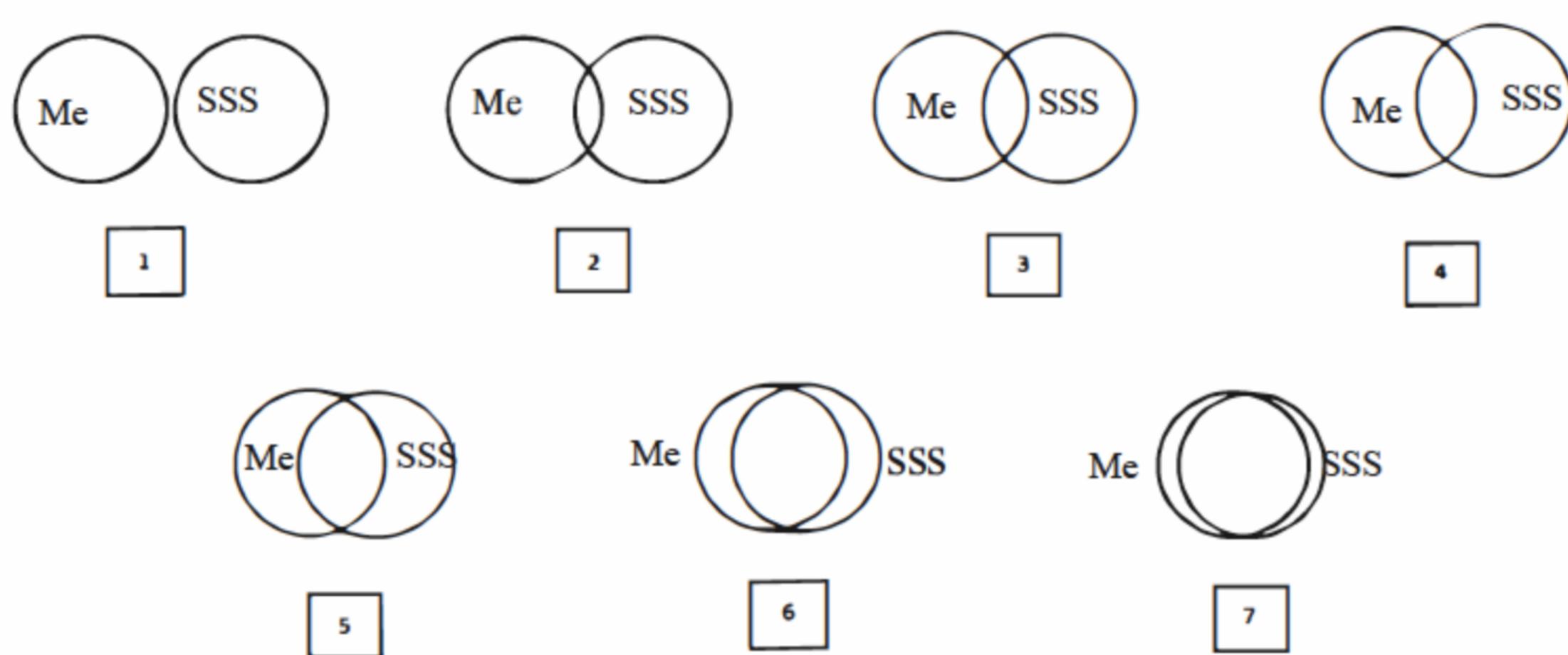
- High school graduates admitted to Stony Brook University and the Simons STEM Scholar program were the sample ($M = 17.5$ years; $Range = 17-18$ years). Of the 29 scholars, 10 identified as multiracial, 8 identified Black/African American, 6 identified as Latine/Hispanic, 2 as Caribbean or West Indian, and 3 did not report their race. 13 students identified as cismen, 10 identified as ciswomen, 2 identified as genderqueer, and 4 students did not report their gender.
- Hypothesis: Social belonging to peers and program predicts higher academic achievement

Results

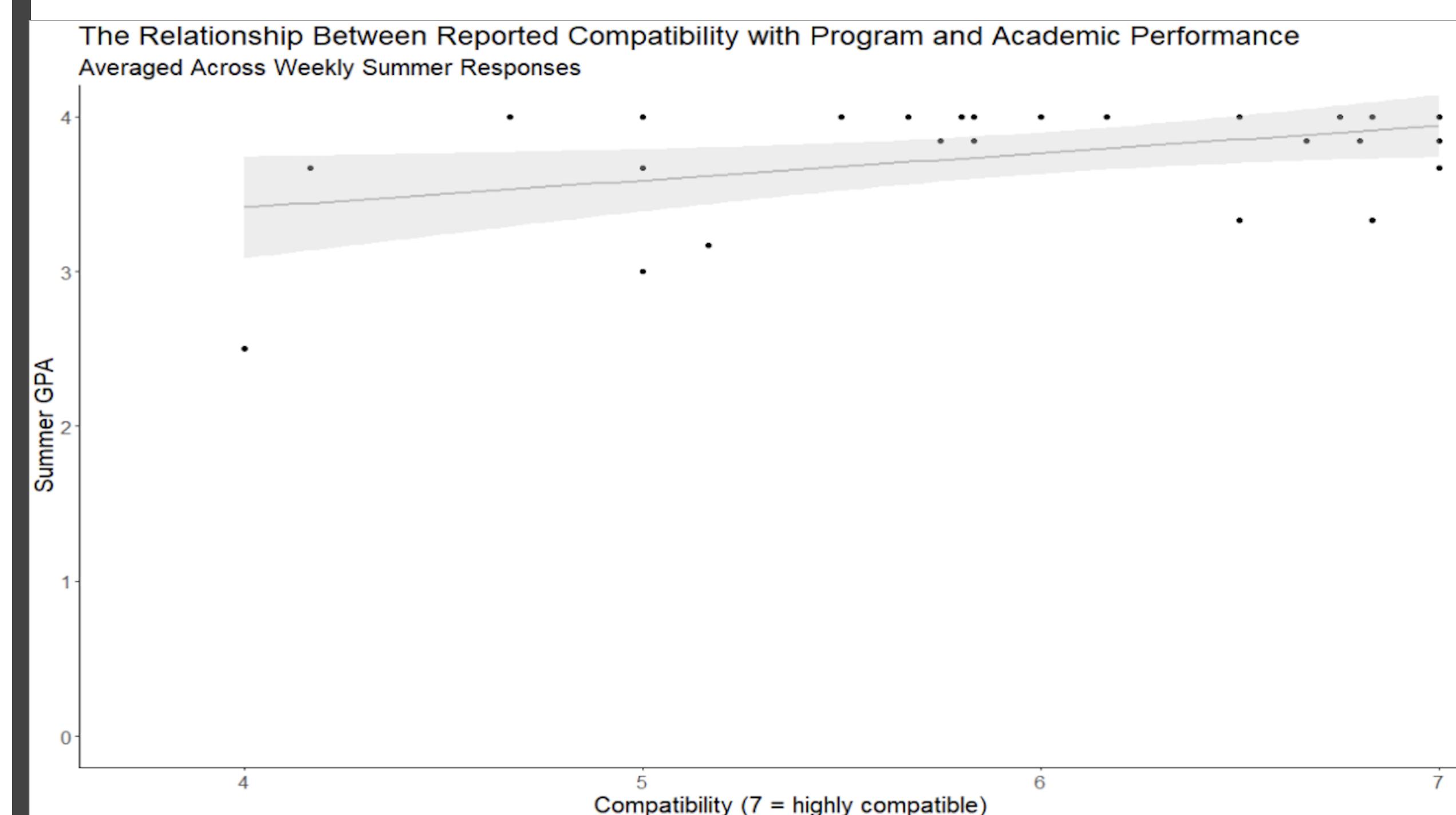


- Findings show a positive relationship over the 6 weeks of summer bridge, between emotional/social closeness and course GPA, $r(26) = .49, p = .007$.

For the following question, select one of the 7 pairs of overlapping circles shown below that best represents how compatible you think these two identities are (you and the Simon's STEM Scholars program (SSS)).



The students' compatibility with the Simons STEM program was assessed using a modified Inclusion-of-the-Other in-the-Self-Scale (the IOS-scale, Aron et al., 1992). This scale asks students to pick the circle that best represents the compatibility between their two identities



- Findings indicate a positive relationship between compatibility with Simons STEM Scholars program and Scholars as well as summer bridge GPA, $r(26) = .43, p = .023$.

Conclusion

Overall, we have observed a positive relationship between (1) emotional/social closeness with peers and Summer bridge GPA and (2) perceived compatibility with the program and GPA.

Notably, a strength of these findings is that we were able to collect longitudinal data such that participants reported on these measures once a week throughout the Summer prior to getting their final grades.

These findings suggest that facilitating social connections and perceived compatibility might be a key factor in improving academic performance among STEM majors.

The Simons STEM Scholars program is actively welcoming its second cohort of students this spring, data will be gathered on these incoming freshmen and their experiences during the Summer Bridge program. This longitudinal study will continue to follow students throughout this program and hopefully draw important conclusions regarding STEM and students belonging to unrepresented minorities.