

Assessing Graduate Student Mentoring in STEM fields

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“Promoting Excellence in Graduate Education and Increasing Hispanic STEM Related Degree Completion”

**Title V Part B PPOHA
U.S. Department of Education**



Project Goals

Goal 1: Capacity

To enhance and create additional capacity—by strengthening existing STEM related programs and developing two new programs—for the CSUB STEM graduate program which facilitates increased enrollment, provides needed student support, improves research facilities and engages faculty to better serve Hispanic graduate students through degree completion.

Goal 2: Culture

To develop a university-wide “graduate school-going culture” through a robust and comprehensive program that encourages, supports, engages, and prepares students to pursue graduate education.



Faculty Mentoring

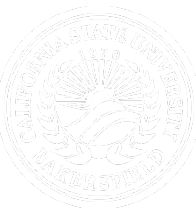


Faculty Development

- **increase mentoring skill and promote an interdisciplinary approach to graduate education**
- **identify experienced faculty research mentors with evidence of success in graduate research and supervision**
- **train faculty in inclusive advising and mentoring of graduate students**

Collaborative Research

- **support expansive opportunities for student-faculty research collaboration**
- **offer students opportunities to engage with faculty in collaborative research projects**
- **expanded graduate student opportunity to be mentored more effectively by faculty, promoting engagement in more meaningful research**



Faculty Fellows program—an adaptive faculty and institutional development program

Cohort 1: 7 faculty

- experienced faculty selected for program with a combined 113 graduated graduate students
- currently mentoring an additional 54 students combined (data not collected on thesis v. non-thesis)
- programs: biology, geology, nursing

Cohort 2: 12 faculty

- mix of both “successful” and less successful faculty (based on student ROP)
- mix of ranks: 6 Assistant, 3 Associate, 3 “Full” Professors.
- currently mentoring 73 students combined (29 thesis students and 44 non-thesis students)
- programs: biology, computer science, geology, nursing, psychology

Cohort 3: 8 faculty (*in progress*)

- selected to produce/develop identified and proposed institutional resources

Faculty mentoring program:

Self-assessment and data-based refinement of mentoring practice

Progress and goal assessment

General category response scoring framework:

- 0 - Establishing
- 1 - Applying
- 2 - Integrating
- 3 - Systematizing

Complete the following self-assessment survey, giving yourself a score of from 0 to 3 for each response category. Use underlining, bold, or highlighting to mark your responses.

Goal A. Mentors develop and maintain structures and systems to promote two-way communication and involvement. Mentees are supported in becoming independent, confident, and strong leaders in their own education and discipline.

A1. Communication

- 0 – Mentor does not communicate with mentees.
- 1 – Mentor communicates with mentees.
- 2 – Mentor *frequently communicates* with mentees to ensure ongoing commitment to communication and development.
- 3 – Mentor *collaborates* with mentees to ensure ongoing commitment to communication and development.

A2. Goals and objectives

- 0 – Goals and objectives are not shared with mentees.
- 1 – Goals and objectives are shared with mentees.
- 2 – The process of communicating goals and objectives is clear and includes multiple modes of communication.
- 3 – The process of communicating goals and objectives is developed in collaboration with mentees, is clearly described, and includes multiple modes of communication.

A3. Mentor-mentee relationship

- 0 – Mentors and mentees set up a schedule to meet.
- 1 – Mentors meet regularly with mentees.
- 2 – Mentors build a trusting relationship and are attuned to the needs of the mentee.
- 3 – Mentors become a trusted member of the mentee's support system and are responsive to the changing needs of the mentee.

A4. Feedback

- 0 – Mentees do not provide feedback.
- 1 – Mentees provide only positive feedback.
- 2 – Mentees provide both positive and negative feedback.
- 3 – Mentees engage in collaborative and constructive criticism, and suggest mentoring improvements.

Goal A.

- Mentors develop and maintain structures and systems to promote two-way communication and involvement.
- Mentees are supported in becoming independent, confident, and strong leaders in their own education and discipline.

Goal B.

- Mentor plans, implements, evaluates, and refines their activities through data analysis and critical self-evaluation.
- Mentors purposefully and systematically collect data, using multiple measures, to demonstrate implementation, impact, and areas for continuous improvement.

Goal C.

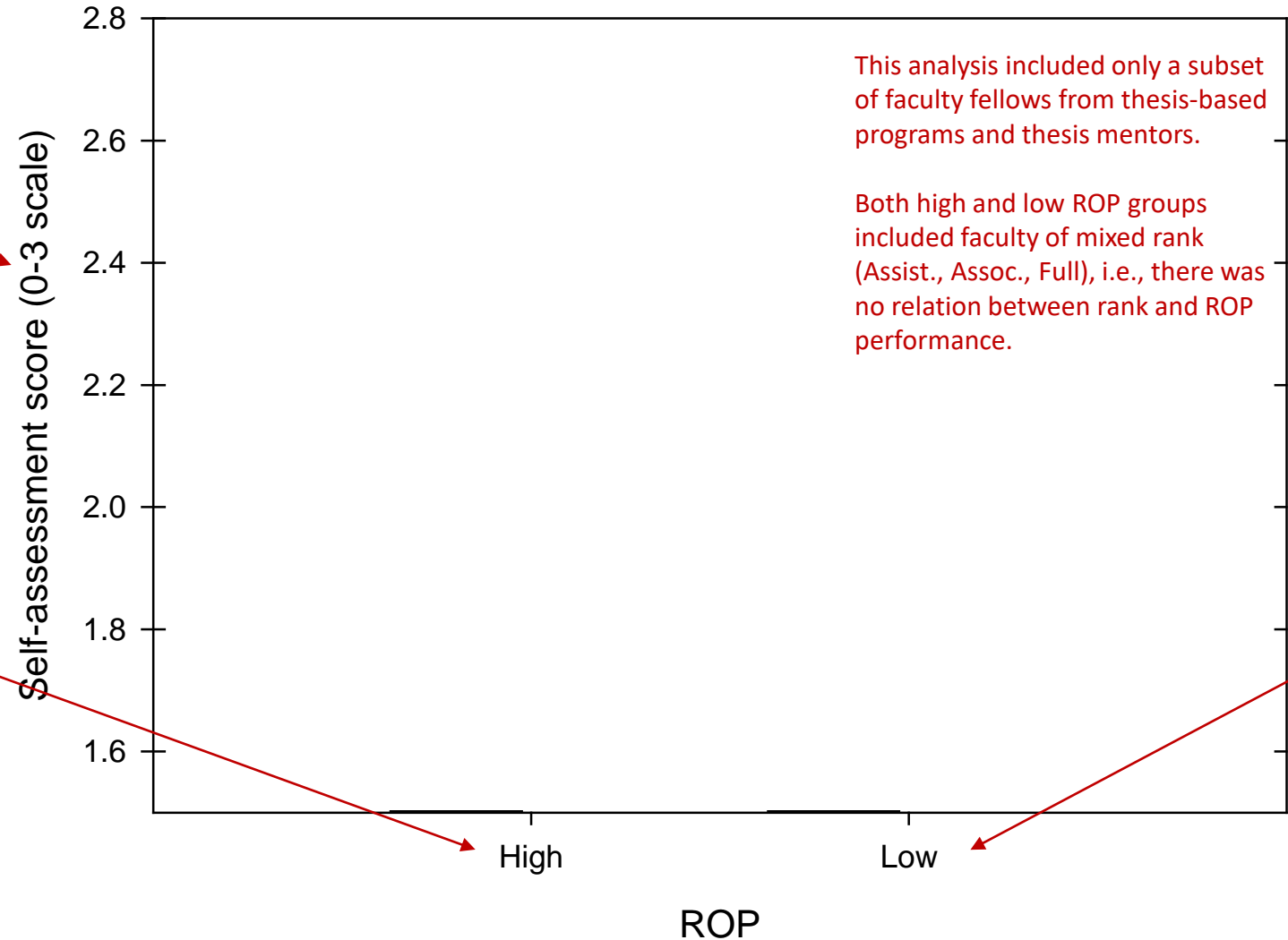
- Mentors expand the knowledge and refine their practice through a collaborative, culturally responsive process, supported by research.
- Mentors apply new learning to mentoring practice through engaging in goal setting and reflection, implementing inquiry action plans, and analyzing data.
- Mentors engage in self-reflection, goal setting and progress monitoring.

Faculty mentoring program:

Self-assessment and data-based refinement of mentoring practice

Faculty self-evaluated their mentoring based on 11 questions:
0 lowest/worst score
3 highest/best score

“High” rate of progress (ROP) means that students of the mentor are regularly meeting or exceeding expected time to degree milestones.

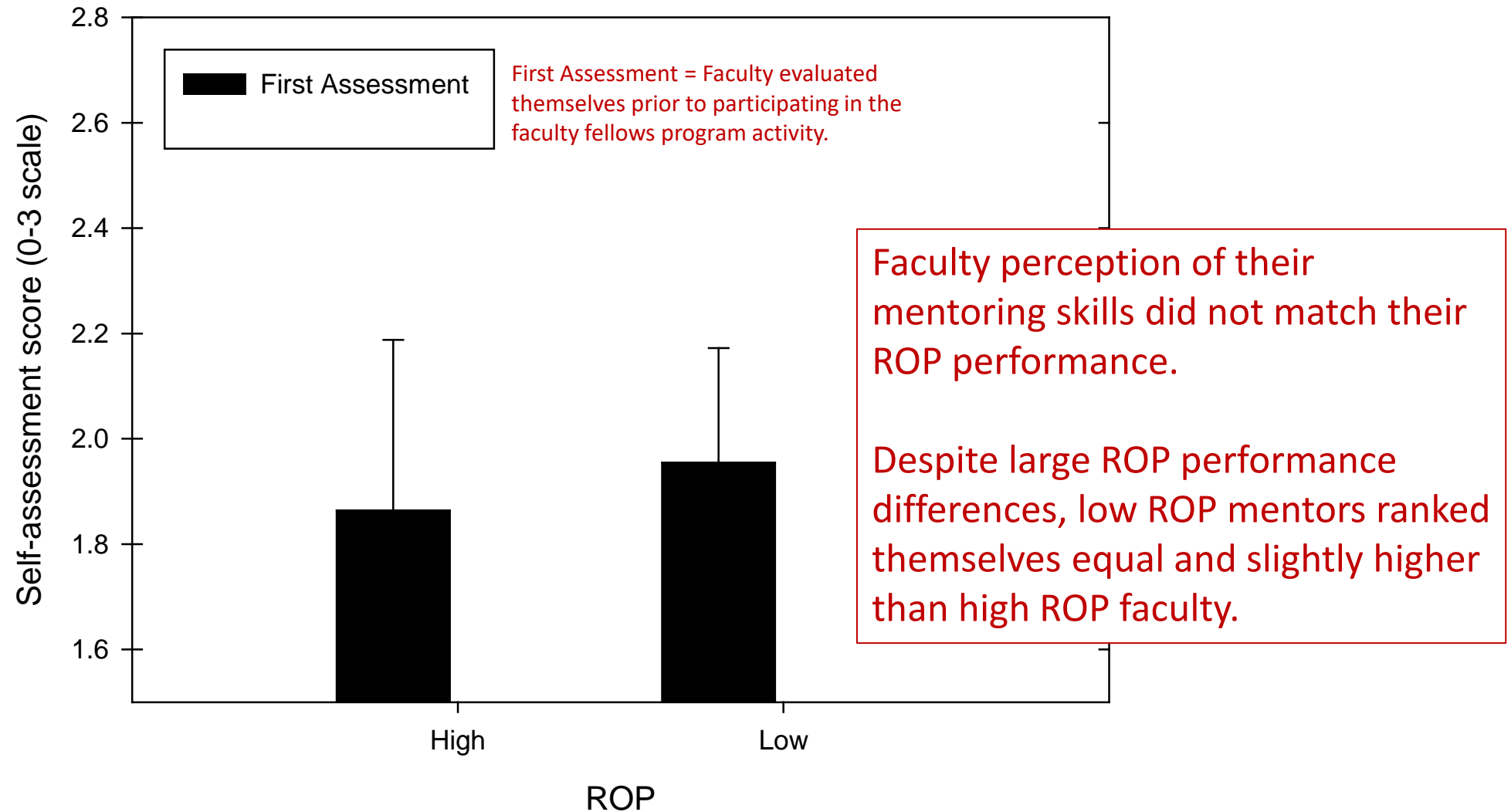


This analysis included only a subset of faculty fellows from thesis-based programs and thesis mentors.

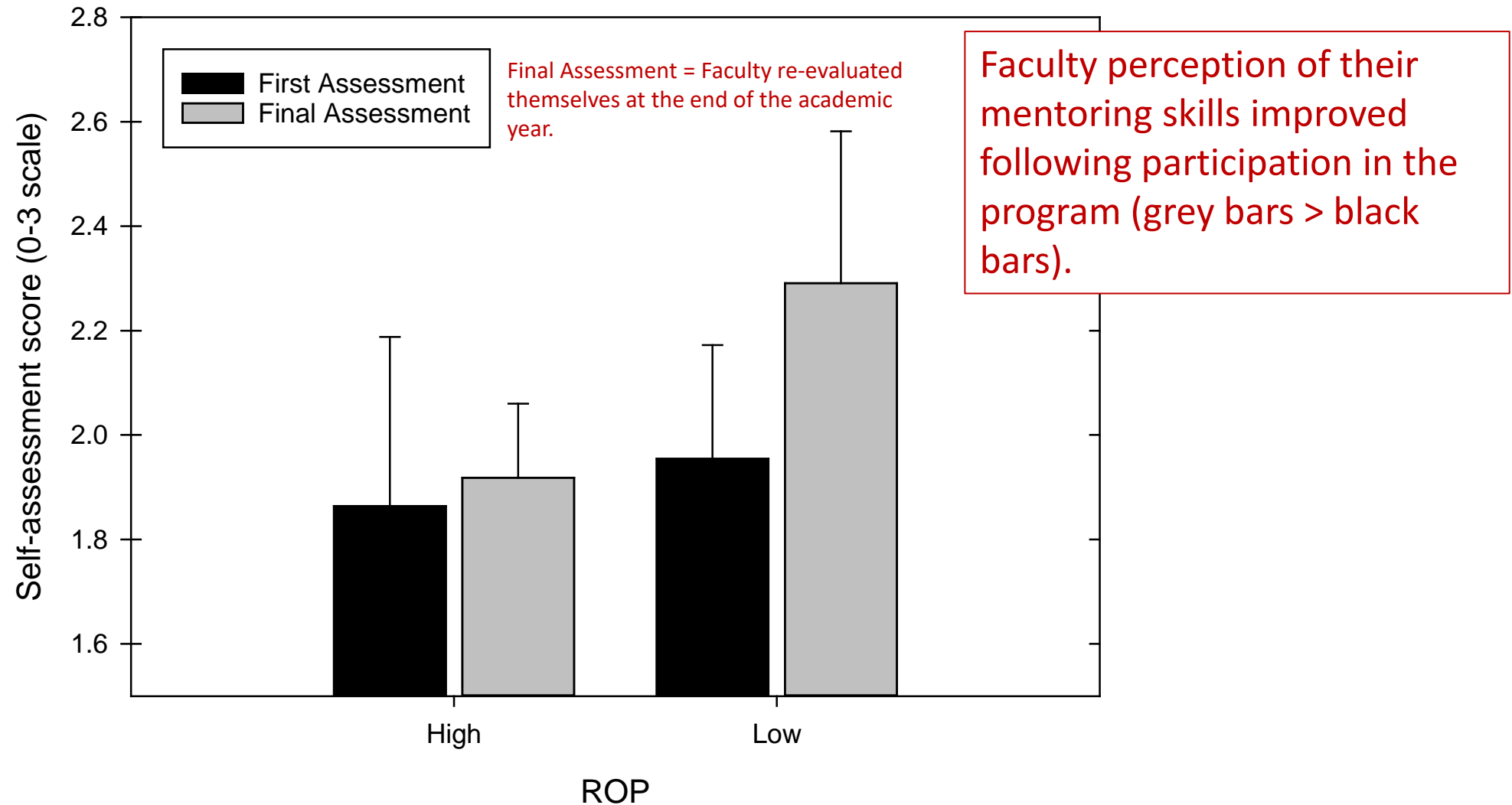
Both high and low ROP groups included faculty of mixed rank (Assist., Assoc., Full), i.e., there was no relation between rank and ROP performance.

“Low” ROP indicates that students are not achieving timely completion of degree milestones.

Faculty mentoring program: Self-assessment and data-based refinement of mentoring practice

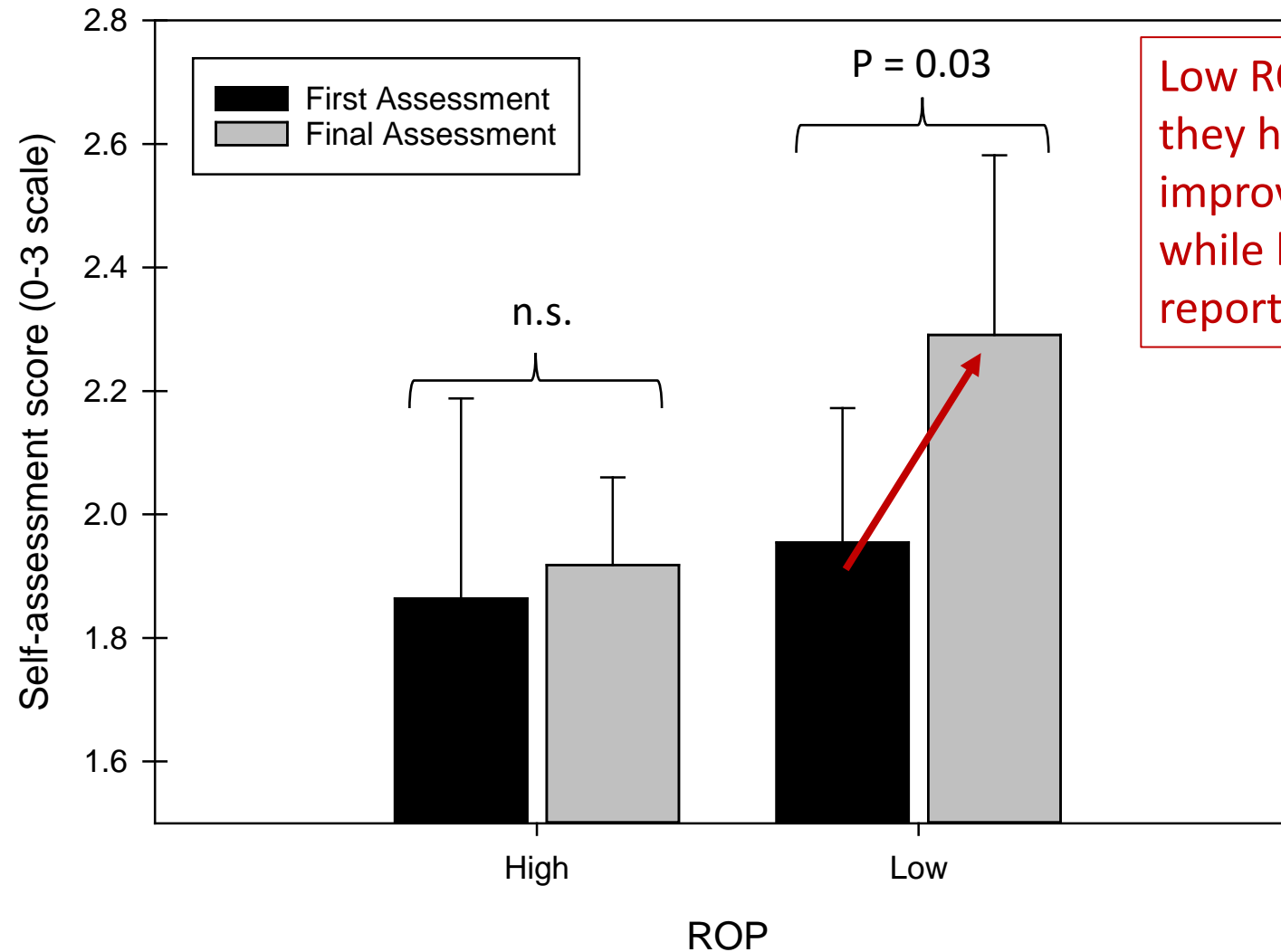


Faculty mentoring program: Self-assessment and data-based refinement of mentoring practice



Faculty mentoring program:

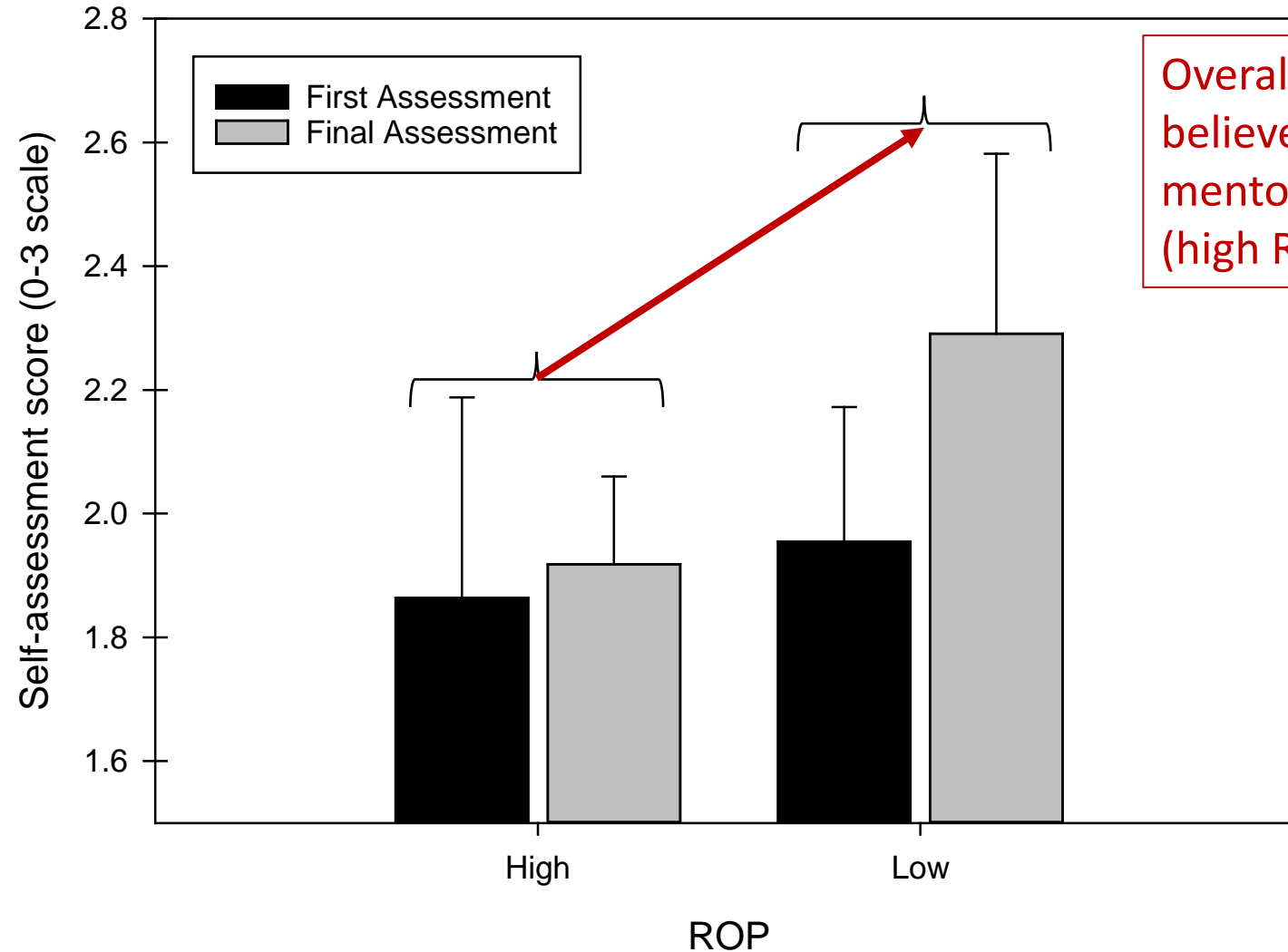
Self-assessment and data-based refinement of mentoring practice



Low ROP mentors believed they had significantly improved in their mentoring, while high ROP mentors reported little change.

Faculty mentoring program:

Self-assessment and data-based refinement of mentoring practice



Overall, low ROP mentors believed they were better at mentoring than successful (high ROP) mentors.

Faculty mentoring program:

Self-assessment and data-based refinement of mentoring practice

High ROP mentors tended to be self-critical with additional efforts to improve planned. Half of faculty high ROP faculty reduced their self-evaluation scores following participation.

High ROP faculty examples:

“There are increasingly powerful tools available that allow researchers work effectively as teams. I am hoping to expand and revise my approach to use best practices in this context that will further help my goal of getting my students to graduate in a timely fashion.”

“I realize now that there is much more that I could be doing to better support my students.”

Faculty mentoring program:

Self-assessment and data-based refinement of mentoring practice

Low ROP mentors reported completion of their goals in a single term of effort. More than half of low ROP faculty reported perfect or near perfect self-evaluation scores at the conclusion of the program.

Low ROP faculty examples:

“I aimed to become a better and more effective mentor, and believe I have done that.”

“I do believe I improved my mentoring significantly... I do feel that it is difficult to obtain transparent feedback from my mentees, although discussions with them this semester encouraged them to “open up” to me about their experience as my mentee.”

Faculty mentoring program:

Self-assessment and data-based refinement of mentoring practice

High ROP mentor and student evaluations largely agreed.

High ROP mentor:

“I try to work supportively and synergistically with my students. As much as possible, I schedule time when I am working as an assistant to them on their project. I learn about their work, approach, and where they are, there is lots of time to discuss other issues as we work together, and they are reinforced in their ownership of their developing project.”

Graduate student:

“Collaborative research with my faculty advisor is definitely one of the best parts of my graduate experience. Being able to work so close with faculty and becoming confident in my own research skills definitely is helpful.”

Faculty mentoring program:

Self-assessment and data-based refinement of mentoring practice

High ROP mentor and student evaluations largely agreed.

High ROP mentor:

“My overarching goal was also to provide support for graduate students that are also URM.... I wanted to provide space that helps students feel supported in my lab/mentorship. I set aside a time each week for us to meet and work, with each of us, including me!, stating a writing goal and being held accountable by the group. We were all equal members of the team facing similar challenges and working together to make progress.”

Graduate student:

“My advisor and I would update each other on our research in terms of stages, problems encountered, new ideas, etc. Meeting with my advisor also gave me the opportunity to ask questions, receive reassurance and direction. This program set expectations for myself and my advisor (on top of personalized expectations of each other) which made collaboration and research much more feasible and organized. My advisor emulates what I desire to be: as a scientist, researcher and educator.”

Faculty mentoring program:

Self-assessment and data-based refinement of mentoring practice

Low ROP mentors and their students had large discrepancies in their reporting and evaluation.

Low ROP mentor:

“My goal was to work with students on their time management and I have been monitoring that progress. A more quantitative monitoring of progress has assisted me with helping the students identify realistic timelines and expectations, with greater accountability.”

Graduate student:

“I was already busy and more meetings and assignments just made me feel like I was busier and more behind... I was made to feel bad when I didn’t complete things that I had been assigned by my advisor.”

Faculty mentoring program:

Self-assessment and data-based refinement of mentoring practice

Low ROP mentors and their students had large discrepancies in their reporting and evaluation.

Low ROP mentor:

“I made a document that helps me to track the goal deadlines set by each individual student, when the goal was actually reached, and the students’ feedback as to why the goal was not reached “on time”....”

Graduate student:

“As a graduate student, you’re in a weird place as you’re not a student, but not a peer... There’s no sense of community. I understand this is a two-way interaction, but after a certain point trying to connect and bridge those gaps to form a community tends to become painful, exhausting and pointless when time, energy and passion isn’t reciprocated.”

**What questions and future directions
emerge from these data?
How can we improve faculty mentoring?**



How can we help mentors do better and more accurate self-assessment? How can we get data and information to mentors (such as ROP) so that they have metrics available to gauge and monitor performance changes?

What are “best practices” for graduate mentoring? What resources or skills are needed for mentors to improve in their mentoring skills? What types of forums, events, and/or programs can we create to assist faculty in sharing best mentoring practices?

Faculty with high student ROP also have high publication rates. How are these related? Does research productivity positively influence student ROP? Can we better support faculty scholarship to increase the number of high performing faculty?

***Can we help faculty to develop data-based methods and practices that will result in continual improvement over time?**

Thank You



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