

Young, K. A., Marayong, P., & Vu, K-P. L. (2022). Faculty mentor training to change mentoring practices at a diverse R2 university. *Journal on Excellence in College Teaching*, 33(4), 105-132.

Faculty Mentor Training to Change Mentoring Practices at a Diverse R2 University

Kelly A. Young
Biological Sciences

Panadda Marayong
Mechanical and Aerospace Engineering

Kim-Phuong L. Vu
Psychology

The Advancing Inclusive Mentoring (AIM) Program was created to share best practices in inclusive and positive mentoring with faculty members who work with undergraduate or graduate students on independent research, scholarly, or creative works across disciplines. This hybrid program contains 35 online episodes within six modules and is complemented by six facilitated group discussion sessions. Participants' viewing behaviors and responses to a post-program survey were assessed. Results showed that the AIM program was beneficial, useful, and engaging to participants. Furthermore, the program increased the participants' knowledge base and relevant mentoring skills for serving diverse and underrepresented students.

Introduction

The mentoring relationship between faculty/staff and students can increase mentees' academic performance (Bettinger & Baker, 2011; Crisp & Cruz, 2009), productivity in research (Horowitz & Christopher,

2013), psychological wellbeing and sense of belonging on campus (reviewed in: Alcocer & Martinez, 2017; Eby et al., 2008), and self-confidence (Thiry et al., 2011). Quality mentoring also positively impacts career and academic persistence (Dahlstrom et al., 2022; Estrada et al., 2018; Kosoko-Lasaki et al., 2006) and professional identity, even among students new to their professional field (Estrada et al., 2018). While effective mentoring, particularly of historically underrepresented students, includes support in multiple areas (for example, academic, psychological, career development and role modeling; Crisp & Cruz, 2009), the day-to-day function of a research or scholarly work mentor is often distilled down to supervision and training, particularly when the psychosocial aspects of mentoring are not defined, discussed, rewarded, or role-modeled. In addition, while mentees report that mentoring matters, establishing a positive mentoring relationship can be challenging, particularly for mentees in historically underrepresented groups (Ramanan et al., 2006).

In contrast to efforts to promote excellence in research and scholarly work and teaching, mentor training is still not commonplace across academia, despite the known impact of mentoring on student success (Golde & Dore, 2004). When formal mentor training does occur, increases are reported in the overall quality of mentoring (Pfund et al., 2014; Trejo et al., 2021) and self-reported mentoring skills (Gandhi & Johnson, 2016; Johnson & Gandhi, 2015; Pfund et al., 2014; Young & Stormes, 2020; Young et al., 2021) in addition to confidence in using best practices in mentoring (Coston & Payton-Stewart, 2019). Mentored trainees report a higher level of perceived career preparation as compared to those without mentors (Ramanan et al., 2006), and mentor training programs enhance alignment between expectations of mentees and their mentors (Johnson & Gandhi 2015; Pfund et al., 2014). Mentor training works; however, to best serve participants, the approach to mentor training should be individualized to address specific needs across institution types and professional rank. For example, while sharing key common themes, the approach to mentor training for Ph.D. students or postdoctoral fellows may need to differ from mentor training designed for faculty peer mentors, which may need to differ still from the training provided to research mentors of undergraduate students.

The AIM Program

At California State University Long Beach (CSU Long Beach), a large,

public, Hispanic Serving (HSI) and Asian American, Native American, and Pacific Islander Serving (AANAPISI) R2 institution, a mentor training program that focused on faculty mentors working with undergraduate and graduate students on research, scholarly, and creative activities was created as part of the National Institutes of Health (NIH) Building Infrastructure Leading to Diversity (BUILD) initiative. This hybrid program, called the *Advancing Inclusive Mentoring (AIM) Program*, consists of asynchronous learning through online videos sharing best practices in mentoring and is accompanied by facilitated discussion sessions following each of the six modules: Communicating With Your Mentees, Inclusive Mentoring, Mentee Growth and Development, Mentee Health and Wellbeing, Mentee-Centered Mentoring, and Mentoring Toolbox (see Table 1 for Module and Episode list).

Mentees consider mentors outstanding when they have positive personal qualities, provide individualized career development, commit time to mentees, support work-life balance, and share guiding principles for expectations that mentees can use as they assume their own mentorship (Cho et al., 2011). As such, the AIM modules (40-50 minutes each) not only cover critical topics such as social justice mentoring, combating discrimination, virtual communication tips, and culturally aware mentoring, they also define the broad role(s) of a mentor who focuses holistically on students' personal and professional development. Each online learning module is accompanied by a 1-hour facilitated discussion, guided by activities and discussion prompts that are made available in the AIM Leader's Manual. The facilitated discussion component provides a learning community for participants to share their experiences, to react to the mentoring scenarios portrayed, and to problem solve for mentoring issues facing the group. According to participant feedback during the pilot sessions, this proved to be a key piece of the AIM program (see Young et al., 2021).

Each video episode, filmed by a mix of Film and Electronic Arts (FEA) students and recent alumni mentored by field professionals and FEA professors, was hosted by a faculty member or an administrator recruited from all seven colleges on the CSU Long Beach campus. To engage viewers and provide context for the mentoring tips, the discipline-diverse modules include reenactments of mentoring-related stories collected by the authors from students, faculty, and staff members that are portrayed by actors with names and affiliations changed. In addition to the videos, AIM "Top Tips" summary handouts were written for each of the 35 episodes and were provided to participants along with additional

Table 1
Module and Episode Names of the AIM Program

<i>Module</i>	<i>Episode Title</i>
Module 1: Communicating With your Mentees	1.1 Non-verbal communication 1.2 Favoritism 1.3 Constructive criticism 1.4 Professional communication limits 1.5 Virtual mentoring 1.6 Power differential 1.7 Communicating across differences 1.8 Active listening 1.9 Communication personalities
Module 2: Inclusive Mentoring	2.1 Why equity and inclusion matter 2.2 Understanding privilege 2.3 Unconscious bias 2.4 Managing microaggressions 2.5 Confronting discrimination 2.6 Culturally aware mentoring
Module 3: Cultivating Mentee Growth & Development	3.1 Supporting professional development 3.2 Establishing a professional identity in your mentees 3.3 Promoting effective mentee time management 3.4 Mentoring professional communication 3.5 Balancing mentee independence with guidance
Module 4: Facilitating Mentee Health & Wellbeing	4.1 Establishing trust and building confidence in your mentees 4.2 Surviving challenging conversations with your mentees 4.3 Modeling and promoting work life balance 4.4 Recognizing signs of depression and anxiety in your mentees 4.5 Ethical mentoring

Module 5: Mentee- Centered Mentoring	5.1 Expectation management 5.2 Social justice mentoring 5.3 Comprehension check-ins 5.4 Avoiding mentoring meltdowns 5.5 Transitions in mentoring
Module 6: Mentoring Toolbox	6.1 Mentoring frames 6.2 Documenting your mentoring 6.3 Assessing your mentees and your own mentoring 6.4 Mentoring myths 6.5 Sustaining your mentoring

outside resources. The videos and supplementary resources were posted on CSU Long Beach's learning management system (LMS). To move from module to module, participants were required to complete the quiz at the end of each module with a 50% success rate or higher within 2 attempts. The total commitment time for the program is approximately 12 hours (6 hours of asynchronous online module and resource viewing and 6 hours of synchronous group discussion), and participants who complete the program receive two certificates, one for completing the online AIM videos and one for completing the facilitated discussion (called *Beach Mentor Community* on our campus). They also earned *Beach Mentor Community Member* status, which is recognized in the CSU Long Beach faculty research mentor directory and as part of the review criteria for selected internal funding awards involving students in research.

2021-2022 AIM Participants

Initially, the program was implemented by the CSU Long Beach Faculty Center. However, after presenting data from the pilot session to campus leaders, the Colleges of Liberal Arts, Engineering, and Natural Sciences and Mathematics decided to offer additional college-specific sessions with a financial incentive (\$600-\$1,000, depending on college) to encourage faculty in their college to complete the program. A total of 198 participants completed AIM in summer 2021, fall 2021, and spring 2022 across 24 sessions. Our Faculty Center continued to hold five non-stipended sessions accounting for 26% of all participants.

The remaining 74% of all participants were from the College-specific sessions.

Participants came from all of our academic Colleges: Liberal Arts (32%), Engineering (32%), Natural Sciences and Mathematics (23%), Health and Human Services (12%), and Arts, Business, and Education (4.0% combined). Participants also came from University Divisions outside of the Colleges (4%) and from three sister CSU campuses looking to adopt the program: Fresno State, San Diego State, and CSU Dominguez Hills (3% total). In total, participants came from 53 different CSU Long Beach departments, with the top five departments coming from the STEM fields, including Biological Sciences (20% of all participants), Psychology (6.6%), Mechanical and Aerospace Engineering (5%), Civil Engineering and Construction Engineering Management (5.6%), and Chemistry and Biochemistry (4.5%). Participants came from all ranks of tenured/tenure track faculty members, full- and part-time lecturers, administrators, and staff members.

While the pilot version of the program consisting of the first two modules was shown to be useful, engaging, and promoting change in mentoring behaviors (Young et al., 2021), the impact of all six modules on participants from a diversity of disciplines was unknown. As such, the goal of the study was to examine participants' online viewing behavior and subjective feedback to better understand outcomes and applicability of the AIM Program.

Methods

Study Participants

Behavioral data from the subset of 125 participants who completed the AIM Program during the fall of 2021 and spring of 2022 were included in the analysis. All participants gave informed consent to participate in the program and were told that their online video viewing behaviors would be obtained from the LMS in accordance with our approved CSU Long Beach Institutional Review Board (IRB) protocol. Participants were also provided with an IRB-approved anonymous online survey administered at the end of program that was not linked to data in the LMS.

Demographic data of the participants were collected in the survey, which was completed by 114 participants. Of these participants, 49% self-identified as a woman, 40% as a man, and 1.5% as gender queer or gender non-conforming. The remaining participants selected "pre-

fer not to state" (4.4%) or left the optional question blank (5.3%). The majority of participants self-identified as being White (50.9%), Asian (14.0%), and Latina/o/x (11.4%). Remaining participants selected "other" (6.1%), "prefer not to state" (6.1%), selected more than one option (5.3%), left the optional question blank (5.2%), or identified as African American/Black (0.89%).

Approximately one half of the respondents were from the fall 2021 ($N = 58$) cohorts, and the other half were from the spring 2022 ($N = 56$) cohorts. Most of the respondents were from the three Colleges that implemented College-specific cohorts with a stipend, with 48% being from Liberal Arts, 28% from Natural Sciences and Mathematics, and 15% from Engineering. Respondents from the College of Health and Human Services represented 3.5% of the sample, and the remainder of respondents were from other Colleges and programs across the university (for example, Academic Affairs, Colleges of Education and the Arts, and Student Affairs). Respondents averaged 9 years of mentoring experience (range = 0-32 years), but only 15% had prior mentor training. Most of the respondents were faculty or staff involved with training undergraduate and graduate students in research, scholarly, and creative activities (89%), and about 11% mentored students in teaching or non-research related activities. Most participants were tenured/tenure-track faculty (70% total: 24% Assistant Professor, 26% Associate Professor; 20% Full Professor), but a sizeable number of lecturers were represented (20% total: 11% part-time; 9% full-time).

Procedure

Participants were recruited to participate in the AIM program through e-mails from our Faculty Center sent to new faculty or faculty who have participated in the Faculty Center's professional development programs in the past. The e-mail described the AIM program, provided the dates of participation, and gave instructions for how to sign up. Admission to the program was on a first-come, first-served basis. Each session was limited to a maximum of 16 participants. For the college-specific sessions, recruitment e-mails were sent to their faculty and staff by the college with information about the program, dates of participation, stipend information, and instructions for signing up.

For the sessions offered through the Faculty Center, its director served as the facilitator for the discussion component. In addition, six faculty facilitators, who had previously completed the AIM program, led the College-specific sessions in their respective colleges. The col-

lege facilitators received compensation for their effort and attended a facilitator training/orientation meeting, which included distribution of the scripted AIM Leader's Manual prior to the start of their first session. Most, but not all, of the facilitated discussion sessions were held via Zoom meetings as the campus gradually repopulated during the 2021-2022 academic year due to the COVID-19 pandemic. Data from the pilot sessions showed no significant difference in outcomes with online vs. in-person implementations of the facilitated discussions (see Young et al., 2021).

After the participants signed up for a particular session, they were enrolled as part of a group in the AIM course LMS. The session facilitator sent all participants an introductory e-mail with information about how to access the course along with the schedule of sessions and attendance/participation expectations prior to their first meeting. Participants were expected to view the online modules before the facilitated discussion session for that module according to the scheduled dates. Facilitators of the college sessions did not have access to the participants' module completion data and did not monitor the participants' module-viewing behaviors during the session. Facilitators kept a record of attendance at each discussion session, and while participants were strongly encouraged to attend all six discussion sessions, make-up sessions were offered if a session was missed.

After completing the final quiz (Module 6), the LMS automatically issued a certificate of completion for the AIM program online videos (the program has since then converted to using "Badgr"-issued badges). An additional completion certificate for the program was issued manually when the participants completed all facilitated discussion sessions. Facilitators sent out the link to the anonymous feedback survey at the end of the program and encouraged participation.

Data Coding and Analysis

The video viewing behaviors recorded by the LMS were coded by a research assistant who was not involved in the development or implementation of the program. Data logged by the LMS recorded if and when each participant viewed the videos for the online modules and whether they accessed the supplemental materials provided in each module. The date watched was compared to the date of the facilitated discussion to determine whether the participant viewed the module videos before, on the same day of, or after the facilitated discussion session for that module. The data were classified as viewing

the videos 3 or more days before the session, 1 or 2 days before the session, the same day as the session, or after the session. (*Note:* For a few modules a technical error allowed select participants to skip the video; this occurred rarely—for only 3.5% of views.) The number of supplemental materials, including episode summary handouts and external references and links accessed by each participant, was also recorded and coded into three categories: accessed all materials, accessed some materials, or did not access any materials.

Participant data were collected using an anonymous survey link through the online survey platform Qualtrics. Closed-ended questions were coded as nominal data for categorical responses and as numerical data for questions using Likert-style scales. Participants' responses to the open-ended questions were coded by two naive research assistants into categories of responses identified by the first and third authors through an initial review of the answers. Overall, the two raters agreed on over 70% of the categorization. For the responses with disagreements, the responses were reviewed by the first and third authors and categorized with complete agreement on all but 2 responses; the remaining 2 responses were discussed and categorized by consensus.

Results

Behavioral Data

We observed when participants viewed the videos relative to the date of the facilitated discussion for the specific module (see Table 2). Across all modules, about 20% of the participants viewed the videos 3 or more days before the discussion session. Almost 5% viewed the videos 2 days prior, 21% viewed the videos the day before, and 39% of the participants viewed the video on the same day. Across all modules, approximately 15% of the participants did not view the video prior to the facilitated discussion. The highest occurrence of viewing after the session was for Module 1, which may be attributed to it being the first session, when participants were getting introduced to the format of the learning community.

For the participants who viewed the videos, we determined whether they viewed all of the videos in the module in one session or across multiple sessions (see Table 3). Across all modules, about 82% of the participants viewed the module in one session, an achievable task since the viewing time for all videos in a module takes on average one hour.

Table 2
**Percentage of Participants Who Viewed
 Each of the Six Modules
 Before, the Same Day of, or After the Facilitated Session**

	<i>3+ Days Before</i>	<i>2 Days Before</i>	<i>1 Day Before</i>	<i>Same Day</i>	<i>After</i>
Module 1: Communicating With Your Mentees	14.4%	6.4%	15.2%	36.0%	28.0%
Module 2: Inclusive Mentoring	20.8%	4.0%	24.8%	40.0%	10.4%
Module 3: Cultivating Mentee Growth & Development	18.4%	3.2%	24.0%	43.2%	11.2%
Module 4: Maintaining Mentee Health & Wellbeing	21.6%	4.0%	25.6%	38.4%	10.4%
Module 5: Mentee- Centered Mentoring	16.8%	4.0%	20.0%	41.6%	17.6%
Module 6: Mentoring Toolbox	29.6%	5.6%	18.4%	36.0%	10.4%
Across All Modules	20.3%	4.5%	21.3%	39.2%	14.7%

Table 3
**Percentage of Participants Who Viewed Each of the Six Modules
 in One or Multiple Sessions**

<i>How Viewed?</i>	<i>One Session</i>	<i>Multiple Sessions</i>
Module 1: Communicating With Your Mentees	72.4%	27.6%
Module 2: Inclusive Mentoring	81.3%	18.7%
Module 3: Cultivating Mentee Growth & Development	81.5%	18.5%
Module 4: Maintaining Mentee Health & Wellbeing	82.8%	17.2%
Module 5: Mentee-Centered Mentoring	86.6%	13.4%
Module 6: Mentoring Toolbox	87.3%	12.7%
Across All Modules	82.0%	18.0%

Participants were also provided with additional information for each module in the form of optional handouts and external resources. For handout access, 48% of the respondents accessed all of the handouts, 16% accessed some of the handouts, and 37% did not access any handouts (see Table 4). For the resources, 22% explored all of the external links and resources provided, 26% explored some of the resources, and 52% explored none of them (see Table 4).

Table 4
**Percentage of Participants Who Explored the Handouts
 and Other Resources for the Six Modules**

	<i>Accessed Handouts</i>			<i>Accessed Resources</i>		
	All	Some	None	All	Some	None
Module 1: Communicating With Your Mentees	54.4%	28.0%	17.6 %	20.8%	40.8 %	38.4%
Module 2: Inclusive Mentoring	52.8%	16.8%	30.4%	23.2%	26.4%	50.4%
Module 3: Cultivating Mentee Growth & Development	46.4%	17.6%	36.0%	16.0%	34.4%	49.6%
Module 4: Maintaining Mentee Health & Wellbeing	52.0%	10.4%	37.6%	27.2%	26.4%	46.4%
Module 5: Mentee- Centered Mentoring	45.6%	8.0%	46.4%	24.8%	12.8%	62.4%
Module 6: Mentoring Toolbox	36.0%	12.0%	52.0%	20.8%	16.8%	62.4%
Across All Modules	47.9%	15.5%	36.7%	22.1%	26.3%	51.6%

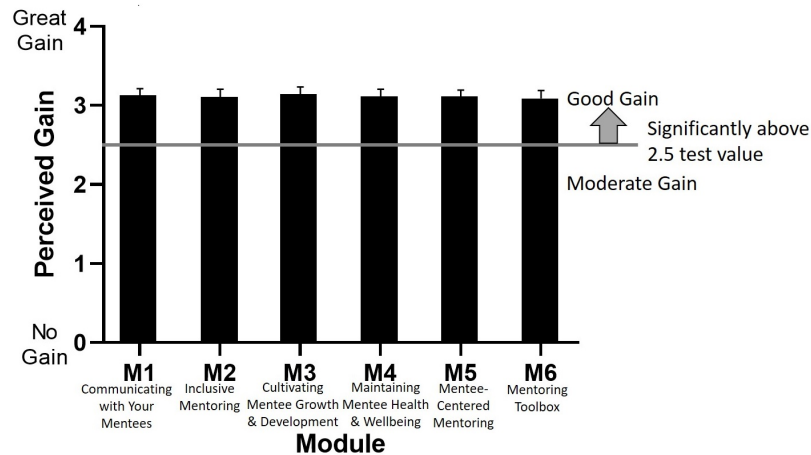
Survey Results

Evaluation of Program Components and Perceived Gain

When asked, “To what degree did information in AIM pertain to you/your mentoring?,” 46% of participants indicated that “All modules” contained information that was relevant to their mentoring, with an additional 40% of participants indicating that “Most of the modules” had information pertinent to them, and 12% stating that half of the modules were pertinent. While 2.6% of participants noted that only 1-2 modules contained pertinent information, no participant selected “None of the modules” as a response.

Participants were asked to rate each of the six modules in terms of their perceived gain using a Likert-style scale, with 0 = “No Gain,” 1 = “Little Gain,” 2 = “Moderate Gain,” 3 = “Good Gain,” and 4 = “Great Gain.” For all modules, the mean rating was above 3.0 (see Figure 1). One-sample *t* tests show that for all modules, the average ratings were significantly above a test-value of 2.5, $p < 0.05$ for all tests, indicating more than “Moderate Gain,” and not significantly different from 3.0, indicating “Good Gain.”

Figure 1
**Frequency Distribution for Rating of Perceived Gain
 for Each of the Six AIM Modules**



Note. Mean ratings for the statement, “Please indicate how much you feel that you have gained from completing each of the following AIM modules.”

For each statement regarding the program components listed in Table 5, participants indicated the degree with which they agreed with the statement. In general, there was agreement that the videos were effective at highlighting important mentoring practices, engaging to watch, and useful. Moreover, participants agreed that the facilitated discussions were an important and engaging component of the program and that the supplemental materials were useful. Finally, participants somewhat agreed with the statement that they would participate in the program with or without a stipend (see Table 5).

Respondents were also asked to rate their overall mentoring skill set before and after participating in the AIM program (see Figure 2A for before and after ratings; see Figure 2B for change score). Most participants reported a shift in one level of mentoring development after participating in the program.

Table 5
**Participant Agreement
With Program Usefulness and Effectiveness**

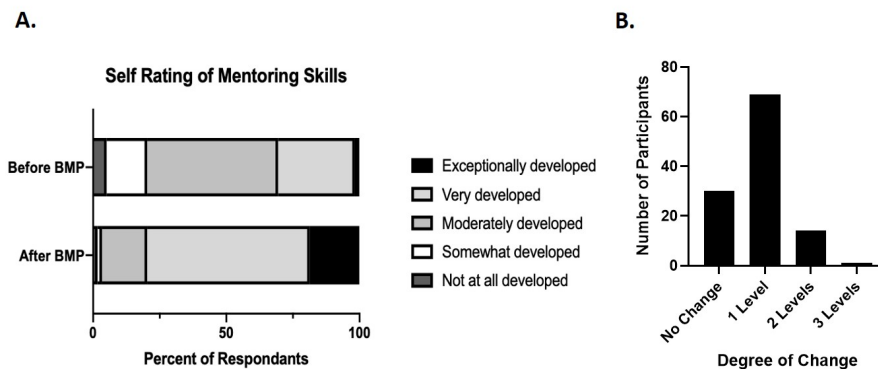
<i>Please rate your agreement with the following statements.</i>	<i>Mean Rating</i>
The videos were effective at highlighting important mentoring practices.**	4.32 (SEM = 0.09)
The videos were engaging to watch.**	3.97 (SEM = 0.10)
The videos were a useful component of this program.**	4.34 (SEM = 0.09)
The facilitated discussion sessions allowed me to expand upon topics I found to be important or interesting.**	4.50 (SEM = 0.07)
The facilitated discussions were engaging.**	4.53 (SEM = 0.07)
The facilitated discussions allowed me to hear different perspectives from others.***	4.71 (SEM = 0.05)
The facilitated discussions were a useful component of this program.***	4.66 (SEM = 0.07)

The supplemental materials contain resources that I will use now or in the future.** 4.13 (SEM = 0.10)

I would participate in this program with or without a stipend*. 3.66 (SEM = 0.15)

Note. Mean ratings of agreement based on a Likert scale of 1 (“Strongly Disagree”) to 5 (“Strongly Agree”). The mean ratings to all statements were all significantly above a test-value of 3.0 (indicative of “Somewhat Agree”), with $p < 0.001$ values, are designated with *. Statements with mean ratings significantly above a test value of 3.5 (indicative of “Agree”), with $p < 0.05$ values, are designated with ** and those significantly above a test value of 4.5 (indicative of “Strongly Agree”), with $p < 0.05$ values, are designated with ***.

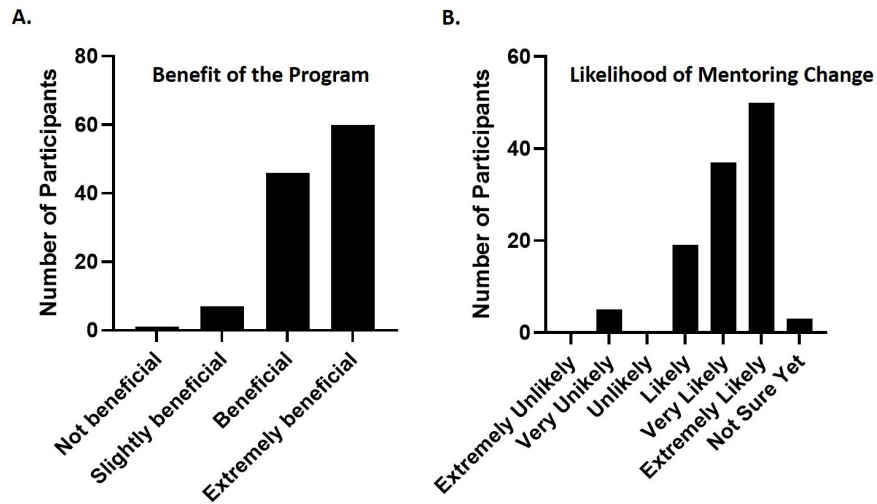
Figure 2
**Self-Rating of Mentoring Skills
 Before and After the AIM Program**



Note. A: Frequency distribution for rating of overall mentoring skill set before and after the AIM program. B: Change in score after participating in AIM.

Most respondents reported the program as being “Extremely Beneficial” (53%), with an additional 40% indicating that the program was “Beneficial” (see Figure 3A). Moreover, most participants reported being “Extremely Likely” to make changes to their mentoring practice because of this training (see Figure 3B). When analyzed along a Likert-style scale from 1 = “Extremely Unlikely” to 6 = “Extremely Likely,” the average rating of 4.1 was significantly above a test-value of 3.5 (value of 3 = “Unlikely,” $p < 0.001$), and not significantly different from a test-value of 4.0 (“Likely”). Thus, participants were likely to make changes to their mentoring practices because of the AIM training.

Figure 3
**Benefit of Program
 and Likelihood of Making a Mentoring Change**

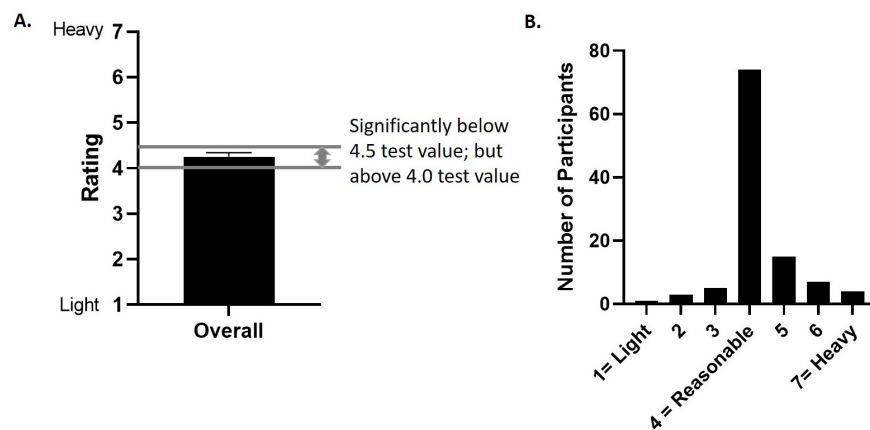


Note. A: Frequency distribution of responses to the question, “How beneficial was AIM to your mentoring practice? B: Frequency distribution of responses to the question, “How likely are you to make changes in your mentoring as a result of this training?”

Workload and Recommendation of the Program

Participants were asked to indicate their impression of the workload for the AIM program (for example, videos, discussion, tasks) using a scale of 1-7, with 1 = "Light," 4 = "Reasonable," and 7 = "Heavy." The mean rating of 4.25 was significantly above a test-value of 4.0, but significantly less than 4.5, indicative of a "Reasonable" workload (see Figure 4A). Moreover, the rating of 4 ("Reasonable") was the most frequent response (see Figure 4B).

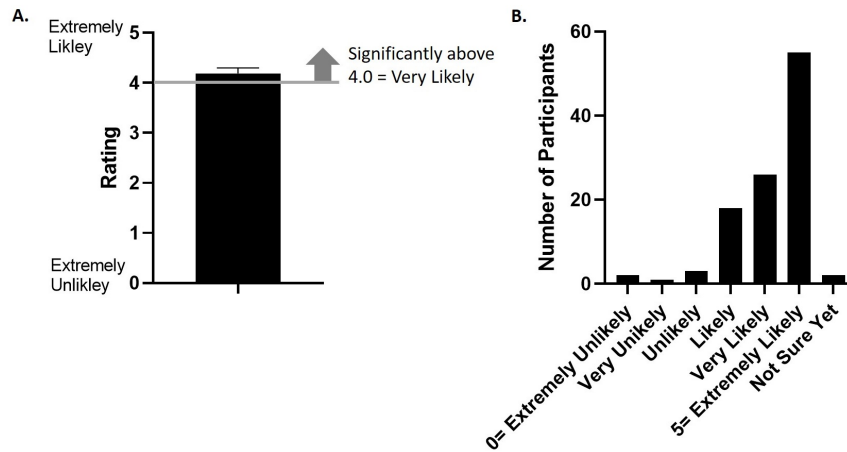
Figure 4
Impression of the AIM Program Workload



Note. A. Mean rating and B. frequency distribution to the question, "What is your impression of the workload for AIM (e.g., videos, discussion, tasks)?"

Participants were also asked to rate the likelihood that they would recommend the program to a colleague using a Likert-style scale from 0 = "Extremely Unlikely" to 5 = "Extremely Likely." As shown in Figure 5A, the mean rating of 4.19 did not significantly differ from a test-value of 4.0 ("Very Likely"). The frequency distribution of responses was positively skewed, with the rating of 5 ("Extremely Likely") being the most frequent response (see Figure 5B).

Figure 5
Likelihood of Recommending the AIM Program



Note. A. Mean rating and B. Frequency distribution for the question, "How likely are you to recommend the AIM Program to a colleague?"

Open Answers

For the item, "Please list any changes in your mentoring practices that you have made, or plan to make, as a result of this training," 158 comments were obtained from 91 of the 114 respondents. Most respondents indicated that they would implement a Mentor-Mentee Compact (32%) to make clear expectations between the mentor and mentee. One mentor stated that "I plan to use a mentor/mentee compact. I really like the idea of outlining expectations on both ends not just for transparency reasons, but it can be helpful to outline the relationship for students who have never been mentored before."

The next major intended change was to improve communication (22%), with one participant writing, "I have thought so much more about communication, time and how to center a mentee's growth and development in a clear and supportive way. I am thankful for these new ways of seeing and situating the mentor-mentee relationship

with clarity." These intended changes were followed by plans to be more intentional in participants' mentoring approaches (15%) and having their mentoring style be mentee-centered (15%). A participant noted that "Lots of small things resonated, like crafting emails to be less 'snappy' and asking 'What questions do you have?' instead of 'Do you have questions?'" Another mentor mentioned several areas of intended change: "Being more responsive and aware of interpersonal issues and styles, understanding their point of view better, giving more guidance for onboarding of research assistants." Finally, respondents indicated that they would make changes to be more inclusive (5%) as well as a variety of other responses (11%).

For the question, "Is there anything else about the AIM experience that you'd like to share?" 80 comments were obtained from 52 of the 114 respondents. Of these comments, 33% indicated that the content or take-aways from AIM were beneficial, with one mentor commenting, "I am really happy I participated in this program. I found myself very reflective of my own experiences as a mentee while at a number of internships, which was useful to think about." Moreover, 25% of the responses to this question related to the value that participants obtained from the facilitated discussions and/or a great experience with the facilitator of the sessions. One participant stated, "Facilitators, and how much time is allowed for discussion, can really make or break this kind of workshop, and it was honestly the best workshop I've attended so far at CSULB." Other comments for this question reflected improvements that could be made to videos used in the trainings (11%) or future implementations of the program (14%). Finally, some participants commented on the amount of additional time and workload required by the program or by mentoring well (6%). For example, one mentor noted, "It takes a tremendous amount of effort and energy to be a good mentor, and I just don't feel on top of all my responsibilities to be able to do this well. I would spend more time mentoring than actually doing the research. A few incremental changes is [sic] likely all I'm capable of." Other answers to this question included specific comments about the program and their discipline (5%), comments on aspects of the LMS (5%), or other categories of comments (1%).

Discussion

This study assessed the *Advancing Inclusive Mentoring* (AIM) Program to better understand if mentor training of faculty members working with undergraduate and graduate students would impact

intended mentoring practices of participants. This program is unique in that it was created for experienced mentors at a large, public, HSI/AANAPISI, as opposed to targeting trainees or mentors at institutions that historically have comprised primarily White student, staff, and faculty populations. The AIM program addresses equity and inclusion throughout the learning modules and encourages mentoring in a mentee-centered and holistic manner. When mentor training includes culturally aware mentoring, the training can specifically promote change in the mentors' practice as well as increase confidence of White mentors to approach diversity-related issues (Byars-Winston et al., 2020; Womack et al., 2020). This is a desired outcome, for while more diverse than in other study populations (Pfund et al., 2014), half of the participants in our Cal State Long Beach study self-identified as White. More mentees than mentors are interested in discussing issues surrounding race and ethnicity together (Byars-Winston et al., 2020), and many White mentors, particularly those in Science, Technology, Engineering, Mathematics, and Medicine (STEMM), continue to adopt the "color-blind" approach (McCoy et al., 2015), which can be detrimental for historically underrepresented mentees (Holoien & Shelton, 2012).

Some mentors do feel that addressing issues of race and ethnicity is within the scope of mentoring practice; however, even some of these mentors prefer that the mentee bring it up on an as-needed basis as opposed to a more direct or proactive practice (Byars-Winston et al., 2020). This approach may or may not fit with the needs of historically underrepresented mentees, many of whom would prefer that the burden of bringing up the impact of race and ethnicity in their particular field fall to the mentor (Byars-Winston et al., 2020). Providing culturally aware and inclusive mentoring, as suggested by the AIM program, correlates with undergraduate mentees positively refining their career and academic goals (Haeger & Fresquez, 2016). By reflecting on mentoring practices within the facilitated discussion, mentors examine their mentoring, a key first step to avoiding replication and reinforcement of historical hierarchical structures that fail mentees of historically marginalized and underrepresented groups (Margolis & Romero, 2001). Still, one participant noted, "I wonder how the curriculum for the inclusive mentoring can be written to take into account what it means for faculty of color to mentor students of color, etc." This comment has prompted additional work to make AIM discussion session activities more applicable to all mentors and promote the goal of inclusive mentoring for all.

Working alongside faculty members on research or other scholarly or creative activities is considered a high-impact practice for undergraduate students and part of a transformative college experience. Although holding faculty accountable for effective mentoring can be challenging (Margolis & Romero, 2001), how students engaged in these practices are mentored impacts how these experiences are perceived by students (Phinney et al., 2011). This need for accountability is compounded when the approach and duties of a “good mentor” are defined differently across individuals and institutions, and because they can be impacted by a mentor’s personal experience, discipline, rank, and positionality. Despite this individualized approach to defining mentoring, studies examining effective mentoring practices find considerable overlap (Golde et al., 2004; Pfund et al., 2014; Stelter et al., 2021). Mentor training programs can also work to open the conversation across a campus about what a mentor should do by sharing best practices in mentoring. Additionally, when mentoring is discussed at a campus level, it can highlight the structure of reward and acknowledgment that is in place—or not in place—at an institutional level. This is a key conversation to have when mentoring is often hidden or extra work that is not recognized or directly linked to tenure and promotion (DeAngelo et al., 2016).

When a comprehensive look at what good mentoring entails is coupled with facilitated discussions that encourage mentors to share experiences they have lived or witnessed, mentor training can lean away from “mentoring 101” and benefit both new and more experienced mentors. Participants in this study had an average of 9 years of experience mentoring students, and 85% still considered the AIM program to be “Beneficial” or “Extremely Beneficial,” while 90% indicated that they were “Likely,” “Very Likely,” or “Extremely Likely” to make a change in their mentoring practice because of AIM program participation. As a result of the training, mentors plan to deploy the Mentor-Mentee Compacts they made during the program, improve communication and/or intentionality, and maintain a more mentee-centered and more inclusive mentoring practice. Because miscommunication and misaligned expectations are top reasons why difficulties arise within the mentoring relationship (Garringer et al., 2015), having mentors work in these areas may be a critical enhancement of their mentoring practice, and it may impact the student experience.

Mentoring at its core is a collaborative connection between mentee and mentor, and a positive mentee-mentor relationship is correlated

with a willingness to mentor (Alcocer & Martinez, 2017; Pham et al., 2019; Zachary, 2012). Given the positive response to the discussion sessions in the AIM program where participants agreed that the facilitated discussions were an important and engaging component of the program, we believe that mentoring can be enhanced further when mentors make a similar connection with each other. Because no single mentor can provide all of the answers needed for holistic mentee support (Keyser et al., 2008), a topic discussed in the AIM program, it follows that mentors too can benefit from a mentoring community on campus. This is particularly true of busy faculty and staff members, who, in this study, generally watched the modules ahead of the session (85%) to be better able to discuss the mentoring scenarios with their peers. In many cases (82%), they had watched all episodes in each module in one viewing session. Despite the 12 hours required for program completion across the current format of a 6-week time commitment, participants still rated the workload of the program to be reasonable. This is a key consideration for continued implementation on campus and beyond. Finally, while participants “Somewhat Agreed” that they would participate in the program with or without a stipend, this opinion was provided after completion of AIM. The stipend likely provided a strong incentive to sign up for the program, and it was key for recruitment in 2021-2022, a year when multiple professional development workshops were being offered for stipends on our campus.

Mentor training programs enhance self-reported mentoring skills, including addressing diversity, communicating with mentees, and ensuring that expectations between mentee and mentor are aligned (Johnson & Ghandi, 2015). In the AIM program, participants positively rated the knowledge gain for each of the six modules and agreed that the videos were effective at highlighting important mentoring practices, were useful, and were engaging to watch (see Table 5). Most participants reported an increase of one level in their self-rated mentoring skills after participating in the program, which represented a 28% reported increase in mentoring skills because of the training. When mentors were asked in the post-program survey to think back and self-assess their mentoring skills prior to the program, 70% rated themselves in the “Not at all Developed,” “Moderately Developed,” or “Somewhat Developed” categories, whereas following AIM completion, 78% of survey participants rated themselves as “Very Developed” or “Exceptionally Developed” (see Figure 2). This gain is comparable to increases noted following completion of other well-regarded mentor

training programs (for instance, Coston & Payton-Stewart, 2019; Pfund et al., 2014) and suggests that our AIM program is on par with other recognized mentor training initiatives. Of the mentors surveyed, 90% indicated that they were “Likely,” “Very Likely,” or “Extremely Likely” to make a change in their mentoring as a result of participation in AIM (see Figure 3). As reported in Pfund et al (2014), 87% of mentors completing mentor training followed through and made changes to their mentoring; ideally, the AIM program will also motivate actual transformation in behavior or practices. Future follow up surveys will be important to ensure that the AIM program is inspiring lasting change. Making positive changes is, of course, the ultimate goal of mentor training, because *how* mentors interact with students can directly impact student success. As a result, another important next step for AIM is to survey students of AIM-trained mentors to better understand how mentor training may be perceived by the mentees. Because mentor training in other programs has resulted in mentees reporting at least one change in the behavior of a mentor (Golde & Dore, 2004), it is important to survey students to fully understand the influence of AIM.

Conclusions

Overall, 85% of the study’s participants were “Likely,” “Very Likely,” or “Extremely Likely” to recommend the AIM program to a colleague, and most (86%) indicated that most or all modules contained information that was relevant to their mentoring. Our program was designed specifically for experienced mentors of undergraduate and graduate research students at a large, public HSI/AANAPISI. Created with funding from NIH’s CSU Long Beach BUILD Initiative, AIM has equity and inclusion at its core and focuses throughout the six modules on topics relating to culturally-aware and mentee-centered mentoring. This program, through its hybrid learning format combining self-paced engaging videos with facilitated discussion sessions, promotes self-reported gains in mentoring skills, and mentors indicate that they will change their mentoring practice because of AIM participation. Because the benefit of participating in high-impact practices is recognized as a key component of student development and growth (Kuh, 2008), mentor training only will continue to gain importance. Mentor training programs like AIM will be necessary to ensure that mentors not only know, but also have an opportunity to discuss, best practices in mentoring with colleagues so they can put these practices into action and bolster student success.

References

- Alcocer, L. F., & Martinez, A. (2017). Mentoring Hispanic students: A literature review. *Journal of Hispanic Higher Education, 17*(4), 393-401. <https://doi.org/10.1177/1538192717705700>
- Bettinger, E., & Baker, R. (2011). *The effects of student coaching in college: An evaluation of a randomized experiment in student mentoring* (NBER Working Paper No. 16881). National Bureau of Economic Research.
- Byars-Winston, A., Leverett, P., Benbow, R. J., Pfund, C., Thayer-Hart, N., & Branchaw, J. (2020). Race and ethnicity in biology research mentoring relationships. *Journal of Diversity in Higher Education, 13*(3), 240-253. <https://doi.org/10.1037/dhe0000106>
- Chemers, M. M., Zurbriggen, E. L., Syed, M., Goza, B. K., & Bearman, S. (2011). The role of efficacy and identity in science career commitment among underrepresented minority students. *Journal of Social Issues, 67*(3), 469-491. <https://doi.org/10.1111/j.1540-4560.2011.01710.x>
- Cho, C. S., Ramanan, R. A., & Feldman, M. D. (2011). Defining the ideal qualities of mentorship: A qualitative analysis of the characteristics of outstanding mentors. *The American Journal of Medicine, 124*(5), 453-458. <https://doi.org/10.1016/j.amjmed.2010.12.007>
- Coston, T. S., & Payton-Stewart, F. (2019). Maximizing mentoring: Enhancing the impact of mentoring programs and initiatives through the Center for the Advancement of Teaching and Faculty Development at Xavier University of Louisiana (ACS symposium series). *American Chemical Society, 1328*, 215-227. <https://doi.org/10.1021/bk-2019-1328.ch014>
- Crisp, G., & Cruz, I. (2009). Mentoring college students: A critical review of the literature between 1990 and 2007. *Research in Higher Education, 50*(6), 525-545. <http://www.jstor.org/stable/29782942>
- Dahlstrom, E. K., Bell, C., Chang, S., Lee, H. Y., Anderson, C. B., Pham, A., Pribbenow, C. M., & Cameron, C. A. (2022). Translating mentoring interventions research into practice: Evaluation of an evidence-based workshop for research mentors on developing trainees' scientific communication skills. *PloS One, 17*(2), e0262418. <https://doi.org/10.1371/journal.pone.0262418>
- DeAngelo, L., & Mason, J., & Winters, D. (2016). Faculty engagement in mentoring undergraduate students: How institutional environments regulate and promote extra-role behavior. *Innovative Higher Education, 41*(4), 317-332. <https://doi.org/10.1007/s10755-015-9350-7>
- Eby, L. T., Allen, T. D., Evans, S. C., Ng, T., & DuBois, D. L. (2008). Does mentoring matter? A multidisciplinary meta-analysis comparing mentored and non-mentored individuals. *Journal of Vocational Behavior, 72*(2), 254-267. <https://doi.org/10.1016/j.jvb.2007.04.005>

- Estrada, M., Hernandez, P. R., & Schultz, P. W. (2018). A longitudinal study of how quality mentorship and research experience integrate underrepresented minorities into STEM careers. *CBE—Life Sciences Education*, 17(1), ar9. <https://doi.org/10.1187/cbe.17-04-0066>
- Estrada, M., Woodcock, A., Hernandez, P. R., & Schultz, P. W. (2011). Toward a model of social influence that explains minority student integration into the scientific community. *Journal of Educational Psychology*, 103(1), 206-222. <https://doi.org/10.1037/a0020743>
- Gandhi, M., & Johnson, M. (2016). Creating more effective mentors: Mentoring the mentor. *AIDS and Behavior*, 20(Suppl. 2), 294-303. <https://doi.org/10.1007/s10461-016-1364-3>
- Garringer, M., Kupersmidt, J. Rhodes, J., Stelter, R., & Tai, T. (2015). *Elements of effective practice for mentoring*. MENTOR/National Mentoring Partnership.
- Golde C. M., & Dore T. M. (2004). The survey of doctoral education and career preparation: the importance of disciplinary contexts. In D. H. Wulff & A. E. Austin (Eds.), *Path to the professoriate: Strategies for enriching the preparation of future faculty* (pp. 19-45). Jossey-Bass.
- Haeger, H., & Fresquez, C. (2016). Mentoring for inclusion: The impact of mentoring on undergraduate researchers in the sciences. *CBE—Life Sciences Education*, 15(3), ar36. <https://doi.org/10.1187/cbe.16-01-0016>
- Holoien, D. S., & Shelton, J. N. (2012). You deplete me: The cognitive costs of colorblindness on ethnic minorities. *Journal of Experimental Social Psychology*, 48(2), 562-565. <https://doi.org/10.1016/j.jesp.2011.09.010>
- Horowitz, J., & Christopher, K. (2013). The research mentoring program: Serving the needs of graduate and undergraduate researchers. *Innovative Higher Education*, 38, 105-116. <https://doi.org/10.1007/s10755-012-9230-3>
- Johnson, M. O., & Gandhi, M. (2015). A mentor training program improves mentoring competency for researchers working with early-career investigators from underrepresented backgrounds. *Advances in Health Sciences Education: Theory and Practice*, 20(3), 683-689. <https://doi.org/10.1007/s10459-014-9555-z>
- Keyser, D. J., Lakoski, J. M., Lara-Cinisomo, S., Schultz, D. J., Williams, V. L., Zellers, D. F., & Pincus, H. A. (2008). Advancing institutional efforts to support research mentorship: A conceptual framework and self-assessment tool. *Academic Medicine: Journal of the Association of American Medical Colleges*, 83(3), 217-225. <https://doi.org/10.1097/ACM.0b13e318163700a>

- Kosoko-Lasaki, S., Sonnino, R., & Voytko, M. (2006). Mentoring for women and underrepresented minority faculty and students: Experience at two institutions of higher education. *Journal of the National Medical Association, 98*(9), 1449-1459.
- Kuh, G. D. (2008). *High-impact educational practices: What they are, who has access to them, and why they matter*. AAC&U.
- Margolis, E., & Romero, M. (2001). In the image and likeness: How mentoring functions in the hidden curriculum. In E. Margolis (Ed.), *The hidden curriculum in higher education* (pp. 79-96). Routledge.
- McCoy, D. L., Winkle-Wagner, R., & Luedke, C. L. (2015). Colorblind mentoring? Exploring white faculty mentoring of students of color. *Journal of Diversity in Higher Education, 8*(4), 225-242.
- Pfund, C., House, S. C., Asquith, P., Fleming, M. F., Buhr, K. A., Burnham, E. L., Eichenberger Gilmore, J. M., Huskins, W. C., McGee, R., Schurr, K., Shapiro, E. D., Spencer, K. C., & Sorkness, C. A. (2014). Training mentors of clinical and translational research scholars: a randomized controlled trial. *Academic Medicine: Journal of the Association of American Medical Colleges, 89*(5), 774-782. <https://doi.org/10.1097/ACM.0000000000000218>
- Pfund, C., Maidl Pribbenow, C., Branchaw, J., Miller Lauffer, S., & Handelsman, J. (2006). The merits of training mentors. *Science, 311*(5760), 473-474. <https://doi.org/10.1126/science.1123806>
- Pham, T., Teng, C. I., Friesner, D., Li, K., Wu, W. E., Liao, Y. N., Chang, Y. T., & Chu, T. L. (2019). The impact of mentor-mentee rapport on nurses' professional turnover intention: Perspectives of social capital theory and social cognitive career theory. *Journal of Clinical Nursing, 28*(13-14), 2669-2680. <https://doi.org/10.1111/jocn.14858>
- Phinney, J. S., Torres Campos, C. M., Padilla Kallemeyn, D. M., & Kim, C. (2011). Processes and outcomes of a mentoring program for Latino college freshmen. *Journal of Social Issues, 67*, 599-621. <https://doi.org/10.1111/j.1540-4560.2011.01716.x>
- Ramanan, R. A., Taylor, W. C., Davis, R. B., & Phillips, R. S. (2006). Mentoring matters: Mentoring and career preparation in internal medicine residency training. *Journal of General Internal Medicine, 21*(4), 340-345. <https://doi.org/10.1111/j.1525-1497.2006.00346.x>
- Stelter, R. L., Kupersmidt, J. B., & Stump, K. N. (2021). Establishing effective STEM mentoring relationships through mentor training. *Annals of the New York Academy of Sciences, 1483*(1), 224-243. <https://doi.org/10.1111/nyas.14470>
- Thiry, H., Laursen, S. L., & Hunter, A. B. (2011). What experiences help students become scientists? A comparative study of research and other sources of personal and professional gains for STEM undergraduates. *The Journal of Higher Education, 82*(4), 357-388. <https://doi.org/10.1080/00221546.2011.11777209>

- Trejo, J., Wingard, D., Hazen, V., Bortnick, A., Van Hoesen, K., Byars-Winston, A., Pfund, C., & Reznik, V. (2021). A system-wide health sciences faculty mentor training program is associated with improved effective mentoring and institutional climate. *Journal of Clinical and Translational Science*, 6(1), e18. <https://doi.org/10.1017/cts.2021.883>
- Womack, V. Y., Wood, C. V., House, S. C., Quinn, S. C., Thomas, S. B., McGee, R., & Byars-Winston, A. (2020). Culturally aware mentorship: Lasting impacts of a novel intervention on academic administrators and faculty. *PloS One*, 15(8), e0236983. <https://doi.org/10.1371/journal.pone.0236983>
- Young, K. A., Finney, M. A., Marayong, P., & Vu, K. L. (2021). Advancing inclusive mentoring through an online mentor training program and coordinated discussion group. *Proceedings of Human Interface and the Management of Information*, 12766, 177-194. https://doi.org/10.1007/978-3-030-78361-7_14
- Young, K. A., & Stormes, K. N. (2020). The BUILD Mentor Community at CSULB: A mentor training program designed to enhance mentoring skills in experienced mentors. *Understanding Interventions Journal*, 11(1), 12480.
- Zachary, L. J. (2012). *The mentor's guide: Facilitating effective learning relationships* (2nd ed.). Jossey-Bass.

Acknowledgments

The creation and implementation of the Advancing Inclusive Mentoring Program/Beach Mentor Community was supported by the National Institute of General Medical Sciences of the National Institutes of Health, under Award Numbers UL1GM118979, TL4GM118980, and RL5GM118978. The article's content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. The authors are grateful to the Director of the CSU Long Beach Faculty Center, Dr. Malcolm A. Finney, for leading the initial discussion sessions, along with the leaders of our Beach Mentor Community sessions: Drs. Nicholas Alt, Ulices Piña, Sara Moghtadernejad, Ga-Young Kelly Suh, Ted Stankowich, and Elaine Bernal. We also appreciate Yvette Apatiga for coding the course viewing data, and the faculty and administrators who served as hosts for the 35 modules of the program. We also appreciate Yvette Apatiga for coding the course viewing data, Dr. Collie Conoley for positive psychology consult, and the faculty and administrators who serve as hosts for the 35 modules of the program. Finally, we are thankful to video director/producer and mentor Nick Oceano and the faculty, staff, and students of the Film and Electronic Studies Department, staff members of the BUILD program, and CSU Long Beach's Academic Technology Service Department for their assistance in bringing AIM into existence.

Dr. Kelly A. Young is a Professor in the Department of Biological Sciences at California State University Long Beach (CSULB). As a reproductive biologist trained at Johns Hopkins University School of Public Health and the Oregon National Primate Research Center, she and her undergraduate research students examine the regulation of seasonal gonadal transition. She has created multiple faculty development programs and works with mentoring programs across the California State University system. As the Co-Director of Research Enhancement for the CSULB NIH BUILD Initiative, Kelly led the team creating the Advancing Inclusive Mentoring (AIM) with the goal of increasing success and personal growth for both students and mentors. Dr. Panadda Marayong is a Professor and the Director of the Robotics and Interactive Systems Engineering (RISE) Laboratory in the Department of Mechanical and Aerospace Engineering at CSULB. Her research focuses on haptics and design of human-machine cooperative systems. She is the Director of the Research Enrichment Core and one of the PIs of the NIH-funded CSULB BUILD Program. She was the recipient of the 2019 Orange County Engineering Council's Distinguished and Pioneer Educator Award. She is a member of the American Society for Engineering Education and the Institute of Electrical and Electronics Engineers. Dr. Kim-Phuong L. Vu is a Professor of Psychology and Associate Director of the Center for Usability in Design and Accessibility and the Center for Human Factors in Advanced Aeronautics Technologies at CSULB. Kim has been extensively involved in research training programs. She is one of the PIs of the CSULB BUILD Phase 2 Award, funded by NIH. Kim has over 150 peer-reviewed publications, many of which were co-authored with students. She is a fellow of the American Psychological Association, Association for Psychological Sciences, Psychonomic Society, and Human Factors and Ergonomics Society.

