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Electronic Mentoring during the COVID-19 Pandemic: A National Survey of STEM Faculty and Students

Chi-Ning Chang, Ph.D., Guan K. Saw, Ph.D., Uriel Lomelí, M.A., and Mingxia Zhi, Ph.D.

Key Findings

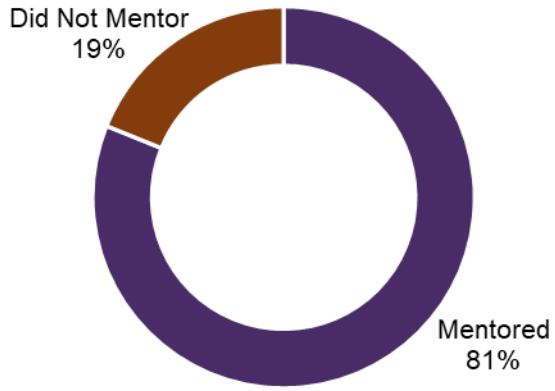
Data from the National Study of STEM Faculty and Students (NSSFS), June 2020

- As expected, the frequency of in-person mentoring meetings significantly decreased after the COVID-19 outbreak.
- Video conferencing became a popular mentoring platform among faculty and doctoral students.
- Interaction between undergraduates and mentors, regardless of communication means, significantly decreased after the outbreak.
- Mentoring while social distancing is likely to pose challenges as both faculty and students generally report that mentoring face-to-face is more effective than through e-communication.
- However, more than half of faculty and graduate students believed e-communication could be equally or more effective for some types of mentoring support.

Due to the coronavirus (COVID-19) pandemic, hundreds of colleges and universities in the United States suspended face-to-face classes and transitioned to remote learning in spring of 2020. In addition to teaching and learning, mentoring activities were also affected by the pandemic. Using data from the National Study of STEM Faculty and Students (NSSFS) collected in June 2020, this report describes the experiences of electronic mentoring among US STEM faculty (n = 1,087) and students (n = 4,603) in the spring semester of 2020.

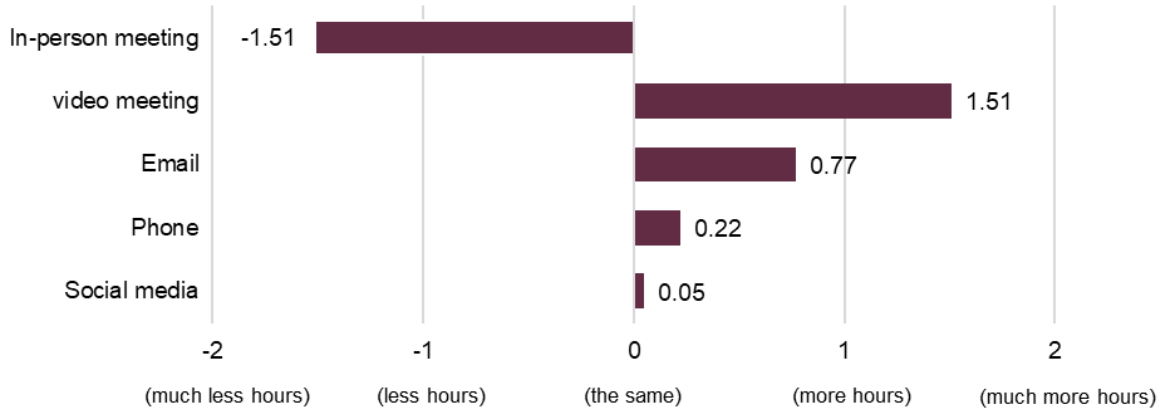
1. Faculty: Serving as a Mentor during the Pandemic

- Most faculty surveyed (81.0%) indicated that they served as a primary mentor or advisor for a least one student, post-doctoral researcher, or faculty member in the spring of 2020.



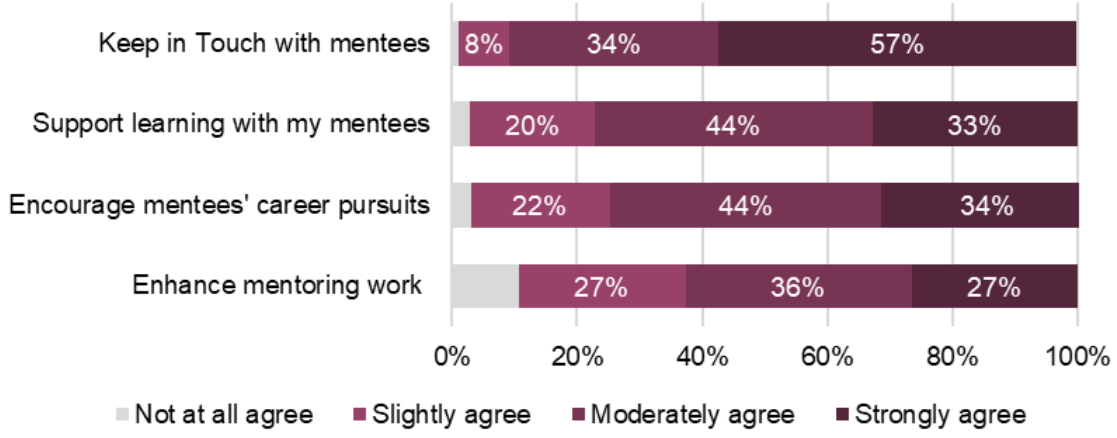
2. Faculty: Mentoring Frequency during the Pandemic

- After the COVID-19 outbreak occurred in March, faculty spent more hours (statistically different from zero, $p < .05$) supporting their mentees through video conferencing, email, phone, and social media. Not surprisingly, the frequency of in-person meetings decreased.



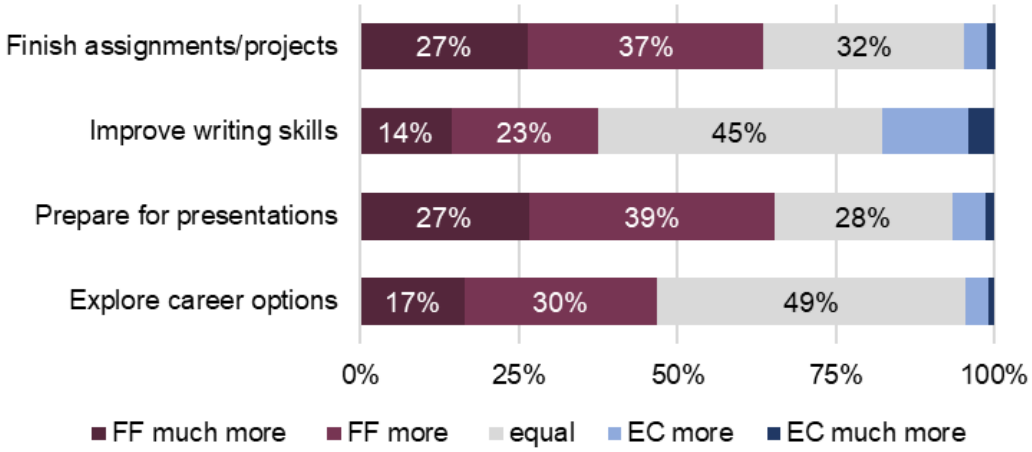
3. Faculty: Usefulness of e-Communication in Mentoring

- Most faculty agreed that e-communication is useful to support their mentees (see figure below for more details).



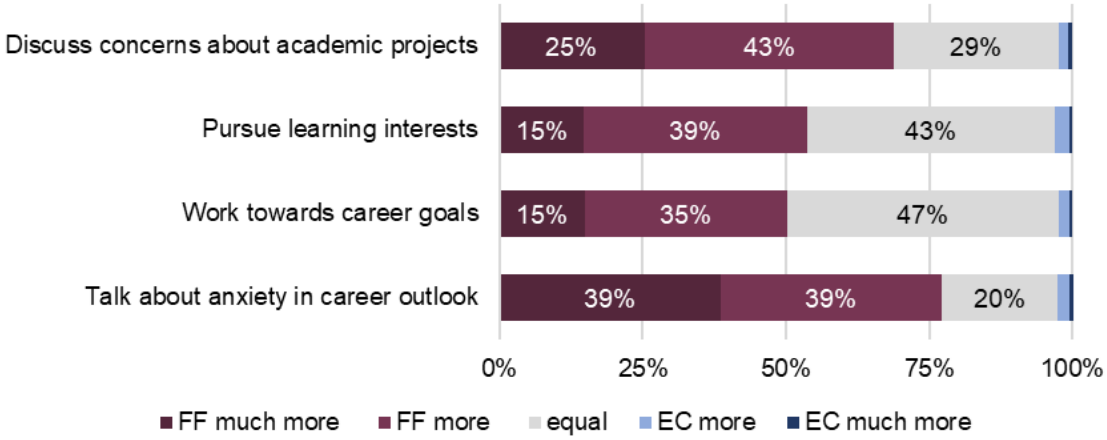
4a. Faculty: Effectiveness of e-Mentoring Support — Instrumental Support

- Although faculty generally stated that face-to-face (FF) mentoring is a more effective way to provide instrumental support, more than half of faculty believed e-communication (EC) was equally or more effective in helping mentees improve writing skills and explore career options.



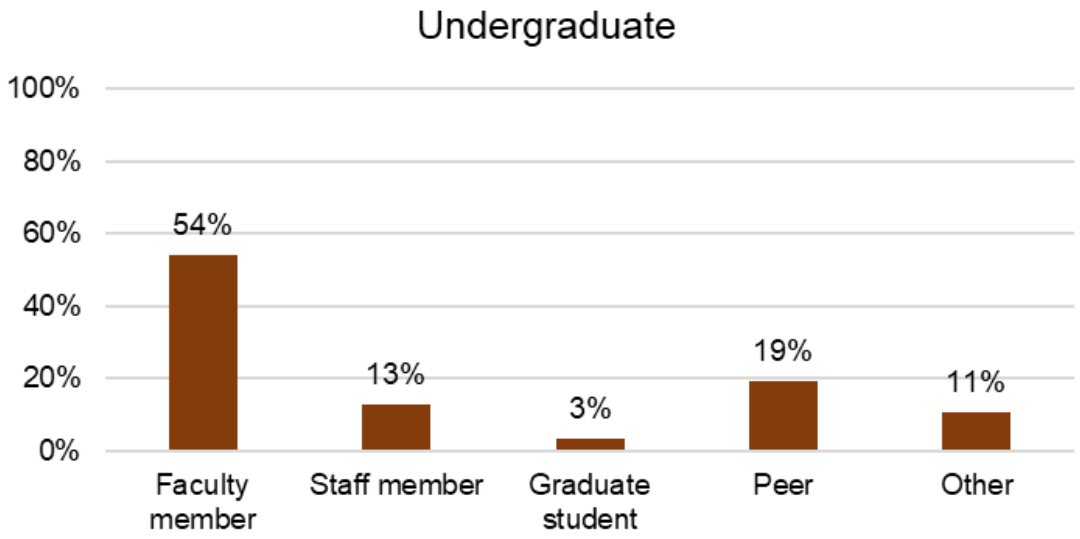
4b. Faculty: Effectiveness of e-Mentoring Support — Psychosocial Support

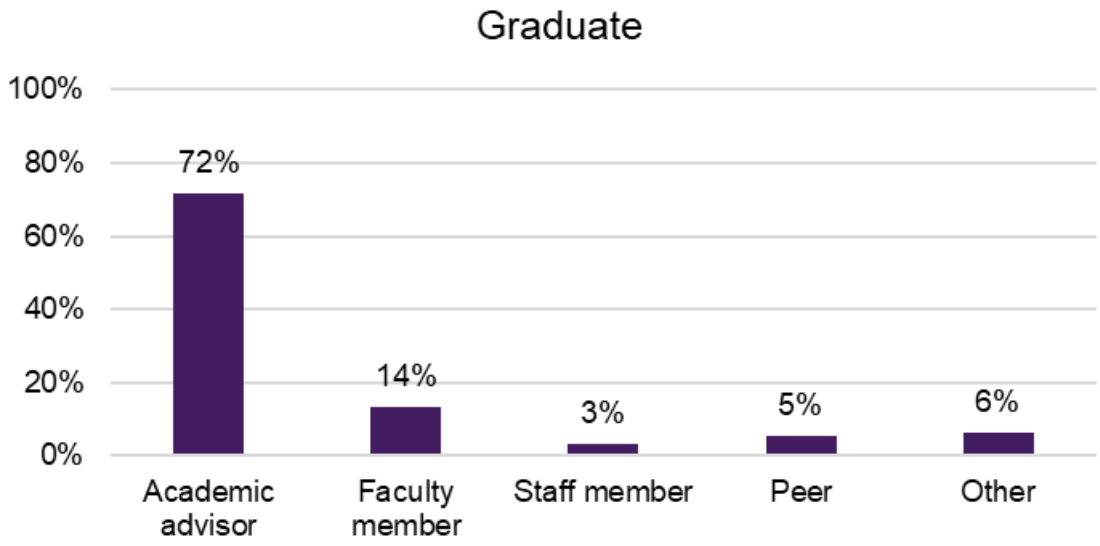
- Although faculty generally preferred face-to-face (FF) mentoring when providing psychosocial support, nearly half of faculty indicated e-communication (EC) was equally or more effective when encouraging mentees to pursue their learning interests and work towards their career goals.



5. Student: Primary Mentor on Campus during the Pandemic

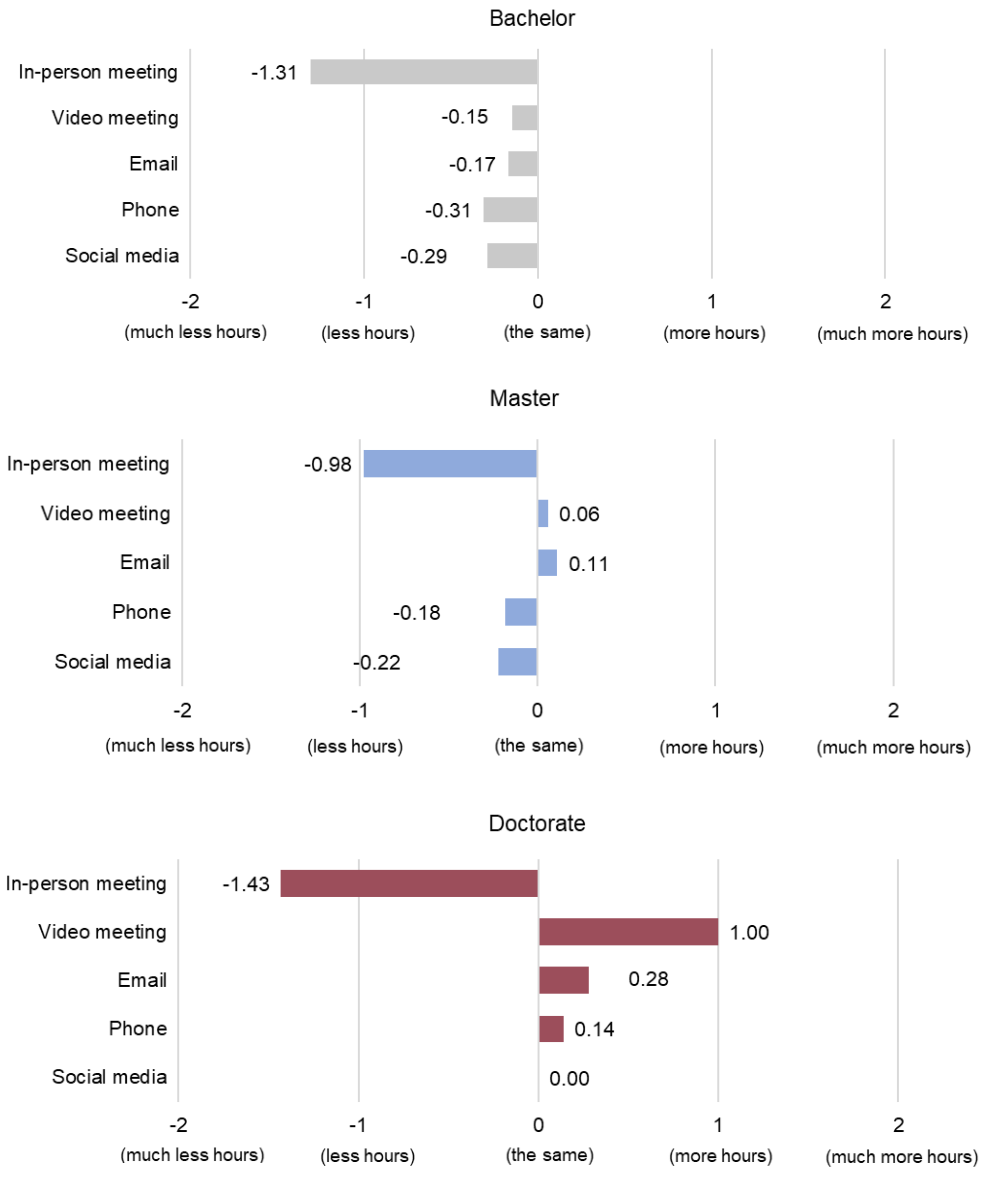
- Among the student sample, undergraduate students were primarily mentored by faculty (54%). Mentorship was also provided by staff (13%), graduate students (3%), peers (19%), and other people on campus (11%). Graduate students were primarily mentored by their academic advisor (72%), but also received mentorship from other faculty (14%), staff (3%), peers (5%), and other people on campus (6%).





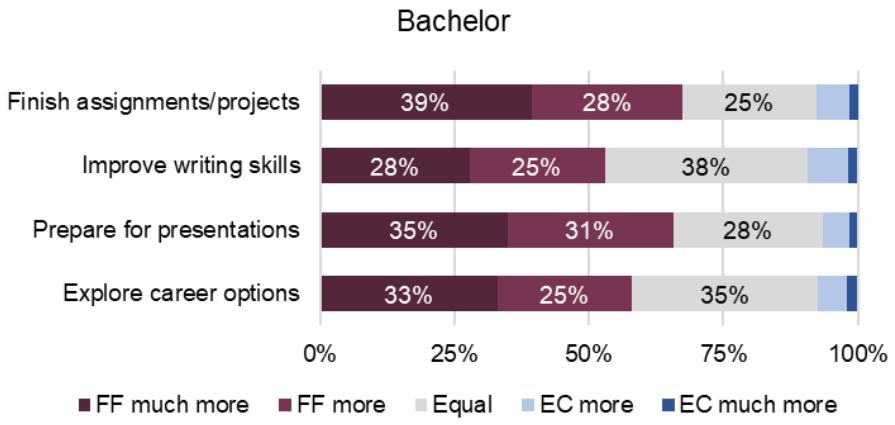
6. Student: Mentoring Interaction Frequency during the Pandemic

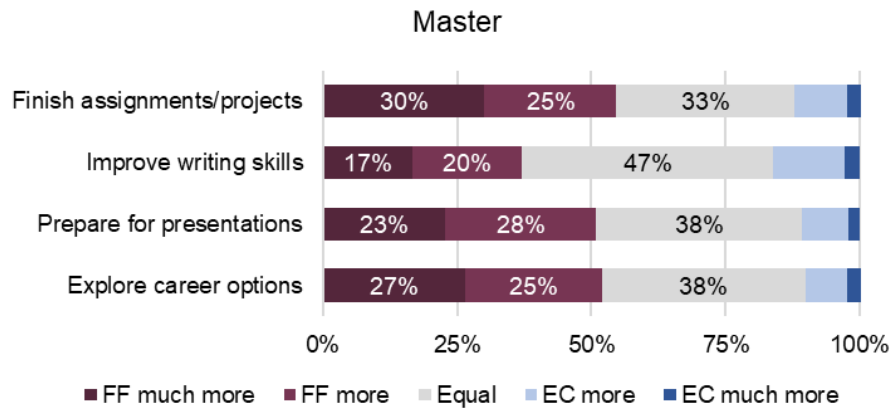
- After the COVID-19 outbreak occurred in March, STEM undergraduates spent fewer hours (statistically different from zero, $p < .05$) with their mentor in both in-person meetings and electronic platforms.
- Master's students had similar experiences with mentorship as undergraduates. For master's students, however, mentorship through video conferencing and email was not significantly affected ($p > .05$).
- Doctoral students spent fewer hours (statistically different from zero, $p < .05$) with their mentors in in-person meetings, but spent more hours (statistically different from zero, $p < .05$) communicating with their mentor through video conferencing, email, and by phone.

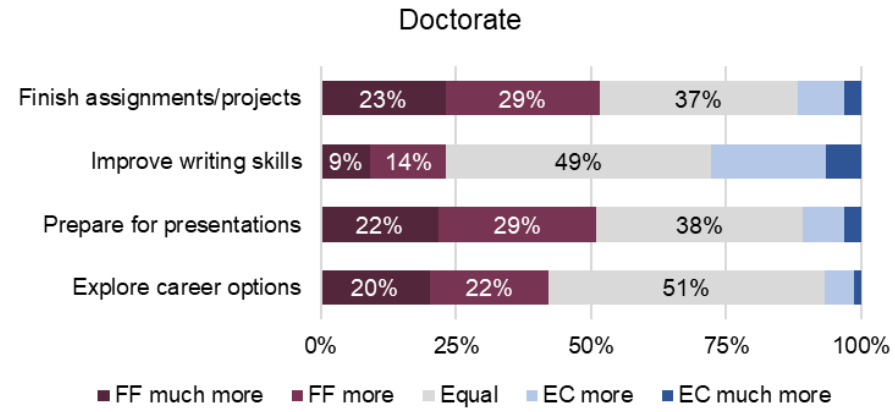


7a. Student: Effectiveness of e-Mentoring Support — Instrumental Support

- Students generally stated that face-to-face (FF) mentoring is a more effective way to receive instrumental support from their mentor, except in certain situations. For example, many graduate students believed e-communication (EC) could be equally or more effective in improving writing skills and exploring career options with their mentor.

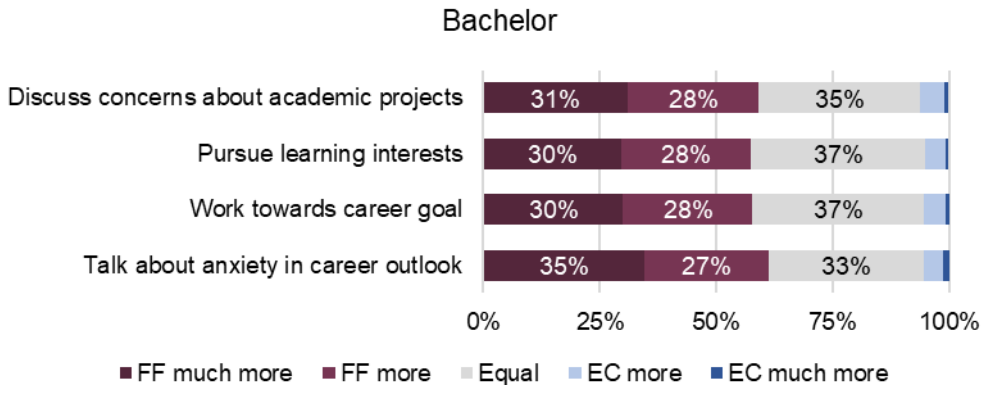


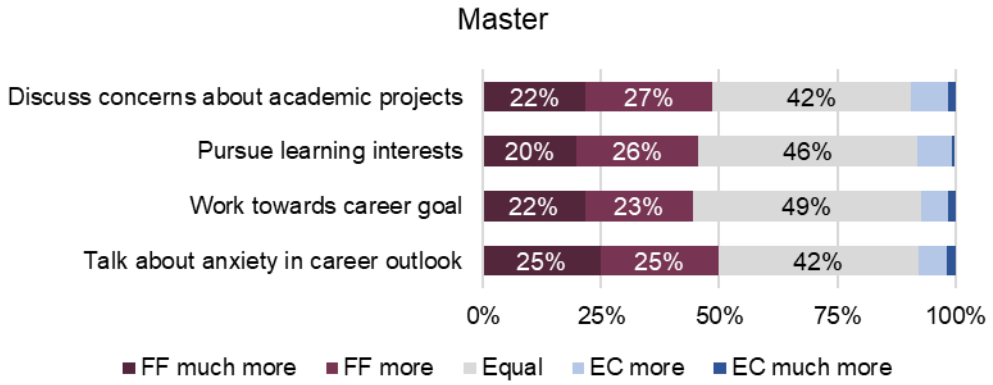


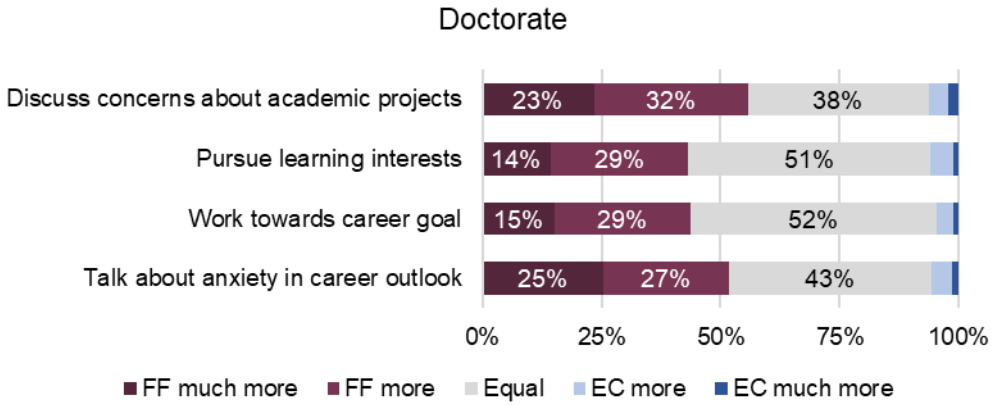


7b. Student: Effectiveness of e-Mentoring Support — Psychosocial Support

- Overall, students generally indicated that face-to-face (FF) mentoring is a more effective way to receive psychosocial support from their mentor. Yet, more than half of graduate students believed e-communication (EC) could be an equally or more effective way for mentors to support them with pursuing learning interests and working towards career goals.







Data, Sample, and Methods

Data used for this report were from the National Study of STEM Faculty and Students (NSSFS) during the COVID-19 Pandemic, funded by the National Science Foundation (NSF) RAPID grant (DGE-2031066; DGE-2031069), using funds from the Coronavirus Aid, Relief, and Economic Security (CARES) Act. The study was administered through an online survey platform—Qualtrics—on June 3-22, 2020. Informed consents of participants were obtained electronically prior to gathering the survey data.

The final analytic sample for this report comprised 1,087 faculty and 4,603 students in STEM from 157 higher education institutions in 41 states. Of the total faculty sample, 26.3% were assistant professors, 25.7% were associate professors, 39.5% were full professors, and 8.6% were other academic ranks. With respect to race/ethnicity, 70.5% identified as non-Hispanic White, 13.8% were non-Hispanic Asian, 8.4% were Hispanic, 3.2% were non-Hispanic multirace, 1.7% were non-Hispanic Black, and 2.5% were non-Hispanic Native American or other race. Of the total student sample, 77.5% were undergraduate students, 13.4% were master's students, and 9.1 % were doctoral students. 54.3% of the student sample identified as non-Hispanic White, 20.8% were non-Hispanic Asian, 14.7% were Hispanic, 5.0% were non-Hispanic multirace, 2.7% were non-Hispanic Black, and 2.5% were non-Hispanic Native American or other race. The mean ages of the faculty and student sample were 49.1 and 22.9, respectively.

Statistical tests for Figures 2 and 6 were examined using one sample t test at the $p < 0.05$ significance level. The results in the figures presented in this report are bivariate associations that may be explained by other factors not controlled for. Statistical analyses were performed using R software (version 4.0.2).

Suggested Citation

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About the Authors

Chi-Ning (Nick) Chang is an assistant research professor at the University of Kansas; Guan K. Saw is an associate professor at Claremont Graduate University; Uriel Lomelí is a doctoral student at the University of Texas at San Antonio; and Mingxia Zhi is a program evaluator at Northside Independent School District.

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