

UT System LSAMP: Perceptions of Mentorship and Support During COVID-19

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Abstract

Research identifies mentorship, support, and resilience as key factors related to the success of science, technology, engineering, and mathematics (STEM) students from underrepresented groups. The Louis Stokes Alliance for Minority Participation Bridge to the Doctorate project (LSAMP-BD) at the University of Texas at El Paso (UTEP) provides post-baccalaureate fellowship support and mentoring to a cohort of twelve doctoral-level students for the first two years of their graduate careers. The support provides academic, professional, and research skills that enable students to earn doctoral degrees and transition into the STEM workforce. To better support LSAMP-BD doctoral students through the Coronavirus pandemic (COVID-19), the current study assessed students' perceptions of mentorship, support and, various resiliency factors. Participants were asked to complete a forty-two-item questionnaire consisting of Likert-type and open-ended response questions. Initial results indicate that LSAMP-BD students ($n = 11$) experienced higher confidence in their ability to make timely progress with their graduate education (range 1 – 5, $M = 4.7$), professional development ($M = 4.7$), and thesis/dissertation ($M = 4.7$) before than during the COVID-19 pandemic ($M = 3.7$, $M = 2.8$, $M = 3.5$, respectively). Overall, the students reported feeling supported by thesis/dissertation chairs (90%), and their department, program, or research laboratory (80%). However, respondents reported being concerned about the impact of the COVID-19 pandemic on the academic rigor due to distance learning adjustments (70%), the lack of opportunities for in-person professional development (80%), and their financial aid status or the financial resources available due to distance learning (70%). The results of the survey will inform the development of additional LSAMP-BD support infrastructure to enhance student academic, research, and professional skill development during periods of national health crises. Results will be shared with faculty mentors and students in order to foster innovative mentorship. Future research efforts will include analysis of student outcome data (e.g., graduation rates, time to degree completion, and job placement) and resilience factors from this survey.

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Research continues to show a disparity in degree attainment among underrepresented minorities and underrepresented groups (e.g., African Americans, Hispanics or Latinos/Latinas, American Indians/Native Americans, Alaskan Natives, Mixed-Race, women, and persons with disabilities) in STEM fields (Estrada, et al., 2018; National Center for Education Statistics, 2019). The consequences for lower degree attainment among these groups have profound impacts on innovation in research and the workforce (National Science Board, 2015). Thus, many researchers have tried to identify and understand the key factors related to the success of STEM students from underrepresented minorities and groups.

Research has shown that students with higher self-efficacy, or the belief that they can perform science-related tasks, are more likely to succeed in their educational programs (Estrada et al., 2011). In addition to self-efficacy, resilience has shown to have a positive relationship with academic achievement (McLafferty et al., 2012). Resilience in an academic setting is defined as “the capacity to overcome challenges that pose a threat to a students' academic development” (Martin, 2013). Aspects of resiliency include personal competence (e.g., solving personal problems), social competence (e.g., ability to form relationships with others), family coherence (e.g., family cohesiveness), social support (e.g., emotional, practical, or informational assistance from others), and personal structure (e.g., personal organizations). Finally, students with strong mentorship have been shown to increase academic achievement, persistence, and productivity (Eby et al., 2013; Estrada et al., 2016; Tenenbaum et al., 2001; Johnson et al., 2007).

The Louis Stokes Alliance for Minority Participation Bridge to the Doctorate (LSAMP-BD) at the University of Texas at El Paso (UTEP) provides post-baccalaureate fellowship support and mentoring to a cohort of twelve doctoral-level students from diverse backgrounds for the first two years of their graduate careers. The support provides academic and research skills that enable students to earn doctoral degrees and transition into the STEM workforce. Given the disruption in research and graduate studies due to the recent Coronavirus (COVID-19) pandemic, the goal of the current study was to assess LSAMP-BD program students' perceptions of mentorship, support, and various resiliency factors.

Methods

Doctoral students of the LSAMP-BD program ($n = 12$) at UTEP participated in the study. In total, 11 participants completed the 42-item questionnaire in May 2020. The survey did not include identifiable information to preserve the anonymity of the participants, but most are Hispanic or Latino, and all of them pursue Ph.D. degrees in science or engineering. The questionnaire was administered electronically via Survey Monkey, and participants did not receive compensation. Prior to data collection, permission was obtained from the Institutional Review Board.

In collaboration with the LSAMP leadership, the evaluation team created a forty-two-item questionnaire to assess students' perceptions of mentorship, support, and resiliency factors (Appendix A). The questionnaire contained six subscales that included: the personal competence dimension from the Resilience Scale for Adults, self-efficacy, help-seeking/adaptation, academic structure, academic/professional concerns, and personal structure (Friborg et al., 2003). For the personal competence dimension from the Resilience Scale for Adults, participants were asked to rate their agreement to the following statement, “I believe in my own abilities.” For the self-efficacy subscale, participants were asked to rate their agreement on their confidence in being able to make timely progress before and during

COVID-19 in their graduate education, professional development, and thesis or dissertation. For the help-seeking/adaptation subscale, participants were asked to rate their agreement to the following statement, “If I needed help, I would feel comfortable asking for assistance.” For the academic structure subscale, participants were asked to rate their agreement to the following statement, “My thesis/dissertation chair has been supportive through the challenges of this pandemic.” For the academic/professional concerns subscale, participants were asked to rate their agreement to the following statement, “I am concerned about a reduced quality of academic rigor due to distance learning.” Finally, for the personal structure subscale, participants were asked to rate their agreement to the following statement, “I have access to safe, secure housing.” Each construct was assessed using Likert-type scale items (1 = strongly disagree to 5 = strongly agree). In addition, two open-ended questions were included to assess the resources students found most helpful, and if any further support from LSAMP was needed. At the end of the questionnaire, participants were given resources on mental health, self-help, and emotional support provided by the institution.

Results

Results indicated that LSAMP-BD students (n = 11) experienced significantly higher confidence in their ability to make timely progress with their graduate education (range 1 – 5, M = 4.7), professional development (M = 4.7), and thesis/dissertation (M = 4.7) before than during the COVID-19 pandemic (M = 3.7, M = 2.8, M = 3.5, respectively). Table 1 summarizes the mean (M), standard deviation (SD), t-value (t), p-value (p), and findings. Overall, the students reported high agreement with the following subscales: personal competence dimension from the Resilience Scale for Adults (range 1 – 5, M = 4.02), help-seeking/adaptation (M = 4.07), academic structure (M = 4.07), and personal structure (M = 4.49). These subscales were related to the students’ perceptions of mentorship, support, and resiliency factors. For example, the students reported feeling supported by thesis/dissertation chairs (90%), and their department, program, or research laboratory (80%). Additionally, students reported believing in their own abilities (73%), feeling comfortable asking for assistance (82%), and having access to secure housing (100%). However, for the academic/professional concerns subscale, respondents reported being concerned about the impact of COVID-19 on the academic rigor due to distance learning adjustments (70%), the lack of opportunities for in-person professional development (80%), and their financial aid status or the financial resources available due to distance learning (70%).

Table 1
Results of the T-Tests on LSAMP-BD Students’ Perceptions on their Ability to Complete Progress on Graduate Education, Professional Development, and Thesis/Dissertation Research Before and During COVID-19.

	Before COVID-19		During COVID-19		t (11)	p
	M	SD	M	SD		
Graduate education	4.64	.51	3.73	.79	2.65	.02
Professional development	4.64	.51	2.73	1.11	5.19	.00
Thesis/dissertation research	4.64	.51	3.27	1.	3.32	.01

Discussion

Underrepresented minorities and groups in science, technology, engineering, and mathematic (STEM) fields continue to have lower degree attainment rates when compared to their white counterparts (Estrada et al., 2018; National Science Board, 2015). The long-term impact of COVID-19 pandemic is unknown. Thus, it is essential to identify the characteristics and factors that enable or hinder academic achievement. The current study created a questionnaire to assess students’ self-efficacy, resilience, help-seeking/adaptation, academic structure, personal structure, and academic/professional concerns related to COVID-19. Overall, LSAMP-BD students reported less confidence and some concerns related to COVID-19. However, these same students reported believing in their own abilities, feeling supported, and feeling comfortable when asking for assistance. Additionally, students reported having access to housing and other necessities. This study has highlighted the strengths and barriers experienced during COVID-19 by underrepresented groups and minority doctoral students.

The results of the current study will be used to inform the development of additional LSAMP-BD support infrastructure to enhance student academic, research, and professional skill development. Previous studies have shown increasing self-efficacy, resilience, and mentoring are positively related to academic and career achievement (Chemers et al., 2011; Eby et al., 2013; McLafferty et al., 2012). Given the difficulties LSAMP-BD students are facing with COVID-19, the LSAMP leadership team is developing seminars that will be held virtually throughout Fall 2020. The seminars will include university resources, opportunities for learning, and opportunities to increase individual self-efficacy in terms of graduate education, professional development, and thesis/dissertation research. In addition, LSAMP leadership is recruiting a member of the LSAMP-BD cohort to host peer support groups without the presence of LSAMP leadership to encourage peer-to-peer mentoring and facilitate open conversation.

The current study had several limitations and future directions. The study had a small sample size, and thus it is difficult to generalize to the general population of STEM doctoral students. Future directions include recruiting more STEM doctoral students to increase the sample size and provide a comparison group for students outside of the LSAMP-BD program. In addition, this study did not assess the perspective of faculty mentors. Future studies will assess the difficulties faculty mentors are facing during COVID-19. Finally, future research efforts include analyzing student outcome data (e.g., graduation rates, time to degree completion, and job placement) and resilience factors from this survey.

Conclusion

Because the impact of COVID-19 on doctoral student success is unknown, the current study assessed students' perceptions of mentorship, support, and various resiliency factors. The students in the LSAMP program reported believing in their own abilities, feeling supported and feeling comfortable when asking for assistance. Although, the students reported feeling concerned about the impact COVID-19 will have on distance learning, their professional development, their financial aid status. This study will allow LSAMP leadership to provide specific and targeted assistance to these students to ensure the students' continued success.

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Appendix A

Think about your most recent experiences, during the COVID-19 pandemic. Please indicate your level of agreement/disagreement with the following statements.	
Self-Efficacy	
<i>Thinking back to BEFORE COVID-19, please rate your agreement with the following.</i>	
Pre-COVID-19	I was confident in my ability to make timely progress with my <u>graduate education</u> .
	I was confident in my ability to make timely progress with my <u>professional development</u> .
	I was confident in my ability to make timely progress with my <u>thesis or dissertation research</u> .
<i>For the following statements, consider the current COVID-19 situation.</i>	
COVID-19	I am confident in my ability to make timely progress with my <u>graduate education</u> .
	I am confident in my ability to make timely progress with my <u>professional development</u> .
	I am confident in my ability to make timely progress with my <u>thesis or dissertation research</u> .
Resilience Scale for Adults - Personal Competence Dimension	
	I believe in my own abilities.
	Believing in myself helps me to overcome difficult times.
	I know that I succeed if I carry on.
	I know how to reach my goals.
	No matter what happens I always find a solution.
	I am comfortable with other persons.
	My future feels promising.
	I know that I can solve my personal problems.
	I am pleased with myself.
	I have realistic plans for the future.
	I completely trust my judgements and decisions.
	At hard times I know that better times will come.
Help Seeking / Adaptation	
	If I needed help, I would feel comfortable asking for assistance (e.g., from your thesis or dissertation chair, mentor, or others).
	If I ran into a technology issue while completing educational or research activities, I know where to go for help.
	I know where to seek help from my department, lab, or program as needed.
	I know where to seek <u>academic resources</u> at UTEP if needed.
	I know where to seek <u>research resources</u> at UTEP if needed.
	I know where to seek <u>health care resources</u> at UTEP if needed.
	I know where to seek <u>mental health resources</u> at UTEP if needed.
	I know where to seek <u>financial resources</u> at UTEP if needed.
What are some resources that you have found helpful to manage the COVID-19 situation?	
Are there resources that UTEP or LSAMP could provide to better support you?	
Academic Structure	
	My course instructors have been supportive through the challenges of the pandemic.
	My thesis/dissertation chair has been supportive through the challenges of the pandemic.
	UTEP support services have provided me with the help I need at this time.
	My department, program, or lab has been supportive through the challenges of the pandemic.
	My thesis/dissertation chair or mentor provides me the support that I currently need.
Academic/Professional Concerns	
	I am concerned about a reduced quality of academic rigor due to distance education.
	I worry about COVID-19's impact on my preparation for my career.
	I am concerned about not <u>gaining the skillsets</u> traditionally learned in lab settings.
	I am concerned about a lack of opportunities for in-person professional development as I prepare for my career.
	I am worried about a reduction in financial aid due to distance learning.