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## Mentorship Program Offers Insight to Students' Self-Efficacy Interested in Medicine

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## Mentorship Program Offers Insight to Students' Self-Efficacy Interested in Medicine

### Cover Page Footnote

1. Hamilton, L. K., Boman, J., Rubin, H., & Sahota, B. K. (2019). Examining the impact of a university mentorship program on student outcomes. *International Journal of Mentoring and Coaching in Education*.  
2. Bandura, Albert. "Guide for constructing self-efficacy scales." *Self-efficacy beliefs of adolescents* 5.1 (2006): 307-337. 3. Lent, R. W., Brown, S. D., & Hackett, G. (2000). Contextual supports and barriers to career choice: A social cognitive analysis. *Journal of counseling psychology*, 47(1), 36. 4. Rogers, M. E., & Creed, P. A. (2011). A longitudinal examination of adolescent career planning and exploration using a social cognitive career theory framework. *Journal of adolescence*, 34(1), 163-175. 5. Dall, T., Reynolds, R., Chakarabarti, R., Chylak, D., Jones, K., Iacobucci, W., (2021). The Complexities of Physician Supply and Demand: Projections From 2019-2034. *AAMC*. 6. Moy, E., Bartman, B. A., (1995). Physician race and care of minority and medically indigent patients. *JAMA*, 273(19); 1515-20. We would like to acknowledge and thank all the students who took the time to participate in this mentorship program, the Alpha Omega Alpha Chapter of the University of South Dakota Sanford School of Medicine, and South Dakota HOSA-Future Health Professionals

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## Introduction

The benefits of mentorship have been widely studied for the past thirty years. For this research, the authors decided to use this definition of mentoring: “a process by which a more experienced person (the mentor) gives support to a less experienced person (the mentee) across a wide range of issues relevant to work and professional development.”<sup>1</sup> Generally speaking, mentorship programs occur at one of three life stages: youth mentoring (e.g. matching children/adolescents with supportive adults), academic mentoring (e.g. matching students with faculty members), and workplace mentoring (e.g. matching new employees with more experienced colleagues)<sup>2</sup>. When looking across mentorship contexts, evidence has suggested that mentorship programs can result in positive behavioral, attitudinal, motivational, relational and career outcomes although the benefits may depend on the type of mentoring program.<sup>2</sup>

As has been well documented over the years, physician shortages will continue to plague the healthcare fields for years to come. An American Academy of Medical Colleges (AAMC) 2021 study forecasted that the United States is expected to see a shortfall of both primary care and specialty physicians estimated between 54,100-139,000 by the year of 2033.<sup>3</sup> Thus, it is evident that the pursuit of medical school and perhaps other medical disciplines such as advanced practice providers present strong opportunities as careers for youth of today.

In 1963, Erik Erikson detailed in his landmark study on *Childhood and Society* that adolescence is a time when career identity begins to take place. As a result, assistance in career planning during the period of adolescence may galvanize a person's commitment to a specific field.<sup>4</sup> A study by Rogers and Creed aimed to discover predictors of career choice actions. They found that career support in the form of friends, family, and teachers was strongly significant in adolescent career planning, especially in grade 10, as they select classes to prepare for tertiary education. Consequently, the role of mentorship during this time period cannot be understated to encourage and stimulate pursuit of career exploration and planning.<sup>5</sup>

Another interesting theory tied to mentoring is the social cognitive career theory (SCCT) by Lent et. al. as well as a more recent adaptation known as the social cognitive model of career self-management (CSM).<sup>6,7</sup> Both theories express the importance of learning experiences playing a critical role in career development. Also, support systems such as mentorship, serve as key sources of efficacy information, demonstrating a positive correlation with self-efficacy.<sup>6,7</sup> Self-efficacy refers to an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments.<sup>8</sup> Self-efficacy is important because it is considered a key precursor of adaptive career behaviors.<sup>1,7,8</sup>

Although the population of diverse applicants applying to medical school is increasing, efforts persist to ensure the continuance of this trend.<sup>9</sup> Mentoring students at an early age may be an effective method by which to accomplish diversity within the applicant pool. Having a diverse physician population is more likely able to adequately address the healthcare needs of our diverse population.

High school students inquire about specific career pathways regarding the classes required, aptitude for the career, and “day in the life” of a medical student. Offering a robust and structured statewide mentorship program that aims to pair high school students and medical students of similar backgrounds will aid in the development of career planning toward the healthcare profession and enhance the diversity shortfall the medical community currently faces. A mentorship program like this aims to compare students’ self-efficacy in their pursuits of becoming future health professionals as well as their understanding of the specialties and subspecialties offered in medical school education.

## **Background**

### *SOUTH DAKOTA HOSA-FUTURE HEALTH PROFESSIONALS*

South Dakota HOSA-Future Health Professionals was established during the 2012-13 academic year aiming to nurture and encourage high school students aiming to pursue a career in health care. South Dakota HOSA is a valuable instructional tool for empowering health science students to play an active role in their learning on their journey toward becoming future health professionals. HOSA emphasizes values essential for students aiming to be successful in the “real world,” namely excellence, teamwork, and care. HOSA creates opportunities for members to engage with health professionals via its competitive events program and other resources as well. Through opportunities for students to serve in local, state, or international leadership roles, to complete an internship where they can connect with health officials, or to attend leadership development conferences, HOSA offers substantive leadership, networking, and mentorship experiences through which students can explore their career options and passions in health care; all while gaining valuable insight into what it looks like to work with others in fulfilling their dreams.

The mission of South Dakota HOSA is to nurture and encourage high school students interested in a healthcare career. This mentorship is a great opportunity for students to connect with medical students to build confidence in their pursuit.

### *THE AOA HONOR MEDICAL SOCIETY*

Alpha Omega Alpha is a national medical honor society that was founded in 1902 and remains the only established medical honor society in the country. According to the Alpha Omega Alpha website, Its mission is, “dedicated to the belief that in the profession of medicine we will improve care for all by recognizing high educational achievement, honoring gifted teaching, encouraging the development of leaders in academia and the community, supporting the ideals of humanism, and promoting service to others.” Local chapters are spread across the country that are home to over 200,000 members that include students, residents/fellow, faculty, and alumni. The South Dakota Chapter was established in 1978.

### *The R.E.A.C.H. MENTORSHIP PROGRAM DESCRIPTION*

In the fall of 2020 South Dakota HOSA-Future Health Professionals and the Alpha Omega Alpha Honor Medical Society at the University of South Dakota Sanford School of Medicine collaborated on a mentorship program entitled “The R.E.A.C.H. Mentorship Program” to provide an opportunity for graduate students to cultivate professional relationships with high school students aiming to pursue a career in medicine. R.E.A.C.H. is an acronym that stands for Relationships, Engagement, Awareness, Collaboration and Help. The aims of the program were as follows:

- 1) Compare the self-efficacy of the process of application and entrance into medical school of the mentee participants.
- 2) Compare the familiarity of specialties/subspecialties in medicine of the mentee participants.
- 3) Compare the confidence of pursuing a career in medicine of the mentee.
- 4) Analyze the effectiveness of a mentorship by comparing pre-survey and post-survey results.

## **Methods**

Emails were sent out to both groups that included the rationale for the mentorship program, the logistics of the program, and a link to an application for the program. The application included certain criteria such as grade in school, ethnicity, common interests, and more. We used the responses in the applications to match the mentor and mentee.

Due to the pandemic, mentors and mentees viewed a video orientation before beginning the program, read through the rationale of the program, and completed a pre-survey.

Once the dyads were paired, the mentors were asked to initiate contact with their mentees. They were required to meet once a month for a duration of eight months. The mentors used guided questions on topics such as applying to

medical school, college life, residency, specialties in medicine, and longitudinal integrated clerkship but were also given the autonomy to field topics specific to the mentees line of questions.

Participants in the program completed two different Likert-scale surveys. Prior to the start of the mentorship program, the researchers sent an 8-item Likert survey to the mentees that included four- and five-point Likert scale questions. The researchers also sent a 7-item Likert survey to the mentors that included four- and five-point Likert scale questions. Following the mentorship program, the researchers sent out the same Likert scale surveys to the mentees and mentors.

Data from the surveys were collected and analyzed for correlations using t-tests. The dyads were invited to an annual recognition banquet to recognize participants and to highlight the successes of the program.

#### *INDIVIDUALS/PARTICIPANTS*

Mentors were recruited by AOA medical students and included 1<sup>st</sup> year, 2<sup>nd</sup> year, 3<sup>rd</sup> year and 4<sup>th</sup> year medical students. Mentors had to meet multiple eligibility requirements. 93 mentors responded to the invitation to apply and voluntarily completed the application to the program.

Mentees were recruited by the South Dakota HOSA Executive Director. Mentees were required to meet certain eligibility requirements. 40 mentees responded to the invitation to apply and voluntarily completed the application to the program. Mentees had to be at least 16 years old to participate and a legal guardian/parent was required to sign for permission on the application.

#### **Data**

The R.E.A.C.H program offers opportunities for high school students to learn from current medical students about applying for medical school and what a career in medicine may look like. HOSA distributed surveys to all mentees before and after the program measuring to collect perceptions of the program and its effectiveness. Thirty-two (32) mentees completed the pre-survey for a response rate of 80% while twenty-five (25) mentees completed the post-survey for a response rate of 62.5%. Additionally, select mentee demographics were collected when they applied to be a part of the program. Geographic location is based on address of residence provided on the application and categorized using HRSA's Rural Health Eligibility Analyzer. HRSA defines rural as all non-metro counties, all metro census tracts with Rural-Urban Commuting Area (RUCA) codes 4-10 and large area metro census tracts of at least 400 square miles in areas with population density of 35 or less per square mile. Table 1.1 reports these demographics below.

**Table 1.1**

Mentee Demographics at Application		
Variable	Frequency	Percentage
Age		
15	7	17.5%
16	17	42.5%
17	13	32.5%
18	3	7.5%
Geographic location		
Rural	11	27.5%
Not Rural	26	65.0%
Unknown	3	7.5%

Responses on the pre-and post-surveys were then compared using independent t-tests to determine if the changes in the average response for each question on the pre- and post-surveys were statistically significant. The questions analyzed focused on mentee's understanding of medical school and pursuing a career in medicine. Specifically, mentees were asked about their comfort with applying to medical school and their confidence at pursuing a career in medicine on a scale from "No confidence" (1) to "Very Confident" (4). They were also asked about their familiarity with medical specialties and subspecialties on a scale from "Not familiar" (1) to "Very familiar" (4). The results of these t-tests can be found in the table 1.2 below.

**Table 1.2**

Change in Mentee Perception Before and After Participation in R.E.A.C.H.					
Question	Before R.E.A.C.H.	After R.E.A.C.H.	t statistic	Degrees of Freedom	P value
How comfortable are you with the application, entrance, and acceptance process into medical school?	1.75	2.48	-4.60486	44.3702	0.000035
How confident are you in pursuing a career in medicine?	3.46875	3.36	0.64608 7	51.05896	0.521116
How familiar are you with the specialties/subspecialties in medicine?	2.1875	2.68	-2.72168	54.56802	0.0087

The results show that there were statistically significant differences in the before and after average response for comfortableness with the medical school application process and mentee's familiarity with medical subspecialties; however, confidence in pursuing a medical career did not significantly change. This lack of significance is likely due to the population of high school students served by the program. Students willing to commit to an extra-curricular mentorship program likely feel confident in their career choices, but we do not have data to confirm this assumption.

In addition to this quantitative data, the post-survey included qualitative questions to better understand what students liked and disliked most about the mentorship program. Students frequently reported that they felt their mentors were very informative with one student responding that they learned "about the



actual experience of college” and another stating that they “enjoyed learning about an actual medical student's daily routine.” Another aspect of the program that mentees enjoyed was the authenticity of the mentors. One mentee stated that their mentor was, “so honest about her experience as a student in college”, and that they, “Helped me decide what I want going into my college career.” Additionally, several students reported that they felt comfortable with their mentor and that they had gained a mentor and friend for the future.

The most frequent dislike about the R.E.A.C.H. program was that it was conducted entirely through virtual platforms. One mentee reported that it was, “difficult to kindle a relationship over a monitor.” Several students wished that meeting in-person would have been an option but understood that given the ongoing COVID-19 pandemic that this was not possible. Others noted that even if COVID-19 had not limited the program to virtual meetings, in-person meetings would not have been feasible for them or their mentors since they weren't in the same location.

## **Conclusion**

The results demonstrate students' high self-efficacy of the mentees regarding the medical school “journey” especially in the process of application to medical school and the knowledge of specialties/subspecialties. Mentees were less confident than their mentors that the program can help them successfully complete medical school.

Future research will involve ethnic minorities who are participating in the mentorship program as well as information regarding barriers in pursuing a degree in the health sciences.

Data provided in this manuscript is not yet publicly available: Please contact authors for data access.

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