

**A Case Study of University Seniors' Persistence in Preparation for Medical School**

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Abstract:

This qualitative study of 30 seniors in two mid-western universities were examined to identify factors related to the persistence of university seniors that were pursuing a degree to prepare themselves for medical school admission. This topic is important as most students who initially indicate this goal ultimately change their focus throughout their undergraduate studies. A sample of 30 university seniors, identifying themselves as "pre-med", was used. Semi-structured interviews were used to attempt to gain a better understanding of what factors contributed both to student's decision to pursue a degree in preparation for medical school, as well as contributed to their persistence of this goal throughout their undergraduate progression. Findings indicate that many factors contribute to goal orientation and perseverance in some university seniors and that participants reported common themes such as interest and aptitude for science, an ability to withstand competition, an influential experience with a health-care provider, and a desire to work in a helping profession.

*Keywords:* Medical School Admissions, Advising, Counseling, Pre-Professional

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## **Introduction**

Aspirations of beginning university students to pursue degrees that will be in preparation for medical school continue to be extremely common in all institutions of higher education. Students who wish to be admitted to medical school must meet certain specific requirements before they have an opportunity to be accepted. This coursework usually includes completion of a bachelor's degree from an accredited institution of higher education with specific coursework, 2 courses with a laboratory component in biology, general chemistry, organic chemistry, and physics. Although the coursework requirements to qualify for medical school appear relatively modest, most students who begin college with this objective ultimately decide to change their focus long before their senior year. This study examined the experiences of 30 university seniors who identified themselves as "pre-med" and focused on their persistence with this objective throughout their undergraduate studies.

## **Methods**

The participants for this study were 30 (n=30) seniors at two universities. The first was a mid-sized Midwestern research institution that identified their primary academic goal as preparing students to be accepted into medical school. The second, mid-sized Midwestern regional university of a that identifies their primary academic goal as a teaching university. Participants were recruited through the university pre-professional clubs. This is a voluntary club in which students who plan to pursue a professional education can exchange ideas and support in a formal club environment. With the permission of the faculty advisors, the researchers attended a club meeting and asked for volunteers who fit the criteria. From this recruitment attempt,

twelve participants were recruited initially between both universities. Snowball sampling techniques were then implemented, as the participants were asked about other members of the population that may be willing to participate (Bogden & Biklen, 2007). This recruitment technique was important as the population for this research topic, even at midsized institutions, was small in comparison to the pre-med majors identified. The number of participants was 64% female and all interviewed students were majoring in a field of science at both schools

Qualitative researchers attempt to gather information by examining or exploring phenomena in its natural setting, trying to make meaning through the lens of those who are part of an experience (Denzin & Lincoln, 2005). As this study was attempting to explore several broad questions that were open-ended in nature, qualitative interviews were used. Semi-structured interviews were chosen as the method of data collection to allow the researcher to obtain data that was insightful and descriptive. The semi-structured interview format allowed each student to explain their specific situation thoroughly and did not constrain the responses (Brophy, 2005). The interviews were conducted in the fall of 2011, and 2016-2017 and lasted approximately a half an hour. All interviews were audio-recorded and later transcribed. After transcription, themes were identified. We used collected criteria from 2011 to maintain a baseline of data. An electronic document was created that listed several themes that were identified by the researcher as important. These themes were created based on how many times the theme was addressed by the participant. Each section of the interview transcript that fit a certain theme was then placed under the theme that was identified, to organize the data.

The questions used in this study were:

- What were the most important educational experiences of first-year medical students between pre-kindergarten and their senior year of high school?
- What were the most important educational experiences of first-year medical students during their undergraduate collegiate experience?
- What were the most memorable and significant educational moments that occurred within first-year medical students' entire educational lives?
- How did those moments contribute to their successful admission to medical school?

Data was collected by recorded interviews and transcripts to identify recurrent coding themes. The use of coding in qualitative research is short units, usually a word or a few words, that convey a symbol or meaning and are repetitive themes that are used by the participants in the study, (St. Pierre & Jackson, 2014). For example, if a student spoke about an influential science teacher in third grade, and this passage was already categorized into the sub-theme of "mentorship," a more specific code or codes would be given possibly including "influential teacher" and "third grade."

## **Findings**

Four themes were identified as important in this analysis. The inserted table, Table 1, Data Thematization Chart, based on Richardson's (2015) previous work organizes the levels of thematization that were identified throughout the analysis process. The terms at the left of the chart were the originally identified topics, while the columns to the right show the more comprehensive and re-organized sub-themes and final themes. Each participant discussed issues

relating to interest and aptitude for science, an ability to withstand competition, an influential experience with a health-care provider, and a desire to work in a helping profession.

**Table 1.**

Data Thematization Chart		
Note: Thematization took place continuously during the data collection and analysis processes in identification of interest and aptitude for science. (x) The numbers are the actual events that represent the mention topics.		
Theme	Sub-Theme	Topic
- Mentoring and Encouragement.	-Curiosity -Mentorship -Impostor syndrome -Creativity -Sociality -Social Capital	-Liked to learn (26) -Enjoyed science (30) -Self-Driven (16) -Family very serious about school (21) -Artistic (7) -Family member working in medicine (16)
Academic performance/ achievement.	-Math -Identified as gifted -Enjoyed academic challenge -Encouraged by high school teachers and college professors.	-Excelled in math (18) -Viewed academic challenges as exciting (27) -High level of respect for teachers in which grade was "earned" (21) -Caring teachers and professors. (23) -Repeatedly re-learning academic material (6) -Experience proving an academic ability (7)
Influential Experience with a Health-Care Provider.	-Competition -Sick in childhood and great experience with a pediatrician -Experience with physicians after a family illness -Work/volunteerism in a foreign country	-Recovered from a childhood trauma. (6) -Friendships developed with medical personnel caring for sick family member. (8) -Family member in the health field. (12) -Health aide work in a high school mission trip. (2) -Science fair award in health. (4)
Desire to Enter a Helping Profession.	- attracted to helping professions. -Impactful study abroad experience	-Competitive events (5) -Career exposure (18) -International experience (2)

## **Mentoring and Encouragement**

The most comprehensive theme was that of personal attributes, family background, and interests. Participants spoke in detail about how these factors had influenced their educational journeys, and many sub-themes emerged from this theme including curiosity, mentorship, impostor syndrome, creative arts, sociality, and social capital. In many instances, some of these sub-themes almost merged, to a point where it was difficult to assert how one topic or sub-theme was affected by another, (Richardson, 2015). Interest in science was a significant part of all participants' scholarly endeavors. Each participant mentioned a passion for science education, as well as a natural talent in the field. Each student was currently pursuing a degree in a field of science, and most were involved in scientific research in some capacity. Participants' described their relationship with science by indicating that they had a true passion for the subject. Interest in science and curiosity about science was an important trait that was identified in a study by Pagnin, De Queiroz, Filho, Gonzalez, Salgado, Oliveira, Lodi, and Melo (2013), who administered questionnaires to a sample of 277 medical students assessing their career motivation. They found intellectual curiosity was among the most common reasons for choosing a career as a physician. Jones (2013), a veteran K-12 educator with over 20 years of experience in STEM education, found through conducting a STEM literacy project that project-based learning and experimentation in elementary science education significantly increases a child's curiosity, and therefore their likelihood to continue to pursue science education. The survey students cited that physicians are highly curious about science and medicine, and this curiosity drove their pursuance of the field by effective K-12 science education and nurturing parents, cultivating curiosity in nature and science. Each of our participants reported curiosity, which

directed them to pursue a science education and that this eventually evolved into a degree that prepared them for medical school.

Interests and mentoring by teachers were certainly impactful throughout the continuum of the educational journey; however, family members, usually parents, were often indicated as the most important influences. Although many participants spoke about the impact of their parents, the way or reason in which they felt impacted differed significantly. Students spoke about the impact of their parents as being important because they provided support in moments of strain, rather than pushing them into a high level of achievement, something which was usually initiated fully already themselves. Many others seemed to share the perspective that, although their parents were very interested and involved in their education, their high level of academic expectation was more initiated by themselves. Others spoke about the influence of their parents as a driving factor that reminded them of the expectation to be a good student, especially important to them in the moments in which this outlook began to diminish (Richardson, 2015). Each participant cited their own unique yet comparable experience with familial support and attention to education—one that undoubtedly led to a mentorship experience unlike any other. Although the role of parents and family is significant, over twenty students cited caring teachers and professors. Friends who shared similar passions in the medical sciences were cited by a few students in their academic journey. Aspiring pre-med students need support from all sides by friends, parents, and professors in this long arduous career path.

### **Academic performance/ achievement**

Even before the medical school admission process, competition is evident to pre-medical students. Across interviews, participants discussed their desire to "stand out" from others within

their field. This competition is certainly understandable, as medical schools tend to admit approximately a tenth of potential applicants. Participants overwhelmingly spoke about their early involvement and enjoyment in competitive events, which were usually academic. A study by Horowitz, G. (2010) confirmed that these events seemed to be particularly memorable as they provided students with some type of eagerness to do their best, or because through them, they gained insight into their high level of ability. Some of the competition participants spoke about was concerning non-academic extra-curricular activities, such as various sports (Richardson, 2015; Jones, R., 2002). Twelve participants described pre-med competition by stating that they were not naturally competitive and did not enjoy the competition, but they accepted it as part of the process. The competition factor was addressed by all participants in some way, although was sometimes reported as more of a motivational factor rather than an obstacle. All participants indicated that they felt busier and more pressured than their college peers and that they had an understanding from early in their pre-med studies that they would need to be involved and dedicated both within and outside of the classroom. The confidence they gained from their involvement in extra-curricular activities led them to continue their interests in pursuing a pre-medicine program. Involvements with competitive academic events, faculty-sponsored research, and significant exposure to a career in medicine were pivotal moments within the educational histories of participant's experience, (National Center for Education Statistics, 2009). No student believed it was a detriment to their career choice and all believed that it helped them to grow academically, socially, and professionally. Most of the queried students agreed with similar studies by Nir, (2017) and shared similar beliefs about the competitive ambitions they set for themselves, and how they were beneficial to the pre-med student's studies. The interviews reveal

that competition in other fields is good for aspiring pre-med students to build character, healthy habits to reduce stress and train them to focus.

### **Influential Experience with a Health-Care Provider**

An important identified theme was contact with a health care worker. This may have been with a family member, personal interaction as a patient or as a caregiver to a family member. This consistently presented itself throughout the data as a frequent response to an interview question asking students to recall factors that had influenced them to pursue a degree in preparation for medical school. All participants discussed a significant and influential experience with a health care professional. Events in which participants were exposed to the medical profession appeared particularly important. Even among participants who had a high level of social capital related to the medical professions (e.g., those with a physician relative), 12 students identified it. A slightly higher number of interviews (14) became interested in medicine because of direct exposure to a medical career through a personal illness or family medical situation that cultivated a new level of attentiveness to the field. This experience usually prompted participants to think about medicine in a new way, picturing themselves in the role of a physician. Most of the participants described these experiences in late childhood or early adulthood (10 students); however, others (7 students) remember this impactful career exposure from a very young age. With all participants, career exposure seemed to be most important in instances when the participant could relate to or wished to aspire to the skills of the attending physician.

## **Desire to Enter a Helping Profession**

A final theme identified was that of helping others. This appeared to be a primary motivational factor in their pursuit of a medical degree. Most indicated that the enmeshment of science with serving others was an especially motivating factor toward this degree. Participants indicated in some way that they had been attracted to helping professions for some time. All students involved in an international study cited a desire to use medicine to serve others and improve the lives of others. Twenty of the students interviewed were first-generation college students and wanted to give back to their community. Twenty-three planned to return to their communities on completion of medical school. Twenty-two of the participants' indicated that since they enjoyed both science and helping others that practicing medicine seemed to be the best way to combine these into a career.

## **Conclusion**

It was apparent through this study that everyone was influenced by their specific circumstance and attitude; however, several interesting themes did emerge, a significant finding of magnitude regarded their science education. This appeared to be of extreme importance in the participants' ability to be persistent throughout the pre-med process and appeared even across themes. It is of interest that each of these successful pre-med students spoke diligently about their interest in science, and each indicated that their genuine interest in it is what evolved into their decision to pursue a program in pre-medicine. This finding is supported in the literature in an article by Horowitz (2010), which indicated that students who were classified as intrinsically motivated to learn in a course were more likely to receive a grade they saw as acceptable.

The data reported in this research project could be of value to those in university advising and preparation programs. Although so many incoming students identify as pursuing a degree intended for preparation for medical school, many higher education professionals are unsure of how to approach these students, as the professional is likely aware of the high turn-over rate in these majors (Pagnin, D., De Queiroz, V., Oliveira Filho, M. D., Gonzalez, N. A., Salgado, A. T., Oliveira, B. E., Lodi, C.S. & Melo, R. S., 2013; Richardson, T. (2015). This study demonstrates that pre-med students that involve themselves in a variety of experiences may lead them to define their career goals. Their experiences will entail enrolling in science coursework, involvement in a setting ripe with health care professionals, and evaluating of ability and desire to withstand competition. A key finding in these interviews is that that curiosity enhances a student's ability to perform in science education and even within medical education specifically is repeatedly indicated through literature. Successful applicants to medical school have a strong support system in social, professional, and academic circles that complement and support each other. For secondary science educators, we need to encourage our high potential students. Offer rigorous programs to challenge them and extra-curricular activities i.e.: science clubs, fairs, physics Olympics etc. Universities who desire to assist their students to be admitted and thrive in medical school, must continue the nurturing and mentoring of their pre-med students.

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