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OTHER PEOPLE'S FAMILIES: HOW SOCIAL TIES SHAPE ENTRANCE INTO THE MEDICAL PROFESSION

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OTHER PEOPLE'S FAMILIES: HOW SOCIAL TIES SHAPE ENTRANCE INTO THE MEDICAL PROFESSION

DISSERTATION

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the College of Education at the University of Kentucky

By

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ABSTRACT OF DISSERTATION

OTHER PEOPLE'S FAMILIES: HOW SOCIAL TIES SHAPE ENTRANCE INTO THE MEDICAL PROFESSION

Not enough members of low-income, rural, and minoritized populations are successfully prepared for and recruited into medical school, exacerbating issues of unequal access to healthcare and limiting access to the profession. While a multitude of factors contribute to this problem, early social exposure to others in a field can act as a key contributor to career interest and a key advantage for entering the profession. Meanwhile, students without early social exposure to healthcare may take unconventional paths to medical school or may struggle to fit into the unique culture of medicine when they do enter training, especially if they belong to underrepresented groups.

This project includes 3 papers based on a longitudinal, mixed-methods case study of first, second, and third year medical students at an allopathic medical school at a public university in the Southeastern United States. Participants include 80 interviewees drawn from a pool of 261 survey respondents. Each paper considers a different point along the trajectory into the medical profession: first, the pre-college years; second, the undergraduate stage; and third, medical school itself.

In the first paper, I explore how students with different levels of early socialization into medicine develop initial interest in the profession, and how families, peers, schools, and communities influence students' aspirations both positively and negatively. In the second paper, I discuss how students from underrepresented

backgrounds often avoid identifying as “pre-med” and instead approach the intense preparation process for medical school via independent—rather than collaborative—strategies, with less confidence and insider information than better-connected peers. In the final paper, I map out how early differences in socialization into the field can continue well into medical training, especially for students who continue to feel out of place in the culture of medicine.

Underlying each of these papers are comparisons to literature on first-generation college students, which documents unique challenges faced by students who did not grow up in college-going families and may lack social or cultural capital to facilitate their entrance to postsecondary education. Similarly, I typologize participants as “insiders” in medicine–those with familial connections to healthcare professionals—and “newcomers”—those with no familial connections in healthcare. I find that insiders have significant advantages stemming from their access to the profession, while newcomers are often hindered by a lack thereof. However, I also find that many students from nonmedical families access “inside-adjacent” status in which they align themselves with insiders who provide information and access to the profession, although this is most feasible for students already in positions of relative privilege, such as students at college-preparatory high schools. Nevertheless, students from nonmedical backgrounds still found unique ways to aspire to medicine, prepare for admission to medical school, and navigate training, illustrating that outsider status, while challenging, can also act as an advantage or source of inspiration empowering diverse students.

KEYWORDS: Medical Education, Sociology of Education, Career Choice, Social Capital Theory, Diversity, Access to Professions

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OTHER PEOPLE'S FAMILIES:
HOW SOCIAL TIES SHAPE ENTRANCE INTO THE MEDICAL PROFESSION

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To Valerie and Langdon, who can be whatever they want to be

To Tyler, who helped me become who I wanted to be

And to all the kids who could be doctors

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CHAPTER 1: INTRODUCTION

1.1 RESEARCH OVERVIEW

Not enough members of low-income, rural, and minoritized populations are successfully prepared for and recruited into medical school, exacerbating issues of unequal access to healthcare, and limiting access to the profession. While a multitude of factors contribute to this problem, early social exposure to others in a field can act as a key contributor to career aspirations and a key advantage for entering the profession. Meanwhile, students without early social exposure to healthcare may take unconventional paths to medical school or may struggle to fit into the unique culture of medicine when they do enter training, especially if they belong to underrepresented groups.

This project includes 3 papers based on a longitudinal case study of first, second-, and third-year medical students at an allopathic medical school at a public university in the Southeastern United States. Participants include 80 interviewees drawn from a pool of 261 survey respondents. Each paper considers a different point along the trajectory into the medical profession: first, the pre-college years; second, the undergraduate stage; and third, medical school itself. Throughout this research, quantitative (survey) data functioned as a backdrop and source of focus for qualitative (interview) data, which provided evidence used to construct themes. Included questions (attached in Appendix 2) asked about students' familial and social connections to healthcare professionals alongside background questions gathering information like race/ethnicity; rural status; and access to college-preparatory courses in high school. Questions also asked about students' transition into the first year of medical school (e.g., connections with peers and mentors; feelings about their initial performance). I conducted interviews after analyzing each round of survey results, then followed up on emerging themes such as how students

from non-medical backgrounds built confidence and made connections in their new field. Thus, the research, while technically mixed-methods because it focuses on the same topic through these different methodological lenses, primarily utilizes surveys as pilot data for the in-depth interview work (see Appendix 4 for an overview of the survey and interview data collection timeline).

In the first paper, I explore how students with various levels of early socialization into medicine develop initial aspirations toward the profession, and how families, peers, schools, and communities influence students' aspirations both positively and negatively. In the second paper, I discuss how students from underrepresented backgrounds often avoid identifying as "pre-med" and instead approach the intense process for medical school via independent—rather than collaborative—strategies, with less confidence and insider information than better-connected peers. In the final paper, I map out how early differences in socialization into the field can continue well into medical training, especially for students who continue to struggle to feel at home in the culture of medicine.

Underlying each of these papers are comparisons to literature on first-generation college students, which documents unique challenges faced by students who did not grow up in college-going families and may lack social or cultural capital to facilitate their entrance to postsecondary education. Similarly, I consider whether well-studied differences between first- and continuing-generation undergraduate students could be mirrored among medical students with different levels of socialization into medicine.

I typologize participants as "insiders" in medicine—those with familial connections to healthcare professionals—and "newcomers"—those with no familial

connections in healthcare. I consider whether newcomers with limited early social exposure to the medical profession may struggle more to access or fit into the nuclear medical culture or may feel disconnected from their former identities as they assimilate. I find that insiders have significant advantages stemming from their access to the profession, while newcomers are often hindered by a lack thereof. However, I also find that many students from nonmedical families develop "inside-adjacent" status in which they align themselves with insiders who provide information and access to the profession, although this is most feasible for students already in positions of relative privilege, such as those attending college-preparatory high schools. Nevertheless, students from nonmedical backgrounds still found unique ways to aspire to medicine, prepare for admission to medical school, and navigate training, illustrating that outsider status, while challenging, can also act as an advantage or source of inspiration empowering diverse students.

1.2 SCOPE AND AUDIENCE

While the focus of this research is narrowly defined by the unique context of medical education, I believe it to be relevant beyond a single professional field, given its themes of social mobility and students' professional exposure, which are relevant to a range of stakeholders in higher education and beyond. Postsecondary education is historically one of the most effective means of accessing upward social mobility (Haveman & Smeeding, 2005; NCES, 2014; U.S. Census Bureau, 2018a); therefore, efforts to improve social mobility for disadvantaged populations must be attentive to the issue of access to postsecondary education. Robust diversity at the college level has positive effects for the institution, its students, and for culture writ large (Audretsch et al.,

2010; Hurtado, 2006; Jayakumar, 2008), but many colleges continue to struggle to recruit and graduate diverse cohorts. This problem can compound at the professional education level, where diversity has far-reaching ramifications for the distribution of and access to professional services, but is made more difficult by heightened costs, time spent in training, academic difficulty, and longstanding stereotypes that can hinder recruitment efforts.

Professional education programs can only be as diverse as their applicant pools, and thus must focus diversity efforts not just at the admission level but on undergraduate recruitment and support as well (Magnus & Mick, 2000). Such efforts may also extend to k-12 initiatives that seek to increase interest in professional fields, especially among disadvantaged student populations (Office of Planning, Evaluation, & Policy Development, 2016). Thus, this research could prove relevant to broad audiences, including: 1) mentors and family of students at any level who may pursue medical careers, as well as students themselves; 2) k-12 personnel considering how best to engage students with STEM especially in underprivileged contexts; 3) college personnel providing structural support to students of differing backgrounds who may aspire to professional school; 4) medical school administrators seeking to diversify cohorts and support their current students; and 5) researchers concerned with exploring the role of professional exposure in processes of career choice and professional identity development.

Given the variety of stakeholders who may find this research of use, I chose to use the three-manuscript format and to write each manuscript for a different audience. Those who read the entire dissertation will notice how themes overlap across manuscripts but

are tailored towards different points in students' timelines: first, the k-12 years as students develop career aspirations; second, the undergraduate "pre-med" years as they solidify aspirations and prepare for medical school admission; and third, medical school itself, as students begin to find their places in a new professional context. This format also helps to separate chronologically students' reflections, which may be relevant methodologically. For instance, childhood memories cited in the first paper are years past and possibly shaped by students' later choices and journeys, while medical school memories in the third paper occurred around the time of interviews and reflect students' "present" selves during professional school.

I envision findings from the first manuscript being most useful to stakeholders at the high school level (e.g., school counselors and leadership) or those studying the sociology of education more broadly, given the focus on the role of parents and community in students' exposure to medicine. The first paper thus includes a detailed "Implications" section with practical takeaways from the research, such as the importance of offering STEM electives like Anatomy and supporting summer enrichment programs that bring diverse students together.

For the second manuscript I wrote with undergraduate academic advisors in mind, especially anyone involved in pre-med programming. I presented that manuscript at the NACADA (International Community of Advisors) conference on 8 October 2021 and would like to submit components of it for eventual review in a journal read by the advising community or a general higher education audience.

The third manuscript is the most narrowly targeted, written with the medical education community in mind. Because of the focus on how students socialize into

medical training itself, this paper is not designed for a broad audience. I submitted this paper to a medical education journal in May 2021 and it is currently in its second round of Revise and Resubmit edits. Because of its target journals which typically have very short page limits, this paper is also the most succinct of the group.

Finally, I hope that any reader interested in medical education; diversifying the medical profession; or the sociology of education more generally would find it worthwhile to read all three manuscripts, as they collectively illustrate how better-connected students benefit from years of advantages that streamline their trajectories into medicine, while less-connected students face additional challenges at each stage despite the value they bring to the field. On that note, a clarifying point: I refer throughout these papers to the field of "medicine" and to "medical education"; in this context, I am referring to the profession of physicians (as opposed to others who work in healthcare or in medicine writ large) unless otherwise noted, and to the process of physician training, which typically begins with a 4-year graduate degree, respectively.

1.3 CONTEXTUAL LITERATURE

The context of medical education today is central to the relevance of this study. While each paper includes a brief overview of the importance of widening access to the medical profession, in the subsections below I describe this context more fully.

1.3.1 Setting the Stage

Students who aspire to careers as physicians must navigate a gauntlet of preparatory coursework, resume-building, and testing ending with the application process itself, usually undertaken as undergraduate juniors or seniors or as college degree-holders. Despite physician shortages, medical school remains highly exclusive and is

often most easily available to students from privileged backgrounds (Steven et al., 2016). This elite status is the result of over a century of professionalization which has limited diversity, the effects of which compound healthcare shortages in underserved populations nationwide. Below, I overview 1) the history of American medical education since professionalization began in earnest; 2) resulting modern cohort demographics and diversity challenges; and 3) concerns over the physician shortage and problems with access to healthcare which underscore the importance of diversifying and expanding the physician workforce. These challenges demonstrate the need for additional research on widening access to medical careers and provided the impetus for my own study.

1.3.2 The History of Medical Education

Medical education as we know it today has changed radically over the past century, undergoing a process of professionalization that benefited the field in several ways but also created the context for ongoing challenges associated with the physician shortage and a lack of diversity in the field. Historically, doctors were trained via an apprenticeship model, or in some cases undertook a few years of university education if they wanted to work as academic physicians (as opposed to surgeons; Custers & Cate, 2018). Even well into the 1800s, most North American medical students only trained for two years and were not even required to have hospital experience during training (Custers & Cate, 2018). Medicine was much like any number of other trades, with less prestige and lower wealth potential than today, but easier access, particularly in the United States. In 1870, there were more female physicians practicing in the U.S. than anywhere else in the world — albeit often in nontraditional specialties and in separate women's schools, the first rigorous example of which was opened by America's first female M.D.,

Elizabeth Blackwell, in 1868 (Fee et al., 2002). Women without access to more tightly controlled professions could in that era still enter medical careers. In the developing world today, we see echoes of this when women are trained as healthcare providers in rural and high-needs areas, with the triple benefit of improving healthcare access, women's education, and their social status (Storm et al., 2018). The late 1800s also saw the development of osteopathic (D.O.) medicine, a more holistic, wellness-based approach than allopathic (M.D.) training (AACOM, 2019). Officially organized in 1898 after the first osteopathic school opened in 1892, osteopathic medical programs continued to grow through the 1900s, and now make up around one-third of the number and total enrollment of larger allopathic programs (AACOM, 2019), although some osteopathic students continue to face stereotypes which assume their programs are less selective than allopathic routes.

The medical profession was famously reshaped after the 1910 Flexner Report, which drew attention to the lack of consistency and rigor in medical education across North America (Duffy, 2011). After the Flexner Report, medical schools were standardized and became the domain of university-level education (Starr, 1982). This seismic shift had benefits for the field that continue today: increased scientific rigor; better training and better-performing graduates; and a resulting increase in social status and compensation. Much as school integration in the Civil Rights era led to the loss of jobs primarily for African American teachers whose families in turn felt the social and economic effects of exclusion from the middle class for decades (Oakley et al., 2009), the shift instigated by professionalization of the medical field also had a negative long-term impact on diversity. The Flexner Report's effects limited access to the field by calling for

the closure of minority-serving schools and excluding more female and minority-race candidates who had previously had greater access to medical training in its more loosely defined form prior to 1910 (Harley, 2006). For instance, after the Flexner Report five of seven schools dedicated to training African American physicians were closed, and fewer African American students overall earned M.D. degrees in the years that followed (Harley, 2006).

Fast forward a few decades: Becker et al.'s seminal 1961 study of medical student socialization, *Boys in White*, used symbolic interaction theory to understand how medical students experienced the "group life" of professional training in that era. At the time of its publication medical cohorts were far less diverse than today, as evidenced by the title of the report. Becker described the cohort he focused on as "young, white, male, Protestant, small-town" students (p. 58). Medical fraternities dominated the social landscape of the class, with many students even living in organizations' dorms. A high percentage of students were also already married. Becker noted that typical cohorts included around five women and four or five African Americans, but that: "The small numbers of women and Negroes do not reflect any intent to discriminate. The school gets very few applicants of either category" (p. 60). Although Becker's study drew attention to the importance of peer connections in creating a class identity, any concerns about student diversity were essentially ignored.

1.3.3 Diversity in Medical Education

In the decades since *Boys in White*, the medical profession has undergone enormous growth and significant demographic shifts. Today, there are around 120,000 allopathic medical students nationwide in over one hundred and fifty programs, and

schools are expanding class sizes to meet demand, with nearly 30% growth in allopathic programs since 2002 (AAMC News, 2017a; AACOM, 2019). More recent research has documented the positive effects of increased diversity in medical school cohorts, although attempts to diversify have been limited and have led to mixed results (Grbic et al., 2019; Saha et al., 2008).

Despite growth, the number of applicants to medical schools has declined in some recent years, particularly among men, while paradoxically, admission has become even more competitive. Most notably, as of 2017, there are more women than men enrolling in medical schools (AAMC News, 2017b). While women do not yet have equal representation across the field or in faculty positions, progress continues towards gender parity at least in terms of initial access to the profession (AAMC, 2019a). While racial diversity has improved since Becker's study, larger gaps in access remain for minoritized groups. Around half of current medical students now identify as White, compared with a 76% share of the nationwide population, but numbers of African American and Hispanic matriculants still do not reflect population demographics (AAMC News, 2017a; U.S. Census Bureau, 2018b). In fact, only 6% of current medical students nationwide identify as Hispanic or Latinx (compared to an 18% share of the total U.S. population); 7% as Black or African American (13% of the population); and another 9% as mixed race (AAMC, 2019a; U.S. Census Bureau, 2018b). Asians are the only major group overrepresented in medical school relative to their share of the total population, with 22% of medical school enrollees but 6% of the population. In total, around three-quarters of all current medical students are of either White or Asian descent, and White and Asian students have significantly better odds of acceptance than Black applicants (AAMC,

2019a; U.S. Census Bureau, 2018b). In addition, leadership roles in the field are still dominated by White physicians and, to a lesser extent, by men; for example, as of 2015, fewer than 4% of medical school faculty identified as African American, Hispanic, or Native American (AAMC, 2019a). Data on socioeconomic status (considered below) is less readily available, and questions about the different socioeconomic backgrounds of White and minoritized students have yet to be fully addressed.

1.3.3.1 Affirmative action.

Medical schools have prioritized improving the racial diversity of cohorts in recent decades, aided by affirmative action policies that are now under increasing fire. Bakke vs. University of California Regents, a touchstone legal case decided in 1978, narrowed the scope of affirmative action to allow race-conscious admissions but denied race-based or "quota" systems (Ball, 2000). At that time, postsecondary institutions and professional schools had been allowed to reserve an explicit number of seats for minority-race candidates, effectively creating a 2-track system but ensuring at least a certain percentage of minoritized students in a cohort. Allan Bakke, a white student initially denied entry to medical school, won his case on the grounds that he was denied access to education due to his race, and affirmative action systems since have only been able to consider race as part of a wider context with no guarantee for a specific number of minority candidates (Ball, 2000). A series of lawsuits in the intervening decades has continued to challenge related policies. Students for Fair Admissions vs. Harvard, a 2014 case still working its way through the justice system and potentially towards the Supreme Court (as of 2021), has the potential to further limit even race-conscious policies if it determines that they work against some minoritized populations, contrasting with

affirmative action's original intent. Where affirmative action policies are weakest, though, minoritized students prove less likely to gain admission (Cunningham & Steele, 2015). Furthermore, as recently as 2016 a study documented racial bias and false racial beliefs among half of medical trainees (Hoffman et al., 2016; see also van Ryn et al., 2015). Thus, regardless of the future of the policy, medical schools still need to find ways to increase racial diversity in their cohorts to combat bias among learners and future physicians.

1.3.3.2 Socioeconomic diversity.

In other quarters of the fight to improve physician diversity, medical schools increasingly emphasize recruitment of students from rural areas in the hopes of addressing the rural physician shortage but have paid far less attention to diversification by social class, sexual orientation, or other measures beyond race and rurality (Magnus & Mick, 2000; Tam, 2017). Unfortunately, numbers of rural applicants are now on the decline (Shipman et al., 2019). Professionalization in the early 1900s led to class-based exclusion in particular, as medical trainees in the last century have emerged predominantly from middle- and upper- income backgrounds (Starr, 1982). Compounding this problem is the relative lack of emphasis on class-based demographics nationwide, perhaps because it can be challenging to track socioeconomic status among medical school students who have often legally aged out of dependent status, but can still rely on generational wealth to fund professional school costs. The AAMC meticulously tracks gender and racial data but not socioeconomic status of its applicants and matriculants, although it does report on average debt and cost of attending medical school, for which scholarships are rare. As of 2020, nearly three-quarters of medical

students graduated with some debt, with a median debt burden in 2019 of $200,000 (AAMC, 2019b). Data collected on student debt suggests that around one-third of 2017 medical school graduates had a combined parental income of $200,000 or more and the debt burden can be far higher than average for lower-income students (AAMC, 2019b). Median household income nationwide in 2017, in comparison, was just over $61,000 (U.S. Census Bureau, 2018a). If medical school cohorts are not very socioeconomically diverse, as this data suggests, the lack of emphasis on improving this challenging metric remains problematic.

Even admissions initiatives that prioritize class-conscious diversity may be hindered by a lack of diversity in the applicant pool itself, as pre-med students are often disproportionately affluent (Steven et al., 2016). To combat this, Magnus and Mick (2000) advocated for more far-reaching recruitment programs to encourage younger students, hopefully those from lower-income quartiles in particular, to consider a medical career. Efforts to recruit more diverse candidates can be limited by contextual factors: academic requirements and cost appear chief among them. 2019's average medical school matriculant earned a 3.57 undergraduate GPA, well above the average undergraduate GPA overall (AAMC, 2019a). There is also evidence that private colleges are more susceptible to grade inflation, which could give their graduates — who disproportionately come from higher income backgrounds — an admissions advantage (Rojstaczer & Healy, 2010). More than half of 2019 allopathic medical school matriculants majored in some version of Biological Sciences as an undergraduate; fewer than 4% earned humanities degrees (AAMC, 2019a). Such non-career majors (e.g., Biology or Chemistry versus Engineering or Nursing) are disproportionately appealing to

higher-income students while lower-income students seek more secure career paths (see Armstrong & Hamilton, 2013; Mullen, 2010).

To earn the prerequisite credits for admission to medical school and to prepare for the entrance exam (the MCAT), students often plan their entire college curriculum around their pre-med status. Those who make their career choice early may therefore be best suited to build successful applications while in college – a clear advantage for students who enter college with high confidence and clear career plans, which may be more likely for students from privileged than disadvantaged backgrounds.

For students who can meet the academic requirements to pursue medical careers, cost is still a dissuading factor that can limit diversity (Grbic et al., 2015). Even applying to medical school requires taking the MCAT, which costs hundreds of dollars, not to mention far more expensive test preparation services and potential costs of tutoring, traveling for resume-building opportunities or for interviews, or re-testing or re-taking courses to improve scores. For those who are accepted, medical training is enormously expensive and lengthy, with students required to earn an undergraduate degree and then a four-year MD degree before entering the workforce as medical residents for several additional years of training, at which point income is still limited. There are some options for debt forgiveness, including the Public Service Loan Forgiveness for physicians and other professionals who work for the government, but these programs are in constant jeopardy of de-funding and fraught with mismanagement (Dabaja & Macki, 2018; GAO, 2018). Meanwhile, average annual tuition for in-state students at public medical schools is nearly $40,000 (AAMC, 2019b), compounded by the fact that most medical students will not have time during 4 years of professional school to work to offset living expenses.

Required STEP exams taken at regular intervals during training add up to cost over $2500 (NBME, 2019), and student are expected to pay to travel to as many residency interviews as they can during the fourth year match process, among many other expenses which can make the career path extremely challenging for low- or even middle-income students.

Unsurprisingly, the average debt burden of medical school graduates continues to rise, although a lower percentage of graduates has debt than in past decades (AAMC, 2019b; Beran & Lawson, 1997). The median debt load among borrowers is now nearly $200,000 (AAMC, 2019b), with students expected to begin repayment during residency, the stage of training after medical school. Residents have limited control of where they train, cannot negotiate salary or easily move, and are paid an average annual salary of around $56,000 while their medical school loans can accrue enormous interest (AAMC, 2019c). After at least 3 (and often 5-6 or more) years of residency and potentially fellowship training, physicians are finally free to independently enter the job market, usually past the age of 30, and often spend their initial prime working years paying off loans and catching up on retirement savings (Nahvi, 2018). Physicians remain very well-paid, with average salaries approaching $300,000 nationwide and growing recently to meet increased demand (Kane, 2018), but students must survive more than a decade of postsecondary training to reach the high-yield stage of a medical career—a “startup cost” that is doubtless more difficult for lower- and middle-income students than for their high-income peers.

1.3.3.3 Implications of diversity challenges.

Organizing bodies in professional fields such as the Association of American Medical Colleges do not always clearly mandate or even heavily encourage continued improvements to the diversity of their fields. Rather, they tend to herald recent improvements such as the growth in numbers of women enrolling in medical school and avoid drawing attention to continued disparities such as the ongoing challenges faced by African Americans aspiring to medical schools (e.g., Capers & Way, 2015). In terms of diversity, the emphasis is often on applicants to professional schools rather than enrolled students (i.e., pre-med rather than medical school students). We know from research on the undergraduate experience that access alone does not dictate success, suggesting that more research on the experiences of diverse professional school students is needed.

As research in this area expands, it could collectively lead to stronger policies supporting diverse professional school candidates. Increased attention to the experiences of "first-generation" professional school students (those whose parents did not attend college, or even those whose parents did not attend professional school) will likely reveal more similarities to the well-documented challenges faced by first-generation undergraduate students. Finally, clearly tracking socioeconomic data of professional school candidates could also help draw programs' attention to the ways in which wealth and cultural context impact student experiences even after earning an initial undergraduate degree.

1.3.4 The Physician Shortage

Today we face a physician shortage rooted in the limited access imposed upon the field in 1910. Although the Flexner Report professionalized and restricted the field,

expansion is once again taking place as the population grows and ages and more physicians are needed (AAMCNews, 2017a). Shortages are not universal, and in fact, many affluent areas of the country have virtually no physician shortages (Rosenblatt & Hart, 2000; Thomas, 2015). Instead, gaps are concentrated in certain populations, regions, and specialties: most frequently, these include low-income and minoritized populations, rural communities, and primary care specialties. There are real-world, even life-and-death effects of the lack of diversity in the physician workforce, as current graduates do not express sufficient willingness to work in underserved communities and those communities face resulting gaps in care. Thus, while most fields may arguably need to diversify, medicine has especially urgent cause to prioritize diversification.

1.3.4.1 Inequities in access to healthcare.

Low-SES patients face a lack of access to healthcare nationwide, and as income inequality has increased gaps in access to healthcare have become increasingly stark (Bor et al., 2017). Shortages are acute in many rural areas that are also low-income, and an increasing number of elderly Americans with complex health needs live in rural areas (Cromartie & Nelson, 2009) where too few medical school graduates wish to live. Rural hospitals are closing at a rapid rate, with a projected shortage of 45,000 rural physicians in the near future and over three-quarters of all rural counties facing shortages (Jones et al., 2009).

Rural, low-income, and minoritized people also face the prospect of receiving unequal, biased, or even inferior care (Barney et al., 1993; Bor et al., 2017; Penner et al. 2014; Smedley et al., 2001), as physicians attempt to treat and understand patients with whom they may struggle to identify, build trust, or communicate effectively (Alsan et al.,

2019). For example, Black patients as well as female patients receive less treatment for pain than White and male patients, respectively (Hoffman et al., 2016; Samulowitz, 2018). Meanwhile, minority-race physicians are more likely than others to practice in low-income and minority-race communities and to practice as lower-paid primary care physicians, areas which disproportionately feel the brunt of the physician shortage (Davidson & Montoya, 1987; Kane, 2018; Tekian, 1997; Smedley, 2001). Thus, the national physician shortage is also a physician diversity problem. Not enough members of rural, minority race, and low-income populations are being successfully prepared for and recruited into medical school, with the industry instead offering eleventh-hour solutions such as debt forgiveness or higher pay for medical school graduates who will go to such communities.

1.3.4.2 Inequities in access by specialty.

Shortages vary by specialty as well. In general, primary care physicians are in high demand; family medicine was established as a separate training program in the 1960s to increase interest and expertise in primary care (Gutierez & Scheild, 2002; Taylor, 2006), although the shortage continues (Petterson et al., 2012). While the number of residency positions has increased in recent years, there has been a decrease in the number of students who enter primary care training programs (Jolly et al., 2013). Competition is projected to increase despite growth in numbers of medical graduates, as there are still not enough residency positions (which are federally funded and capped) to meet demand for each specialty (Jolly et al., 2013).

While the reasons for shortages in certain specialties are complex, medical students often consider their debt burdens relative to income potential when choosing a

specialty (Clinite et al., 2014; Grayson et al., 2012) as well as the field's prestige (Phillips et al., 2019). Some of the highest-need specialties, including primary care and psychiatry, are also some of the lowest-paid (Kane, 2018; Phillips et al., 2009). Conversely, some of the highest-paying specialties have become the most competitive, regardless of whether those fields face a practitioner shortage (Ebell, 2008). On average, primary care physicians report much lower earnings per year than more specialized colleagues; plastic surgeons, for example, report pay more than double that of primary care pediatricians (Kane, 2018). In addition, Phillips et al. (2019) found that many medical students felt driven to specialize (i.e. undertake a fellowship after residency rather than remaining in a primary care field) because of the perception of greater prestige in specialized fields. These authors argued that lessening the pay gap between primary care and specialty fields would have the potential to improve the unequal distribution of candidates into lower-need specialties. This could, however, have the negative consequence of making specialization less appealing when there are still shortages in many specialties, particularly those which already require additional training without a tradeoff of higher pay.

1.4 THEORETICAL FOUNDATIONS

The problem of widening access to the medical profession has been studied from a variety of perspectives; given the scale of my research and its exploratory nature, many different theoretical foundations were of possible use. While I expect to be able to use this dataset for future work that may draw upon other perspectives, I draw from social reproduction theory in developing my underlying theoretical foundation because social connections and exposure are so fundamentally important for getting into medicine. Each

of these papers focuses in different ways on who has access to the connections and forms of capital relevant to medicine; on who needs capital; and on the advantages these assets provide. In addition, I draw heavily on Bourdieu's concept of habitus (1984) as it has been re-examined by more recent scholars (e.g., Ingram & Abrahams, 2016), applying it in particular to questions of how students who do not grow up around medical professionals adjust into the unfamiliar pre-medical social field or into medical school itself.

I also borrow significantly from work on first-generation college-goers, as researchers working on this are often considering the role of capital and habitus to consider how more- and less-connected students navigate postsecondary education. I analyze the extent to which these trends are paralleled among medical school students from medical and nonmedical backgrounds. For example, in my first paper, I use Ivemark and Ambrose's (2021) life course perspective of "habitus adaptation" among first-generation college-goers as a model for my study of how pre-college students are (or are not) socialized into the medical profession by their early contexts. Similarly, in my second manuscript, I explore how pre-med students from nonmedical families navigated preparation for medical school more independently than peers, just as April Yee found among first-generation undergraduates (2016).

In a departure from much of the literature on first-generation college students which focuses on the challenges these students face, in my third manuscript I also use Harper's (2010) *anti-deficit* framework to emphasize how non-medical students' backgrounds are potentially advantageous in some ways; in other words, being "first-gen" in medicine, while challenging, also helps them become better professionals via

traits like increased empathy and greater awareness of the social determinants of health. Finally, I also use Yosso's (2005) *community cultural wealth* framework, especially in my third manuscript, to highlight how underprivileged students can marshal alternate forms of capital to support their journeys into medicine.

1.4.1 Applying Social Reproduction Theory to Medicine

If all of education is an exercise in "cultural apprenticeship," (Lahire, 2011, p.x), medical education may be one of the most daunting options for students to consider. Medicine is a highly specialized, nuclear field. Assimilation has historically been *de rigueur* for incoming medical students who are expected not only to learn the immense amounts of content necessary to become successful physicians, but also to take their place in the deep-seated social hierarchies of the field. These rigid hierarchies are reinforced with regularity, perhaps nowhere as clearly as when attending physicians lead bedside rounds with groups of medical students, residents, and fellows, often employing a Socratic questioning process colloquially dubbed "pimping" to publicly test students' knowledge in front of their peers (Wear et al., 2005). In a field with such a dominant primary culture, students who bring much-needed diversity to the profession may find little space for their identities as "outsiders."

Friedman (2016) found that working-class people who enter elite professions often experience "potentially debilitating feelings of insecurity" (p. 110) which can be self-induced rather than externally created (p. 116). With little to no incentive or support to create a sense of community around traits that identify students as outsiders (e.g., a working class, rural, or minoritized background) in such a competitive, hierarchical profession, aspiring physicians may instead focus on assimilating into the dominant

culture of medicine. Thus, one key difficulty in studying this problem is precisely that students may self-induce their assimilation. If this happens, even a medical school which seeks to celebrate diversity or support underrepresented students' differences may find those students minimizing their outsider identities.

Bourdieu and Wacquant (1992) argued that "the task of sociology" "is to uncover the most profoundly buried structures" (p. 7). In this case, the desire to assimilate into medical culture may be largely internalized rather than outwardly forced upon students. A key goal of this research, then, is to identify ways in which students may be motivated directly or indirectly to assimilate rather than to remain, in a positive sense, "outsiders within" (Collins, 1986; Ingram & Abrahams, 2016). What's lost if and when diverse students assimilate is hard to measure. Perhaps students code-switch to hide certain traits at work, like a rural accent. Perhaps they resist, wearing their unique traits like a badge. Or they may distance themselves permanently from their backgrounds, essentially rendering their diversity invisible. And of course, this could be for positive or negative reasons, with equally helpful or harmful results, depending upon the individual.

1.4.2 Applying the Concept of The Habitus to Medical Education

In the past, research on integration into new social contexts focused most on two alternatives faced when moving between social groups: successful assimilation into the new culture, or *cleft habitus*. Each of my manuscripts circles around this core set of alternatives faced in particular by underrepresented students who are breaking into a new field. Pierre Bourdieu originally popularized the concept of *habitus* to describe "a system of structured, structuring dispositions" (1990, p. 52) which interplay with "chances offered … by the social world" (p. 62) to shape every individual's possibilities. The title

of this dissertation is drawn from a student's comment that "other people's families own" the field of medicine; Bourdieu argued that "[a]gents shape their aspirations according to concrete indices of the accessible and the inaccessible, of what is and is not 'for us'" (p. 64). Thus when an individual jumps into a new social context like going to college, gaining wealth and status, or entering medical school, he or she may be in danger of cleft habitus: of never really feeling at home in the new context, while no longer fitting into the original one.

Near the end of his career Bourdieu focused on cleft habitus in much of his work, describing his own conflicted experience as a working-class child elevated to the top of an elite profession (2008; 2002; 2000). Reay (2004; 2015) later complicated Bourdieu's approach to habitus and argued that the concept had too often been overused and oversimplified. Ingram and Abrahams (2016) then built upon Reay's ideas, describing "habitus tug" (Ingram 2012), which "denotes a multidirectional pull on the habitus rather than a division" (p. 144). Most recently, Ivemark and Ambrose (2021) similarly described different forms of "habitus adaptation" for students entering college-going cultures. While certainly the possibility of cleft habitus exists, Ingram and Abrahams (2016) along with Friedman (2016) and others (Burke, 2016; MacLeod, 2009) argue that Bourdieu was too deterministic in his belief that those who do not smoothly assimilate into a new context will experience cleft habitus. Ingram and Abrahams argued that "[t]here is a need for a model to account for those who have left behind their class without pain, those who have found it painful, those who refuse to erode their identity and those who find a way to reconcile the differences" (p. 151) – an approach which I

center in my third manuscript especially as I parse out differences in "newcomer" and "outsider" experiences.

Ingram & Abrahams (2016) identified a typology of four potential reactions to a habitus interruption (such as a move from an underprivileged background into medical school). Students may experience a disjunctive reaction in which they choose one habitus and leave another behind, or a conjunctive reaction in which they combine their old and new contexts into a new identity. Each of these can be either positive or negative. Disjunctive reactions include *abandoned habitus*, in which "structures of the new field become internally dominant" (Ingram & Abrahams, 2016, p. 144) and *re-confirmed habitus*, in which a new field is rejected in favor of the home context. A rural student, then, might immerse herself in medical school and no longer associate or identify with her rural background (abandoned habitus), or may reassert her rural identity rather than change to fit her new context (re-confirmed habitus). If a student instead has a conjunctive reaction to a new context, he may experience *reconciled habitus*, in which "two fields, although opposing, are integrated" (p. 150), or *destabilized habitus*, closest to the traditional idea of cleft habitus, in which the fields "vie for dominance" in perpetual conflict (Ingram & Abrahams, 2016, p. 141; see also Friedman, p. 14-15). A working-class student, then, might find a positive space between his newly elite context in the medical profession and his roots, or may never find a home in either context, always feeling stuck in between places (Jehangir, 2010).

1.4.3 No Capital? No Problem: Agency of Underconnected Students

While social reproduction theory emphasizes the importance of access to social ties and other forms of capital which facilitate entrance to a field (or more generally, the

generational preservation of privilege), there is room left to consider how underconnected students can nevertheless have agency and success. What I love about Ingram and Abrahams' (2016) typology of habitus interruptions is that they insist upon the creative power of the individual to react to his or her newfound habitus, to "[bring] sets of structures together that don't belong" (p. 151), and even to create an entirely new, "third" space rather than simply to exist somewhere along a linear spectrum between two existing contexts. Burke (2016) similarly identified in his study of students of different class backgrounds "conceptual groups outside of the larger binary model" (p. 17).

Historically and even today, an enormous amount of research focuses on the idea of the haves and the have nots, the privileged and the at-risk. While in many contexts students (and people, generally) are disadvantaged relative to those who occupy positions of power, mounting research has sought to complicate this dichotomy. Yosso (2005) eloquently pushed back against simplistic renderings of minoritized students as "at-risk" with her community cultural wealth framework, which argued that those who are not rich in dominant forms of cultural capital still have their own powerful forms of capital (e.g., resistant capital). That these sources of strength are not the dominant one in a culture does not mean they are less inherently valuable, but that they are less *valued* by outsiders who hold positions of power (Yosso, 2005; see also Bowers-Brown, 2016; Carter, 2005; and Wallace, 2016). Jehangir (2010) brought Yosso's framework to bear on the context of first-generation undergraduate students, a context which is in many ways parallel to that of newcomers in medical education. Harper (2010) pushed for an anti-deficit perspective in research on minoritized students in STEM areas.

Building upon these foundations, I set out to explore how newcomers to medicine are different, but not always disadvantaged, in the ways in which they choose medical careers and navigate their training. I believe that students from underrepresented backgrounds have the potential to modernize the culture of medicine in incredibly powerful ways. Not only could they bring much-needed diversity to the physician workforce and arguably better relate to underserved patients, but they could broaden our society's understanding of who gets to be a doctor, potentially opening the field further to others from underrepresented backgrounds. They cannot do this effectively, though, if they are denied access or persuaded either by external forces or internal pressure to hide, ignore, or even erase the diversity that they bring to the field.

1.5 CONCLUSION

The contextual literature surveyed above underscores the stakes of efforts to diversify the physician population. These efforts include the potential to 1) better address the growing physician shortage by recruiting more candidates from underserved areas; 2) improve the quality of healthcare by diversifying the physician pool; and 3) increase access to the field over time as more diverse candidates are accepted and become role models and connections for others in underrepresented communities. Because my research does not limit its definition of diversity to socioeconomic class, geography, or race, but instead considers broadly the experiences of any students who are "new" to the field due to their social ties, I am able to highlight how various compounding background characteristics can impact socialization into medicine. I anticipate that these findings can have practical use to a wide range of stakeholders seeking to improve access to the

medical profession, while contributing to scholarly research on the role of social reproduction in career choice, college-going, and professionalization.

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CHAPTER 2: MANUSCRIPT 1

Other People's Families:

How Early Social Context Shapes Medical Career Interest

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Note to Readers:

This manuscript follows ASA format.

HOW EARLY SOCIAL CONTEXT SHAPES MEDICAL CAREER INTEREST

Abstract

This research draws upon data from two cohorts of medical school students at a public university in the Southeastern United States to study how social context shapes students' early attitudes towards the medical profession. Students discussed in interviews what factors sparked their interest in becoming physicians. My analysis explores how students from a range of backgrounds were drawn to the field by social connections; how beneficial forms of capital are concentrated in privileged communities; and yet how some students from socially disconnected backgrounds found ways to build confidence to aspire to medicine. In addition to implications for stakeholders seeking to support diverse medical school candidates, findings from this study add to growing bodies of research exploring how young people build on community cultural wealth from a variety of sources to facilitate college-going and how less privileged students, often challenged by a lack of social exposure to medicine or other health professions, can be empowered to aspire to elite fields.

Keywords

Educational aspirations; inequality; professional education; medical education; habitus adaptation

2.1 INTRODUCTION

In a recent research study on experiences of first-generation college (FGC) students, a participant told her interviewer why no one in her family would consider aspiring to a medical degree: "[O]ther people's families own the whole doctoring business. So there are generations of families [that are] just doctors and … it felt hard to get into, like initially getting into actually being a doctor, from a family that has no medical history."[1] This student felt that her nonmedical background alone was enough to disqualify her from becoming a physician, despite the fact that there is great need to diversify the physician workforce to address both shortages and inequities in healthcare access (AAMCNews 2017a; Williams et al. 2016). This student's comment suggests how recruitment of such social "newcomers" to the medical profession may be hindered not just by real-world barriers such as cost (Grbic et al. 2015; Magnus & Mick 2000), but also by lingering stereotypes concerning who gets to become a doctor.

In the aforementioned student's case, the perception that medicine was only for "other people's families" was profoundly discouraging. This issue of feeling unwelcome in medicine is one which stakeholders along the pipeline into medical education—including advisors, mentors, and administrators from high school to professional school contexts—must consider as they attempt to recruit and support more underrepresented

[1] NOTES

[1]The opening quotation inspired the current study's focus and is drawn from unpublished data from the following research study, used with the investigator's permission: Ferrare, Joseph J. 2016. "Brokering Persistence Pathways: A Study of Social Capital Creation Among First-Generation College Students." Lexington, KY: University of Kentucky.

students into the historically exclusionary field of medicine (Barkin et al. 2010; Mathers & Parry 2009; Zaidi et al. 2021).

To explore this problem, this research study draws on interviews with a group of 80 medical students in an allopathic medical school at a public university in the Southeastern United States. In reflecting upon their early (pre-college) attitudes towards a medical career, participants provide insight into how pre-college exposure to medicine via familial or social connections can spark or shape aspirations, with long-term ramifications. My analysis of the data illustrates the difficulty of exposing diverse students to medicine when the social and cultural capital which facilitate entrance to the field are so often concentrated among privileged communities (Jack, 2019; Southgate et al. 2015). In addition, though, I highlight how even minimal or serendipitous social exposure to the profession can have a profound long-term impact on students' aspirations, and how even students without easy access to ties in the field can nevertheless build confidence to aspire to a medical degree through other means, including via support of nonmedical families or school experiences. These findings add to the growing bodies of research exploring how young people build social and cultural capital to facilitate college-going (Reay et al. 2009; Zimdars & Heath 2009); how these assets can be especially important for diverse students breaking into exclusive professions like medicine (Nicholson 2017; Vaughan et al. 2015); and how underrepresented or underprivileged students, though challenged by a lack of social exposure, can nevertheless be empowered to aspire to elite fields (Harper 2010; Yosso 2005).

2.2 BACKGROUND

Despite growing attention to the need for greater diversity in medicine (Grbic et al. 2015; Grbic et al. 2019; Talamantes et al. 2019) stakeholders continue to struggle to improve access to the profession (AAMC, 2018). While in 2017 American allopathic medical schools accepted more women than men for the first time in their history (AAMCNews 2017b), progress in racial and socioeconomic diversity remains slow and for some groups such as rural candidates and Black men has even lost ground (Baker et al. 2009; Laurencin & Murray 2017; Magnus & Mick 2000; Saha et al. 2008; Shipman et al. 2019). The broader STEM movement — while encouraging interest in fields like medicine — is itself inequitable, as access to STEM courses, programs, or mentors are not evenly distributed (Bluestein et al. 2020; Saw & Agger 2021) and STEM outreach can label underrepresented students as "others" or inadequate because "the field is set up to further the interests of the dominant" (Archer et al. 2020). Meanwhile, underrepresented students face internal challenges as well (Freeman et al. 2016). Archer and colleagues (2012) described how middle-class families find STEM careers more "thinkable" than families of less privileged students, mirroring the experience of the student in the opening anecdote who felt that medicine was for "other people's families." Greenhalgh and colleagues (2004) similarly explored how lower-income high schoolers in the UK felt that medicine was beyond them.

To further explore challenges like these, this paper is founded upon Bourdieu's theory of *social reproduction* (1984), which explores how privileges and disadvantages are passed on across generations. I focus in particular here on social capital, defined as the resources available to a given actor through social networks, which in turn can

provide access to other forms of capital (e.g., economic; cultural; see Bourdieu, 1986). I also draw on Ivemark and Ambrose's (2021) more recently developed concept of habitus adjustment, which complicates social reproduction theory by considering how students with varying degrees of social capital come to enter new social fields. While existing research considers the role of social capital in medical school and among pre-medical students (Becker 1961; Grace 2017; Magnus & Mick 2000; Morrison & Cort 2014; Sims 2021a; Sims 2021b; Xu et al. 1997), the impact of social connections to the field on initial interest in becoming a physician is less studied (key exceptions include Robb et al. 2007 and Southgate et al. 2015). Especially if students often make their career choice pre-college, social exposure to a profession like medicine at a young age could potentially be crucial to eventual pursuit of the career.

Bourdieu wrote about how a person's *habitus*, while arguably flexible over time, can limit the ability to move into social contexts that are markedly different from one's upbringing, as he himself experienced. Reay further argued that "choice is at the heart of habitus" (2004; p. 435), but that choices are nevertheless limited by an individual's environment. Thus, complicating any student's early interest in medicine is what Appadurai called the "capacity to aspire" (2004), which Southgate and colleagues (2015) considered as primary factor limiting lower-income high school students' ability to imagine themselves pursuing medical careers. This capacity to aspire can be shaped internally or externally, such as by high schools that discourage underprivileged students from considering challenging academic plans (McHarg et al. 2007; Southgate et al. 2015). In addition, other research has explored how upward social mobility, even when successful, can be emotionally fraught (e.g., Friedman 2016). In the context of medicine

— a highly exclusive profession still struggling towards equitable access — these trends suggest that aspiring to a profession that may be utterly unfamiliar or even intimidating to outsiders could be intensely challenging, especially for students who are most socially distant from professionals in the field (Robb et al. 2007).

2.2.1 Lessons from the First-Generation College Experience

Bourdieu (2000) noted, and many later researchers have reinforced, that privilege tends to beget privilege. In the context of the sociology of education, for instance, students who attend college-preparatory high schools, which are most accessible to privileged families, more easily accumulate social and cultural capital for the transition to college (Ingram 2009; Ivemark & Ambrose, 2021; Jack, 2015; Jack, 2019; Southgate et al. 2015), which in turn leads to advantages during college as well. Similarly, having a family member who has attended college or even a sibling who has done so also helps pave the way for success, as the wide body of research on experiences of FGC students vs. continuing-generation peers explores (Engle 2007; Redford & Hover 2017).

Existing research on social capital suggests initial insider connections facilitate support in a field (Burt and Burzynska, 2017; Portes, 1998). This research in turn considers how insider connections such as family members in medicine or close networks of peers with similar aspirations help students develop and nurture interest in medical careers and eventually gain entry to the profession, in much the same way that social capital is found to help continuing-generation college-goers access postsecondary education (Armstrong & Hamilton, 2013; Chen & Carroll, 2005; Choy, 2001). In addition, research documents how college-educated parents actively shape their

children's academic choices and provide connections and insider information which aid with collegiate success (Griffin & Hu, 2019; Lareau, 2003; Nichols & Islas, 2016).

Meanwhile students with a lack of exposure to the profession could face challenges similar to those experienced by FGC students who do not grow up in college-going social contexts. These challenges are well-studied (Cataldi et al. 2018; Redford & Hover 2018) and include lower rates of college attendance overall (Choy, 2001); less academic success (Chen & Carroll, 2005); and lower odds of pursuing high-earning STEM majors (Chen & Carroll, 2005). FGC students also more often face increased academic pressure alongside less familial insight and fewer well-placed mentors (Armstrong & Hamilton, 2013; Atherton, 2014; O'Shea, 2016) and may be conditioned to seek less help from others and to approach college as a solitary challenge, unlike more privileged peers who frequently work together and actively demand support (Yee, 2016).

2.2.2 The Spectrum of Social Exposure to Medicine

For this study I draw inspiration from existing research comparing FGC and continuing-generation undergraduates to typologize and explore the spectrum of early social exposure to the medical profession. Just as FGC undergraduate status is itself difficult to define and exists along a spectrum — e.g., from students whose parents did not graduate high school or attempt any college, to parents who may have completed several years of postsecondary training (see Peralta & Klonowski, 2017) — I consider that students' early socialization into medicine also exists along a spectrum and intersects with other background characteristics which could shape early interest in the profession.

Of particular relevance is the work of Ivemark and Ambrose (2021), who typologized FGC students based on how their social backgrounds shape attitudes in

college, arguing that earlier access to college-going culture meant lower risk of habitus strain and easier adaptation once in college. They found that early exposure to middle class social fields created *Adjusters*: students who "pre-adapted" their habitus to easily fit into collegiate environments. Later exposure to college-going circles led to *Strangers*: students who more often felt out of place in college, even experiencing cleft habitus — similarly to Ingram and Abrahams' (2016) description of *destablised habitus* — when they struggled to reconcile their old and new environments into a cohesive new identity. Finally, *Outsiders* were those who were never socialized into middle-class or college-going contexts and thus did not experience habitus adaptation at all; these students were often intimidated or unhappy in the collegiate environment.

Expecting subgroups of medical students to fall into similar categories based on their early exposure to the profession, I first typologized medical students into two broad categories: *insiders* with close, early ties to medicine via family, and *newcomers* without such familial connections. Insiders are typically the children or siblings of healthcare professionals, including but not limited to physicians. Newcomers are sometimes the first in their families to attend college, but more broadly include any student without a family member in a healthcare profession. In the middle of this spectrum falls a large subset of students who were socialized into medicine via highly educated or well-connected, but nonmedical, parents (e.g., college professors; business owners) or by attending college-preparatory high schools where they were friends with insiders. I refer to these students as *inside-adjacent,* given that they often grew up with close ties to medical professionals and to college-going cultural capital through their peers or their parents' connections. Just as Ivemark and Ambrose found that some FGC students enter college already prepared to

fit in easily to their new environment (2021; see also Southgate et al. 2015), I consider how insiders and inside-adjacent medical students may be primed by their social backgrounds to succeed in their new social field, while newcomers who lack social ties to the field may experience some of the strain faced by FGC undergraduates similarly unprepared for their new environments.

In addition, Ivemark and Ambrose (2021) documented 5 factors which contributed to FGC students' habitus adaptation prior to college: family resources; early social environment; educational experiences; individual peers; and partners (see also Greenhalgh et al. 2004). In considering how students developed an interest in becoming physicians, I find that these factors were also key to sparking engagement with the profession, but that different factors mattered more to students from different social backgrounds. Furthermore, as with undergraduate FGC students (Bettencourt, 2021), other factors compounded to shape marginalized and minoritized participants' sense of connectivity to medicine, such as rurality, income, and race, making some students' trajectories towards the profession much more challenging than others.

Finally, despite inequities in exposure to medicine, STEM content, or college-going culture, there is evidence that certain types of exposure can help underrepresented students enter exclusive academic (and in turn, professional) spaces, especially when exposure offers support which centers students' own perspectives (Archer et al. 2020; Harper, 2010). For example, Archer and colleagues studied how informal science contexts like zoos could provide an "on-ramp" to "disrupt dominant power relations" in STEM by employing more equitable practices, such as centering diverse students and their perspectives, and working to change the social field, not just the people in it (2020).

This vein of research suggests that beyond offering potential connections to access social and cultural capital, simply enabling underrepresented students to build the confidence to aspire to fields like medicine is a valuable strategy.

2.2.3 Research Question

> With this context in mind, I consider here the following research question:
>
> In what ways do pre-college familial or social connections to medicine distinguish the early medical career interest of those who have such ties from "newcomers" who do not?

In answering this research question, I surveyed participants to first identify what factors inspire medical career interest and how these factors differ by social background, then used survey data to create a typology from which I recruited interview participants. I then use interview data to explore how students' differing social contexts, including families, peers, schools, and wider communities, shape their early attitudes towards becoming physicians.

2.3 METHODOLOGY

2.3.1 Data

To answer this research question, I draw on data from an IRB-approved study of the experiences of two cohorts of medical school students in a traditional, allopathic program at a state university in the Southeastern United States. Data consists of 1) survey results from 2019 for 122 first-year [M1] medical students in the graduating cohort of 202; 2) survey results from 2020 for 139 first-year medical students in the graduating cohort of 2023; 3) follow-up interviews with 22 initial survey-takers the class of 2022, conducted in 2019 during the spring of M1 year; 4) 58 interviews with survey-takers in

the class of 2023, conducted in 2020-2021 during winter of their M2 year; and 5) an additional 14 second interviews with the original participants from the class of 2022, also conducted 2020-2021 during winter of their M3 year.

Surveys were initially developed for a larger study with a team of colleagues interested in how medical students socialize into their profession, and some questions were revised from the first year of data collection to the second based on initial analysis. For example, additional questions about students' early exposure to healthcare professionals were added. Follow-up interviews were specific to this paper's more narrowly focused topic and, like surveys, the interview protocol was revised somewhat after the first year of data collection.

In the survey phase I explored students' connections to the medical profession. For example, surveys asked whether students had a family member working in healthcare, how many friends they had in medical school, and what type of mentorship connections they had in the field, while interviews explored how family members, peers, and mentors shaped students' exposure to and attitudes towards the profession from a young age. All surveys were administered online via the Qualtrics survey platform, after which I recruited interview participants. First round interviews, which took place in 2019, were conducted in person, while second round interviews, conducted in 2020-2021, were conducted via Zoom due to the COVID-19 pandemic.

2.3.2 Setting and Participants

The research site is part of a predominantly white institution (PWI) with over 700 medical students currently enrolled. I invited all members of both participating cohorts to complete the initial survey—and later invited all survey-takers to participate in follow-up

interviews—in order to gather a broad range of student perspectives (Varpio et al. 2017). These included students from the main medical school campus as well as two small satellite campuses which follow the same curriculum, including shared classes which are broadcast from the main campus. All 261 survey-takers received $10, while the 22 first year interview participants were unpaid and the 72 second year participants were each paid $25 to participate in an interview.

Interviewees—the primary focus of this research—included 28 men (39%) and 44 women (61%), 56 of whom identified as white (78%), 9 as Asian or Asian-American; 3 as mixed heritage; 2 as Black; and one as Hispanic. One participant chose not to specify race. These demographics reflect the racial makeup of the medical school, where three-quarters of students identify as White, but participants skew somewhat more female, as the medical school population is only about half female. In addition, it is possible that certain subgroups of students may have been less likely than others to participate in this voluntary research, which may leave some perspectives underrepresented.

2.3.3 Analytical Strategy

During research design and throughout data collection, I used survey data to inform development of the interview protocol and then used interviews to explore survey trends (see Appendix 4 for further details of this process). I informed participants of my positionality as a white female from a rural, middle class background with a family member who was a physician in training; while this background sparked my initial interest in the research and helped establish a connection with participants, it also inevitably shaped my analytical process. I used grounded theory (Stern & Porr 2011) to maintain an exploratory approach, and developed a semi-structured format based on data

from the survey responses to encourage participants to talk about what mattered most to them in their journeys into medicine. As a single investigator, I use both methodological and data triangulation to improve credibility (Lincoln & Guba 1985). I also employed member checking with the help of participant volunteers to better analyze potential themes, which helped both to enrich and challenge the analysis process and to bridge the hierarchy between researcher and participants (Tong et al. 2007; Varpio et al. 2017). After constructing initial themes from early interviews, I used iterative analysis to concurrently seek feedback and clarification during remaining interviews (Tong et al. 2007).

I recorded, transcribed, and coded interviews using Dedoose version 8.3.47b (Los Angeles, CA: SocioCultural Research Consultants, LLC www.dedoose.com). I organized initial codes chronologically (e.g., "childhood exposure to medicine"), then cross-coded themes by social connection (e.g., "peers interested in medicine"; "parents in healthcare"). I also relied on memos summarizing students' lifetime exposure to medicine to consider the cumulative influence of different social connections over time. Finally, I shared themes with the faculty group who participated in survey design for another source of feedback during the analysis process. The resulting findings use interview data and pseudonymous student quotations to explore how students were shaped by various social influences to pursue a medical degree.

2.4 ANALYTIC THEMES

2.4.1 Differences in Career Choice Processes by Social Background

Overall, early social ties proved key to the journey into medicine across backgrounds: only 11% of total participants in the class of 2023 (16 students) entered

medical school without either a family member in healthcare or a close friend in or also entering medical school, and even fewer – just 6 – entered medicine lacking these ties as well as a close connection to a physician mentor. These trends and insight from follow-up interviews suggest that students from backgrounds which may not facilitate early exposure to physicians or contact with similarly aspiring peers face a more difficult process of career choice and potential long-term disadvantages stemming from their lack of exposure to the profession, including lower confidence which at times lasted well into medical school. In this study, these were often students from lower-income, FGC, minoritized, or rural families, while students from more privileged communities benefited from easier access to the medical profession, in turn perpetuating inequities in access and adjustment into the profession for less-connected students.

2.4.1.1 Insider experiences.

Notably, while only around a tenth of U.S. jobs are in healthcare fields (KFF, 2017), more than half of the medical students in this study had a family member working in healthcare (for the class of 2023, insiders accounted for 58% of all participants), illustrating the continued prevalence of insider backgrounds in medicine. During follow-up interviews, students described how they proceeded from their initial interest in medicine to admission to medical school. Insiders tended to develop early healthcare career aspirations, often encouraged or exposed by parents, and then to solidify those dreams in the company of dense networks of likeminded high school peers, streamlining their route towards medical school.

2.4.1.2 Inside-adjacent experiences.

Interviews with inside-adjacent students, typically the children of non-healthcare professionals who attended college-preparatory high schools alongside insiders, illustrate how even secondhand exposure to healthcare professionals through peers' families was highly advantageous both for developing career interest and gaining access. This theme aligns with findings from other research focused on student populations who accessed social and cultural capital via peers prior to college (Jack, 2015; Jack, 2019; Johnson, 2018; Ivemark & Ambrose 2021). Insiders and inside-adjacent students relied on the same relationships formed in high school as they continued through college and even into medical school, smoothing their way to success for years to come. In Ivemark and Ambrose's (2021) typology of FGC students, this subgroup is akin to the Adjusters who were "pre-adjusted" to college environments due to middle-class social exposure that primed them to fit in in college, as inside-adjacent students fit into medical circles more easily than newcomers.

2.4.1.3 Newcomer experiences.

Meanwhile, while newcomers often considered medical careers at a young age, many did not build the confidence to pursue their goals in earnest until well into college, at which point insiders had already spent years cultivating connections which helped them enter the field. One example of the differences between inside-adjacent students and more socially disconnected newcomers: while more than half of participants in the class of 2023 indicated that they chose their career in high school or earlier, follow-up interviews clarified that newcomers from less well-connected backgrounds made their choice later and with different inspirations than inside-adjacent students who grew up

around the children of healthcare professionals. However, some newcomers accessed social ties to medicine via even short-term or serendipitous connections, like those formed with peers during summer enrichment programs, or found other ways to gain interest and confidence in a medical career, like direct experiences in the healthcare system or supportive families.

2.4.1.4 Sources of early career interest by social background.

Insiders were most often inspired to consider becoming physicians by their parents' jobs (n=45; 56% of 81 insiders), followed by high school STEM classes (n=40; 49% of insiders), which many insiders described in follow-up interviews as confirming their earlier interest in medicine. Newcomers were more often first inspired by high school STEM classes (n=33, or 57% of 58 newcomers), followed by further confirmation through volunteer experiences (n=29, or 50% of newcomers), or even illnesses (n=28, or 48% of newcomers) that gave them direct exposure to healthcare settings. Overall, students without familial ties to healthcare missed out on the top source of exposure to the field and took more time to gain exposure and develop interest via other means. Students with the lowest exposure to professionals, including many from rural and lower-income communities, often took the longest – well into or beyond college – to settle on medicine as a career. Thus, the distinction between experiences of students who grew up around healthcare professionals and those with no early social ties to healthcare professionals was stark.

2.4.2 Primary Social Influences Shaping Early Interest in Medicine

Students narrated how various social influences overlapped to positively or negatively shape early interest in medical careers. These included parents, communities,

and peers as well as school classes, extracurricular programs, and direct healthcare experiences. The sections below detail how students from different social backgrounds were shaped by these influences during their formative pre-college years, beginning with the primary source of career inspiration for insiders and a frequent source of both encouragement and doubt for newcomers: their parents.

2.4.2.1 Parents.

Insiders typically benefitted from parents' connections to medicine in several ways. First, insiders described a lifelong familiarity with the medical field, which facilitated early interest for many as they imagined growing up to be like their parents. Jason (a pseudonym), the son of a physician, described the straightforward process of developing initial career interest which many insiders enjoyed:

> I grew up around it. It was always, even from middle school, something that I thought about doing. I'd go to the office with him on weekends if he was on call […] I think, just with that background, you're always going to be thinking about it. There's so many people I know in my class and at other med schools whose parents are doctors. It rubs off on you. Then, I guess, in high school … I just put that as the thing I wanted to do in my mind, and didn't think about it too much.

Insiders often considered other careers throughout high school and even college but felt confident that they could return to medicine if or when they chose. As Jeremy recalled joking, "If Hollywood doesn't work out … I'll just be a doctor."

On the other hand, newcomers' nonmedical families often doubted or were anxious about their children's interest in becoming physicians. Far from being pressured to consider medicine, Alan, a FGC student, identified as "the black sheep" of his family

simply for attending college and felt that his family "kind of expected me to drop out" because none of his relatives had completed college. He remembered his rural family discouraging his interest in medicine for years: "Multiple times, they said, 'Why don't you try something easier? Something that, you know, you could be successful in but not have to do all this work? Because, you know, there's no guarantee that you're going to make it.'" Similarly, newcomer Peyton's parents supported her career aspirations as a child but less so later, worried that medical school would be too "serious" a step despite her passion for the field:

> [A]s I grew older, they were like, "Oh, yeah, [scoffing], she wants to be a doctor, we'll see where this goes." And then it got to undergrad, and they were like "*Uhhh*, she's still pre-med. She's doing it!" I mean even when I took the MCAT, my dad was like, "You know, you really have to be serious about being a doctor." I was like, "Come on Dad, I'm taking the MCAT, I've gotten pretty serious about it!"

For students like Peyton, family (or other close connections) actively discouraged legitimate aspirations to pursue a medical degree, effectively communicating to their children at formative points that medicine was not "for" people like them. While some insider families warned their children about practical challenges of the medical profession, like the long years of training, only newcomer students faced outright discouragement or doubt from their families. According to students, these fears were often focused on practical concerns like the cost, intensity, and unknowns of training – but possibly also stemmed from a perceived lack of cultural fit, not just in students' own minds but for their families as well.

Both insiders and newcomers absorbed parental advice about careers from a very young age; some recalled committing to medicine as early as elementary school, encourage by adults' comments. Others initially rebelled against parental encouragement ("No, I'm not going to do it because you say!") but eventually realized that their parents' advice was salient. Newcomer Marley recalled of her decision as a first-year college student to pursue medicine: "I don't know why it didn't click with me sooner, except that no one had suggested it to me, and my own brain wasn't going to come up with it." She attributed her shift in interest to a growth in self-confidence, in part due to her father insisting that "you really could be a doctor." For many newcomers, it took years of such encouragement from a combination of family and mentors to build the confidence to aspire to medical school.

Additionally, having professional parents helped some students, especially women, to envision a place for themselves in medicine. Claudia gratefully recalled her mother's career as a scientist: "from when I was very young, I just saw that women can go into STEM, women can get PhDs, so I never really questioned it." In other cases parents' lack of insight into medical careers actually helped students develop confidence. Miriam explained that while healthcare was "very foreign" to her as someone who "didn't know any doctors except for the ones that took care of me," her parents' attitude was "Sure, you can do it" and so she simply believed them. In other cases, students were inspired to pursue a high-status profession in order to achieve the financial security that their parents had not had; this was especially true for children of immigrants, single mothers, and parents who did not attend college. In these ways students drew support from whatever their parents could offer, and even nonmedical families helped to spark

their children's cultural adjustment towards medicine, much as Ivemark and Ambrose (2021) reported among first-generation college students who successfully experienced habitus adaptation before entering college.

2.4.2.2 Schools: STEM classes and peers.

As students reached high school, parental influences on career choice were often compounded or offset by school surroundings, including classes and peers. Students who attended college-preparatory high school or were in college-preparatory tracks immersed themselves in high-achieving academic contexts where, in one student's words, "social pressure" encouraged them to consider elite professions like medicine and to perform well in school. "Everybody wanted to be a doctor," one student reflected about his STEM magnet school, and so he easily envisioned himself doing so. Essentially, insiders and inside-adjacent students who had opportunities to group together in high school got a head start on the "STEM identity" which several scholars have identified as advantageous (Dou et al. 2021; Southgate et al. 2015), especially for pre-med and medical students learning to fit into the nuclear, competitive field of medicine (Lovell, 2015; Sims 2021a; Weaver et al. 2011).

Students in college-preparatory schools often found themselves surrounded by others with professional connections and high aspirations, which reinforced their own capacity to aspire to enter medicine. Insiders tended to attend such schools, as did students from successful families in other fields. Thus, inside-adjacent newcomers attending college-preparatory schools often described being regularly exposed to the idea of a medical career through insider peers or their families or through their communities, as Clay recalled: "[G]rowing up I had doctors living on my street and they all had kids

my age. I grew up around doctors, no one in my family, but it was always something I kind of thought about in the back to my mind." Students who achieved this insider adjacent status in high school had more time to develop medical career interest than less-connected newcomers, who were more often in rural or lower-income areas where they had less exposure to healthcare professionals and insider peers. This gap in experiences between insiders and newcomers continued to widen through high school and into college, as insiders and insider-adjacent newcomers drew on early connections and interest to more easily navigate the preparation process for medical school.

For those who did not attend elite high schools, schools were still a key source of career inspiration. Even a single high-quality STEM class engaged many newcomers with medicine for the first time and helped deepen interest for insiders. Anatomy classes, not usually required and not always offered at all, were especially impactful to newcomers. In larger or more diverse high schools, STEM classes brought students from different backgrounds together to facilitate peer ties which fueled career interest. Leo described how newcomers were typically inspired by STEM classes to consider medicine for the first time:

> I was a senior in high school and I took an Anatomy and Physiology class. And that was the one class I was always excited to go to, even though it was really hard, and I didn't do that well in the class itself, the material was really interesting. And so just from that, I was like, "Oh, maybe I want to be a doctor?" But you know how that is.

Note from Leo's closing phrase that while a STEM class piqued his interest in medicine, it did not build his confidence. While engaging STEM classes deepened interest for

insiders these classes were only a first step for newcomers, who often waited years to see how they performed in high school and college STEM classes before adapting to the idea that they really were capable of becoming physicians, and in some cases continued to struggle to build confidence even during medical school (Sims 2021b).

Unfortunately, newcomers who attended schools without robust STEM course offerings missed another key opportunity to build interest in medicine, and inequities in course quality lasted well beyond high school. Aiden, a newcomer, described the long-term impact of his inadequate STEM education:

> I went to a really small private school, [and] our science was terrible. Like I never used a microscope until college. All we did in my high school chemistry class was we had to memorize the periodic table by the end of the year. So right after high school I enrolled in college and ended up dropping out the first week because – I still remember the first day walking into a chemistry class and being like, it's a completely different language. So [medicine] is not really anything that I considered growing up, ever.

Meanwhile, Kelsey, an insider attending a college-preparatory private school, recalled her secondary education very differently:

> I started in high school just taking all the AP science courses, like physics, biology. I loved AP classes. I started college in 300 levels. In the top 10 [students] in all our AP classes, I think right now there's six of us in med school. Being in classes with people who also liked the same kind of things and were doing well reassured me that I could be at that level too. And it really made me like it more, just knowing that I actually am good at it, because you don't know until you are in

> a challenging course. [College] was easy […] Like I had to take calculus, people were struggling, and I remember just flying through everything.

Kelsey's access to college-level coursework and a network of competitive peers benefitted her through college and into medical school. Meanwhile, it was only after dropping out of college and dating a nurse that Aiden first developed the interest in healthcare and the confidence – through that late insider connection – that Kelsey had been building for years, mirroring the experiences of the "Strangers" who were exposed late to collegiate culture in Ivemark and Ambrose's (2021) typology of FGC students.

Beyond coursework, schools which offered mentoring and shadowing opportunities also helped students consider medicine earlier. One newcomer, for example, was inspired to pursue a medical career thanks to a program in his high school which paired interested students with a local physician for a shadowing and mentoring experience. Despite the fact that Austin's rural, public high school did not provide the college-preparatory curriculum many peers in medical school had access to (in his words, his high school was "not anything special"), the school's choice to partner with local professionals and to encourage students to learn about healthcare careers provided the early exposure to the field that helped him pre-adapt to the unique social field of medicine.

2.4.3 Secondary Social Influences Shaping Early Interest in Medicine

In terms of pre-college interest in medicine, parents, school classes, and peers were the primary vehicles for social exposure to the profession, as described above. However, several secondary influences were key to newcomer students' experiences in the absence of familial connections in healthcare, and especially in the cases of students

who did not attend college-preparatory high schools where they could easily form connections to insider peers. In particular, students built social capital which helped them to aspire to medicine through short-term extracurricular programs and experiences in the healthcare system. Finally, some students used the lack of professional social connections in their home communities to fuel their career interest, striving to defy expectations and embracing the challenge of doing so with minimal support (Yosso 2005).

2.4.3.1 Extracurricular programs.

For newcomers isolated from healthcare professionals and insider peers, such as those who did not have access to high-quality STEM classes, extracurricular activities proved key for exposure to medicine. In particular, academic enrichment programs that brought high-achieving students from various schools together with similar peers provided insider ties to which students did not otherwise have access. The most commonly referenced program targeted high school students across career interests, while another served first- and-second year undergraduates with a range of professional school interests. Some programs focused on STEM careers, but more commonly they simply brought high-achieving students with various interests together. These networking opportunities enabled relationships with like-minded peers for both insiders and newcomers, connections which not only helped students begin to aspire to medical careers but established friendships upon which students relied during college and even into medical school: study partners, roommates, and sources of insider information who helped students navigate the hidden curriculum of medical education.

Natalie, a rural newcomer, attended these programs several times in both high school and college and described their benefits:

> There are people with parents that are doctors, but I feel like that really helps because they would be like, "Okay, you need to do this," and I'm like "I would have never even known to do that." And then they gave me exposure – so I didn't have friends whose parents were doctors and my parents weren't, but at fifteen I was shadowing in an OR [operating room] because [the program] helped me do that.

The number of newcomers who formed long-term, close friendships with better-connected peers during high school summer programs suggests that students can rapidly access the capital to facilitate entrance to medicine, and that these short-term programs play a key role for sparking disconnected students' career interest and confidence. One major barrier to engagement with these programs, which are often state-sponsored or hosted by a college or university, was awareness: students who did not move in college-preparatory or STEM circles simply did not know of these opportunities. For example, in Natalie's case, her rural school did not inform her about the program ("They were so focused on everyone getting a job in a trade"); instead, she recalled "always Googling things like that" and first hearing about the one she attended on social media.

A few newcomers benefitted from extracurricular engagement at their own schools which built confidence even without offering connections with insiders. For many this came through sports; for others, programs like theatre, as Kimberly remembered. She described herself as a "super shy" teenager whose early impression of medical professions was of "something scary, a field that's sad" and the one thing "I'm never going to do." Seeing sick relatives in the hospital was a "traumatic" experience that further distanced her from the field. But joining her high school's theater program built

confidence which Kimberly credited with enabling her eventual realization that she could pursue medicine after all. A few high schools also had pre-med clubs which helped students make social connections with likeminded peers. Aliyah's "regular" public school had a Future Physicians Group that brought in guest speakers, but most importantly for Aliyah, "my friends were in it, too. So it was like, "We're all gonna be doctors!" Although most of her peers eventually chose other careers, the confidence and enthusiasm for medicine fostered by the group remained.

2.4.3.2 Healthcare experiences.

In a few cases, direct experiences in healthcare settings inspired students to consider medicine, sometimes at a very young age. In particular, these experiences included health scares which brought students in contact with physicians during childhood or volunteering or job experiences as young adults. Marley, like several peers, found a childhood interest in medicine through her own experiences as a patient:

> I guess my parents always told me that when I was little they thought I might be a doctor because I have a congenital heart defect, and I had open heart surgery when I was 4 years old, so I kind of grew up in that environment of a lot of doctors' appointments and surgeries and specialties. And my mom said I had a very big vocabulary when I was little; I'd repeat all the words back to the doctor and I knew exactly what was going on with me. And I used to play *Doctor* and *Hospital*.

In effect, Marley sounded just like her insider peers as she described a sort of socialization into medicine at a young age, but in her case, this stemmed from her own health challenges rather than her wider social context. In addition, while illness served as

a spark for Marley's career interest, it did not imbue the same confidence or insight others found through closer connections to the profession; instead, Marley had to build these in college through work experience and continued to struggle with confidence well into medical school. Similarly, students whose sole early exposure to medicine was through jobs or volunteering (often during college rather than pre-college) took longer to build the confidence to commit to medicine and did not participate as easily in the tight-knit pre-med culture which insiders easily joined (Sims 2021a).

2.4.3.3 Community culture.

In some cases, students' broader home culture – beyond their families, schools, or peers – contributed to or discouraged their early interest in medicine. This was especially true among rural students, like Alan, who worked at a fast-food restaurant in high school and was pressured by his manager to quit his plans to pursue medical school and stay in the food industry, an ultimatum which instead led Alan to quit his job and fueled his commitment to medicine. Students from underrepresented communities commonly redeployed such negativity as motivation to beat the odds (resistant capital, Yosso might argue; 2005), as Kevin, a FGC African-American student, explained:

> I think a lot of what pushed me to really say, "Okay, this is what I really want to do," was seeing that, when I grew up, there was not a doctor that looked like me. And I had that in mind. And so kind of being what I guess didn't exist for me when I was younger continues to motivate me, but really solidified my desire to break that generational cycle and also to be the one to be more representative for those like me.

At times multiple cultural factors compounded to discourage careers like medicine, as was the case for Madeline, a rural insider who "always heard growing up, 'Oh, my gosh, you're so smart for a girl!'" but wanted to instead be known as "smart in general." She fought to view such gendered discouragement as a challenge, but still "internalized it," wondering for years whether "I'm not smart enough to do this" despite her familial exposure to medicine. Meanwhile Gemma, a FGC student, recalled how her community's lack of healthcare professionals effectively made medicine invisible to her until college:

> I didn't know. I didn't even know any physicians or anything like that. I mean, we come from a very small, suburban town. You do your work. […] And it just kind of seemed like we were the people who ... we weren't those people. I mean, now I know they're not mutually exclusive, but it just seemed that maybe you'd join the military, maybe you'd marry your high school sweetheart and you guys would start a family and live next door to your parents. It was just that kind of pattern. And like I said, I didn't know any physicians, especially ones who looked like me, growing up. So, I just didn't think it was really in the cards.

Gemma began the process of habitus adaption towards a medical career when she moved to a larger city for college and "there were so many more hospitals than I ever saw in my hometown," which suggested to her that a healthcare career might actually be smart. However, she then spent years building confidence and preparing to apply for medical school, with far fewer connections in the field than many of her pre-med classmates.

Some rural insiders wondered whether they ever would have considered medicine without familial exposure. Nolan explained that "everybody I knew wanted to be a deep sea welder when I was growing up." He had a girlfriend in high school whom he was

expected to marry right away ("That's the next step, you know?") and continued to face confusion from his rural community about his career plans well into medical school. When he found himself explaining that he wasn't in nursing school or dental school but "doctoring school," as he described it, he realized he could unexpectedly relate to female classmates who had faced similar stereotypes from their home communities. However, even in rural or underprivileged areas, some high schools successfully fostered a college-going culture which motivated students to aspire to professional fields, as Austin recalled of his hometown, which had "a track record of producing a lot of physicians and pharmacists, professionals in the medical field." This knowledge helped him feel capable of aspiring to medical school.

2.4.4 Intersecting Contexts and Inspirations

For most students, some combination of social influences complicated or streamlined their early exposure to medicine. In the final example below, we see how a single newcomer can face multiple compounding deterrents to pursuing a medical career (e.g., local culture; finances; lack of exposure; low confidence) as well as pulling from multiple sources of inspiration to overcome these deterrents (e.g., illness; summer program experience). Haley, a rural FGC student who "did not come from an area where there were many doctors", was not motivated to perform well in school because "it wasn't really until my junior year of high school that I figured out that I was smart." Haley attributed her lack of early motivation to her community's lack of professional role models:

> [I]t was a bunch of country folk and working people like farmers and farmers' kids and working class families. So I wasn't around … a role model to show me,

> "This is how you do it. You can do this." Because no one around me, no one's families did that [medicine]. So I was like, "Well, why do I think I can do it if no one around me is doing it?"

After undergoing a surgery for a sports injury during her first year of high school which exposed her to healthcare professions for the first time, Haley began to consider a medical career. But, "it was always, 'Well, I want to be a doctor, but I won't be able to pay for it. I won't be able to get in. It's so hard to do. I just don't think I'm smart enough.'" Thankfully, as a high school junior Haley was encouraged to apply for a "really competitive" state-sponsored summer program; when she got in – and earned a high ACT score that same year – she finally began to believe "that I can do this. I can do this and it's a realistic goal."

2.5 DISCUSSION

These findings underscore how early access to insider connections shape students' professional aspirations long before college, streamlining the experiences of those with social ties to the profession and complicating the journey of those without. Insiders and inside-adjacent students typically had years in which to pre-adapt their habitus to "fit" easily into the social field of medicine, leading to a seamless transition into pre-medical college culture and later, medical school itself. Medical students tended to choose their career early, typically before entering college; STEM classes in high school were a key inspiration for students across backgrounds, but insiders cited their parents as key motivators, while newcomers relied — after classes — on direct healthcare experiences such as sports injuries to gain exposure to the field. For students without familial exposure to healthcare careers having peers with insider ties was especially beneficial,

and even short-term opportunities to engage with other high-achieving students, such as through STEM classes and summer enrichment programs, were often important. Nevertheless, some students struggled to build the confidence to aspire to medicine, most acutely those who typically grew up in rural or low-income areas where access to insider peers and mentors was limited.

Newcomers' experiences align with those of FGC undergraduates, especially in terms of the struggle to build confidence and to feel at home in their new cultural context. One newcomer's description of college-level chemistry as "a completely different language" echoes almost word-for-word the perspectives of undergraduate FGC students in other research studies (e.g., Jehangir 2010; Rose 2005) who faced significant barriers as they tried to adapt quickly into collegiate contexts. Like Ivemark and Ambrose's FGC "Strangers", some newcomers with minimal exposure to the profession had little time to pre-adjust their habitus to the idea of entering medical school and took longer to develop the "STEM identity" (Dou et al. 2021) which helped better-connected students navigate college and the medical school application stage (Sims 2021a).

For students without familial access to healthcare professionals, schools played a key role in facilitating habitus adaptation which enabled students to envision themselves as physicians. As research outside of medical education has noted, though (Jack 2019; Johnson 2018, Saw & Agger 2021), I find that students from more privileged backgrounds are also those best positioned to access social and embodied cultural capital helpful in aspiring to medical school, in effect maintaining generational advantages over less-advantaged peers. In particular, insiders and inside-adjacent peers described attending college-preparatory high schools with high-quality STEM courses and

opportunities like elective Anatomy classes which helped them adapt to the college-going, pre-med mindset (Dou et al. 2021; Ivemark & Ambrose 2021; Southgate et al. 2015) years before peers. On the other end of the spectrum, students from communities where college-going was unusual, especially rural students, at times found themselves swimming against the tide when they chose to pursue a medical degree and faced barriers better-connected students did not, most notably in the struggle to gain confidence to commit to the field.

The experiences of inside-adjacent students whose peer ties afforded the opportunity to aspire to medical school highlight the potential ease with which young people can change their habitus to "pre-adapt" to a medical career, even without familial ties to healthcare. For students who attended college-preparatory high schools or went on to nuclear postsecondary settings like liberal arts colleges, peer connections had an incredible positive impact upon their routes to medical school, as Southgate and colleagues (2015) also found in Australian high schools, to the extent that these inside-adjacent students often felt just as comfortable in the social field of medicine as their insider peers. However, some newcomers – in particular those attending rural high schools without robust college preparatory programs or city schools where they were excluded from college preparatory tracks – never had such opportunities (echoing Saw & Agger's 2021 findings), leading to later – or incomplete – habitus adaptation. Using Ingram and Abrahams' typology of habitus interruptions, newcomers who find themselves suddenly surrounded by medical culture in college (or medical school) experience "destabilised" habitus. This lack of cultural fit can amount to a serious disadvantage for underrepresented students who might otherwise be capable of aspiring

to become physicians and improving the diversity of the physician workforce, in turn improving future generations' access to the field.

2.6 IMPLICATIONS

Prioritizing efforts to help more newcomer students begin to imagine themselves as future physicians from an early age could help offset the challenges newcomers experience later on and could in turn help to diversify medicine itself. Ironically, newcomers could be most able to help fill the physician shortage in the same areas from which they emerge and which limit their insider access: rural and lower-income communities. Participants in this study helped to identify key opportunities which can help more diverse students form early social connections to facilitate career interest, confidence, and preparation.

Ideally, stakeholders along the entire pipeline into medicine can help offer exposure and confidence-building connections to students from diverse backgrounds. This is perhaps most important at the high school level given the advantages of entering college "pre-adapted" to postsecondary culture (Ivemark & Ambrose 2021; Southgate et al. 2015) and to a STEM identity in particular for those entering medicine (Dou et al. 2021; Lovell 2015; Weaver et al. 2011). Given the range of experiences which proved beneficial to students' early confidence-building and interest in medicine, every opportunity high schools can offer to help diverse students to engage with high-achieving peers–and especially to form 'bridging" connections with well-connected peers–is worthwhile. These findings emphasize the importance in particular of offering high-quality STEM classes and STEM electives in high school to offset inequities in STEM exposure like those identified by Saw & Agger (2021) and of facilitating social exposure

and confidence by connecting newcomers to insider peers or to mentors in medicine. State- and institutionally-sponsored summer programs were especially important to students whose schools did not or could not offer robust STEM courses. Even brief summer programs enabled peer connections which students maintained through college and in some cases into medical school and which were especially beneficial during the application stage. Unfortunately, one of the state-sponsored programs most often cited as crucial to students' trajectories into medicine was recently de-funded, indicating that state leaders may not be aware of the important role these programs play in recruitment of more and more diverse young people into medicine.

In addition, schools without the resources to offer in-depth STEM courses could tap directly into the medical profession via mentorship programs, but these must be well-structured to facilitate true mentoring relationships, as shadowing alone often proved unhelpful – or worse, intimidating or inaccessible – to many underprivileged high school students. Practicing physicians and healthcare professionals who make themselves accessible as mentors, in particular to students and school communities who might not otherwise have connections in healthcare, are central to this equation. Finally, schools can facilitate participation in any confidence-building extracurriculars, from sports to theatre, to help newcomers build the confidence to aspire to competitive professions.

Next, medical schools and pre-med programs serving undergraduates can consider newcomers in general as a broad category of recruits to whom they can offer support, much as institutions already support FGC students at the undergraduate level (Engle 2007). This research demonstrates that more targeted measures of diversity based on a single background characteristic, such as rurality or race, *while extremely important*, can

miss students who do not identify with one of those backgrounds but nevertheless lack social and cultural capital and confidence needed to aspire to medicine. In addition, narrowly targeted support could obscure the compounding effect of multiple background characteristics on students' ability to aspire to and fit into medicine or may be avoided if students perceive narrowly targeted support to be deficit-based (Harper 2010; Sims & Ferrare 2021). Thus, programs may consider identifying newcomers as a broad category of students who may encounter inequities in accessing medical training (Sims 2021a), may continue to struggle with confidence (Sims 2021b), and may face other challenges during training, especially if they are also members of underrepresented subgroups (Sims 2021b).

Finally, both families and communities played their own key role in students' early interest in medicine. Even nonmedical families sometimes sparked their children's interest in the profession simply by insisting that they were capable of being doctors. At the community level, rural students in particular described the need for young people to be encouraged to pursue medicine or other competitive fields and to be taught clearly "here's how you can do it." Several participants called for better funding of rural schools and career programs in order to create college-going cultures (Southgate et al. 2015), which even some poorly resourced schools achieved. These trends suggest that even when collegiate social capital is in short supply, families and communities can still empower students to aspire to medicine, and students can also empower themselves when they view themselves as trailblazers for their families or communities.

2.7 CONCLUSION

These findings highlight the potential contributions of a number of actors (families, peers, community mentors) and institutions (high schools, colleges, medical schools) towards diverse students' trajectories into the medical profession. Students who feel that medicine is for "other people's families" often develop this impression far before college due to lack of exposure or confidence, and collaborative effort is necessary to counteract the stereotypes that limit students' capacity to aspire to medicine. At the same time, some students harness their circumstances as powerful motivators for their career aspirations, underscoring their own agency in this process. While findings illustrate how advantages are perpetuated by privilege, most clearly among insider and inside-adjacent students who group together in high school and use those close connections for years afterwards as they navigate into medical training, this research also notes how even short-term or serendipitous exposure to medicine or to high-achieving peers can alter an under-connected student's trajectory towards the profession, especially when they include confidence-building opportunities.

Ideally, professional schools seeking to diversify need to partner not just with colleges but with k-12 school systems to expose more young people to exclusive careers like medicine, in particular by connecting insiders with newcomer peers, as peer connections were more important to participants' early interest in the profession than were mentors. The summer programs described here are a clear example of the positive ripple effect of bringing students from diverse social backgrounds together as early and as frequently as possible.

Finally, future research could describe how differences stemming from early access to or exclusion from the profession may continue over time, first as students navigate the preparation process for medical school, typically as undergraduates, and later during their medical education itself. While this paper describes the importance of connecting students across social backgrounds at a young age, it remains to be seen how social backgrounds continue to shape students' formal entrance into the medical profession, especially for those newcomers who were not able to connect with insiders or access early exposure to the profession. While in other papers I consider newcomers' experiences of undergraduate "pre-medical" education and preclinical medical school training, future research should explore to what extent these differences may or may not endure even beyond medical school, with possible long-term implications for broad issues such as physician wellness, especially if newcomers experience long-term habitus strain as they progress further into their professional contexts.

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CHAPTER 3: MANUSCRIPT 2

“Pre-Meds are a Lot”:

Experiences of Newcomers Outside Pre-Med Circles

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PRE-MEDS ARE A LOT: EXPERIENCES OF NEWCOMERS OUTSIDE PRE-MED CIRCLES

Abstract

This research draws upon data from an interview-based study of current medical school students conducted in 2018-2021 at a public state university in the Southeastern United States. Using social reproduction theory and the concept of habitus adaptation, I typologize participants along the spectrum of socialization into the medical profession, exploring how students from diverse backgrounds differentially approach the unique social field of pre-medical (undergraduate) years. I focus in particular on how students without robust insider ties to medicine approach preparation for medical school with different mindsets and using different strategies than their better-connected peers, often reflecting their more diverse backgrounds and dispositions. Like first-generation college-goers, I find that newcomers used more independent academic strategies than better-connected peers and at times felt out of place in the highly interactive pre-med world. These newcomers to medicine had to perpetually balance between the all-encompassing pre-med culture and their identities as outsiders, which led some to resist the very nature of the social field which they sought to enter. Meanwhile, students whose original social fields aligned with pre-medical culture benefitted from smoother transitions than more diverse peers.

Keywords

Diversity in professional education; medical education; habitus; social reproduction theory; sociology of education; career choice

PRE-MEDS ARE A LOT: EXPERIENCES OF NEWCOMERS OUTSIDE PRE-MED CIRCLES

3.1 INTRODUCTION

Students aspiring to medical school must navigate an intense, expensive, multi-year preparation process during which they develop their career interest; build relevant experiences such as shadowing, volunteering, or working in medical contexts; and complete a college degree. Applicants undertaking this complex process can benefit from social connections in the field, including with mentors and peers, which can help them access insider information (Haggins et al., 2018; Thompson Rodriguez et al., 2021). In particular, students from underrepresented backgrounds and/or non-medical families may benefit from social ties which can facilitate entrance into their profession (Achenjang & Elam, 2016; Estrada et al., 2018) by providing access to the social and cultural capital necessary for success (Bourdieu, 1986).

Many universities create such social interactions among students aspiring to medical school – both purposefully and incidentally – through *pre-med* engagement. Depending upon the institutional context, pre-med interactions can be formal, such as through a pre-med major, minor, track or club, as well as through pre-med advisors and student interest groups, or informal, such as through student networks or shared activities (e.g., volunteering with the same programs or sharing classes, study groups, or dorms). Thus, institutions can play a key role in the sharing of insider information and mentorship to help students access the cultural field of medical education. In doing so, however, institutions also contribute to the formation of a unique pre-med culture which serves as its own social field (Hilgers & Mangez, 2015) – a context brimming with norms, stigmas,

and signposts which may deter the students most in need of support during preparation for medical school.

Research on how students from differing backgrounds perceive pre-med status and engage with pre-med peers is not widespread. Students' dispositions toward engagement with formal and informal pre-med social circles vary based on their personal histories with and interpretations of possible futures as medical professionals. Opportunities to identify as pre-med are perceived – and marketed by colleges – as advantageous to students aspiring to medical school; however, this study documents how not all students aspiring to medical school are eager to identify as pre-med, and how the term itself can have negative connotations. This research therefore explores how students, particularly those from underrepresented and non-medical backgrounds, differentially approach engagement in pre-med social groups. Some students may not be aware of pre-med opportunities, may not perceive them as accessible, or may consciously choose to avoid pre-med social circles. I focus especially on the perspectives of undergraduates who were hesitant to identify as pre-med or to immerse themselves in pre-med culture despite having plans to pursue medical school. I draw on data from current medical students at a large, traditional allopathic medical school in the Southeastern United States to learn about why students from different social backgrounds may feel out of place among peers aspiring to medical school, and how this isolation from the pre-medical social field shaped their journeys into medical school.

My analysis of the data suggests that students who do not engage with pre-med circles often come from backgrounds with few ties to medicine. Because many of these students did not grow up with social connections to physicians or other healthcare

professionals, they often developed their career interest later or were less certain of their goals early in college than more-connected peers. In addition to having limited early social ties to healthcare, these students often emerged from diverse backgrounds which at times contributed to a lack of fit with pre-med peers whom they perceived to be culturally different from themselves. In these ways social context contributed to some students' tendency to approach medical school admission primarily as an independent process, unlike more-connected peers who benefitted from frequent use of interactive strategies. These findings have implications for how support can be targeted to better engage students who avoid pre-med circles.

3.2 CONTEXTUAL LITERATURE AND FRAMEWORKS

The lack of diversity in the medical profession highlights the value of social and cultural capital which are crucial both to students' well-being and their academic success, but which can be difficult to access for underrepresented and underprivileged students. In the context of this research, social capital refers to connections with others who can provide insight or access relevant to the medical profession, while cultural capital refers to the unwritten rules and norms of this social field which can become embodied as students' preferences, mannerisms, etc. or their "habitus" regarding a future in medicine (see Bourdieu, 1986). While students who gain entrance to medical school often fit in successfully in collegiate contexts, they may still struggle to feel at home in medical or pre-medical circles, which have unique cultures, norms, and barriers of their own. This challenge may be especially likely for students without sufficient social capital in the medical profession (e.g., parents or other connections in healthcare), much as first-generation college [FGC] students can struggle to feel at home in collegiate circles where

they have few prior ties. Furthermore, students' own pre-conceptions of who "belongs" in the medical profession may result in a rejection of social groups or institutional programming that are perceived as being homogeneous or exclusive and therefore unfriendly. In these ways for students who aspire to careers in medicine layers of social connectedness to the field shape their approaches to medical school admission.

3.2.1 Exclusivity in Medicine

Medicine is historically not a highly accessible field, and barriers in access to exclusive professional fields such as medicine are deeply entrenched, complicating current efforts both to diversify the field and to help diverse students feel at home. In part due to such historic inequitable access to high-status professions, students from rural, low-income, and racially minoritized backgrounds remain especially underrepresented (AAMC News, 2017; Magnus & Mick, 2000; Starr, 1982). Medical school students are instead disproportionately wealthy (AAMC, 2018) and from college-educated families (AAMC, 2010). This homogeneity may mean that most medical students are likely to have grown up with social ties to healthcare professionals (e.g., parents or friends of parents; peers at college-preparatory schools), and that those who did not may face specific barriers if ties to the field are an expected norm.

Improving medical school cohorts' diversity could help mitigate the growing physician shortage, which disproportionately affects many of the same rural, low-income, and minoritized communities which are underrepresented in medicine (Jolly, Erikson, & Garrison, 2013; Xu et al., 1997). Increased cohort diversity could also increase the quality of medical care itself by drawing greater attention to care for underserved populations and issues such as racism in the profession (e.g., Hoffman et al., 2016; Wyatt

et al., 2021). While existing interventions such as the holistic admissions review process encouraged by the AAMC have improved cohort diversity somewhat (Grbic et al., 2019), deep-rooted inequities continue to shape the pre-med student population and their attitudes, increasing calls for attention to the structural barriers limiting access to the field for many students (e.g., Grbic et al., 2015; Talamantes et al., 2019).

3.2.2 The Social Field of [Pre-] Medicine

Although challenges faced by students aspiring to medical school could certainly also be relevant in other contexts such as different professional schools, medicine remains unique from many postsecondary environments in several ways. Drawing on the sociology of education, the undergraduate pre-medical years can be viewed as their own *social field* (Bourdieu, 1990; Hilgers & Mangez, 2015), a stratified cultural space in which students prepare to enter the field of medical education, which in turn sets them up for success in the profession itself. The pre-medical field is arguably its own social field; it has its own culture, distinct even from medical training; it is famously competitive, as admission to medical schools in the United States is itself extremely competitive and pre-medical students are often in competition with one another for acceptance to the same medical schools (Millo et al., 2019). Fewer than half of undergraduates who complete medical school applications matriculate into allopathic (i.e., M.D.-granting) programs (AAMC, 2019). and even for those admitted, students are frequently viewed through the lens of strict hierarchies comparing, for example, allopathic (M.D.-granting) and osteopathic (D.O.-granting) programs; program rankings; or standardized exam scores.

In this context hierarchies really do matter, as medical students must go on to be accepted to a residency program after earning their initial medical degree, and residency

spots – funded by the federal government – are also highly competitive and limited, in some specialties severely so (Ahmed & Carmody, 2020; Goldberg, 2021). Undergraduate students aspiring to enter medicine face enormous pressure to perform well in classes, build impressive resumes through work, research, shadowing, and/or volunteering, and do well on the MCAT, the entrance exam for medical school typically taken in the third year of college. Each of these pressures could contribute to perceptions of pre-medical culture as competitive or even intimidating, especially to students who are not already socialized into similar contexts and confident in their career choice and capabilities.

Shaping any student's approach to the pre-medical social field is the individual's *habitus*, or what Diane Reay (2004) refers to as the "complex internalized core" shaped by our past and shaping our present (p. 435). Sam Friedman (2016) described sociologist Pierre Bourdieu's original conception of habitus as "an enduring matrix of sensibilities flowing from primary socialization" (p. 130). While Bourdieu suggested that habitus is slow to change, and that a change of habitus is more difficult for those with limited access to capital, he and later scholars explored how it is possible to change one's habitus over time (Bourdieu; 1990; Friedman, 2016; Reay, 2009). Difficulty arises, however, with sudden changes to social field which strain an individual's habitus (Ivemark & Ambrose, 2021).

We can easily imagine that in the context of higher education, the shift from secondary school into the high-stakes pre-med environment at many colleges would be jarring for students not already conditioned in similar contexts. In contrast, students who easily assimilate into pre-medical culture (and later, into medical culture itself) are likely those who grow up around healthcare professionals and other high-achieving students;

match cultural expectations of what doctors look and sound like; and are familiar with college-going and the preparation process for medical school. In essence, the pre-medical culture is already familiar to them from their familial and early educational contexts, and thus the transition into a pre-medical identity is more likely to be smooth.

3.2.3 Economic, Social, and Cultural Capital in the Pre-Med Context

While college-going is itself an academic, financial, and social challenge, going to college with the intention of entering medical school is doubly so. In discussions surrounding postsecondary diversity initiatives, researchers have emphasized the value of economic, cultural, and social capital for successfully accessing collegiate networks (Ardoin, 2018; Jez, 2014; O'Shea, 2016; Zimdars, Sullivan, & Heath, 2009). Economic capital refers to the financial resources available to an individual; cultural capital, familiarity with the unwritten rules and skills which help individuals navigate a given context; and social capital, the benefits accessible via connections to others who can facilitate entry to a new field (Bourdieu, 1986). I argue that these resources are perhaps even more important in the pre-medical environment than among the college-going population writ large.

3.2.3.1 Economic capital.

Economic capital is most straightforward: simply put, it helps to be wealthy if a student wants to go into medicine. The economic capital required to complete extensive STEM coursework, study for and take the MCAT, and build an impressive resume can be extensive. Students who can afford class tutors, test preparation courses, and travel for volunteering or research opportunities, for example, can likely translate these into more competitive medical school applications than more financially constrained peers. Even

attending a 2-year college or less prestigious 4-year institution may leave students worried that they are "behind" peers who can afford to attend larger or more selective colleges. Finally, those without very wealthy families must not only budget or take out loans for their undergraduate degrees but must also plan for the enormous cost of medical school itself, which for students without familial wealth leads to, on average, around $200,000 in debt (AAMC, 2020), followed by years of limited income during residency.

3.2.3.2 Social and cultural capital.

Social capital relevant to medical circles is also of clear benefit: students who know physicians, medical students, and other pre-med students have the most opportunities to access the cultural capital – sometimes quite literally the insider information – which can facilitate entrance to the profession. Students without insight into the "hidden curriculum" of the admissions process or other privileges such as wealth which facilitate career preparation can face distinct disadvantages (White et al., 2012).

Finding shadowing or research opportunities, studying for intense STEM courses and the MCAT, and understanding how best to navigate a complex series of application and interview stages are all skills built on accessing insider information, perhaps most importantly through other pre-med peers, near-peers slightly who are more advanced, or pre-med advisors and mentors. Students who know many other pre-med students or current medical students are likely best-positioned to understand the culture, norms and expectations of the pre-med stage, and by extension, the social field of medicine writ large – also built upon similar skillsets which help students collectively navigate medical training itself.

For example, students must choose whether to apply for allopathic (M.D.-granting) or osteopathic (D.O.-granting) programs; how many and which programs to apply for; when to apply; how to market themselves in personal statements and how to marshal recommendation letters and other supplementary materials to their best advantage. None of these skills is specific to practicing medicine, but belong to a unique set of cultural capital students must access through social connections in the field or through general sources of advice, like online searching, which may not be specific to their targeted programs. Thus, social ties provide the easiest path to the cultural capital of the profession, giving better-connected students a leg up during the highly competitive application stage, and doubtless keeps some less-informed students from accessing the profession altogether.

3.2.4 Risking Cleft Habitus to Join the [Pre-]Medical Field

Given the ongoing struggle to diversify the profession, it is not surprising that students from underrepresented backgrounds may not feel at home in the social field of medicine, although a rich body of research emphasizes the importance of belongingness for student success (Bettencourt, 2021; Strayhorn, 2012; Vaccaro & Newman, 2016). Beyond inequities in access to the forms of capital which enable entrance to exclusive groups is the problem of students' own need to fit into their social contexts. In general, people from non-dominant cultures or contexts can struggle more than others to feel at home in any new environment; for example, working-class students entering college (Bettencourt, 2021). This potential discomfort associated with branching into an unfamiliar new social field is a spectrum; at one extreme fall students whose home cultures so closely match their new field that they can easily feel at home (Bourdieu and

Wacquant in 1992 described this matching habitus as being a fish in water); on the other end fall students with the greatest cultural gaps between their home contexts and their new field (in Bourdieu's metaphor, these people must learn to swim while others are already comfortable in water). These students are at risk of what Bourdieu called *habitus clivé* – cleft habitus – which occurs when people are trapped between two fields, both of which they want to be a part of (Bourdieu, 1999; see also Bourdieu, 2008).

This entrapment can lead not just to measurable disadvantages, like a lack of knowledge of academic jargon which makes navigating collegiate life more taxing, but to inner turmoil that can be just as detrimental. Diane Reay (2015) described the "heavy psychic costs" borne by students who must negotiate the space between their home cultures and the cultural norms of academic contexts – leading to what she called a "dual perception of self" which requires "superhuman effort" to maintain (2015, p. 13). Sam Friedman (2016) wrote about the "unease, anxiety, and dislocation" individuals risk during upward social mobility (p. 130). Ingram and Abrahams (2016) called this the *destablised habitus*, in which two fields "vie for dominance" in perpetuity, leaving the individual permanently unsettled (p. 151). Underrepresented students often describe the added burden of learning to code-switch their way through postsecondary education to capitalize on the perceived value of the dominant culture's capital, sometimes distancing themselves from their home environments to do so (Ardoin, 2018; Jehangir, 2010; O'Shea, 2016). While strategies like code-switching can help people learn to function in a new environment, the underlying strain of feeling forever pulled in two directions can remain. Notably, Ingram and Abrahams (2016) also called for attention to the potential of a *reconciled habitus,* in which "two fields, although opposing, are integrated" into

something entirely new (p. 150) – for instance, allowing an individual to code-switch seamlessly and without internal conflict.

Individuals may attempt to avoid cleft habitus or the gentler, more nuanced *habitus tug* Ingram and Abrahams (2016) describe via several means. First, they can attempt to fully embrace their new social field, leaving their original identity behind; Ingram and Abrahams (2016) called this the *abandoned habitus*. Or they can resist assimilating into their new field, prioritizing closeness with their values, home culture, or sense of self; the *re-confirmed habitus* in Ingram and Abrahams' (2016) typology. This strategy might explain why some students could choose to outright avoid pre-med contexts or the pre-med label. Ideally, a balance is possible in which students are allowed to make space for their original habitus in their new social field; Ingrams and Abrahams (2016) used Bhabha's concept of the "third space" (Rutherford, 1990) to explore how this balance could benefit students. This balance enables less strain for diverse individuals and also helps diversify the field itself, which in turn could lessen strain on future students who seek to join without sacrificing their original sense of self.

Much of the research in education on the risk of cleft habitus centers around undergraduate college-going, especially for minoritized, lower-income, and FGC students, or on tensions working-class college students face in their professional fields (Burke, 2016). In recent years, some research has considered similar problems within the relatively narrow context of medical education. Brosnan et al. (2016) explored how FGC Australian medical students experienced a lack of fit with peers due to the different forms of cultural, social, and economic capital which they could access, especially when they came from underrepresented backgrounds, such as low-income students. Other work has

described how fitting into a profession like medicine which can be highly nuclear and homogenous is especially difficult for racially or ethnically minoritized people as well as women and those from low-income families (Brosnan et al., 2016; Haggins, 2020; Strayhorn, 2020; Wyatt et al. 2021). Several studies also focus on how pre-medical and medical students benefit from flocking together, essentially focusing on their new social field in order to ensure their academic success. Weaver and colleagues (2011) found that medical students build professional identity most effectively when they feel a sense of "social exclusivity" that sets them and peers apart from non-medical students; Dou and colleagues (2021) similarly described how students aspiring to medical school frequently develop a "STEM identity" separating them socially even from same-major peers. Lovell (2015) identified the extreme social balance demanded during medical education by showing how medical students both benefit from forming close-knit social groups (e.g., because peers can relate to the stress of training) and risk additional strain if they develop anxiety about competing with peers or over-identify as medical students (limiting their *self-complexity*, e.g., Linville, 1987).

Pre-med students are not yet in the "bubble" of medical education but are nevertheless part of a context unique within the broader undergraduate world. Being pre-med means essentially learning to be a college-goer while also practicing for becoming a medical student – including the norms and expectations that govern medical education as well as strategies that can enable success during medical school, such as forming the close peer groups as Lovell (2015) described. Underrepresented pre-med students thus essentially face even higher burdens than other college-goers adjusting to unfamiliar academic cultures, and must do so at a breakneck pace in their ultra-competitive

environment. For these reasons, undergraduates aspiring to medical school must walk a tightrope between engaging with others in their new professional community and maintaining their own identities and connections outside of medicine.

3.2.5 Typologizing the Spectrum of Social Exposure to Healthcare Professions

In recognition of the unique challenges faced by students who are not raised in college-educated families, there are growing efforts to support not just FGC undergraduate students but also FGC students who go on to graduate or professional schools, including attending medical school (Brosnan et al., 2016; Christophers et al., 2021; Roksa et al., 2018; Southgate et al., 2017). These studies have emphasized the challenges FGC students continue to face at the professional school level, which often involve accessing insider information and fitting into their new contexts. Much as having connections to college-goers can help FGC students navigate higher education, this study considers more broadly how any students from non-medical backgrounds – even those with college-educated parents – may face unique challenges as they seek to access and navigate the unfamiliar world of medical education.

As researchers studying FGC undergraduate students' experiences have documented, it can be difficult to identify the degree of social exposure students have to a given context such as the collegiate environment amidst efforts to support them. For example, institutions and researchers may choose to define FGC students as those whose parents never began any college; never began a four-year degree; or never completed a four-year degree, among other options (e.g., Toutkoushian, 2019), and other factors such as wealth or rurality can complicate the impact of FGC status (Brosnan et al., 2016; Sims & Ferrare, 2021; Southgate et al., 2017). Similarly, the pre-med population includes

students from a wide range of social contexts and varying levels of exposure to the medical profession, among whom background factors such as wealth and race may compound to increase the difficulty of fitting in (e.g., Bettencourt, 2021).

With this spectrum in mind, I developed a typology of students' social exposure to medicine inspired by the FGC label as an additional variable in setting up the design of the study. According to this typology, some students are *insiders* in medicine: those with family members who are physicians or other healthcare professionals – akin to continuing-generation undergraduate students with family members who are familiar with the college-going process. Others are *newcomers* to medicine: those who are the first in their families to pursue a professional career in healthcare, much as FGC undergraduate students are typically the first in their families to pursue or complete a collegiate degree. According to my research, insiders are often familiar with medical careers through familial exposure and are perhaps best positioned to support newcomer classmates, in much the same way that continuing-generation students might provide key bridging ties to FGC peers. At the same time, newcomers may bring valuable diversity to the profession, especially when they emerge from disadvantaged or underrepresented backgrounds – an important perspective for research which might otherwise overgeneralize such populations as struggling "at risk" (McKenzie, 2019).

Finally, as a result of a preliminary analysis of the data, I added a third category of newcomers who grew up interacting with insider peers with social exposure to medicine, such as those who attended elite high schools with the children of healthcare professionals, and/or those whose parents were highly educated themselves and could share connections with physicians as their children developed an interest in the

profession. I considered these students *inside-adjacent* because they typically share the habitus and access to capital of insiders despite coming from nonmedical families.

3.2.6 Research Focus

Given the complex context of medical education and its intersection with pre-medical culture, I approached this research as an open-ended exploration of why some undergraduate students aspiring to attend medical school might avoid identifying or participating as pre-medical students, and how this avoidance of pre-med culture in some cases uniquely shaped students' trajectories into medicine. I focused in particular on how students without robust insider ties to medicine approached preparation for medical school with different mindsets and using different strategies than their better-connected peers, often reflecting their more diverse backgrounds and dispositions. These newcomers to medicine–even those from college-educated families, and especially those from underrepresented backgrounds–had to perpetually balance between the all-encompassing pre-med culture and their often intersectional identities as outsiders, which led some to resist the very nature of the social field which they sought to enter.

3.3 RESEARCH DESIGN

This research draws upon data from an IRB-approved study conducted in 2018-2021 at a public state university in the Southeastern United States. Components of the study include two phases of study (surveys and interviews) generated with two cohorts of first-year (M1) medical student participants (members of the graduating cohorts of 2022 and 2023, respectively). Each member of the graduating cohorts of 2022 and 2023 was invited via email to take a social network survey as a first year medical student. At a later point in their training, each survey-taker was then invited to participate in a follow-up

interview (see Appendix 4 for an overview of the data collection timeline). In total, 22 survey-takers from the class of 2022 and 58 survey-takers from the class of 2023 agreed to be interviewed as M1s (for the initial 22 participants) or as M2s (for the second round of 58 participants). I also conducted another round of follow-up interviews with 14 members of the initial 22 interviewees, this time during their M3 (3rd) year of medical school. This article reflects analysis of these data with special focus on their reflections on experiences prior to starting medical school.

3.3.1 Site and Participant Selection

I chose to study the experiences of students at a public state university's allopathic medical school in order to get a sense of the newcomer experience in this common context. For many underrepresented students, programs housed at a state university may be their best or one of their only opportunities to attend medical school, particularly if they wish to stay in their home state. Among the 80 total interviewees whose insight provides the foundation of this paper, 31 students (39%) were insiders from medical families and 49 students (61%) were newcomers from non-medical families. Again, these categories were derived from their initial survey responses regarding their family and educational histories. Among survey participants – and likely among full cohorts – insiders actually outnumbered newcomers, but newcomers were prioritized for interviews due to the focus of this research. Interviewees were predominantly female (49 participants, or 61% of total) and white (59 participants, or 74% of total) along with 10 who identified as Asian or Asian American; 6 as mixed heritage; 2 as Black or African-American; 2 as Hispanic or Latinx; and one who chose not to identify race.

3.3.2 Data Collection

In 2019, 122 then first year medical students (73% of the graduating cohort of 2022) completed a voluntary, paid ($10) online survey 22 of these students then volunteered for unpaid follow-up interviews in which participants narrated their journeys from initial interest in the field into M1 year. I then used these data to revise my survey and interview protocols and repeat the data collection process with the next first year medical student cohort (graduating class of 2023). 139 students (68% of cohort) completed the online survey and, after a delay due to COVID-19 disruptions, 58 students participated in paid ($25) follow-up interviews around the midpoint of their M2 year (winter 2020-2021).

Survey and interview questions were based on informal pilot interviews with current medical students, pre-medical students, pre-medical advisors, and College of Medicine faculty which explored how best to engage students on the topics of career choice and socialization into the profession. Interviews were exploratory, but I used initial survey data to target questions. For example, for students who indicated on the survey that they chose to pursue a career in medicine only after several years of college, interviews focused in particular on what students' attitudes towards medicine had been at an earlier age, what other careers they may have considered first, and what precipitated the shift towards medicine during college. During interviews, I followed a semi-structured guide to prompt students through narratives of their backgrounds, how they developed an interest in medicine, and how they navigated college and the medical school application stage. Questions focused on the undergraduate stage revolved in

particular around students' access to mentorship, processes of gathering insider information, and attitudes towards entering medical school.

3.3.3 Data Analysis

The initial survey data identified students from non-medical families (e.g., newcomers) and underrepresented backgrounds. After this general categorization, I learned from interview data that newcomer status consistently overlapped with avoidance of pre-med circles or of a pre-med identity, to the extent that I focused on newcomers in the findings detailed below. I recorded, transcribed, and coded the interview data using Dedoose software. My initial analysis used a grounded theory approach (Bryant & Charmaz, 2007) to identify a number of thematic trends. I initially coded students' narratives by time period (e.g., "high school"; "undergraduate years"; "application stage"; "M1 year") and again by theme (e.g., "initial interest in medicine"; "finding mentors"; "pre-med peers"). I used field memos to describe students' backgrounds and journeys into medicine. For this paper, I studied students' comments about their interactions with pre-med peers or pre-med organizations individually and then holistically according to insider or newcomer background. I developed themes for each subgroup; for example, the theme of hesitancy to identify with pre-med circles and/or to feel at home around pre-med peers emerged frequently among newcomers to medicine. The most commonly described themes relating to engagement with pre-med circles thus made up the focus of this paper.

3.3.4 Researcher Positionality

Methodological limitations of this study include its single site setting and lack of diversity among participants, both of which reflect the reality of many medical schools

but leave room for future work across institutional types, in more diverse contexts, or with quantitative data gathering. Additionally, my own positionality as a researcher influenced the chosen methodology and may have shaped participant attitudes. As a former high school teacher as well as partner to a physician in training, I approached interviews as a near-peer in age and to some degree in experience, seeking to learn more about students whose familial and educational experiences were in some ways similar to my own. However, as a white woman from a middle class, rural background, I was also unable to relate personally to the experiences of minoritized, low-income, and other underrepresented students.

3.4 ANALYTIC THEMES

Newcomers struggled to find footing in the pre-med social field; more than half of all newcomers described some degree of discomfort with pre-med circles as undergraduates, limiting their access to insider information and social support. In comparison, insiders and inside-adjacent students (newcomers who grew up around physicians or had close ties with insider peers) who were steeped in medical culture typically felt at home in culturally familiar pre-med circles, as Jackson, an insider, described: “In college, all the premeds were similar people. That's why I had a bunch of premed friends.” In these ways, the undergraduate years further stratified students based on pre-existing access to capital and resulting familiarity with the pre-med social field.

Furthermore, while having a non-medical family was a key source of outsiderness other intersectional background characteristics compounded this experience, especially race and wealth. Perhaps because relatively few medical school students are FGC students and because pre-med and medical students are disproportionately high income,

even newcomers from middle class backgrounds stood out in their experiences of socioeconomic strain, similar to that described by Armstrong and Hamilton (2013). One student lamented that simply being a child with divorced parents made her feel out of place among pre-med peers. Another regretted that "Medicine has been set up for people who are privileged in the first place." Some racially minoritized students – including insiders – faced additional barriers fitting in to homogenous pre-med groups, while others battled stereotypes which made them less comfortable identifying as pre-med students. In the following subsections, I explore how and with what effects newcomers approached the pre-med stage differently from peers, including how students 1) avoided the pre-med label; 2) employed primarily independent rather than interactive strategies to navigate preparation for medical school; and 3) accessed insider information through close peer ties.

3.4.1 Late-Deciders versus Resisters

Two distinct subgroups of students did not readily identify as pre-med: those who made an active choice to resist or avoid this categorization, and those who decided to pursue medical school too late to easily assimilate into pre-med culture. Simply choosing to pursue a medical degree as late as the first year of college left some students feeling out of place in the pre-med environment, while others' relatively late decisions meant they had less time to establish deep connections with pre-med peers. Being such a "late-decider" was relatively unusual, further isolating these students. Newcomers' career inspiration by necessity came from different sources than their parents' jobs, including some early opportunities like high school STEM courses, but others occurring during or after college, such as during work experiences in healthcare. As Reay and colleagues

found with working-class undergraduates (2009), newcomers often described stumbling into medicine via serendipitous inspiration or exposure. Often these students were left out of pre-med opportunities due to resulting circuitous routes into medicine, such as beginning at a community college or pursuing another initial career. Landon, for example, who worked for several years between his undergraduate degree and beginning medical school, reflected "I don't think anybody knew I was going to medical school until basically when I went to medical school […] I was the only pre-med that I knew."

A lack of self-confidence also slowed the career choice process for many newcomers, including Amelia, who felt that she had to prove her potential before identifying as a pre-med:

> I kind of went in … with the mentality of I'll take the pre-med classes, if I pass them, I can be pre-med, and if I don't, I'll find something else to do. […] And I did well in them. I got to sophomore year, junior year of college, and I was still passing all my pre-med classes, enjoying them. And I was like, "Oh, maybe I should volunteer at a hospital or something."

Late-deciding also contributed to feelings of inadequacy in comparison to pre-med peers. One student who chose her career during the first year of college described nevertheless feeling disadvantaged because so many peers had already spent years aiming towards medical school admission. Some late-deciders also felt out of place because of their openness to different careers, as newcomer Haven described: "[E]verybody was so competitive, and I almost felt like a poser because … because I don't know what I'm going to do." In this way pre-med social groups signaled to some social newcomers that

they did not belong because of their unique backgrounds, ultimately undermining developing interest and discouraging diversity in the field.

3.4.2 Why Students Avoid the "Pre-Med" Label

Perhaps because of their diverse backgrounds, newcomers resisted the perceived expectation that they should be defined by their career aspirations. Many were put off by the all-encompassing culture of pre-med circles which left little space for their original, nonmedical identities, experiencing the destabilised habitus Ingram and Abrahams (2016) described as they attempted to keep a foot in their original worlds while breaking into new social field. Others had practical reasons for navigating their education independently, such as nontraditional trajectories into medicine. In some cases, students also needed time to overcome stereotypes that initially discouraged them or their families from a medical career.

3.4.2.1 The pre-med culture.

Newcomers from diverse backgrounds often did not identify with the peers they saw as "typical" pre-meds or "the pre-med personality type." Instead newcomers described institutional pre-med cultures as "intense," "competitive," or "rooted in insecurity," and pre-meds themselves as "a lot," "catty," "high strung," or "toxic people," who "kind of scare me," as different newcomers explained. One newcomer recalled pre-meds as "the most stressed out people I've ever met in my life." For confident newcomers this intensity was typically an annoyance that made them seek friendships in more diverse circles, while for less confident peers, such intensity was intimidating and discouraging. Damion, for example, called med students "neurotic" and labeled himself

the same, but felt that “it made me very anxious” to be around other competitive peers, so he “kind of tended to just hang out with a lot of the business people” instead.

Consequently, some of the students most in need of the support often offered to pre-med circles instead “sort of avoid[ed] the pre-meds,” felt that “I don’t like those people” because they “live, eat, and breathe pre-med” in a “culture of … suffering” or found themselves feeling “anxious,” “on the fringes,” or “like a poser” around other pre-med students, as various newcomers recalled. This echoed Lovell’s (2015) finding among medical students that over-identification with their identities as medical students was a cause of stress for some students; participants in this study intuitively seemed to realize that they felt healthier when they did not allow their identities to revolve around their pre-med status. For instance, Aliyah, a confident, laid back newcomer, was shocked by her first-year peers’ early focus on grades and MCAT preparation. She “tried to participate” but resisted the idea that she should obsess over her career during the early years of college; in her view, she was “still just stumbling into this” and had other interests and priorities. Aliyah intentionally avoided close friendships with other pre-meds, joking that “I hated pre-meds!” because they were so wrapped up in their career plans and “I have other things to talk about.” A few students felt so out of place that they outright avoided all pre-med contexts and “did most of it by myself,” as Amelia explained.

For others, avoiding pre-med status meant dodging not intimidatingly competitive peers, but the potential for disappointment. Haven, for example, a rural newcomer, took pre-med classes but did not identify as pre-med, and went so far as to keep her application itself a secret:

I didn't know 100% what I wanted to do. So I didn't want to say like, “I'm going

> to be pre-med" and then not get in and then pick a different path. I also think I knew that I didn't *have* to be part of it, I didn't have to declare pre-med to do the courses, right? […] I didn't say to anybody that I even applied until I had gotten in. I even told my parents – I was like – "You can't tell anyone until we know!" Because I just don't want that sort of disappointment.

In these cases, pre-medical culture proved how it perpetuates its own exclusivity, intimidating or repelling students from more diverse backgrounds who were not eager to abandon their original habitus. Hesitant newcomers were left to navigate "divided loyalties" in similar ways to the working-class undergraduates Reay (2015; p. 18) studied, and when they refused to assimilate into pre-med culture, at times remained isolated from the social field to which they needed access to facilitate admission to medical school.

3.4.2.2 Familial and cultural pressure.

Hesitancy was not always an individual choice; some students felt familial or cultural pressure to avoid identifying openly as pre-meds. This was especially true of students from rural communities, where in keeping with Bourdieu's theory of habitus (2000), students' social networks often struggled to envision how a young person could – or would want to – go so far outside their original social field. Alan's rural family pushed him for years to "try something easier," worrying that he might drop out of medical school because no one in his family had successfully completed college. Haven faced comments implying that she could not or should not become a doctor, including detractors in her rural community who advised against entering a career in which she would earn more than her partner. Shelby, a FGC student also from a rural background,

faced pressure from her family to pursue a credential-granting degree for job security and initially started nursing school before switching to "just" neuroscience, which alarmed her relatives. These families usually expected college-going to be a transactional, credential-focused experience, and were uneasy with the many unwritten rules and unfamiliar cultural signposts of the pre-med world.

On a similar note, a few racially minoritized students avoided pre-med status because they wanted to resist cultural or familial pressure to go into medicine. For example, Halona, who came from a medical family of Asian descent – who are minoritized generally but overrepresented in medicine – felt uncomfortable identifying as a pre-med and pursuing activities like shadowing after "growing up with the stereotype, the brown kids are going to be doctors." In each of these ways, students and their families were influenced by stigmas or stereotypes to avoid pre-med status or even to hide their interest in medicine, in turn intensifying their independent approach to career choice and preparation for medical school admission.

3.4.3 Independent Versus Interactive Approaches to Medical School Preparation

Differences between students who embraced pre-med identities and those who held themselves apart had long-lasting impacts upon students' approaches to medical school acceptance. Newcomers who hesitated to immerse themselves in pre-med culture were acting as *independent* strategists, largely taking it as an individual responsibility to choose a career and prepare for medical school and taking blame upon themselves for any setbacks. This mindset mirrored April Yee's (2016) findings among the FGC population at the undergraduate level. Yee (2016) found that more privileged students are eager to deploy interactive strategies to find academic success, while FGC and working-class

students are less eager to collaborate and instead pursue primarily independent strategies during their academic journeys, which may make it more difficult for stakeholders to successfully engage with them.

Similarly, in my study independent strategists often described Googling their way into medical school or turning to a very small circle of advisors only when necessary. Although most students were required to meet with a pre-med advisor at least once, newcomers often were intimidated or discouraged by these interactions, especially when advisors or professors stressed the low odds of medical school acceptance, which further damaged newcomers' confidence. Erika, for example, struggled with a lack of insight into what opportunities to pursue, how to apply, and whether "I *could* go or if I was just wildly shooting for the moon." She was intimidated by meeting with her advisor and described independently "figuring things out" and believing that "Google was my parent doctor."

Conversely, *interactive* strategists worked closely with others – most often a cohort of pre-med peers – to collectively navigate the preparation process, as Yee (2016) also described continuing-generation undergraduates doing. Insider Jared recalled his collaborative experience as a pre-med at a nuclear, private college where the institution itself fostered such an interactive culture:

> The first thing I did was asked people who are a year ahead of me who had gotten in or who I knew had scored well. So I talked to some of them. They recommended some things. [My college] has a pre-health advisory committee. I talked to them a lot about what to do and they recommended resources. […] I think I was very well-informed. We had all finished our personal statements in the

> fall. We'd all been working on what the app should look like, preparing everything to go into it, so that literally the only thing we had to do was take the MCAT and then insert it.

Kelsey, an insider initially inspired to consider a medical career by her father's healthcare job and high school STEM courses, described a similarly methodical approach to the application process at a much larger flagship state university, where she turned to peers for guidance:

> My current roommate, my big sister for my sorority, she is an M2 [second year medical student] now, but I would kind of ask her baseline kinds of things, and then I had met with the pre-med undergrad counselor, and they kind of look at your GPA and then [say] "Oh, yeah, apply." [For the MCAT], everyone's just like, "Take a Kaplan course, you'll be fine." And in PMAC [Pre-Med Activities Council], everyone kind of knows, take [the MCAT] in May and turn your application in by this time. I had older friends in PMAC, and they sent me their schedule so I knew like what day to turn [the application] in by. So I had tons of friends, like in my [medical school] class right now, there are six girls from my sorority. There's probably 20 of my friends from undergrad. […] I knew where I stood academically because everyone kind of talks – you know everyone's GPAs – and then you're just all waiting.

Meanwhile, Marley, a newcomer, recalled a much less collaborative experience using independent strategies at a regional university:

> I felt like I had to do a lot of it on my own, because my parents really had no idea what to do. My advisors were OK, but I was one of like, three or four hundred

> pre-med students at my university. And so … it's kind of one of those things where you get your advising sessions and that's basically it. You're kind of left to determine [things] on your own.

Sierra, another independent newcomer, also described a radically different process of preparation compared to insider peers, in her case at a large public university, further compounded by financial strain as she returned to college to pursue medicine:

> I feel like it's not as straightforward to apply to med school as I would have thought. So I definitely had to do research. I didn't really know anyone who had applied. I was like, okay, what is this MCAT? I was like, I gotta take that. And then I just kind of figured out how to apply. I was kind of scrambling because when I was studying I was also working full-time, like a 40 or 50 hour work week. I would record myself reading MCAT books and listen to them while I was doing work.

By the time insiders like Jared and Kelsey started medical school, they had a plethora of peers from high school and undergraduate networks both in their M1 class and in advanced cohorts and were able to put that social capital to use throughout the application stage and during medical school. They were essentially in a bubble of insiders, which made the application process a straightforward procedure; others with insider access referred to this process as "jumping through hoops" or following a "checklist." Sierra and Marley, the newcomers quoted above, instead saw the process of applying to medical school as a mysterious, intimidating, and unfamiliar venture. Like Yee's (2016) FGC undergraduates and Reay's working-class undergraduates (2015), "what they do is work

and work extremely hard" (p.1109), but their efforts were not always aligned with their new social field in which insider information and interactive strategies are so beneficial.

3.4.4 The Advantages of Privilege and Professional Ties

Beyond differences in general knowledge of the application stage, insiders also described how access to social, economic, and cultural capital yielded real-world advantages during the pre-med stage. Insiders typically took for granted relatively easy access to opportunities like shadowing, which sometimes intimidated newcomers who felt disadvantaged by their lack of social ties to healthcare professionals. Inside-adjacent newcomers benefitted from opportunities to shadow physicians who were friends, neighbors, and professional associates of their families.

In comparison, experiences like shadowing were neither easy to access nor always logical to newcomers, especially those from disadvantaged backgrounds. Tony, a FGC student, was uncomfortable with the expectation that he accrue volunteer hours in preparation for professional school, which he viewed as resume-building instead of serving others in earnest. In addition, his parents had not facilitated such opportunities for him early on because they did not realize volunteering can be a key expectation for acceptance to professional school. Tony resented the cultural mismatch between his family's view of the purpose of volunteering as selfless and the expectations of pre-medical students to volunteer ultimately for personal benefit.

The expectations of the application process were at times at odds with the very background traits associated with newcomer status, especially for lower-income or FGC students (who often come from lower-income backgrounds). As a FGC student, Andy recalled the "culture shock" of attending a liberal arts college where the "vast majority"

of his peers were wealthy and had “elite professional parents.” He was surprised to see peers meticulously map out each semester’s schedule with their parents’ help, whereas he chose a major late and switched majors his junior year. His approach was always to “go at it alone,” although he built a support network to help him navigate preparation for medical school. As another newcomer Chelsea explained, she did not know her “chances” of acceptance because:

> Everyone's always making it seem like it was impossible to get in. You had to donate an arm or an ear or something. And it seemed like a very elite application process in a lot of ways. I don't come from a high income family or anything like that and so I just felt all these people had connections to get internships so that they can look good on the applications and I don't have any of that.

Only when awarded a scholarship during her junior year of college did Chelsea have the opportunity to pursue the volunteering and research experience which solidified her aspirations and helped build her resume.

Underconnected newcomers were thus discouraged by the myriad inequities of the application process for medical school, as Alana recalled when describing how she was pressured to apply for many schools but could not afford to do so:

> That was very discouraging. I feel like there are so many things that are discouraging about the whole application process […] I feel like right now it’s mostly for rich kids. It’s awful, because you can't follow your passion just because you don’t have the means, or you can’t afford a $300 MCAT book, or just to apply for the MCAT.

Alana recalled friends who took time off during college to travel and volunteer and wished she had been able to afford to do so. Instead, she rushed through college in three years to minimize debt, then worked full-time while navigating the application stage, which she recalled as a "tough," "stressful," and sleepless stage, because "You can't work enough." For these newcomers, the diverse social backgrounds which make them assets to the medical profession worked to make their journeys towards admission more confusing and difficult, and ultimately less certain, than those of more privileged and better-connected peers.

3.4.5 How Newcomers Access Pre-Med Ties

While insiders often had more professional connections in healthcare than newcomers, *peer* connections were crucial to facilitating nearly all students' emerging sense of belonging in medicine, even when only one or a few ties existed. When newcomer students developed a close peer tie that provided insider access, they were more easily able to envision and act confidently upon their interest in medicine. Even a single close friend with insider access proved enormously beneficial to newcomers who may otherwise have been isolated from professional connections. Ben, for example, felt that there were "toxic people in my pre-med sphere," but he insulated himself from negative influences with a close-knit, supportive group of peers who were also planning to apply to medical schools. Thus, in keeping with the large body of research documenting the importance of social and cultural capital for facilitating engagement with a new network or context (e.g. Ardoin, 2018; Bourdieu, 1986; Jehangir, 2010; O'Shea, 2016), this study finds that establishing social ties to the profession helps

newcomer students fit into their new professional contexts, while better-connected students more readily access advantages related to their more robust social networks.

Peers' advice mattered more to most students' decision-making than advisors' guidance or coursework, and students used insider information primarily from peer networks to maneuver through the complex medical school application process. Students who flocked together benefitted in ways similar to findings of Dou and colleagues (2021), Weaver and colleagues (2011) and Lovell (2015), but the act of flocking together itself – forming a pre-med identity, to paraphrase Dou's "STEM identity," – was easier for students whose pre-college habitus most closely matched the pre-medical social field. Newcomers who were relatively isolated from pre-med groups struggled most to confidently navigate the preparation and admissions stages. In contrast, newcomers who successfully accessed strong peer networks used ties with better-connected peers to minimize the effects of their lack of prior exposure to the field. Insiders, meanwhile, had more options from which to draw information and to maintain control over their journeys to medical school, especially those who attended college-preparatory high schools and also connected with strong pre-med networks in college. Insiders were less likely than newcomers to be completely reliant upon peers' expertise, although both groups described benefits from connecting with classmates.

This access to capital via insider connections served the double purpose of sparking habitus adaptation to enable aspiring to medicine, and helping newcomers gain entrance to medical school. For example, Natalie, a Latinx newcomer, relied upon the help of friends whom she met through a state-sponsored summer program to apply for

medical school years later. Although her parents strongly encouraged her academic goals, she cited her peers' insight as crucial to her success:

> I got so lucky. So I mentioned my friends from [the summer program] that came here [to the same college], and I know it's dumb to say something so small like that played such a big part in my life, but if it weren't for them … my parents didn't know what to tell me to take, like to take this biology class over this biology class. […] Honestly, it was my friends. My friends were the ones that were like, I'm taking this Kaplan class, you should take it too. Or I'm gonna take this class, you take it too. […] I think it's just because when you surround yourself with likeminded people, it's easier to figure it out.

Both newcomers and insiders and students with or without college-educated parents benefitted from these peer ties, although a single, better-connected peer was often key to the success of students who came from nonmedical or disadvantaged backgrounds. Hanna, for example, purposefully "separated" herself from the pre-med group early in college but had an insider roommate with whom she navigated the application stage; they continued to live together after both were accepted to medical school. Meanwhile Jordan, a rural insider, had a friend who attended a summer program designed to help rural students prepare for the application stage for various professional education careers. Her friend "taught me everything" to navigate the application stage, to the extent that Jordan believed that "I would not have gone to medical school" without her better-connect peer's guidance, saying: "It's literally inside knowledge. I've had a hard time grasping that." While her status as an insider may suggest that peer connections would not be necessary to her success, Jordan nevertheless relied heavily on her better-connected

friend. Jordan's experiences indicate that peer ties may outweigh the importance of family connections in healthcare when it comes to the application process, and that even insiders or other seemingly advantaged students could still need close peer connections at the pre-med stage to successfully navigate entrance to medical school.

While the abovementioned summer programs provided crucial formal networking opportunities, other students experienced similar support from their wider undergraduate communities. However, this was more often true of students who attended small liberal arts colleges rather than those who attended larger institutions, or for those immersed in Greek organizations or other tight-knit formal groups. For example, Andy, a social newcomer who attended a liberal arts college, found himself swept up in a culture where "the majority of kids already knew what they wanted to do" and had self-selected into pre-professional groups (e.g., law, business, medicine). In his words, "I just didn't really feel a lawyer vibe. And so I just kind of floated in to that [pre-med] group with other with my other STEM peers."

Unfortunately, the lack of diversity in such settings may complicate this possibility for underrepresented students, leaving them with fewer bridging ties connecting them to medical networks and even impeding their efforts to prepare for medical school. In this way these findings contribute evidence of the problem Bettencourt (2021) described at the undergraduate level, in which students who hold "multiple marginalized identities" are often most in need of support but least likely to feel that they belong because of the "compounded set of barriers" they face.

For example, Kevin, a Black first-generation college student from the same institution as Andy, described the college as having "a culture of being unhealth[ily]

competitive" which discouraged him from applying to medical school. Instead, he kept a medical career "held in the back of my mind" but hesitated to declare his plans and ultimately delayed his application. He lamented that his college claimed it could not evaluate his likelihood of acceptance to medical school because it had "no data" on Black men who had applied to medical school, which further confused his preparation process and labeled him as an outsider. Perhaps unsurprisingly, racially minoritized newcomers like Kevin described especially independent processes of preparation for medical school or looked to small circles of mentors from the same backgrounds, as did Gemma, a mixed race, first-generation college student who had an "epiphany" to pursue medicine and cold-emailed a physician of her own nationality for advice because "I don't even know where to start." So many newcomers may have relied primarily on themselves to navigate the complexities of career choice and preparation for medical school not only because of a lack of self-confidence but due to a lack of confidence in others to support their goals.

3.5 IMPLICATIONS

A key finding of this research study is that aspiring first-generation *pre-medical* students – even when they may have had college-educated parents – were challenged by a lack of early exposure to healthcare professionals and struggled with confidence-building and navigating the application process for medical school. For stakeholders seeking to support students from socially diverse backgrounds who aspire to medical school it may be beneficial to seek out newcomers in particular, most crucially by helping students connect with insider peers with whom they can share resources and build a sense of belonging, even if they remain uncomfortable identifying strongly as pre-med students.

It is also worthwhile, however, to cultivate supportive pathways for students who are used to navigating their education via independent strategies. Despite the benefits of connecting with peers, students can still enter medical school as independent strategists, and engaging with them in ways that suit their less group-oriented mindsets can potentially help more diverse candidates enter the field. For example, 1-1 outreach from advisors to students from atypical majors or nontraditional backgrounds (like a former nurse who participated in this study) can provide much-needed insider information and encouragement. Medical schools can help by making sure their public-facing websites and application materials are as clear and detailed as possible, and include explanations of processes that newcomers may not be familiar with, such as the institution's expectations for secondary applications, the interview timeline, or niceties like thank you notes.

The typology developed for this research to identify newcomers to medicine can help institutions support and connect students at various points along the spectrum of social exposure to the profession. Importantly, background characteristics beyond familial connections to healthcare remained meaningful to participants, and in particular FGC, rural, low-income, or racially minoritized backgrounds contributed to students' struggles to fit into the pre-medical social field while balancing their original identities, as other research examining structural inequities in access to the medical field have noted (e.g., Haggins, 2020; Magnus & Mick, 2000; Southgate et al., 2017; Talamantes et al., 2019).

In addition, gatekeepers and mentors at the undergraduate level can keep in mind that a college student who expresses an interest in attending medical school for the first

time is not necessarily behind schedule, and that late career interest or avoidance of a pre-med identity does not necessarily reflect a lack of commitment or qualification. Rather, these students are often newcomers who can bring valuable diversity to the field but may have had fewer early opportunities to adapt their habitus to aspire to medicine, to gain confidence via experiences like volunteering, or to learn about the hidden curriculum of the preparation process for professional school. These students may benefit from targeted support to build confidence and overcome the inequities which can make the road to medical school particularly daunting for applicants from socially disconnected backgrounds.

Future research on this subject might parse out in greater depth the experiences of narrower subsets of the newcomer population[2]. For example, nontraditional students in this study had unique reasons to avoid pre-medical engagement and typically followed a professional trajectory that was very different from peers. In addition, experiences of students who attended liberal arts colleges were markedly different from those who attended larger universities, and research emphasizing how students in these different institutional contexts engage with pre-medical circles could be of greater use to stakeholders seeking to support students at their own colleges or universities. Finally, while many universities and students espouse the benefits of pre-medical engagement,

[2] A note to readers: While this paper explored students' pre-medical experiences, future research should also consider how students' experiences in medical school affect their original habitus, just as habitus initially shapes their approaches to career choice and socialization. I do this to a limited extent in my third manuscript (Chapter 4), but believe it warrants much more space, especially for students who continue to feel habitus strain during medical school, which proved especially true of rural students and others whose families did not fully embrace their career choice.

few studies exist to document the benefits of membership in tight-knit pre-medical communities, and there is certainly room to explore this underlying assumption further.

3.5.1 Limitations and Opportunities

A key limitation of this study is that it draws from perspectives of students at a single university; future research on this subject would benefit from looking to more diverse contexts to better understand the range of pre-med experiences. In addition, all participants in this study were ultimately accepted to medical school, even those who struggled due to their backgrounds or lack of early ties to the field. Longitudinal studies at the high school and undergraduate stages which follow a range of students towards medical school – including those who turn to other careers or are denied entrance to medical school – could add further depth to these findings and help to better understand the potential impact of avoidance of pre-med circles, especially on underprivileged and underrepresented students who do not gain entrance to professional school.

3.6 CONCLUSION

These findings highlight the dissimilar journeys to medical school taken by students from different social backgrounds and the ways in which students whose original social fields aligned with pre-medical culture benefitted from smoother transitions than more diverse peers. In particular, students from nonmedical backgrounds often delayed their career choice until college or did not initially plan to pursue medical careers, frequently because they were not sufficiently exposed to healthcare professionals prior to college. With scant exposure to the profession, these students did not identify as pre-med until they had built enough confidence and gained enough ties and exposure to be certain of their trajectory, in the meantime sometimes avoiding or engaging minimally with pre-

med circles. In contrast, most insiders spent years before the medical school application stage building dense peer networks that helped smooth their path to admission and embraced opportunities to work collectively to prepare for admission (e.g., through group test preparation and resource-sharing). Newcomers instead often felt out of place in pre-med circles, especially when the high-stakes, high-intensity pre-med culture did not align with their cultural upbringing or personalities. Newcomers rarely felt capable of changing pre-med culture, and instead felt pressured to assimilate (Ingram and Abrahams' *abandoned habitus*) – a feat that was easiest for inside-adjacent students and others with their own wells of social and cultural capital – or chose to resist (*re-confirmed habitus*), a tactic more commonly used by underrepresented students with low access to the forms of capital valued in pre-medical circles (Ingram & Abrahams, 2016).

Newcomers who did not want to define themselves solely by their pre-med status likely preserved a healthier mindset (e.g., Linville, 1987) by maintaining their original sense of self (Ingram & Abrahams, 2016), but paradoxically, this strategy also made it harder to engage with pre-med peers, a tension Lovell (2015) similarly explored, and at its worst risked cleft or destablised habitus. In addition, by establishing and encouraging tight-knit pre-med groups, institutions may inadvertently be discouraging more diverse candidates from considering medicine, especially when routes into the profession which allow for their more independent mindsets are not also emphasized. As Weaver et al. (2011) and Dou et al. (2021) found, the social isolation many newcomers described ultimately made students' journeys into the tight-knit field of medicine more difficult, and help to illuminate the unique and uniquely challenging social field of the pre-medical experience.

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CHAPTER 4: MANUSCRIPT 3

Into the Unknown:

Experiences of Social Newcomers Entering Medical Education

Note to Readers:

This paper follows AMA guidelines.

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INTO THE UNKNOWN: EXPERIENCES OF SOCIAL NEWCOMERS ENTERING MEDICAL EDUCATION

Abstract

Purpose

Amid efforts to diversify the medical profession, research on the problem of *outsiderness* faced by many underrepresented students has yet to fully explore the role of early social ties to the field. This study examines diversity writ large through the experiences of *newcomer* students who do not have early ties to medicine through family members working in healthcare, in comparison with more-connected *insider* peers.

Method

In this qualitative study conducted 2018-2021, 261 students from consecutive M1 cohorts at the University of Kentucky, a public, MD-granting medical school in the Southeastern United States, completed a preliminary survey about their social ties to healthcare professionals. 80 students participated in follow-up interviews as M1s or M2s about how social context shaped their journeys into medicine; some of the original participants also returned for second interviews as M3s for insight into the potential longitudinal nature of outsiderness. Iterative analysis used member checks and a grounded theory approach to maximize lessons learned from this exploratory research.

Results

Students experienced outsiderness primarily on the basis of being newcomers to medicine, often compounded by intersectional characteristics like first-generation college status; rural or low-income background; race or ethnicity; or nontraditional status. For some, an early shortage of social capital became internalized, continuing to influence confidence and belonging well into training, in line with social reproduction theory. However, newcomers also experienced benefits associated with diverse backgrounds which helped them find a sense of belonging in medicine, as suggested by community cultural wealth and anti-deficit perspectives.

Conclusion

Newcomer status proved to be a central cause of outsiderness for students from all backgrounds and warrants greater attention from stakeholders, perhaps mirroring the undergraduate focus on first-generation college-goers. Findings suggest that institutions which provide robust networking and community-building opportunities are best positioned to support newcomers.

INTO THE UNKNOWN: EXPERIENCES OF SOCIAL NEWCOMERS ENTERING MEDICAL EDUCATION

4.1 INTRODUCTION

A persistent lack of physician diversity is of concern as research mounts on the importance of a diverse workforce for providing high quality healthcare,[1] especially to underserved people and areas.[2-3] In addition, diversity of medical education itself remains a challenge as inequities rooted in geography and historic exclusion remain[3-8] alongside other barriers.[9-11] Despite progress on gender parity,[12] low income and first-generation college students remain underrepresented,[13-14] and enrollment of Black men and rural students is lessening.[3;15] Meanwhile, trainees who belong to these populations report increased strain stemming from their underrepresented status.[16-17]

In recognition of the need to engage students from a wider range of backgrounds, an expanding body of research explores the experiences of students from underrepresented groups.[18-21] Much of this research focuses on the importance of "fitting in" to the nuclear culture[16;23] of medicine and on the social and cultural challenges faced by diverse trainees.[24-26] This study adds to and broadens such efforts by considering social diversity writ large, highlighting the spectrum of experiences of students from nonmedical families. Findings explore how early, close social ties in healthcare confer long-lasting advantages, while students from less-connected backgrounds bring valuable diversity to the profession but face additional challenges.

4.2 CONCEPTUAL FRAMEWORKS

Social reproduction theory[27] suggests that individuals without pre-existing ties to a profession may disproportionately struggle to develop connections in the field, and that

this lack of social capital[28] could ultimately impact their educational experiences, for example by limiting access to cultural capital, the unwritten rules and skills which facilitate entrance to a new context.[27] From this perspective, relevant social capital might include family members or mentors in medical professions or friends in medical school. Bourdieu described how social capital is most available to those already in positions of privilege, as a byproduct of broader economic and cultural advantages.[29] In this context, for example, a wealthy student who attended an elite high school is already well-positioned to accrue social capital which can support entrance to the profession, while a student who did not grow up around the professional class is likely to have lower social capital to support such a journey.

However, it is not necessarily a debilitating or even a negative experience for students to have low access to professional social capital[30-31]; in fact, outsiders may bring strengths such as awareness of social determinants of health and empathy for disadvantaged patients.[32-34] Therefore, this research is also predicated on Yosso's *community cultural wealth* framework,[35] which argued that minoritized students lacking dominant forms of capital (e.g., social or cultural) may instead deploy other forms of capital (e.g., familial; aspirational; navigational). In the context of this research, aspirational capital refers to students' professional hopes and dreams; navigational capital, their insight into how to maneuver through medical training; and familial capital, support drawn from family or home communities, each of which can overlap.[35]

4.2.1 Belonging in Medicine

Roberts[25] described how a sense of belonging comes from the interpretation of social cues and noted how medical students may experience a lack of belonging if they do not feel welcomed and supported. Wealth and social capital in particular contribute to

expected norms in medicine[13;19;26] which can potentially leave a great many students feeling unsettled, as studies of various subgroups of underrepresented students have explored[4;24;36-37] This sense of *outsiderness*[38-39] can be externally and internally motivated, as students compare themselves to peers[39-40] or report disproportionately low institutional support, mentorship, or quality of life[18;41] and may be especially likely for less-connected students who were not socialized to "fit" into the field prior to medical school. [18-20]

The potential for outsiderness is of particular concern for those seeking to support students from diverse backgrounds.[16;24;25] So-called "leaky pipelines"[41] into medicine are rooted in systemic inequities that shape aspirations, exposure, and access to elite professions.[10] Thus, even once accepted to medical school students without robust ties to the field may face challenges related to their backgrounds, which could in turn contribute to a continued sense of outsiderness.[19;42] Students who resist assimilating into the culture of medical education if it means distancing themselves from their home cultures or families can experience *habitus tug* or the more extreme *cleft habitus*–a sense of being between two worlds and thus belonging nowhere.[43-44] Further complicating efforts to identify and engage students who lack social capital is the tremendous variation among underrepresented students,[45] as well as the potential that in a highly competitive environment, students may avoid support which they perceive as deficit-based.[30;46] On the other hand, some argue that students can find positive ways of experiencing outsiderness[44] especially when they maintain a connection to their home cultures[32-33;47] while forming ties[48] in their new professional context.[22-23;49]

4.2.2 Study Aims

Perhaps the most direct form of early professional socialization is available to *insiders* from medical families (e.g., with a family member working as a physician or other healthcare professional). In contrast, *newcomers*–those without such early ties to medicine–may have less early exposure and access to the field, similar to first-generation undergraduates' typically lower exposure to collegiate environments,[42;50] and may likewise emerge disproportionately from underrepresented backgrounds,[51] possibilities which recent research on the experiences of first-generation college-goers in medical school has documented.[18;20;36-37] With this context in mind, I considered broadly the experiences of social newcomers to medicine, also exploring how background characteristics such as race, rurality, and first-generation college status can compound or mitigate the problem of outsiderness. I analyzed how newcomers may access capital to support their journeys into medical school, even when faced with a shortage of insider ties. This perspective makes space to explore newcomers' diverse strengths, in line with community cultural wealth[35] and anti-deficit[30] perspectives, while considering ways in which they may struggle due to lack of close connections in medicine.

4.3 METHOD

4.3.1 Research Design

This study is based on the ongoing experiences of two successive cohorts of medical students at the University of Kentucky, an MD-granting medical school in the Southeastern United States. I began this research (IRB-approved as "The Transition to Medical School") by collecting survey data from the first year (M1) cohort of 2018-2019, hereafter referred to by their anticipated graduation year as the class of 2022.

Subsequently I surveyed members of the M1 cohort of 2019-2020 (the class of 2023). I used survey data to identify broad trends in students' socialization into medicine, potential themes based on those trends, and questions for follow-up interviews. A pilot year of follow-up interviews (n=22) in early 2019 was followed by a second year of follow-up interviews (n=72) in winter 2020-2021, which provide the foundation of the qualitative results discussed here.

4.3.2 Setting and Participants

The research site, part of a predominantly white institution (PWI), has over 700 medical students currently enrolled across its main and satellite campuses, just over three-quarters of whom identify as white and about half as female. The medical school works to improve access and support for underrepresented students through measures like an undergraduate pipeline program targeting rural and minoritized students, a rural physician leadership program, and an enhanced curricular focus on health equity and advocacy. The college has an early decision option and otherwise uses a rolling admissions process across campuses. See Table 1 for participant demographics.

4.3.3 Data Collection

After analyzing themes from pilot interviews and both years of survey data (see Table 2 for an overview of the full data collection process), I conducted 58 one-hour, semi-structured interviews with members of the class of 2023 in winter 2020-2021. Interviews took place at the midpoint of students' M2 year after a delay due to the COVID-19 disruptions in 2020. I also invited and re-interviewed as M3s 14 of the initial 22 M1 participants from the class of 2022 during the pilot study, in order to gauge the longitudinal potential of outsiderness. All survey-takers received $10; interviewees in 2020-2021 were paid $25. In the results summarized here, I refer to each participant

quoted by a letter (A-M) followed by their class year at the time of their latest interview (M2 or M3).

I invited all class of 2023 survey-takers to interview who indicated no familial connections to healthcare professionals (i.e., potential newcomers), followed by students with non-physician healthcare professionals in their families, and lastly, students with a physician or other medical student in their families. These groupings allowed me to more easily employ an iterative analysis process, as I concurrently reviewed data for students from similar social backgrounds and adapted upcoming interviews to explore unanswered questions or underdeveloped themes.

4.3.4 Data Analysis

I worked to strengthen and diversify my process of framing and analysis in several ways. I first used a series of interviews with nonparticipant stakeholders (e.g., faculty and leadership in the College of Medicine; medical student volunteers) to help inform research design from its early development. During data collection I employed iterative analysis, concurrently interviewing participants while analyzing data and asking for feedback from students as I sought to classify codes and interpret themes.[52] For example, after an early participant described her sense of outsiderness as the impression of feeling suffocated, I asked later participants if that phrasing resonated with them, which shed light on how some newcomers successfully avoided a sense of outsiderness. In addition, when students expressed interest in hearing about potential findings, I invited them to participate in member checks by reflecting on themes at the close of our interviews and asking for additional thoughts, and in some cases, speaking again after all data collection to further discuss construction of themes. This strategy provided valuable

feedback enriching my process of analysis while also working to bridge the hierarchy between researchers and participants.[52-53]

I recorded, transcribed, and coded interviews using Dedoose Version 8.3.47b (Los Angeles, CA: SocioCultural Research Consultants, LLC www.dedoose.com). I initially organized codes according to students' lifetime chronologies[54] (e.g., "childhood and high school," "undergraduate years," "medical school"), then cross-coded themes identified across chronologies, such as "familial capital" (how family members facilitated entrance to the profession) and "peer networks" (how peers did the same) to better understand the factors which most consistently shaped students' comfort level in medical circles. In addition to focusing on frequently cited experiences and similar comments, I also wrote and revisited memos summarizing the lifelong trajectories of each participant to maintain a focus on how students' backgrounds may have molded their attitudes during medical school, and shared initial themes with the faculty group who participated in survey design for another source of feedback.[55]

2019 interviews were conducted in person and 2020-2021 interviews were conducted via Zoom due to the COVID-19 pandemic. As a white female with a middle-class, rural background, I do not share the life experiences of all participants and sought to provide space for students to narrate their journeys however they chose, while acknowledging how my point of view would inevitably color analysis.[56] I approached interviews as a family member of a physician in training, explaining to students that this perspective inspired my interest in their experiences.

Interviews were purposefully exploratory, and analysis used a grounded theory approach[57-58] which allowed me to interpret how themes coalesced around commonly cited experiences. For example, during initial interviews with the class of 2022 I asked

students to describe when and how they chose to become physicians; this is when I noticed that newcomers reported experiences of outsiderness. As one early participant put it, the all-encompassing nature of medical school had "squashed" her identity. I then constructed sub-themes as I explored this concept, based on questions like "Is there anything you feel you need to hide or minimize in the context of medical school?", which yielded the theme of how students from underrepresented backgrounds often experienced outsiderness more intensely than peers. The multi-stage design of this study thus facilitated real-time adjustment and analytic growth through data triangulation.[55]

4.4. RESULTS

Findings indicate that newcomer status was the primary cause of outsiderness among participants. Below, I summarize themes surrounding 1) the spectrum of social exposure to medicine; and 2) ways in which newcomers offset outsiderness by accessing community cultural wealth, newfound confidence, or social capital.

4.4.1 The Spectrum of Social Exposure to Medicine

4.4.1.1 Insider Experiences.

Insiderness was a spectrum among participants, ranging from students with multiple physicians in the family to the most common single connection to healthcare: a non-MD mother, such as a nurse. Insiders reported benefits stemming from early social capital including advantages at the high school and undergraduate level, both through opportunities stemming from easy access to the field (e.g., developing aspirations; shadowing) and through parental support–academic, emotional, or financial. Once in medical school, insiders typically fit in easily and described their cohort like a "club" from which they drew solidarity, reflecting what Weaver and colleagues[23] described as

the sense of "social exclusivity" which helps medical students build professional identity. Insiders often recognized the benefits accrued by their family legacy in healthcare, as Participant AM3 a healthcare professional's daughter, explained:

> I can talk to my family about every part of medical school. I can talk to them about being really stressed out about exams and the disappointment that comes with a bad grade, and they can help me put it in perspective. I can talk to them about sad things I see in the hospital. I can talk to them about anything.

Several insiders like Participant AM3 actively shared social capital with less-connected peers, passing their family members' insight on to classmates, inviting friends to dinner with their parents to talk about specialties, or calling siblings on speakerphone to ask questions about residency.

4.4.1.2 Inside-Adjacent Experiences.

There were two main subgroups of newcomer students: those who described *inside-adjacent* experiences, and those who felt like outsiders in medicine. Inside-adjacent students typically rubbed shoulders with physicians and peers interested in medicine from an early age, such as by attending college-preparatory high schools, or by having college-educated or well-connected parents who could facilitate early career aspirations via experiences like shadowing. While most inside-adjacent students grew up in contexts rich in social capital, some achieved this status after high school by immersing themselves in a tight-knit pre-medical culture, often at small liberal arts colleges or through Greek organizations. Experiences like this provided inside-adjacent newcomers with social capital to navigate the medical school application process and for medical school itself by providing a close circle of undergraduate peers with whom they

continued to study or socialize. Participant BM2 explained how he accessed support through peers:

> I don't really have any family members that are in the medical field … [so] having people to share that with is really nice. Because I'll try to share things like that with my family, but they're always like, "Okay." Either it's not interesting to them, or they don't quite understand what I'm trying to get at. But having a group of people that has that similar mindset, it's nice to be able to talk about that kind of thing.

Inside-adjacent newcomers often described experiences almost identical to insider peers, e.g., having many friends in medicine; a solid academic foundation; a clear idea of what to expect during training; and robust access to mentorship, highlighting the benefit–and privilege–of peer connections which provide social capital in medicine.

4.4.1.3 Outsider Experiences.

In contrast, newcomers who felt a sense of outsiderness in medical school described fewer early social connections in the field; more diverse backgrounds; a more independent career choice process; and additional burdens–and some advantages–during training. As Participant CM2 summarized, “this is just so foreign for so many reasons.” Students described outsiderness as a lack of confidence relative to peers or difficulty “fitting in” (or a choice not to do so); as a lack of insider information; or as a lack of social capital needed for mentorship or support. When newcomers struggled to build confidence they often perceived that insiders were more prepared, advantaged, or competitive due to their backgrounds. Meanwhile newcomers often turned increasingly to peers and mentors for support in some cases creating tension with their families,

especially for those whose loved ones did not agree with their choice to attend medical school, a worry often rooted in fear of debt, failure, or distance–literal and figurative.

Lower confidence among newcomers was at times rooted in having little practical knowledge, most notably through a comparative lack of medical vocabulary–the linguistic capital of the field-or other practical experience. Participant DM2 remembered of her M1 year: "[A]ll these people were like, 'Oh yeah, my mom's a doctor … I've been going to the OR since I was 12.' I'm like, 'Uh, I was afraid of blood my whole life. And I don't know any of this stuff.'" Perhaps consequently, newcomers approached each semester as a test of their ability, rather than believing all along that they could succeed. In addition, newcomers experiencing outsiderness often felt isolated within their cohort, approaching medical school less collaboratively than peers, expecting less support, and struggling silently while unsure of resources. In one example, a newcomer avoided studying in the medical school library where peers tended to work collaboratively in favor of the main university library, where she studied alone, but felt less out of place.

Some newcomers were especially stressed by the unknowns of the future. Participant EM3, still experiencing outsiderness in her third year, tied this trait directly to her nonmedical family: "I think some of it comes from being the first physician in the family too. Just not having confidence in knowing exactly what's going to happen." For many, this stress began at the undergraduate stage ("What is an MCAT?,") and continued with each year of medical training ("STEP what? What is that?"). Participant EM3 lamented that "I feel like I don't know what's going on all the time. People will talk about stuff and I'm like, 'Where do I read about that? How do I find out about that?'" When mentors tried to assure students by telling them not to worry about the future this

sometimes compounded the stress of the unknown, as Participant FM2 explained: "[T]hey're just like, 'Oh, you'll be fine. You'll know when you get there.' And that doesn't help." In the absence of formal information-sharing students sought informal guidance from peers, but newcomers often had fewer connections in the field to fill this role, which meant continued stress. The underlying anxiety about what to expect extended long-term as well, as newcomers worried most about how to choose specialties, navigate residency, pay off debt, balance workloads, and plan families.

While being the first in their families to pursue a healthcare career was a root of many newcomers' unease early in medical education, other background characteristics compounded challenges associated with a lack of social ties in the profession. Students from overlapping underrepresented backgrounds[59] often described the most intense experiences of outsiderness. Students of minoritized race or ethnicity more frequently recalled facing comments, stereotypes, or outright discrimination based on their backgrounds, compounding the struggle minoritized newcomers faced to build confidence and social capital. One rural, low-income newcomer felt out of place even among other rural students who were relatively wealthy and well-connected, instead relishing time spent with residents from "a town almost as small as mine," because "with other people, I just know the stigma associated with it." In addition, several rural students experienced distancing from their home communities in an intensely negative way, developing a sense of cleft habitus in which, as Participant GM3 said, "I don't fit in anywhere." For example, during the 2020 pandemic lockdowns, Participant GM3 felt pressure to educate those in her rural hometown about the benefits of mask-wearing, but also to defend them when others in medicine judged rural people's noncompliance. She

wanted to return to her home region to practice medicine, but “It will be difficult, to exist in that space after having lived where I live now.”

4.4.2 Offsetting Outsiderness

Despite challenges, a central theme across newcomer interviews was students’ ability to recognize the advantages of their nonmedical backgrounds. Newcomers lacking social capital accessed community cultural wealth as motivation; built confidence during clinical experiences that highlighted their ability to connect with patients; or leveraged peer connections to quickly build social capital in the field.

4.4.2.1 Wielding Community Cultural Wealth.

Despite being at greatest risk of experiencing outsiderness, students from underrepresented backgrounds were especially adept at offsetting disadvantages associated with an early lack of professional social capital. These students often built community with others from similar backgrounds, as Participant HM2, a mixed-race woman, described: “Then there's the folks who don't really look like everyone else … so we all sort of stick together to an extent. We all have branched out, but all of us are part of that base, sort of that social base for one another.” Alternatively, Participant CM2 (a racially minoritized student from a low-income household), relied on familial support[32] and aspirational capital:

> I don't think I'd be able to do this in another family, just because there's so much Banking on me doing well, and me making it through this and really changing a lot of stuff for my family. And so, it's my honor - they know that I'm doing this, in a lot of ways, for them. This is really a group effort, a familial effort, for us to get through this together.

At other times newcomers embraced their families' lack of insight into medicine as its own advantage. Newcomer status meant less pressure; as Participant IM2 explained, she could go to her professional mentors for career advice "and then at home you can vent to people that just think anything you do is great." Even when students' families did not encourage their career choice some used this as its own motivation, such as Participant JM2, who had a bet with a sibling over whether he would graduate medical school but felt that "it was just that lack of support that just kept the fire burning. So, I'm kind of grateful for it." Other newcomers drew inspiration from making their families proud, as did Participant KM2, who reflected on her father's delight "that he made a kid that could go to med school." Participant LM2 similarly described her success as a tribute to parents who "made those sacrifices so that their daughter could become a *doctor*, the first doctor in the *family*, coming from a grandfather who didn't even go to high school."

4.4.2.2 Building Confidence via Clinical Experience.

Newcomers recalled struggling most with confidence early in medical school, which contributed to a sense of outsiderness during M1 year. But they often went on to build confidence through clinical exposure which helped them recognize advantages of their diverse backgrounds. Students at times felt that their backgrounds made them especially empathetic, independent, or hard-working ("I've had to make a budget before," one nontraditional student boasted). As Participant MM3 said of interacting with patients, "There's a lot of stigma. Some students are really rude, but half of my family and friends are poor, on drugs, have all of the problems. And so I walk in these rooms and I'm like, 'You know what? That could be my uncle on any given day.'" Racially marginalized and rural students in particular described validation stemming from working with patients

from similar backgrounds; as Participant CM2 said, "[M]y job is to relate to these patients, and to represent them and to make them comfortable and empathize with them." In this way even students who never felt at home among peers were able to build a sense of belonging.

4.4.2.3 Building Capital via Peer Connections.

Several students who originally described experiencing outsiderness as M1s rapidly built mentor and peer connections during the first year of medical school which helped them find a sense of belonging (e.g., "I've found my people"). Some newcomers, like rural Participant MM3, were eagerly extroverted in medical school, happily making new connections to provide navigational capital "because my world was so small for so long." Students at one small satellite campus in particular were able to quickly build social capital and fit in by their M2 year, while at the main campus, peer and mentor relationships formed in a small-group course often proved crucial foundations for connections that yielded insider information. Finally, a few students described experiencing outsiderness from an entirely positive perspective, taking pride in how different they felt from peers and prioritizing other parts of their lives to offset the stress of training.[44;47;60] One student admitted that this balance is a constant struggle, though, illustrating the long-term strain of being an outsider in medicine: "I think sometimes I feel like my whole identity is a med student, which can be hard, because there are so many other parts to me that are more than that. […] I was a person before I came to med school. I'd like to be one during and after."

4.5 DISCUSSION

These findings illustrate the enormous importance of strong social ties for entering the medical profession, in keeping with social reproduction theory,[27-29] but advance evidence of challenges some students face in accessing the insular culture that helps other medical students navigate training.[22-23;49] Newcomers without early familial exposure to the profession described a difficult process of having to look for space in which to exist in medicine, which they often found through like-minded peers, while insiders already felt at home. Notably, inside-adjacent newcomers who built deep social ties to the field before medical school were largely protected from experiencing outsiderness, reflecting that the privilege of access to social capital–if not through family members in healthcare, then through a college-educated community or insider peers–offset the risk of outsiderness for many, but concentrated risk among the least connected, and typically least privileged, students.

Students who initially struggled with outsiderness often accessed social capital through community-building opportunities, such as a small-group class where many newcomers formed key friendships. Newcomers also benefitted from clinical experiences that centered the advantages of their backgrounds and built confidence, as broader community cultural wealth[35] and anti-deficit[30] frameworks have advocated. Those still struggling with outsiderness in their M2 or M3 years were often in a process of reconciling their old and new selves,[44] realizing that they needed to make space for their identities outside of medicine[60] but also to build new, supportive professional networks.[22]

Newcomers also recognized that the life experiences which led to challenges provided advantages in medicine, particularly in greater awareness of social determinants

of health; ability to empathize with stigmatized patients[27]; and skillsets such as community-building, which helped offset an initial lack of belonging. These positive aspects of newcomer status support and broaden existing anti-deficit research suggesting that underrepresented students bring unique skillsets and advantages to medicine which can be rooted in the very characteristics associated with their perceived disadvantages.[32] Yet in some instances this tension led to exasperation and stress, as students felt pulled both to overcome and embrace sources of outsiderness, as research on habitus strain outside of medical education has found.[43]

These findings align in particular with research documenting challenges faced by first-generation college undergraduates[50-51] and suggest that newcomers to medicine can experience something similar in professional school even if their parents graduated college, and to a greater extent among first-generation college-goers and other underrepresented students in medicine. Yee[61] noted how first-generation and lower-income undergraduates conditioned by a lifetime of low social capital constrained their academic strategies by employing independent tactics, while more advantaged peers employed both independent and interactive strategies and readily sought support.[62] The current findings indicate that this trend applies to newcomers in medical education as well; those who experienced outsiderness often hesitated to seek help and blamed themselves for shortcomings. Thus, this work contributes evidence of the long-term advantages of early social exposure to the medical profession, contrasted with evidence of additional strain and persistent challenges facing students with low early access to professional social capital.[42]

4.5.1 Implications

Students who identified as outsiders typically did so at least in part based on newcomer status. While other characteristics may be more obvious than nonmedical background, findings suggest that in the ultra-competitive environment of medical education where students may avoid deficit-framed support, they are highly open to acknowledging newcomer status. Highlighting the strengths and diversity of nonmedical backgrounds can help newcomers build confidence and community in medicine. A key implication of this research should therefore be to consider targeting support to students from nonmedical backgrounds–especially those from underrepresented groups–perhaps borrowing strategies used at the undergraduate level to engage first generation college students who similarly lack social capital in a new context.[63]

Based on these findings, institutions best positioned to support newcomers to medicine should consider providing frequent, formal, and informal versions of scaffolded mentorship opportunities and intra- and inter-class networking; clear pathways to accessing insider information about the future; nonjudgmental spaces where students can discuss challenges; opportunities to build confidence through early clinical exposure; and options to build community, either around background (e.g., a nontraditional students' network) or their identity beyond medicine (e.g., a student writers' club).

4.5.2 Limitations and Future Research

A key limitation of this study is that it took place at a single, predominantly white institution which recruits primarily in-state students. Further research on the role of social capital as an inflection point for outsiderness should consider experiences of a wider

range of students, especially considering students at smaller institutions, in more diverse contexts, and further into training.

4.6 CONCLUSION

My findings suggest that students from various backgrounds face specific challenges associated with newcomer status and that outsiderness due to nonmedical background is often compounded by membership in underrepresented groups. Findings suggest that diversity initiatives may be missing many students who struggle with outsiderness due to a lack of social ties in the field and that newcomers appreciate efforts designed to help build social connections and confidence. Perhaps most importantly, newcomers bring unique strengths to medicine which, when acknowledged,[30-35] help them establish cohesive identities that celebrate their diverse backgrounds while enabling them to build community and belonging in medicine.

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4.8 TABLES

Table 1. Demographic overview of 2020-2021interview participants.

Characteristic	Value
Cohort, n (%)	
Class of 2022	14 (19.5)
Class of 2023	58 (80.5)
Race, n (%)	
White	56 (77.7)
Asian or Asian American	9 (12.5)
Mixed Heritage	3 (4.2)
Black or African American	2 (2.8)
Chose not to Answer	1 (1.4)
Gender, n (%)	
Women	44 (61.1%)
Men	28 (38.9%)
Other Characteristics	
Hispanic Heritage	1 (1.4)
Insiders[1]	23 (31.9)
Newcomers[2]	49 (68.1)

[1]Insiders: students with an immediate family member as a physician, medical student, or other healthcare professional

[2]Newcomers: students who are the first in their immediate families to become healthcare professionals

Table 2. Data collection timeline.

Year	Class of 2022	Class of 2023
2018-2019: Pilot Year	Cohort surveyed in winter of M1 year (72.6% response rate, n=122/168)	
M1 Surveys	*Surveys analyzed and used to develop interview protocol*	
M1 Interviews	All participants invited for follow-up interviews in spring of M1 year (22 complete interviews) *Interviews analyzed for potential themes; survey and interview protocols revised for second round*	—
2019-2020: Second Round Surveys		Cohort surveyed in winter of M1 year (67.8% response rate, n=139/205)
M1 Surveys	—	*Surveys analyzed and used to group participants for follow-up interviews*
2020-2021: Second Round Interviews	14 of initial 22 interviewees invited to interview a second time in winter of M3 year	Participants invited group-by-group for follow-up interviews in winter of M2 year (58 complete interviews)
M2/M3 Interviews	(all 14 complete interviews)	
Total Participants	122 survey-takers 22 follow-up interviewees 14 second follow-up participants	139 survey-takers 58 follow-up interviewees

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Data

None

Other Disclosures

None

Ethical Approval

IRB approval has been granted for this research by the University of Kentucky Office of Research Integrity, protocol reference #47340. Approval was initially granted in 2018 and most recently re-approved as of 3/24/2021.

Disclaimers

None

Previous Presentations

Initial themes from this research have been presented at the Association for the Study of Higher Education (ASHE) annual conference, 15 November, 2019, in Portland, OR, and at the American Educational Research Association (AERA) annual conference, 10 April, 2021, in virtual format. Sections of this manuscript also appear in a chapter of the dissertation "*Other People's Families": How Social Ties to Medicine Shape Entrance*

into the Profession, submitted for completion of a PhD in Higher Education at the University of Kentucky (2021).

CHAPTER 5: CONCLUSION

5.1 OVERVIEW OF CONTRIBUTIONS

Having a range of diverse perspectives in any profession enables practitioners to wield "greater reflexivity" and to more readily identify barriers to entering the field (see Ingram & Abrahams, 2016). Existing research makes the case for improving diversity of medical school cohorts in order to 1) enhance access to the field, 2) teach cross-cultural experiences and improved empathy for trainees, and 3) help address the physician shortage. However, late-stage interventions such as debt forgiveness and higher pay for practicing in underserved areas have not proved sufficient to route enough physicians to areas suffering from shortages, perhaps in part because medical school students disproportionately come from upper-income communities (AAMC, 2018) and seek to practice in similar areas (AAMC, 2021). Meanwhile, the ongoing lack of sufficient physician diversity is associated with the growing physician shortage and disparities in healthcare access and quality across subpopulations. The cumulative social, economic, and physical cost of these gaps are impossible to fully calculate. Thus, improving diversity of medical school cohorts – essentially, welcoming more newcomers to the field – could more efficiently address the physician shortage and its associated dangers.

Given this context, this project sought to provide rich qualitative data offering insight into each stage of students' journeys to medical school and into their professional training, with a focus on the experiences of students from socially diverse backgrounds. Most related research focuses on a single category of diversity, such as racially minoritized students, rural students, or low-income students. This study adds to that body of evidence with insight into ways in which students who are newcomers to medicine

experience career choice and professional training differently than others who are socialized into the field at an earlier age. While these newcomers are not typically identified by professional school programs as disadvantaged or underrepresented, and may not even identify themselves as such, better understanding their experiences and the role of early social connections to medicine can help improve efforts to diversify the field and support students of different backgrounds. Each of these papers echoes in different ways key differences between students who are socialized into medicine before entering professional school and those who are not, highlighting the long-term effects of early access to professional social and cultural capital using the typology of newcomers, insiders, and inside-adjacent students.

5.1.1 Newcomers

For newcomers to medicine, the processes of career choice and preparation for professional school are slow, fraught with unknowns, and challenged by low confidence. These problems are at times compounded by increasing isolation from nonmedical family as the student enters a new social field, but they can also be offset by supportive family or peers or by the student's own perspective. In contrast to insiders and insider-adjacent students, newcomers typically described childhoods in which they were "never around medicine," except in cases where they or a loved one were sick, which for some made medicine less appealing, but for others was a source of motivation. Amelia, a newcomer, described a typical process of late exposure to medicine among nonmedical students:

> Part of my inability to make that [career] decision earlier in life was just exposure. It wasn't until I started shadowing or volunteering in a hospital that it kind of clicked. […] It was always just this thing that seemed appealing, but I didn't have

the exposure to know that it was really something that I wanted.

As my third manuscript explores, even in medical school a lack of familiarity with the field sometimes continued to be an obstacle as students struggled with the language and culture of the profession (and of professional education).

5.1.2 Insiders

Meanwhile insiders experienced both more straightforward processes of career choice, most often inspired by their parents, and direct advantages during and leading up to training, such as ease in accessing shadowing or mentors. Insiders' networks were typically multifaceted, often rooted in each stage of the student's life, from parents in healthcare to high school peers, and with added insight from more recently formed collegiate networks. Being the child of a physician in particular did not matter so much as being the child (or occasionally, sibling or other relative) of anyone in healthcare; Hadley recalled this typical ease of connectivity through her mother, whose healthcare job kept her in close contact with physicians:

> My mom just knows a lot of people because she's [in healthcare]. So a lot of her clients are doctors, she just has a lot of connections. So she was able to set up some of those in high school, like the shadowing opportunities, for me … just through social connections.

Perhaps even more important than a parent's job in healthcare was what the job meant for students' early social and cultural context. Insiders often recognized that the grouping of professional families into the same social circles, often tied to income and geography, helped facilitate their exposure to the field, as Kara described:

> [I]t's all about connections and maybe it's not a parent, but a friend of a parent. I

> grew up in an affluent area where we knew a lot of doctors and had those connections, so I never felt like it was difficult to find an avenue to talking to somebody or meeting with somebody and getting that advice.

These trends explain how insiders easily adapted their habitus to potential medical careers and built confidence and experience earlier and easier than newcomers. In turn, these advantages streamlined students' progress through college, the preparation stage for medical school, and even medical training itself.

5.1.3 Inside-Adjacent Students

A central takeaway of this research is the incredible similarity between insiders from medical families and inside-adjacent students from nonmedical families. Prior to embarking upon this study, I would have expected inside-adjacent students to benefit somewhat from their proximity to insider peers, but that insiders would have the most straightforward routes into medicine. Instead, I found that students from nonmedical families who grow up around the children of healthcare professionals—often attending the same high-quality high schools or college programs—had trajectories and attitudes almost identical to insider peers. If anything, this subgroup of students at times had the best of both worlds, with parents who did not necessarily push them into medicine, but who could offer social connections which fostered their children's pre-adaptation to the social field of medicine.

My findings echo Ivemark and Ambrose (2021) and Jack's (2015; 2019) earlier work on first-generation college students and lower-income students, respectively, in illustrating how privilege begets privilege: the children of college-educated professionals were most likely to access inside-adjacent contexts rich in the social and cultural capital

that pre-conditioned them to succeed in pre-med and medical school contexts. In fact, my findings suggest this privilege reproduction may be more acutely true for those entering the medical profession than for other collegiate contexts, as students without insider ties to medicine face such an intensely nuclear, exclusive, and unfamiliar professional sphere – so intimidating, in fact, that newcomers may simply decide that medicine as for "other people's families" and not for them at all.

5.2 IN SUPPORT OF ANTI-DEFICIT PERSPECTIVES

While I highlighted the struggles newcomer face, I was also struck by their strengths. Friedman (2016) noted how a working-class family fostered its own subversive "counter-snobbery" to combat the dominant culture in which it possessed little power (p. 118). The family, far from feeling ashamed of being working-class, identified their own advantages over the wealthier "haves" in their community and cultivated its own brand of superiority. Similarly, I set out to look for ways in which medical students may signal membership in a non-dominant group and to then explore how those students navigate entrance to the field. I wanted to understand how (if at all) students likely to be labeled as at-risk or underrepresented by those in power create a similar sense of family, of community, so that they feel equally confident in creating their own brand of "counter-snobbery" to counteract forces that might otherwise tamp down their outsider traits.

My earliest data suggested that some individuals readily identify as "med students" while others resist the label and continue to feel like "outsiders within," either in a negative or positive sense (Collins, 1986; Ingram & Abrahams, 2016). Because of the multi-year format of the study, I was then able to parse further the range of external and internal pressures which keep some newcomers from feeling confident and at home

in medical culture. Among newcomers to medicine, particularly those from underrepresented groups such as rural and racially minoritized students, I found that rather than assimilating into medical culture or resisting and potentially experiencing the negative consequences of cleft habitus (Bourdieu, 2008, 2002, 2000), insecurity, or ambivalence (Friedman, 2016), some students found ways to actively create new fusions between or even beyond these two poles (Ingram & Abrahams, 2016). In other words, they found ways to fit into medicine while still centering their diverse backgrounds. While this does not diminish the very real challenges they face, it serves as a reminder of their resourcefulness and adds to the literature calling for anti-deficit perspectives for underrepresented students (Harper, 2010; Yosso, 2005), especially in medicine (Roberts, 2020; Zhou, 2017).

The challenge of finding ways to empower diverse students begins far before medical school, and I emphasized the role of high schools in particular in shaping students' aspirations, confidence, and attitudes towards medicine and other elite careers. Bourdieu (1986) theorized that educational institutions reinforce upper-class cultural capital, in particular when they convert "social hierarchies into academic hierarchies" (MacLeod, 2009, p. 14) implying merit when a class-based difference is the reality. MacLeod (2009) described the crux of this problem, noting that if disadvantaged students "are to be motivated to achieve in school, it must not be at the expense of their self-esteem … [Schools] must help students build positive identities as working class, black and white, young men and women" (p. 262). As k-12 schools are challenged to do this, I hope this research demonstrates that medical schools and pre-med programs should be

equally if not more attuned to the importance of helping newcomer students build positive identities that frame their diversity as a strength for the medical profession.

5.3 METHODOLOGICAL THOUGHTS AND NEXT STEPS

While inspiring, this dataset was at times unwieldly. Collecting so much additional data in the second round of interviews left me struggling to narrow down my key findings and prioritize what I wanted to explore first. However, additional interviews allowed insight into experiences of subgroups of students and enhanced my understanding of how background characteristics compound to influence newcomers' experiences, which was itself a primary theme among findings. I learned to refer to the work I have done so far as qualitative but would like to make better use of the survey data, especially the network data, in future research. Nevertheless, while not elaborated on in the three papers included in this dissertation, survey data provided the initial framing for the research: how many students are insiders or newcomers, and how connected those students are to peers and others in medicine.

One of the earliest threads I considered pursuing was the idea, shared informally with me by several newcomers to medicine at different institutions, that a majority – even a vast majority – of their peers in medical school were the children of doctors. Survey data played a key role in determining the direction this research took by answering that initial question clearly: while medical students are disproportionately the children of physicians these are far from a majority, and even the children of healthcare professionals in general do not fully dominate cohorts, accounting for just over half of participants in a given year. The straightforward trends I pulled from initial survey data (e.g., how many students are newcomers; how many friends and mentors do they have in the field; how

many are also rural or minoritized) helped me develop the initial newcomer/insider typology I then pursued during interviews. If newcomers feel that insider peers are so much more common than they are, why is that? Interviews helped me understand that the larger-than-life impression left by some insiders was both a reflection of their own lifelong familiarity with the profession (making for confident, extroverted, and sometimes intimidating medical students) and of newcomers' corresponding lack of familiarity and confidence. It was interviews, though, which added the inside-adjacent category to my typology. While these students were technically newcomers according to survey data, it was clear from their friendship and mentorship data as well as interviews that well-connected newcomers who grew up around healthcare professionals had very different experiences from what I initially called 'total' newcomers. The multi-method, multi-year structure therefore fed into itself as the project progressed, with survey data inspiring interview approaches and second-year data collection adjusted based on first-year results. In the end, the methodological structure was complex but enhanced both validity and the potential value of the work.

One of the key methodological challenges in working with such a large dataset was choosing what to write about first. I chose to approach this dissertation with a bird's eye view of diversity in medicine, including all students from nonmedical backgrounds in my analysis of newcomer experiences, and considering insider perspectives as well to parse out differences between these groups. The tradeoff in this choice meant leaving a tremendous amount unsaid, particularly about smaller subgroups of students or specific experiences during training. In particular I look forward to writing more about how the children of immigrant families were shaped by their home cultures as they made their

way into medical school; how Black and other minoritized students formed communities within their cohorts during medical school; how many students were shaped especially by their mothers to consider medical careers; and how students from rural backgrounds react to pressure during training to return to those areas as professionals. I also believe that there is space for a great deal of additional research more generally on how social background influences pre-medical experiences, as I begin to uncover in Chapter 3. For example, quantitative or mixed-methods research that maps students' academic success and success entering medical school in relation to the types of social networks they access during their undergraduate pre-medical years could be especially beneficial. Certainly at the professional school level as well, readers would be interested in research that maps potential connections between newcomer status and academic performance during medical school or later measures of success, such as burnout rates.

I anticipate that the next new paper to come from this dataset, though, will make use of the survey data which played a secondary role in my work thus far. The surveys taken by 261 medical students included network data which allows for mapping of the social structure of entire cohorts. Interview data can then play the supporting role, providing detailed information about connections between classmates—who shares information with whom, how, and why. I was struck by how students from different backgrounds draw upon one another's unique strengths; there was the insider boyfriend who shared his dad's advice about specialty choice, but there was also the newcomer roommate who encouraged friends to exercise and take breaks from studying, and the nontraditional study partner who understood how to navigate adulthood more than less-experienced peers. I will be working with a team in the College of Medicine to make use

of this data next, and believe it could yield powerful insight into how students build their own social structure and knowledge-sharing pathways within the context of medical education, especially if paired with more longitudinal data as students proceed through their training.

5.4 IN CLOSING

Perhaps surprisingly, experiences like shadowing physicians or building mentorship relationships were not central to many students' trajectories into medicine (except, perhaps, as hurdles to clear during the application process). Instead, access to insider information about medical professions came from parents in medical professions or via peers with insider ties, and proved crucial in high school and college and during medical training itself. Stakeholders seeking to diversify the profession thus can begin with supporting any efforts to bring young people from different social backgrounds together—not only so that the newcomers become insiders, but so that each group can learn and benefit from one another.

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APPENDICES

APPENDIX 1: INTERVIEW PROTOCOL

Semi-structured Interview Guide

K-12 and Pre-Med Years

1. Walk me through: what inspired you to become a physician?
2. Did anyone encourage (or discourage) you before college to pursue a medical career?
3. How and from whom/where did you learn about the application process for medical school?
4. What was your family's view of your career choice?

Social Connections in Med School

1. How do you feel that you fit in with your classmates now (socially and academically), and has that changed over time?
2. Do you feel that you have made the type/number of social connections in your class that you had hoped to make?
3. Who are your mentors now, and do you have enough mentorship at this time?
4. How has your relationship with your family been since beginning medical school?

The Culture of Medicine

1. Do you feel like a balanced person now?
2. How would you describe the culture of medical school to an outsider?
3. Do you find that there is a sense of community in your cohort around certain traits or experiences?
4. To what extent do you identify as an insider or an outsider in the medical profession?
    1. Are you proud of being an outsider/insider? If you want to be an insider/outsider, what seems to be stopping you?
    2. For outsiders: Is there any sense of community among "outsiders"? How so?
5. How are you a different person since entering medical school?
    1. Is there anything about you that you feel the need to hide or minimize in the medical school context?
    2. What was the hardest challenge you have faced during medical school?
6. How is your confidence and stress in medical school relative to your peers?
    1. Do you believe that some peers have advantages over you? How so?
    2. Do you believe that you have some advantages over peers? How so?
7. How did your inspiration(s) for attending medical school shape your approach to your training? Did your inspiration confer any advantages or differences?
8. Does medicine feel like the mission you were meant to do or the job you chose?
9. If you could offer advice to your M1 self, what would you say?
    1. Has insider information played an important role for you?
    2. If you were mentoring a student who is underrepresented in medicine, what advice in particular would you give?

Looking Ahead

1. What are your long-term goals?
2. What are your current stressors? Are they in the short-term, long term, or in between?

APPENDIX 2: SURVEY QUESTIONNAIRE

This survey instrument was developed in collaboration with a team of colleagues studying the networks of medical students. Please do not use this survey without contacting the corresponding author, lillian.sims@uky.edu, for permission from each collaborator.

First: A few background questions about your initial interest in a medical career.

At what point in time did you decide you wanted to become a physician? (This is often a multi-year process, so think of the stage at which you determined that you were most likely to pursue a career as a physician instead of another career).

- ○ Before 9th grade
- ○ High school (grades 9-12)
- ○ Early college (years 1-2)
- ○ Late college (years 3-)
- ○ After graduating from college but without entering another profession (e.g., during graduate school, during part-time or short-term postcollege employment, etc.)
- ○ After graduating from college and first working in another profession
- ○ Other: _____

What factor(s) most inspired your initial interest in considering a medical career? Check the factor(s) which had the greatest influence on your choice to become a physician.

- ☐ Interest in STEM classes in high school or earlier
- ☐ Interest in STEM classes in college
- ☐ Family member(s) working or studying in a healthcare field
- ☐ Friend(s) interested in medical careers
- ☐ Experience as a patient or as a family member of a patient
- ☐ Volunteer experience in healthcare
- ☐ Work experience in healthcare
- ☐ Other: _____

Are any members of your immediate family either employed or studying in a healthcare field?

	Physician	Medical student	Other healthcare professional or student	Not in healthcare
Mother	☐	☐	☐	☐
Father	☐	☐	☐	☐
Any first sibling	☐	☐	☐	☐
Any second sibling	☐	☐	☐	☐
Current partner (e.g., spouse, girlfriend/boyfriend)	☐	☐	☐	☐
Former partner (e.g., ex-spouse, ex-girlfriend/boyfriend)	☐	☐	☐	☐
Grandparent	☐	☐	☐	☐
Other immediate family (guardian, etc.)	☐	☐	☐	☐

Page Break

In addition to immediate family, relationships with friends and mentors can shape exposure to a field. Before you applied to medical school, approximately how many of your close friends or peers were also planning to attend medical school or were already in medical school?

- ○ None
- ○ A few (1-3)
- ○ More than a few (4+)

Aside from any family members who are physicians, approximately how many physicians did you consider to be mentors before you applied to medical school?

- ○ None
- ○ A few (1-3)
- ○ More than a few (4+)

A social connection might mean a friend, a supportive peer, or an advisor. At this stage of your training, how would you rate your social connections in the medical profession?

	Less than Adequate	Adequate	More than Adequate
Connections to medical students in my cohort	○	○	○
Connections to medical students in later years (M2, M3, M4)	○	○	○
Connections to residents and other physicians	○	○	○

This research relates to mentorship. Are there topics or areas in which you feel that you need more mentorship at this time? Let us know:

- ○ I have sufficient mentorship at this time.
- ○ I would like more mentorship in general, but don't have specific topics I need mentorship on right now.
- ○ I would like more mentorship on the following topic(s): _____

Page Break

Aside from required meetings, approximately how often do you attend class lectures?

- ○ Never or almost never
- ○ Rarely
- ○ Occasionally
- ○ Often
- ○ Always or almost always

How often are you typically on your medical campus?

- ○ Daily
- ○ 2-3 times a week
- ○ Once a week
- ○ Other: _____

To what extent do you interact virtually with other members of your M1 cohort (GroupMe, Facebook, etc.)?

- ○ Daily
- ○ 2-3 times a week
- ○ Once a week
- ○ Never
- ○ Other: _____

In general, indicate to what degree you prefer to be alone (introverted) or in the company of others (extroverted)?

	1	2	3	4	5	6	7	
Introverted	○	○	○	○	○	○	○	Extroverted

Compared to your classmates, how would you rate your academic performance thus far in medical school?

- ○ Above average
- ○ Average
- ○ Below average

How does your academic performance in medical school compare to your expectations?

- ○ I'm doing better than I expected
- ○ I'm doing about as well as I expected
- ○ I'm not doing as well as I expected

Note to readers: following is a question set asking about students' network ties within their cohort. The sample below, a set of 10 students' names, was repeated in sections of 10 for the entirety of the cohort.

Note: this question set contains an alphabetical listing of all your first-year classmates structured over multiple pages. As you move down the list, check the corresponding box(es) of classmates who fall into one or more of these categories: (1) someone you knew before medical school; (2) someone you consider a friend; (3) someone who is a study partner; and (4) someone who has given you academic advice. Simply skip over any classmates for whom no response applies. As a reminder, your responses to these and all other questions are entirely confidential.

If helpful, feel free to log in to view your student directory for class photos if you aren't sure you recognize a name; you can use the "class year" or "campus" filters.

Group 1

	I knew this person before medical school	This person is a friend	This person is a study partner	This person has given me advice
Student 1	☐	☐	☐	☐
Student 2	☐	☐	☐	☐
Student 3	☐	☐	☐	☐
Student 4	☐	☐	☐	☐
Student 5	☐	☐	☐	☐
Student 6	☐	☐	☐	☐
Student 7	☐	☐	☐	☐
Student 8	☐	☐	☐	☐
Student 9	☐	☐	☐	☐
Student 10	☐	☐	☐	☐

Page Break

Please select the gender with which you identify:

- ○ Male
- ○ Female
- ○ Not listed / Prefer to self-identify: _____
- ○ Prefer not to answer

Please select the ethnicity(ies) with which you primarily identify:

- ☐ Asian or Asian American
- ☐ Black, African American, or African
- ☐ Caucasian
- ☐ Hispanic or Latinx
- ☐ Native American
- ☐ Pacific Islander
- ☐ Not listed / Prefer to self-identify: _____
- ☐ Prefer not to answer

Please select the location of your undergraduate institution, and if relevant, enter the name of the institution:

- [ ] [redacted: institution at which students attend medical school]
- [ ] Other university or college in [state]: _____
- [ ] University or college outside of [state]: _____

What was your undergraduate major?

_____

Would you consider your primary hometown rural, suburban, or urban?

- ○ Rural
- ○ Suburban
- ○ Urban

What type of high school did you primarily attend?

- ○ Public high school
- ○ Special program in a public high school (e.g., a Spanish Immersion Program, etc.)
- ○ Public magnet high school (e.g., [local example], etc.)
- ○ Public charter school
- ○ Private school
- ○ Home school
- ○ I'm not sure
- ○ Other: _____

Approximately how many college preparatory courses (e.g., advanced placement, dual credit, international baccalaureate, etc.), if any, did you take in high school?

- ○ None
- ○ 1-3
- ○ More than 3

Please check the boxes that indicate your parents' highest educational degrees earned:

	Did not graduate high school	Graduated high school but did not go to college	Started college but did not finish	Earned a 2 year (associate's) college degree	Earned a 4 year (BA/BS) college degree	Earned a graduate or professional college degree	I'm not sure
Mother/ Guardian 1	○	○	○	○	○	○	○
Father/ Guardian 2	○	○	○	○	○	○	○

APPENDIX 3: IRB APPROVAL

Note:
Year 1 data collection was approved via the same protocol;
the letter below allows for continuation of the study through Year 2.

University of Kentucky | Office of Research Integrity
IRB, RDRC

XP Continuation Review

Approval Ends:	IRB Number:
8/7/2020	47340

TO: Lillian Sims,
Educational Policy Studies and
PI phone #: 6012709471

PI email: Lillian.Sims@uky.edu

FROM: Chairperson/Vice Chairperson
Medical Institutional Review Board (IRB)

SUBJECT: Approval for Continuation

DATE: 8/8/2019

On 8/8/2019, the Medical Institutional Review Board approved your protocol entitled:

The Transition to Medical School: A Social Network Analysis of First-Year Medical Students

Approval is effective from 8/8/2019 until 8/7/2020 and extends to any consent/assent form, cover letter, and/or phone script. If applicable, the IRB approved consent/assent document(s) to be used when enrolling subjects can be found in the "All Attachments" menu item of your E-IRB application. [Note, subjects can only be enrolled using consent/assent forms which have a valid "IRB Approval" stamp unless special waiver has been obtained from the IRB.] Prior to the end of this period, you will be sent a Continuation Review (CR)/Administrative Annual Review (AAR) request which must be completed and submitted to the Office of Research Integrity so that the protocol can be reviewed and approved for the next period.

In implementing the research activities, you are responsible for complying with IRB decisions, conditions and requirements. The research procedures should be implemented as approved in the IRB protocol. It is the principal investigator's responsibility to ensure any changes planned for the research are submitted for review and approval by the IRB prior to implementation. Protocol changes made without prior IRB approval to eliminate apparent hazards to the subject(s) should be reported in writing immediately to the IRB. Furthermore, discontinuing a study or completion of a study is considered a change in the protocol's status and therefore the IRB should be promptly notified in writing.

For information describing investigator responsibilities after obtaining IRB approval, download and read the document "PI Guidance to Responsibilities, Qualifications, Records and Documentation of Human Subjects Research" available in the online Office of Research Integrity's IRB Survival Handbook. Additional information regarding IRB review, federal regulations, and institutional policies may be found through ORI's web site. If you have questions, need additional information, or would like a paper copy of the above mentioned document, contact the Office of Research Integrity at 859-257-9428.

APPENDIX 4: DATA COLLECTION OVERVIEW

Table 1. Data collection timeline.

Year	Class of 2022	Class of 2023
2018-2019: Pilot Year M1 Surveys	Cohort surveyed in winter of M1 year (72.6% response rate, n=122/168) *Surveys analyzed and used to develop interview protocol*	
M1 Interviews	All participants invited for follow-up interviews in spring of M1 year (22 complete interviews) *Interviews analyzed for potential themes; survey and interview protocols revised for second round*	—
2019-2020: Second Round Surveys M1 Surveys	—	Cohort surveyed in winter of M1 year (67.8% response rate, n=139/205) *Surveys analyzed and used to group participants for follow-up interviews*
2020-2021: Second Round Interviews M2/M3 Interviews	14 of initial 22 interviewees invited to interview a second time in winter of M3 year (all 14 complete interviews)	Participants invited group-by-group for follow-up interviews in winter of M2 year (58 complete interviews)
Total Participants	122 survey-takers 22 follow-up interviewees 14 second follow-up participants	139 survey-takers 58 follow-up interviewees

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