Following in Their Footsteps or Avoiding Their Mistakes? The Role of Older Siblings in Shaping College Decision Making

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Abstract: Inequality in access to resources when making consequential education and employment decisions contributes to economic stratification in educational attainment. Students rely on one such resource, their informal social networks, when making decisions about their postsecondary education, a decision that has profound impacts on future economic, demographic, and social outcomes. Given stratification in individual networks, their influence may play a role in growing educational and socioeconomic economic inequality. However, research has focused on the role of parents, or peers, with limited attention paid to siblings as a unique resource for students in their postsecondary decisions. Using longitudinal qualitative interviews with 36 high-achieving high school seniors from families with low incomes, I explore the unique role that older siblings play in shaping the postsecondary decision making of their younger siblings: what makes older sibling support meaningful? What might explain heterogeneity in the effect that siblings have on their younger siblings' pathways? The support provided by siblings is distinct based on three primary characteristics: the intensity of the relationship, and the internal and external relevance, or the fact the information shared is recent and personalized to the students' circumstances. I also explore heterogeneity in the relationship between siblings and student postsecondary outcomes.

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Students' decisions about what pathways to pursue after high school have profound impacts on their future economic, demographic, and social outcomes. These choices do not happen in a vacuum: where students grow up, their social networks and resources, their schools, and the policy and institutional contexts they are exposed to all shape their postsecondary choices and contribute to inequality in educational attainment. The reliance on informal social networks for information and decision-making strategies is a well-established source of inequality in educational attainment (Perna 2006). The role of parents is often emphasized while less attention is being paid to other members of students' family networks. Siblings are often used in research as a form of identification, used to isolate intergenerational mobility, parental investment, or to control for family circumstances. However, the unique role older siblings play in supporting their younger sibling's educational attainment is often underemphasized. Older siblings can serve as key bridges for information on the college application process between students and parents without college experience (Ceja 2006), and recent causal evidence highlights that siblings have a direct effect on students' college going and enrollment choice, influencing the college choices of their younger siblings (Altmejd et al. 2021). However, we know relatively little about this relationship, and what makes it distinct from other resources.

Students, particularly those from families with low incomes, rely on their informal social networks (families, friends, and peers) to navigate this complex and consequential decision (Alvarado 2021; Ceja 2006; Holland 2010). They often face several barriers to accessing higher education including academic preparation, and family support, accurate information about financial aid, or complexity of the application and financial aid processes (Attewell, Heil, and Reisel 2011; Cox 2016; Dynarski 2003; Page and Scott-Clayton 2016; Roderick, Coca, and Nagaoka 2011). All of these factors contribute to students from families with low incomes going to college and completing a four year degree at lower rates than their higher income peers, and more often attending institutions of a lower selectivity than their qualifications would allow (Bailey and Dynarski 2011; Chetty et al. 2020). While policy and institutional factors, as well as formal institutional networks such as teachers and school counselors, are important in shaping the choices students have available to them and their decision-making process (McDonough 1997; Stephan and Rosenbaum 2013), institutional agents often amplify, rather than reduce, existing inequities (McDonough 1997).

Students therefore rely on those they trust to help them make decisions, but not all students have access to comparable resources and support from their social networks in this process. Parents with knowledge of the college application and enrollment process are more equipped to help their children through the complex bureaucracy related to college enrollment (Lareau and Weininger 2008; Pfeffer 2008), and students whose parents have a college degree and students with greater economic resources are more likely to enroll in and complete college (Hout 2006; Bailey and Dynarski 2011; Pfeffer 2018).

In this paper, I use qualitative interviews with high-achieving high school students from families with low incomes to explore the unique role that older siblings play in shaping the postsecondary decision making

of their younger siblings: what makes the support of older siblings meaningful (both how they support, and whether or not that support resonates) and what might explain heterogeneity in the effect that siblings have on their younger siblings' pathways? Qualitative data are particularly well suited for capturing these heterogeneous networks that are meaningful in students' lives, as well as non-traditional family structures that may not show up in obvious ways in many quantitative data sets (for example, stepsiblings or half-siblings with different last names, or students who split their time between multiple households). The students in the interview sample are drawn from an intervention aimed at reducing economic inequality in postsecondary education attendance, the HAIL Scholarship study (Burland et al. forthcoming; Dynarski et al. 2021). Many policies aimed at reducing inequality in educational attainment, including the intervention that these students are sampled from, are targeted towards increasing college-going and completion among students from families with low incomes; therefore, understanding the resources that students from families with low incomes in particular use to make their decisions is crucial to adequately targeting policies to meet their needs. Further, understanding the supports students need to navigate this process could inform programs or policies aimed at providing more equitable institutional supports.

In the remainder of this paper, I will show that the support provided by siblings is distinct from other support, defined by three characteristics: (1) they are externally relevant to the current postsecondary landscape (recent and applicable to the rapidly changing postsecondary system), (2) internally relevant to the personal circumstances of the student, and (3) are delivered based on a long-term, high-intensity relationship. I outline how the support provided by siblings is often distinct from support provided by other key parts of a students' network, including parents, counselors, and peers. Further, I explore heterogeneity in the relationship's influence. I find that siblings' influence on students' decision making varies on several dimensions; primarily, how similar the student's and their sibling's identity align, whether the sibling's postsecondary experiences were positive or negative, and the closeness of their relationship. Regardless of how connected students feel to their siblings' postsecondary experience, having a sibling navigate postsecondary education before them leads to support through information, time, and material resource sharing that simplifies the process for the younger sibling to be able to achieve their goals with fewer roadblocks. In fact, many older siblings also feel an obligation to share the information they learned along the way to ensure their siblings do not make the same mistakes that they do. Students without older siblings receive information from other trusted sources, but often struggle to find resources that have the same impact as those provided by siblings.

I argue that the social capital accessed from sibling has distinct characteristics that make it unique to this relationship, providing resources and support that are otherwise difficult to obtain. I find that older siblings serve as a unique resource that contributes to the educational decision making of their younger siblings. While many policies and institutional factors play an important role in increasing college access,

awareness of the deep relationships that affect student decision-making is important for understanding patterns of educational attainment.

BACKGROUND

The decision of what path to pursue after high school is a challenging phase of a young person's life. The decision is highly complex, the outcomes uncertain, and, for many students, it is an experience that their parents are unable to fully help guide them through. Students face substantial uncertainty, even more so for students from families with low incomes. Students face financial risks, including both initial and unanticipated future costs (DeLuca et al. 2021; Goldrick-Rab 2016; Page and Scott-Clayton 2016). Additionally, they face constraints on time availability: while most students from families with low incomes recognize the potential value of a college degree for their future economic outcomes (Avery and Kane 2004), they often encounter personal restrictions that require them to move more quickly into financial stability (Holland and DeLuca 2016). Finally, students face personal risks to going away for school, potentially away from social networks and support systems (Armstrong and Hamilton 2013; Morton 2019). While human capital models of educational choice and status attainment models of educational stratification can explain some of the economic inequality in educational attainment, they often do not account for variation across groups in the ways students access information to determine what a "sensible and reasonable" path might be for them (McDonough 1997; Perna 2006).

One of the key ways that students navigate the uncertain and complex decision about what to do after high school, and taking the necessary steps to achieve it, is through their social supports (Roderick et al. 2011; Stephan and Rosenbaum 2013). Students with college-educated parents are more likely themselves to attend and complete postsecondary education than those whose parents have not received a bachelor's degree (Pfeffer 2008). While students from middle- to upper-income households are often surrounded by informal college discussions throughout their lives, both at home, in their communities and networks, and at schools; this is less likely to be the case for students from low-income households (Lareau and Weininger 2008). Lareau and Weininger highlight that for many middle- and upper-class families, educational decisions are often a "family affair," with parents arranging everything from college visits to conversations with family friends who have gone to particular colleges or degree programs (Lareau and Weininger 2008). Parents with knowledge of the system, namely, those parents who have themselves completed a college education, are able to employ that knowledge to help their children navigate the necessary steps (Hamilton 2016; Pfeffer 2008). Parents use this "strategic knowledge" (Pfeffer 2008) to help their children achieve at least the same level of education that they themselves completed, if not surpass their own educational outcomes. However, many parents with college experience themselves might have a narrow perspective, or struggle to provide guidance on the current complexities of rapidly changing system of higher education. And while all parents may rely on institutional resources to provide recent and applicable information about the postsecondary decision-making

process, parents who do not have a college degree especially rely on the school to provide those supports, with varying success (Lareau and Weininger 2008).

Students rely on their social capital, or their network that enables and communicates resources, information, and access to forms of cultural and human capital, to navigate complex decision. This may be particularly relevant for consequential decisions about postsecondary education (Holland 2010; McDonough 1997). Schools could be sites for developing a more equitable process that relies less on the household economic and educational stratification, and more on the goals of students. However, schools in fact often magnify these existing differences in cultural capital, by assuming students come to them already with a given level of knowledge and skill about the process (McDonough 1997). In fact, the amount of cultural capital at the school level, specifically parent involvement at the school through discussions with the student about their education and parent-initiated school involvement overall at the school, is itself associated with inequalities in educational attainment, regardless of an individual's personal resources (Perna and Titus 2004). In a study of a college-coaching program, Stephan and Rosenbaum find that one-on-one, long-term trusting relationships with students centered around college advising that is proactive, rather than re-active can be successful at improving college-going outcomes among those least likely to attend a four-year school (Stephan and Rosenbaum 2013). This happens specifically through improving completion of key actions along the way between a student's desire to go to college, and actual enrollment, namely: college applications and financial aid form completion (Stephan and Rosenbaum 2013). However, this is a challenging model to scale given the resource constraints on counselors. Counselors are assigned to many students and hold more responsibilities than just college advising. Further, many counseling relationships rely on student-initiated meetings, leaving students less likely to reach out without the support they need. Importantly, the capacity of counselors is related to the socioeconomic status at the school, meaning those schools most in need of this one-on-one, personalized coaching model are less likely to have the capacity to scale it without outside resources (McDonough 1997; Stephan and Rosenbaum 2013). Students need direct guidance on both the postsecondary decision as well as the steps to get there; and this often comes from long-term, trusted relationships and college-specific advising, which is often not accessible to students at school.

Social capital is often thought of as beneficial primarily to students from more resourced social classes, who have access to wealthier and closed networks that provide resources and information for educational attainment. This primarily refers to parents and the connections parents are able to broker between students and institutional resources (Coleman 1988; Holland 2010; Perna 2006). However, social capital is also employed to share resources and support one another within communities underserved by institutions, in particular communities of color, immigrant communities, and low-income communities. In a qualitative study of primarily African American or Black students from families with low incomes, Holland finds that the students did access social capital from their family, friends, and school personnel, relying on these resources for information and support; however, without families and communities who were highly

educated, students lacked informal, personalized opportunities to learn about college. Importantly, because of relatively closed social networks both for them and their more privileged peers, students were not aware of the limitations of the resources and information they did have access to. This led to inequality in college going, despite similar college aspirations (Holland 2010).

Similarly, research among Latina/o high school students found that students leaned on advice from their personal networks, often choosing to apply to or enroll at schools where they already had a connection, and that this could be both good and bad (Pérez and McDonough 2008). Attending college is, as some theorize, a very costly "purchase" of human capital; however, full information about that purchase is not available to students until after they have already enrolled (Perna 2006; Winston 1999). This is especially consequential for students who are the first in their family to go to college, and therefore do not necessarily have parent advice to draw on. In these cases, reliance on the experiences of those close to you may be especially consequential, allowing students to witness someone else "trying out" the experience ahead of them. However, this can have negative consequences. Resources or experiences shared by personal networks are influenced both by the individuals experience as well as their relationship with the person they are sharing the information with (Pérez and McDonough 2008), which can lead to incomplete and biased information. This is relevant to all parts of a students' network that may influence their decision making; however, may be most consequential for resources that are given more weight. Therefore, both the relative influence of the sibling relationship, in reference to other resources, as well as the quality of the support provided by the sibling, may be consequential for inequality.

Inequality in social capital and networks contribute to stratification in college attendance and completion. First-generation college students in particular often rely heavily on their social networks, especially given limitations in college advising available at high schools that serve low-income or otherwise populations traditionally excluded from higher education (Holland 2010). Having close college-bound friends does positively impact college going; however, its impact varies by race and gender (Alvarado 2021). Siblings might have a particular impact on educational stratification. However, siblings have been underexamined as a mechanism contributing to inequality in postsecondary educational attainment. Sibling effects have been a staple of quantitative research on social stratification and economics to document family dynamics. Siblings have been used for identification using sibling fixed effects to control for family circumstances, and to identify intergenerational mobility through sibling correlations. Finally, there is an extensive literature in economics on the effects of birth order timing on child outcomes including academic achievement, earnings, and noncognitive outcomes (e.g. Black, Grönqvist, and Öckert 2018). The literature on birth order timing has found evidence that eldest siblings have higher assessed cognitive and noncognitive outcomes, and that the effect of birth order varies by gender of the eldest sibling. Some identified mechanisms for this birth order effect include environmental factors and parental investment (Black et al. 2018). Despite this research using siblings for identification, whether siblings themselves serve as a mechanism through which intergenerational

mobility occurs is understudied. Research on educational decision making has largely combined siblings with family more broadly, focusing primarily on the role of parents in this process. There are a few studies that suggest focusing on siblings as a distinct mechanism contributing to inequality in postsecondary educational attainment is worthwhile.

For the younger siblings and first-generation college students, older siblings serve as a personalized source of information on the college experience, and can serve as key sources of information for students navigating the process (Ceja 2006). There is a small amount of causal evidence that younger siblings are more likely to enroll in college and choose a higher quality school if older siblings do it first (Altmejd et al. 2021). The authors speculate this is because siblings can serve as a "higher-touch" and sustained intervention, which is particularly important for families without parental knowledge of the college process. However, reliance on social networks and cultural capital is not always positive (Holland 2010). First-generation students and students from families with low incomes often lack the financial resources or the cultural capital to approach college as a time for exploration; and therefore, approach the postsecondary decision more in terms of career training, constraining their options (Armstrong and Hamilton 2013; Holland and DeLuca 2016). While some of the literature on postsecondary decision making characterizes these types of decisions as "irrational," that does not mean these choices are not thoughtful or meaningful. In cases when students do not do this, and do not have family resources as a safety net, the risks of going away to college may increase (Armstrong and Hamilton 2013; Hamilton 2016).

Inequality in educational attainment is driven by a variety of factors including parental resources, institutional resources, financial support, preparation and aspirations, and unequal access to cultural social capital. Successful resource and support systems must be able to effectively deliver key information and support to students to help them evaluate the fit of a given course of action for their individual goals. In asking what unique role siblings play in supporting their younger siblings through the postsecondary decision-making process (both in whether and where to pursue postsecondary education), this paper advances our understanding of both the way students make decisions, and contributions of the social network to growing educational stratification. There is clear evidence that social networks matter for decision making, and that closed social networks contribute social reproduction and growing inequality; however, whether or not siblings have a distinct influence in this process is not obvious. On the one hand, it is possible that given the totality of a student's network, sibling support is a redundant resource. It is possible that peer and school relationships matter much more than a student's older sibling, or that there is nothing new that the older sibling provides beyond what their parents have already done. However, it is also possible that siblings matter a lot to a student given their proximity to the students' individual circumstances, above and beyond what peers, school staff, and parents can provide. In this case, siblings may be a distinct mechanism through which social reproduction occurs, and inequality grows. Without direct attention to the older sibling as a resource, it is impossible to distinguish the broad family effects from individual participants in the decision-making

process. By focusing on siblings as a distinct resource, separate from family, school, or peer support, this paper contributes to our understanding of the ways in which social networks contribute to social reproduction, educational inequality, and economic stratification.

DATA AND METHODS

Research Context

This project is positioned within a randomized, controlled trial (RCT) that is aimed at learning how to increase the enrollment of students from families with low incomes at selective institutions (Dynarski, et al. 2021). The HAIL Scholarship Study, started in 2015, evaluates the effects of a personalized, no-strings-attached, four-year guaranteed scholarship offer to the University of Michigan (UM), the flagship and only highly-selective in-state institution. The scholarship is offered to students while they are still in high school, based on administrative data both on students' economic need and academic achievement, with the goal of increasing both application and enrollment at the University of Michigan. Students in the intervention sample were in one of three treatment groups, students who received the HAIL Scholarship, students who received personalized encouragement and information about a university-wide policy (the Go Blue Guarantee) to meet full financial need for enrolled students (this intervention group is called the "Go Blue Encouragement"). The remaining students were in the control group. The RCT finds that students who receive the HAIL scholarship are twice as likely to apply and enroll at the University of Michigan than students in the control group, and that these students were otherwise likely to attend a less selective four-year or two-year institution (Burland et al. forthcoming; Dynarski et al. 2021). The students in my interview sample were selected from the sample of students eligible for the HAIL Scholarship study from the class of 2020. These students are all from families with low incomes, identified by their eligibility for free- or reduced- price lunch at school, and are considered high-achieving based on a combination of high school grades and SAT score, meeting the qualifications for the HAIL Scholarship set by the University of Michigan.

Interview Sample

Students were selected for the interview recruitment sample using a stratified random sample of the HAIL Scholarship study sample. I used random selection within experimental randomization blocks to both preserve the integrity of the experimental design, and as a part of an effort in the broader qualitative study to speak to processes and mechanisms of decision making.[1] Appendix A has more detail on how students were sampled for participation in the qualitative study. Using addresses provided by the Michigan Department of

[1] In the broader qualitative study, our team interviewed students and parents in two additional HAIL Scholarship study cohorts. Each interview sample was selected using stratified random sampling within experimental randomization blocks. Purposive oversampling of certain experimental blocks was done in response to heterogeneous treatment effects by region and urbanicity found in the experiment. More detail on sample selection is in Appendix A, and on efforts to preserve experimental integrity in Appendix B.

Education at the end of a students' junior year of high school, these students were mailed a letter inviting them to participate in February of their senior year of high school. Students were recruited using this method several times over the course of their senior year. First round interviews were conducted between February and July of their senior year.[2] Most students were interviewed across two time periods (1) during their senior year of high school, as they made their decisions (and after the treatment group students received the HAIL scholarship); and (2) during their first year after high school.[3]

My final interview sample consisted of 36 students. Table 1 describes the characteristics of the students interviewed. Region and urbanicity are based on the location of the students' school as of the end of 11th grade and defined by the Center for Educational Performance and Information (CEPI). A student's SAT score and grade average are from the SAT test they took in 11th grade in school. The test is mandatory as the 11th grade assessment; therefore, most students in a Michigan public school take the test at this time. The sample is mostly White[4] (n=23) and female (n=23).[5] Students in the interview sample have an average SAT score of 1241, by design since the cutoff for the HAIL Scholarship sample was between 1100 and 1150, and most report an A or A+ grade average in their high school classes. Students were spread across rural, urban, and suburban areas across the state, mostly in the southeast, west, or central Michigan; however, there were three students who lived in northern Michigan.

In addition to these characteristics provided by CEPI/MDE, I also have college outcomes provided both from the Michigan Department of Education's SAT records and the University of Michigan Office of Enrollment Management admissions data. About half of the students sent their SAT scores to UM (n=15) and fewer sent their SAT scores to MSU (n=11) when they took the SATs in school. While I did not have this information prior to the interview, 25 students in the interview sample ended up applying to UM, 17 were admitted, and 11 matriculated.

Of the 36 students interviewed, 22 (61%) have an older sibling who has lived with them and is ahead of them in school, and 16 (44%) have a sibling who went to a four-year college.[6] There is no agreed upon way

[2] All 36 students were interviewed at least once. The first 12 students were interviewed in person prior to the COVID-19 pandemic. I followed up with 8 of them in May and June to check in about the ways in which COVID-19 might be affecting their plans for after high school. I then conducted follow ups with 29 of the 36 students in winter 2021.
[3] There was a two month pause due to COVID-19. The first 12 interviews were conducted in person at a location of their choice (e.g. their home, coffee shop, public library). Remaining interviews were conducted by phone or Zoom.
[4] I intentionally capitalize White here and throughout when describing a racial group. There is no widespread agreement on this; however, as Eve Ewing writes, "[Whiteness] is a specific social category that confers identifiable and measurable social benefits" and should be capitalize it to not "contribute to its seeming neutrality" (Ewing 2020).
[5] Administrative data are used when describing the full recruited sample, as these are the data that I have for both those interviewed and not interviewed (although using identity measures like race and sex from administrative data has its flaws, they are unfortunately all I have prior to the interview). However, when discussing student stories in the text of the paper, I report the gender and race that each student self-identified using an open-ended survey question.
[6] Here I have only included students who have a sibling who lived with them at any point in time, and who is ahead of them in school because those are two factors that make a sibling distinct from another peer. This excludes two students who have older siblings that have never lived with them, one student who has twin older sisters in the same grade, and

to define "first-generation" college students (e.g. Redford, Hoyer, and Ralph 2017; Toutkoushian, Stollberg, and Slaton 2018). While 18 students (50%) have at least one parent with a bachelor's degree, only 15 (42%) have a parent with a bachelor's degree from an institution in the United States. And only 13 (36%) have a parent who lives with them for at least 50% of the time that has a bachelor's degree. No one in my sample lives full time with two parents with a bachelor's degree.[7] Additionally, 12 students (30%) have a parent who is a first-generation immigrant to the United States. Most students in my sample are planning to go to college immediately after high school, about 86% (31 out of 36).

I am sensitive to the fact that my interviews only represent the stories of those who opted in: my position as a researcher at an academic institution may have shaped both who chose to respond to the interview call and how students approached the interview. While the interview guide was developed in a way to not privilege conversation about college specifically, and the recruitment materials emphasized that we wanted to talk to students regardless of their plans for after high school, the position I am coming from may have affected students' reactions to the questions. I do not presume that the results of my study will be representative of all high school students in Michigan, or even all students in the HAIL Scholarship sample. However, the stories from my respondents do uncover important patterns that I will highlight in this paper.

Interview Methods

Students were interviewed using a semi-structured narrative interview protocol (see DeLuca, Clampet-Lundquist, and Edin (2016) for more on this method). This ensured the same topics are covered by each student but allows the student to lead the conversation. Students received $50 for participation in the interview, which ranged in length from 82 minutes to 159 minutes. Topics covered include students' family circumstances, disruptions in their schooling, K-12 school experience, career goals, college application processes, and knowledge of college costs and college quality, and their application process. Students are asked to list all the places they applied, or plan to apply, and to weigh the pros and cons of each place. The second interview asks students to describe their post-secondary decision-making processes (potential barriers, alternatives they considered, tradeoffs they perceived among options), list all of their admissions decisions, describe each of their financial aid packages, and learn how their transition went. Interviews are transcribed by a trained transcription professional.

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one student who has an older brother still in school receiving transition only services. I consider anyone the student refers to as their sibling, including step- and half-siblings.

[7] I specify whether the student has a parent with a bachelor's degree from an institution in the United States, because one of the key ways parents can be helpful in navigating the complex decision-making process is through strategic knowledge of the system (Pfeffer 2008; Hamilton 2016), which one acquires through navigating the system. While parents with bachelor's degrees outside the United States may be equipped to help in other ways, they are still at a disadvantage in helping students navigate the complex search, application, and financial aid process in the United States.

The analysis was iterative. Though I started from a semi-structured interview guide with key guiding research questions, initial thematic coding was done without a structured codebook. After thematic analysis, I developed an analytically focused coding scheme that allowed me to code each transcript using ATLAS.ti. Finally, by comparing coded segments across participants, as well as building a student profile within each participant, I was able to maintain the complexity of each students' story, while also identifying patterns across the participants in my sample. Identifying themes and coding for those identified themes will always be subjective to the researchers conducting the study and another researcher may have picked up on different things in the analysis or chosen to code the data in a different way. However, to improve on the trustworthiness of the analysis, I use several different methods including triangulation using administrative data, and cross-checking analysis with respondents during the second interview. The names used throughout are pseudonyms that are selected by the participants themselves to tell their story, to protect the participants' confidentiality. Race and gender reported through the findings are self-identified by the participant in an open-ended demographic survey collected at the end of the interview. I have largely preserved students' words in the quotes presented; however, at times I have trimmed quotes for brevity or to preserve students' confidentiality.[8]

FINDINGS

What Makes Older Sibling Support Meaningful?

As students make decisions about what to pursue after finishing high school (both whether to go to college or not, as well as where and how), they receive many signals about what they should pursue after high school, and often this information can be conflicting or even contradictory. All of my participants revealed that when they are searching for information about what to do and how to achieve it, they often begin by seeking out information from those close to them. These are individuals who they have regular contact with and whose information on the postsecondary landscape is recent and applicable to their needs and experiences. Siblings have a unique position to provide students with resources on their postsecondary decisions; however, the literature has often focused on other informational resources such as parents and counselors.

While a few of the students I interviewed did have a parent or a school counselor who provided continuous, deep support through the process, this was not the norm. For most students, students reported that their parents and school counselors did provide more surface level help with logistics as well as moral support through the process, but not more in-depth decision-making support that many students felt they needed. Parents, while they may know their child very well, including their goals and priorities, they may lack relevant information to support students as they navigate their postsecondary decision. For example, Alfanzo

[8] When quotes are trimmed or edited for any reason, I have indicated this using square brackets.

is a student from southeast Michigan whose parents immigrated to the US from Iraq explains, "It was kind of hard for them to like tell us what to do, in regard to like college and like high school and stuff because they [did not] really live college and high school here, they lived it over in Iraq." Even for students whose parents did attend college, they often saw their parent's of knowledge to be outdated and less applicable to their own circumstances. Christina is White a student from a small, rural community in northern Michigan. While her mom did go to college, Christina described her mom's knowledge about college to be outdated and no longer very useful for her. Asked if anyone at home helped her through the application and decision-making process, she shared, "No, just because like nobody- like it's been so long since my mom went to college that like everything had changed, like since she experienced it, and then, my dad didn't go to college, so he didn't know anything." In addition to parents and counselors, some students also get support from their peers. Like parents, peers can provide support and share resources, but lack the relevant and complete information due to having not yet gone through the process.

Except for a few counselors, students largely described their counselors and teachers as providing surface-level advice and guidance, without providing any personalized assistance. Consistent with the literature on college counseling, many students told me that their counselors are spread thin and unable to provide the kind of long-term and personalized advising that many students need to successfully navigate the college search process. Lily, a White student from rural northern Michigan attends a small school of under 100 students. She explains that her counselor wears many hats and is ill equipped to provide personalized college advising, since that is not her primary role, "I guess the thing is she […] did all kind of counseling. Since she was such a broad counselor, she didn't necessarily help with a lot of specifics. She was just the one person for everything. It was hard because I feel like what she specialized in wasn't what a lot of kids might have needed or I needed."

In summary, the parent relationship has the intensity required for personalized information and advice; however, parents often lack relevant information on the process. Counselors, on the other hand, may have more recent information on the postsecondary education landscape; however, their relationships with students lack the intensity necessary to provide personalized and ongoing support through the process. In contrast, the relationship between siblings provides on different dimensions. Compared to the other sources of information in a students' life, siblings often can provide support on all of the dimensions that make for a strong resource: the relationship is frequently a long-term, trusting relationship (relationship intensity); siblings often have more recent information (external relevance); and unlike peers or teachers, siblings come from the same home environment and financial circumstances, making their experiences more likely to be directly applicable to a students' life (internal relevance).

Relationship Intensity

The long-term nature of the sibling relationship, as well as the regular exposure to each other's lives, is one aspect of the sibling relationship that makes it unique. The students in my sample highlighted some key ways they learned from their older siblings simply by being there as their siblings went through it. For example, Britney is a student from southeast Michigan. Her parents immigrated to the United States when she was quite young, and she has three older siblings. Her older sisters had to navigate the postsecondary system with very little guidance from their parents; however, her sisters went on to become a dentist and a doctor. Her brother is finishing at the UM Ann Arbor and is starting in medical school. Britney also aspires to be a doctor, and had a whole plan mapped out for when and how she would apply, and what she needed to do while in college to achieve her goals. When asked how she learned everything she needed to formulate a plan, she exclaimed, "from my siblings of course." She then went on to explain, "The whole family, it's when they were applying, it's like the whole family was applying because we were also involved in their application. I learned from them and hopefully, when it's my time, they can help me out too." Just having that long-term exposure to their experiences gave her key pieces of information that helped make her journey easier and helped her formulate a plan early on. She explained that her siblings were her key source of information on college going. When she was making decisions, they would all talk about it over dinner, and her siblings helped her reassure her parents that she was ready to move away from home and go to the University of Michigan Ann Arbor. When asked who was the most influential in her college decision-making, she said it was her siblings, "Just because I live with just my siblings, just because I look up to them the most."

Internal Relevance

Similarly, unlike peers or other adults in their lives, siblings often have a deeper understanding of a student's circumstances, having gone through it themselves. They often face similar constraints in their postsecondary decisions, including financial circumstances and parental expectations. In some ways, the older sibling may serve as a preview for the younger sibling, allowing them to see how a certain pathway might play out for them. For Sally, a White student from southeast Michigan, the process of learning from her brother's experience unfolded less through direct and advice and guidance, but instead she learned by from his example. Sally's mom was a single mom who has struggled financially throughout their lives. Sally explained that college was never a question for her, that her mom was happy with whatever path she chose in life, as long as it started with a college education. In the end, Sally was choosing between going away to the flagship UM Ann Arbor campus or attending her local branch campus and living at home. She explained that the University of Michigan was always her top choice, because she "just heard so many like good things about it. And like I've visited my brother a couple of times and I just really liked it." However, she was concerned about moving away from home and starting college. She said that her brother, who attends UM Ann Arbor, and his friends that he connected her with, put her at ease: "I've talked to like a few people that already in

college and they say it's like so much fun, so much better than just being at home all the time. I've talked to like my brother about it."

Her brother was able to ease her concerns about moving away from home and encourage her that she really could handle being away at school – that it would be fun! In addition to leading the way through the college experience, having her brother at the same school also conferred other material benefits, including having access to a car on campus and having his apartment to go to when she and her friends wanted somewhere to hang out. While Sally said that her brother was not very helpful when she was making her list or filling out her college applications, these small and less obvious, ways of leading the way made a big difference in Sally's postsecondary decision.

Unlike the reassurance that Sally's brother provided her to follow a similar path, Jeffrey learned which possible roadblocks to avoid by watching his sister struggle on journey to a college degree. Jeffrey is a student from a rural town in south-central Michigan. His older sister attends community college about an hour away. She did not start there, and her experience figuring out what she wants to do influenced his plans. Coming from similar financial circumstances and experiences, he wanted to avoid the challenges she faced. He shared:

> So, I guess just the fact that is the longer I can stay out of paying student loans, the better. My sister is in college so, because she couldn't decide what major she wanted to be. So, without knowing that she switch to a major and the loans that she has to pay also factored into me wanting to know what I wanted to do before, that way, I don't, I want to say make the same mistake, but do the same, go down the same path, knowing that financially it was not easy.

Both Sally and Jeffrey recognized themselves in their siblings' experiences and watched to see how it might be for them. For Sally, she realized that her brother was happy and successful where he was, and that convinced her that she could also make that pathway work. For Jeffrey, knowing the experience that his sister had changed the way he approached his college decision.

External Relevance

Finally, siblings have more recent information about college and the process to get there. Having recently gone through it helps students both get more recent information than they may get from a parent, and also helps students to narrow down the large volume of information they receive about their postsecondary options. May considers her aunt to be like a sister to her, closer to her age than her parents are and living right nearby they have had an extended, close-knit relationships that in many ways resembles that of a sibling. May explains that her parents, who did not go to college, could not provide much other than moral support in the process. However, her aunt, having more recently gone through the college search process herself, was able to share more accurate information. May said, "Most helpful was my aunt. She would help me with the schools, with – learn about what to look for in schools. She would help me edit my essays and like how to write them more personal to myself […] because she had experience as well like that.

She was like an older sister guiding me with that." Further, both Britney and Jeffrey only really considered applying to schools that their siblings had attended. Consistent with other research on students from first-generation households going through the college application process (Ceja, 2006), I do see evidence that older siblings also play an important role in teaching parents about the process so that they can better help the younger siblings. Many students highlighted that their parents were better able to help them fill out financial aid forms and look at college options because they had already gone through it with the older siblings. This eases some of the burden on the younger siblings as they navigate this complex system of administrative bureaucracy.

The intensity of the relationship, and the internal and external relevance of the information shared are characteristics that define the distinct support that siblings provide as a resource for their younger siblings. Unlike other resources, siblings provide a more concrete picture of what the student might expect if they pursue a particular path. Further, students receive practical help from their siblings who have gone through the college search process before them, using information that is more current than other adults in a students' life. In addition to concrete advice and guidance, older siblings often model this process for their younger siblings, going through the motions and testing out a pathway before their younger siblings make their own choices. However, this does not happen evenly across my participants. Similarly, quantitative research has found substantial heterogeneity in the relationship between siblings' college outcomes. What might explain this heterogeneity?

Following in their Footsteps? Heterogeneity in Sibling Influence

Prior research on the causal impact of older siblings on their younger siblings' college trajectories has found heterogeneity in the effect. This is not surprising given that sibling relationship dynamics vary considerably, as do their lived experiences. Importantly, siblings are just one voice in a sea of voices telling students what they should or should not do; therefore, the weight a student puts on their siblings' advice or experience varies considerably across students. However, here I unpack several dimensions that may shape the heterogeneity in the relationship that we see. How much a student takes from their siblings' experience varies across a few primary dimensions. The first dimension of sibling influence is how "similar" or "dissimilar" a student feels to their sibling's identity. The more connected a student feels to the way their sibling experiences the world, the more likely the student is to see their siblings' outcomes as possible, or even likely, outcomes for themselves. The second dimension is related to how close the siblings are. Of course, families are all different. In families where siblings are particularly close, spending time together and engaging in ongoing communication, the influence that the older sibling has over the students' journey is more pronounced. Finally, the influence of siblings, in particular the direction of the influence, varies based on the student's perception of their older siblings' experience as positive or negative. This may be an evaluation of only pieces of a siblings' experience, and certain parts of their siblings' journey may be more or less salient

than others. For example, a student may see that their sibling picked a good career path (positive), but their sibling started at a school that was not a good fit for them (negative).

There are three primary ways that a student's pathway can follow that of their sibling. They can either reproduce the same pathway their sibling took, diverge completely from the path of their sibling, or they can modify their sibling's experience, choosing to learn from the roadblocks their siblings faced or experiences they do not want to replicate. Having their sibling as a resource allows students to see, prior to experiencing it themselves, what might lie ahead if they follow a certain path, allowing them to make a more informed choice about their next steps. The common threads documenting why this relationship is a distinct resource (the intensity of the relationship, internal and external relevance) show up as common threads throughout these heterogeneous responses to sibling support and information. In the next three sections, I will walk through examples of each of these possible responses to older siblings' experiences. Then, I will conclude with highlighting commonalities; that is, the support that all students receive from older siblings who are involved in their decision making.

Students Who Reproduce Their Siblings' Pathway

Students who consider themselves to be very similar to their sibling, and whose sibling had a positive experience, may choose to *reproduce* the pathway that their sibling took through postsecondary education. In some cases, this is obvious, and their siblings' influence is particularly salient throughout the interview. In other cases, this is more subtle, with no salient point at which the student chose to take the same path; however, the student still follows the same steps and strives for the same goals.

Ciara is a White student from a rural area in northern Michigan. Her mom does have a college degree, and she has two half-brothers who are older than she is. Despite their age gap, Ciara looks up to her brothers as role models, and leans on them for advice and guidance. Even before college was a consideration for her, Ciara's brothers shaped her schooling experience. She participated in the same sports that they did, learned from them which classes to take AP versus dual enrollment, which electives to avoid, and which teachers were helpful and less helpful. They even shaped how she approached school throughout her life. As Ciara put it, "I put a high premium, I guess, on my academics because my brothers did really well. And so I like made it a point of kind of doing either equal or better to them." Given the intensity of their relationship, she was able to watch closely what they did and decide how she might follow them, seeking out advice and guidance they could provide because they had already gone through school themselves. When it came to her college decision, she again relied on their experiences. Her mom thought that she would thrive at a smaller school, while she thought she could make it at a larger university, like the state's two largest public universities: Michigan State University and the University of Michigan. After receiving her acceptance letters, she was ultimately deciding between the University of Michigan and a smaller school, she turned to her brothers' guidance on whether attending a larger school would be something she could handle. Not only did

she rely on them to help her understand what the experiences might be, she valued their input on how she might do at each of these places:

> My middle brother was - he thought I would be able to handle it just fine. And it was mainly about whether or not I should apply to be in the residential college[9]. And he - and I asked him like why he didn't. And he said `probably because I just all wrapped up in like getting the application done and excited about potentially going there, and I didn't really think about that.' And he thought that it was a good opportunity.

Ciara placed a premium on her brother's experiences when deciding what to pursue. And not only did she end up on a similar path, but she sought their advice when deciding what to do – knowing they would understand what might work for her.

Sometimes, however, following in siblings' footsteps happens in more subtle ways. Lily has an older brother. While he has already finished college, and they did not always have a close relationship, she now talks to him almost every day. Her brother attended school for computer engineering, and now works as a computer engineer. Lily wants to go to school and study computer science, although she has had no opportunity to explore computer science in her very small high school. I asked Lily how she got interested in coding and computer science. She explained, "So, my brother actually got a bachelor's degree in computer engineering and that's where like definitely a lot of my interest has stemmed." She went on to explain that her brother invited her to her first hackathon while he was in college and she was in high school, and that's where her interest in coding was first initiated and sparked her interest in pursuing programming in her future career.

> I've attended like several hackathons which is like an event where you make a project with code. And I like taught myself how to build websites. And I've just always had interest in just like making programs and – especially nowadays, like it's such a demanding job. Like there's so many places that are looking for it because like technology is rising so much. And it's a really good paying job. You don't have to get more than a bachelor's degree.

Without the exposure to her brother, she may not have had this pre-college experience with coding or computer science. Her brother also showed her what it takes to get a job in the field. This experience, while less explicit than Ciara's, shaped her college considerations. While some students chose to or ended up reproducing their sibling's path, other students did choose to learn from their siblings, and modify their path to better meet their needs.

Students Who Modify Siblings Pathways to Better Support their Goals

Students who see themselves as similar to their siblings, but whose siblings they perceive to have had a negative experience or negative outcomes, may choose to learn from their siblings' mistakes in an attempt to more successfully achieve their goals. For these students, they see the outcome that their sibling ended up

[9] A residential college is a smaller living-learning community intended to create a smaller school feel within a larger college campus (see https://lsa.umich.edu/rc/prospective-students.html).

with from a given action or experience as the outcome they would likely experience as well. This is because they see themselves as similar to their sibling, so they expect to experience a certain pathway in a similar way. This includes expectations of similar financial aid offers, social experience, academic challenges, among other things. When students' siblings have a negative experience, they choose to make modifications to their sibling's pathway to avoid the mistakes they saw their siblings make or to avoid outcomes that they or their siblings perceive to be negative. This observation and modification is possible only because of intensity of a sibling relationship that allows students to regularly communicate throughout their siblings' experience, or at least, watch the experience unfold firsthand. Avery is a Hispanic student from west-central Michigan. Her parents immigrated to the United States before she was born, and she will be a first-generation college student. She has several older siblings, including two sisters and an older brother. She and her sister are particularly close. When asked to define what success means to her, Avery described her sister: the independence her sister has established is a goal that Avery has for her life. While her sister's current life is successful, according to Avery, none of her siblings had an easy journey through postsecondary education. She explained,

> I've had my brother he did [a four-year] then it became too much, but he dropped out and then my other sister did [a four-year] so she dropped out and then she switched to community college. […] and then my other sister she also did community College she was saying that like you can literally get the same benefit of community college from like a university, but you're just in for two years.

Most of what Avery knows about the cost of college comes from her siblings' experiences. Her sister switched from a four-year school to a community college because the cost was prohibitive. Avery explained what she knows about how much college costs: "I don't know how much exactly college classes are. I do know they're a lot […], because my sister she did [a four-year], but she was only able to last like a semester a year before she had to switch out to community college, because it was just way too much money for her to handle or like for her to pay off." With this in mind, Avery decided that no matter what, she wanted to start at a two-year school and then transfer to get her bachelor's degree.

When she was in high school, Avery's sister was able to provide personalized guidance about the pathway she believed would be a good fit for Avery. Her sister suggested she enroll in her high school's early middle college program, which allows students to begin taking college classes in their junior year, and graduate in five years with both a high school diploma and an associate's degree. While Avery was hesitant at first, her sister ultimately convinced her that it was a good idea:

> The main person who helped me like decide though was just like my sister, she really pushed me into it, and she kept mentoring me about it, and so yeah. It wasn't really anything like, it wasn't my friends who persuaded me to do it, it was just more my sister who was saying that like, in the long run it's going to help you out so much more financially and stuff so, I guess that kind of pushed me to do the program.

Avery was influenced by her siblings' negative experiences with cost and debt, as well as their positive experiences in community college. Through their guidance and advice, and learning from their experiences,

she was able to choose a path that would help her achieve her goals while avoiding the financial risks that her siblings incurred along the way.

Other students may choose to modify their siblings' pathway, even if their sibling's experience was positive, because they do not consider themselves to be similar to their sibling and have different priorities. When students see themselves as less similar to their sibling, they may want to avoid certain pathways or experiences that their sibling prioritized; however, they do still learn from their siblings' experiences in meaningful ways. This includes practical knowledge about the application process, such as how to fill out financial aid paperwork, scholarships to look for, or characteristics of an academic program to prioritize, as well as colleges to look at or consider. Sully is the daughter of Korean immigrants from southeast Michigan. Neither of her parents went to college; however, her sister who is two years older does attend the University of Michigan. Sully has two sisters, one older and one younger. While Sully was around 9 or 10 years old, her family moved around a few times while her parents switched jobs. She explained that from her perspective, these moves hit her at a particularly important phase in her social development that they impacted her more than her sisters:

> We were in different parts of life, because my sister, she's two years older than me and she's, my little sister is four years younger. So, I don't think the moves impacted my little sister as much, because she was kindergarten or through a big chunk of it and then my older sister, she already had settled into where she wants to stand in a social setting. So, I was, I don't know. I don't want to assume anything, but I feel I was impacted by the social ramifications the most, so I think it's made me much more introverted. I feel I value social interactions less than my sisters do.

Given their different personalities and interests in the college social life, Sully believes she might need something different in a college experience.

While Sully believes her personality and priorities are different from her sister, she still used her sister and her sister's experience to evaluate where she might be happiest. When choosing where to apply, she applied to the three schools that her sister applied to, and then added a school that her sister recommended to her: a highly selective institution out of state that has a reputation for high quality science programs. Given her career interests, her sister suggested that another highly-selective institution out of state that has a strong reputation in the field Sully is interested in, might be a good fit for her. Ultimately, Sully was deciding between the University of Michigan and the other highly selective institution, and turned to her sisters' experience to help her make a decision:

> I basically weighed my perception of how freshman year went for her because she's a junior right now […]. So, like seeing from it, I don't know, I feel she let herself go a little too much in terms of her grades, but seeing that and then, […] judging from my perception of how U of M has been for her and then also seeing from an outsider's perspective what other students are on campus are experiencing. I have a few friends from church and pastors from high school, who also went to U of M and seeing them is basic, is how I sussed out how U of M might be for me.

In addition to her concerns about the social life at UM, Sully also worried about relying on her sister too much if they went to the same place. Her sister has taken on a lot of responsibilities at home, including

helping her parents navigate the layers of bureaucracy that exist in the United States in a language other than their native one. When it came to her college essays and her financial aid application, it was Sully's sister who guided her through the process. She explained that at UM, she feels like she would continue to rely on her sister: "I would have had the space to grow, I guess and learn new things, because even from a little child, I feel I depended on my sister a lot. I wouldn't be really willing to go out of my way to meet other people and establish something for myself, if I knew that she would be there." Ultimately, she decided that UM, seen through the eyes of her sister, "wouldn't really fit" with her personality, and that a smaller highly selective institution out of state would be a better fit. She said, "I feel a lot of people who are similar to me go there a work hard, play a little less hard thing and it's smaller." Because her sister went before her, she had time to process and think about how her goals and personality fit within a given institutional culture. Without that experience of her sister, she may have had to do more trial and error to figure out what would work for her, but she was instead able to process that information while still in high school with enough time to make a stronger first choice.

Students Who Diverge From the Experiences of their Siblings

Instead of reproducing or modifying the paths that their siblings took, other students choose to follow diverging paths from those that came before them. These students do not relate to their siblings or see themselves as different from their siblings. They choose to chart a different path because they have different goals, desire a different outcome, or perceive their siblings' experience as negative. Further, these students may pick up on other signals from other people or institutions that better align with their priorities or goals. In some cases, this may mean that students choose to go to college, even if no one in their family has gone before them. In other cases, they may see their older sibling as the one who chose a divergent path from the rest of their family or community and choose to diverge from their siblings' example to stay on a similar path as others in their community, rather than following in their siblings' footsteps. One example of this diverging pathway is Dorothy, a White student from west-central Michigan. Dorothy has several older half siblings who live with her and her mom. Her mom did not finish high school, and none of her older half-siblings went to college before her. While her father did finish college, he was not in her life until very recently and therefore Dorothy did not turn to him for guidance on the process.

Despite her siblings not continuing their education after high school, Dorothy has always wanted to go to college. She wants to achieve career goals that are different from what her family members have achieved, explaining, "my family, they're not like […] that fortunate when it comes to jobs, so like I've always used them as a basis, like I want to be better." She goes on to share more about her diverging goals and priorities:

> I'm just the first one out on my mom's side to like even think about going to college or graduating high school. But in my head, like, I don't know, I've always thought like I want to be that graduate.

> […] So yeah, I just want to be proud of myself. Like, I want to set higher standards for myself, and my family do and I want them to be proud too.

Instead of relying on her sibling experiences and advice, Dorothy leaned on her high school counselor and her peer network of college-bound friends for advice and support in the process. Further, her older brother, who never went to college himself, still provided some amount of material support through the process. In addition to encouraging her goals, her brother would grab mail she received from colleges and slip it under her door, texting her about it so that she could avoid conversations with her less supportive sister. He also helped by brainstorming with her and editing her college essays as she prepared her applications.

The attempt at diverging from a sibling's pathway is not always straightforward. In some cases, students tried to diverge from the pathways paved for them by their siblings; however, faced similar barriers and constraints that ultimately led them down a similar path. Nineteen is a Hispanic student from rural central Michigan. He intended to go to college, and even applied to a few. He has an older sister and a younger sister. His older sister lives at home, works at the local grocery store, and has taken some classes at the community college on and off for years. Neither of his parents went to college, and he wanted to start off at a four-year school rather than do what his sister did and enroll at the local community college. Unfortunately, when he was accepted to just a few colleges, none of the financial aid packages he was offered would allow him to afford school without support from his family, who was unable to provide him with any financial support. He felt as though he no longer had choices, and chose to instead follow in the footsteps of his sister, enrolled in a few classes at the local community college and got a job where she worked. He ultimately did not finish the semester at the community college and is working to regroup and figure out how to apply again next year. He still intends to diverge from the path laid before him; however, for now, he is still figuring things out. Nineteen is an example of students who may want to take a different path, in part because they do not consider their siblings path the right one for them but end up with similar choices due to the similar constraints and barriers that siblings face.

Common Threads: Support from Siblings Regardless of Path

Heterogeneity in sibling influence leads students into one of the three possible paths: either reproducing, modifying, or diverging from their siblings' experience; however, regardless of the relationship between students and their older siblings, all of the students in my sample took *something* from their older siblings' experiences. Rae's considers herself to be quite different than her brother. Her brother followed friends up to Michigan Tech, but ultimately realized he did not want to study what was offered there dropped out to move back home, not wanting to waste money on a degree that would not get him where he wanted to go. Rae, however, is very sure on what she wants to pursue for a career, and knows that academically she will have the right options at Michigan Tech. While her brother ultimately did not stay enrolled, he was able to reassure her socially. Rae's brother helped reassure her that the community of students there is very open

minded and accepting, and she therefore would not be ostracized for her sexuality, something she was nervous about in moving away from home. Rae's brother was able to provide real advice that is personalized to Rae's unique concerns, based on his recent experience with that institution. Further, given their close relationship, Rae knew that they were different enough that she would likely be able to achieve a different outcome.

Even students who are charting their own path still received things like practical advice about applications and financial aid, career and major guidance, help editing essays, and moral and emotional support. For example, many students also received small pieces of advice and guidance from older siblings who supported their diverging goals. Annie, a White student from rural eastern Michigan, learned from her brother who just graduated college how to evaluate whether her intended program of study is accredited at a given university and how to research job placement rates. This is advice he was able to provide both due to their ongoing communication, his knowledge of her goals and priorities, and his recent experience navigating the postsecondary education system. Jeffrey, a White student from rural central Michigan, was able to live with his sister for free while attending community college, allowing him to avoid taking on debt at least for his first two years of school. He was concerned about debt primarily due to his sister's experience, explaining "So, I guess just the fact that is the longer I can stay out of paying student loans, the better. My sister is in college so, because she couldn't decide what major she wanted to be. So, without knowing that she switch to a major and the loans that she has to pay also factored into me wanting to know what I wanted to do before, that way, I don't, I want to say make the same mistake, but do the same, go down the same path, knowing that financially it was not easy." His sister also shared her experience at various colleges, to inform his transfer process after he finishes two years at community college. In many cases siblings were able to provide this simple but important guidance and support that made it easier for their younger siblings to make decisions.

Thus far, I have presented findings on the way that younger siblings discuss the role of their older sibling in their postsecondary decision. However, my participants who have younger siblings also share their perspective on their role as an older sibling and resource to their younger siblings. Many of my participants who are themselves older siblings shared the sense of responsibility they feel in shepherding the success of their younger siblings. This includes advising siblings on things like what classes to take, and what activities to participate in, to passing on knowledge they wish they knew when they were searching for colleges. In some cases, it also included advising their parents on what they should help their younger siblings with when the time comes. Marian is an Asian student from west-central Michigan. Her parents immigrated to the United States just before she was born and had little knowledge of the institutional structure of higher education in the United States. They consistently emphasized going to a "good college" without much concrete guidance on what that should look like. Her mom would not take her to visit colleges before she applied, suggesting she just apply to the well-known schools and then pick the best one she gets into. She only got to visit

Michigan State University once she was accepted and was selected to interview for a scholarship, which was eye opening for her. She described this experience:

> I'm like after like going to MSU and seeing everything. I'm like, `Mom, you should have let me go to a college.' I'm like telling her [my brother] has to go to at least one college before he gets to choose everything, because I had no baseline of what everything looks like in a college. […] For me, I think it was better to see everything, like how big it was like up close, because MSU is like really big and everything. They have a lot of stuff there. And I like, "That's really big compared to the map."

Because she felt as though her college search experience would have been better had her mom let her visit schools ahead of time, this is one key piece of advice that she is sharing with her brother to help in his college preparation. She said, "And then that's one thing I would like to say to my brother, this thing, "You have to go to a college before you like choose one. And like visit one." She felt obligated to advise her brother as he prepares to apply to college, and to share with her mom what would have made her experience better, to make sure that he has a better experience selecting a college than he did. She explained this role she's taken on, "I'm the first one to go to college. So, I'm the one like guiding my brother through all of this. Like telling him like what classes like he should take." As the first one to experience college, she is the one to advise her brother on what the process is like.

The older siblings in my sample also provide a framework to consider the policy implications of these findings. In particular, the guidance and information they highlight that they were missing in the process, and what they felt compelled to share with their younger siblings, can help us design equitable institutional supports. For example, Jalyn, a Black student from southeast Michigan with one younger brother explained that being a first-generation college student, she had few people to turn to for advice and guidance. She felt as though her high school did not prepare them for the whole range of options available to them, including likely financial aid at schools that may look expensive (high sticker price) but offer a lot of need-based financial aid (low new price). In the year following her high school graduation, she worked with her former high school counselor to provide guidance for students early on in their college search, providing them with information about their options as well as a personal perspective on the experience. This research question itself is deserving of its own separate analysis, certainly both siblings have important stories to tell about the importance of this relationship; however, Jalyn's experience poses an important question about how to effectively design policies aimed at increasing college access equitably.

CONCLUSION

Students' social networks serve as important resources in their decisions about postsecondary education. However, the influence of social networks is also a key source of inequality in educational attainment. The literature often focuses on the role of parents and peers, as well as institutional resources provided in school. The unique role of siblings as a resource, distinct from parents and peers, is understudied. There is initial evidence that siblings matter (Altmejd et al. 2021; Ceja 2006). In this paper I unpacked the

characteristics that distinguish the resources siblings provide, as well as the heterogeneity in their influence. I documented the distinct characteristics that define siblings as a resource for their younger siblings as they navigate their postsecondary education decisions. That is, it is a long-term, high intensity relationship, and resources that are both externally relevant to the current postsecondary landscape, and internally relevant to the personal circumstances of the student. This leads to support from siblings in the form of information, time investment, material resource sharing, as well as leading by example and showing their younger siblings one possible pathway (and the resulting outcomes). Notably, some sources of heterogeneity come from the similarity of the student to their older sibling, the closeness of their relationship, and whether the older siblings' experience is perceived as positive or negative which leads students to follow different pathways using sibling support and resources. Regardless of the pathway, using siblings as a resource simplifies the process for younger siblings to navigate in order to achieve their goals.

This paper serves to provide a characterization of this relationship, something previously missing in the literature. It documents what makes this relationship distinct from other resources that students access, why these characteristics are important for supporting student decision making, and what might be contributing to the heterogeneity in the influence of siblings. I show that the social capital available to students as they make their postsecondary decisions comes from both tapping their networks for support and resources, as well as having the opportunity to observe those around them directly going through the process, namely siblings. I find support for the conclusions made by Holland (2010) about the importance of acknowledging social capital within disadvantaged groups, and of the potential importance of closed or small social networks to educational inequality. Given limited social resources in a student's network, reliance on siblings, while necessary for students to make decisions, may exacerbate existing inequalities given the narrow experiences of those individuals. The identified characteristics of the support provided by older siblings should guide policies aimed at helping students make postsecondary decisions. Further, families are complex, and these complex networks may provide support beyond the parents or family economic circumstances generally. Siblings, as well as step- and half-siblings, provide important support in the transition to postsecondary education and decisions about educational attainment. Siblings may be a key mechanism contributing to persistent intergenerational economic transmission, or in pushing forward intergenerational mobility. By studying only parents or considering only the role of parent educational or economic circumstances in contributing to inequality, we ignore an important source of heterogeneity in the lives of students from families with low incomes.

Future work should use a larger sample size to look systematically at when this relationship matters most, and when it is less consequential. This would help us better understand the policy implications of the sibling relationship: in what context is the experience and influence of siblings reduced through institutional resources that could reduce inequality? Additionally, in this analysis I consider the role of all individuals that the student considers to be an older sibling. However, future research would benefit from understanding

whether there is a difference in the role of siblings by family complexity: that is, do half- and step-sibling relationships exhibit similar or different qualities? While in my sample I document this as a clear relationship between students and their older siblings, in the absence of a sibling, a non-sibling tie may be able to provide similar support if the students' relationship with them has similar characteristics. This was the case for May, who received a lot of support from her aunt in the college decision making process. As described in the findings, May characterized her relationship with her aunt as *similar to* a sibling relationship, and her relationship with her aunt clearly displayed many of the same characteristics of a sibling relationship. This suggests that while these relationship characteristics may be most readily displayed in the sibling dynamic, they can replicated in non-sibling relationships in certain circumstances. Finally, this paper focused almost exclusively on the perspective of the younger sibling. Understanding the perspective of the older sibling serving as this resource for their younger siblings would be a valuable contribution to this literature.

In one direct next step to this analysis, I am working on a sibling link in the administrative data to be able to directly speak to policy spillovers, both from the HAIL Scholarship as well as other interventions. This will help link the mechanisms discussed here to quantitative evaluation in the entire population, speaking directly to the policy implications of this relationship dynamic. In this qualitative evaluation, I show that older siblings can have profound influence over the postsecondary paths that their younger siblings pursue due to their unique relationship and support characteristics. The support provided by this relationship in the educational decision making process varies considerably depending on the siblings' experiences, and the characteristics of their relationship. The experiences that shape siblings' influence can be both positive and negative. That is, negative experiences of the older sibling are further compounded as they shape the decisions of the younger sibling. Alternatively, interventions that positively influence the older siblings' experience may pass on to the younger sibling. Therefore, positive interventions may have spillovers beyond their sample, as older siblings pass on their positive experience to their younger siblings. Qualitative research allows us to understand the "black box" driving the effects of interventions, and understand mechanisms resulting in policy spillover effects. Beyond policy spillovers, this work can inform the development of policies that provide the necessary support needed to guide large, complex, and consequential decisions. The characteristics that make sibling support so distinctly meaningful should contribute to making institutional supports for postsecondary decision making more robust to the needs of students. Beyond college access policies, these influential factors may extend to the take-up of other social supports. In order to appropriately target public policies, and assess their impact, it is essential to understand the complexity of the resources that students access as they navigate their postsecondary decision.

Table 1. Sample Characteristics of Students Interviewed compared to those Selected for Recruitment

	Interviewed		Selected for Sample	
Characteristic	Number	Proportion	Number	Proportion
Region				
Outside Southeast MI	22	0.61	42	0.64
Southeast	14	0.39	24	0.36
Urbanicity				
Town or Rural	14	0.39	28	0.42
City	8	0.22	24	0.36
Suburban	14	0.39	14	0.21
Student Demographics				
Female	23	0.64	38	0.58
Male	13	0.36	28	0.42
Black	5	0.14	7	0.11
Asian American	5	0.14	6	0.09
Hispanic	4	0.11	10	0.15
White	23	0.63	47	0.71
American Indian, Native Hawaiian, or Alaskan Native	*	*	5	0.08
Student Academics				
Grade Average: A+ or A	22	0.61	58	0.88
Avg. SAT Composite Score	1241.11		1253.64	
HAIL Study Treatment Status				
Control Group Student	12	0.33	22	0.33
Student Received HAIL Scholarship	12	0.33	22	0.33
Student Received Go Blue Encouragement	12	0.33	22	0.33
Number of students	36		66	

Notes: Table reports information from administrative data, not information self-reported in the interview; therefore, demographics may differ slightly from what is reported in the findings. Race and ethnicity are not mutually exclusive categories so they may not add up to the total number of interviews.
Source: (Michigan Department of Education 2022; University of Michigan Office of Enrollment Management 2022)

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Appendix A: Sample Selection and Response Rate

The students selected for the sample are all from families with low incomes, they qualify for free- or reduced- price lunch at school, and are considered high-achieving, based on a combination of high school grades and SAT score. These students were randomly sampled from the HAIL Scholarship sample, meaning all meet the qualifications for the scholarship as set by the University of Michigan. I randomly selected 66 total students from two of the four experimental strata: students from cities in southeast Michigan (where UM is located), and students who lived in rural areas outside of southeast Michigan. I oversampled rural students based on evidence from the HAIL scholarship study that this second group are least likely to apply to UM at baseline and are mostly likely to have their application and enrollment behavior changed by treatment, and the students from cities in the southeast Michigan are at the other extreme, more likely to apply at baseline and therefore less likely to be moved by treatment (Dynarski et al. 2021).

In April 2020, due to low response rate among the initial sample, I selected a nearest-neighbor matched sample for those students who had not yet responded to the call for participants. These "matches" replaced original sample members. This is to ensure adequate range on key sample characteristics and experiences, to ensure I was hearing stories from not only a select group of students. I conducted a nearest neighbor match in Stata for all those that had not yet been in contact as of April 2020. The goal of this was to replace the unresponsive sample members, but increase the likelihood of getting students more "like" the students in the original sample that were unresponsive. Each sample member was matched with their "nearest neighbor" using the program "mahapick" in Stata (which creates up to four "matches" for each sample member, and scores them based on closeness) and "mahauniqe" (which selects one unique match for each sample member) programs in Stata. This takes the nearest unique match for a student, ensuring that no "match" is paired with two additional sample members. When there's a tie, it selects randomly. Here are the criteria used to determine the "nearest neighbor": (1) Participants must be an exact match on: region, urbanicity, HAIL treatment status, gender, race category. (2) Participants need to be a "close" match on: SAT score, gpa category, distance to UM, number of HAIL students in their school.

I removed two participants from the study prior to the scheduling of the interview due to ethical concerns related to COVID-19 that arose over the course of recruitment that led me to stop recruiting those students and parents. Additionally, I removed four participants from the sample due to bad addresses that resulted in the return of all letters sent, including the final letter which was sent by certified mail to ensure its arrival.[10] In total, I interviewed 36 students out of a reachable sample of 62, a 58% response rate. While lower than I would have liked, I do provide an analysis in Table A1 below on those who did not respond to the call

[10] These students do not appear to be substantially different from the interviewed sample of students. There were four students who received a HAIL Scholarship and two who were in the control group, they were evenly spread across racial groups, were split between suburban and urban areas, and had similar average SAT scores to the interviewed group.

for participants so we can see how they differ from those that I did interview. In the results, I will address how this limitation may have biased the results of the study. Table A1 below describes the original sample members, comparing those who did not respond to those who did. Students in the HAIL treatment group, female students, and students in the southeast were more likely to respond. However, looking at average SAT scores and average distance to UM, the "yes" and "no" groups look similar. Table A2 shows the matched sample compared to the "no" responses from the first group. By design, they look the same on gender, race, strata (SE/urban v. non-SE/non-urban), and treatment status. They're also very similar on average SAT score, distance from UM, and GPA category.

Table A1. Characteristics of Sample Selected for Interview Recruitment and Overall HAIL Sample

	Selected for Sample		Overall HAIL Sample
Characteristic	Number	Proportion	Proportion
Region			
Outside Southeast MI	42	0.64	0.66
Southeast	24	0.36	0.34
Urbanicity			
Town or Rural	28	0.42	0.43
City	24	0.36	0.16
Suburban	14	0.21	0.41
Student Demographics			
Female	38	0.58	0.55
Male	28	0.42	0.45
Black	7	0.11	0.07
Asian American	6	0.09	0.11
Hispanic	10	0.15	0.07
White	47	0.71	0.80
American Indian, Native Hawaiian, or Alaskan Native	5	0.08	0.03
Student Academics			
Grade Average: A+ or A	58	0.88	0.83
Avg. SAT Composite Score	1254		1269
HAIL Study Treatment Status			
Control Group Student	22	0.33	0.34
Student Received HAIL Scholarship	22	0.33	0.33
Student Received Go Blue Encouragement	22	0.33	0.33
Number of students	66		1,796

Notes: Table reports information from administrative data. Selected for sample are those randomly selected to be recruited for interviews. The overall HAIL sample is the experimental sample that these students were selected from. Race and ethnicity are not mutually exclusive categories so they may not add up to the total number of interviews.
Source: (Michigan Department of Education 2022)

Table A2. Characteristics of Participants and non-responses

	Contact Made (as of April 2020)			
	No		**Yes**	
Treatment				
Control	17	33%	5	33%
HAIL	15	29%	7	47%
GBG	19	37%	3	20%
Strata				
SE urban	17	33%	7	
non-SE non-urban	34	67%	8	
Gender				
Male	24	47%	4	27%
Female	27	53%	11	73%
Race				
White / Asian	37	73%	9	60%
Black	3	6%	2	13%
Other	11	22%	4	27%
GPA Category				
A+	27	53%	11	73%
A	16	31%	4	27%
A-	6	12%	0	0%
B+	2	4%	0	0%
Average SAT	1263	--	1222	--
Distance from UM (miles)	85	--	93	--
N	51		15	

Notes: Table reports sample numbers that were used to decide to conduct a nearest-neighbor matching process to select additional sample members for recruitment. Students who had not yet reached out for an interview as of April 2020 were included in the match process.
Source: (Michigan Department of Education 2022)

Table A2. Matched Sample Characteristics

	Original – nonresponse	**Matched Sample**
Treatment		
Control	17	17
HAIL	15	15
GBG	18	18
Strata		
SE urban	16	16
non-SE non-urban	34	34
Student Characteristics		
Male	24	24
Female	26	26
White / Asian	37	37
Black	2	2
Other race	11	11
GPA Category		
A+	26	23
A	16	20
A-	6	6
B+	2	1
Average SAT	1264	1244
Distance from UM (miles)	86	88
N	50	50

Notes: The first column represents the characteristics of students who had not responded to our invitation to participate in an interview. The second column represents the matched sample, those students selected for interview recruitment based on the nearest-neighbor matching. The procedure forced an exact match on treatment status, strata, sex, and race. Nearest match on academic criteria and distance from UM.
Source: (Michigan Department of Education 2022)

Appendix B. Testing for interaction between qualitative and experimental samples

This qualitative work was part of an ongoing experiment looking to evaluate not only short term, but also long-term outcomes. Therefore, we took additional steps to both ensure we were maintaining the integrity of the experimental design. This is described in depth in the sampling design. We also took steps to evaluate, post-hoc, whether our interviews had any impact on experimental effects.

Experimental Sample Balance, Pre-Interview

To make sure the experimental sample remained balanced, prior to contacting the interview sample, I ran our experimental balance tests with two added indicators: "Selected for interview sample" which is a 1 for the 66 students randomly selected to be in the qualitative sample, and an indicator for "Total targeted for interview", which is a 1 for the 116 students who are either in that original sample, or part of the matched samples (selected based on the nearest neighbor matching described in Appendix A). Table B1 shows the balance table with these indicators included. Both qualitative sample indicators are balanced, and the overall F-test for joint significance shows overall balance. Results separately by region are consistent with these results. The balance tables can be compared with Appendix Table 1 in Burland et al. (forthcoming), which shows that the experimental sample is balanced after randomization.

Post-Interview Evaluation of Interaction Between Interview and Experimental Results

After interviews were completed, I evaluated whether including the interview sample impacted the experimental results. First, I included an indicator for "was interviewed" and "was contacted for interview" in the balance analysis. Table B2 shows the balance table, including these indicators. The sample is still balanced with these indicators included. Finally, because interview sample selection was conducted at the student-level, I also show student-level characteristics by treatment in Table B3. This corresponds to Appendix Table 2 in Burland et al. (forthcoming).

Table B4 has the original treatment effects for this analysis (Burland et al. forthcoming). Table B5 shows the main effects for this cohort, including an indicator for "was interviewed," and then an indicator for "was contacted for interview." The treatment effects shift only slightly, by approximately 0.001-0.002. Finally, we conducted robustness checks to see if we dropped students interviewed completely, did it change our results. We find that the treatment effects are robust to dropping these students completely.

Table B1. Pre-Interview Experimental Sample Balance Check

Characteristic	(1) Control	(2) HAIL	(3) GB Encour.	(1) vs. (2) P-value	(1) vs. (3) P-value	(2) vs. (3) P-value	Joint F-test P-value
Pred. prob. of highly selective college attendance	0.13	0.13	0.13	0.81	0.58	0.43	0.71
	(0.13)	(0.13)	(0.13)				
School in UP	0.15	0.18	0.15	0.52	1.00	0.52	0.76
	(0.36)	(0.38)	(0.36)				
Town/rural school	0.53	0.53	0.52	1.00	0.78	0.77	0.95
	(0.50)	(0.50)	(0.50)				
Suburban school	0.35	0.35	0.36	1.00	0.78	0.77	0.95
	(0.48)	(0.48)	(0.48)				
Distance of school from UM (miles)	98.9	104.1	97.5	0.55	0.85	0.39	0.68
	(86.74)	(86.65)	(75.65)				
UM application rate of school, class of 2015	0.07	0.07	0.06	0.89	0.60	0.56	0.81
	(0.08)	(0.10)	(0.09)				
Average ACT score of school, class of 2015	19.96	19.92	19.89	0.85	0.74	0.92	0.94
	(1.85)	(2.06)	(2.07)				
Proportion of sample students with A or A+ GPA	0.86	0.87	0.84	0.74	0.47	0.30	0.56
	(0.24)	(0.22)	(0.26)				
Proportion of sample students with A-, B+, or B GPA	0.14	0.13	0.16	0.68	0.52	0.29	0.57
	(0.24)	(0.22)	(0.26)				
Average SAT of sample students	1260	1264	1262	0.55	0.86	0.65	0.83
	(71.14)	(72.77)	(61.83)				
Proportion female	0.56	0.55	0.57	0.71	0.87	0.59	0.86
	(0.35)	(0.36)	(0.34)				
Proportion under-represented minority	0.17	0.15	0.18	0.59	0.63	0.31	0.59
	(0.28)	(0.27)	(0.29)				
Proportion eligible for free lunch	0.80	0.81	0.79	0.70	0.71	0.43	0.74
	(0.28)	(0.25)	(0.28)				
Average number of sample students	3.8	3.7	3.7	0.79	0.76	0.96	0.95
	(3.50)	(3.19)	(3.51)				
Selected for Qualitative Sample	0.02	0.01	0.01	0.44	0.33	0.87	0.62
	(0.12)	(0.07)	(0.05)				
Overall F-test p-value				1.00	1.00	0.93	
Number of schools	159	159	159	318	318	318	477
Number of students	610	595	591	1,205	1,201	1,186	1,796

Notes: Compare this with Appendix Table 1 in Burland et al (forthcoming). All analyses conducted at the school level. P-values for each pair of treatment arms are from a t-test of the coefficient on treatment status from a regression of the characteristic on treatment and strata dummies. The joint F-test p-value for each characteristic is from a joint significance test of the coefficients on treatment dummies from a regression of the characteristic on treatment and strata dummies, run on all treatment arms. For each pair of treatment arms, the overall F-test p-value is from a joint significance test predicting treatment based on the characteristics listed here, excluding the summary index, as well as strata dummies. Standard deviations in parentheses. All regressions use robust standard errors. We rerandomized to achieve balance within region on all listed school characteristics, except the summary index and the proportion eligible for free lunch. Summary index calculated from parameters of an OLS regression estimating the relationship between observable characteristics and a binary indicator for attending a college as competitive as the University of Michigan. "Under-represented minority" includes all students who are Black, Hispanic, American Indian, or Native Hawaiian or Pacific Islander.
Source: (Michigan Department of Education 2022; University of Michigan Office of Enrollment Management 2022)

Table B2. Post-Interview Experimental Sample Balance Check

Characteristic	(1) Control	(2) HAIL	(3) GB Encour.	(1) vs. (2) P-value	(1) vs. (3) P-value	(2) vs. (3) P-value	Joint F-test P-value
Pred. prob. of highly selective college attendance	0.13	0.13	0.13	0.81	0.58	0.43	0.71
	(0.13)	(0.13)	(0.13)				
School in UP	0.15	0.18	0.15	0.52	1.00	0.52	0.76
	(0.36)	(0.38)	(0.36)				
Town/rural school	0.53	0.53	0.52	1.00	0.78	0.77	0.95
	(0.50)	(0.50)	(0.50)				
Suburban school	0.35	0.35	0.36	1.00	0.78	0.77	0.95
	(0.48)	(0.48)	(0.48)				
Distance of school from UM (miles)	98.9	104.1	97.5	0.55	0.85	0.39	0.68
	(86.74)	(86.65)	(75.65)				
UM application rate of school, class of 2015	0.07	0.07	0.06	0.89	0.60	0.56	0.81
	(0.08)	(0.10)	(0.09)				
Average ACT score of school, class of 2015	19.96	19.92	19.89	0.85	0.74	0.92	0.94
	(1.85)	(2.06)	(2.07)				
Proportion of sample students with A or A+ GPA	0.86	0.87	0.84	0.74	0.47	0.30	0.56
	(0.24)	(0.22)	(0.26)				
Proportion of sample students with A-, B+, or B GPA	0.14	0.13	0.16	0.68	0.52	0.29	0.57
	(0.24)	(0.22)	(0.26)				
Average SAT of sample students	1260	1264	1262	0.55	0.86	0.65	0.83
	(71.14)	(72.77)	(61.83)				
Proportion female	0.56	0.55	0.57	0.71	0.87	0.59	0.86
	(0.35)	(0.36)	(0.34)				
Proportion under-represented minority	0.17	0.15	0.18	0.59	0.63	0.31	0.59
	(0.28)	(0.27)	(0.29)				
Proportion eligible for free lunch	0.80	0.81	0.79	0.70	0.71	0.43	0.74
	(0.28)	(0.25)	(0.28)				
Average number of sample students	3.8	3.7	3.7	0.79	0.76	0.96	0.95
	(3.50)	(3.19)	(3.51)				
Participated in an Interview	0.02	0.02	0.02	0.41	0.91	0.44	0.66
	(0.09)	(0.09)	(0.07)				
Contacted for Interview	0.05	0.07	0.05	0.12	0.91	0.20	0.28
	(0.15)	(0.19)	(0.14)				
Overall F-test p-value				1.00	1.00	0.93	
Number of schools	159	159	159	318	318	318	477
Number of students	610	595	591	1,205	1,201	1,186	1,796

Notes: Compare this with Appendix Table 1 in Burland et al (forthcoming). All analyses conducted at the school level. P-values for each pair of treatment arms are from a t-test of the coefficient on treatment status from a regression of the characteristic on treatment and strata dummies. The joint F-test p-value for each characteristic is from a joint significance test of the coefficients on treatment dummies from a regression of the characteristic on treatment and strata dummies, run on all treatment arms. For each pair of treatment arms, the overall F-test p-value is from a joint significance test predicting treatment based on the characteristics listed here, excluding the summary index, as well as strata dummies. Standard deviations in parentheses. All regressions use robust standard errors. We rerandomized to achieve balance within region on all listed school characteristics, except the summary index and the proportion eligible for free lunch. Summary index calculated from parameters of an OLS regression estimating the relationship between observable characteristics and a binary indicator for attending a college as competitive as the University of Michigan. "Under-represented minority" includes all students who are Black, Hispanic, American Indian, or Native Hawaiian or Pacific Islander.
Source: (Michigan Department of Education 2022; University of Michigan Office of Enrollment Management 2022)

Table B3. Post-Interview, Student-level Applicant Characteristics by Treatment Arm

Characteristic	Control	HAIL	GB Encour.	Control vs. HAIL P-value	Control vs. GBE P-value	HAIL vs. GBE P-value
Pred. prob. of highly selective college attendance	0.23	0.16	0.19	0.00	0.05	0.29
School in UP	0.07	0.14	0.07	0.07	0.77	0.10
Town/rural school	0.31	0.37	0.38	0.55	0.16	0.38
Suburban school	0.44	0.43	0.34	0.31	0.02	0.33
Distance of school from UM (miles)	78.0	89.8	73.3	0.24	0.67	0.08
UM application rate of school, class of 2015	0.11	0.08	0.11	0.34	0.76	0.53
Average ACT score of school, class of 2015	20.64	20.49	20.41	0.72	0.47	0.93
A or A+ GPA	0.90	0.87	0.89	0.22	0.70	0.52
A-, B+, or B GPA	0.10	0.13	0.10	0.25	0.78	0.48
SAT	1309	1285	1289	0.01	0.02	0.63
Female	0.54	0.55	0.55	0.94	0.79	0.93
Under-represented minority	0.18	0.15	0.18	0.53	0.97	0.66
Eligible for free lunch	0.83	0.76	0.81	0.05	0.64	0.24
Average number of sample students at school	7.6	6.6	7.5	0.51	0.86	0.65
Participated in an Interview	0.03	0.03	0.02	0.43	0.66	0.14
Contacted for Interview	0.08	0.06	0.06	0.36	0.80	0.22
Overall F-test p-value				0.00	0.02	0.00
Application rate	0.38	0.63	0.46			
Number of students	229	373	269			

Notes: Compare to Appendix Table 2 in Burland et al. (forthcoming). All analyses conducted at the student level. P-values for each pair of treatment arms are from a t-test of the coefficient on treatment status from a regression of the characteristic on treatment and strata dummies. The joint F-test p-value for each characteristic is from a joint significance test of the coefficients on treatment dummies from a regression of the characteristic on treatment and strata dummies, run on all treatment arms. For each pair of treatment arms, the overall F-test p-value is from a joint significance test predicting treatment based on the characteristics listed here, excluding the summary index, as well as strata dummies. Summary index calculated from parameters of an OLS regression estimating the relationship between observable characteristics and a binary indicator for attending a college as competitive as the University of Michigan. "Under-represented minority" includes all students who are Black, Hispanic, American Indian, or Native Hawaiian or Pacific Islander.
Source: (Michigan Department of Education 2022; University of Michigan Office of Enrollment Management 2022)

Table B4. HAIL Scholarship and Go Blue Encouragement Treatments and College Choice Outcomes (see *Table 2 in Burland et al. forthcoming)*

Outcome	Treatment effect		HAIL vs. GB E.
	HAIL	GB Encouragement	
Applied	0.280	0.082	0.198
	(0.038)	(0.039)	(0.038)
		[0.354]	
Admitted	0.096	0.025	0.071
	(0.036)	(0.035)	(0.037)
		[0.230]	
Enrolled	0.086	0.008	0.077
	(0.033)	(0.032)	(0.034)
		[0.174]	
Strata dummies	X	X	
Indicator: " Interviewed"			
Indicator: " Contacted for Interview"			
Number of school-years		477	
Number of students		1,796	

Citation: Burland et. al (forthcoming)

Table B5. HAIL Scholarship and Go Blue Encouragement Treatments and College Choice Outcomes, Including Interview Indicators

	Indicator for Interviewed Included			Indicators for Interviewed & Contacted for Interview Included		
Outcome	Treatment effect		HAIL vs. GB E.	Treatment effect		HAIL vs. GB E.
	HAIL	GB Encouragement		HAIL	GB Encouragement	
Applied	0.279	0.082	0.197	0.282	0.082	0.199
	(0.038)	(0.039)	(0.038)	(0.038)	(0.039)	(0.038)
		[0.354]			[0.354]	
Admitted	0.094	0.024	0.069	0.097	0.025	0.072
	(0.037)	(0.035)	(0.037)	(0.036)	(0.035)	(0.036)
		[0.230]			[0.230]	
Enrolled	0.084	0.008	0.076	0.085	0.008	0.077
	(0.033)	(0.032)	(0.034)	(0.033)	(0.032)	(0.034)
		[0.174]			[0.174]	
Strata dummies	X	X		X	X	
Indicator: " Interviewed"	X	X		X	X	
Indicator: " Contacted for Interview"				X	X	
Number of school-years		477			477	
Number of students		1,796			1,796	

Notes: All analyses done at the school level. Robust standard errors reported in parentheses. Results from a regression of the outcome on indicators for each treatment status. Control means are in square brackets. The difference, and standard error of the difference, between the HAIL and Go Blue Encouragement effect coefficients reported in the right-most column. UM application, admission and enrollment are measured in the summer and fall following expected high school graduation. Admission and enrollment are unconditional on application.
Source: (Michigan Department of Education 2022; University of Michigan Office of Enrollment Management 2022)