The Impact of Engineering Summer Camp Counseling on Students' Community Cultural Wealth and Engineering Identities

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Abstract

It has been shown that out-of-classroom experiences build engineering students' professional skills and engineering identities. Many other universities host engineering summer camps for middle and high school students and employ engineering undergraduate students as camp counselors. These camps are designed for students with minimal previous exposure to engineering. In this research study, we explore the impact of working as a counselor in these camps on counselors' Community Cultural Wealth (CCW) assets and self-defined characteristics of an engineer. Five summer camp counselors in one institution's 2023 summer camp programs participated in post-camp semi-structured interviews about their experiences as counselors. Two counselors identified as Black/ African American and three as Hispanic/ Latino/a/é; two identified as women and three as men. Collectively, counselors discussed all six types of capital in the CCW framework. Most commonly, they reported that they are actively improving skills they believe engineers to have (aspirational capital), that being a camp counselor improved their communication skills (linguistic capital), and built them a close network of friends that many consider to be like family (familial capital). Those who were in affinity-based student orgs, such as the National Society of Black Engineers (NSBE) and the Society of Hispanic Professional Engineers (SHPE), encouraged non-members to join, building their social capital on campus. One participant mentioned that because being a camp counselor was her first job, she gained valuable life skills such as completing tax forms and managing a personal budget (navigational capital). Some counselors also talked about what it meant to them to be role models for campers of their same racial/ ethnic backgrounds, since they didn't know such engineers growing up (resistant capital).

While out-of-classroom engineering experiences and their effects are well-studied, they are often limited to experiences such as extracurricular engineering activities or service learning projects. Despite the prevalence of engineering summer camp programs, the effects of working as a camp counselor are understudied. We hope that the results of this study will compel those running engineering summer camps to think not only about what the campers, but also the camp counselors themselves, are gaining from participating in these programs.

1 | Introduction

Despite the prevalence of employing undergraduate engineering students as summer camp counselors, research on such camps primarily focuses on outcomes for campers [1-4], rather than the counselors themselves. In this study, we seek to understand the experiences of undergraduate engineering students who were counselors together at a summer camp at a large, public

university in the southwestern United States. Our work is guided by the theoretical frameworks of community cultural wealth and engineering identity and the following three research questions:

1. How did being a camp counselor enable engineering students to build their perceptions of community cultural wealth?
2. How did being a camp counselor enable engineering students to build their perceptions of engineering identity?
3. How do undergraduate student camp counselors use their community cultural wealth assets to grow their engineering identities?

In answering research question 1, we seek to further discourse on the many ways in which students from historically excluded groups build community cultural wealth (CCW) [5] during their undergraduate experience. Though this is well-studied for undergraduate engineering students [6-12], it has not yet been applied for those who conduct engineering outreach or work as camp counselors. Similarly, while it is well-understood that co-curricular experiences increase students' engineering interest and identities [13-18], camp counseling has not yet been studied as a co-curricular activity. Finally, in research question 3, we build upon work by [12], which sought to understand how undergraduate Latinx students' cultural assets supported their STEM identity development. In this work, we expand to include Black/ African American participants and, again, focus specifically on undergraduates' camp counseling experiences.

2 | Literature Review

2.1 | Impacts of Camp Counseling and Engineering Outreach

For those who have experience in camp counseling and outreach, the impact does not only affect the participants (campers or students), but the counselors, volunteers, and outreach workers, as well. The work brings short and long term effects in positive leadership, communication, and workforce development skills. Several studies have shown the effects camp counseling has on counselors. In a long-term study, 4-H Camp Counselor alumni reported a positive impact in leadership, citizenship, contribution, and teamwork from their work as camp counselors [19]. They also reported a positive growth in their ability to communicate, problem solve, and resolve conflict. Since counselors are expected to contribute to a team, lead, and be responsible, these results are not astonishing but, rather, a validation of the effects of camp counseling on counselors. The same sentiments were found in an additional study, with counselor alumni claiming that the skills they learned transferred to being a student, an employee, and a community member after camp counseling [20]. Engaging in their counselor roles helped develop skills and personal qualities that they have since integrated into their lives in the workforce, and counselors made long-lasting friendships during their time at camp. Another

study measuring the experience of 4-H camp counselors found that "63 percent reported an increased desire to stay in school; 65 percent reported job and career opportunities opened up for them" [21].

A further look into engineering outreach programs shows a benefit to engineering undergraduate students. A study done at Tufts University's Center for Engineering Educational Outreach [22] found that leading outreach with middle and high school students helped undergraduate and graduate students build communication skills. The development of better communication skills helped students become more confident and, in turn, improved their leadership skills. Undergraduate student leaders in STEM outreach programs value the ability to apply what they learned in their own courses and transfer the knowledge to the outreach participants [23]. The student leaders expressed feeling challenged–yet rewarded–to think in new ways. Several studies have found that students improve their communication, teamwork, and other professional skills from their experience leading outreach activities [23-25]. Students also reported improved understanding of technical content [23, 25]. Participating in outreach can influence students' post-graduate plans, such as attending graduate school [26]. Overall, individuals leading outreach expressed a desire to continue their involvement in outreach initiatives with the aim of making a more significant impact within the STEM community.

2.2 | Community Cultural Wealth

Stemming from Critical Race Theory, CCW takes a more conceptual–rather than skills-based–approach to categorizing assets in the form of six types of capital [5, p. 77-80]:

- **Aspirational capital:** "ability to maintain hopes and dreams for the future"
- **Linguistic capital:** "intellectual and social skills attained through communication experiences in more than one language and/or style")
- **Familial capital:** "cultural knowledges nurtured among *familia* (kin) that carry a sense of community history, memory and cultural intuition"
- **Social capital:** "networks of people and community resources"
- **Navigational capital:** "skills of maneuvering through social institutions"
- **Resistant capital:** "knowledges and skills fostered through oppositional behavior that challenges inequality"

CCW has been applied in many studies in STEM education for a variety of participant populations, including Black, Latiné, and Asian undergraduate students, graduate students, and alumni [6]. For undergraduate engineering students more specifically, CCW has been used to examine the persistence of underrepresented minority students [7, 8] and in conjunction with ecological systems theory to explore the aspirational capital of Black engineering students [9]. For undergraduate students of color in STEM, familial capital manifests not only through their

parents and siblings [11], but also through their relationships with their peers, staff, and administrators [10].

2.3 | Engineering Identity

Engineering identity has been measured by a variety of constructs that capture students' own beliefs about their interest, competence, and recognition within [27, 28] engineering; three factors of engineering identity are [27, 29]:

- **Interest**: the desire a student has to think about and do well in engineering
- **Recognition**: whether a student perceives that others see them as doing well in engineering
- **Performance/Competence**: the belief a student has about their own ability to understand engineering concepts and complete engineering tasks

Several studies have established that engineering identity has a significant impact on students' choice of an engineering major in college [30] and their persistence in that major [31]. *Values* are an important aspect of this choice; in particular, *attainment value* (i.e., the perceived importance of doing well on a task) and *interest value* (i.e., the enjoyment experienced when doing a task) are both strong components of students' decisions to study engineering [30]. Strong influences on persistence include social connectivity (e.g., studying in groups) and participating in internships [32]. Engineering "persisters" demonstrate a better connection with engineering as a field, with their peers, and with faculty than "switchers" do [13]. Students who persist in engineering develop "solidarity" with other students studying engineering; for engineering persisters, identification becomes a "compass" that guides them through engineering, even more so than either disciplinary knowledge or navigation [33]. An engineering student's *grit*, as captured by both their consistency of interest and persistence of effort in engineering can be directly influenced by the strength of their engineering identity and the depth of their feeling of belonging [34].

Engineering-specific on-campus residential programs (e.g., living learning communities) build out-of-class experiences to strengthen engineering identity and persistence in engineering [14]. Co-curricular experiences, like service learning projects [16], entrepreneurship competitions [17], and peer-led leadership programs [18], contribute demonstrably to the development of STEM identity and subsequently to persistence and motivation to study engineering. Intentionally designed mentorship programs as well as research experiences for undergraduate students that happen outside of the core curriculum strengthen students' engineering identity, including their confidence and self-efficacy to study engineering [35, 36]. Programs that build community among students construct a familial atmosphere that has been shown to be a catalyst for engineering identity building [37]. Platforms that allow students to share engineering experiences and build engineering portfolios, both connected to formal classroom work and

outside of any formal instruction, help students realize their own value and interest as engineers [38, 39].

Recently, education researchers have begun to probe how students' CCW assets inform their STEM [12] and computing identities [40]. Students' STEM *interest* can be aided by seeing their peers of color overcome challenges, and students become interested in STEM by desires to better their home communities (aspirational capital) [12]. STEM and computing *performance/ competence* are aided by their ability to speak Spanish with others while at work (linguistic capital) and from knowledge from their families and networks (familial capital and social capital) [12, 40]. Affirmation from students' mothers (familial capital) builds their STEM *recognition* [12]. More broadly, STEM/ computing identities are strengthened by desires to represent others who look like them (resistant capital) and figuring out processes for entrance into STEM fields (navigational capital) [12, 40].

3 | Methods

3.1 | Context

[Camp 1] is a free, interactive program for rising 8th and 9th graders, focusing on showcasing the broad impact of engineering. Campers engage in daily presentations by University of Texas at Austin faculty and students, followed by hands-on activities to reinforce engineering fundamentals. [Camp 1] has four one-week sessions during the summer, in three cities: Austin, Houston, and San Antonio. [Camp 2] is a five-day residential summer camp for current high school juniors, offering an exploration of engineering through team projects and hands-on activities. [Camp 2] is structured as a residential camp so that campers not only learn about engineering but also about college and college life.

The summer consists of seven working weeks for the counselors, with the first week being training. The University's Youth Protection Program provides counselors training related to university policies for activities involving minors. Each camp counselor completes a background check and training that provides counselors information on how to keep campers (minors) safe during their time at camp. The training consists of counselor and camper behavior, warning signs, and reporting. In addition to this general training, the camp counselors also participate in training activities specific to engineering, during which they learn and execute the activities for each of the camps.

During camps, the camp director and counselors focus on scheduling and timing, provide feedback on activity alterations for seamless delivery, and, importantly, team building activities for the campers, which is helpful for the counselors as well as the campers. Counselors are responsible for presenting engineering material and facilitating activities. They are also responsible for keeping campers engaged and keeping a focus on positivity throughout the camp while always keeping everyone safe. Throughout the seven weeks, counselors are expected to

not simply lead engineering activities but to create a safe learning environment for each camper. Through the provided training, counselors also have the opportunity to build relationships that will provide them a safe place to learn and grow – not only as an engineer or a teacher, but also as a student and leader.

3.2 | Participants

Participants in this study served as summer camp counselors in the University of Texas at Austin's engineering summer camps in June - July of 2023. All counselors were invited to participate in this study. Five of the ten summer camp counselors participated, representing four engineering majors. Two counselors identified as Black/ African American and three as Hispanic/ Latino/a/é (specifically, Mexican or Mexican-American). Two identified as women and three as men. For participant privacy, we will not identify intersectional identities or specific engineering disciplines.

3.3 | Data Collection & Analysis

The initial study design was to employ solely focus groups so that participants could build on each other's contributions and provide multiple perspectives of the same stories. However, due to scheduling, we completed one semi-structured focus group (two participants) and three one-on-one semi-structured interviews in August and September of 2023. The focus group/ interview protocol had ten questions:

1. Tell me about why you became a camp counselor.
2. Tell me about a time when you felt successful as a counselor and tell me about a time when you did not feel successful–describe the what and why.
3. What did it mean to you to be a camp counselor?
4. What does it mean to be an engineer?
5. Do you share those characteristics?
6. Did teaching campers about engineering impact the way you think about yourself as an engineer? How so?
7. Did being a counselor help you develop the characteristics you just stated? How so?
8. What are your plans after you graduate?
9. Did your experience as a camp counselor influence your career goals at all?
10. Did being a camp counselor prepare you for your future career?
11. What is your most memorable or meaningful experience from camp?

Participants were provided with questions 1-4, 6, and 8 in advance of the focus group/ interviews; the other questions were follow-up probing questions. Participants were given $25 Amazon gift cards for their participation.

The focus group and interviews were recorded and professionally transcribed. The first author completed three rounds of coding. In the first round, she identified that the six capital types from the community cultural wealth framework were present. In the second round of coding, she deductively coded the transcripts for engineering identity (interest, performance/ competence, and recognition) [27] and community cultural wealth (aspirational, linguistic, familial, social, navigational, and resistant capital) [5]. In the third round of coding, she completed another round of open coding to further identify subthemes and used axial coding to identify relationships between the nine previously identified codes.

3.4 | Positionality

The first author is an engineering education researcher with no affiliation to running the camps. She conducted the interviews and analyzed the data. Participants were assured that their identities would not remain anonymous and not be shared with the other authors, including the camp director. The second author was the camp director; her role is described in section 3.1 above. The third author is a professor in electrical and computer engineering and, at the time of the camps, the associate dean for diversity, equity, and inclusion in engineering at the University of Texas at Austin.

3.5 | Limitations

The primary limitation of this study is that our sample size of five participants was far smaller than that needed to reach saturation [41]. For example, one code (navigational capital) was present for only one participant, but may have occurred more with a larger sample size. A larger sample also may have enabled us to draw more three-way, rather than just pairwise, connections between codes (as described in section 4.3). However, even with only five participants, all nine codes from the community cultural wealth and engineering identity frameworks were still present.

4 | Results

4.1 | Community Cultural Wealth

Aspirational Capital

The first way that participants described their aspirational capital was through their career interests. Participants had ideas of what type of jobs or industries (subfields within their major) they were interested in after graduation. Many of the participants shared an interest in teaching, though they were unsure of how they could both teach and do engineering work. One participant, whose high school physics teacher was a retired engineer, thought the same career trajectory

could happen in his “ideal world”. One participant had not previously considered a career in academia, favoring a career in research. However, after being a camp counselor and building on a pre-existing love for teaching, she is now considering being a professor, as it would allow her to both conduct research and teach.

The second way that participants described their aspirational capital was through a desire to learn skills and a belief that building these skills was possible, stating, “I feel like I'm trying to get there” and “I think I’m willing to learn. Sometimes I have trouble problem solving, but I’m hoping to improve on that.” One participant drew inspiration from a junior counselor (a returning camper) who built a glider that flew really well and wanted to “work harder so I can try building things like that”. Another participant compared her stated characteristic of an engineer of taking “base knowledge” and applying it to real world problems to running: when one first starts running, it’s impossible to run even a mile, but over time, it’s possible to run a mile in ten minutes, and, eventually, in under seven. She had already observed improvement in her ability to apply knowledge during her first two years of studying engineering, and foresees this improvement continuing in the future.

Linguistic Capital

The camp helped counselors build their linguistic capital by providing the opportunity to practice communicating technical content to the campers. Three of the five participants believed that communication is a characteristic of an engineer or an important skill needed to be successful in engineering. As one participant shared,

> “I think at a bigger level, a big part of the camp is explaining things in terms that the students can understand. Because if I give them a bunch of mechanical jargon, they aren’t really gonna get it. And I had to learn to break things down and maybe realize it’s like, if you don’t really understand things that well, it’s kind of hard to break them. Because you realize you’re just regurgitating things as opposed to actually understanding them. So, I feel like the camp improved that communication aspect of engineering. But I know it’s very important, like even now whenever I’m looking at interviews for the summer [internships], they always have the bullet point, able to break down mechanical words into simple, everyday language. That’s a very valued skill that companies look for.”

The counselors identified that explaining technical concepts to campers with no engineering experience was good practice for later in their careers, as they anticipate needing to convey technical content to non-technical audiences such as customers or a company’s business area.

A surprising aspect of communication that two participants discussed was emotional intelligence (EQ) and compassion. They recognized that campers who were having emotional

difficulty or were tired or sick during the camps were less likely to be engaged in the engineering projects, and needed particular care when spoken to. One participant realized that "engineering is not even just mechanical stuff", but also "interacting with people, and knowing to engage with people in a positive way… working as a camp counselor did kind of force me to break out of that, and to focus on skills like EQ". He had also seen that a lack of emotional intelligence was detrimental to a technical team outside of the camp, furthering his conception that EQ is important for engineering. The other participant shared a desire to improve: "I'm trying to put myself in places where I can learn how to communicate better and be more effective and just basically being compassionate." This is an example of how his aspirational capital is tied with his linguistic capital.

Familial Capital

Familial capital appeared in the interviews in two ways: speaking about one's family members and the sense of family or close friendships that the counselors formed with one another. Two participants mentioned that their parents were engineers (and that they had that in common), while one participant shared that his parents were not engineers and wouldn't have known about engineering summer camps - which he also said weren't available in his community growing up. He also noted that many campers had learned about engineering and the summer camps through their own familial capital, as several had parents or knew others who were engineers.

Four of the five participants described the friendships that they formed with one another over the course of the summer, with one going as far as saying "it feels like we were literally family", particularly with helping one another. One counselor, working for the second summer in a row, is still friends with counselors from the previous summer. When asked to describe their most meaningful or memorable experience during camp, four of the five participants described memories with other counselors, including sightseeing in one of the cities where an off-site camp was held and socializing in the dormitories with each other after hours. The interviews for this study took place over a month after camps had ended, and participants described how they are still friends with one another. These close friendships also helped participants be successful in their roles as counselors because they understood each other's strengths and how to work together.

Social Capital

Discussions of social capital primarily focused on teamwork and learning how to be a leader. Participants saw an increase in their interpersonal skills over the summer, which will help them in their future engineering careers. One participant felt that this experience helped her build her interpersonal skills in an "exponential" way, and another shared, "there's the high chance that I'm gonna be in a leader position within an engineering firm, and so this developed me to already start understanding how to work as a group".

One participant stated that part of his motivation to become a camp counselor was to build his social capital, sharing, "one of the main things that pushed me to join and become a counselor because like I get to connect better with the people around me." Other participants described how using their social capital helped them find out about the camp counselor opportunity, hearing about it from people who had previously worked as camp counselors or staff in their professional networks affiliated with the summer camps.

The familial capital that participants built through close friendships with one another also helped them build their social capital. A number of counselors were active in student organizations such as the National Society of Black Engineers (NSBE), Society of Hispanic Professional Engineers (SHPE), student engineering council, and the student org for minority engineering students. One participant described how, after encouragement from other counselors, joining the student orgs impacted her:

> "I saw a whole new world to them [the student orgs]. It's truly a friend group in these orgs. It's truly people that support others and have fun, all that type of stuff. It's less than just – because a lot of people, I know a lot of engineers that are just kinda running the game. So, they just join orgs to get the name… but these orgs, especially [identity-based] orgs, no, they're friend groups. Everyone knows everyone. Everyone supports everyone. So, I saw that. And then, they were like, [Participant], why aren't you in it? And then, they encouraged me to be in it."

Navigational Capital

Only one participant described how working as a camp counselor built her navigational capital, sharing that it gave her valuable life skills. "It was a step in the door to how a job works. I mean, some stuff as simple as figuring out a W-2 and W-9s, so like the taxes, and seeing a paycheck come in, and having to budget it, that was something that's really cool."

Resistant Capital

Three of the five participants spoke about how, as counselors, they served as role models or provided an opportunity for campers who might not have had other chances to learn about engineering. One female counselor noticed that girl campers were less confident speaking if boy campers were present and worked with another female counselor to "all show each other girls can do it". Two counselors were interested in applying for the job as a means of challenging injustice by providing the camp opportunity to "students like them". Participants spoke about not having such camps available when they were in middle and high school, and how they would have benefited from such programs. One shared that she chose to be a counselor to be a "spark of inspiration" for "underrepresented kids" because she "really like[s] the message". Another shared what it meant to him to be able to be a counselor:

> "It was bittersweet in the sense that it felt satisfying to give these kids an opportunity to further explore their interests. But it was also kind of bitter in the aspect of, I realized that I would have actually liked this type of thing in my community growing up. And that type of opportunity wasn't available. So, it's like, oh, this would have been great. But at the same time, it felt good to provide those opportunities to other students."

4.2 | Engineering Identity

Interest

Unsurprisingly, interest was highly intertwined with aspirational capital, specifically in the ways that participants described their career interests. Participating in the camps also increased participants' interest in specific engineering topics. The camps involved faculty and graduate student guest speakers teaching campers about different aspects of engineering, including solar fans, wind turbines, data science, and sub-disciplines in mechanical engineering. For one participant, teaching campers about engineering sparked a time of introspection, sharing that it "made me think, what do I actually want to pursue? And it inspired me to actually invest more time into researching and looking up the specific roles I want to do. And again, I'm starting to ask myself a question like, wait, what do I actually want to do? What do I do with it, as an engineer?" Outside of camp, he spent time investigating the roles of engineers at companies related to that day's topics. Participants talked about demonstrating engineering interest through watching YouTube videos to learn more about engineering topics and desires to improve their problem solving and communication skills, which they identified as important for doing well in engineering.

Performance/ Competence

In order to talk about counselors' assessed performance/ competence, it is first important to discuss the skills they identified as important for being successful engineers. When asked what it means to be an engineer, participants gave both technical and non-technical characteristics. On the technical side, this meant analyzing and solving problems, developing solutions, and applying base knowledge to the real world. Non-technical characteristics were bravery, communication, ethics, creativity, open-mindedness, compassion. One participant succinctly stated how engineering encompasses both technical and non-technical skills: "A true engineer is that person that can really not only solve a problem, but be able to understand how they can help the customer that they're solving that problem for."

Working as a camp counselor helped participants develop these technical and non-technical skills. On the technical side, participants gained knowledge in specific technical content covered in the camps. One participant described how, although she already knew a truss is the "strongest shape", the module on bridges taught her how trusses impact bridge design. Another participant

shared that going through the iterative design process improved problem-solving skills, as he could see what campers "were building and then give them something that they can improve upon". As previously discussed about linguistic capital, participants strongly felt that they improved their interpersonal and communication skills during camp, which are crucial for being successful as an engineer. Performance/ competence was also related to aspirational capital; as previously described above, participants felt strongly that they were actively improving their engineering skills, and would continue to build them. Overall, teaching affected the way that counselors saw themselves as engineers, making them realize they knew more than previously thought, particularly for applying technical knowledge to different applications when campers thought of creative scenarios. These realizations of being able to perform as a teacher and demonstrate their technical competence boosted participants' self-esteem.

Recognition

Three participants described feeling recognition, either from their fellow counselors or the campers. In the one focus group conducted for this study, one participant gave recognition to the other, saying "I was gonna say that you gained confidence during our weeks in camp" when sharing a story about her communication with the campers. Another participant described recognition from the other counselors (as described by close friendships in "Familial Capital") as helping him develop the characteristics of an engineer:

> "I didn't really fully process until I sat down with the other counselors and they were like, oh no, you did this and this, and I saw this from my perspective when you were talking with a kid. And sometimes they were things that I just didn't see in myself or that I saw I was doing. So, it really opened my mind, and it was like, 'Oh, wow.'"

This recognition was very helpful to him, as he had not seen this improvement in himself and was focusing only on his "downfalls".

4.3 | Overlap between codes

As described above, there were relationships between pairs of codes. Figure 1 depicts the relationships between these pairs, showing the number of connections that exist. Social capital had the most overlap with other codes, co-occurring with the CCW assets aspirational, linguistic, and familial capital and the engineering identity components performance/ competence and recognition. Aspirational capital and engineering interest were the most frequently co-occurring (four out of five participants). Navigational and resistant capitals did not have any overlap with other codes.

In addition to these pairwise relationships, there were two instances of three-way relationships between codes. In the first instance, a participant tied together aspirational capital, linguistic capital, and performance-competence when describing how being camp counselor prepared him for his future career because of the "whole idea of being able to help and understand and manage a group of kids because then again as I do that later on in my career, I'll be able to see that clear correlation between being able to communicate with someone that doesn't understand the field they're standing in now or that they're interested in." This participant believes he is already competent at helping, understanding, managing, and communicating with people, and it will help him in his future. Two participants connected aspirational capital, linguistic capital, and engineering interest. One shared that the camps positively increased his interest in working as an engineer in industry due to talking about the camp's topics. The other was interested in increasing his communication skills, which he perceived as important characteristics of an engineer, and was actively trying to put himself in situations where he can improve his communication skills and compassion.

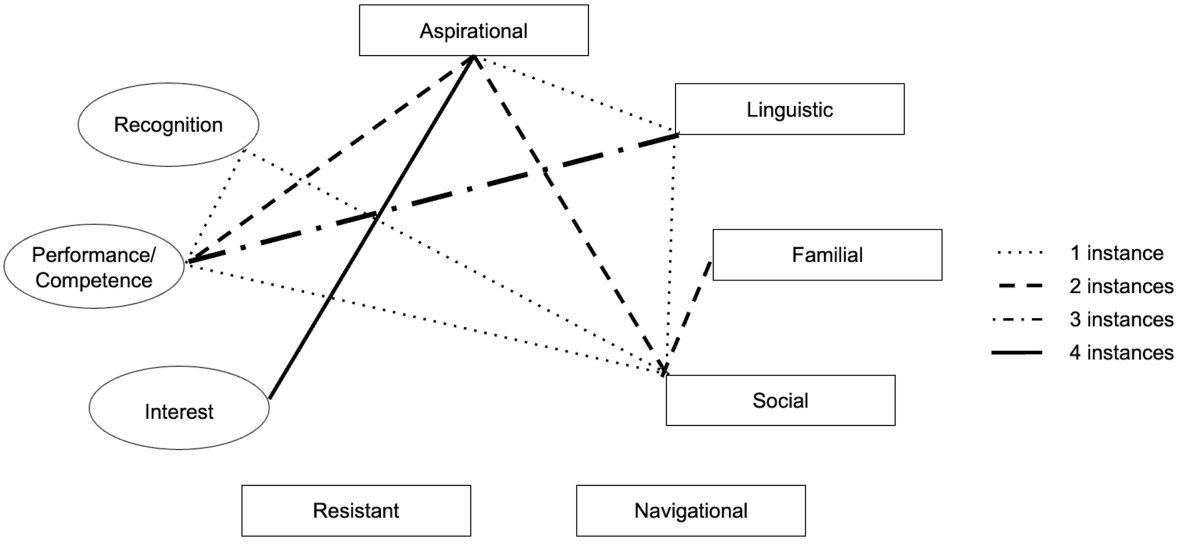

Figure 1. Overlap between pairs of Community Cultural Wealth assets (rectangles) and aspects of engineering identity (ovals).

5 | Discussion & Implications

The results from this paper tie together recent work showing the relationship between community cultural wealth and engineering identity for students who are racial/ ethnic minorities [12], effects of camp counseling [19-21], and benefits gained by undergraduate students leading engineering outreach activities [22-26]. The camp counselors recognized that communication is a crucial skill to be successful as an engineer. The communication skills built over the summer will

benefit them when they apply to and enter the workforce, as communication is a skill commonly sought in engineering job postings [42] and one of the most important skills for engineers working in industry [43-47]. Additionally, the social capital counselors gained and continue to build by joining student organizations will benefit them for years to come. Participation in professional engineering organizations (e.g., NSBE, SHPE) has been shown to aid in engineering persistence for underrepresented minority students [48], provide them with professional and leadership skills, and offer "family-like support systems" [49].

The findings from this paper have implications for staff and faculty who employ undergraduate engineering students as summer camp counselors or outreach student workers during the academic year. While the focus of outreach programs is on the students being introduced to engineering [1-4], their impact on undergraduate outreach leaders cannot be overlooked. To that end, in future summer camps, the author team plans to incorporate professional development content such as communicating technical content and emotional intelligence into the counselors' pre-camp training.

Acknowledgements

This work was supported by National Science Foundation grant EEC-2217741. The authors thank Audrey Boklage for feedback on the interview protocol.

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