# A Narrative Exploration of Two Post-Traditional Students in Undergraduate Engineering Education

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# A Narrative Exploration of Two Post-Traditional Students in Undergraduate Engineering Education

**Background:** Post-traditional students have become the norm in higher education, not the exception. The definition of a post-traditional student is not well established, but it is generally agreed that they are 25 years old or older, are enrolled part-time, and/or work to support themselves or their families. Currently, there is a focus on engaging post-traditional students in undergraduate engineering programs, but it is crucial to understand their diverse perspectives in order to effectively support them and promote their retention and persistence in the engineering workforce.

**Design/Method:** The data for this study came from a larger project, Audio for Inclusion. We constructed narratives based on the interview responses. In this paper, we discuss the findings of a cross-case analysis of the narratives of two post-traditional participants: (1) Jakobe, a Black cisgender man studying computer science, and (2) Alejandro, a veteran Hispanic man studying mechanical engineering. Both participants attend separate R-1 Hispanic Serving Institutions (HSIs).

**Findings:** We present the constructed narratives by both participants to highlight points of similarity and contrast. For example, Jakobe sees education as a vital part of his goal of giving back to his community, whereas Alejandro describes his college experience as a means to achieve other goals, such as providing a more robust financial foundation for his family. Additionally, we present instances of similarities and differences that, in turn, uncover nuances in the experiences of these two post-traditional students.

**Implications/Conclusions:** Understanding students' experiences offers insights into the underlying factors that influence how some students view their educational experience and how their needs may differ. This can help shape more effective professional preparation approaches and enhance engagement. Overall, our study highlights the importance of considering the diverse perspectives of post-traditional students and the need for engineering educators to tailor their approaches to better support these students.

## 1. Introduction and Background

Despite the common perception that archetypical undergraduate college students are 18 to 21-year-old recent high-school graduates, approximately three-fourths (73 percent) of today's campus population are classified as "nontraditional" since they do not fit within this demographic [1]. These students are also described as post-traditional students to acknowledge that post-traditional student populations are now often the norm [2]. Undergraduate students are considered post-traditional if they identify with at least one of the following criteria [3], [4], [5]: a) are at least 25 years old; b) attend school part-time, work full-time; c) are a veteran; d) delay college enrollment at least one year after high school; e) have a GED or other equivalency certificate instead of a high school diploma; f) are a first-generation student (FGS); g) enrolled in non-degree programs, or have reentered a college program; h) have non-spousal dependents; i) are single parent(s); j) support themselves financially while enrolled; k) are economically

disadvantaged students; and l) are students who work a minimum of 20 hours per week. Sometimes commuter status or Pell grant eligibility are used as proxies for some criteria [6].

In spite of this growing demographic, today's institutions were and still are designed to appeal to traditional undergraduate students, raising the question of "whom our higher education system serves" [7]. Research notes that post-traditional students bring with them accumulated capital from their professional or life experiences, known as "experience capital" [8], along with clear educational goals and motivation. At the same time, these students encounter unique challenges and situations that are misaligned with the current institutional structure. Unlike traditional undergraduates, post-traditional students are rarely "just students," as they prioritize fulfilling many other roles in their lives [9]. For these reasons, measures of success for post-traditional students fundamentally differ from their counterparts since they place more emphasis on continuing their studies from semester to semester than on completing a degree in full [10]. Leaving these issues unaddressed raises the possibility of post-traditional students dropping out of their engineering programs; current research notes that nearly 70 percent of post-traditional students dropout of school, some within four short months of enrolling [11].

Though there have been works on post-traditional students of a quantitative nature (e.g., [12]), a small but growing vein of research has started to develop qualitative research studies on post-traditional students in engineering (e.g., [3], [6], [13]). For example, in a qualitative study of 5 post-traditional students, Brozina et al. [13] found that undergraduate post-traditional students engaged in a transactional relationship with the university. Financing their education was listed as one of these students' key concerns, prompting them to be focused and strategic to finish their degree on time. At the same time, students in this study also reported experiencing exhaustion and guilt as a result of their inability to concentrate entirely on their studies due to competing financial and family responsibilities. These students also mention a lack of interest in utilizing university-provided support systems and other on-campus activities and prefer limited interactions with faculty and advisors. Relatedly, Minichiello found that faculty often framed post-traditional students from a deficit perspective, making it almost essential for these learners to withdraw and create their own counter-narratives [3]. We posit and hope that as knowledge of post-traditional students' needs and issues grows, universities and engineering programs will be better equipped to create interventions and support networks that will enable them to persist.

Our goal in this study is to learn more about how post-traditional undergraduate engineering students experience engineering culture and how their peers, teachers, or the institution can further impact those experiences. Leveraging narrative-based research methodology, we capture the nuanced experiences of two post-traditional students, Jakobe and Alejandro. The research questions guiding this work are:

1. What are the consistent and contrasting narratives of two post-traditional engineering students' experiences?
2. What insights do the narratives of Jakobe and Alejandro provide regarding structures to better support post-traditional students in engineering?

## 2. Guiding Framework: Model of Multiple Dimensions of Identity (MMDI)

Jones and McEwen's model of multiple dimensions of identity (MMDI) [14], [15] depicts the relationships among personal and social identities (e.g., race, gender, social class, sexual

orientation), as well as relationships among social identities. The model portrays social identity dimensions as intersecting rings around the *core sense of self*, emphasizing that no identity can be understood in isolation. The core sense of self indicates an individual's personal attributes and characteristics (e.g., compassionate, intelligent). Meanwhile, the circles surrounding the core are multiple socially constructed social identities (e.g., race, gender, socioeconomic status, religion, and nationality). This model (core and surrounding identities) is integrated within the context where the person is situated. Although each person's identity may become more or less salient (i.e., prevalent) depending on context, all identities influence their experiences.

Several identity dimensions of post-traditional students have been described in the literature [4]. People can be minimally, moderately, or significantly post-traditional based on how many criteria they possess. Students who exhibit a single post-traditional feature are referred to as *minimally post-traditional;* students who have two or three qualities are considered to be moderately post-traditional; and students who exhibit four or more qualities are regarded as *very post-traditional*. In that regard, we recognize that post-traditional engineering students' core sense of self may be intricately connected to the number of these different criteria with which they align.

We approach this study with an awareness that multiple dimensions of identity may be personally salient and/or significant to learners' educational experiences. We note that identities of race and gender are often top of mind for students, faculty, staff, and senior administrators; post-traditional (or nontraditional) identity is rarely even named or conceived as such. Race and gender are also the identities that researchers, practitioners, and government agencies are often most focused on supporting. However, a pure attention to race and gender can sometimes spotlight issues (e.g., classroom marginalization and microaggressions) that are shared by all or the most traditionally normative of a marginalized group. An attention to post-traditional student aspects focuses towards other contexts, such as time spent commuting, supporting a family, or working a significant part-time job, all of which can impact one's schooling experience. Instead of a pure focus on experiences of race and gender, and since nearly half of the post-traditional learners are non-White and lower-income [9], [16], we can gain new important insight and practical implications by an attention to the ways these students' multiple identities are understood and experienced. In short, in order to better support the growing diversity of the United States, including racial and socioeconomic inequality, we model a pivot in attention to understanding post-traditional student identities.

## 3. Methods

This paper presents a secondary analysis of two participants' constructed narratives, developed as part of an ongoing larger project called Audio for Inclusion (A4I). This ongoing project investigates the experiences of engineering undergraduates whose identities are hidden or misinterpreted by classmates or teachers. The end goal of theA4I project is to create immediate and accessible resources for increasing faculty understanding of these students' experiences. To date, the research team has recruited and conducted Zoom interviews with 22 undergraduate engineering students from over 11 universities. The interviews consist of three major parts: 1) Students' identity and impact on lives, 2) Engineering-related experiences, and 3) Reflection and Giving Back to the community. The details of the bigger project are described elsewhere [17].

We adopted narrative and discourse analysis techniques [18], [19] to construct narratives from the transcribed interviews. Constructed narratives centered around the final question of our interview protocol (i.e., “If you could tell your professors something, what would it be?”) and then supplemented with additional details and context to articulate that message in a dialogic format. Once the first draft of the constructed narrative was completed, the research team reviewed it multiple times to refine it, keeping continuity, coherency, and length in consideration. More details about our narrative construction can be found here [20].

In the following section, we dive deeper into the similarities and differences between Jakobe’s and Alejandro’s narratives. Both of our focal participants identify with more than two of the post-traditional student criteria defined by Horn [4]. Jakobe identifies as a Black first-generation cisgender man studying computer science, and Alejandro identifies as a veteran Hispanic man studying mechanical engineering. Both participants attend separate R-1 Hispanic Serving Institutions (HSIs). Jakobe was interviewed in the pilot phase, and Alejandro was part of the ongoing, full study. These similarities and differences provide deeper insights into how post-traditional students with their multiple social identities describe, interpret, and interact with their relationship with education systems.

## 4. Findings

One of the major goals of the project is to evoke faculty’s empathetic understanding by reading/listening to students’ overlooked or hidden experiences in engineering settings. In the spirit of the project, we fully present both Jakobe's and Alejandro’s constructed narratives and invite readers to reflect and consider their significance. We also provide a number of reflection questions to structure it into a guided reading activity. Recognizing the length and nuances of the narratives, these reflection questions serve as a pause, encouraging readers to take a moment of introspection before delving into another narrative. After each participant's story and reflection questions are presented, we also provide the similarities and contrasts between their narrated experiences. Interested readers can listen to the audio version of the narratives at our YouTube channel, https://youtube.com/@A4I-audio.

### *4.1 Jakobe’s Narrative*

**Q: How do you identify personally and in engineering contexts?**

I see myself as Black first and foremost. Being Black shapes my viewpoint around everything. I was raised in a predominantly white town and had good access to education. When you get around other groups of people who don’t necessarily have access to the same education, you may speak differently than they do. So, then you get the whole, “Oh, you’re black on the outside, and you’re white on the inside.” That was something that shaped how I would interact with people and made me feel guilty about being as smart as I was or talking the way I did until I was able to go ahead and really like face and confront it and know that it wasn’t anything that I had done to really bring about this type of response that I was receiving. Nowadays, I don’t feel that way anymore. I feel as if I operate in both worlds. When I am in my community, I speak the way I normally do. And when I am out of my community and in a more professional environment or around people who are not from my community, I change my language a bit.

I remember the first incident where I truly was just like, you know, no one can ever really say I'm "white" in any way, was when I was in New York visiting my father. I think I was 14 or 15 at that time. I went into a thrift store with my stepbrother, and I was all excited because I was going to buy that pretty cool jacket everyone had. I was looking around, and I didn't really see anything that I liked. It was only me in this store besides the two store clerks. While I was browsing the store, I realized that there was this lady who was following me. It was weird because they weren't looking at any clothing; they were just touching hangers and moving to the sides. Then I got the sense that they were checking on me because they followed me to each rack. So I tested them, and like I crouched like as if I was tying my shoe to where they couldn't see me and I was kind of just waiting for them. I was looking at directly where they would have stepped in the view if they were following me. And when they saw me, like they immediately, I don't know, like, stepped out of view. But I felt so uncomfortable. I got up, grabbed my stuff, and left. I cried that night. Because I recognized that while shopping, I was being profiled as someone who was going to rob the store or steal items without paying. That really just cemented for me, like these types of experiences that I'm having today and I'll have in the future, where there's no way this "white on the inside" identity that other people try to give to me is going to ever be able to be used by me.

In terms of other identities, I am a cisgender man. So that comes into play when I have to hesitate to see how aggressive I may come off to somebody from me being Black and then being a cisgender man specifically. If we are going to go a little bit deeper, I do not fully identify with LGBTQ identity, but if the Q stands for the sense for questioning, I guess it is there. As far as queerness is involved, I identify with some aspects of that community.

Regarding financial status, I would just say that I'm poor. I am one paycheck away from everything in my life being uprooted and not being able to pay all my bills, there not being any type of security blanket for me or a backup plan for me.

**Q: What are some identity-related challenges you have experienced in engineering?**

When I was in high school, I never considered computer science. It was one of those majors that was reserved, in my mind, for super-smart people. Not people who are just going to do the work and work hard at it. That you had to be super gifted in math, and you had to love science to be in CS. I probably was slated towards business. I was in a marketing association for students in high school and doing competition things; it made the most sense resume-wise to go into business. One of my friends at the time learned about computer science and let me know how cool it was.

When I transferred from community college to the university, I had a disadvantage compared to other students. When you are from community college, other people see you as being from the lower middle class or potentially poor. I did all the coding classes the year before I transferred, so I had to actively relearn everything that, for others, was still fresh. And I had to keep up with what was being taught in my classes to no longer feel left behind.

I think that poverty shapes your mind and your decisions. I think many of my decisions are based on risk aversion, which can keep me from enjoying or participating in certain opportunities because I'm afraid of the fallout. For example, in my classes, when professors offer extra credit assignments or opportunities to become more involved with the course, it's hard for me to find the time to do it. I work roughly 30 hours per week and go to school full-time. I always have to

think about my current situation. I'm envious of those who are able to be just students; they don't have the added pressure of also needing to work to support themselves and their families. It has not allowed me to fully experience the university the way other students do. Just being able to go to school and just think about school and not have these other worries on your mind. Like, I have never actually experienced it.

Something I found challenging in my program is the expectation from professors who measure success in a class by how much effort you put into it. I personally have always worked other jobs throughout my entire university career. A lot of the times when my professors had office hours or tutoring, they directly coincided with my work schedule. The only advice they give you if you need help is that you have to go to tutoring or to come to office hours. I've been lucky to have some accommodating Professors, but I think that culture, in the beginning, discouraged me more than anything to seek out help. I knew since I wasn't able to meet expectations of going to tutoring or being available for office hours, professors would see me as a student who didn't really care that much. It's frustrating to see because it's just like, you know, I care about this class, I care about my degree, about my knowledge, but I can't adhere to the time that you have available because I need to work.

I remember during my first year, after I transferred to the university from community college, I was never clinically diagnosed, but I was feeling depressed. There was a lot going on in my life. I was houseless. I had a place to go, but I didn't have a physical house that I would be able to put as my address. I was living over at my sister's house temporarily. And other stuff that was going on– I got out of a relationship during that year. I didn't have a car in my first two years of university; I took the bus everywhere. And between those three things, I felt a lot was stacked against me, and I couldn't focus the way I wanted to on my studies. I decided to start to take a step back from my academic responsibilities. I physically felt like I couldn't handle them with everything else going on. I would be looking at the things that I needed to do, and it would be weighing me down even more. Mental health is hard to prove to professors; how do you explain that you're dealing with something and you may need some type of extra accommodation?

With one of my classes, I was doing well at the beginning of the semester, and then suddenly, I wasn't turning in assignments or going to class. When I failed the class, my professor Dr. B was like, "Hey, look, I don't really know what's going on, but this is not acceptable. So I'm going to make you a proposal. I'm going to give you an Incomplete; you are going to do the work that you need to do over the summer. And upon the end of it, you'll get the grade for whatever you do for the assignments you missed if you're willing to join this professional enhancement program." I told him, yes, I did his professional Enhancement Program and did amazing on that; I didn't do all the other work he assigned me, though. He gave me another semester, and I finally did it. I got an A on every assignment. He was the first person to see something in me, to give me a chance to prove myself. Being able to go into it and explain to him what I was going through really helped me. It helped me to see that someone cared to notice that something was happening to me and wanted to see if there was anything that we could do about it. It made me feel that I didn't want to disappoint him.

**Q: How have your identity and experiences influenced you today?**

I'm definitely more active in social justice than I was before because of the experiences I've had and the countless experiences that I saw online of other black people. I feel as if I have a

responsibility to contribute to resisting that. I currently work with organizations primarily surrounding prison abolition and making communities safer. I just started volunteering with the state's immigrant coalition and things of that nature because I want to give back and protect communities that can't protect themselves.

**Q: If you gave advice to someone like you, what would you say?**

I would tell a younger me to not feel as if they needed to assert themselves into everything to stand out so much. Over the years, I probably developed some type of overcompensation. There's that idea that how often you participate in class correlates to how smart you are and how much you care. And be open to your peers regarding collaboration and sharing of ideas. Some students can be a little bit snobbish, and they're not really looking to collaborate with you, even if you're on a team with them. There are other people who also have that same experience but are able to share that information and their knowledge. There's the unnecessary added pressure that you give yourself when you compete against other students within your class. I really wish students would just understand that we're all in the same class and that you're not being rated by your standing within the class; you get rated on your GPA.

I would also tell someone like me to seek help when you need it because I am the type of person who tells myself that I'm going to resolve the issue myself, and then weeks later, I didn't do anything. And it's the end of the semester when it's like the breaking point, and I've talked to nobody about this, and there's no way anybody would have known the issues that I was having throughout the year. Being able to go ahead and let professors know what I am going through, even with my peers that can help me, makes things easier in the end. So, I would say relax and don't feel so pressured to be involved in everything and just focus on what you're learning and learn it well.

Reflection Questions

As you finish reading Jakobe's narrative, take a moment to reflect on your understanding.

- Reflect on instances where you may have made assumptions about someone based on their identity (including identities such as post-traditional status, or even disability or religion). How can increased awareness lead to more inclusive interactions?
- What are the best ways to reach out to students like Jakobe who might be struggling but not seeking help and/or support due to personal and practical reasons?
- Consider how institutional and classroom policies, such as the location or schedule of help sessions, may impact students with financial or time constraints. What changes could enhance educational access for all?
- Knowing that some students face significant constraints due to poverty, how could you act differently to better support these students?

*4.2 Alejandro's Narrative*

**Q: How do you identify personally and in engineering contexts?**

I'm male, my first language is English, *but* immigration and international status is a topic I care *a lot* about because I'm Hispanic and my parents were immigrants. Well, actually, my dad was an immigrant, and my grandparents on my mom's side were immigrants. I'm a veteran, and my wife and I are starting a family, so you could say I'm a nontraditional student. I'm just over 30, and now I'm back with a bunch of 18 and 19 year olds.

I got my first degree in biology with a marine concentration, so I knew I wanted to be on the ocean. *As I was finishing that up,* I was selected for the Navy's nuclear Officer Candidate school, which ended up essentially being a master's degree in nuclear engineering. I was fascinated by all these main cooling pumps the size of a car, nuclear reactors, warships, submarines - you know, all these marvels of engineering. I was in love with the material, but it was extremely difficult because I had no engineering experience. Academically, I was at the very bottom of my class. I've never been at the bottom before. I realized that I didn't have *the necessary background knowledge to finish the program*, *so* I transferred to surface warfare. *I was there* for almost three years.

My time in surface warfare was extremely difficult and a cause of a lot of heartache and headache. My chief hated me. It was awful. I hated my team. It was bad for morale. And it led to the end of my naval career. I didn't fit in on that ship. My best friend on the ship was Black, and he suspected it was happening because we're both minorities. I tried to fix it, I tried to keep my cool, but I ended up crying, sobbing– A lot. It was a very toxic workplace. Like public humiliation, verbal abuse. It was a nightmare. It was the most difficult experience of my life, and I had to get out.

As a transition back into civilian life, I became a high school teacher for two years, but knew I wanted to become an engineer. So, in the summer of 2021, I went back to school. And now, I'm getting a second bachelor's degree in mechanical engineering.

**Q: What are some identity-related challenges you have experienced in engineering?**

When I first started, I was still teaching. So I'd have to email my professors and say, "Look, I might not be able to attend this class right now. The academic year for high school is almost over, but it overlaps a bit with the university's summer semester. Are the lectures recorded, or how else can I get the information?" A lot of them were really receptive and understanding.

I think my age plays a big role in my studies. My schedule is always different because I have very different priorities than a lot of other students. You know, I have a family, so I don't have time for hanging out after class in the library and getting together and forming study groups. I just have a completely different life. I don't participate in any clubs or associations or extracurriculars. I just go to class and come home, so I can take care of what I need to do; whether it's home improvement or all of my other tasks and chores, like mowing the lawn, laundry… Especially once I picked up an internship; it just became work and school and then,

you know, life at home, because time is the most valuable asset. It changed how I study. I think part of it is my age where I have more discipline and I treat it like it's my full-time job, instead of like just school. I have to kind of build education around my life as opposed to someone who's younger, who builds their life around their education.

Another challenge is all the different classes I'm required to take and re-take. I don't think that a lot of the advisors understood. Or maybe they just didn't really care. So, you know, although I had already taken Physics 1 and 2 and Calc 3, I had to retake all of them, even though I'd been tutoring higher level mathematics and science courses for a long time and teaching high school chemistry to advanced students, as recently as a year ago. I even ended up having to retake some humanities courses, like – I did this for my first degree. When I tried to explain this to my advisors, they didn't care. They said, "Well, these are the requirements, so you're going to have to take them". So, I mean, there wasn't much I could do.

I had this notion in my head that maybe I can go speak to the dean and just get it resolved or waived or something, but that never happened. It's difficult, because I'm like. Please stop wasting my time and money, and let me get out of here so I can actually work and contribute to society. I've exhausted my savings. I had a decent amount, but over the past few years, I've exhausted it. I was really frustrated with the advising office for not accounting for my background or prior schooling. Like, at least let me try to test out of classes I've already taken or something. Part of me thinks that they just want to take your money, and they just want to waste your time. I know that's not true. But all of this means money. And it means time, which is more valuable than money to me. All I wanted to do was really finish my mechanical engineering degree as fast as possible.

As far as other identity challenges, hmm. You know, I do try to give people an idea of who I am and the things that I've accomplished or the experiences that I have. So I feel like I'm an open book. But as a veteran, when people hear that, I think maybe they assume I'm retired and I'm like 40 or 50, and I'm going back to school, but I'm in my early 30s.

Especially via email, their responses make me think they assume I'm like a great warfighter that has been to Afghanistan, and I have strong character and I'm super tough. And, you know, some of those things are true, but others just aren't. I spent a lot of my time up and down Third Fleet, which is what we call the Pacific. I spent some of my time in the Atlantic as a U.S. representative on some foreign ships. I've launched one missile before, but it was a test tomahawk. I don't know. All the time I just hear "Thank you for your service."

**Q: What feedback would you give an engineering faculty about these issues if you had a chance?**

As someone who has to commute to campus, I would say consider their commute. You know, it takes a couple hours out of every single day. Consider their life and the things that they're going through. Every day, things happen to people. Even me and my family tragically lost a loved one this past summer, and I had to miss class. I think most professors are understanding of that type of thing and they'll figure out a way to work with you. I haven't had any issues, maybe because I'm so open and clear with professors, and I'm always in class and in office hours, so they know who I am. Other students might not have the same experience, especially if they don't regularly

attend class or office hours, so the professor is more hesitant to accommodate them. While that's mostly the student's responsibility, professors could still do better.

**Q: What advice would you give someone like you?**

I don't know, on the one hand, I would say take more classes. Instead of just taking four classes per semester, try to take five or six, but on the other hand, if you really want to take advantage of your GI Bill and the funds that you receive from it, you might want to take fewer classes and finish in 5 or 6 years. I don't know. I could help with specific class material but in terms of the engineering program as a whole? No, I would just say finish as soon as possible. Gotta finish as soon as possible to get to the workforce. That's what I'm trying to do.

Reflection Questions

As you finish reading Alejandro's narrative, take a moment to reflect on your understanding.

- Alejandro seems to pride himself on his self-sufficiency. What are some needs that students like him might have but be unwilling to express?
- Some students just "have a completely different life," and while school is still important to them, they have other commitments. How can instructors better support these types of students?
- Alejandro accumulated years of academic and professional experience before enrolling in his second Bachelor's degree program. How can Alejandro's *Experience Capital* be taken into account?
- Alejandro accumulated years of academic and professional experience before enrolling in his second Bachelor's degree program. How might his experience differ from a traditional student's?

*4.3 Analysis and Discussion*

Both participants describe several identities and their effects on both their lives and their school experiences. In Jakobe's narrative, we see him identifying as "Black first and foremost," despite the fact that at some moments in his life, many around him attribute to him an identity that is "white on the inside" because of his intellectual abilities or the way he speaks in comparison to other Black people. After experiencing racial profiling at the age of fourteen, he realized that the ascribed white identity would never be used meaning that others would never think of him as white. He also centers his Black identity to describe his engagement in social justice activities, such as work with prison abolition organizations as well as his gendered interaction style. On the other hand, Alejandro takes pride in his Veteran status, indicating that it is an integral part of his life. In his narrative, we see relatively smaller racial salience. One possible explanation for this could be he is mostly surrounded by individuals who share his Hispanic identity with him, for example, him attending a Hispanic serving institution. He does mention having negative experiences while in the Navy but does not recognize whether this was due to racism or not. Even though both Jakobe and Alejandro possess different academic backgrounds and life

experiences, their post-traditional student identity takes prominence in describing their engineering experience. Here, we provide similarities and contrasts organized by common themes.

#### 4.3.1 Time or Money: What Is More Important? One or The Other or Both?

Literature on post-traditional students often notes time commitment and financing education as two of the prominent and challenging factors exhibited in their experience [16]. Both of these factors were present in Jakobe's and Alejandro's narratives.

As mentioned in the beginning, post-traditional students are rarely 'just students.' Alejandro describes this phenomenon by saying he has to "build education around [his] life as opposed to someone …who builds their life around their education." Jakobe voices a similar concern, "I work roughly 30 hours per week and go to school full time. I always have to think about my current situation." However, money concerns create a notable distinction in their description of experiences as Jakobe mentions in the narrative, "Poverty shapes your mind and your decisions". Both students grapple with the challenge of balancing work and academics, but Alejandro is usually able to attend both classes and office hours, while Jakobe is only able to attend class.

We observe the salience of class on people's educational experiences. We also find Alejandro saying, "time… is more valuable than money. All I wanted to do was really finish my mechanical engineering degree as fast as possible." We argue his putting relative emphasis on quickly finishing the degree is tied to his relative privilege, meaning that Alejandro is financially secure since he mentions having savings and receiving veteran benefits. By contrast, Jakobe mentions being impoverished, unhoused at times, and needing to work due to not having "any type of security blanket… or a backup plan," It seems that this reality leads to various struggles for Jakobe that Alejandro does not seem to face. Jakobe experiences layers of marginalization complicated by what it means to be a post-traditional student who is simultaneously balancing economic hardships, while still negotiating race-related challenges. In many ways, this parallels well-documented work on intersectionality and complications of managing racial and other complex situations [21]. Jakobe does not experience intersectional issues associated with his gender but does experience them across racial and socioeconomic dimensions.

From these narratives, we also get an idea that professors' perceptions of students are contingent on them being able to be in-person or present. Alejandro identifies his openness and ability to attend office hours or communicate regularly as the reason that "most professors are understanding" when he needs accommodations and implies that other students are less likely to receive leniency (e.g., adjustments or flexibility) if they are relatively unknown by the professor, which is exactly the case with Jakobe. When seeking additional help, the "only advice" Jakobe received was to "go to tutoring… or office hours." Because of his inability to attend, he feels that professors "see [him] as a student who didn't really care that much." It is concerning that faculty members expect only students who appear proactive and ambitious enough to attend office hours or tutoring sessions to receive mentorship or any flexibility, when post-traditional students may struggle to connect with them on a regular basis owing to other obligations. This reflects previous research related to ways in which engineering/STEM faculty may hold and even perpetuate negative characterizations of post-traditional learners [3].

Assuming Jakobe does not care because he is unable to attend office hours is a form of stereotyping, in a similar way as following him through a store to ensure he doesn't steal anything (i.e., racial stereotype). Other forms of stereotyping can be benevolent, such as assuming that Alejandro "has been to Afghanistan, [has] strong character, and [is] super tough" based solely on the fact that he's a veteran, but as he says, "some of those things are true, but others just aren't." Even when seemingly harmless, the act of categorizing individuals and making assumptions about them based on perceived group characteristics can give rise to misunderstandings and breakdowns in communication.

It cannot be assumed that school is the sole priority for all students, and yet this is often the expectation in engineering and other STEM majors [22]. Many students, traditional or not, grapple with similar issues such as needing to work part-time or having an irregular schedule. Perhaps some can maintain school as a priority, but this might be impossible for other students, like Jakobe, whose basic housing needs are not even guaranteed. There is no simple solution for these issues, but a professor who is willing to listen and make adjustments can have a huge impact on the trajectory of such a student. Though none of them says it explicitly, it seems that having online and flexible office hours would be helpful for post-traditional students [16].

#### 4.3.2 Role of Faculty

In the previous section, we noted the differences in Jakobe and Alejandro's perspectives on engaging with professors-- Alejandro prides himself on attending office hours and making his circumstances known to professors, while Jakobe describes the challenge of attending office hours while working 30 hours per week. In this section, we highlight the role of faculty in encouraging the feelings of mattering or, in a way belonging to post-traditional students.

Mattering is a feeling that one matters to another individual or one is concerned with another's well-being [23] Among five, one of the dimensions of mattering is attention: "The most elementary form of mattering is the feeling that one commands the interest or notice of another person" [24, p. 164]. We see in Jakobe's narrative how Dr. B paid attention to Jakobe while he was going through a phase of depression caused by various out-of-classroom events (e.g., temporary houselessness, break-up, dealing with poor perception towards commuter students). Dr. B also showed flexibility, another dimension of mattering [25].

Jakobe's struggle with both in- and out-of-classroom experiences echoes research findings reporting that post-traditional students often go through immense mental toll and guilt [13] for not spending the same amount of time on all their tasks. Dispositions of students, like Jakobe's dependence on his own initiative and reluctance to ask for assistance, might be seen as one of the obstacles to complete integration and persistence in college. To describe his hesitancy, Jakobe brings aspects of engineering culture (e.g., competition, expectation) that discouraged him from seeking out help or accommodation. He also points out the invisible nature of mental health concerns: "Mental health is hard to prove to professors: how do you explain?"

In situations like this, one of his professors, Dr. B, noticed Jakobe was not succeeding as much as he used to at the beginning of the semester and made adjustments such as extended or flexible deadlines for him. This instance when "someone cared to notice" seems to invoke positive

feelings of mattering in him as well as changed his attitude towards help-seeking: “I would …tell someone like me to seek help when you need it. ”

Research notes that faculty are usually the first point of contact for most students, and positive student-faculty interaction is beneficial to student satisfaction and success in college. This is particularly true for post-traditional students, who may have limited means of connection with the university. Work on improving mattering can be an active area of intervention since students who believe they matter have higher retention rates and student involvement. Minority Serving Institutions like the one that Alejandro and Jakobe attend are well-positioned to provide the types of support mechanisms that can help students of color succeed in engineering [26]. We would envision this type of support extending to post-traditional students of color.

#### 4.3.3 External Assumptions (or Seeking Support)

Both participants show a desire to autonomously design their own educational path, and both have mixed results. Before entering into the 4-year institution, Jakobe mentions transitioning into a CS major after learning it's not as inaccessible as he thought it was. Alejandro is more vocal in his advice to someone like him, “ Gotta finish as soon as possible to get into the workforce. That's what I'm trying to do.”

As Alejandro demonstrates a transactional (i.e., limited but strategic) relationship with the institution, his narrative has limited discussions around faculty or peers. He does mention his active role in seeking accommodation from faculty. From his narrative, it seems that he does not require or long for support from his peers, whom he describes as “a bunch of 18 and 19 year olds.” Also, he explicitly mentions his decision not to allot time to student-related activities, “I just have a completely different life.” On the contrary, we see Jakobe expressing regret that he had to miss out on certain parts of the college experience due to his work commitments, “...added pressure of also needing to work …. It has not allowed me to fully experience the university the way other students do. I have never actually experienced it.”

Alejandro's scenarios are consistent with previous research [11], which notes that some post-traditional students may not require social support from the university or do not need/want to utilize the university-provided support because of their outside lives. However, it would be incorrect to assume that all post-traditional students share this trait because some students may yearn to experience college life just like their counterparts. Therefore, when thinking of post-traditional student engagement in universities, both perspectives should be taken into consideration.

## 5. Implications/ Conclusions

The engineering education community is focused on supporting marginalized students, and there is a growing focus on undergraduate post-traditional students. We emphasize the intersection between traditionally understood marginalization (race, socioeconomic class) and post-traditional status. A lot of the focus on post-traditional has been at a statistical or how-to-categorize level, not as focused on the psycho-social experiences and within-group differences [27]. Here we have showcased the value of paying attention to the individual nuances. The narratives of Jakobe and Alejandro reveal the complex interplay of identities and experiences in

shaping the lives and educational journeys of post-traditional students in engineering. Understanding students' experiences offers insights into the underlying factors that influence how some students view their educational experience and how their needs may be similar or different, which can help shape more effective approaches to their professional preparation and enhance their engagement.

The COVID-19 pandemic has altered a lot of our usual practices (e.g., widespread remote options) and taught us we can do things differently. A lot of systems that were traditional and seemed like they could never change, needed to change overnight. The emergency of COVID-19 is gone, but we can still think about what we have learned, which is now possible. Emergencies can help us figure out what is important to us and what other ways we could do things better.

As educators, we recognize that many of the challenges faced by post-traditional students, such as financial insecurity, time constraints, and external responsibilities, are systemic issues beyond our immediate control. However, within the academic realm, we have the power to make a meaningful impact. Faculty can play a crucial role in creating an inclusive and supportive environment by fostering positive student-faculty interactions. Recognizing the diverse life situations of post-traditional students and providing flexible academic support, such as accommodating varied schedules or offering online and accessible office hours, can contribute significantly to their success.

In short, post-traditional students need our attention and creative support. Ultimately, due to the varied nature of post-traditional students, the only way to fully understand the needs of each individual student is to engage in a discussion with them about their specific challenges and requirements. By paying attention to the individual and thinking about what they need, we can each find new ways of supporting them, we can work to change our institutional systems. While we may not have the ability to address all external factors, we can strive to make the educational experience more equitable and responsive to the unique needs of post-traditional students, ultimately enhancing their engagement and outcomes in the academic journey.

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