

Stewardship of the Stories: Learning from Black Engineering Students' Lived Experiences

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Abstract

In 2019 - 2021, during a research study involving 24 Black engineering student participants who were currently or formerly enrolled at a predominantly White university in the United States, some participants answered interview questions, based on their lived experiences, in a storytelling manner. These participants used a narrative form of storytelling to share their experiences at the university and other settings, including experiences of physical conflicts, emotional conflicts, bias, microaggressions, mental stress, and physical illness.

Their experiences spoke their truth, sometimes for the first time. The participants' experiences were consequential for each of them, even while being inconvenient and uncomfortable for other people who did not share their experiences and may not believe their truth. However, we believed them. In 2023, we sought to revisit a reflective question related to conducting the original research study: *What methodological nuances arose from participants sharing their lived experiences in a study of 24 Black engineering student participants who were currently or formerly enrolled at a predominantly White university? And relatedly, in what ways did these nuances lead to components of deeper stories?*

We introduce a new term, a **Sounding Line**, for the marker-based methodology we developed for this analysis. A Sounding Line marker reflects a research participant's communication, in the moment, taking measure of the interviewer, determining if they are to be trusted with the personal, culturally-sensitive, and perhaps highly revealing stories from their lived experiences. This paper is about the methodology we developed and applied, in 2023, to the initial dataset from 2019-2021.

Listening to these stories evoked an awareness among the research project interviewers that we were hearing an unexplored expression of lived experiences, so we leaned in to learn more. Trust grew between the students and interviewers, as the interviewers created space for participants to share openly, and the participants responded with honesty and depth. Participants expounded further, sharing a rich tapestry of stories. Participants disclosed their resilience and resourcefulness; their paths to overcoming challenges; frustration and isolation; communities and belonging; support from extended family; the sadness they experienced with outcomes they perceived as unsuccessful; and the joy they experienced with outcomes they perceived as successful.

As researchers and interviewers, we felt a stewardship responsibility to develop a methodology that respects the power of the stories the participants entrusted to us. In this paper, we present a beginning to the methodology we developed and applied to this dataset. It is a relational

methodology, intentionally bringing humanity into the research process, embracing the complexity of narrative storytelling while maintaining a consistent approach that may be replicated by others. We include specific examples from four of the participants' interviews. Our results draw attention to the cadence and revelatory attributes of storytelling, interpreted in the context of experiences of the racialized environment where the participants were immersed as students for their engineering education journey.

Positionality and Reduction of Author Bias

Dr. Ennis is a Broadening Participation Professional at a high research university in the western United States. Dr. Auguste is a Research Practitioner at an LLC in the western United States. Dr. Hampton is a Post-doctoral Research Fellow at a high research university in the mid-Atlantic region of the United States.

Dr. Ennis designed, developed, and led the initial research study that resulted in creation of the dataset analyzed for this research paper. Drs. Ennis and Auguste participated on the initial project research team. All three researchers participated in the interviews that resulted in creation of the dataset; the design and secondary analysis of the dataset that is described in this paper; and the writing of this paper.

All three researchers identify as African-American people; with lived experience in African-American communities and predominantly White universities (one also has lived experience at a Historically Black College and University (HBCU)); and with qualitative and quantitative research experience in STEM education. To reduce possibilities of author bias, multiple researchers from this team coded and analyzed each participant interview.

For anonymity, we have replaced references to the university, its programs, and its services with generic names in UPPERCASE.

Introduction

One author of this paper (Ennis) led a research study in 2019-2021, as part of her doctoral dissertation research. That research study examined the following research questions about Black engineering students at a specific predominantly White university in the United States: "(1) What are the retention rates in the Engineering College for Black students, and how are they changing over time?; (2) How do interventions and programs figure in their navigating the university and their major?; (3) What aspects of student experience are related to students' decisions to stay or leave?"[1]. The other authors of this paper (Auguste and Hampton) were members of the five-person research team for that study. All members of the research team conducted semi-structured interviews with the 24 current or formerly-enrolled Black engineering student participants.

Outcomes from that research study included a dataset of the interview recordings and transcripts, and qualitative and quantitative analyses of the data.

During data analysis following each round of semi-structured interviews, we (the researchers) discussed the fact that some participants answered interview questions, based on their lived experiences, in a storytelling manner. These participants used a narrative form of storytelling to share their experiences at the university and other settings, including experiences of physical conflicts, emotional conflicts, bias, microaggressions, mental stress, and physical illness. We came to realize that we were hearing an unexplored expression of lived experiences, so we leaned in to learn more. We explored, documented, and honed aspects of our methodology that built trust and to which the participants responded with honesty and depth. As a result, participants disclosed short and long stories about their resilience and resourcefulness; their paths to overcoming challenges; frustration and isolation; communities and belonging; support from extended family; the sadness they experienced with outcomes they perceived as unsuccessful; and the joy they experienced with outcomes they perceived as successful.

After the initial research project was completed, we felt a stewardship responsibility to further analyze the dataset, developing and documenting a methodology that respects the power of the stories the participants entrusted to us. In this paper, we present the methodology we developed and applied to this dataset after the initial research study was completed. It is a relational methodology, intentionally bringing humanity into the research process, embracing the complexity of narrative storytelling while maintaining a consistent approach that may be replicated by others. We include specific examples from five of the participants' interviews.

We believe that Stewardship of the Stories is a responsibility of each researcher/interviewer to be familiar with the markers that are culturally relevant for their community of participants, and to respect the knowledge that participants contributed based on their lived experiences [2] [3] [4].

A key aspect of the methodology we used for this research study is recognizing markers that indicated a willingness on the part of the participant to trust the interviewer with personal, culturally-sensitive, and perhaps highly revealing information or stories about their lived experiences. Here we introduce a new term for these types of markers: a **Sounding Line** (abbreviated singular SL and plural SLs). We chose this term for the markers as an analogy to the sounding lines used by sailors to physically measure the depth of the ocean at their current location. We interpreted these specific markers that we encountered during our research interviews as the participants' communication, in the moment, that they wanted to take a measure of this interviewer, to determine if she or he could be trusted with the stories from their lives. With the SL, a participant is expressing a readiness to tell their story, small or large. The SL is a precursor to the participant's storytelling. We came to recognize each SL as a call to which we carefully responded in ways that encouraged culturally-informed trust-building. Over

the course of two semi-structured interviews and two member check interviews with each of the 24 participants, we honed and documented our methodology for recognizing and responding to SLs. A year later, in a secondary analysis of the dataset, we documented the methodology that evolved during the initial research study, and we present that methodology in this paper.

Sounding Lines have varied attributes. Many have a verbal attribute, including words, word-choice, code-switching, African-American Vernacular English (AAVE), tone, inflection, or volume. Some have a physical attribute, including body language or gestures. Some have an urgency attribute, such as the participant interrupting the interviewer to ensure that the SL is inserted into the dialog at the moment where and when the storytelling-readiness matters most to that participant. Some SLs are part of a call-and-response cadence, where the timing of the response contributes to its measurement results.

There are several types of SLs that we encountered and documented during the initial research and subsequent analysis of the dataset:

SL Type	Definition
Beacon	A clear call for a response; the participant puts the SL forth and waits for a measurable response from the interviewer.
Whisper	This SL is communicated quietly, softly, maybe in passing, and can be easily missed if the interviewer is not paying close attention.
Normalize extreme circumstances	A participant normalizes their experiences that, in other situations, might be considered extreme.
Understate significant efforts	Sometimes participants use phrases or gestures that understate or devalue their significant survival efforts or their significant lived experiences. This type of SL may overlap with “Normalize extreme circumstances” SLs.
Highlight a hard-learned lesson	Indicates that the participant went through a struggle, learned something valuable from the experience, and is deciding if they trust the

	interviewer enough to share this personal lived experience with them.
Urgent	Sometimes characterized by the participant interrupting the interviewer, and/or using hand gestures and other body language to express urgency of the story they feel a need to insert into the interview at exactly that moment.

Table 1: Types of Sounding Lines

For this analysis of the dataset that focused on identifying SLs and responses that led to participant storytelling, the guiding research questions were: *What methodological nuances arose from participants sharing their lived experiences in a study of 24 Black engineering student participants who were currently or formerly enrolled at a predominantly White university? And relatedly, in what ways did these nuances lead to components of deeper stories?*

Literature Review

Black Student Undergraduate Experiences

The experiences of Black students in engineering have been explored in various ways within research. For instance, Boyd-Sinkler et. al [5] presented thematic patterns in existing research on Black undergraduate engineering students reveal a prevalence of identity saliency, persistence, and support resources for undergraduate engineering students, but that more intentional and creative studies were needed to understand the experiences of Black students in STEM. Research efforts to explore the complexity of the underrepresentation of Black engineers at every level have resulted in a common agenda with an “ultimate goal to improve, enhance, and transform learning and work environments” [6, p. 107].

Black undergraduate engineering students encounter many challenges in their pursuit of an engineering degree. Some of these challenges include stereotype threat, a “predicament in which members of certain social groups must deal with being judged or treated stereotypically, or of doing something that would confirm the stereotype” [7, p. 401]. In the case of Black engineering students, Black participant’s perceptions shape their academic performance in the engineering curriculum. Moore [8] and Howard and Hammond [9] asserted that society communicates inferiority in a variety of ways, and the stigma of inferiority followed Black students everywhere they went, especially in science, engineering and math. McGee [10] described the deficit views that others take toward Black students, which blinds others from viewing Black students from an asset perspective and as strong, persevering and unique individuals. Furthermore, researchers explained how school administrators and teachers track Black students away from STEM fields and this tracking occurred very early in these students’ educational experiences [10] - [14].

Seymour & Hewitt [15] described the experience of a Black female student whose professor questioned why she was enrolled in a physics course and what she could possibly want to learn about physics. Additionally, Sue et al. [16] described the microaggressions people face, including Black students on predominantly white campuses, which negatively impact a student's self-esteem, self-doubt and are exhausting and fatiguing. In addition to microaggressions, some Black students experience financial hardship, which could affect their ability to continue their undergraduate studies. Substantial empirical evidence exists that shows financial stress is a major barrier to college success [17] - [20].

On a positive note, students who find supportive academic and social peers tend to persist in engineering and are better equipped to resist internalized stereotypes, especially if the peers are in racial and ethnic support groups [15]. Belongingness is impactful with students feeling included in the engineering culture and developing a strong engineering identity [21]. Nasir et al. [22] argued that when Black students created peer groups that share their Black identity, they maintain a wide network of friends and a strong ethnic identity which can facilitate positive school achievement. McGee [10] developed the Model for Trajectories of Resilience among Successful Black Mathematicians and Engineering students; additionally, McGee [23] developed the Fragile and Robust Mathematical Identity Framework which outlines ways in which students formed their mathematical identity and which highlights fragile resilience and robust resilience responses.

Ennis' dissertation included a qualitative comparative analysis that differentiated the participants who stayed in their engineering majors and the participants who left their engineering majors. The results of this analysis were represented as configurations of constellations of factors that influenced the participants' decisions to stay or leave their engineering majors. The various methods utilized provided the quantitative results of the qualitative comparative analysis, and also provided nuanced understanding of three case studies: two stayers and one leaver [1]. The concept of "leavers" is not as readily explored within the engineering student space, much less the experiences of Black students. Recently, various consortiums and organizations have convened around topics such as the psychological factors that contribute to the dearth of Black students [24]. Overall, intentional studies that consider complexities of lived experiences and the factors involved in persistence and attrition were bedrocks of this paper's exploration.

Storytelling

The study of storytelling spans a multitude of research genres, from history and culture, to uncovering theoretical methods and design. Narrative-based methods have been used across many types of studies including ethnography, narrative inquiry, and phenomenology. Uses of storytelling by way of narratives are prevalent and a significant tool for studies in which a view of a participant's world is requested, with specific but shifting bounds of time, place, and topic

[25]. Further, storytelling elicits an opportunity for stories and experiences that are unheard, unacknowledged, and often willfully ignored due to the lived realities of individuals and their identities. Counter-storytelling is a method that is used as a tool to push back on normalized ideologies grown from a dearth of culturally responsive research on marginalized communities, for example ideologies of deficit-based representations of Black male students in STEM [26].

Funds of knowledge

We recognize that our research is built on a foundation of engineering students' lived experiences. We have learned valuable insights from the work of Norma González, Luis C. Moll, and Cathy Amanti [3][4]. González, et al established the concept of “funds of knowledge”, based on the premise that “People are competent, they have knowledge, and their life experiences have given them that knowledge” [4]. Similarly, we acknowledge the funds of knowledge that the participants in our research study bring from their backgrounds, families, and varied lived experiences. González, et al noted that they attempted to “represent households in a way that is respectful to issues of voice, representation, and authenticity” [4, p. X]. We followed that lead in receiving and studiously responding to the nuances of markers that participants in our research study shared with us, as they assessed our trustworthiness. With our focus on stewardship, we respectfully received the stories they chose to share with us, recognizing that they contributed valuable knowledge with each story they shared.

Use of markers in qualitative analysis

Robert S. Weiss defined a marker, in the context of qualitative interview studies, as “a passing reference made by a respondent to an important event or feeling state.” [2] In an example, he stated that, “The respondent was indicating that this was something significant for her... she understood that it might not be important for the study; and that if I wanted to pick it up, well, there it was...” [2, p.77]. Our use of markers is both similar to and different from Weiss’ in that we examined the intentional use of markers by participants in a nuanced call-and-response manner that reflects Black culture. In our experience, the participant shared the marker as a call, an indicator of their readiness to share more stories of their experiences that they knew *were* relevant to the research study, and the participant evaluated the interviewer’s response to determine if there was enough trust in the emerging relationship for the participant to share more of their stories.

Weiss encouraged interviewers to pay attention to markers and to respond promptly. Not responding to a marker might communicate to the participant that the interviewer was not interested in that detail, or that the interviewer was focused only on answers to their specific questions rather than “the respondent’s full experience” [2]. We built on this concept from a standpoint of respect for a participant’s full lived experiences, and respect that they were/are the experts about their lived experiences. We sought to communicate, at every possible opportunity,

that they were leading the exploration of their lived experiences in the context of our research questions, and we were following their lead.

Anna Carson, et al, interviewed and analyzed birth stories from mothers who were 16 - 24 years old [27]. Their analysis included extensive study of markers indicating a desire for socially-perceived normal and natural childbirth. One notable suggestion that emerged from their research was that the way a participant told her story helped to reveal the story's meanings, and that researchers should examine narrative accounts within context of time, audience, identity, and social dynamics. Ryan L. Boyd, et al, examined narrative markers in the context of narrative storytelling elements theorized by Gustav Freytag and Aristotle [28]. Their work focused on psychological and narrative theory. They measured consistency of narrative processes, identifying sentiment patterns within a corpus of stories – notably, not compiled from culturally diverse sources. Their search for and analysis of markers, interesting in its methodological approach, did not include markers that preceded storytelling, or that determined if a storyteller would proceed with sharing their story. Our work examined markers that preceded storytelling, and included a focus on our priority community of African American engineering students.

Methodological Journey

To become a Steward of the Stories, the interviewer/researcher must develop a trusting relationship with each participant. We refined our methodology over the course of the original research study, with focus on our belief that stewardship is part of each interview and each member check. The protocol was designed, developed and approved by the university Institutional Review Board. The semi-structured interview was intentionally designed for a flow through difficult and complex topics that was iteratively refined. This characteristic of the original study cannot be overshadowed, as it allowed for fidelity across multiple interviewers. This was a multi-member team. The interviewer who participated in one step was not necessarily the one who participated in another step.

Methodologically, a member check is a procedural step. In this context it is an opportunity to build trust, to let the participant know we heard them, and to engage deeper. We move from procedural to relationship building, trust building, and stewarding the story during member check. The member check, when addressed by a participant to include deeper clarifying information, can extend beyond a transactional exercise of verification into powerful nuances and connection with the interviewer and participant [29].

We conducted two semi-structured interviews and two member check interviews with each of 24 Black engineering student participants who were currently or formerly enrolled at a predominantly White university in the United States. The overall topic was understanding Black engineering students' decisions to stay or leave engineering majors.

We used a qualitative analysis method based on the use of Sounding Lines (abbreviated singular SL and plural SLs), as defined above. A SL is a specific type of call-and-response marker, expressed by participant to the interviewer, indicating that the participant is ready to share potentially revelatory stories about their lived experiences, and which the participant uses to measure trust between themselves and the interviewer. The interviewer’s response determines, at the participant’s full and subjective discretion, if the participant feels this interviewer is a trustworthy steward of the story that the participant is ready to share.

During each interview, there were two parties: participant and interviewer. The protocol for the research project included an initial interview, a member check #1, a second interview and a member check #2. This protocol was designed to get to know the participants, to build trust, confirm the information shared during the interviews during the member checks, to correct responses during member checks based on feedback from the participants, and to steward participant stories in a caring and trustworthy manner.

Steps in the method:

- (1) During the interview, as the participant responded to questions by the interviewer, the interviewer listened/observed for, and identified, a SL. In real-time, the interviewer further identified the type of SL that they heard, observed, or experienced.
- (2) The interviewer determined which type of response would be authentic, appropriate, affirming and trust-building. Types of appropriate responses to various SLs are shown in Table 2.

Response type	Examples
Affirm	“I hear you” or “Thank you for sharing that”
Acknowledge – they went through something difficult	“I’m so sorry that happened to you.” “...that's a lot to work 40 hours a week and be in engineering school being an RA. It's really hard to balance so I just applaud you for putting that effort out there. That's amazing.”
Express shock or surprise (can be positive or negative surprise)	“Wow, so you really put it out there!”
Express joy, celebration of achievement	“Good for you! You did it!”

Use language that reflects back to them that you understand and respect the language they are using (especially AAVE, but only if it's authentic for you)	“Grinding” as a reference to studying diligently.
Invite them to tell more of the story	“Okay, great and so you alluded to this a little bit, but I want to just give you an opportunity to expand on your response.”
Be silent and listen, be patient	Similar to the concept of “wait time” as a pedagogical classroom practice. [30] See examples below of 20-second, 6-second and 4-second silences followed by Interviewer’s statements that are also these types of Responses.
Ask how they responded to an event in the past, or ask how they would choose to respond to past event in present time	“If you could respond to that situation now, what would you say?”

Table 2: Types of appropriate responses to various Sounding Lines.

(3) If the participant proceeded to share their story, the interviewer usually listened quietly to the entire story, or affirmed in ways that didn’t interrupt the flow of the participant’s storytelling. In those moments, the interviewer was usually silent until the participant completed the telling of their story – not always, but usually. The interviewer acknowledged and accepted the story, internalized it, verbally appreciated its value, and recognized that the participant generated valuable new knowledge by entrusting them with this story. The story itself was sometimes an SL for another potential story; if so, the interviewer returned to Step (1).

We highlight three key aspects of this methodology. One is that there are times when it is important for the interviewer to be quiet while the participant is sharing. We generally advise that interviewers not interrupt participants when they are speaking, gesturing, communicating in other ways, or pausing to assess trust. The participant may be sharing SLs, to which interviewers should pay attention, parse, and respond accordingly after the participant has finished sharing what they choose to share. The participant may be sharing a story, to which the interviewer should pay attention, listen, see, experience, learn, and absorb all that the story offers. It’s not a firm rule, but guidance – we listened far more than we spoke. Non-verbal affirmations,

demonstrating that the participant had our undivided attention and our support, were key at certain moments of the interview.

The second key aspect of this methodology is that the interviewer's actions and responses must be authentic. For example, if the interviewer is not first-hand familiar with and conversationally-fluent in African-American Vernacular English (AAVE), that interviewer should not respond to the participant's AAVE in AAVE. That would be inauthentic and would likely erode trust-building in the relationship.

The third key aspect of this methodology is that it is **not** a piecemeal methodology. This methodology must be learned and studied holistically, so that it is not taken apart and used out of context. It is not an opportunistic methodology, used on a whim, but instead it may be learned and thoughtfully integrated into a research protocol. Additional information on managing responses will be discussed in the Considerations for Researchers and Practitioners section of this paper.

Examples of Application

Researchers found sounding lines (SLs) and the methodological steps of stewarding stories in participant responses. The protocol for the research project included an initial interview, a member check (1), a second interview and a member check (2). This protocol was designed to get to know the participants, to build trust, confirm the information shared during the interviews during the member checks, to correct responses during member checks based on feedback from the participants, and to steward participant stories in a caring and trustworthy manner.

In the initial interview, a few questions pointed to high points and low points, events that shaped their experience in college, including important moments either positive or negative, in or out of class, how they would divide their experience into chapters and the significant events within each chapter and how they coped with challenging experiences in the academic environment.

In the second interview, the interviewer asked deeper and more pointed questions, focused on the topics of who influenced the participant's decision to study engineering, peer and academic support, racism-related stress, financial hardship and job security, engineering identity, racial climate, competitive culture, stereotype threat, microaggressions and resilience responses. While the initial interview illuminated insights into the participants' stories, during the second interview, participants shared deeply about their lived experiences.

To illustrate the SLs and the method for stewarding their stories, we will draw from the stories of four participants (from the dataset of 24 participants): Nelson, Niesha, Gina, and Frank. For SL: Whisper, SL: Beacon, SL: Normalize Extreme Circumstances and SL: Understate Significant

Efforts, SL: Highlight a Hard-Learned Lesson, and SL: Urgent at least one example is provided from these participants' stories.

Type of SL: Whisper (Nelson)

Nelson shared in his first interview that his high points, low points, significant events and how he coped with challenging experiences were focused on his academic courses and his academic performance. The researcher listened intently, looking for SLs throughout the interview.

Here is an example of an SL: Whisper from Nelson's first interview:

00:12:38.430 --> 00:12:47.430 Nelson: People that, like, well, specifically, like my little brothers, I can help them out like Jerry's going to go to college, I can help them out like more like financially, I can help them out. If he has questions about courses, especially if he wants to do engineering. And then I also think it gives me an opportunity to help out other people that were, like, similar like in The ACCESS Program and stuff, like, I reach out...whenever I'm on campus. Recruiting and stuff like that, because I just think it, you know, doing something like paying it forward just because you didn't get something, like, it doesn't mean that you can't try to help bring others up.

00:13:26.010 --> 00:13:29.640 Interviewer: That's amazing. I just want to put that out there. That's really amazing that you want to do that and you want to pay it forward.

In this story, Nelson delicately shared his desire to “pay it forward” to other students coming behind him, especially his little brother. He also whispers that even though he “didn’t get something” (i.e., didn’t have lots of financial resources), he would like to help others out whether financial, answering questions about engineering courses, or showing up to recruiting events to “help bring others up.” The interviewer listened intently and recognized the importance of this whisper, and affirmed Nelson by sharing how amazing it is to reach back and help someone. “I just want to put that out there” signals that the interviewer respects Nelson’s attitude and approach as noble.

Here is another example of an SL: Whisper from Nelson's second interview:

00:14:04.980 --> 00:14:17.070 Interviewer: Lots of folks talked about people who were important in their decision to stay or leave engineering. Can you say something about the people who were important to you, and what made them important to you?

00:14:18.900 --> 00:15:34.920

Nelson: Yeah, I mean, I'd like to say, like, my mom. For sure, because, I mean, it was never, like, her asking if I could not do well. It was like you can do this, you can make your way through it. My little brothers, like, wanting to set an example for them and wanting to, you know, show them that, like, no matter our background we could do it. We can make it through college and graduate. And, you know, being in a position, like, with engineering, it puts you in a better financial position than a lot of other career paths, so being able to support, you know, my family and not letting, I guess past circumstances determine, like, the future.

I think that, like, there's a lot of friends, being close with other people and The ACCESS Program like Obi and Greg. You know, watching them, you know, I graduated after them, so watching them do it, and they were still supportive and knew I was struggling in some things, but, like, I wanted to show all my friends that I could do it as well. And when graduation finally happened, like, having everyone be there was, you know, made it all worth it.

This SL: Whisper has two stories: one about how his mother affirmed his capability to finish his engineering degree, and how his earning an engineering degree could allow him to provide financially for his family (mother and brothers). The second story tells about how his friends who graduated before him came back to the university to attend his graduation, which is uncommon and significant.

Because the interviewer heard the SL: Whisper reference to Nelson's mother, the interviewer wanted to hear more of Nelson's mother's voice and about her influence. So the interviewer responded with a follow up question to expand on Nelson's response.

00:15:41.760 --> 00:15:52.770 Interviewer: Okay, great and so you alluded to this a little bit, but I want to just give you an opportunity to expand on your response. Can you tell me about the role of any family members in your decision to stay or leave?

00:15:55.500 --> 00:17:09.690 Nelson: I mean. yeah like. Wanting to stay, I guess, my mom didn't really give me an option until I talked about wanting to leave. She's like "You're not leaving." So I was kind of, you know, put into a corner, but, I mean, I'm glad she was hard on me, in that way, because I think if I would have left engineering, I would have regretted it. Seeing where I am now and seeing, you know, just because, you know, if you get set back in classes and leaving engineering would be the easy way out, because you see everyone in these other majors that don't have to study as much or, you know, like just having more fun in college. I guess you could say, but it doesn't, once you graduate you're gonna realize that it's, like, college isn't for fun. It's, you know, it's like, it's a time, I mean, it's four years. In my case, it was a lot more. But, uh you know, like

once you're done with it, you realize like what you put into it is what you're getting out. And I think I'm setting myself up for a rewarding career and future, because of the trials and tribulations I went through. Because of the amount of struggling and because my mom was sitting there, “Nobody may change majors.”

00:17:14.010 --> 00:17:17.640 Interviewer: Well, good for her and good for you, you did it! You did it, right?

Because the interviewer asked Nelson to expand on his whispered SL, Nelson provided a more textured and nuanced account of the conversation with his mother who “put [him] in a corner” and said “Nobody may change majors.” [3] [4]. Ultimately, he acknowledged his appreciation for his mother’s advice because he would have regretted it if he had left engineering. Although Nelson used his own voice to outline the reasons for staying, it was his mother’s voice with which he spoke. She significantly influenced his decision to stay in engineering by refusing to support his change of major. Because the interviewer encouraged Nelson to elaborate on his whispered SL, he told his story in a way that shared with researchers an insight into his family life, where his mother guided him and his brothers with firm, loving influence for important life decisions. This resulted in valuable insight for the research study, which might have been missed without using the SL methodology.

The interviewer’s response of “Well, good for her and good for you, you did it!” was to affirm and celebrate the fact that Nelson did it. This move stewards Nelson’s story by building trust, demonstrating to Nelson that the interview was a safe space to share his story openly. He graduated with his engineering degree even though his mother pressured him to stay when he considered leaving.

Type of SL: Beacon (Nelson)

Having spent some time with Nelson during his first interview and member check, the interviewer had developed a trusting way of communicating with him. During the second interview, the interviewer followed the protocol asking Nelson more specific questions. Here is the interaction regarding Nelson’s experience of racial discrimination, racism and prejudice on campus.

00:52:18.510 --> 00:52:30.570 Interviewer: Okay, so have you experienced racial discrimination, racism or prejudice on campus? If so, please elaborate. How did it make you feel and what was your response to the incident?

00:52:32.190 --> 00:53:39.360 Nelson: Yeah, so, I mean, I was assaulted on campus and called racial slurs, or not on campus, like, when I lived in THE UNIVERSITY TOWN.

The police had to get involved. THE UNIVERSITY got involved. Definitely made me feel, I don't know. A huge whole thing, I guess I didn't tell you this before, but, yeah, it was like second year before I graduated, maybe one year before I graduated.

Yeah, so, I mean, it's just, I don't know, maybe I look at the whole campus a little differently, cuz I thought the people got off relatively easy, um, I mean, it's definitely something that I carry with me, you know because of it. So I guess, yeah, it kind of made me, I don't know, less, you know, THE UNIVERSITY puts on this image that they are very diverse and inclusive, but it made me feel like that's not necessarily true.

00:53:43.410 --> 00:53:45.960 Interviewer: So you were assaulted and and

2 SECOND PAUSE

00:53:47.850 --> 00:53:50.340 Interviewer: called racial slurs police got involved. Were the people charged at all? Were they arrested? It sounds like it's maybe a hate crime [...] You said that they got off relatively easy. Could you give a little bit more about what that looks like?

00:54:30.900 --> 00:54:33.390 Nelson: I lost you for a bit there, my bad. (Zoom connection)

00:54:34.800 --> 00:54:39.690 Interviewer: Yeah, yeah I'm back, and I was asking.

2 SECOND PAUSE

00:54:41.550 --> 00:54:49.860 Interviewer: First of all, I'm sorry that happened, and it sounded like you were, you were physically assaulted or verbally assaulted?

00:54:50.670 --> 00:54:53.340 Nelson: physically assaulted and then called racial slurs.

00:54:54.120 --> 00:54:59.490 Interviewer: Okay, and so were the offenders arrested? Were they found? [...] Could you tell me a little bit more about what happened?

00:55:05.070 --> 00:55:06.240 Nelson: Yeah so, they're arrested, called the police to have

7 SECOND PAUSE

00:55:13.290 --> 00:55:22.290 Nelson: Three were involved, but only two were involved in the physical assault, so nothing happened to the third one, with the school or with the police. Two of them, one of them got kicked out of THE UNIVERSITY and the other one did not.

7 SECOND PAUSE

00:55:30.510 --> 00:55:37.020 Nelson: And then they both got, like, I want to say assault charges in, like, I don't know what the other one was, but they were all based off of like not drinking for a year, or something and then it just came off their records.

20 SECOND PAUSE

00:55:57.240 --> 00:55:59.460 Interviewer: So what was your response to all of that?

00:56:01.260 --> 00:56:59.700 Nelson: I mean I started, I definitely started seeing a therapist after that. It was like I had PTSD [...], because there's just like it's unbelievable that that happened to me,, I talked with the OFFICE OF EQUITY COMPLIANCE. I don't remember, but they got involved. And then, yeah, it was just a really bad situation. I didn't have a good semester that semester. but there were some good parts of THE UNIVERSITY, I went to the VICTIMS SUPPORT OFFICE. They wrote letters to like my professors and just kind of helped me navigate that.

00:57:07.890 --> 00:57:08.520 Nelson: you're on mute.

00:57:10.830 --> 00:57:15.210 Interviewer: I just said Wow, I did not know that happened to you, and I'm really sorry that that happened to you.

00:57:17.220 --> 00:57:31.620 Interviewer: And I'm glad you sought out the help and sounds like you did get some support in the process, so I'm glad that you were able to do that. And so, did you have any feelings of inferiority as a result of this discrimination and or racism?

00:57:32.670 --> 00:57:43.230 Nelson: Um, yeah, I mean like, to me it was these guys came in and, like, tried to fight me and I was beating them up. And then, as they're leaving because that happened, they started calling me the N word and stuff like that, so, I mean, it just upsets me because it upsets me that that word upsets me because it's like this, you know. Every person like that comes like "I know what I can do, you know, to upset you as a black male" so, I mean, it made me feel a lot of different ways about it.

27 SECOND PAUSE

00:58:11.640 --> 00:58:13.980 Nelson: Yeah. I don't know.

00:58:16.680 --> 00:58:23.520 Interviewer: So, what are your beliefs about how the university responds to racism?

00:58:25.470 --> 00:58:36.840 Nelson: In that instance I mean they kicked one person out but. They pretty much didn't do anything else to the other two, so I don't think that they responded adequately at all.

6 SECOND PAUSE

00:58:43.080 --> 00:58:47.340 Interviewer: Okay, what would you have hoped that the university would have done?

00:58:48.480 --> 00:59:32.460 Nelson: I mean. I guess I nothing, I mean, I don't, I don't know, you know, I wish that they would have, I don't know, been more because they all they told me after was, well, one of them's getting kicked out, but then he just ended up withdrawing and going to another university, so it wasn't like, you know, it really made a huge impact on his life. It felt like I was the only one that had, like, real impacts from it. If that makes sense. It is like I had to go through all this and the other people kind of got off relatively easy. And it definitely doesn't affect them the same way, it affects me.

00:59:37.950 --> 00:59:52.350 Interviewer: You may think you've already answered this question, but did you believe that the university was supportive of you or not when racism occurs on campus why or why not?

00:59:55.140 --> 01:00:25.380 Nelson: And in the way that they handled it I don't think so. There were some, like I said the VICTIMS ASSISTANCE OFFICE was helpful. And I think you know, especially because I wasn't really trying to be super public about what happened to me. They just emailed the professors for me and then kind of laid that out, but I mean, they were really the only like UNIVERSITY organization that got involved.

9 SECOND PAUSE

01:00:34.950 --> 01:00:40.560 Interviewer: Okay, thank you for sharing that. And again I'm sorry that that happened.

Nelson shared that he experienced an assault; in doing so, he hesitated, as did the interviewer. This account is an example of an SL: Beacon because it is a clear call for a response; the participant puts the SL forth and waits for a measurable response from the interviewer. It is a very serious matter, and a powerful story for Nelson to tell about a time when he was highly vulnerable. The emotions of the traumatic experience may have contributed to the delayed responses of both Nelson and the interviewer. The interviewer was shocked; she paused to gather her thoughts so she could respond in a supportive and caring way to steward Nelson's story. The interviewer responded with follow up questions to provide additional space for Nelson to tell his account of his experience, the privileged treatment of the perpetrators, and the impact on Nelson for the rest of his life. The interviewer affirmed and empathized with Nelson, apologizing for that experience, and affirming his choices to seek help and move forward.

As researchers, we note that becoming stewards of these powerful and impactful stories brings both a stewardship responsibility toward the participants and also toward ourselves. When using this methodology, we receive deeper stories, sometimes very sensitive stories, that may shock us or anger us on behalf of the participants. In the Considerations for Researchers and Practitioners section of this paper, we elaborate on the need for researcher grace. Processing the stories, as well as the traces left behind from the stories, requires that we take care of ourselves. We intentionally do not allow ourselves to normalize these extreme circumstances. As a researcher, if you find yourself the steward of stories that shock and disturb you on behalf of others, just know that you also have a stewardship responsibility to pause, process, and take care of yourself.

Type of SL: Normalize Extreme Circumstances (Niesha)

Many of our participants discussed the challenges of paying for their undergraduate education. Some participants had scholarships and grants that partially covered tuition, books, and some living expenses. After their first year, some participants were able to be hired as Resident Assistants (RAs), on-call to support students living in the residence halls in exchange for room and board. When participants had gaps in covering tuition, books, and living expenses, they took on-campus or off-campus jobs to fill the financial gaps.

As an undergraduate student, Niesha worked multiple jobs to pay for her education and for some bills to help her family at home. Here is an excerpt from her interview:

00:18:57.810 --> 00:19:06.300 Interviewer: The next questions I'm going to ask you about are your high and low points in your college experience, and I'm specifically talking about THE UNIVERSITY. What would you say were the high points during your time at THE UNIVERSITY and what made them high points?

00:19:17.190 --> 00:19:31.380 Niesha: High points are probably the friends that I made and I was an RA (Resident Assistant) so that was probably a really big high point. I had a lot of fun with my residents and living in the dorms a second year as an advisor. I met a lot of my coworkers who were really awesome. And then I had a really good group of residents, so that was probably what I would have to say, like highest points, meeting some of my friends and engineering, highest points.

00:19:48.570 --> 00:20:02.190 Niesha: I think, and then probably my lowest points at THE UNIVERSITY were just the fact that I was working, so much so, I was constantly exhausted so usually like it would be around midterm week I would end up cramming pretty hard for them.

00:20:03.090 --> 00:20:09.150 Interviewer: So, when you say working so much, are you talking about a job, the job as an RA? You were working a lot of hours?

00:20:09.210 --> 00:20:52.900 Niesha: Oh, I was working. I was an RA, but I worked on top of that, so I worked as an RA like 20 to 25 hours a week and that's not including you know incidents happen or anything else, and I was a full time engineering student and I was still I think I started serving my sophomore year, heavy like my junior year maybe I started serving in a restaurant, but I had been. I would go back some weekends if I needed money to work at the restaurant. I've been working since my freshman year. I also worked in a couple labs at THE UNIVERSITY on the side. I was a leasing agent. I did, like several, I usually had multiple jobs at a time.

00:20:55.410 --> 00:20:58.560 Interviewer: Yeah, did anybody ever tell you that maybe that was too much work?

00:21:03.840 --> 00:21:06.210 Niesha: I mean, bills needed to be paid so it's not really an option.

Niesha worked as a resident assistant (RA) in the residential halls, and this job paid for her room and board. However, she still had tuition and additional bills to cover which her RA position did not cover. She said she was working a lot and casually mentioned that she was “constantly exhausted” and would cram for her exams. Initially, the interviewer thought that Niesha worked long hours as an RA; however, Niesha explained the jobs she had in addition to her RA position. She was a server at a restaurant, worked in labs at the university and was a leasing agent; furthermore, she worked multiple jobs at a time. When the interviewer asked if anyone told her that the multiple jobs were too much work, she casually replied (leading with “I mean”), “Bills needed to be paid so it’s not really an option.” Being exhausted, cramming for exams, working as an RA and having multiple jobs are extreme circumstances that Niesha normalized. Had the

interviewer not recognized Niesha's comments about "working, so much so", the follow up question about her working the RA job too much, Niesha may not have revealed the additional jobs she worked to survive. This normalizing her extreme circumstance is part of Niesha's story as an engineering student, who ultimately left engineering and the university because of financial hardship, although she was successfully progressing through the academic program.

Later in the interview, when exploring Niesha's low points, she shared the following:

00:21:49.800 --> 00:21:55.140 Interviewer: And you won't you just you already started answering my second question, what about the low points. And when you were at THE UNIVERSITY and what made them low points?: So you talked about working so much.

00:22:03.180 --> 00:22:33.120 Niesha: huh yeah I mean that was really only the downside, I was the only reason I left THE UNIVERSITY was because I just couldn't afford to live in THE UNIVERSITY TOWN. That was pretty much it. Okay, if I could have, if I could have been able to afford to live in THE UNIVERSITY TOWN, I would have stayed but that was just the reality of the situation so that was why it was a low point. I just was working so I was generally working at least 40 hours a week and then plus being in class, and it was just really hard to balance.

6 SECOND PAUSE

00:22:39.330 --> 00:22:56.520 Interviewer: So, in terms of the money situation, did you think of like hey are there, financial resources on campus maybe I could tap into maybe get some more scholarships you sound like you are very, very bright. And so it seemed like there could have been some grants or some funding that could have helped.

00:22:57.840 --> 00:23:30.840 Niesha: I mean, I applied for scholarships every year. I applied for grants, I definitely, I mean, I had the Pell grant I had a couple other things, but I mean. When the cost of living is like, if you think about the cost of an apartment, the cost of like my phone bill, like your car, your car insurance, like when things start to add up, it's just not feasible necessarily. And we talked about the fact that you're paying your student loans back. I started paying some of them back, while I was in school to get a lower interest rate, because I had to do private student loans, so my Sallie Mae one, I was already paying back, while I was in school.

4 SECOND PAUSE

00:23:34.290 --> 00:23:34.680 Interviewer: Wow.

00:23:36.060 --> 00:23:37.260 Interviewer: Well, I applaud you!

00:23:37.920 --> 00:23:50.190 Interviewer: That's a lot to work 40 hours a week and be in engineering school being an RA. It's really hard to balance so I just applaud you for putting that effort out there. That's amazing.

Niesha shared details about her experience with normalizing extreme circumstances regarding meeting so many financial obligations. The interviewer empathized with Niesha and thought about ways Niesha could have eased her financial hardship by asking about accessing other resources. Niesha shared her strategies for navigating her circumstances, which were very impressive. The interviewer was shocked, especially when Niesha shared that she was paying back her student loans while she was in school even when she experienced financial challenges. The interviewer also affirmed Niesha by applauding her efforts.

As mentioned in the Introduction, the SL types “Normalize extreme circumstances” and “Understate significant efforts” sometimes overlap. There were many examples during the interviews where participants matter-of-factly described hardship or trauma, as they measured if the interviewer could be trusted with the full story. Sometimes they provided succinct examples of persistence with a verbal shrug, measuring the interviewer’s ability to comprehend the magnitude of obstacles they had to handle as very young adults. Those SLs overlapped, at times, as the participants collected their SL measurements and decided whether or not to entrust the interviewers with their full stories.

As interviewers, we noted that verbal markers such as “I mean...” or “I guess...” frequently preceded a participant’s comments in which they minimized the significant efforts they’ve made for survival and progress in their undergraduate program. Sometimes those verbal markers also preceded explanations that normalized what would otherwise be considered extreme circumstances, such as working 40 hours a week while carrying a full-time engineering class load.

Type of SL: Understate Significant Efforts (Nelson)

Like Niesha, Nelson also experienced challenges meeting his financial obligations. While he navigated his survival as an engineering student, he often understated the significance of his efforts, making it seem like his efforts were not very notable. Using the words “I mean” when he talked about working many student jobs signaled understatement:

00:17:18.930 --> 00:17:28.020 Interviewer: tell me about your access to financial resources that impacted your motivation or ability to stay in or leave engineering.

00:17:31.110 --> 00:18:22.260 Nelson: I mean, I had to take out student loans and I worked multiple jobs through college so, I don't know, I guess I wasn't, I didn't have any financial things to really motivate me to keep me in engineering, besides, like the thought that I would get paid more and could afford, you know, the student loans that I had to take out during college. And I guess yeah it would have made more sense I would have probably saved a lot of money not going to college, but if you look at it like, you know return on investment, going to college makes it worth it, so, yeah, I mean, there was no financial reason to keep me and, besides, like the future career growth, but there was tons of things telling me that, uh, I simply couldn't afford this.

00:18:24.270 --> 00:18:34.350 Interviewer: So, you're telling me, then, you took out a lot of student loans, you worked multiple jobs, what were the jobs that you worked?

00:18:35.670 --> 00:19:21.030 Nelson: So I worked on campus a lot of jobs, I worked THE UNIVERSITY RIDE AT NIGHT SERVICE, I unlocked doors in the morning for campus security. What else? I worked at Avis Rental Car in the summer, I was a grader some semesters. I was a research assistant for some semesters. I was a brand ambassador for Rock Star. I mean, [I worked] at any job that would help with the hours. I worked at the Office of the Registrar. There's a lot of different jobs I was working at. I did UPS and more unloading trucks, so tons of different jobs here and there, depending on the semester and, depending on what I could do to work around classes.

00:19:21.990 --> 00:19:24.090 Interviewer: Wow, so you really put it out there!

00:19:25.380 --> 00:19:25.590 Nelson: yeah.

Nelson began by saying, “I mean”, and throughout his comments said “I guess”, understating the significance of using large student loans to pay for college. Nelson took out student loans to pay for school, even though he thought he couldn't afford it. He “whispered” that he had multiple jobs, so the interviewer leaned in to the comment and asked to hear more about the jobs he worked. Shockingly, in total, Nelson worked nine jobs around his class schedule to survive as an engineering student. He kept listing his jobs very casually, like it wasn't a big deal, when, in fact, it was. The interviewer's responses showed that she was shocked and surprised (e.g., “Wow, so you really put it out there!”).

Type of SL: Understate Significant Efforts (Niesha)

Niesha expressed to the interviewer that it was difficult to live on her own and pay rent, the water bill and other bills, so she transferred to another university in the state. She stated that things began to settle down, and that her life was less stressful. She described this in the interview:

00:27:52.080 --> 00:27:57.000 Interviewer: Okay, so, why do you say that it's settled down more when you went to THE OTHER STATE UNIVERSITY?

00:27:57.630 --> 00:28:00.240 Niesha: Because I moved back and I moved back home, so it was. It was just cheaper. I didn't have to pay rent anymore, so that was out of the way. And it's just that not having to pay rent changed everything, but I could also work, and I say more hours, but I transitioned into becoming a bartender so I was making more per shift, so I didn't have to work as much to make the same amount of money I was making before.

00:28:25.290 --> 00:28:47.370 Interviewer: Okay. All right, so it sounded like you were trying to reduce your expenses and increase the efficiency of how you made money, so that you didn't have to spend so much time working and you could devote more time to your studies. Yeah that was balanced better.

00:28:47.790 --> 00:29:14.400 Niesha: Yeah, I mean, it worked, I mean, I don't know. I feel like my physics courses were just as hard as my engineering courses. I just had more time to devote to it, and I was at a school that was a mainly commuter school, so it just was a different energy so maybe it was the energy to that just was different, but, and, I mean, I could just light rail everywhere I needed to go, so that was a nice aside too. A little bit easier.

Moving home for Niesha increased her ability to manage her financial situation better. She navigated this by figuring out how to increase her income in less time to create balance in her life. As a steward to Niesha's story, the interviewer summarized what Niesha shared in her response, and then Niesha affirmed the interviewer's response. Additionally, Niesha extended her story and included that using light rail made transportation easier for her to get to and from school. Niesha normalized these experiences, using "I mean" in her statements; however, this was an extreme circumstance that required Niesha to develop complex time-management and financial-management skills as an undergraduate.

00:38:36.150 --> 00:38:48.060 Interviewer: You also mention that graduation was your goal, like it wasn't an option to not graduate. Where does that come from?

00:38:51.600 --> 00:38:52.200 Niesha: [PAUSE] Good question. [PAUSE, SMALL LAUGH] I mean, honestly it came from the fact that, as I was taking all those student loans, I was like okay if I'm taking out these loans, I better be able to pay them back and I bet they better be worth it, because I was thinking well I just wasted time and money if I

don't graduate so. It honestly came from my mom and my grandparents, they were like, "You graduate even if you change your major and graduate."

00:39:24.630 --> 00:39:30.240 Interviewer: Okay, so you went and got your masters um. Was that expensive or were you able to find some financial support for that?

00:39:37.560 --> 00:39:40.830 Part-time bartending was my financial support for my master's. Bartending was how I paid for my masters, I mean I started to take out some loans, but. By and far, choosing, I mean, in the fact that I'm still living at home, right now, which, thank goodness, I am because of COVID. If I hadn't been, that would have been difficult, but living at home and then bartending, and, I mean, from year to year as I shifted from one restaurant to a higher paying restaurant, or a higher volume restaurant, I went from making significantly less at my first job I had as a server and bartender to, by the time I finished bartending, in December, I was making significantly more basically. So it was a lot easier to put money aside, and by that point I just paid my car off, so it was like I had a lot more income to throw at school, so.

00:40:42.480 --> 00:40:57.270 Interviewer: Good well good, well, you are definitely the navigator of how to get through school and how to hustle and do what you gotta do and that's to be commended.

The interviewer prompted Niesha about it not being an option not to graduate and asked where that came from. Niesha hesitated at first, and deflected a little bit. Ultimately she trusted the interviewer by stating "honestly" twice in her response: one to say that she wanted to pay back her student loans and the other response stating that this idea originated with her mother and grandparents. Niesha then proceeded to talk about how she navigated multiple restaurants for her bartending job to consistently increase her income. She paid the balance of her car loan and saved money for school. Afterwards, the interviewer affirmed Niesha for this work and her "hustle" and commended her for doing what she had to do to survive, excel in school and graduate – ultimately with a bachelors degree and a masters degree.

Type of SL: Highlight a Hard-learned Lesson (Gina)

Gina learned a hard lesson about trust. She cautiously began describing her interactions with faculty, using select statements as SLs to decide if she would tell this full story to the interviewer. The interviewer revisited Gina's earlier SL, about problems in engineering, and created space for Gina to share more of her story if she chose to. Eventually, Gina did tell the full story, where she reached out to a fellow student to ask for assistance, the student did not provide the assistance, and the faculty member ultimately made that lapse in group communication Gina's responsibility and minimized Gina's concerns. As Gina continued to build trust with the

interviewer, she shared additional stories of experiences when she felt awkward, isolated, or a “dark kind of vibe” with her fellow classmates.

Interviewer (30:35): Awesome. And then in the beginning you had started to mention about, um, the problems that are in engineering, I guess I'm wondering if you could tell me a little bit more about the challenges that you have experienced.

Gina (30:50): Yeah. And I can totally do that. So there's so many [INAUDIBLE] stuff. So for the first one, I discovered that I wasn't really kind of having that connection, not connection is kind of, I feel whenever I kind of visit some of the [faculty members], some of the [faculty members], I feel this awkward feeling. I don't know. Like I don't feel that you see something, you need to feel free with your faculty but I didn't feel that. It was kind of, “Okay, we need to get back to work. Okay. See you next week.” It was that or awkwardness. I didn't really like that. I really want to relate to my to [faculty], like, yeah, they're there to help us. I want to go to them without feeling that awkwardness. But I usually felt that with some of my faculty and some of the professors and getting to, to sometimes to, and, even with the students, like they just meet you and then you are being, kind of, yeah, they are giving you that weird vibe.

Gina (31:56): Like, I don't want to be your friend, dark kind of vibe then, or don't get close to me. And even by the expression he or she's giving you, you can really see that. And to me too, with the group that was in the communication one too. And I kind of, I kind of felt excluded from the group, even though I think it started from the first day I met with them. And I kind of, I needed to come back to HOME TOWN because I had a doctor's appointment. And then I told one of my friends to kind of text me on, like, what we'll be doing, because I knew what we're doing but kind of had an appointment, in the middle of class I had to go, to come back to HOME TOWN. And then I came back [to] campus. No one said anything to me to the day of the day, like after the assignment was due that day.

Gina (32:54): And then when I came to class, I was like, ‘Yo, I told you to tell, like, text me on anything going on. Like anything I missed when I left the class’. And then she behaved as if I said nothing. She was like, “Really did you tell me that?” That was like, ‘why are you making me look like, making me look like I'm the liar here.’ I, I, I didn't tell her that. I said it to my room. I can't really rise out [INAUDIBLE]. So just keep my head up. But I was like, well, you're making me look like a liar. And I told you that, tell me this. And then now you're telling me that you don't remember. So sometimes I felt excluded from that kind of group.

Gina shared that she struggled with relationships with professors and her fellow classmates. She thought she could trust her classmate to tell her the homework assignment, but she learned a hard lesson: everyone was not her friend, and may or may not tell her what's going on in class, even if they are in groups together. Even though Gina behaved as a teammate, her peers didn't in this situation.

Gina (33:39): And then even when I made my comments, and because [...] at the end of their project, they give you this here group thing, a peer review thing, then that you needed to do.

Gina (33:49): And I give my review. And then the professor was like, 'They told me that you weren't involved in the group. And then you need to be involved in this.' And I was like, 'I told you the reasons and reasons why I felt [excluded], but you are still defending them.' That's so weird and yeah. And lame. So I told my sister about it and then she was like, "It is what it is. Perhaps, you just need to keep your head up and just keep going." Yeah. So yeah, I felt sometimes I felt excluded that way, especially that academic side, people just, that occurrence, I didn't really like it. And sometimes too, like when you are seated at the [INAUDIBLE] table, no one wants to come and sit, because I don't know whether you are a new kid or because of your color. I don't know why. And, but yeah. I also felt the struggles that most Black students feel.

In this story, Gina shared that she discovered that her professor was not as supportive as she expected him to be. From her standpoint, the professor sided with her peers who told the professor that Gina was not contributing to the group project. To get counsel, Gina reached out to her sister who responded, "It is what it is. Perhaps, you just need to keep your head up and just keep going." In providing that response, Gina's sister normalized this discriminatory behavior, yet also helped Gina learn to navigate this difficult situation. Gina learned hard lessons about the ideal world and the actual world, and that she would need strategies to operate more effectively, depending less on others. It's a tough lesson, but a real one.

The interviewer remained silent, listening intently, and Gina decided to continue and discuss experiences with other students of color:

Gina (34:45): And then most people didn't want to be your friend too. It was like that thing. Yeah. And even I felt that in the ACCESS program in [the] beginning, they were like, "Okay, we are friends. You are the community." I felt that. But then immediately you become their friend, the next day, they'll see you and be like, 'okay, I don't know you.' That vibe. They give you that vibe. Don't [...] tell you directly, but we'll give it up. Like, "Okay. I don't really know. You're not really my friend.' Yeah. That kind of vibe thing. I felt it out.

Unfortunately, the “vibe” that Gina felt was real. Her peers were fake with her and inconsistent with her as a friend. Even in the ACCESS program, where she thought she was a part of the community, some ACCESS program participants marginalized her. The interviewer’s attentive silence was an initial response to Gina’s SL, building trust, followed by the interviewer’s empathetic statements that encouraged Gina to continue describing the stories of her hard-learned lessons.

Interviewer (35:20): Yeah. Wow. Sorry. Thank you for sharing. Um, so you said in the ACCESS program too. It seems, it said you felt that kind of vibe. Um,

Gina (35:30): Yeah. I felt that we didn't get students. Yeah. I felt that like in the ACCESS program, they like, don't like beginning because we have that summer break thing that we need to attend. Yeah. When you go, people are like, “Come and sit beside us. We’ll be your friend.’ That vibe. And then the beginning of college starts, the reality starts. They'll be like, “Nope. You’re not my friend. I didn't know you back then.” Yeah. You were just kind of. Yeah. That thing

Interviewer (35:59): That was like before, that was the part of the program that happens before school started, they were friendly.

Gina: Yeah.

Interviewer: And then once school started they’re less friendly

Gina: They started getting wider and wider. Yeah.

Interviewer: Hmm. Okay. All right. Well thank you for sharing that. Um, I think it'll be helpful and, you know, informing the engineering program in the future.

The interviewer acknowledged Gina’s struggles and apologized to Gina for these harmful experiences. The interviewer then asked Gina to elaborate further on her comments. Knowing the ACCESS program was designed to be a supportive community, the interviewer was surprised to hear that Gina was being marginalized in her own community and asked her to confirm her experiences in the ACCESS program. And Gina provided additional confirming statements about her treatment. To steward Gina’s stories, the interviewer provided the uninterrupted safe space and time, followed by encouragement that Gina needed to elaborate openly in response to the questions.

Type of SL: Whisper (Frank)

During the interview, Frank paused on one question and asked that the interviewer refer back to the question at the end of the interview. The interviewer noted that and patiently waited to revisit this question as Frank requested in his Whisper SL. This was a very clear action on Frank's part to measure the trustworthiness of the interviewer, and the interviewer's actions built trust. Here is the original interaction:

00:20:57.210 --> 00:21:07.890 Interviewer: Awesome. Awesome, any other events that have shaped your experience at THE UNIVERSITY, whether it's across campus or in engineering?

5 SECOND PAUSE

00:21:12.600 --> 00:21:13.350 Frank: I think

4 SECOND PAUSE

00:21:17.730 --> 00:21:19.260 Frank: Like a, like a negative experience?

00:21:20.040 --> 00:21:29.190 Interviewer: It can be positive or negative. Whatever comes or stands out to you as something that shaped your experience.

8 SECOND PAUSE

00:21:37.980 --> 00:21:38.640 Frank Let's see. Just give me one moment

00:21:38.730 --> 00:21:39.690 Interviewer: Sure. Take your time.

10 SECOND PAUSE

00:21:50.220 --> 00:21:53.160 Frank: Yeah, let me let me get back. Let me get back to you on that one then.

00:21:53.520 --> 00:21:53.940 Interviewer: Okay.

00:21:54.210 --> 00:21:55.140 Frank: Ask me again at the end?

00:21:55.950 --> 00:21:58.350 Interviewer: Sure. Okay.

At the end of Frank's interview, the interviewer returned to this question as Frank had requested, and this was Frank's response:

00:28:41.730 --> 00:29:05.280 Interviewer: All right, so you... There was a question you wanted me to come back to. I think it was events that have shaped your experiences at THE UNIVERSITY, important moments either positive or negative in class or out of class.

00:29:06.720 --> 00:30:58.110 Frank: Yeah. I think one of the negative experiences, is that the week where there was that incident on campus in the engineering building, that's when I really realized, I think I was pretty naive to the racism that's that's always happening around us and that I think that that incident really opened up my eyes because I never actually really experienced something on campus like directed at me something really racist directed on me. But I think that incident, I realized that my friends, and my colleagues, they, they're, they're also experiencing, they might be experiencing these

things, even if they've never happened to me personally, and any one of these days, it could it could happen to me as well. So I realized then that I, I always knew that I probably look a lot different than most of the people that I see walking around campus but maybe that like there's some people, some of these people like walking around, they might see me. Like in a, in a, in a, in a, like, not like, not in a very good way like to see me probably not as capable, as capable as them. You know, so I think that experience really opened up my eyes to how important it is for me to be to be an advocate for these types of things and just whenever, whenever these types of things happen, it's it's scary. At the same time, it's a little bit motivating, like you realize how important it is for you to change this stereotype. And how far it is, how like, need to do it really quickly too.

00:31:00.330 --> 00:31:03.300 Interviewer: Okay. Thank you.

By responding to Frank's SL: Whisper with patience, as he requested, the interviewer was able to confirm her trustworthiness to receive his powerful story. At the end of the interview, the interviewer remembered to ask the question again and referred back to the question. The interviewer acted as a steward of Frank's story by providing Frank with time to think about it and space to share his response. Frank's cadence in telling his story reveals his emotion and passion as he processed his feelings about a racially-motivated incident that happened in the engineering building at THE UNIVERSITY where he was an engineering undergraduate student.

Type of SL: Urgent (Frank)

At the conclusion of Frank's first interview, the interviewer was wrapping up the session. Even after Frank indicated that he had nothing more to add, the interviewer's positive and affirming tone led to an Urgent SL and informative exchange.

00:31:04.620 --> 00:32:00.780 Interviewer: Thank you very much. Can you give me a second? I want to just verify that that was the last question, because I'm looking at one document. And I just want to make sure that I'm not messing anything up here. And because we went through really quickly, I just want to make sure. Yeah. So that's the last question. So is there anything else that you left out that maybe you want to share? Um, I think you think were, that was good.

00:31:57.450 --> 00:31:59.040 Frank: Yeah, I think that's it.

00:32:00.090 --> 00:32:00.780 Interviewer: Well, great.

The interviewer was going to end the interview when Frank chimed in with these comments:

00:32:03.240 --> 00:33:06.330 Frank: I think, I think it's great that you're that you're doing this and I hope, I hope you get to hear about a lot of different student experiences because it's really important what you're doing. And it's, I'm glad that it's like you're able to do something like this as your, what do you call it like when you get your doctorate like this?

00:32:33.990 --> 00:32:35.190 Interviewer: Oh my dissertation.

00:32:35.370 --> 00:32:37.170 Frank: Dissertation, oh yeah. Yeah, because like most of these, like, like right now when I'm doing research, I thought it was always something supposed to be super like technical stuff and like things like this where you need to talk to a bunch of different people, I think it's important and that it's different from what a lot of people are doing. And I think it's going to turn out great. And I'm super excited to hear about, like, seeing the results at the end. And I just think it's beautiful, what you're doing.

00:33:09.600 --> 00:33:17.430 Interviewer: Thank you so much. I appreciate that, Frank. And so I'm gonna stop recording now, and thank you.

Frank's affirmation of this research was unexpected and surprising. Sharing that he thought what the researcher was doing was "beautiful" was also unexpected and surprising. This was a valuable revelation. The SLs that Frank used to take a measure of the interviewer, up to this point in the interview, helped them to build a trusting relationship. That led to his urgent and unsolicited sharing of his valuable insight for the research study.

Considerations for Researchers and Practitioners

Considering methodological nuance is only one purpose of this reflection on procedural methods. For researchers and practitioners alike, we present a methodology that may have application to qualitative research. We provide visibility to a process that is likely familiar and commonplace for seasoned practitioners who provide care-based support to our promising yet under-valued university talent. As a way to connect the theory and process provided here, this process, theory, and methodology result from applying tools such as researcher positionality, researcher grace, and the potential of iterative qualitative research. This paper cannot be used superficially as a guide to run with this methodology. However, it is a start to a meaningful conversation.

Researcher Positionality, Researcher Grace, and Arising Considerations

An ongoing and useful component to the research process presented here was the concept of researcher positionality. As researchers, our positionalities helped us to recognize when a Sounding Line had occurred, because we were able to recognize similar and different

experiences in our own STEM narratives. Our positionalities helped us to negotiate proximity to difficult topics that were revealed post-Sounding Lines. Relatedly, we also shared lived experiences as practitioners of STEM outreach to marginalized communities. These recognitions and revisiting of experiences helped us to discuss where nuances took place that may have been prevalent in practitioner-based work but not within research guidance for qualitative research. Various forms of guidance are available to researchers on use of positionality, such as Milner's work on working through dangers in research when race and culture are ever-present proximal realities [31]. Projects involving teams of data collection researchers may benefit from practices that allow reflection on experiences that may resonate within the context of the study, or allow space for researchers' reactions to storytelling that occur during the interview process.

The context of the original research study referenced in this paper opened a space for the twenty-four participants to share deeply personal, triumphant, and tragic stories that in many cases were described as the first time discussing such content with someone, especially outside of their personal networks. Often not discussed in engineering education research is the importance of researcher grace, or the active steps of self-care needed during the research process. We acknowledge that the act of stewarding requires responsibility and engagement in exploring participants' stories as well as our own analysis and processing of those stories.

As an instrument of sorts, we recognized the importance of taking time to process other's stories, and taking time to remember experiences uncovered in our own STEM stories. There were emotional tolls, such as emotional responses in real time during the interviews, and post-interview latent responses. Within our team of researchers, we frequently needed to talk through and validate our experiences with our protocol. In recognizing our role in the research, we also regularly revisited our openness to be corrected, for instance, during member checks. We acknowledged that the story being presented was a living part of the participant that they too experienced during and after the span of data collection methods. We placed the participants as experts in their own experiences, leaving an open mindset to shift into learners rather than solely researchers.

As researchers who identify as sharing similar identities to the participants, we experienced moments when processing their stories was deeply emotional for us. Guidance in areas such as social work provides frameworks for self-care that is predicated on reflection and awareness. These practices also feed into the active role of positionality. We advocate for time, space, and support in processing the stories as well as the traces left behind from the stories. We emphasize that this is not a perfect science; sometimes interviewers will fail to recognize a sounding line, mishandle a needed response, or misinterpret a shared story. However, the emotional and reflective work done by researchers/interviewers taking the task to steward such stories can aid in identifying crucial nuances within interview-based work. From the perspective of student-support practitioners, the verbal, non-verbal, and emotional cues, as well as the sounding lines

presented, may be familiar in the context of marginalized students sharing issues, successes, and barriers in their attainment of engineering degrees.

Concluding Remarks

As researchers, there are times when we recognize that something unexplored and unexpected has surfaced in our midst. We each have a choice of how to respond to such situations. In our case, all three of us saw this as a time to learn from the participants in our research study. Their funds of knowledge exceeded our own along a certain dimension, and we chose to learn more about the nuances of that dimension.

Combining our research training with our own lived experiences, we observed, listened, and learned. This paper presents some of what we learned about the call-and-response markers that participants expressed to inform their decisions about sharing personal stories of their engineering education journey with us or not. Some stories were brief, some were long, and all were valuable knowledge that the participants contributed to our research. We consider ourselves stewards of these thoughtfully-shared stories.

As stated above, we sought to revisit a reflective question related to the research process: *What methodological nuances in interview data collection arose from a research study involving 24 Black engineering student participants who were currently or formerly enrolled at a predominantly White university? And relatedly, in what ways did these nuances lead to components of deeper stories?*

Our outcomes included an evolving methodology around the methodological nuances, introducing the concept of a **Sounding Line (SL) marker**, which is a type of call-and-response marker used to take the measure of an interviewer so that a participant may decide if the interviewer is to be trusted with their personal stories. Analyzing our dataset of interviews, we identified several types of SLs, and further analyzed our responses to those SLs. In this paper, we provided eight examples of the deeper, and sometimes revelatory, stories that participants chose to share when they determined that we were trustworthy interviewers.

We recognize that no examples were provided for interview situations in which we did not recognize SLs in the moment or did not respond appropriately, and we later learned that the participant chose not to reveal a story that they might have otherwise revealed if we had applied the methodology effectively. This is an area for future research.

We emphasize key aspects of this methodology, for researchers who wish to learn from and build upon it. Key aspects include the need for the interviewer to be quietly observant when the participant is speaking and pausing to assess trust; the need for the interviewer to be authentic in

their responses; and the need for this methodology to be studied and learned holistically, in context, and thoughtfully integrated into research protocols.

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