

Suggestions for Responsible Qualitative Research with Transgender Engineering Students Using an Auto-Ethnographic Approach

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Abstract—The need for increasing diversity in engineering has paved the road for a rich wealth of literature exploring the experiences of marginalized students in these spaces. Much of this literature utilizes qualitative methodology to understand the experiences of these students, as told through their own words. However, work of this nature can often be influenced by the implicit biases that the researcher carries, as well as the inherent misalignment of power present between researcher and participant. These misalignments may be exacerbated when the researcher is interviewing a marginalized participant, while not identifying as part of a marginalized identity themselves. Students within the LGBTQ+ community may reside at multiple marginalized identities, and as such, the issues surrounding interviewing marginalized identities can be compounded further. Even the most well-intentioned and experienced researcher may find themselves in an interview with a marginalized individual in which implicit biases and unspoken power structures alter the trajectory of the interview. This paper seeks to provide an auto-ethnographic reflection by the first author on the interview of a transgender research participant, while simultaneously providing an opportunity to identify ways in which her interview could have been methodologically improved. This will be accomplished by the first author's analysis of the interview and meta-data. This analysis is valuable, as the first author identifies as a member of the LGBTQ+ engineering community herself.

Keywords—LGBTQ+, Transgender, Inclusivity, Qualitative Methodology, Auto-Ethnography

I. AUTHOR & STORY INTRODUCTION

“There is a lot that we can learn by asking ourselves which perspectives we don't understand.”

-Winnie

Throughout this paper, “I” refers to Madeleine, the first author. Following my graduation from a Bachelor's degree in Engineering, I was offered a unique opportunity to work as a research assistant intern at Arizona State University while awaiting a decision on my admittance to their Engineering Education PhD program. This provided me with a rare chance to jump-start my research as a PhD student on improving diversity and inclusion in engineering. My first project was reviewing and coding a series of interviews from universities and institutions across the country for a paper focused on student recommendations for the improvement of makerspaces and maker culture [1], [2]. In these interviews, I discovered Winnie's story. Winnie was a fourth-year electrical engineering student in the middle of her capstone project. Winnie also identified as a pansexual, transgender woman. Her story captured me from the beginning and continued to draw me in, as I saw my own experiences as a queer woman pursuing engineering deeply reflected within it.

Winnie's story was incredibly difficult for her to tell, due in part to the rich historical, social, and political contexts affiliated with her identities. Throughout the duration of Winnie's interview, it was clear to me that part of the difficulty she experienced in telling her story was derived from her needing to unpack for the researcher these historical and social contexts that define her day-to-day experiences. At one point during the interview, the emotional labor required to explain the complex nuances of her experiences reconciling her identities as transgender, a woman, an engineer, and a maker weighed on her so heavily that she put her head down on the desk and cried. In her own words, she felt that she “could be trans or inexperienced, but [she couldn't] be both.” This statement frames the issues present in engineering culture, such that Winnie felt that she had to be a perfect engineer as a transgender woman in order to be labelled as competent in the eyes of her peers. Instead of being welcomed into the spaces she inhabited, she was constantly scrutinized as being ‘other.’ The historical context of the transgender struggle to exist permeates her experiences, and unpacking this background is no simple task. As a result, telling her story was incredibly difficult for her, though necessary.

This paper was written with the express purpose of contextualizing my experiences with Winnie's experiences by providing recommendations on how to responsibly conduct research with marginalized communities in engineering. We explore the complexities of being in a privileged position and conducting qualitative research with students from marginalized identities by providing a first-person, auto-ethnographic analysis of an interview with a transgender woman in engineering. I explore these topics with the help of my research advisors, who initiated the project that produced this interview [1].

II. WHAT WENT WRONG?

A. Lack of Diversity in Routine “Box-Checking”

The initial issue with this interview, according to the researcher who interviewed Winnie, was that Winnie was immediately on the defense before being interviewed due to the demographic survey. The “boxes” that were provided were not comprehensive, in that participants were not given an option to select alternative genders or sexualities, or provide more descriptive feedback regarding their identities. The demographic questions included gender (“Male,” “Female,” or “A gender not listed: _____”), major, ethnicity, and year of study. Because Winnie's identity as a transgender woman does not fit into traditional “box-checking” protocols, and because her identity influences her perspective and experiences in her pursuit of an engineering degree, she felt responsible for disclosing her identity to the researcher and providing feedback on how the survey was written before the interview even happened.

B. *Marginalized Communities' Histories are Systematically Repressed and Not Well Known*

Perhaps a larger issue present during this interview, though harder to identify, was the researcher's lack of knowledge on the transgender experience. This was not necessarily the researcher's fault; the LGBTQ+ community's history is rife with systemic oppression [3], [4], [5]. Because the demographic survey was not sensitive to more diverse identities and the fact that society suppresses many communities' histories, it seemed to me that Winnie approached this interview from the point of view of someone who sought to educate or inform. This, of course, must be verified through Winnie, but from my own perspective, this is how I would have approached this interview.

The researcher who interviewed Winnie did not know very much about the historical struggles of the LGBTQ+ community at the time of the interview. She was also surprised with Winnie "taking the wheel," which was most likely a direct function of Winnie's perceived duty to provide a framework for her experiences in engineering through the lens of the historical context of being a member of the LGBTQ+ community.

C. *One Interview, One Shot to Get It Right*

The interviews that were being conducted during this project were conducted during a three-day site visit and were planned to be roughly one hour long. Winnie's interview lasted nearly two hours, and her experience as a maker was barely addressed. Unfortunately, the research design only planned for one interview per person, which severely limited the amount of information that was gathered.

III. RECOMMENDATIONS FOR QUALITATIVE RESEARCH WITH HISTORICALLY REPRESSED IDENTITIES

Briefly, here are some recommendations that I wish to raise as points of consideration for those in privileged positions wishing to conduct any type of research with marginalized communities. These recommendations are considered through the lens of Winnie's experience, but I believe that they are pertinent for conducting research with other marginalized communities, as well.

A. *Include More "Boxes" in Demographic Surveys*

In order to be inclusive to *everyone*, I recommend ensuring that any demographic survey that is administered be as comprehensive as possible. Providing an opportunity for individuals to self-identify as transgender or nonbinary signals that you are aware of their existence in the space or context that is being researched. This may even have a positive effect on recruitment efforts for research, as those who identify as LGBTQ+ may feel safer disclosing their identity if they see their identity represented somehow prior to their participation [6]. Additionally, provide options on the demographic survey for participants to disclose other marginalized identities, such as socioeconomically disadvantaged status and disability for the same purpose. Everyone is unique, and each individual has experiences that are influenced by their unique identity. Therefore, allowing the disclosure of these identities is a good way to be as inclusive as possible.

B. *Do Your Research Before Doing Research*

If a participant discloses an identity that is unfamiliar, do research on that identity *before* entering an interview. Having a knowledge of that particular community's history relieves the participant of being required to provide historical context to their experiences. Prior knowledge of the transgender experience and its history would have informed dialogue and carefully structured questions such as, "I'm aware of the struggles that the transgender community has faced throughout history and into current events. With this in mind, can you tell me how your identity as a transgender woman has affected your experience as a maker?" Thus, the responsibility of information shifts from Winnie to the researcher, which provides a platform for more informative discussion regarding the research topic, as opposed to historical contexts which inform experiences that the research seeks to investigate. Furthermore, entering an interview with a preexisting knowledge of the community being researched can prevent insensitive or ignorant questions, which can very quickly derail an interview.

One way to combat this lack of knowledge is to seek out media that is specifically directed towards the community being researched. For example, podcasts such as *Nancy* [7] or *Queery* [8] focus on the LGBTQ+ experience in past and present societal structures, and cover a vast array of the LGBTQ+ experience. These media sources could also be supplemented with articles from institutional databases, which is where references for historical context of the LGBTQ+ experience were found for this paper [3]–[5], [9].

C. *Conduct Multiple Interviews*

If possible, conduct multiple interviews with individuals who belong to small, under-represented, or under-researched marginalized communities. For example, while there is research emerging on the transgender experience in engineering [9], the body of literature on this topic is miniscule. Conducting multiple interviews builds a rapport and trust with the participant – thus resulting in richer data – while adding more data to the pool of literature [10]. This suggestion also applies to any community, but is especially relevant for communities that have been under-represented in research, such as the transgender community in engineering.

IV. LIMITATIONS

This study is limited primarily by the sample size, as well as the length of this paper. Additionally, we are unable to contact Winnie for her feedback on this paper, and we recognize that auto-ethnographic analysis as data has its own limitations.

V. FUTURE WORK

This paper has been a way for Madeleine to explore qualitative methods of interviewing with marginalized populations more thoroughly as she begins her PhD. She is broadly interested in pursuing this line of work for her dissertation. We plan to gather and analyze interviews conducted between a more diverse set of students to make this analysis more thorough and intersectional.

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