

# Attack Helicopters and White Supremacy: Interpreting Malicious Responses to an Online Questionnaire about Transgender Undergraduate Engineering and Computer Science Student Experiences

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Online research that solicits participation from marginalized communities or is conducted by scholars of marginalized identities may be targeted by individuals who intend to tamper with the study outcomes and/or harass the researchers. Our goal is to identify and interpret malicious responses recorded in a first-of-its-kind national questionnaire for transgender and gender nonconforming (TGNC) students in undergraduate engineering and computer science programs. Data categorized as malicious (50 of the 349 total responses) contained slurs, hate speech, or direct targeting of the research team. The data was coded inductively and discursively interpreted through social justice frameworks. The responses contained homophobic, transphobic, ableist, anti-Black, antisemitic, and anti-Indigenous content. Online memes associated with white nationalist and fascist movements were present throughout the data, alongside memes and content referencing gaming and “nerd” culture. Malicious responses can provide critical insight into the social conditions in STEM education. In application, we call for researchers to critically analyze, rather than discard, malicious data to shed light on these phenomena and generate empowering “counterspeech” to confront hate and reclaim agency. These findings show that social justice STEM education must include perspectives on online hate radicalization and center anti-colonial, intersectional solidarity organizing as its opposition.

**KEYWORDS** transgender; STEM; engineering; computer science; hate speech

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Many academics are pleased to receive emails from strangers interested in their research. The authors of this paper have been particularly thrilled to receive warm words from engineering education and transgender and gender nonconforming (TGNC) community members over the course of a project to provide insight into the experiences of TGNC students in engineering and computer science. Shortly after the launch of the project, however, a member of our research team opened her email to find a different type of feedback:

Subject: TGNC Resiliency Question

...I believe that is what is wrong with higher education. Students should be taught to focus on their chosen field and not their gender. In my program I'm sure there are students that fall into the categories you are researching, but their performance is how they are judged. Stop trying to push gender and convince people that they are more important or discriminated against because how they identify. Let people choose their own path and don't force them into fields because you think a group isn't represented enough. In today's world people can be what they want to be regardless of their gender or race, all you're doing is propagating a stereotype and pushing a divide between groups. Also, the fact that you are funded by the NSF is an enormous waste and not science, that money could be used for real research that could actually better things. Good luck with your research,

[Name Redacted]

In retrospect, and compared to other communications we received, this email is relatively kind. There were a handful of other direct emails to our research team, but slurs and hate speech poured into our online outreach questionnaire when it was distributed nationally. The malicious words and slurs directed towards our research team had a profound impact on morale and mental health, particularly for one of our graduate student researchers, who was the primary data analyst. As a transgender woman who was already in therapy for anxiety and depression regarding online anti-trans rhetoric, managing the study's data collection caused significant personal distress, and time had to be taken off the project to heal from traumatic harm.

This paper interprets the online backlash against our research, particularly as it appeared in the questionnaire data, and relates the hate speech we received to larger trends of online radicalization into white supremacist and fascist conspiracy movements. Rather than exclude this data in our research, we argue that malicious responses must be taken into account. To quietly discard these responses due to their harmful intent is a disservice to a project aimed at transforming engineering culture, as such responses reflect the social and educational context in which traditionally excluded students and scholars experience oppression, silencing, and violence. Our goal is to better understand how these responses relate to engineering culture by framing them within larger social contexts—namely, the rise of online fascism.

## BACKGROUND

This paper is situated within a national multi-phase research project specifically exploring the experiences of TGNC students in engineering education and computer science. In the broader project, queer and trans studies frameworks are used to form discipline-specific understandings of how student experiences are shaped by gender, racial, political, and professional identities (Cech and Waidzunas, 2011; Cech, 2013; Haverkamp et al. 2021; Tonso, 2014).

The project's initial phase was an outreach questionnaire directed toward TGNC undergraduate engineering and computer science students in the U.S. The instrument was composed of numerical and open-ended text box questions probing students' perceptions of gender, engineering education culture, and communities of support. Online outreach was chosen as the first activity for two reasons: first, online questionnaire and survey-based methods are effective in gathering many participants from small-number populations. The number of TGNC engineering or computer science students at a single institution is likely small, given that transgender-identified individuals are approximately 0.6% of the general population (Flores et al. 2016). Second, transgender-identified students spend more time online compared to their peers (Stolzenberg and Hughes 2017). This may be attributed to the internet offering readily accessible TGNC "counterpublic" social spaces for belonging, name and gender recognition, emotional care, and identity affirmation when compared to physical public spaces (Cavalcante 2016).

We began writing this paper in 2020, before some of the major events of the last few years, including the COVID-19 crisis, the move of conspiracy theories such as QAnon into mainstream discourse, the attempted coup and fascist insurrection of January 6, 2021, the overturning of reproductive rights by the Supreme Court in Dobbs

v. Jackson Women's Health Organization, legislative attacks on TGNC children and youth and their health care providers, new waves of book banning, and restrictions against K-university educators in states such as Florida in discussing issues of racism, transphobia, homophobia, and sexism. Before these events, it was disturbingly clear to our research team that the malicious responses could not be dismissed and indicated that discussions of gender and sexuality in STEM education are flashpoints for fascist ideologues living "inside the house" of engineering and computer science. Tellingly, earlier versions of this paper submitted to journals in engineering education were ultimately rejected, not because of the quality of the research itself, but because of "fit." We were left with the impression that our arguments concerning the necessity of addressing fascist ideologies within the cultural contexts that TGNC students endure was seen as irrelevant to engineering education, if not alarmist. Ultimately, we continued with this paper in order to raise awareness and, further, call for researchers in engineering education to take malicious responses seriously in order to better understand the contexts of TGNC students' experiences in engineering and interrupt fascist ideologies inside and outside of our academic programs.

### **Gender and engineering education research**

It has been established that engineering culture presents barriers to the inclusion of women, people of color, and lesbian, gay, bisexual, transgender, and queer (LGBTQ+) individuals in higher education and the workplace (Fouad et al. 2017; Gregory 2015; Linley et al. 2018; Logel et al. 2009). In 2019, 77.5% of bachelor's degrees in engineering and computer science were granted to men, and 60.7% were awarded to white graduates (ASEE 2020). The number of women in architectural or engineering occupations is just 16.5%, according to the Bureau of Labor Statistics, and 78% of total workers in this category are white (Bureau of Labor Statistics 2021). These barriers remain culturally embedded in engineering despite decades of funded intensive reform and inclusion efforts. Research on gender in engineering and computer science education has predominantly remained within a cisgender, gender binary, Eurocentric framework for many years, but work that integrates the intersectionality of race and gender is becoming increasingly visible (Haverkamp et al. 2021).

### **Online harassment and radicalization**

While TGNC students may spend more time online due to supportive internet communities, this does not mean the internet is a safe place for TGNC people. In fact, TGNC individuals navigate an online culture of targeted harassment, which exists parallel to widespread offline marginalization. Almost every trans individual (97.6%) in a recent study reported witnessing persistent negative social media and news articles about the community, which strongly correlates to broadly reported experiences of depression, anxiety, and distress (Hughto et al. 2021). A comprehensive three-and-a-half-year study further discovered that 15% of *all* transgender-related comments on social media were blatantly transphobic, weaponizing slurs against TGNC individuals (Haynes 2019). Another study analyzed the highest-performing social media content on TGNC topics and found that politically right-wing or anti-transgender sources account for 65.7% of all top-performing content, compared to 15.4% of top-performing content from LGBTQI+ sources (January 2020).

Transphobic and homophobic harassment online has the potential to extend into academic research focused on these communities. The term “mischievous responder” has been coined to describe respondents who falsely claim to be part of a survey’s intended audience to provide extreme or untruthful responses to alter the research outcomes (Robinson-Cimpian 2014). Several studies on LGBTQI+ topics have noted mischievous responders. In one example, mischievous responder data (1% of the total) in a large data set ( $N=148,960$ ) altered the measurement of LGBTQI+-heterosexual youth health disparities by as much as 46% (Cimpian et al. 2018). A study within engineering education presented at the Collaborative Network for Engineering and Computing Diversity 2019 conference recorded data from mischievous responders as well, much of which contained overt hate speech (Boudreau et al. 2019). In that paper’s case study, an all-campus survey regarding gender-neutral restrooms received 880 survey responses and 50% were identified as negative, with a transgender undergraduate student describing these comments as “hateful and violent.” (Boudreau et al. 2019, 9). We use the word *malicious* over the word *mischievous* when discussing such data to recognize malintent rather than playfulness. Our concern is that what occurred in our study, and as could be reasonably predicted in Boudreau and colleagues (2019), has been occurring without note or acknowledgment in engineering education research for years and continues to occur. The consequences of targeted harassment against TGNC researchers in STEM, which occur silently or hidden, cause researchers to feel isolated, and the harassment may discourage them from persisting in the field. Ignoring malicious responder data and incidents of targeted harassment contributes to the already documented chilly, unwelcoming climate in STEM for marginalized academics. Instead, we call on researchers to pay close attention to malicious responses as data that elucidate the lived experiences of TGNC students and scholars in STEM. To dismiss such statements and harassment as “mischievous” ignores the context of fascist movements taking place in the U.S. in which TGNC students find themselves in the crosshairs of violent white nationalist extremists.

STEM fields such as computer science and programming share workplace and recreational proximity to online subcultures including video gaming and “nerd-dom” which similarly present barriers to those not within a white, cis male, heterosexual norm (Starr 2018). While not inherently white nationalist (and indeed, can offer potent rebukes to such ideologies), these are locations where the issue of radicalization into white supremacist and white nationalist movements is endemic. Of concern to STEM education is the fact that online white supremacist and white nationalist groups frequently recruit from online gaming/tech/nerd communities where they find fruitful connections through white “geek” identity and the militarized straight cis masculinity represented in popular video game media (Kline et al. 2003, 246–68; Shaw 2014, 13–51).

White supremacy and white nationalism are related, often overlapping, yet not synonymous. White supremacy is a system of oppression that maintains cultural, ideological, epistemological, and political control of people of color through “direct processes that secure (white) domination and the privileges associated with it.” (Leonardo 2004, 137) White supremacy can be subtle or overt, but it is ubiquitous in the United States of America. White nationalism is the belief that an all-white Christian ethnosestate must be created through the removal of “others” through citizenship denial, deportation, and genocide (Flanagan, Acee, and Schubiner 2019, 6). White nationalism

fixates on the nation-state and processes to create a racially pure ethnosestate through the creation and subjugation of racial “others.” Such ideologies are always inseparable from constructions of gender, sexuality, and disability within white nationalist claims to genetic superiority, with epistemic origins as far back as the Crusades and Spanish Inquisition, which used violence and forced conversions of Jews, Muslims, and Indigenous peoples to regulate citizenship across racial-ethnic boundaries (Dunbar-Ortiz, 2003; Friedlander 1995).

Online radicalization and recruitment occur on a constellation of websites, from 4chan, Twitter, YouTube, Reddit, the “manosphere” (men’s rights and misogynist forums), and conspiracy theory news sites (Nagle 2017). Social communities on these websites collectively form a pipeline of sorts, where algorithms intended to increase engagement or “clicks” funnel users into increasingly extreme content and tactics. This pipeline is not composed of a single app or site, but rather affects a person’s whole ecosystem of internet use and social media. Adherents to various hate movements or ideologies eventually meet and integrate members of one group into another, forming allied commitments towards radical reactionary racial, gender, and political agendas. For example, women are present in neo-Nazi groups, despite the antifeminist and male-orientation of these ideologies, due to a shared racist agenda (Blee 1996). Weisman (2018) illustrates this phenomenon occurring online using an example of strangers becoming friends on an online game chatroom through sharing antifeminist memes. Through this friendship, an individual who had not been aware of antisemitic conspiracy theories may become introduced and radicalized towards those views and drawn into communities with shared antisemitic and antifeminist views through this new connection.

Misogynist communities such as “men’s rights,” “red pill,” and “pick up artist” communities often directly overlap with white supremacist communities, consisting of primarily straight cisgender white men who build community partially through the harassment of women, people of color, and LGBTQI+ people (Condis 2018; McLean and Griffiths 2019; Nagle 2017). A significant number of online gaming community members experience sexist, racist, transphobic, white supremacist, and conspiratorial discourse—which harms marginalized communities and builds a sense of community-dominance by straight, white men (Easpaig 2018, TaeHyuk, and Hearnes, 2021). One study found that over 80% of gamers have witnessed identity-based harassment online, and that roughly 10% will be exposed to white supremacy, Holocaust denial, and conspiracies surrounding COVID-19 and Black Lives Matter (Anti-Defamation League, 2020).

Far-right adherents deflect criticism by writing off their digital hate-signaling as playful trolling and edgy memes. As Cynthia Miller-Idriss (2020, 151–2) observes,

one reason the new ecosystem of online spaces has been so effective in spurring growth in the far right has to do with the entertainment value of social media and the ways that humor has been weaponized, especially through the creation and circulation of memes, jokes, and emoji. The far right has figured out that young people are motivated not only by serious, planned action but also by spontaneous and humorous engagement.

Harassment from online gaming and tech communities translates to real-world danger for women and marginalized groups through in-person threats and releases of

addresses and personal information (doxxing). Three mass shooters in 2019 left manifestos littered with specific references to racist, antisemitic, and sexist memes common on gaming and tech-centered forums such as 4chan, 8chan, and Reddit. They were part of a growing number of mass shooters who announce their shootings on forums and/or livestream the violence (Dewey 2014; Harwell 2019; Quinlan 2019; Wells and Lovett 2019).

Paying attention to when, where, and how students in STEM are drawn into radicalization pathways online is clearly necessary. Studies that assist STEM education researchers in better understanding these pathways will better equip us to understand the depth and scope of the issue and find ways to intervene.

## **METHODOLOGIES AND CONCEPTUAL FRAMEWORKS**

Social justice methodologies operate through a lens of “tackling seemingly intractable issues” through frameworks that extend “beyond the mere ability to collect, interpret and communicate data” to “create the conditions for social justice” (Gwyther and Pos-samai-Inesedy 2009, 97). We use antifascist and trans/queer methodologies to transform the raw data from a collection of malicious responses into results that can assist researchers in understanding and untangling the interconnected knots of the social, political, and cultural context of the data surrounding TGNC students in order to make effective interventions and transformations to our programs and institutions.

### **Antifascist methodologies**

Fascism perpetuates itself through a cycle of growth, obtaining power, splintering, and then moving back towards growth. Paxton details this theory of fascism-as-process through a five-stage model, summarized below by Ross (Paxton 1998; Ross 2016, 15):

1. A movement-building base dedicated to creating a “new order”
2. A process of rooting in the political system
3. Obtaining power
4. Exercising power
5. Either entering a decline period or a period of compromise called “entropy,” or a radicalization by hardcore fascist groups who advocate a “second revolution.”

Antifascist methodologies attend to and challenge fascist ideologies and movements in research frameworks and data, and expose the overlap among them.

### **Queer/trans methodologies**

Research on equity in engineering education has been called to use theories of power that move beyond institutional policy or individual bad actor models (Riley et al. 2009). We answer this call through the use of critical trans and queer methodologies. Trans and queer methodologies are interdisciplinary, addressing multi-faceted mechanisms of power through engaging in cross-disciplinary politics, methods, relationships, and intellectual structures (Pryse 2000). If “to queer” is to destabilize normativity and the nature of knowledge and its power-as-universal-truth, then a “queer” methodology will destabilize traditional research trajectories and act as an interpretive project (Browne and Nash 2010; Crawley, Whitlock, and Earles, 2021). It follows, then, that

transing is a practice that takes place within, as well as across or between, gendered spaces. It is a practice that assembles gender into contingent structures of association with other attributes of bodily being, and that allows for their reassembly. (Stryker, Currah, and Moore 2008, 13)

Trans and queer methodologies position discourse as a primary mode through which power permeates society. Discourse is a linguistic process that upholds power through legitimizing institutions while also constructing differences such as sexual, racial, and gender categories (Browne and Nash 2010; Foucault 1978). Interpreting discourse, even between trans people ourselves, allows for a critique of what is seen, felt, or perceived as hegemonic truths in their specific social context (Zitz et al. 2014). Language not only has power but constructs and reproduces power itself. We view the malicious responses to our study as data, fragments of discourse that can reveal how power constructs itself and operates.

Single identity models, such as an analysis that positions TGNC undergraduate student experiences as unconnected to race, class, ability, or sexuality, reflect an epistemology of Eurocentric masculinist thought and obscures the multiplicity of identities and experiences of TGNC people and people of color. Patricia Hill-Collins (1990, 293) argues that

viewing domination itself as encompassing intersecting oppressions of race, class, gender, sexuality, and nation points to the significance of these oppressions in shaping the overall organization of a particular matrix of domination. Similarly, personal identities constructed around individual understandings of race, class, gender, sexuality, and nation define each individual's unique biography.

Using a Black feminist thought framework, we seek to prevent TGNC identity from becoming a detached genre of singular identity, or subsumed into a supposed universality of lesbian, gay, bisexual, and queer experiences. Gender and trans identities cut across sexualities relating distinct discourses, communities, issues, practices, and lifestyles (Stryker 2014).

Gender and trans identities are constructed by and through race, with whiteness shaping dominant norms of gender embodiment. Discursively categorizing Black bodies as subordinate, for instance, was critical in “maintaining the biopolitical ordering of slavery” and continues to undergird Black experiences with trans identity (Snorton 2017, 104). Racialized conceptions of “masculinity” and “femininity” further cast all non-white trans individuals into disproportionate doubt and invalidation. This occurs in a myriad of ways, such as the contemporary objectifying mystique of Asian transgender bodies in dominant culture or the colonization of Indigenous gender/sexual embodiments into prevailing colonial gender regimes (Driskill et al. 2011). Trans and queer methodologies in STEM education research must ultimately recognize the power of discourse upon the construction of gender and its deep enmeshment with racial subjugation. Our methodological frameworks do not attempt to remain “objective” in our analysis of our data. Instead, we are rooted within research methodologies that contribute to the practice of “research justice,” which Andrew Jolivette (2015, 5), defines as “examin[ing] the relationships and intersections between research, knowledge construction, and political power/legitimacy in society.”

## METHOD

Malicious responses to research on marginalized students in engineering education should be analyzed as vital to an analysis of the context of their experiences. Towards this end, we combine qualitative and quantitative methods through inductive coding, thematic interpretation, and TGNC undergraduate research participant input to interpret the malicious responses to our outreach questionnaire. The instrument explored student skillsets and strengths, sources of community and support, and their favorite aspects of engineering and computer science.

### Recording of data

A Qualtrics questionnaire with 16 Likert-scale items and 7 open-text prompts focusing on students' perceptions of their skills, support, and resiliency was created. Demographic questions regarding gender, disability, and race/ethnicity were included. The questionnaire link was distributed to over 3,000 email addresses of department chairs, program administrators, and faculty at accredited engineering bachelor's degree-granting institutions. A total of  $N = 723$  responses were recorded.

### Criteria for invalid, malicious, and valid data

The responses were exported into Excel for sorting and cleaning. Validity criteria were established to develop datasets for the research project and identify which respondents would receive a \$5 [Amazon.com](#) gift card as compensation. We did not intend to separate any complete responses into a "malicious" category until faced with the problems of harm to the research team and potential skewing of outcomes. Reading the data participant by participant, the malicious responses were often immediately and viscerally identifiable. The general sorting criteria are described in Table 1.

**Table 1. Criteria for questionnaire data categorization**

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#### 1. Invalid or Incomplete

- Did not Agree to Consent.
- Did not select they identified as TGNC.
- Did not select they are an undergraduate engineering or computer science student.
- Did not answer all fields (incomplete).

#### 2. Malicious

- Answer contained slur, hate speech, or mocked research/researcher.
- Answer implied bad faith (i.e., direct mention of gift cards or memes).

#### 3. Valid

- All else.

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### Inductive thematic coding

Data categorized as malicious was imported into [ATLAS.ti](#). An inductive coding approach was used to highlight specific themes and form connections throughout the range of malicious responder data (Thomas 2006). Multiple read-throughs of the data both by column (question) and by row (respondent) were performed. Thematic analysis informed our team's "identifying, analyzing, and reporting patterns within the data" (Braun and Clarke 2006, 79). Emergent results were discussed and revised iteratively. Two primary upper-level codes were created: culture and identity. Culture

referred to political commentary, internet subculture, perspective on higher education, or expressed ideologies. Identity referred to specific social identities targeted, marginalized, or referenced (e.g., race, ability, gender).

### **Virtual research community input**

Thirty-six participants, categorized as valid responders to the questionnaire, accepted an invitation to join a virtual research community on the Slack platform. The space allowed for input beyond the one-time initial outreach questionnaire and provided a supportive space where the unique intersection of TGNC experience meets the engineering undergraduate experience. TGNC students in the virtual community were offered an opportunity to help the research team analyze and make sense of the malicious responder data. Student participants were warned that the data contained violent terminology and harmful, triggering language. Students that opted into the smaller private Slack channel discussing malicious responders were provided with de-identified versions of the demographic data and an Excel sheet of the malicious responses. A multi-month, online conversation ensued, prompted at random intervals by specific questions.

Students involved in the analysis, particularly those who spend time on forums such as Tumblr, Reddit, and 4chan, or engage online games, provided perspectives into the meanings and motivations of the malicious responders, and provided context for online subculture slang. While input from this group was relatively unstructured and informal and was not used as an augmenting data set in and of itself, it did help refine the research team's understanding of the malicious data. Drafts of this manuscript were also reviewed by this subgroup of the virtual community, and their constructive feedback was integrated.

### **Representing hate speech**

We present our data mostly verbatim, including words that are broadly understood as demeaning, disturbing, and hateful. Some words, however, have been redacted in consideration of the positionality of the research team. Andrea Haverkamp is Jewish, transgender, queer, and white. Finn Johnson is white, transgender, queer, and disabled, and Michelle Bothwell is white, cisgender, queer, and disabled. Qwo-Li Driskill is light-skinned, multiracial (Indigenous/Black/white), queer, trans feminine, and disabled, and Devlin Montfort is white, transgender, and queer. We have redacted the n-word from the malicious comment data in this paper. As Stewart writes, “who benefits from seeing that word, unredacted? I assure you it is not Black people” (Stewart 2016). The decision to retain homo- and transphobic words is intentional, as they shape the communities and histories of our queer and trans team members and are deeply entwined with the systems of power under study. We do not wish to perpetuate the harm done through these responses but rather leave them intact to bear witness to the realities of our lives. Censoring or hiding these words in this research area limits our collective ability to dismantle them more broadly in social justice work and may counterintuitively add to their power. Here, we document this problematic speech, critique its origins and impact, and advocate for action (Saldaña and Omasta 2017). Last, the terms “hate,” “hateful,” and the term “hate speech” in this paper should not imply simple or irrational emotion. We use these terms as shorthand for serious and

focused negative prejudice enacted verbally, non-verbally, and symbolically by those with social or political power, which can further 1) rally support by similar ideological adherents and/or 2) incite or perform physical, emotional, or relational harm upon the subject community in private or in public (Paz, Montero-Díaz, and Moreno-Delgado 2020). Eli Clare (2017), on the importance of trigger warnings, notes that “in the late 1980s and 1990s, feminists developed the practice of trigger warnings to give people a heads up before details of violence were spoken out loud.” Clare uses the specific language of “trigger warnings” to “reflect the abrupt, visceral tailspin some of us experience when encountering or being caught off guard by particular images or stories...” The following sections contain virulent and malicious responses to our study. We advise that the reader take great care in reading the following sections.

## RESULTS

Total responses ( $N = 723$ ) were separated into three categories: i) 299 responses from TGNC undergraduate students in engineering education; ii) 50 malicious responses; and iii) 374 invalid or incomplete responses. Malicious responders accounted for about 15% of the questionnaire’s responses.

### Demographics

The demographics of the 50 malicious respondents are presented in Table 2. Throughout the rest of the paper, quotations from responses will be attributed to the respondent number from this table. Of note is that 12 respondents (24%) indicated their gender as being related to a helicopter or aircraft and that 15 of the 30 reporting disabilities (50%) referred to transgender identity or sexuality *as* a disability. Viewing this table gives an immediate snapshot of the tone and tenor of the malicious responses and the interplay between gender, sexuality, race, and ability. Here are a few examples of demographics that show this interplay:

- #2 – Aerosol [Gender], Afro/Klingon-Asiatic Galapogayation [Race], Being 2.86% White [Disability]
- #17 – Airplane [Gender], Native American (Elizabeth Warren) [Race], Transgenderism [Disability]
- #24 – Fucking white male [Gender] I’m a Swedish Muslim [Race], My country is run by communists [Disability]
- #31 – pansexual attack helicopter [Gender], kangz [Race], intracranial lead deficiency [Disability]

### Primary Themes

The following sections outline major patterns found in the responses. Select quotations are provided, along with their associated questions, as examples of how these patterns appeared in the data. Our methodology explicitly calls attention to the multiplicity of constructed identities that are subjugated across race, gender, citizenship status, religion, disability, and sexuality.

**Table 2. Demographics of the malicious respondents**

| #  | Gender                                 | Racial / Ethnic Identities  | Disability (if indicated)                                  |
|----|--|---|--|
| 1  | I identify as a gift card              | I'm an ethnic gift card   | I don't have enough gift cards                             |
| 2  | Aerosol                                | Afro/Klingon-Asiatic Galapogayan  | Being 2.86% white  |
| 3  | Apache Attack Helicopter               | American  | -  |
| 4  | Male                                   | Puerto-Rican American   | -  |
| 5  | Apache Attack Helicopter               | Erhnically diverse  | -  |
| 6  | Apconsugender                          | Black   | I have hands where my feet are and feet where my hands are |
| 7  | Attack Helicopter                      | Ah-64 Apache  | -  |
| 8  | Bi Sexual                              | Black   | -  |
| 9  | big chungus                            | republican  | autism   |
| 10 | Gruy                                   | Come on man, these questions are stupid. Everyone is a grab bag of genetics from all over the world   | -  |
| 11 | There are only two genders             | There are only two genders  | -  |
| 12 | Transgender/shemale                    | white   | -  |
| 13 | I'm an attack helicopter               | my skin is blue, I think I might be a smurf   | being an identitarian                                      |
| 14 | ?                                      | Blasian   |  |
| 15 | Airplane                               | Black Hispanic Jew  | Being trans  |
| 16 | A human being.                         | STILL A HUMAN. this tells us even less information than gender. its the actual color of my skin. what else do you want to know? what i ate for breakfast. this question is unnecessary. | -  |
| 17 | Airplane                               | Native American(Elizabeth Warren)   | Transgenderism   |
| 18 | Apache helicopter                      | Cracker   | Gender dysphoria   |
| 19 | Cis gender lizard king                 | Eskimo  | Thinking im not a man                                      |
| 20 | DID YOU JUST FUCKING ASK FOR MY GENDER | DID YOU ASSUME MY RACE  | Gender Disphoria   |
| 21 | Electron GENDER                        | Colored Native Mix w/opressed ancestors.  | Anxiety  |
| 22 | F-16 Fighter Jet                       | US Military   | That I'm a tranny.   |
| 23 | Female                                 | White   |  |
| 24 | Fucking white male                     | I'm a Swedish Muslim  | My country is run by communists                            |
| 25 | helicopter                             | cherokee  |  |
| 26 | Hermaphrodite                          | African American  | Transgenderism   |
| 27 | homophobic bigot, yes we exist         | well i was born white but i spend a lot of time in the sun so i identify as a light skin black male   | im mentally retarded                                       |

| #  | Gender   | Racial / Ethnic Identities  | Disability (if indicated)  |
|----|--|---|--|
| 28 | I identify as a boy when I'm getting fucked and a girl when I'm the one fucking. My dick goes inside out so it changes             | I'm black on the inside but when I'm a boy I like getting my white ass fucked, you know what I'm sayin' broh? | I'm sexually attracted to the thought of being eaten alive. I know this sounds like a joke, but I'm being serious. I'm a macrophile/voreophile and I jack off almost every night to the thought of a giantess women shoving me up her ass (to dip me in her sauce) and then throwing my body into her giant mouth. This isn't a joke. I'm sexually suicidal and I jack off to death. The doctors say I have a disease but I find that really fucking hard to believe |
| 29 | Literal fluid  | My skin color is not important.   | Like all transgenders, my disability is the inability to come to terms with biological reality. Madness, essentially.  |
| 30 | Mail   | Bourne  | -  |
| 31 | pansexual attack helicopter  | kangz   | intracranial lead deficiency   |
| 32 | Pedophile  | Hispanic latina, native american black  | pedophilia   |
| 33 | Perfer not to say  | Perfer not to say   |  |
| 34 | Quasi-Demi-poney; bankai-released state queercopter with a hint of faggotdrag lesbian and homosexual upside-down Frappuccino cake. | Everything that is native from the country of Africa.   | Trans  |
| 35 | Queer  | KANGZ   | Being transgender  |
| 36 | Real n*  | Real n*   | Too ballin homie   |
| 37 | There is only 2  | White   |  |
| 38 | Agender  | African-American  | Depression/Anxiety   |
| 39 | Trans hypocoagulated   | I identify a Indian   |  |
| 40 | V22 osprey   | Crip  | nvm  |
| 41 | Two-spirited demiqueer n*faggot attack helicopter kin  | KANGZ   | being transgender  |
| 42 | Female   | Black, Hispanic American, Hawaii Indian   | My pride   |
| 43 | transgendered lesbian  | saiyan  |  |
| 44 | Non-binary inter-sectional African Mohammedian Feminist  | African Jewish  | Transgendered  |
| 45 | Non-cookie-cutter cis-furry dragonkin. Don't judge.  | Homo sapiens, American  |  |

| #  | Gender                           | Racial / Ethnic Identities                          | Disability (if indicated)                            |
|----|----------------------------------|---|--|
| 46 | N/A                              | Trans-black, trans-child, trans-asexual, pedosexual | Meth addiction                                       |
| 47 | I'm just here for the gift card. | I'm just here for the gift card.                    |  |
| 48 | Nonbinary queer                  | Hapa  | Non-neurotypical cognitive ability (ADD, demisexual) |
| 49 | Trans male                       | Mixed   | -  |
| 50 | Transfemme rad butch             | Black and native American                           | Illiterate   |

### ***Responding to diversity, equity, and inclusion (DEI)***

Respondents frequently mentioned DEI efforts, and affirmative action, with one referring to “privilege point systems” (#41). Programs that seek to promote equity and inclusion may be perceived by these respondents as antithetical to ideologies of meritocracy. Many of the comments along this theme were fairly succinct, stating that “this is bullshit” (#39) or that “a degree has nothing to do with gender” (#31).

#### ***What are your strengths and skills in engineering and computer science classrooms or projects?***

I am trans obviously I will have a job regardless of my skills thanks to diversity quotas inspired by surveys such as these. - #15

I don't actually have any skills I'm just a diversity “affirmative action” student. - #43

#### ***Are there any comments that you would like to share with the research team?***

While I of course do not condone bullying or discrimination, I wish people in universities (especially the faculty) would not focus so much on gender and identity. That doesn't matter. Just let people do their thing and teach them how to do Gauss eliminations and whatnot. - #47 Please do some research on something that will actually benefit the human race. This notion that these quacks are normal is crazy. Honestly, they make engineering courses more a pain in the ass. Why cant they just sit down and learn the material like the rest of us and stop making everything about themselves? - #5

How on earth did this study get funding??? - #13

These responses, alongside the emails we received, communicated to our research team that the respondents not only thought our specific TGNC research project was unnecessary but that this study was one aspect of a larger social problem. This reflects claims made by political conservatives, which argue that equity research and policies are a legitimate and immediate concern in academia. The community act of making this claim constructs this as a part of their social reality, regardless of the evidence (Best 2018).

It is important to make clear here that (1) “diversity quotas” are against the law and do not exist in the U.S., and (2) Affirmative Action is not a quota system and its policies do not apply to LGBTQI+ communities. This is one of many places where we can see issues of race deeply entwined with issues of gender and sexuality. Attacks on

Affirmative Action are racialized and implicitly anti-Black, as the historic and ongoing exclusion of Black people is a specific legacy Affirmative Action was implemented to address.

### *Gender binary discourse*

Respondents promoted an immutable biological gender-sex binary through their commentary on gender. The most overt was respondent #11 putting “There are only two genders” into every open-text comment field, with similar wording provided by respondents #17, 31, and 39.

#### ***Are there any comments that you would like to share with the research team?***

Transgenderism and Modern Gender Theory are a manufactured entity created out of a desire to help people, but are factually incorrect and deny any of the unique and valuable differences between men and women that should be celebrated, not taught as falsehoods in order to eliminate any distinctions. Facts don’t care about your feelings, and neither do most Americans. They care about getting a good job and providing for their families, not pandering tendency and neglect of moral or personal responsibility. - #4

Your research is Bullshit and there is no such think [sic] and nonbinary genders you’re either male or female with the rare exception of someone born with both which is probably a result of a genetic disorder therefore if someone thinks they are born in the wrong body they have a mental disorder. -#27

#### ***Do you have friends, classmates or family who support your success in engineering as it relates to your race, sexuality, disability status, religious affiliation, or other identities? If so, how do they provide support for you in your engineering program?***

I really can’t be bothered at this point. You’re ruining genuine scientific disciplines here. There are two genders, male and female. If an engineer creates a bolt and a nut but then whimsically labels them, then they’re not that great of an engineer. - #29

The marginalization of TGNC people through a rigid gender binary is closely related to the marginalization of intersex people through the simplification of gender into two binary categories of sexual difference. Roughly 1/100 humans have intersex characteristics and the notion that physical sex confers inherent immutable gender difference is increasingly recognized as outdated and false (Joel 2011).

### *Anti-trans, anti-queer*

Many comments targeted TGNC individuals and their community. Trans and queer people were referenced with hostility, anger, resentment, denial of validity, and tropes such as pedophilia and sexual predatory behavior. Some responses were short—issuing slurs such as “shemale” or “tranny” or calling themselves (feigning TGNC identity) “degenerate” or “repulsive.” Demographics listed in Table 2 provide a window into the respondents’ perceptions of gender and sexuality. Reported genders range from those similar to expected TGNC respondents (e.g., trans male, nonbinary queer, female,

agender) to those outright ridiculing TGNC identity (e.g., non-cookie-cutter cis-furry dragonkin, non-binary intersectional African Mohammedan Feminist, pedophile).

*Do you have friends, classmates or family who support your success in engineering as it relates to your race, sexuality, disability status, religious affiliation, or other identities? If so, how do they provide support for you in your engineering program?*

No lol I'm a social outcast transsexual who the fuck would actually hang out with me - #15

***What is your favorite part of engineering & computer science programs & student culture?***

I love that everybody misgenders me. I have a mental disorder and they are constantly reminding me to snap out of it. -#26

Faggots -#34

The hate for faggots -#24

The sex hehe. -#53

***What are your strengths outside of your engineering program (i.e., at home, in your community, during free time, within friendships, and beyond)?***

My strength is my ability to rape women with the strength of a man but pretending to have the body of a woman. It's not cross dressing, mom!!! - #28

***Are there any comments that you would like to share with the research team?***

Pedosexual rights are the next step in the never ending march of poz and degeneracy and fathers who won't let people from the pedosexual community have sexual relations with their children are bigots and might as well join the KKK. -#43

The term "poz," used by respondent #43, is shorthand for HIV-positive. This shorthand was first used by the HIV-positive community itself but has been appropriated by hate groups online to refer to LGBTQI+ people. Taken in context these responses highlight the respondents' conflation of gender with sexuality, and gender diversity with mental illness, rape, disease, and child abuse.

### ***Anti-Blackness, Anti-Indigeneity, and racialization***

The backlash to TGNC students and their inclusion is an inherently racist backlash due to the intersectionality of race and gender. There are implicit racist assumptions and explicit racist rhetoric in contemporary anti-transgender movements, alongside ideological partnerships with the Far Right, and reflected in the malicious responder data (Pearce, Erikainen, and Vincent 2020, 680).

Racial and ethnic identity demographics displayed in Table 2 demonstrate that racial references and racism are deeply embedded in the malicious responses, particularly anti-Blackness. The respondents were not satisfied by simply listing "Black" as their race. Instead, it was often compounded with additional terms such as "Black Hispanic Jew," "Blasian," "Hispanic latina, native American, black" among others visible in Table 2. Mixing of races and ethnicities in the demographic data

reflects one of white supremacy's primary fears: the diluting of whiteness resulting in anti-mixed racism.

Being both Black and trans is constructed by white dominated society as a "seemingly impossible positionality" due to the complex intersections of race and gender (Nicolazzo 2017, 69). Snorton argues that the "condensation of transness into the category of transgender is a racial narrative" predicated on the privileging of white gender narratives while simultaneously ungendering and excluding Black bodies from the construction of cis/trans (Snorton 2017, 8). Further, the racialization of Blackness and gender is imprinted with ownership, animalization, and bestialization (Gossett 2017). When a respondent maliciously writes one's race as Black, this signals an ideology in which Black trans bodies are constructed as both impossible, and not fully human.

Anti-Black online netspeak and "digital Blackface" was present throughout the data. This is contemporary online parody, spectacle, and role play which commodifies a performance of Black culture and language, reflecting racial dynamics of 19<sup>th</sup> century Blackface minstrelsy (Matamoros-Fernández 2020). The online slang term "kangz" was used by 7 (14%) of the respondents. This term is shorthand for an online anti-Black phrase "we was kangz," or "we were kings," which is a pejorative diminishment of Black history on the African continent. Respondent #38 filled every single text box available with anti-Black slurs or stereotypes such as "I eat fried chicken NOMISAYIN AHAH-HA" or the word "kangz"—never once explicitly touching upon the subject of gender.

Indigenous people are also targeted in the data, reflecting historical and ongoing discursive and state violence against Indigenous gender systems to justify genocide through the exertion of biopower. Chris Finley argues that "biopower defines the colonization of Native peoples when it makes sexuality, gender, and race key arenas of the power of the settler state" (Finley, 2011, 31). Table 2 presents diminishing demographics such as the slur "Eskimo," "Colored Native Mix w/opressed (sic) ancestors," and "Two-spirited demiqueer n\*faggot attack helicopter kin." It is notable that the specific descriptor of an *Apache Attack Helicopter* is referenced by several different participants—itself a synthesis and reflection of U.S. military force and the appropriation of Indigenous language by colonizers.

### *Antisemitism and Jewish conspiracy*

The connection between antisemitism and enduring white nationalism in the data set must be identified and understood through historical context. Antisemitism was first termed in the 1870s to describe new patterns of Jewish subjugation across Europe after Jews gained citizenship and individual rights (Robinson 2000, 472). Antisemitism is a "cyclical" oppression that positions Jews as secretly capable and powerful, and conversely, a lesser-than corrupting force in society (Jews for Racial and Economic Justice 2017, 15). Hostility to Jewish people is the "lynchpin" of white supremacist organizing and alt-right conspiracy theories because "within this ideological matrix, Jews—despite and indeed because they often read as white—are a different, unassimilable, enemy race that must be exposed, defeated, and ultimately eliminated" (Ward 2017, 10).

### *What are your strengths and skills in engineering and computer science classrooms or projects?*

Recognizing Jewish Marxist conditioning. -#24

***What are your most important sources of support & community in your engineering or computer science program?***

Hitlers 3rd Reich -#25

***What is your favorite part of engineering & computer science programs & student culture?***

The fact that Jews aren't in it. -#37

Getting to fuck my classmates without their consent. If they report me, I'll just report them to the Jewish elites and the Clinton foundation and we'll kill their parents. -#28

My favorite part is how I can get all the students and faculty to deep throat my pozzed tranny cock and rim my yummy boy hole in public for everyone else to see just by threatening to report them to my jew enablers at the ADL so they can dox them and defame them as nazis for the egregious hate crime of not wanting to sexually satisfy me in public.

-#43

One of our researchers, who is Jewish, had their last name referenced directly:

***Are there any comments that you would like to share with the research team?***

I felt like the team wasn't diverse enough and included too many cis-white males. I did not appreciate the lack of trigger warning. Haverkamp reminded me of mein kampf which triggered my alter-jewish identity. -#2

### ***Online hate subculture references***

The growth of hate movements online carries specific vernacular and in-group "jokes." Respondent #6 filled every comment field with the same phrase: "They can call me MAAM" followed by 70 exclamation points. This is a direct reference to a popular video shared online by anti-trans activists with millions of views. The viral video shows a trans woman yelling at a GameStop employee after being misgendered, and the woman in the video is frequently cited as emblematic of trans activists. Respondents frequently referenced "triggered/trigger warnings." The website Tumblr was referenced as an important place for several malicious responders. The site once known as a safer space for LGBTQI+ people has more recently been noted as a hot spot for white supremacist and anti-trans targeting (Nagle 2017). Members of the white nationalist associated community of 4chan perform organized "raids" of Tumblr, flooding the social media site with offensive and antisemitic imagery. References to online jokes, humor, memes, or hateful jokes permeated the data.

Identifying one's gender as an (Apache) Attack Helicopter is also a hallmark of anti-trans discourse online, whether overt or in passing, and helicopters and aircraft were mentioned 12 times in the data. This meme can be understood through the belief that gender is genital-based at birth and any deviation is undeniably outrageous—and this anti-trans joke argues that trans-ness is inherently made up or artificial. Students in the virtual TGNC engineering community described the meme as a more socially acceptable way to mock trans people compared to overt slurs. The various identities targeted through stereotyping, slurs, and offhand statements blur

together to form a web of oppression, leaving masculinity, whiteness, and Christianity untouched.

## DISCUSSION

The backlash to our research project reflects characteristics of contemporary far-right or fascist political movements in the U.S., such as the synthesis of antisemitism with anti-Black and anti-feminist rhetoric (Ward 2017). Harassment against engineering education researchers conducting social justice research are expressions of power intended to silence our efforts toward equity, and we should organize against these efforts (Pawley et al. 2019). It is our hope that this paper and our discussion will assist researchers in making sense of malicious responses they receive by shedding light on this often undiscussed, yet serious, phenomenon. We further hope that readers can leave this paper with a clear sense of application of this work to their own research, education, and organizing.

There are three primary themes in our discussion: (1) the potential for malicious responder research to shed light on and undermine hate speech; (2) an ideological exploration into the malicious responses as reflective of fascist ideologies and movements, and (3) potential responses in higher education.

### Research as counterspeech

This paper was written precisely because we had not seen a paper written by researchers analyzing the hateful comments they received. Our peers in the field have been targeted and have written about it—but a content analysis or deeper details were not released (Pawley et al. 2019). Research demonstrates that online harassment and discrimination towards scholars lead to mental health issues and silencing, with scholars of marginalized identities more vulnerable to these effects, but this describes the *impact* of the targeting—not the *content* itself (Gosse et al. 2021). Analysis of harassment towards academics by Doerfler and colleagues (2021) proposes a taxonomy of harassment that objects to work on race, gender, and marginalization; details how harassers can form networks to enact the abuse; and argues that institutions are presently unable to support the mental and spiritual wellbeing of researchers experiencing targeting. Within the paper, Doerfler et al. posit three primary motivations for online harassment: “1) self-preservation, in that the research poses a real or perceived threat to the harasser 2) ideology, when the research is offensive to the harasser or challenges their ideology; and 3) performative harassment for personal or social gratification” (p. 5-6). Targeting of our work by malicious responders is likely ideological in nature. Many questions we had about academic research communities and our capacity to enact collective care and institutional ethics of safety/visibility have been reflected on by others as well, namely Massanari and her work on the “Alt-Right” online gaze upon researchers (2018).

Despite this, we still return to the question of the data itself—is it to be deleted, unspoken, stored on a hard drive, or analyzed? We clearly argue that more analysis work should be done on the words and ideologies written by the commenters—particularly work that takes their words, repurposes them into critique, and pushes back.

Counterspeech—done safely and with intention—can be empowering, reclaim control and narratives of our lives, and work towards a productive end-goal. The *Online Harassment Field Manual*'s section entitled “Fight Back Write Back” offers examples of counterspeech such as “the reclamation of hashtags” and “enlisting an online community to redirect the conversation in a comments section” (PEN America 2022). Similar work in academia can be done to safely and intentionally repurpose, confront, and make assertive statements against the ideologies expressed in malicious comment data. For the researcher on our team who experienced the brunt of the hate speech, she felt most fully able to complete her dissertation work when the idea to analyze and publish the malicious comments was further refined. Recommendations in prior work center on institutional response and research ethics—we hope that this paper and our discussion demonstrate usefulness to dissecting the ideology, assessing why a particular study was targeted, and confronting the hate in the research process itself. Further work may be able to assess the size, scale, and severity of these subcultures in STEM student bodies, for example, or better understand the cultural proximities at play. *Safety* from additional danger and *intention* in the analysis, as suggested by PEN America in the *Online Harassment Field Manual*'s section “Guidelines for Safely Practicing Counterspeech,” should be key for researchers building on this work.

### **Ideological motivations**

Harassment and targeting of academics and their research can come from those with ideological motivations. Theories of fascism provide a framework to interpret the ways that dominant, oppressive, or reactionary ideologies regarding race, personhood, and gender become entrenched in community base building, exercises of power, and the State (Toscano 2021). Exercises of power by fascist movements can be electoral or legislative victories, violence, media entrenchment, and discursive shifts (Paxton 1998; Ross 2016). In our data, we saw individuals exercising discursive power in their language to target researchers and tamper with data. Importantly, the themes and repetitions serve to mark shared references and signify an existing community with a shared political agenda and racist, trans-antagonistic, and online political meme commentary.

Fascism is not a coherent singular ideology or a resolved historical problem. It is a process, not only an outcome, consisting of multiple simultaneous reactionary movements which advocate extremist “ideas about race, religion, economics, social welfare and morality” (Davies and Lynch 2002, 13). Anti-fascism is a framework that we can use to connect contemporary fascist movements to the foundation of the U.S. as a racial project and ongoing legacies into the present era, which have bolstered colonialism, eugenics, slavery, and the prison industrial complex (Mullen and Vials 2020, 6-8). The U.S., while purporting to be founded on legal equality and democratic rights, was predicated on the 17<sup>th</sup> century invention of “the white race” alongside slave codes and settler colonial militarism—defining people of color as subordinate racial castes who were ultimately dispensable when it favored the white land-owning class (Mullen and Vials 2020). Further, white eugenicist and fascist movements in Europe played a key role in the transition of gender/sexual differences into “notions of sickness and deviancy within criminal law” to be constructed, categorized, regulated, or eradicated, which continues to shape material conditions for contemporary trans and queer communities of color (Mullen and Vials 2020, 316). The fact that just three respondents

identified as white in the demographics, with most responses noting a form of disability and non-normative gender, points to a critical ideological subtext: the fascist extremist's obsession with conflating and eradicating TGNC/LGBTQI+ people, Black people, Indigenous people, Jews, Muslims, "race-mixing" and multiracial people, and people with disabilities.

Various parts of the fascism-as-process, five-stage model can be interpreted as present within the data. The geographically widespread institutional email addresses recorded from malicious responders and their connections to online hate-movement building relate to the movement-building defined in stage 1, and the ability to target researchers and research projects is a minor exercise of power (stage 4). The backlash to our research project is just one small component of broader fascist base building in the United States which frequently targets trans individuals and student activists (Hayden, 2020).

### **Higher education responses**

The targeting of social justice research and marginalized academics fits into theories of fascism as a pathway the right-wing can use to exert power, one act within a larger effort. With this in mind, we can explore ways to not only protect each other and perform our work, but also stifle their broader social-political goals. Alexander Reid Ross (2016) concludes *Against the Fascist Creep* by stating that education is a key tool for dismantling fascist political movements:

It is fascism and the radical right's distortion of truth that poses the greatest threat to the world—not immigration or "Islamization." Combating fascism requires the bravery and courage of fact. Knowledge pierces prejudice. Education around politics, immigration, Islam, and Judaism—to name only a few hot points—remains crucial. (p. 330).

Extremist political ideologies and conspiracy theories are increasingly easy to access online. If counter-education does not occur or is not widely accessible, then white supremacists and nationalists will have a larger share of political education through social media and other media platforms (Snyder 2021).

The university at its most ideal can be envisioned as "a central site for revolutionary struggle, a site where we can work to educate for critical consciousness" using "a pedagogy of liberation" (hooks 1989, 31). Towards this liberation, teaching theories of power regarding racism, antisemitism, cissexism, and fascist political movements should avoid "individual bad actor" frameworks which have been common in STEM (Riley et al. 2009). Frameworks that illustrate interdependent collective struggle, and demonstrate a politic of solidarity, should be centered instead. We share Cathy Cohen's assertion that "the process of movement building [should] be rooted not in our shared history or identity, but in our shared marginal relationship to dominant power which normalizes, legitimizes, and privileges" (Cohen 1997, 458). Identities such as transgender status in STEM teaching should similarly not be taught as "single issues" but be conceptualized as one component of our multifaceted experiences with power and oppression—and that categories such as race, gender, and sexuality have roots in European colonial logics shared by fascist movements (Haverkamp et al. 2021). The content of social justice education in STEM must also challenge STEM's role in these oppressions. Engineering graduates in the U.S. frequently work in fields such as fos-

sil fuels, defense, construction, and technology upon graduation, and could be taught about these field's relationships with national and global racial capitalism and ongoing apartheid in Palestine, as an example (Davis 2016, 79-83). While outside the scope of this research, though perhaps relevant to other researchers, a quick internet search of a phrase such as "January 6 engineer" will quickly reveal a number of engineers involved with the Capitol Riots. These engineers were educated in our classrooms. Engineering educators have a responsibility to teach critical thinking around political issues.

## CONCLUSION

Our researcher serving as the primary contact for the outreach questionnaire received a winding 500-word email, with its end stating:

I am only writing this email to make it more obviously aware to you that your "transgender and non-conforming gender" studies are only encouraging this new unfortunate and immature movement that is happening across the United States at this time. I am appalled that you think it is okay to waste money and precious time on something so irrelevant in the field of engineering... please dispose of this study and focus on something better. Do it for humanity. The decisions we make now will effect (sic) the outcome of history forever. Don't make the wrong decisions.

We disagree with this email's assertions. This analysis and the TGNC student resiliency study they are referencing *are* for the sake of humanity. The email asserts that our research is part of a movement that will affect the "outcome of history forever." We hope that this paper *is* part of a movement that will dismantle hate, bigotry, and oppression. Using social justice and anti-racist frameworks to dissect malicious data recorded in engineering education research is necessary in order to conduct responsible and rigorous scholarship.

This analysis is a rebuke of conspiracy theories and misinformation which not only barraged our research but also underpinned the fascist storming of the U.S. Capitol on January 6<sup>th</sup>, 2021. We should find common ties between social events such as the cyber threats issued against engineering educators, anti-trans rhetoric online from celebrities and major media, antisemitic conspiracies gaining a foothold in mainstream political discourse, and the shooting of Black Lives Matter protestors by a member of the right-wing militia movement. These events all share a common tie of growing extremist racial and gender rhetoric and violence. This paper answers calls made by engineering educators to embrace academic freedom and engage in political discourse (Morgan et al. 2020; Riley et al. 2020). We echo scholarship explicitly naming antiracist engineering education approaches as critical in combating white supremacy (Cross 2020). Our field must develop a robust analysis of how racist and fascist discourses are inseparable from transphobic discourses and approach malicious responses to research that focuses on marginalized people in engineering as central evidence in this research. Addressing these sentiments and their cultural contexts are not only critical for understanding resistance to social justice research, but it is imperative for our colleagues' safety and the transformation of our field.

## REFERENCES

Anti-Defamation League. 2020. *Free to Play? Hate, Harassment and Positive Social Experiences in Online Games 2020*. New York: Anti-Defamation League. <https://www.adl.org/resources/report/free-play-hate-harassment-and-positive-social-experience-online-games-2020>.

Best, Joel. 2018. "Constructionist Studies of Social Problems: How We Got Here, and Where We Ought to Go." *Società Mutamento Politica* 9 (18): 53–67.

Blee, Kathleen M. 1996. "Becoming a Racist: Women in Contemporary Ku Klux Klan and Neo-Nazi Groups." *Gender and Society* 10 (6): 680–702.

Boudreau, Kristin, Leo Ryan Bunyea, David DiBiasio, Rozwell Johnson, and Zoe Reidinger. 2019. "Integrating Inclusive Pedagogy and Experiential Learning to Support Student Empowerment, Activism, and Institutional Change: A Case Study with Transgender STEM Students." Paper presented at CoNECD: The Collaborative Network for Engineering and Computing Diversity, Crystal City, Virginia, April 14, 2019. <https://peer.asee.org/31772>.

Bureau of Labor Statistics. 2021. "Labor Force Statistics from the Current Population Survey Search Labor Force Statistics from the Current Population Survey." U.S. Bureau of Labor Statistics. <https://www.bls.gov/cps/cpsaat11.htm>.

Braun, Virginia, and Victoria Clarke. 2006. "Using Thematic Analysis in Psychology." *Qualitative Research in Psychology* 3 (2): 77–101.

Browne, Kath, and Catherine J. Nash, eds. 2010. *Queer Methods and Methodologies: Intersecting Queer Theories and Social Science Research*. Burlington, VT: Ashgate.

Cavalcante, Andre. 2016. "I Did It All Online: Transgender Identity and the Management of Everyday Life." *Critical Studies in Media Communication* 33 (1): 109–122.

Cech, Erin A. 2013. "The (Mis)Framing of Social Justice: Why Ideologies of Depolitici-  
zation and Meritocracy Hinder Engineers' Ability to Think About Social Injus-  
tices." In *Engineering Education for Social Justice*, edited by Juan Lucena, 67–84.  
New York: Springer.

Cech, Erin A, and Tom J. Waidzunas. 2011. "Navigating the Heteronormativity of  
Engineering: The Experiences of Lesbian, Gay, and Bisexual Students." *Engi-  
neering Studies* 3 (1): 1–24.

Cimpian, Joseph R., Jennifer D. Timmer, Michelle A. Birkett, Rachel L. Marro, Blair C. Turner, and Gregory L. Phillips. 2018. "Bias From Potentially Mischiefous  
Responders on Large-Scale Estimates of Lesbian, Gay, Bisexual, or Question-  
ing (LGBQ)–Heterosexual Youth Health Disparities." *American Journal of  
Public Health* 108: 258–65.

Cohen, Cathy J. 2020. "Punks, Bulldaggers, and Welfare Queens." In *Feminist Theory  
Reader*, edited by Carole McCann, Seung-kyung Kim, and Emek Ergun,  
311–23. New York: Routledge.

Condis, Megan. 2018. *Gaming Masculinity: Trolls, Fake Geeks, and the Gendered  
Battle for Online Culture*. Iowa City: University of Iowa Press.

Crawley, S. L., MC Whitlock, and Jennifer Earles. 2021. "Smithing Queer Empiri-  
cism: Engaging Ethnomethodology for a Queer Social Science." *Sociological  
Theory* 39 (3): 127–52.

Cross, Kelly J. 2020. "Racism is the Manifestation of White Supremacy and Anti-  
racism is the Answer." *Journal of Engineering Education* 109 (4): 625–28.

Davies, Peter, and Derek Lynch. 2002. *The Routledge Companion to Fascism and the Far Right*. New York: Routledge.

Davis, Anglea Y. 2016. *Freedom is a Constant Struggle*. Chicago: Haymarket Books.

Dewey, Caitlin 2014. “Inside the Manosphere That Inspired Santa Barbara Shooter Elliot Rodger.” *The Washington Post*, May 27, 2014. <https://www.washington-post.com/news/the-intersect/wp/2014/05/27/inside-the-mansphere-that-inspired-santa-barbara-shooter-elliot-rodger/>.

Doerfler, Periwinkle, Andrea Forte, Emiliano De Cristofaro, Gianluca Stringhini, Jeremy Blackburn, and Damon McCoy. 2021. “i’m a Professor, which isn’t usually a dangerous job”: Internet-facilitated Harassment and Its Impact on Researchers.” *Proceedings of the ACM on Human-Computer Interaction* 5: 341.

Driskill, Quo-Li, Chris Finley, Brian Joseph Gilley, and Scott Lauria Morgensen. 2011. “The Revolution is for Everyone: Imagining an Emancipatory Future Through Queer Indigenous Critical Theories.” In *Queer Indigenous Studies*, edited by Quo-Li Driskill, Chris Finley, Brian Joseph Gilley, and Scott Lauria Morgensen, 211–21. Tucson: University of Arizona Press.

Dunbar-Ortiz, Roxanne. 2003. “The Grid of History: Cowboys and Indians.” *Monthly Review* 55 (3). <https://monthlyreview.org/2003/07/01/the-grid-of-history-cowboys-and-indians/>.

Easpaig, Bróna Nic Giolla. 2018. “An Exploratory Study of Sexism in Online Gaming Communities: Mapping Contested Digital Terrain.” *Community Psychology in Global Perspective* 4 (2): 119–35.

Finley, Chris. 2011. “Decolonizing the Queer Native Body.” In *Queer Indigenous Studies*, edited by Quo-Li Driskill, Chris Finley, Brian Joseph Gilley, and Scott Lauria Morgensen, 31–42. Tucson: University of Arizona Press.

Flanagan, N Nora, Jessica Acee, and Lindsay Schubiner. 2019. *Confronting White Nationalism in Schools: A Toolkit*. Portland, OR: Western States Center. <https://www.pps.net/cms/lib/OR01913224/Centricity/Domain/4/ConfrontingWhiteNationalisminSchoolsToolkit.pdf>.

Flores, Andrew R., Jody L. Herman, Gary J. Gates, and Taylor N. T. Brown. 2016. *How Many Adults Identify as Transgender in The United States?* Los Angeles: Williams Institute. <https://williamsinstitute.law.ucla.edu/wp-content/uploads/Trans-Adults-US-Aug-2016.pdf>.

Fouad, Nadya, Wen-Hsin Chang, Min Wan, and Romila Singh. 2017. “Women’s Reasons for Leaving the Engineering Field.” *Frontiers in Psychology* 8: 875.

Foucault, Michel. 1978. *The History of Sexuality*. New York: Pantheon Books.

Friedlander, Henry. 1995. *Origins of Nazi Genocide: From Euthanasia to the Final Solution*. Chapel Hill: University of North Carolina Press.

Gosse, Chandell, George Veletsianos, Jaigris Hodson, Shandell Houlden, Tonia A. Dousay, Patrick R. Lowenthal, and Nathan Hall. 2021. “The Hidden Costs of Connectivity: Nature and Effects of Scholars’ Online Harassment.” *Learning, Media and Technology* 46 (3): 264–80.

Gossett, Che. 2017. “Blackness and the Trouble of Trans Visibility.” In *Trap Door*, edited by Reina Gossett, Eric A. Stanley, and Johanna Burton, 183–90. Cambridge, MA: MIT Press.

Gregory, Stacie LeSure. 2015. “African American Female Engineering Students’

Persistence in Stereotype Threatening Environments: A Critical Race Theory Perspective." PhD diss., Utah State University. <https://digitalcommons.usu.edu/etd/4260>.

Gwyther, Gabrielle, and Alphia Possamai-Inesedy. 2009. "Methodologies à la Carte: an Examination of Emerging Qualitative Methodologies in Social Research." *International Journal of Social Research Methodology* 12 (2): 99–115.

Harwell, Drew. 2019. "Three Mass Shootings This Year Began with a Hateful Screed on 8chan. Its Founder Calls It a Terrorist Refuge in Plain Sight." *The Washington Post*, August 4, 2019. <https://www.washingtonpost.com/technology/2019/08/04/three-mass-shootings-this-year-began-with-hateful-screed-chan-its-founder-calls-it-terrorist-refuge-plain-sight/>.

Haverkamp, Andrea, Michelle Bothwell, Devlin Montfort, and Qwo-Li Driskill. 2021. "Calling for a Paradigm Shift in the Study of Gender in Engineering Education." *Studies in Engineering Education* 1 (2): 55–70.

Hayden, Michael Edison. 2020. *The Fascist Underpinnings of Pro-Trump Media: An Interview With Author Jason Stanley*. Montgomery, AL: Southern Poverty Law Center.

Haynes, Suyin. 2019. "A Study Analyzed 10 Million Online Posts Over 3.5 Years. It Found a Torrent of Transphobic Abuse." *TIME*, October 25, 2019. <https://time.com/5710466/transphobic-abuse-online-study/>.

Hill-Collins, Patricia. 1990. "Black Feminist Thought in the Matrix of Domination." In *Black Feminist Thought: Knowledge, Consciousness, and the Politics of Empowerment*, edited by Patricia Hill-Collins, 221–38. Boston: Unwin Hyman.

hooks, bell. 1988 *Talking Back: Thinking Feminist, Thinking Black*. Boston: South End Press.

Hughto, Jaclyn M. W., David Pletta, Lily Gordon, Sean Cahill, Matthew J. Mimiaga, Sari L. Reisner. 2021. "Negative Transgender-Related Media Messages Are Associated with Adverse Mental Health Outcomes in a Multistate Study of Transgender Adults." *LGBT Health* 8 (1): 32–41.

January, Brianna. 2020. "The Right is Dominating Facebook Engagement on Content about Trans Issues." *Media Matters*, July 7, 2020. <https://www.mediamatters.org/facebook/right-dominating-facebook-engagement-content-about-trans-issues>.

Jews for Racial and Economic Justice. 2017. "Understanding Antisemitism: An Offering to our Movement." <https://jfrel-web-assets.nyc3.digitaloceanspaces.com/JFREJ-Understanding-Antisemitism-November-2017-v1-3-2.pdf>.

Joel, Daphna. (2011). "Male or Female? Brains are Intersex." *Frontiers in Integrative Neuroscience* 5: 57.

Kline, Stephen, Nick Dyer-Witheford, and Greig De Peuter. 2003. *Digital Play: The Interaction of Technology, Culture, and Marketing*. Montreal: McGill-Queen's University Press.

Leonardo, Zeus. 2004. "The Color of Supremacy: Beyond the Discourse of 'White Privilege.'" *Educational Philosophy and Theory* 36 (2): 137–52.

Linley, Jodi L., Kristen A. Renn, and Michael R. Woodford. 2018. "Examining the Ecological Systems of LGBTQ STEM Majors." *Journal of Women and Minorities in Science and Engineering* 24 (1): 1–16.

Logel, Christine, Gregory M. Walton, Steven J. Spencer, Emma C. Iserman, William von Hippel, and Amy E. Bell. 2009. "Interacting with Sexist Men Triggers Social Identity Threat Among Female Engineers." *Journal of Personality and Social Psychology* 96 (6): 1089–103.

Massanari, Adrienne L. 2018. "Rethinking Research Ethics, Power, and the Risk of Visibility in the Era of the 'Alt-Right' Gaze." *Social Media+ Society* 4 (2). <https://doi.org/10.1177/2056305118768302>.

Matamoros-Fernández, Ariadna. 2020. "El Negro de WhatsApp' Meme, Digital Blackface, and Racism on Social Media." *First Monday* 25 (1). <https://journals.uic.edu/ojs/index.php/fm/article/download/10420/8325>.

McLean, Lavinia, and Mark D. Griffiths. 2019. "Female Gamers' Experience of Online Harassment and Social Support in Online Gaming: A Qualitative Study." *International Journal of Mental Health and Addiction* 17 (4): 970–94.

Miller-Idriss, Cynthia. 2020. *Hate in the Homeland: The New Global Far Right*. Princeton, NJ: Princeton University Press.

Morgan, Demetri, Kendrick B. Davis, and Norma López. 2020. "Engineering Political Fluency: Identifying Tensions in the Political Identity Development of Engineering Majors." *Journal of Engineering Education* 109 (1): 107–24.

Mullen, Bill V., and Christopher Vials. 2020. *The U.S. Antifascism Reader*. Brooklyn: Verso Books.

Nagle, Angela. 2017. *Kill All Normies: Online Culture Wars From 4Chan and Tumblr to Trump and the Alt-Right*. Washington: Zero Books.

Nicolazzo, Z. 2017. *Trans\* in College: Transgender Students' Strategies for Navigating Campus Life and the Institutional Politics of Inclusion*. Sterling, VA: Stylus Publishing.

Pawley, Alice L., Erin A. Cech, Stephanie Farrell, and Donna M. Riley. 2019. "Targeted Harassment of Engineering Educators: How to Connect with Community and Support Your Colleagues Under Attack." Paper presented at CoNECD: The Collaborative Network for Engineering and Computing Diversity, Crystal City, VA, April 14, 2019. <https://peer.asee.org/31796>.

Paxton, Robert O. 1998. "The Five Stages of Fascism." *The Journal of Modern History* 1: 1–23.

Paz, María Antonia, Julio Montero-Díaz, and Alicia Moreno-Delgado. 2020. "Hate Speech: a Systematized Review." *SAGE Open* 10 (4). <https://doi.org/10.1177/2158244020973022>.

Pearce, Ruth, Sonja Erikainen, and Ben. Vincent. 2020. "TERF Wars: An Introduction. *The Sociological Review* 68 (4): 677–98.

PEN America. 2022. *Online Harassment Field Manual*. <https://onlineharassmentfield-manual.pen.org/>.

Pryse, Marjorie. 2000. "Trans/Feminist Methodology: Bridges to Interdisciplinary Thinking." *NWSA Journal* 12 (2): 105–18.

Quinlan, Casey. 2019. "It's No Coincidence the Synagogue Shooter Posted About the 'Red Pill Movement'." *ThinkProgress*, April 30, 2019. <https://archive.thinkprogress.org/no-coincidence-california-synagogue-shooter-john-earnest-posted-about-the-red-pill-movement-aa46b31c01ad/>.

Riley, Donna, Ellen K. Foster, and Jennifer Karlin. 2020. "Show Up and Disrupt."

*Journal of Engineering Education* 109 (1): 7–10.

Riley, Donna, Alice L. Pawley, Jessica Tucker and George D. Catalano. 2009. “Feminisms in Engineering Education: Transformative Possibilities.” *NWSA Journal* 21 (2): 21–40.

Robinson, George. 2000. *Essential Judaism: A Complete Guide to Beliefs, Customs and Rituals*. New York: Pocket Books.

Robinson-Cimpian, Joseph P. 2014. “Inaccurate Estimation of Disparities Due to Mischievous Responders: Several Suggestions to Assess Conclusions.” *Educational Researcher* 43 (4): 171–85.

Ross, Alexander Reid. 2016. *Against the Fascist Creep*. Chico, CA: AK Press.

Saldaña, Johnny, and Matt Omasta. 2017. *Qualitative Research: Analyzing Life*. Thousand Oaks, CA: SAGE.

Shaw, Adrienne. 201. *Gaming at the Edge: Sexuality and Gender at the Margins of Gamer Culture*. Minneapolis: University of Minnesota Press.

Snorton, C. Riley. 2017. *Black on Both Sides: A Racial History of Trans Identity*. Minneapolis: University of Minnesota Press.

Snyder, Timothy. 2021. “The American Abyss.” *The New York Times Magazine*, January 9, 2021. <https://www.nytimes.com/2021/01/09/magazine/trump-coup.html>.

Starr, Christine R. 2018. “‘I’m Not a Science Nerd!’: STEM Stereotypes, Identity, and Motivation Among Undergraduate Women.” *Psychology of Women Quarterly* 42 (4): 489–503.

Stewart, Terrah J. 2016. “To Whom It Should Concern: An Open letter on the N-Word and Academic Publishing.” *Medium*, July 16, 2021. <https://terahjay.medium.com/to-whom-it-should-concern-an-open-letter-on-the-n-word-and-academic-publishing-edcd0c699578>.

Stolzenberg, Ellen Bara, and Bryce Hughes. 2017. “The Experiences of Incoming Transgender College Students: New Data on Gender Identity.” *Liberal Education* 103 (2): 38–43.

Stryker, Susan. 2014. “Trans Studies: Queer Studies Evil Twin.” *GLQ: A Journal of Lesbian and Gay Studies* 10 (2): 212–15.

Stryker, Susan, Paisley Currah, and Lisa Moore. 2008. “Introduction: Trans-, Trans, or Transgender?” *Women’s Studies Quarterly* 36 (3/4): 11–22.

TaeHyuk Keum, Brian, and Maynard Hearns. 2021. “Online Gaming and Racism: Impact on Psychological Distress Among Black, Asian, and Latinx Emerging Adults.” *Games and Culture* 17 (3): <https://doi.org/10.1177/15554120211039082>.

Thomas, David R. 2006. “A General Inductive Approach for Analyzing Qualitative Evaluation Data.” *American Journal of Evaluation* 27 (2): 237–46.

Toscano, Alberto. 2021. “Incipient Fascism: Black Radical Perspectives.” *CLCWeb: Comparative Literature and Culture* 23 (1): 6.

Ward, Eric K. 2017. *Skin in the Game: How Antisemitism Animates White Nationalism*. Somerville, MA: Political Research Associates.

Weisman, Jonathan. 2018. *((Semitism)): Being Jewish in America in the Age of Trump*. New York: St. Martin’s Press.

Wells, Georgia, and Ian Lovett. 2019. “‘So What’s His Kill Count?’: The Toxic Online

World Where Mass Shooters Thrive.” *The Wall Street Journal*, September 4, 2019. <https://www.wsj.com/articles/inside-the-toxic-online-world-where-mass-shooters-thrive-11567608631>.

Zitz, Claudia, Jan Burns, and Erasmo Tacconelli. 2014. “Trans Men and Friendships: A Foucauldian Discourse Analysis.” *Feminism & Psychology* 24 (2): 216–37.

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