



Twitter Fingers and Echo Chambers: Exploring Expressions and Experiences of Online Racism Using Twitter

Shaniece Criss¹ · Eli K. Michaels² · Kamra Solomon¹ · Amani M. Allen^{2,3} · Thu T. Nguyen⁴

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Abstract

Social media sites, such as Twitter, represent a growing setting in which racism and related stress may manifest. The aims of this exploratory qualitative study were to (1) understand the essence of Twitter users' lived experience with and response to content about race and racism on the platform, and (2) explore their perceptions of how discussions about race and racism on Twitter may impact health and well-being. We conducted six focus groups and four interviews with adult Twitter users ($n = 27$) from Berkeley, California, and Greenville, South Carolina. We managed the data with NVivo and conducted an interpretative phenomenological analysis to identify themes. Participants described Twitter content as displaying both overt and subtle expressions of racism, particularly for Black and Latinx people, and serving as an echo chamber where similar viewpoints are amplified. Participants described how Twitter users may feel emboldened to type offensive tweets based on the perception of anonymity, and that these tweets were sometimes met with community disapproval used to provide a collective calibration to restore the social norms of the online space. Participants perceived harmful mental, emotional, and physical health impacts of exposure to racist content on Twitter. Our participants responded to harmful race-related content through blocking users and following others in order to curate their Twitter feeds, actively engaging in addressing content, and reducing Twitter use. Twitter users reported witnessing racism on the platform and have found ways to protect their mental health and cope with discussions of race and racism in this social media environment.

Keywords Twitter · Coping · Race · Ethnicity · Focus groups

Introduction

Racism is recognized as a fundamental cause of adverse health outcomes [1–5] and has been associated with numerous adverse mental [6–8] and physical health outcomes among racial/ethnic minoritized groups [9, 10]. One mechanism through which racism is hypothesized to impact health is repeated behavioral and physiologic adaptation to psychosocial stress, which over time, increases the risk of multiple chronic

disease outcomes [11–13]. Racism operates at internalized, personally mediated, and institutional levels [14]. Personally mediated racism can be experienced directly through racial discrimination, or differential treatment according to race, as well as vicariously through awareness of discrimination against friends, family, or one's own racial group [15]. Both forms of personally mediated racism can cause stress and adversely impact health [15–17].

Social media sites, such as Twitter, represent a new setting in which racism and related stress may manifest [18]. Currently, 22% of US adults use Twitter [19] and millions of tweets are sent daily [20]. The unlimited access to unfiltered information that social media enables can result in exposure to negative ideologies (prejudice, white supremacy, intolerance) and makes interactions with these ideas and attitudes potentially more frequent than in offline spaces [18, 21, 22]. Therefore, users can experience direct racial discrimination, or vicarious racism through exposure to stereotypes or racist content about members of their racial group [23].

As we move to an increasingly digital world, it will be important to adapt our conceptualization and measurement

✉ Shaniece Criss
shaniece.criss@furman.edu

¹ Department of Health Sciences, Furman University, Greenville, SC, USA

² Division of Epidemiology, University of California, Berkeley, CA, USA

³ Division of Community Health Sciences, University of California, Berkeley, CA, USA

⁴ Department of Family and Community Medicine, University of California, San Francisco, CA, USA

of racism to align with current modes of communication and interaction. Along with freedom of speech and expression, the anonymity of Twitter allows people to express beliefs they may not share through in-person interactions based on a sense of invisibility, group norms, and seeing like-minded individuals [24, 25], which circumvents common limitations with self-reported measures making Twitter a platform ripe for investigating online racism. Racist groups and individuals perpetuate cyber-racism through employing a high level of skill and intricacy using various channels and strategies [26]. These characteristics make social media an attractive source for capturing attitudes and interactions involving sensitive topics such as race. Discussions about race and ethnicity on Twitter have been used as indicators of the current state of race relations in the USA, and variation in the types of discussions about race may indicate geographic variability in racial attitudes and sentiment [27]. However, research examining race-related discussions on Twitter and their impact on the health and well-being of Twitter users is in its infancy.

An emerging body of evidence has demonstrated associations between area-level racism, captured using social media data, and health outcomes. For example, previous work has found that states with more negative sentiment towards racial and ethnic minorities expressed on Twitter have a higher prevalence of adverse birth outcomes [28] and poor CVD outcomes [29]. However, the mechanisms underpinning these associations are currently unknown, warranting a deeper exploration into social media users' lived experiences and day-to-day interactions in online spaces.

Existing literature has focused on racist content in online spaces (i.e., the perpetrator). Less work has been conducted on the experience of those targeted [26] and the influence of vicarious experiences of racism [30, 31]. To contribute to building this area of knowledge, we conducted an exploratory qualitative study using focus groups and interviews of Twitter users to study the following aims: (1) understand the essence of Twitter users' lived experience with and response to content about race and racism on the platform, and (2) explore their perceptions of how discussions about race and racism on Twitter may impact health and well-being. To our knowledge, this is the first qualitative study to explore the users' perceptions of racial attitudes and experiences on Twitter.

Methods

Recruitment

We recruited a purposive sample of 27 participants by posting flyers at local universities and libraries and advertising via social media (Twitter and Facebook), Craigslist, and by contacting student and community organizations. Eligibility criteria included individuals who were at least 18 years old, use Twitter at least

once per week, and were available to participate in a 90-min focus group on-site. Those interested were invited to complete a brief online survey to collect basic demographic information including age, sex, race, ethnicity, contact information, and their availability to participate at the scheduled locations and times.

Study Setting and Participants

This study was approved by the University of California, San Francisco IRB. Focus groups and interviews were conducted in Berkeley, California, and Greenville, South Carolina, where the authors are located, providing an opportunity to explore people's exposure to and engagement with race-related discussions on Twitter in two geographically, culturally, and demographically distinct locations. We conducted six focus groups (three in each location) along with four interviews (two in each location) ($n = 27$). We wanted diverse racial and ethnic focus groups to mirror the multi-ethnic environment of Twitter. However, the small number of participants and availability of the participants prevented us from sub-setting the focus groups by racial/ethnic membership. The four interviews consisted of individuals who had a strong interest in participating in the study but could not attend a focus group. The focus groups provided the benefit of fluid discovery from the group dynamics, and the interviews provided an opportunity to gain in-depth perspective. Together, these strategies resulted in complementary findings that strengthened our study results.

Focus Group Guide Development

We used a semi-structured focus group guide, developed based on a review of the literature and our research aims, to explore perceptions about race and racism on Twitter. Question topics included the reason for using Twitter, perceptions of racism on Twitter, and perceptions of how exposure to race-related discussions on Twitter may impact their health and well-being. This guide was used for focus groups and interviews, and the questions are listed in Table 1.

Data Collection and Analysis

Focus groups and interviews were conducted at public libraries and lasted 90 min. Participants received a \$50 gift card. The sessions were audio-recorded and later transcribed and de-identified. In order to assess the understanding of the participants' experiences with online racism and discussions about race online more broadly, we used interpretative phenomenological analysis, which aims to provide examinations of personal lived experiences for topics that are "complex, ambiguous, and emotionally laden" [32]p1]. We used a combined inductive and deductive approach to codebook development. The initial codebook was based on the research aims and a review of literature. We then identified an additional set

Table 1 Focus group and interview guide: racial and ethnic content on Twitter

Questions

- Why do you use Twitter?
- How do you think that race and ethnicity are discussed on Twitter? What topics have you seen discussed?
- Do you see one racial/ethnic group talked more often than another? Explain. Does the tone differ by group? How so? Which racial/ethnic groups are talked about most? Do feel like what you see on Twitter is more hostile to some racial/ethnic groups? Explain.
- How often have you come across comments on Twitter that are negative about a particular race or ethnicity? [Probes: comments that are derogatory, inflammatory, prejudice, or racist] What are some examples that you have seen?
- How does reading these negative comments affect you? [Probes: emotions, health, etc.]. How do you respond when you see those comments?
- Do you think in-person discussions about race and ethnicity differ from Twitter discussions about race/ethnicity? If so, how?
- Do you think discussion about race and ethnicity differs by social media platform? If so, how is Twitter different than other platforms [Probes: Facebook, Instagram, SnapChat, etc.]?
- What do you think should be the role of Twitter addressing racial and ethnic content on their platform?
- Do you have anything else to add? Please share.

of codes from an initial read and coding of the transcripts. Three reviewers evaluated the codebook to ensure accuracy and clarity of code definitions. Then, the three reviewers used the codebook to code the transcripts using NVivo to organize the data. The team discussed coding disagreements and came to a consensus to reach complete coding agreement to prepare the data for theme development.

The team analyzed the text produced from the NVivo coding reports, which consisted of all the text associated with that specific code from the focus groups and interviews. Three team members read each code report and analyzed the content for potential themes, connections across themes, and interpretations [33]. During a series of team meetings to allow for the constant comparison approach, we shared our findings, discussed the data, and collectively solidified the themes. Throughout the process, we sought to maintain data trustworthiness through utilizing multiple data analysts with different racial backgrounds and geographic differences. In addition, a fourth study member provided peer debriefing and served to question our methodological practices, the analysis process, and overall clarity of the interpretations [34, 35].

Results

Participants

Sample characteristics are shown in Table 2. The majority of SC sample identified as White, while the CA sample included a mix of racial and ethnic groups. The majority of participants

identified as women, had at least some college, and were approximately 32 years of age. Most reported using Twitter once or several times a day, though self-generated tweets were less consistent.

Overall, participants from CA and SC had similar perspectives related to Twitter and discussions of race and ethnicity on the platform. One notable difference was that CA participants used nuanced language when discussing racism, including terms such as “microaggressions,” “anti-black,” and “abolitionist,” whereas SC participants mentioned Christian and conservative views more often. Participants used Twitter for a variety of purposes such as for connection to friends and family, news, politics, popular culture, and other interest-oriented topics including sports and education. In addition, they shared that they use other social media platforms in different ways than Twitter. For example, some respondents described Twitter as more political and news-oriented compared to Facebook and Instagram, which were more socially oriented. Most participants reported they valued the immediacy of receiving information quickly on Twitter. One participant shared, “when something is really popping socially, I’ll go to Twitter to try to find out more details about what is happening, why it’s happening, who’s involved and if there’s any local action being addressed or pointed at it.”

Table 3 shows the categories and themes for the following sections.

Twitter Users’ Lived Experience with and Response to Content about Race and Racism on the Platform

Overt and Subtle Expressions of Racism Participants agreed that race and ethnicity were contested topics on Twitter. One participant noted, “I would say race in particular, is the most hated subject on Twitter at the moment.” Participants reported accounts of both overt and subtle expressions of racism on Twitter. Overt expressions of racism included perpetuating stereotypes, derogatory tweets about race/ethnicity, prejudiced responses related to news events and politics, and racist remarks in the comments section. One participant shared that the character limit of Twitter often leads to inflammatory statements: “[Twitter] feeds into the soundbite culture, so you say really inflammatory things in a short amount of space to get your point across, and I feel like it really fosters extreme examples.” Participants reported that subtle racism was demonstrated through popularity of Twitter users with lighter skin tone. One participant stated, “Hardcore, I just don’t want to get tan because I want to look more White. It’s really interesting to see that, and it’s reinforced but the fact that the people with the largest followings or the people with all the positive comments and the likes and the retweets are the people that are most White-looking.”

Table 2 Demographic information for focus groups and interviews

	All groups (N = 27)	California (N = 12)	South Carolina (N = 15)
Gender			
Female	22 (81.5%)	10 (83.3%)	12 (80%)
Male	5 (18.5%)	2 (16.7%)	3 (20%)
Age, average (SD)	31.62 (7.74)	30.92 (9.34)	32.2 (6.47)
Race, ethnicity			
Asian	5 (18.5%)	5 (41.7%)	0 (0%)
Black or African American	3 (11.1%)	1 (8.3%)	2 (13.3%)
Hispanic/Latino	3 (11.1%)	3 (25%)	0 (0%)
White	12 (44.4%)	2 (16.7%)	10 (66.7%)
Mixed race	4 (14.8%)	1 (8.3%)*	3 (20%)**
Education			
High school degree or equivalent	1 (3.7%)	1 (8.3%)	0 (0%)
Some college, no degree	7 (25.9%)	5 (41.7%)	2 (13.3%)
Bachelor’s degree	8 (29.6%)	2 (16.7%)	6 (40%)
Master’s degree	10 (37%)	3 (25%)	7 (46.7%)
Professional degree	1 (3.7%)	1 (8.3%)	0 (0%)
How often do you go on Twitter?			
Several times a day	14 (51.9%)	7 (58.3%)	7 (46.7%)
Once a day	6 (22.2%)	1 (8.3%)	5 (33.3%)
3–4 times per week	5 (18.5%)	2 (16.7%)	3 (20%)
1–2 days per week	2 (7.4%)	2 (16.7%)	0 (0%)
How often do you tweet?			
Several times a day	5 (18.5%)	4 (33.3%)	1 (6.7%)
Once a day	3 (11.1%)	3 (25%)	0 (0%)
3–4 times per week	2 (7.4%)	1 (8.3%)	1 (6.7%)
1–2 days per week	1 (3.7%)	0 (0%)	1 (6.7%)
Every few weeks	10 (37%)	2 (16.7%)	8 (53.3%)
Never	6 (22.2%)	2 (16.7%)	4 (26.7%)

*Black or African American, Hispanic/Latino

**American Indian or Alaska Native, White and Black or African American, Hispanic/Latino

Table 3 Categories with themes

Twitter users’ lived experience with content about race and racism on the platform	Perceptions of health and well-being associated with discussions about race and racism on Twitter	Twitter users’ engagement with content about race and racism on the platform
<ul style="list-style-type: none"> ▪ Overt and subtle expressions of racism ▪ Depiction of different racial and ethnic groups ▪ Echo chamber ▪ Emboldened anonymity meets collective calibration ▪ Trump on Twitter 	<ul style="list-style-type: none"> ▪ Negative emotions ▪ Desensitization ▪ Cumulative toll ▪ Mental health ▪ Physical health 	<ul style="list-style-type: none"> ▪ Curating feed ▪ Active engagement ▪ Reducing use

Depiction of Different Racial and Ethnic Groups Participants distinguished patterns of how Twitter users discuss and describe specific racial and ethnic groups. Some participants noted that Asians “get a pass” as the target concerning race-related comments, but others shared that Asians were negatively stereotyped based on physical features: “I know ... East Asian people have smaller eyes, but it’s not fun to make the exaggeration so huge. You just feel humiliated.” Several participants highlighted the “self-empowering activism” of Black Twitter, and that it can be a “closed club.” Participants also shared that there was a double standard for Black people, especially for Black women: “They talk very bad about Black women... about weaves and... Black women get criticized for wearing weaves. There are other races of women that wear weaves too. ...but every race gets a pass for it but Black women.” The majority of participants stated that Black and

Latinx people were the target of most of the racist content, but that it was sometimes set-up as “White vs. Other.” Regarding Latinx, participants typically mentioned in terms of immigration status. Some participants also noted that immigration was linked to xenophobia and was often conflated with ethnicity or religion, especially in relation to Latinx and Muslim populations. Participants reported that White people were, at times, categorized as “hillbillies,” “white supremacists,” or “Neo-Nazis” and that it was more socially acceptable to “make fun” of White people on Twitter (e.g., through memes) than other racial groups. Some White participants revealed that they did not want to be lumped in with “racist White people” and feared “saying the wrong thing” on Twitter. One participant shared, “It makes me sad, and I would say ashamed because I think most of those comments come from White people, and I’m White and it doesn’t represent me.”

Echo Chamber Many participants reported that Twitter users with similar perspectives about race and ethnicity tend to follow and corroborate each other, creating an “echo chamber” in which racist content is strengthened. One participant stated that “There’s a large percentage of racists within ten miles of where we’re sitting. But now you can go online and read about them. You can read what they’re saying... [it’s an] echo chamber.” More broadly, participants reported that Twitter users proactively or reactively “curate their feed,” so they intentionally engage with people who share similar perspectives. One participant explained, “I think people speak in vacuums on Twitter. I think people tend to follow those whom they already agree with.” Several participants noted that this pattern leads to confirmation bias and normalization of their existing viewpoints. In contrast, other participants shared that they are intentional about being “open-minded” in seeking viewpoints outside their own.

Emboldened Anonymity Meets Collective Calibration Many participants discussed the relationship between hostile and countering tweets. *Emboldened anonymity* refers to participants’ description of “trolls” and people “hiding behind a keyboard” who are emboldened to use their “Twitter fingers” to type racist comments because they are anonymous. Many participants remarked about “Twitter battles” and the focus on “winning arguments” leading to quick judgements of people instead of more constructive discussions. When this happens, participants reported a process of *collective calibration*, in which Twitter users “check” racist comments, “police” harmful remarks, and “call out” negativity, which functions as a mechanism for norm-setting (i.e., *calibration*) within Twitter. One participant described the tension between *emboldened anonymity* and *collective calibration*: “Sometimes people can get racist in the comments and stuff. They call them internet thugs or whatever. They’re talking crap but sometimes

people will put them in check in the comments too. They’ll be like, ‘Hey, stop being a racist. You don’t know what this person’s been through.’”

To counter these distressing Twitter exchanges, several participants reported that they would prefer to discuss issues related to race and ethnicity in-person versus online. Reasons included beliefs that people would have more empathy, would be more willing to compromise, and are more aware of in-person social ramifications. One participant said, “I think the consequences are more imminent and more threatening in-person because if someone were to call me that in-person they would definitely... get punched or they would have a confrontation that they probably wouldn’t be able to deal with.” Another person shared the benefit of in-person conversations: “They are a holistic person... I think you’re more prone to compromise or see another side. Because it’s not just you alone with your thoughts.”

Trump on Twitter Many participants reported that racist comments are often tied to politics, and Donald Trump was a widely cited political figure in relation to comments about race and ethnicity. Several participants reported President Trump’s tweets are polarizing concerning race: “...whenever I do see it [race-related posts] it’s closely linked to politics. And that’s really like anti-Trump, or Trump is racist, or it’s pro-Trump and All Lives Matter instead of Black Lives Matter. That’s kind of what I see, it’s like really opposition-oriented.” One participant said, “Trump and racism thrive as a business model for Twitter.” Also, several participants expressed their reasoning for choosing whether or not to follow President Trump’s Twitter account. One participant said, “To be honest, I use Twitter because of Donald Trump, because I want to see what he is saying about different policies.” Another participant said, “I follow Fox and CNN and NPR, and I try to follow news outlets and then people that I know are big in the GOP or in the Democratic Party. I refuse to follow Donald Trump. I can’t do it.”

Perceptions of How Discussions about Race and Racism on Twitter May Impact Health and Well-Being

Negative Emotions Some participants shared that they experienced feelings of frustration, anger, sadness, disappointment, and exhaustion. One participant stated, “Sad. I mean, sad. Because a lot of this is really affecting and hurting a lot of people. You know? There’s people behind these screens...it just makes me sad for what our country has become.” Another participant reported a mix of emotions, “I mean, disappointment and frustration are most often the things and then when I start going into, ‘Why am I disappointed and then why am I frustrated?’ Then I’ll get angry.”

Desensitization Some reflected that over time, they became desensitized or were able to disassociate themselves from the tweets they read: “I don’t think it does [affect me]. I think it’s because I’ve become so desensitized to... it sort of is the same conversations over and over, phrased in different ways.”

Cumulative Toll Rather than desensitization, others stated that repeatedly encountering negative race-related messages took a “toll” on them. Participants also reported that having negative race-related online interactions can impact relationships offline: “It can feel very soul-sucking I think, and very much ... So people were saying about the rabbit hole, and that’s the thing. You just kind of get sucked into it, and it’s just one of those things that sometimes ... once you get into that, it’s hard to pull yourself out of it. I think that that can affect your interactions in the rest of the things that you’re doing, in your work, in school, your social relationships, your personal relationships because it’s something that’s on your mind and that’s bugging you.”

Mental Health Participants most commonly mentioned how Twitter impacts their mental health, including depressive symptoms, stress, and anxiety: “I get really, really affected by it I think sometimes... And sometimes to the point of feeling my anxiety high that we’re becoming so polarized and so many people in our country are not being treated with the respect and the dignity that they deserve.”

Physical Health A few participants mentioned how the mental health impact can translate to physical health. One participant stated, “... [Some people are] unable to figure out what to do with the anger that’s in their body. So consuming the anger, not speaking on the anger, ways that our bodies just translate the stress and the harm and the trauma, like having stomach aches, being constipated, having a dry mouth.” Another participant stated, “if you’re constantly feeling like you’re having to be exposed to this, you know, racist discussion on Twitter, like it does affect you physically. First, it’s mental, and then you’re carrying this weight with you for a while. But then that does manifest itself physically. Stress affects every other part of our bodies. I think it absolutely does come out in physical ways.”

Twitter Users’ Engagement with Content about Race and Racism on the Platform

Many participants expressed the need to cope with negative content on Twitter in order to protect their mental and physical health. Some participants proactively made decisions about how to navigate their Twitter feed to avoid triggering race-related discussions on Twitter, and other people made reactive changes after they were exposed to harmful content. Participants shared various coping strategies which can be categorized by curating feed, active engagement, and reducing use.

Curating Feed Participants indicated that they purposefully followed Twitter accounts that aligned with their perspectives. One participant said, “we tend to get our feed full of people who are like minded. You know, rarely will you keep following someone who posts things that you disagree with.” Another participant shared, “I think it is important to surround yourself [with people] that are all different, but we so rarely do that because when I’m in bed on my social media I don’t want to see things that upset me, right? So, it’s more of like a selfish thing that you want your feed to reflect what you think, cause it doesn’t have to make you uncomfortable after that.” Another approach to curating the feed involved participants unfollowing and muting Twitter accounts that were disturbing to them. One participant said, “I’ve chosen to block certain people and certain hashtags, and certain words through the app so I don’t have to see certain kinds of conversations or I’ve... muted certain conversations so I don’t have to see them.” Finally, Black Twitter was described a safe space where Black users share personal experiences of racial discrimination, reflect on social injustice more broadly, and organize for action.

Active Engagement Participants reported active engagement with others as a means by which to cope with unsettling tweets. Many participants reported that other Twitter users will “call out” racist tweets, and that they are “happy” when they witness that happen. Some participants mentioned re-tweeting a negative tweet so that they can “send the mob” back to the original poster. A few participants stated that they report inappropriate tweets, and one participant said, “You can mark it as offensive, so I’ve done that before. I don’t know if anything’s ever happened, but at least I feel like I’m doing something.” Several participants shared that they process harmful tweets with their acquaintances either online or in offline conversations. One participant said, “if it’s something really hateful or really shameful, then I will share it with friends and be like, ‘Wow, look at this. This is so disgusting. Right?’” Another participant shared, “I’ve taken articles I read on Twitter and started a discussion with the friends I have and the people that I would see that night.” Some participants reported being very conscientious about whether and how they respond to a tweet because it could lead to serious consequences like “doxing,” where personal information is published online, so that someone can find their location and harm them.

Reducing Use Several respondents described reducing Twitter use, limiting to certain times of day, or deactivating their accounts entirely. For these participants, reducing or discontinuing Twitter use was described as something they “had” to do to protect themselves after being pushed to the limits of what they could tolerate on Twitter. They described it as something compulsory, using language such as: “I *can’t* be on Twitter right now or any other social media platform because it’s too much to take” and “I get into this mood where I just *can’t*... I *have to* turn it off.”

Some participants mentioned being aware of people deleting their Twitter accounts to escape the negativity, and that they themselves had to separate from Twitter's negativity at times. One participant stated, "I get really, really affected by it... And sometimes I have to take a little hiatus from all of just the negative stuff in the world which we see on Twitter...I need a detox... I'm going to take a couple of days off." Another participant said, "I sometimes have to be like, 'Nope, not tonight, too much, too far' and be very conscious of how much I'm letting in when it's negativity like that. I start to go into a spiral where all of the sudden I want to fight this. I want to verbally fight this person who I don't know and whose mind I'm never going to change. I really have to consciously be like, 'This person has nothing to do with me, that's them, whatever' and put it down and step away."

Discussion

This is the first study, to our knowledge, to conduct focus groups and interviews to understand Twitter users' experience with and response to content about race and racism on the platform. Our qualitative analysis provided insights demonstrating Twitter as a source of vicarious experiences of racism, and consequently, a distinct source of stress. Our participants described frequent exposure to overt and subtle expressions of racism on Twitter and described those experiences as taking an emotional toll, adversely impacting mental and even physical health. Our participants reported coping with harmful racial/ethnic content in various ways including curating their feeds, active engagement in addressing negative content, and reducing their Twitter use.

Many researchers have conducted qualitative analysis of online text to research cyber-racism [26]. Keum and Miller provided a comprehensive conceptualization of online racism and emphasized the need to focus on the potential targets' perceptions [24], which our study explores within Twitter where incendiary behaviors can thrive and proliferate [36]. Participants described examples of both overt and subtle expressions of racism on Twitter. Scholars posit that "platformed racism" stems from the culture of social media and is mediated through Twitter based on its design [37]. Some focus group participants acknowledge that their online racism experience is bounded by their geography and social circle. Our findings suggest that the brevity and speed of Twitter bolsters racist comments and may incite aggressive comments. Twitter advances communication that is simple, impetuous, and uncivil [38]. Notably, several participants mentioned the role of Donald Trump in fueling negative discourse about race on Twitter and Ott asserted that the president's tweets reflect racism as well [38].

Some Twitter users observed "echo chambers," which are characterized by homophily and polarization of viewpoints within ideologically distinct and separate networks [39–41],

including seeking out people online with the same racist views [24]. These echo chambers can serve to solidify views under the cloak of anonymity. Evidence suggests that anonymity on the Internet gives a sense of invisibility and online disinhibition, which can foster racist comments [24]. Our study finding of emboldened anonymity illustrates how "Twitter fingers" provide a cover for people to type racist comments online that they would not say in a face-to-face setting. Even with emboldened anonymity, within certain spaces and among certain communities on Twitter, racist language or behavior is not tolerated, and users will come together to police each other and resist derogatory comments through a process of collective calibration.

Many of our participants indicated that they and others existed in echo chambers, and that it took intentionality to diversify opinions on their feed. Surprisingly, one intervention study found that notification of the political homogeneity of participants' Twitter accounts resulted in a less diverse network 2–3 weeks later [42]. In contrast, knowledge of political homogeneity along with recommendations of different political accounts to follow resulted in more diverse networks 1 week later [42]. Indeed, it seems that diversifying one's Twitter feed requires intentionality, and more people breaking out of an echo chamber could influence the amount and type of racist comments that people are exposed to in their feed.

There is a growing body of research using content analysis to track tweets on a variety of health topics [43] and a call to investigate the mental and physical ramifications associated with online racism [24]. Our focus group participants stated that exposure to and engagement with racially prejudiced content on Twitter can directly impact their mental and physical health. This finding is consistent with research suggesting that negative content, including discriminatory content, on social media may impact users' mental health outcomes, including depression, anxiety, and poor body image [21, 22, 44–46]. This finding also supports a broader literature documenting the adverse health effects of direct and vicarious racism experiences [2, 9, 15–17, 44]. Future studies could explore empirically measured health outcomes, as well as the behavioral and/or physiologic mechanisms through which exposure to racism on Twitter may harm health.

Extensive research has documented ways in which racially stigmatized groups cope with stress related to racism, including but not limited to problem-focused coping, emotion-focused coping, social support seeking, racial identity development, and anger suppression or expression [17, 47–49]. However, most existing studies examining coping with racism have focused on in-person interactions [47, 50]. Our study adds novel insight into how stress and coping may manifest in the context of online racism.

Our study respondents described ongoing exposure to racism on Twitter which required a variety of coping responses, including "curating the feed" to control the content they were

exposed to, “active engagement” through directly confronting racist users online, and reducing Twitter use to avoid exposure to racist content. These strategies align closely with formerly validated measures of coping behavior, which have been applied to coping related to racism [49, 51]. Specifically, “curating feed” is an example of *planful problem solving*, “active engagement” exemplifies *confrontive coping*, and “reducing use” is a form of *escape avoidance* [49].

More recent work has documented the use of Twitter as a form of problem-focused coping with discrimination experiences among Black Americans. We saw this sentiment expressed among participants who described Black Twitter as a safe space to share experiences of racism, build coalitions, and strengthen social support within the Black community [52]. Adaptive coping responses have been shown to buffer the adverse mental and physical health effects of racism [5, 8]. Future research may examine whether various coping strategies, including engagement with Black Twitter and other identity-affirming spaces, may be health-protective for individuals navigating racism on Twitter.

Strengths and Limitations

Strengths of our study include the use of standardized facilitator guides, analysis of transcripts using established qualitative methods including procedures for maximizing reliability and credibility such as using multiple coders and consensus building, and representation from different geographic, demographically, and culturally distinct regions in the USA. There are also important limitations. Our participants were mostly women with an average age of 32 with advanced educational attainment (some college, bachelor’s degree, or master’s degree); thus, further research is needed with a more diverse study sample. It is notable that Twitter users tend to be younger, more educated, and have higher incomes than the general US population [53]; our sample shares some of these characteristics. Our results may have missed important perspectives from others. For example, people who do not feel comfortable talking about race in-person but who engage in and/or are exposed to these discussions online. This factor may be one reason for the limited sample size. Our incentive of \$50 was based on the sensitive nature of our focus groups and interviews. Another limitation is that participants interact within certain social networks that may include echo chambers, which can influence the types of tweets they are exposed to online. Despite these limitations, this study provides understanding of Twitter users’ experience regarding discourse on race and ethnicity and highlights directions for future research. Based on this exploratory study, future research should be conducted with a larger sample to understand direct and vicarious online racism experiences, and examine which coping responses are most adaptive for mitigating the deleterious health effects of exposure to racism in online spaces.

Conclusion

Twitter users in our study reported frequent experiences of racism, particularly vicarious racism, and reported using various coping strategies to minimize the negative impacts of these exposures on their emotional and physical well-being. Given that racial group membership may influence how individuals experience and process racial content [54], future work is needed to examine experiences of navigating discussions of race and racism online by racial/ethnic group membership. Improving research in this area will require new measurement approaches to better assess the varied and unique manifestations of racism in the online environment. As this body of research grows, there is a potential to partner with Twitter and other social media entities to develop policies and interventions that can lessen the exposure to and impact of online racism.

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Data Availability Focus group and interviews audio-recordings and transcripts are housed with the corresponding and senior authors.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethics Approval (Include Appropriate Approvals or Waivers) This study was approved by the University of California, San Francisco IRB (18-24593).

Consent to Participate (Include Appropriate Statements) All study participants provided consent to participate in this study.

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