"Do all bisexuals have this power?": An exploratory study of "crippling nicotine addiction," identity, and other emergent themes in vaping messages on QueerTok

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Abstract

Nicotine and tobacco use disproportionally affects sexual and gender minority (SGM) populations in the United States. Social media narratives may contribute to these disparities. This qualitative study delineated perceptions and experiences depicted in SGM-related videos about nicotine vaping on TikTok. Young adult researchers engaged in every step of the research process, adding an insider perspective. Using four TikTok accounts, we used vaping and SGM-related search terms to sample videos in March–April 2022. Three TikTok accounts collected SGM-specific videos; a fourth provided non-SGM specific videos for comparison. We iteratively sorted 303 unique videos into 32 *a priori* and emergent codes and identified themes in SGM videos and comparison videos. In their videos, creators displayed awareness of and ambivalence toward vaping and nicotine dependence. SGM videos reflected vaping as a salient feature of identity and a consideration in romantic partnership. Studying video-based social media platforms, like TikTok, using an

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insider-engaged qualitative lens promotes rich interpretation of content to identify prevalent and emerging messages, which can inform appropriate interventions for SGM young people.

Keywords

LGBTQ+; E-cigarettes; Electronic cigarettes; Social media; Adolescent health; Young adult; Qualitative analysis; TikTok

1. Introduction

The use of e-cigarette devices (i.e., vaping) has been linked to short- and long-term health complications for adolescents and young adults (AYA), including respiratory harm (Gotts, Jordt, McConnell, & Tarran, 2019; Lee, Lee, & Lee, 2019), impaired brain development (Wawryk-Gawda, Lis-Sochocka, Chyli ska-Wrzos, Budzy ska, & Jodłowska-J drych, 2019), poor mental health (King, Reboussin, Spangler, CornacchioneRoss, & Sutfin, 2018), and amplified risk of cigarette smoking and other substance use (Soneji et al., 2017; Veliz et al., 2020; Watkins, Glantz, & Chaffee, 2018). Still, vaping among AYA persists; 10% of U.S. middle and high school students (Birdsey et al., 2023) and 17% of U.S. young adults aged 19–30 reported past-month nicotine vaping in 2022–2023 (Patrick, Miech, Johnston, & O'Malley, 2023).

Vaping prevalence is disproportionately high among sexual and gender minority (SGM) AYA compared to heterosexual and cisgender AYA, consistent with longstanding disparities in tobacco use and tobacco-related disease (Lee, Griffin, & Melvin, 2009; Li et al., 2021; Quinn et al., 2015). Currently, 13% of lesbian, gay, bisexual, and transgender adults report vaping—a rate twice that of heterosexual adults (Al Rifai et al., 2020). Similarly, vaping prevalence is twice as high among sexual minority girls than heterosexual girls and three times as high among transgender youth than cisgender peers (Johnson et al., 2019). Identity-based harassment and the subsequent disparate burden of mental illness (Meyer, 2003) might precipitate tobacco use among SGM AYA (Evans-Polce, Schuler, Kcomt, McCabe, & McCabe, 2023). Moreover, given evidence that vaping negatively impacts AYA mental health (King et al., 2018), SGM AYA vaping may exacerbate poor mental health from minority stress rather than relieve it. More prevalent vaping might also stem from aggressive targeted marketing of tobacco and nicotine products to SGM communities (Smith, Thomson, Offen, & Malone, 2008). Tobacco advertising in magazines and bars and sponsoring pride events has likely contributed to tobacco normalization in SGM culture (Coulter, Bersamin, Russell, & Mair, 2018; Truth Initiative, 2022).

Social media use is a determinant of vaping-related norms, attitudes, and intentions (Kava et al., 2020; Vogel et al., 2020), all of which predict behavior (Ajzen, 1991; Yang, 2023). Frequent exposure to tobacco- and nicotine-related content on social media has been associated with subsequent use (Clendennen, Loukas, Vandewater, Perry, & Wilkinson, 2020; Pokhrel et al., 2021), more positive tobacco attitudes and norm perceptions (Pokhrel et al., 2018), and lower support for tobacco control policy (Tan, Lee, & Bigman, 2015). SGM individuals report higher engagement with tobacco content online than do heterosexual individuals (Soneji et al., 2019) and therefore might also be disproportionately impacted

by online content. While the tobacco industry continues to promote products through direct advertisement (Huang, Kornfield, Szczypka, & Emery, 2014; Kreitzberg, Murthy, Loukas, & Pasch, 2019; Liang et al., 2015) and influencer endorsement (Vassey et al., 2022), a substantial amount of positive product content is organic and peer-generated (Morales, Fahrion, & Watkins, 2022). As a result, new social media content often references current trends, relatable commentaries, and other culturally relevant details (Morales et al., 2022) that may particularly resonate with AYA, perhaps contributing to the message's perceived authenticity and influence as AYA seek to align themselves with the idealized versions of their peers that they view on social media (Vogel et al., 2014, 2015).

Social identity theory (Tajfel & Turner, 1979) suggests that vaping content from SGM peers —who may be viewed as members of SGM AYAs' own community—might be particularly influential for SGM AYA. Social media, however, also exists as a critical space for SGM individuals to seek SGM-specific information, learn from SGM role models, share SGM-centric experiences, and experiment with identity (Fox & Ralston, 2016). For this reason, vaping content from SGM social media content creators might contain unique messages and delivery features not reported in previous research on TikTok's overall vaping content (Allem, Majmundar, Dharmapuri, Unger, & Cruz, 2019; Basch, Fera, Pellicane, & Basch, 2021; Marynak, Robichaud, Puryear, Kennedy, & Moran, 2022; Morales et al., 2022; Purushothaman et al., 2022; Rutherford, Sun, et al., 2022). There is a lack of research regarding vaping content created by or for SGM individuals on social media. Focusing on the vaping content that is shared by SGM creators can delineate unique messages SGM AYA might see on social media. Moreover, first-hand observation of how SGM AYA are already communicating about vaping on social media offers a novel complement to research soliciting responses to intervention materials (Hinds, Chow, Loukas, & Perry, 2021; Lee et al., 2022; Patterson et al., 2024b; Tan, 2024) by identifying culturally relevant content and delivery ideas for SGM AYA-tailored social media messaging.

TikTok connects people globally through short-form video sharing, a departure from traditional social media that typically facilitate photo and text sharing among friends. The app hosts 100 million users in the United States, 47.4% of whom are aged 10–29 (Dean, 2022). The most prominent feature on TikTok is its "For You Page" (FYP), a continuous feed of videos tailored for each user. Videos suggested on the FYP can be created by any TikTok user and are influenced by the person's previous video engagement, following, friends, geolocation, and most conspicuously, an algorithm's often precise perceptions of that user's interests, hobbies, and identities (Ohlheiser, 2021; TikTok, 2022b). Accordingly, informal TikTok communities connect individuals across the world who share similar interests and identities (e.g., BookTok, GymTok), including SGM young people (Hiebert & Kortes-Miller, 2023), who engage in an informal subculture called "QueerTok." TikTok also serves as a digital platform for sharing health information. Some videos promote healthy behaviors like COVID-19 vaccination; others feature (and glamorize) harmful habits like nicotine use (Morales et al., 2022), which is reflected on "NicTok."

Videos promoting vaping receive thousands of views, likes, comments, and shares (Marynak et al., 2022; Morales et al., 2022; Sun et al., 2021). Popular e-cigarette content that normalizes vaping may undermine public health prevention and cessation interventions.

TikTok claims to monitor and remove harmful content, and according to TikTok's Community Guidelines (TikTok, 2022a), depictions of tobacco and nicotine are not eligible for FYP recommendation (i.e., content will not be pushed to TikTok users' tailored feeds). However, content moderation may be unsuccessful in removing noncompliant videos (Rutherford, Sun, et al., 2022) and this claim has not been validated. If the algorithm associates an identity with a behavior, such as SGM identity with vaping, it may push positive tobacco/nicotine messages to SGM AYA regardless of whether they vape. Alternatively, if a TikToker who uses tobacco/nicotine engages with vaping content, their FYP feed may become inundated with positive nicotine messaging. In both cases, the app would reinforce favorable normative beliefs toward vaping among peers, in both descriptive and injunctive norms, and likely increase the audience's vaping behavior (Yang, 2023).

In this study, We aimed to identify and describe vaping experiences and perceptions of SGM AYA as depicted in TikTok content to inform culturally tailored social media messaging for SGM AYA. Our team used four study accounts to collect videos containing vaping content for qualitative content analysis. Drawing from the principles of Youth Participatory Action Research (Kornbluh, Ozer, Allen, & Kirshner, 2015), SGM and allied young adult researchers were involved at every step of the research process. By centering SGM perspectives, we developed a nuanced understanding of how the messages shown to SGM TikTok users differ from mainstream vaping narratives on social media that have been previously documented. Additionally, using TikTok as a study setting permits dynamic monitoring of emerging habits, brands, and attitudes that inform health communication efforts and tobacco control policy.

2. Methods and procedures

In March and April 2022, we captured data from four study TikTok accounts; three focused on SGM vaping posts and a fourth did not specify sexual or gender identity for comparison. Four young adult researchers controlled one account each. We collected 440 videos; after removing duplicates ($n = 137$), we conducted qualitative thematic analysis with 303 unique TikTok videos.

Our team consisted of four young adult researchers (undergraduate and graduate students: CB, AF, MM, AM), a faculty mentor/project lead (SLW), and two faculty co-investigators (EAV, MK) who collaborated during all stages of the research process. Throughout data collection and analysis, the young adult researchers met independently of the project lead to discuss protocols and emergent findings. During full-team meetings, all researchers discussed updates and exchanged feedback. In qualitative research, researchers bring value by leveraging "their theoretical perspective, bank of knowledge, personal experience, methodological repertoire, creativity and imagination" (Eakin & Glad-stone, 2020). Through our co-learning approach, the young adult researchers brought their insider perspective (Tracy, 2010) as TikTok users to design an innovative study protocol and interpret the videos. SGM team members brought important perspectives to data collection and interpretation. A deeply collaborative relationship between faculty and mentees subverted academic power imbalances while simultaneously inspiring a passion for research among the young adults, which elevated our analysis.

This study was determined not to be human subjects research by the University of Iowa Institutional Review Board.

2.1. Data collection

Fig. 1 depicts the components of a TikTok post. The video is the most important and content rich feature. Creators may overlay text on the video, add a caption to provide context or commentary, use hashtags, and add an existing "sound" (an audio snippet available on the app) or provide original audio. All TikTok users can comment on, like, and share videos within or outside the TikTok platform. In our conceptual model, TikTok videos are messages comprised of what is said (the "content features," e.g., arguments that downplay nicotine addiction); and how it is delivered (the "delivery features," e.g., fast-paced editing; SGM-identified creator) (Kim & Cappella, 2019). The particularly engaging delivery features of short-form videos like those on TikTok may interact with content features to increase audience engagement, create strong emotional responses, and enhance persuasion.

We developed and implemented a data collection protocol that specified search terms, inclusion/exclusion criteria, a schedule, and data management guidelines. We trained together to apply the protocol consistently and met regularly to discuss.

We created four accounts. For three "SGM accounts," we inserted an SGM identity cue in the biography section of each account's profile. The fourth, a "comparison account," did not include any identity cue. After pilot testing, we determined that three SGM accounts would yield comprehensive and efficient data collection (vs. 1 account which could miss some videos or 4+ accounts which would produce largely duplicates). For 11 data collection days over four weeks, each young adult researcher systematically collected 10 videos per day on their study account using TikTok's search functionality. We downloaded each relevant video, took a screenshot of the video's caption, and recorded the number of likes and comments. We chose the number of days and videos based on estimates of how many videos would support us reaching saturation (Morales et al., 2022) and be appropriate for our young adult researchers' schedules and well-being.

On each data collection day, all four account operators searched the same vaping related keyword (vape, nic, disposable, nicfiend, nicstick, nicrush, nicotine, ecig); the SGM accounts also included the same identity term (lesbian, trans, bi, transgender, LGBTQ, lesbian, nonbinary, queer). To select these search terms, we leveraged our team's experience, searched online for top hashtags, and consulted previous work (Morales et al., 2022). We combined different SGM and vaping terms each day for broader reach. These searches provide a "static" view of nicotine vaping content on TikTok and were part of a larger study to learn how the app responded to use over time. This study reports results from a qualitative content analysis of these snapshots.

In our searches, we used the video, video text, caption, hashtags, and username to screen videos. To be considered relevant for analysis, a video must have referenced an SGM identity (for SGM accounts), been related to vaping (i.e., explicitly or implicitly referred to vaping, nicotine addiction, or a vape device), been in English, and been posted on or after January 1, 2021. We did not include content containing anti-SGM rhetoric in our dataset.

2.2. Codebook development and deployment

We developed a codebook of *a priori* and emergent codes that leveraged previous research (Morales et al., 2022), our conceptual model, our data collection experience, our tacit knowledge of TikTok, and an iterative process of reviewing a subsample of videos, developing emergent codes, testing draft codes, and refining definitions. The final codebook included 32 codes related to vaping (e.g., *initiation*, *addiction*), SGM identity (e.g., *partners*, *queer*[1]), delivery (e.g., *skit*, *story time*), and data management (e.g., *unrelated*). We coded videos in Microsoft Excel.

We coded videos from the three SGM accounts as "queer"[1] when an explicit mention of SGM identity was present in either the hashtag, caption, username, sound, or video, such as a pride flag displayed in the background or caption. Videos from the SGM account searches that did not have an explicit SGM indicator were coded as "potentially not queer," along with videos collected from the non-SGM account without an explicit mention of SGM identity. Coders trained together, discussing discrepancies, to ensure consistency of code application.

2.3. Data reduction and thematic analysis

We separately coded videos from SGM and comparison accounts. First, each researcher summarized each video from their account. Then, by code, we wrote analytic notes to summarize videos and identify patterns. Each researcher reviewed portions of the others' analytic notes to ensure consensus. We then sorted our SGM notes into cross-cutting themes using Miro, a whiteboarding platform (www.miro.com). Then, the comparison account operator compared the existing SGM findings in Miro to her analytic notes, identifying consistencies and differences between the datasets. Finally, she reviewed her analytic notes to identify distinct emerging themes from the comparison data that were outside the topics covered in the SGM Miro board.

2.4. Statistical analyses

We calculated the prevalence of each code and compared code prevalence between SGM and comparison datasets using chi-squared tests. Tobacco use varies by SGM subgroup (Romm et al., 2022; Sawyer, Bono, Kaplan, & Breland, 2022), and themes and sentiments online may also differ. Therefore, as an exploratory analysis, we compared code prevalence between SGM identity subgroups using chi-squared tests. To do so, we classified each video using video hashtags, aggregating similar hashtags (e.g., bisexual and pansexual as "bi/pan," transgender and nonbinary as "gender diverse") into five subgroups: bi/pansexual, gay, lesbian, gender diverse, and LGBTQ+. Videos could identify multiple sexual and/or gender identities and so the groups were not mutually exclusive. We compared each subgroup to the SGM videos without that specific identity (e.g., bi/pan vs. not bi/pan). We conducted analyses using Stata 17.0.

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1 "Queer" is a reclaimed term and is used to describe anyone who is not heterosexual or cisgender. We internally used queer for this study with consent of all researchers.

3. Findings

The 198 SGM videos in our dataset received a combined 1,485,499 likes and 23,549 comments. Videos ranged in popularity (min likes: 3; median: 1300; max: 2,000,000). Of the 198 SGM videos, 46% discussed addiction and 16.7% (n = 33) made explicit or implicit reference to ambivalence (co-occurrent viewpoints that were mixed, and sometimes, contradictory) toward vaping or its negative consequences (Table 1). One third of videos referenced a relatable experience, habit, or phrase that would be familiar to viewers who vaped. Videos also depicted sensory effects (14.1%), discussed vaping in the context of romantic or sexual partnership (14.1%), showed off vape collections or vape tricks (13.6%), and described experiences of initiation (7.1%) and cessation (9.1%).

In our qualitative analysis, we identified sentiments and themes concerning the intersection of SGM AYA vaping perceptions and TikTok practices. Important themes included: *nicotine addiction, side effect ambivalence, vaping as identity, vaping in relationships,* and *vaping for social media trends.* In our dataset, TikTok videos typically featured one individual. To act out a conversation, individual creators posed questions in video text that they answered in the video or they edited together several clips of themselves playing multiple characters. This delivery format was used by multiple creators and appeared across themes.

3.1. Nicotine addiction

Explicit statements and implied references to addiction were common. Analysis revealed SGM creators were aware of their nicotine dependence, sometimes posting videos solely portraying their addiction. In some cases, the creator explicitly made the claim in the video, caption, or hashtag. For example, while holding a vape, one creator asked in their video text, "Why is it so hard for you to stop buying those flavored nic sticks?" and answered with a sound stating, "I'm addicted to them!" TikTok videos in our dataset highlighted the lengths endured to access nicotine vapes (e.g., walking in dangerous conditions, "POV [Point of View] - you risking your life in this weather for a 2 for 10 deal").

Perhaps to increase reach and virality, videos referencing addiction were often built using a comedic and AYA-specific lens presented in a skit or story-time format, a format in which the creator monologues about a personal experience. For example, TikTok creators depicted addiction through a trending skit format in which the creator acted distressed or irritated without a vape. For example, in the first scene of a video, a creator posed with video text, "My girlfriend: you just had your v@pe it's in here somewhere …" In the second scene, they frantically searched for their lost vape in a purse as video text read "Me not caring about anything but finding it" and the audio played a dramatic scream. Participating in this trend might reflect SGM AYAs' desire to appear integrated with the pro-vaping TikTok subculture. One video made this desire more explicit; a creator distanced themselves from those that do not vape, lip-syncing "I don't relate to you" as overlay video text read "To people that don't have a nic problem from disposables [a type of nicotine vape]."

Creators also conveyed addiction using mainstream TikTok trends. At the time of data collection, a popular video format involved the creator making a statement and panning the

camera on-beat to reveal a contradiction. As an illustration, in our data, a creator claimed, "I swear I don't have a nicotine addiction …" and then revealed a vape hidden in their sleeve.

3.1.1. Unintended addiction—Some creators described how they "accidentally got addicted to nicotine" through three key mechanisms: "as a joke," through partners, and from curiosity. Many *unintended addiction* videos in our dataset used a then-popular sound featuring the lyric "I messed around and got addicted." One creator used the sound to emphasize how they developed dependence after "buying a disposable [vape] as a joke," pouring dozens of used vapes out of a bag to illustrate their sizeable use. Another creator used this sound to demonstrate how partners facilitated use. Their text read, "dated someone who was a nic addict and vaped with him …," and then the creator lip-synced "I messed around and got addicted."

Other creators acknowledged "just trying" a vape without the intention to continue and subsequently becoming dependent. For example, one creator lip-synced "I messed around and got addicted" with overlay text "buying a disposable and saying I won't buy another one." To illustrate their own self-duplicity further, the accompanied caption stated, "I can quit I just don't want to yet."

3.2. Side effect ambivalence

Consistent with the lighthearted portrayal of nicotine dependence, videos reflected ambivalent attitudes regarding the health implications of vaping. Creators accompanied mentions of physical effects including headaches, coughing, and negative sensations in their lungs with dismissive narratives for comedic relief. For example, one creator held a vape and stated in video text "me acting like idk [I don't know] where the stabbing pain in my lung came from when i'm a nic addict and take an excessive amount of d@bs everyday." In this case, the creator used the TikTok video to portray the contradiction they identified in their own behavior. Another creator acted out a conversation: overlay text asked, "you know nicotine and caffeine aren't meal replacement right? You're just gonna be more anxious." The creator replied "Facts!" and captioned the video "Uhuh, and?" indicating they understood the effects of nicotine use yet continued to vape.

3.3. Vaping as identity

Several SGM TikTok creators portrayed vaping as part of their identity or SGM identity presentation. SGM videos associated vaping with presenting as masculine. For example, one video's first scene featured "Character 1" asking "So … are you into masc or femme [masculine or feminine presentation]?" "Character 2" responded "oh only masc … sorry!!" The video cut back to "Character 1," now dressed in a different set of clothes, sporting a different hair style, and blowing a vape cloud. In this case, the creator used vaping as a feature of virility to reaffirm their masculine presentation. This point was reiterated when a masculine-dressed lesbian creator (as identified by hashtag) danced to music while video text read "paying for her nic because pretty girls don't pay to smoke," reflecting a gendered norm that providing is a "masculine" activity.

Other videos appeared to uplift nicotine use as a salient part of the creator's identity, listing vaping with characteristics such as sexual orientation, gender identity, and mental health status. For example, one creator posted a skit with video text "my boyfriend looking for a gf" before cutting to a shot of themselves with new video text "me-a nonbinary bimbo with a nic addiction with multiple mental illnesses" and a humorous sound. Similarly, another creator called themselves a "lesbian nic addict," and another described themselves as being "gay sad and a nic addict." A video even commented on vaping as a feature of queerness at large. In it, the creator lip-synced to a sound asking, "do all bisexuals have this power?" before replying "yes" and transitioning to a montage of vape devices with video text reading "▧ CRIPPLING NICOTINE ADDICTION ▧."

3.4. Vaping in relationships

The SGM data included narratives about the role of vapes in romantic partnerships. Videos depicted sharing with partners and how vaping influenced attraction.

3.4.1. Sharing with partners—We found evidence of a vaping-partner subculture with different perceptions, expectations, and etiquette for partners than for "nic fiends," who are strangers or friends that constantly ask for a "hit" of someone else's vape. Sharing with partners did not seem to generate similar annoyance. In fact, a few videos illustrated that partners were expected to share, for example, one creator expected their boyfriend to share each new vape. Another TikTok creator considered her boyfriend's new vapes "ours." Additionally, partners catalyzed the unintended addiction described above.

3.4.2. Attraction—Our findings indicated that some individuals viewed vaping addiction as an attractive and desirable trait. For example, a creator described wanting a to be with someone "[that is] clingy with a nic addiction." In another video, the creator specifically searched for "a transmasc genderfluid boy with a hair dye, monster and nic addiction." Interestingly, a few videos conveyed that providing a vape to a partner was perceived as an act of affection; for one creator, their ideal relationship included their partner buying vapes for them.

In contrast, some videos portrayed vaping as an unattractive trait in a partner. For example, a creator shared how they avoided dating people who vape because they "choose nicotine over you." Still, some SGM TikTok users responded to this judgement. For example, a creator demonstrated disregard for other's negative opinions of nicotine, responding "nobody asked!" to the claim "I'm not attracted to people who vape sorry." This exchange both provides insight into how SGM AYA perceive vaping and demonstrates how SGM AYA engage in conversation about identity and relationships on SGM TikTok.

3.5. Vaping for social media trends

We found some evidence that vaping facilitated participation in popular culture on TikTok that includes trending dances, sounds, and challenges. Some AYA TikTok creators enhanced their videos with vapes for aesthetic purposes or used them as an accessory for videos about other topics. One video even suggested that vaping to participate in a TikTok trend facilitated addiction; the creator lip-synced and blew a cloud of vapor that covered the

screen. As the smoke disappeared, the creator is revealed wearing makeup and a change of clothes. The caption stated, "bought a vape for this transition a month ago and now I'm addicted." On TikTok, a "transition" refers to an intentional change in the creator's appearance between scenes, usually with artistic effect. In this example, the creator got a vape to create the transition video and attributed that to subsequently becoming addicted.

3.6. Comparison account

Comparison videos shared themes with SGM videos, including ambivalent views of addiction, side effects, and annoyance with other people asking for a hit. The comparison dataset also contained unique themes. Creators explored topics like designating nicknames for their vapes, finding hiding spots for their devices, and tips to get a "nic rush." Table 1 reports prevalence of codes in SGM and comparison data and results of chi-squared tests. The SGM dataset had a higher proportion of videos with narratives about side effect ambivalence and partners and a lower proportion of videos about cessation and sensory effects (physical sensations from vaping) than the comparison dataset.

In comparison videos, creators also commented on their nicotine addiction, however, they included more claims that other people were much more addicted than themselves, rather than making claims of personal addiction as in the SGM videos. Furthermore, the comparison account did not include vaping narratives regarding partnership to the same extent. Partner initiation and addiction, vaping as a determinant for a relationship, and nicotine use as an attractive quality were exclusively depicted in SGM videos. The inherent association between relationships and sexual orientation, which we included in our search terms for SGM but not comparison videos, may partially explain the discrepancy in partner-related content between the SGM and non-SGM accounts.

3.7. Theme prevalence across different SGM subgroup videos

Table 2 reports results of our exploratory analysis that compared code prevalence by SGM subgroup. Cessation was more prevalent and sensory effects were less prevalent in videos from gender minority creators compared to other groups. Additionally, videos from lesbian creators included significantly more content relating to partnerships. Addiction was the most common code for all subgroups (although shared experience was similarly high in videos with lesbian creators).

4. Discussion

In this qualitative, young-adult engaged study, we leveraged both scientific and cultural knowledge to identify important narratives in SGM vaping content on TikTok, including commentary on one's addiction, ambivalence towards health consequences, and use of vaping to participate in cultural trends. With a non-SGM comparison dataset, we were able to discern themes and sentiments unique to SGM creators, including partner influence on initiation and vaping as a component of identity, as well as identify higher prevalence of ambivalence narratives and lower prevalence of cessation narratives in SGM content. Using TikTok as a public health surveillance tool can enhance understanding of current vaping beliefs and help anticipate culture shifts, particularly among more dynamic populations, like

AYA. Our findings suggest that SGM vaping subculture on TikTok reflects positive vaping messages and an intersection of vaping and SGM identity in a way that might perpetuate positive vaping norms.

Our findings are consistent with the current body of work that suggests vaping content on TikTok is prevalent and shares positive messages about vaping (Basch et al., 2021; Morales et al., 2022; Rutherford, Lim, et al., 2022; Sun et al., 2021). Videos that featured a creator's nicotine addiction appear consistently in vaping TikTok studies (Morales et al., 2022; Sun et al., 2021; Tan & Weinreich, 2020). Here, we further establish that creators mention their unintentional (or "accidental") addiction, sometimes starting to vape because of partners or friends, which is consistent with reports that young adults who experiment with tobacco and nicotine perceive low susceptibility to nicotine dependence (Mantler, 2012; Moffat & Johnson, 2016). Given that exposure to social media portrayals of risky behaviors with high "like" counts activates brain regions associated with reward processing and attention (Sherman, Payton, Hernandez, Greenfield, & Dapretto, 2016), vaping videos with high engagement may encourage viewers to try vaping.

Our focus on SGM AYA adds important nuance to our understanding of TikTok's vaping content. Our findings suggest SGM videos more often describe ambivalence to negative health effects of nicotine use and the importance of nicotine use in romantic/sexual partnership, and they less frequently depict cessation, than non-SGM videos. Recent work has reported adolescents generally associate vaping with negative traits, including vaping being "unattractive" (McKelvey, Popova, Pepper, Brewer, & Halpern-Felsher, 2018); our work complicates this previous finding. We found there was no consensus on the perceived effect of vaping on someone's attractiveness. Moreover, SGM videos uniquely portrayed vaping as an identity, which is consistent with previous work that reported SGM adolescents who vape are more likely than their non-SGM vaping peers to identify as a "vaper" (Donaldson et al., 2021).

In the context of TikTok, the content we observed that downplays addiction and health consequences and integrates vaping into partnerships and SGM identity presentation may further normalize vaping in SGM AYA culture. Viewing more tobacco content is associated with higher likelihood of vaping (Emory, Buchting, Trinidad, Vera, & Emery, 2018) and having more positive expectancies of nicotine vaping (Pokhrel et al., 2018). A recent study suggested even passive media exposure leads to vaping among AYA (Liu, Lochbuehler, Yang, Gibson, & Hornik, 2020). We find vaping videos included sentiments of indifference that are accompanied with the glamorization of physiological side effects or dismissal of health consequences. Our analysis adds that this ambivalence is more prevalent in SGM content. When these themes are pervasive, they may reinforce pro-tobacco norms, perceptions, and attitudes. Moreover, vaping messages from SGM creators, especially videos that reference SGM identity, might be particularly persuasive for SGM AYA.

Nicotine vaping content on TikTok may disproportionally influence SGM AYA. SGM AYA already experience disparate peer victimization (Gill & McQuillan, 2022) and therefore might be compelled to participate in TikTok's vaping culture as a coping mechanism for minority stress (Evans-Polce et al., 2023). As such, SGM AYA might find both a

sense of community and, as (Ma et al., 2022) described, its associated "social incentives." SGM social spaces, such as bars, have traditionally been utilized by the tobacco and alcohol industries as venues for targeted marketing, which has contributed to substance use disparities (Belt et al., 2014; Stevens, Carlson, & Hinman, 2004). Vaping content in online SGM social spaces may similarly normalize and encourage vaping. Further, a recent study suggested adolescent SGM males vape to fit in with their peer groups (Ma et al., 2022); TikTok might present another opportunity for this process to occur.

Our findings suggested vaping is an important facet of SGM identity on TikTok. Beyond the scope of this study, future work may validate this finding outside the context of TikTok in SGM AYAs' offline realities. By stratifying our results by identity in an exploratory analysis, we offered a glimpse into which themes may be more prominent in different subgroups, which is especially important because tobacco use prevalence varies across SGM identities (Romm et al., 2022). In SGM-focused research on tobacco, effort should be made to separate identity groups to highlight specific perceptions, mechanisms, and strengths that can be leveraged in focused interventions.

Social media observation is a powerful tool for research on an array of populations and health topics (Kanchan & Gaidhane, 2023). To prepare for emergent threats in a quickly changing tobacco and nicotine landscape and maintain effective tobacco control policies (Ling et al., 2022), social media research offers a venue for rapid, fluid methods for data collection, analysis, and response. For AYA specifically, future work should continue to use widely used social media platforms to discern attitudes and behaviors in an unobtrusive manner. Studies that leverage machine learning techniques might draw from the qualitative findings here to categorize large samples. Social media research about AYA content, including machine learning studies, should use robust collaboration with young researchers to inform its design, interpretation, and implications. Longitudinal studies can document how social media content changes over time as social norms, product markets, and social media policy change. When conducted thoughtfully, especially as ethical and methodological guidance standardizes (Al-Zaman, Khemka, Zhang, & Rockwell, 2024; Bour et al., 2021), social media research in collaboration with young people advances the field substantially.

Public health practitioners may address vaping perceptions through clear messaging (Escoto, Watkins, Welter, & Beecher, 2021) and tailored SGM campaigns like FDA's "This Free Life Campaign" (Guillory et al., 2021) using short-form videos. Our finding that videos downplay addiction are consistent with other observational TikTok studies about vaping (Allem et al., 2019; Basch et al., 2021; Marynak et al., 2022; Morales et al., 2022; Purushothaman et al., 2022; Rutherford, Sun, et al., 2022) and reports from intervention development studies that addiction messaging is not as impactful as other messaging topics (Escoto et al., 2021; Stalgaitis, Jordan, & Isaac, 2023). We found SGM videos about addiction more often conveyed personal addiction than non-SGM videos about addiction, which might reflect more dependence among SGM AYA who vape, reflect more self-awareness among SGM AYA, and/or reflect differences in how creators use social media. Additional investigation into identity-specific addiction and vaping norms and perceptions may assist in making interventions to change norms and perceptions more targeted, and

consequently, more effective. Moreover, since partnerships also served as an influential mechanism of initiation for SGM people, vaping interventions focused on interpersonal relationships may be particularly effective. We hope these observational findings from short-form videos generate hypotheses to test in the growing body of theoretically-informed (McQuoid et al., 2023), community-engaged work (Tan, 2024) to reach SGM AYA with vaping prevention and cessation content through social media (Hinds et al., 2021; Lee et al., 2022; Patterson, 2024a; Patterson et al., 2024b).

Regulating nicotine vaping-related content on social media platforms is an important yet complicated goal for public health. The unique design of TikTok and its algorithm complicates the mechanisms through which vaping content influences AYA with no vaping, light vaping, and heavy vaping. TikTok claims to monitor and remove harmful vaping content; however, a recent article found removal "does not specifically target content with high engagement" (Rutherford, Sun, et al., 2022), suggesting current regulation efforts must be significantly refined. To promote AYA health and prioritize disparately targeted groups like SGM AYA, we must continue to scrutinize current practices and recommend new routes for action. Tactics like limiting AYA exposure to pro-tobacco content through age-gating (restricting access to content based on age) or efforts to remove content that circumvents moderation (e.g., using #v@pe instead of #vape) may be promising initial steps.

4.1. Limitations

In this study, we created a dataset using a surveillance technique on TikTok to understand the messages about vaping that might impact SGM AYA, a group disproportionately impacted by tobacco use and tobaccorelated disease. Despite the significant strengths, our sampling strategy was limited to videos with explicit mention of SGM identity and vaping during a short period. We might have missed content that used only covert terms (e.g., n1cot1ne). In this qualitative study, we do not provide summary statistics to depict the overall pattern of content online, and while the videos we collected had high engagement (i.e., thousands of likes, shares, comments), we do not know their reach and impact on perceptions and behaviors of their audience. Our strategy assumed that videos with SGM hashtags were posted by SGM creators, however, we were unable to confirm if the creator identified as a sexual or gender minority. Still, our collection process is consistent with the social media user experience, as TikTok viewers are also interpreting identity from video cues. In addition, how an individual portrays themselves on social media does not necessarily translate into their offline persona (Lieberman & Schroeder, 2020), so we cannot be sure that videos portray the beliefs of the creators. Still, the video message might impact viewers regardless of its concordance with the creators' "true" perceptions. Finally, our research team's interpretations, and therefore analysis, of the TikTok videos were guided by our own experiences and may not represent the creators' intentions.

5. Conclusion

Our qualitative study, led by young adult researchers, identified common sentiments in vaping content generated by SGM creators. We reported several key emergent themes, such as vaping addiction and an associated ambivalence, vaping as a salient part of their lives,

and the roles of vaping in partnerships. Parallel to offline realities, vaping culture appeared integrated in SGM culture on TikTok.

This study reinforces the need for vaping content regulation on social media, as well as the continued development of vaping prevention interventions, not only to support SGM AYA, but also other groups that have been disproportionally targeted by the tobacco and vaping industries. Future research should continue to engage with social media platforms like TikTok to both monitor elements of vaping practices and gain authentic information regarding priority populations. Building research teams that include both scientific expertise and lived experience and that are grounded in co-learning enriches and accelerates social media-based health investigation.

Funding

Data availability statement

Due to the inability to deidentify videos, data are not publicly available.

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Fig. 1.
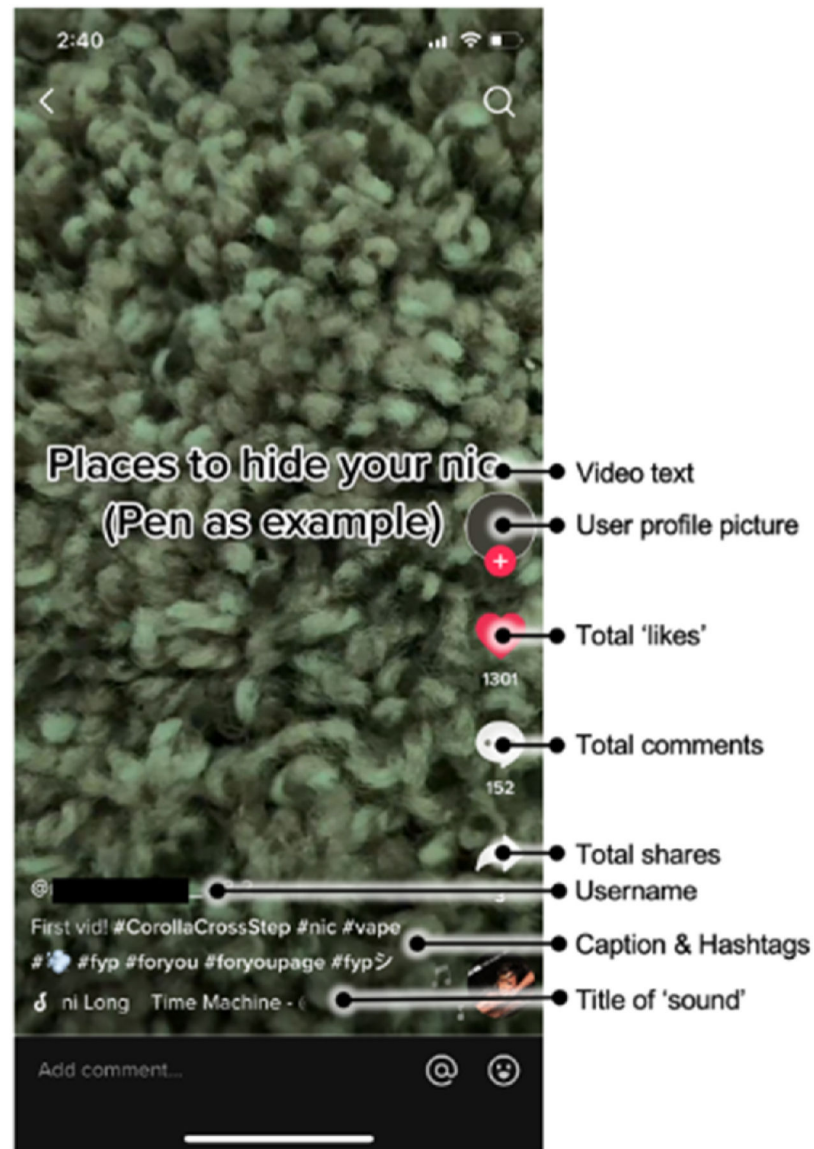Image of a TikTok video. On a mobile device, a TikTok video occupies the entirety of a viewer's screen. An individual who creates the video may incorporate video text, add a caption and hashtags, or use a 'sound.' Viewers can interact by liking, commenting, or sharing the video, even with people off the platform. The figure is a screenshot of a collected video; the creators explained places to hide nicotine vape devices.

Table 1

Code occurrence among SGM and non-SGM videos (n = 303).

Code Definition	SGM (n =198) % (n)	Comparison (n = 105) % (n)	χ^2
Addiction	46.0 (91)	36.2 (38)	2.68
Any explicit or implicit mention of addiction. The mention of addiction can refer to addiction of the video creator themself or of others. Implicit mentions of addiction include reference to symptoms of addiction or withdrawal, behaviors that suggest dependence, or use of classifiers (e.g., "nic fiend"). Posts that only mention cessation without otherwise referencing addiction should be coded under cessation only.			
Apathy/Ambivalence	16.7 (33)	5.7 (6)	7.34[a]
Any video with implicit or explicit mention of indifferent or passive views or attitudes toward the health, social, financial, or other costs of e-cigarette use.			
Cessation	9.1 (18)	21.0 (22)	8.42[a]
Any reference to cessation, including the process of cessation, positive/negative effects, and recounts of attempts at cessation.			
Initiation	7.1 (14)	1.9 (2)	3.66
Any reference to the start of vaping, including first time experiences or factors that influence TikTok users to use e-cigarette products for the first time.			
Partners	14.1 (28)	3.8 (4)	7.75[a]
Any video that contains references to partners. This includes videos that suggest the user's partner/potential partner is not approving of, joins in, or encourages vaping.			
Sensory Effects	14.1 (28)	24.8 (26)	5.28[a]
Any mention of the physical, mental, or other sensory effects of nicotine use (e.g., buzz, taste) or withdraw. The mention of the physiological effects can be about the creator themself or about others. Any description of the smell or taste of e-cigs will be coded here, although simple mentions of the *name* of an e-cigarette flavor that do not describe what it feels or tastes like are excluded.			
Shared Experience	33.3 (66)	24.8 (26)	2.38
Any video that references relatable experiences, habits, or phrases about vaping. Use of a popular TikTok sound like "nicotine addiction check" would be coded as *Shared Experience* because the intent behind the sound is to connect and share relatable content (i.e., a trending sound) with fellow vape users on TikTok.			
Showing Off	13.6 (27)	8.6 (9)	1.68
A video where e-cigarettes are the main subject of the video, there is a lack of critique or the intent to be visually pleasing, or the user is performing vape tricks. The user is simply showing off their e-cigarettes or vape trick skills.			

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[a]Bold numbers indicate significant difference in code prevalence between SGM and comparison datasets ($p < .05$). Eight out of 32 codes (included in Table 1) contributed substantially to the qualitative findings and were deemed most relevant for quantitative assessment.

Table 2

Code occurrence in SGM Videos Stratified by Identity Subgroup[a] (n = 198).

Code	Gender Minority			LGBTQ			Lesbian			Gay			Bi/Pan		
	Yes [b]	No	χ^2	Yes	No	χ^2	Yes	No	χ^2	Yes	No	χ^2	Yes	No	χ^2
	% (n)	% (n)		% (n)	% (n)		% (n)	% (n)		% (n)	% (n)		% (n)	% (n)	
Addiction	43.8 (21)	46.7 (70)	0.12	47.4 (36)	45.1 (55)	0.10	42.9 (12)	46.5 (79)	0.12	45.9 (17)	45.9 (74)	0	56.0 (14)	44.5 (77)	1.16
Apathy/Ambivalence	20.8 (10)	15.3 (23)	0.79	18.4 (14)	15.6 (19)	0.27	14.3 (4)	17.1 (29)	0.13	16.2 (6)	16.8 (27)	0.01	28.0 (7)	15.0 (26)	2.65
Cessation	18.8 (9)	6.0 (9)	**7.15** [c]	9.2 (7)	9.0 (11)	0	7.1 (2)	9.4 (16)	0.15	8.1 (3)	9.3 (15)	0.05	8.0 (2)	9.2 (16)	0.04
Initiation	10.4 (5)	6.0 (9)	1.08	6.6 (5)	7.4 (9)	0.05	3.6 (1)	7.6 (13)	0.61	2.7 (1)	8.1 (13)	1.32	8.0 (2)	6.9 (12)	0.04
Partners	14.6 (7)	14.0 (21)	0.01	15.8 (12)	13.1 (16)	0.28	35.7 (10)	10.6 (18)	**12.5** [c]	8.1 (3)	15.5 (25)	1.36	16.0 (4)	13.9 (24)	0.08
Sensory Effects	4.2 (2)	17.3 (26)	**5.19** [c]	10.5 (8)	16.4 (20)	0.25	10.7 (3)	14.7 (25)	0.32	18.9 (7)	13.0 (21)	0.86	4.0 (1)	15.6 (27)	2.42
Shared Experience	27.1 (13)	35.3 (53)	1.11	34.2 (26)	32.8 (40)	0.04	42.9 (12)	31.8 (54)	1.33	43.2 (16)	31.1 (50)	2.01	28.0 (7)	34.1 (59)	0.37
Showing Off	20.8 (10)	11.3 (17)	2.79	7.9 (6)	17.2 (21)	3.45	7.1 (2)	14.7 (25)	1.17	10.8 (4)	14.3 (23)	0.31	24.0 (6)	12.1 (21)	2.61
Total Videos	*48*	*150*		*76*	*122*		*28*	*170*		*37*	*161*		*25*	*173*	

[a] SGM identity identified using video hashtags. Videos could identify multiple sexual and/or gender identities; identity subgroups are not mutually exclusive.

[b] "Yes" indicates SGM videos with the subgroup identity; "No" indicates SGM videos without the subgroup identity.

[c] Bold numbers indicate significant difference in code prevalence between videos with and without the subgroup identity (p < .05).