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Original Investigation

Perspectives of Sexual and Gender Minority Youth on Anti-Vaping Messages in Social Media

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Abstract

Introduction: Sexual and gender minority (SGM) youth have higher rates of nicotine vaping than other youth in the United States. While social media can be effective in reaching youth and discouraging vaping, informed cultural tailoring is necessary to ensure effective messaging to SGM youth. This study aimed to understand SGM youth perspectives on anti-vaping social media messages and tailoring approaches.

Aims and Methods: In-depth, qualitative videoconference interviews were conducted from February to July 2022 with 34 SGM youth recruited in the United States via social media ads. The interview guide addressed participants' beliefs about vaping, the context of vaping, perspectives on tailoring messages, and responses to examples of social media anti-vaping messages. Coding and thematic analysis followed a team-based approach.

Results: SGM youth perspectives fell into four categories—representation and diversity, facts and evidence, empowering messages, and source credibility. Participants stressed the importance of accurate, genuine representation of SGM youth in messages, but also noted that more overt representation may be seen as tokenizing. Participants recommended partnering with known LGBTQ + influencers who can promote or share anti-vaping messages on social media platforms. They also recommended using culturally tailored language, including statistics specific to SGM youth, and invoking themes of empowerment to improve the relevance, reach, and effectiveness of anti-vaping campaigns.

Conclusions: Findings can inform future efforts to develop anti-vaping messages for SGM youth with effective reach through social media. Nuanced perspectives on SGM representation in messages suggest a careful approach to tailoring. Concerns around inauthenticity may be minimized by ensuring SGM youth are included in message development and dissemination.

Implications: This study describes the importance of being attentive to the tailoring preferences among the current generation of SGM youth. Findings will inform social media-based messaging strategies that discourage nicotine vaping tailored for SGM youth in health campaign material design and evaluation, ensuring that tailored messages are designed in ways that avoid unintended consequences. The study also describes methods for effectively engaging SGM youth in research to improve the relevance of health education materials for this population and increase reach, which in turn can lead to a reduction in vaping practices among SGM youth.

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Introduction

Approximately 2.6 million U.S. youth ages 13–18 years identify as sexual and gender minority (SGM), inclusive of lesbian, gay, bisexual, transgender, and queer individuals.[1,2] SGM youth are at significantly higher risk for using tobacco products and nicotine vaping compared with non-SGM youth.[3,4] Vaping likely increases the risk of cigarette initiation and poly-tobacco use,[5–9] which can in turn contribute to tobacco-related health inequities seen in the adult SGM population, including respiratory illnesses, cancer, and cardiovascular diseases.[10–13]

Certain risk factors for nicotine vaping are more prevalent among SGM youth and must be considered when designing anti-vaping interventions.[14] SGM youth experience increased risks of vaping due to anxiety and depression,[15] sexual violence,[16] and SGM-related discrimination,[17] while there are conflicting findings on the influence of race and ethnicity.[18,19] While the literature on risk factors for vaping specific to SGM youth is limited, known risk factors for tobacco use in this population may also impact SGM youths' beliefs and attitudes toward vaping. These include increased risks of tobacco use due to family rejection,[20] increased exposure to tobacco marketing online,[21] higher rates of mental health distress,[22] and increased use of substances including alcohol and cannabis.[23] SGM youths' attitudes related to anti-vaping interventions may differ substantially from those of non-SGM youth in the context of these risk factors.

Several national organizations such as the U.S. Food and Drug Administration and Truth Initiative, as well as certain states, have utilized social media for anti-vaping campaigns targeted at general youth audiences.[24–26] Anti-vaping messaging efforts that use social media are effective when targeting youth and young adults.[27] Social media interventions also show promise for reducing vaping among SGM youth—96% of whom utilize at least one social media site.[28] SGM youth are more likely than non-SGM youth to go online for health information, access other people's personal health stories online, and share their own health stories.[28] In addition, SGM populations are more likely to encounter pro- and anti-tobacco messages on social media, which may also be the case for messages related to nicotine vaping.[29]

Research has shown that SGM individuals who use tobacco prefer culturally tailored interventions.[30,31] Cultural tailoring of anti-vaping messages is also important to SGM youth,[32,33] yet implementation of such tailoring has not been widely applied to this population.[34] Baskerville and colleagues reported that SGM youth preferred tobacco interventions that are SGM-specific, relatable to them, and highlight inclusivity.[32] However, to the best of our knowledge, there have been no studies of smoking or vaping prevention and cessation intervention programs for SGM populations that were tailored for SGM youth.[35]

This study aims to fill this gap using qualitative interviews with a national sample of SGM youth in the United States by eliciting their perspectives on nicotine vaping motivations and behaviors, elements of effective social media messages, and message tailoring specifically to SGM youth.

Methods

This qualitative study is part of a larger mixed-methods study—Project SMART (Social Media Anti-Vaping Messages to Reduce Electronic Nicotine Delivery System Use Among SGM Teens)—which aims to develop and test anti-vaping messages tailored for SGM youth on social media. In the initial phase of Project SMART, we collected structured and open-ended survey data online from SGM and non-SGM youth to elicit beliefs related to vaping initiation. The survey informed the development of guides for qualitative interviews described in this paper, which were conducted via videoconference with a sample of SGM youth to expand on the survey findings and explore perceptions about anti-vaping messages and message tailoring. Members of the research team were outside the study age bracket and not all were members of the LGBTQ + community.

The study was also enhanced through the engagement of five SGM youth advisors, whom we recruited through our network of LGBTQ + organization partnerships. Throughout 2022, the youth advisors, who each lived in a different U.S. state, participated in monthly videoconference meetings led by study team members, where they provided input on study slogan development, social media platform and tailoring suggestions and examples, and the qualitative interview guide. The study was approved by the University of Florida Institutional Review Board (IRB-01) and the University of Pennsylvania Institutional Review Board.

Study Population and Recruitment

Eligibility criteria included being 13 to 18 years old, residing in the United States, and being able to read and understand English. Survey participants were recruited directly through social media ads posted on Instagram based on best practices for enrolling youth in research,[36] and were offered $10 for their participation. Advertisements featured a photo of youths and captions describing the study (eg, "advancing research on vaping beliefs"), study participant gender, age, and geographic eligibility criteria, and a link to the survey. Multiple ads were developed to recruit SGM youth (with rainbow flags featured in the photo and the target audience described as "LGBTQ+ youths") and non-SGM youth (with no LGBTQ + signifiers in the photo and the target audience described as "youths").

Participants were considered "initiated" if they reported vaping in the preceding 12 months or "susceptible" if they had never vaped but stated they had been "curious" about using vape products. Respondents who reported no history of vaping and who stated they were "definitely not" curious about vaping were ineligible for the study. A waiver of parental consent was obtained to reduce barriers to participation that could result from youths' hesitation to disclose their SGM identity or vaping status. Youth completed assent (age 13–17) and consent (age 18) electronically via Qualtrics.

The survey collected the respondent's age, gender identity (girl/woman, boy/man, non-binary, and other), sex assigned at birth (female, male, and intersex), and sexual orientation (heterosexual, gay or lesbian, bisexual, queer, pansexual, and other). Responses were used to categorize respondents according to gender (cisgender and transgender) and sexual orientation (LGB+, heterosexual), which were combined along with age (13–15 years, 16–18 years) and vaping susceptibility (initiated, susceptible) to designate 12 study stratifications. Table 1 shows the eight study stratifications included in the qualitative portion of this project, including participants who identified as LGB + and/or transgender (groups A through H).

Upon survey completion, participants in these eight groups were invited to participate in a focus group to share their

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Table 1. Qualitative Study Groups by Age, Vaping Susceptibility, and Gender

Group designations			
Group A Age 13–15, susceptible, LGB + cisgender	**Group B** Age 13–15, initiated, LGB + cisgender	**Group C** Age 16–18, susceptible, LGB + cisgender	**Group D** Age 16–18, initiated, LGB + cisgender
Group E Age 13–15, susceptible, LGB + transgender	**Group F** Age 13–15, initiated, LGB + transgender	**Group G** Age 16–18, susceptible, LGB + transgender	**Group H** Age 16–18, initiated, LGB + transgender

perceptions of message tailoring and were offered an additional $25 for their participation. Due to difficulty scheduling focus groups for participants from different time zones and low rates of attendance, the first nine were conducted with only one participant each and were reclassified as individual in-depth interviews. We adjusted the study protocol to include individual interviews.

Interested participants were scheduled approximately 2 weeks after survey enrollment to allow the study team time to tailor the qualitative interview guide based on the participants' survey responses. Due to high attrition, we used social media advertisements to recruit additional SGM youth who had not completed the survey. The second round of recruitment was conducted using the ads developed to target SGM youth.

Data Collection

Responses to the survey were reviewed for quality and eligibility using Qualtrics statistics on fraudulent responses, which were identified using Qualtrics features for detecting multiple submissions and responses generated by bots, along with manual detection methods focusing on groups of similar responses that came in rapid succession, the presence of duplicate email addresses, and respondent latitude and longitude data falling outside of the United States Out of 3458 individual survey responses received, 3201 were fraudulent, resulting in a final sample of 257 survey responses, including 180 who identified as LGB + and/or transgender.

The qualitative phase included 29 interviews, including 24 individual interviews and five with two participants each. No focus groups were conducted. A team of five moderators trained by the study's qualitative expert (RPT) led the interviews from February to July 2022. Each interview was conducted remotely by one moderator and one co-moderator using a videoconferencing tool (Zoom) and joined in most cases by an assistant who provided technical support. Interviews lasted an average of 51 minutes (range 31 to 87 minutes) and were audio recorded for transcription and analysis.

The interview guide first addressed youths' perspectives on the benefits, consequences, and context of nicotine vaping, with an emphasis on vaping by SGM youth. Next, youths were shown four social media messages designed to discourage tobacco use and/or vaping (using an on-screen slide deck) and asked to comment on the messages and offer their perspectives on message tailoring. The messages included:

- A non-tailored static image from Alaska's "Not Buying It" campaign, featured on Instagram, showing a male adolescent and the text: "Vaping can increase symptoms of depression, anxiety, stress." Next to the image is a description of findings from the Truth Initiative survey about youth vaping, along with details on an anonymous vaping quit support resource. (https://www.instagram.com/p/CZiYEuaAhJL/).
- A non-tailored video from the U.S. Food and Drug Administration's Real Truth campaign, featured on YouTube, showing two female adolescents in a bathroom. In the video, one girl accidentally drops her vape pen in the toilet, then retrieves it with her hand and uses it. The other girl gives her a look of disapproval. The video ends with the slogan: "Addiction isn't pretty." (https://www.youtube.com/watch?v=bWVS82hS070&t=5s)
- A tailored static image from the Out Boulder organization, featured on Instagram, showing a young lesbian couple and the text: "We've worked too hard to let tobacco hold us back." The image includes a rainbow-colored logo, and a statement next to the image describes the organization's tobacco-free policy, along with a website link. (https://www.instagram.com/rm.equality/p/CaDdTjbFS5a/)
- A tailored video from digital creator Rey Gongora, featured on TikTok, showing a male adolescent in dark, grotesque makeup holding a vape pen. In the video, he replaces the vape pen with a makeup brush and changes his makeup to be colorful and vibrant. The video is captioned with the slogan: "Quitting looks good on you." (https://www.tiktok.com/@xreyyexo/video/6808176938096643333?is_from_webapp=1).

For each message, youths were asked whether and why they thought the message might be effective in preventing vaping among youth. For tailored messages, we asked youths whether and how tailoring might make LGBTQ + youths more or less receptive to the messages. Next, we revisited the non-tailored static image and asked youths how its images and message could be changed to make it more appealing to LGBTQ + youth. The guide also elicited perspectives on strategies for posting anti-vaping messages on social media, including the social media platforms most effective for reaching SGM youth and the timing and frequency of posting. The interview guide is provided as Supplementary Material.

Data Analysis

Qualitative data were organized for coding and analysis using NVivo R1.6 (Melbourne, Australia: QSR International). Interview transcripts were analyzed using a flexible, team-based approach to coding and thematic analysis,[37,38] with each transcript reviewed by two independent coders from a team of eight trained qualitative coders. The team held weekly meetings to discuss emerging themes and resolve coding discrepancies, and after each meeting made iterative changes to the codebook. Previously coded transcripts were

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Table 2. Interview Participant Characteristics

Study group	ID	Age	Vaping susceptibility	Gender identity	Sexual orientation
Group A	A1	15	Susceptible	Girl/woman	Lesbian
	A9	14	Susceptible	Boy/man	Bisexual
	A13	15	Susceptible	Girl/woman	Lesbian
	A14	15	Susceptible	Girl/woman	Lesbian
Group B	B43 [a]	13	Initiated	Girl/woman	Queer
	B48 [a]	15	Initiated	Girl/woman	Omnisexual
Group C	C1	16	Susceptible	Boy/man	Gay
	C2	16	Susceptible	Boy/man	Bisexual
	C11	17	Susceptible	Girl/woman	Bisexual
	C13	17	Susceptible	Girl/woman	Bisexual
	C20	17	Susceptible	Girl/woman	Bisexual
	C21	17	Susceptible	Girl/woman	Bisexual
	C22	17	Susceptible	Girl/woman	Lesbian
Group D	D19	17	Initiated	Girl/woman	Pansexual
	D40 [a]	17	Initiated	Girl/woman	Bisexual
	D41 [a]	17	Initiated	Girl/woman	Bisexual
	D43 [a]	16	Initiated	Girl/woman	Bisexual
	D50 [a]	16	Initiated	Boy/man	Pansexual
Group E	E8	15	Susceptible	Boy/man	Pansexual
	E17	14	Susceptible	Boy/man	Queer
	E41 [a]	15	Susceptible	Boy/man	Gay or lesbian
	E44 [a]	15	Susceptible	Non-binary	Gay or lesbian
	E53 [a]	14	Susceptible	Non-binary	Bisexual
Group F	F1	14	Initiated	Boy/man	Pansexual
	F50 [a]	15	Initiated	Other	Queer
Group G	G3	17	Susceptible	Non-binary	Pansexual
	G21	17	Susceptible	Non-binary	Queer
	G22	17	Susceptible	Other	Bisexual
	G43 [a]	17	Susceptible	Non-binary	Pansexual
	G45 [a]	16	Susceptible	Non-binary	Pansexual
Group H	H19	17	Initiated	Non-binary	Queer
	H21	17	Initiated	Boy/man	Pansexual
	H50 [a]	16	Initiated	Non-binary	Bisexual
	H51 [a]	16	Initiated	Non-binary	Queer

[a]Participant did not complete the survey/was recruited during the second round.

then back-coded for new themes using the 8th and final version of the codebook.

The team used an audit trail worksheet to monitor inter-rater reliability (using Cohen's Kappa), document coding decisions, and assess coding saturation. No new codes were generated after coding the sixth transcript, while changes to existing codes (eg, expansion and reduction) continued to occur through the 25th transcript.

Findings were framed using the five strategies for enhancing the cultural appropriateness of health programs and materials outlined by Kreuter et al. (2003).[39] These include: (1) *peripheral strategies*, which package programs or materials in ways that are likely to appeal to a given group, (2) *evidential strategies*, which present evidence of the impact of a health issue on the group, (3) *linguistic strategies*, which improve accessibility of programs and materials by providing them in the group's dominant language, (4) *constituent-involving strategies* that draw directly on the experience of group members, and (5) *sociocultural strategies*, which incorporate the broader sociocultural values and characteristics of the group.

Results

Table 2 provides the characteristics of the 34 interview participants. Participants ranged in age from 13 to 17 years (average 15.8 years). Fourteen participants identified as cisgender girl/woman (41%), nine as transgender non-binary (26%), five as transgender boy/man (15%), four as cisgender boy/man (12%), and two as transgender "other" (6%). With regard to sexual orientation, nine identified as bisexual (26%), eight as pansexual (24%), seven as gay/lesbian (21%), and six as queer (18%). Participant IDs shown in the table are included in all quotations for context.

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Findings from interviews revealed varied perspectives on the elements of effective anti-vaping messages, message tailoring for SGM youth, and the use of social media for disseminating messages. These perspectives aligned with specific recommendations made by SGM youth for developing effective social media anti-vaping messages.

Perspectives and recommendations fell into four categories: (1) Representation and diversity, (2) Facts and evidence, (3) Empowering messages, and (4) Source credibility. Themes in these categories emerged inductively in the interviews and were not anticipated by the study team a priori. Additional quotations pertaining to each of the categories are available in Supplementary Material.

Representation and Diversity

Eight participants remarked on the importance of effectively representing youths who are the intended audience of anti-vaping messages, and of accurately representing situations that are relatable to the audience. Participants stated that messages should include subjects that SGM youths can "see themselves" in. As one participant remarked:

> "For me personally to see… LGBTQ+ people represented is really important, right? Especially because a lot of times when you see ads on your screen, if they don't feel very relatable, it's hard to feel the messages." – C22

However, for tailored messages, participants cautioned against representing SGM youths in ways that single them out. Two participants questioned whether the "performative aspect" of the tailored TikTok video would be taken seriously, expressing concerns that users would post critical comments in response. As one participant noted:

> "I think that queers can kind of feel like… they're like just kind of being singled out to accomplish an agenda... With the popularity or like rise of rainbow capitalism and … queer baiting and queer people just being kind of like tokenized, that has kind of created this attitude of any time queer people are singled out, it can feel like an attack even if it's not." – D41

Participants also highlighted the importance of portraying diversity within the LGBTQ + community, including images of and perspectives from different genders, races, and sexual orientations. As one participant stated:

> "I think a lot of times there's a lot of whitewashing when it comes to LGBTQ+ representation, when in reality a lot of minorities, a lot of black and brown people have really… spearheaded those movements and I think that's really important." – C22

Participants suggested that visual representation can also be achieved through identifiable cues, such as rainbows, flags, and color schemes that represent LGBTQ + populations, and pins that display pronouns.

Facts and Evidence

Twenty-two participants stated that messages should include facts, evidence, and statistics in order to be effective, which they suggested can enhance message credibility and increase the likelihood that a message will be shared with others. Facts on mental health consequences were particularly salient and were described as important to SGM youth. Participants noted that SGM youth were more likely than non-SGM youth to experience mental health issues, which they perceived as both a reason for and a consequence of nicotine vaping.

Seven participants suggested that including evidence and statistics specific to SGM youth would be more captivating and impactful. Examples included statistics on the number of SGM youth who vape and information on why SGM youth are more at risk of vaping. As one participant remarked:

> "Especially, if you add statistics that are specific to LGBTQ youth, it sticks with us, specifically as a community to be thinking about like, "Oh, why are we letting this bring us down?" You know what I mean?" – F50

Clarity of messaging was also important for participants, in particular, those in the older age group (16 to 18 years). The tailored TikTok video was deemed by seven participants to be ineffective because it did not clearly link the message to vaping. Aside from the written caption "Quitting looks good on you" and the subject's presentation of a vape pen at the beginning of the video, the message presented no other clear references to vaping. As one participant stated:

> "I feel like it doesn't make a lot of sense. It's not saying anything about any harms or about quitting, it's just holding a vape up and then putting makeup on." – A14

Empowering Messages

Five participants commented on the importance of appealing to positive emotions in anti-vaping ads, which emerged in response to the tailored Instagram ad emphasizing the achievements of the LGBTQ + community.

This ad further led participants to emphasize the use of empowering, community-oriented language to appeal to the values and beliefs of SGM youth. However, participants also noted that community-focused messages should be authentic to the experience of LGBTQ + community members. As one participant related, failure to do so could result in a response from youth that reduces, rather than enhances, relatability:

> "When you tailor things, you have to be sensitive to the community and make sure that what you're actually giving out is how the community feels. So there is that like, possible backfire from the queer community if you just don't do it correctly and you do it like, in an insensitive way." – E17

The same participant contrasted empowering messages with those that emphasize the harms of vaping, relating that adding negative impacts to a message like the tailored Instagram ad would "do more harm than good":

> "Like with this one specifically, it's so positive that like putting in those negative factors… would kind of remove the main point… With this being on a positive note… it makes it seem like it's a nice thing that they quit and like it's good. And just giving that message itself I think is good enough for this." – E17

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Source Credibility

Seven participants expressed concerns about messages that were clearly marked as advertisements or promotions. Youth were considered more likely to scroll past posts that are marked as advertisements, which can adversely impact reach. Sponsored advertisements raise questions about the true intentions of the post, and can lead youths to believe that money, rather than health promotion, is the primary motivator behind the post.

Instead, participants stated that messages delivered by a reliable LGBTQ + source can increase credibility. Examples included organizations such as The Trevor Project, which is a crisis counseling resource for SGM youth (https://www.thetrevorproject.org/), and known LGBTQ + social media influencers and creators, such as Jammidodger, the Fab Five from Queer Eye, and JoJo Siwa. Participants in five interviews related that LGBTQ + individuals would not typically be perceived as having ulterior motives and would have a broader reach. Concerns about sponsored advertisements and suggestions to partner with known LGBTQ + influencers were more common among participants in the vaping-susceptible group than those in the initiated group.

With regard to social media platforms, TikTok was considered to be the most widely used platform by the study's target demographic, followed by Instagram and Snapchat. Some noted that "microinfluencers" on these platforms would be perceived as potentially more effective message sources than larger sponsors:

> "Don't make it seem like sponsored or anything. Maybe have like an actual account… like by another LGBT teen… Have them actually post it like as a regular video so that it doesn't come off as [an] advertisement." – A13

One participant also remarked on the importance of working with content creators who have first-hand experience of the harms of vaping:

> "Even if it's more of like a one-and-done type deal of one creator, if you can just get one big creator to get something for you... Especially like for example, there's creators who are ex-addicts, they're ex-jail people and they know what that feels like to see it in teenagers, like their own kids themselves or their friends." [F1]

Discussion

SGM youth are more likely to smoke or vape nicotine than their cisgender or heterosexual peers,[3,4] yet strategies to tailor messages and interventions focused on vaping among SGM youth are not fully understood. This study and previous research on the effectiveness of community-specific tailoring highlight the need for SGM youth-specific tailoring for vaping prevention.[40,41]

The importance of accurate, genuine representation of SGM youth in ads cannot be overstated. The emphasis on representation points toward potential peripheral tailoring strategies, which seek to package messages in appealing ways to the target group.[39] SGM youth expressed a preference for messages that are representative of their community and experiences but cautioned against attempts at representation that may be perceived as self-serving for organizations. Therefore, campaign designers and implementers must find a balance between untailored ads, which youth may perceive as unrelatable, and over-tailored ads, which they may perceive as inauthentic. To address this issue, SGM youth suggested that the design and dissemination of anti-vaping interventions be done in partnership with social media influencers or community groups instead of larger, national organizations. These findings build on the previous work of Baskerville and colleagues (2018) and Ma and colleagues (2022), who described the importance of real and relatable messages in anti-tobacco campaigns.[32,33]

SGM youth participants also highlighted the need for culturally tailored language, information, and themes in anti-vaping messaging. Anti-vaping messages that include evidence and statistics specific to SGM youth would be more captivating and impactful, pointing toward evidential tailoring strategies that seek to increase awareness of a given health issue.[39] Furthermore, messages that highlight themes of empowerment may be effective at reaching youth who are accustomed to messages that focus on the negative consequences of vaping. Messages that draw on positive themes specific to the LGBTQ + community or the experiences and perceptions of individual SGM youth can improve relevance, reach, and effectiveness, highlighting the importance of sociocultural and constituent-involving tailoring strategies.[39] However, campaign developers should practice caution in presenting statistics (such as the number of SGM youth who vape) that may set a descriptive norm for vaping in this population, which could increase intentions to vape.[14]

When choosing how best to disseminate anti-vaping messages to SGM youth, campaign implementers should consider the ever-changing nature of social media. While the participants in this study referenced TikTok as a widely used social media platform among SGM youth today, TikTok may not be the most popular or available platform in the future. Therefore, researchers and implementers must take inventory of key features that can impact message effectiveness on potential future platforms. For example, participants emphasized the importance of taking into account platform features that can adversely affect reach, such as having the ability to skip or scroll past posts, as well as features that elevate the visibility of specific posts, such as posting on a user's "For You" page or using relevant trending hashtags.

Engaging youth directly as part of campaign development and implementation—both through youth advisory committees and through youth integration into study teams—will help those designing campaigns avoid problematic representation of SGM youth and ensure that anti-vaping messages are well-received. In a systematic review of youth engagement in mental health research, McCabe et al. [42] found that there is no one-size-fits-all approach to working with youth in public health research or campaigns.[42] Across the studies examined, youth held roles in co-production (eg, developing research protocols, recruiting participants) and in advisory capacities (eg, participating in advisory meetings, advising on data collection instruments). For Project SMART, the development of SGM youth-specific vaping prevention messages will necessitate engagement with SGM youth both early and often.

This study had several strengths and limitations. Engaging a youth advisory group during materials and protocol development helped to ensure the meaningfulness of data collected in interviews. Our practices for recruiting participants via social media helped to improve the study's reach and

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relevance to the study population. While high rates of fraudulent survey responses were detected, these were similar to those reported by LePine et al. [43] and our rigorous review of survey responses for quality and eligibility ensured that each response in the final sample was from a unique, real person. Our team-based coding and audit trail practices improved the rigor of our data analysis methods, ensuring high reliability in coding decisions and the identification of themes. However, there remains the possibility that recruiting through social media may have biased our study findings toward SGM youth who interact more frequently with social media and have more knowledge of social media platforms and features. Furthermore, 14 interview participants were recruited in the second round and did not complete an elicitation survey. Compared to participants who had completed an elicitation survey, these youth were not previously aware of the specific study aims, had not previously responded to structured questions similar to those asked in the interviews, and may have been less prepared to expand on salient topics or provide meaningful detail in their interview responses. Initiated youth in the 13–15 age group were less likely to participate than other groups, and were thus underrepresented in the study. Due to their age and the legal age for vaping, they may not have been comfortable participating. Although parental consent was waived, some SGM youth who have not come out as a sexual or gender minority to their families or communities may not have participated. Lastly, tobacco smoking history or susceptibility was not collected in the elicitation survey, and we therefore could not assess the potential impact of tobacco smoking on SGM youth perspectives on anti-vaping messages.

Conclusions

This study provides insights into youth perceptions of anti-vaping messaging on social media, which are being used in the next phase of Project SMART to inform the design of a social media-based intervention to reduce vaping among SGM youth. Peripheral tailoring strategies should carefully balance the nuanced perspectives of SGM youth on representation in messages, ensuring that messages are perceived as both relatable and authentic. Furthermore, the relevance, reach, and effectiveness of anti-vaping messages may be enhanced through evidential tailoring strategies that incorporate evidence and statistics specific to SGM youth in messages, sociocultural tailoring strategies that highlight positive themes specific to the LGBTQ + community, and constituent-involving tailoring strategies that draw from the experiences and perceptions of individual SGM youth. Ensuring that SGM youth are included in message development and establishing partnerships with LGBTQ + social media influencers or community groups for message dissemination can help to minimize concerns around inauthenticity. Findings from this study can also be applied to messaging on other harmful products, with the potential to inform messaging efforts around not only nicotine vaping but also the use of tobacco and other substances in the SGM youth population.

Supplementary Material

Supplementary material is available at *Nicotine and Tobacco Research* online.

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Declaration of Interest

Sabra Katz-Wise is a diversity consultant for Paramount Global. None of this study's other authors have conflicts of interest.

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Data Availability

Data are not publicly available due to the sensitive nature of interview content and the age of participants.

References

1. The Trevor Project. Diversity of Youth Sexual Orientation. The Trevor Project. 2019. Accessed March 20, 2023. https://www.thetrevorproject.org/research-briefs/diversity-of-youth-sexual-orientation/
2. Shields JP, Cohen R, Glassman JR, *et al*. Estimating population size and demographic characteristics of lesbian, gay, bisexual, and transgender youth in middle school. *J Adolesc Health*. 2013;52(2):248–250. doi: 10.1016/j.jadohealth.2012.06.016
3. Azagba S, Latham K, Shan L. Cigarette smoking, e-cigarette use, and sexual identity among high school students in the USA. *Eur J Pediatr*. 2019;178(9):1343–1351. doi: 10.1007/s00431-019-03420-w
4. Dai H. Tobacco product use among lesbian, gay, and bisexual adolescents. *Pediatrics*. 2017;139(4):e20163276. doi: 10.1542/peds.2016-3276
5. Khouja JN, Suddell SF, Peters SE, Taylor AE, Munafò MR. Is e-cigarette use in non-smoking young adults associated with later smoking? A systematic review and meta-analysis. *Tob Control*. 2021;30(1):8–15. doi: 10.1136/tobaccocontrol-2019-055433
6. Soneji S, Barrington-Trimis JL, Wills TA, *et al*. Association between initial use of e-cigarettes and subsequent cigarette smokingamong adolescents and young adults: a systematic review and meta-analysis. *JAMA Pediatr*. 2017;171(8):788–797. doi: 10.1001/jamapediatrics.2017.1488
7. Zhang YY, Bu FL, Dong F, *et al*. The effect of e-cigarettes on smoking cessation and cigarette smoking initiation: an evidence-based rapid review and meta-analysis. *Tob Induc Dis*. 2021;19(January):4. doi: 10.18332/tid/131624
8. Chan GCK, Stjepanović D, Lim C, *et al*. Gateway or common liability? A systematic review and meta-analysis of studies of adolescent e-cigarette use and future smoking initiation. *Addiction*. 2020;116(4):743–756. doi: 10.1111/add.15246
9. Baenziger ON, Ford L, Yazidjoglou A, Joshy G, Banks E. E-cigarette use and combustible tobacco cigarette smoking uptake among non-smokers, including relapse in former smokers: umbrella review, systematic review and meta-analysis. *BMJ Open*. 2021;11(3):e045603. doi: 10.1136/bmjopen-2020-045603
10. Wender R, Sharpe KB, Westmaas JL, Patel AV. The American Cancer Society's Approach to Addressing the Cancer Burden in the LGBT Community. *LGBT Health*. 2016;3(1):15–18. doi: 10.1089/lgbt.2015.0089
11. Boehmer U, Elk R, eds. *Cancer and the LGBT Community: Unique Perspectives from Risk to Survivorship*. Springer International Publishing; 2015. doi: 10.1007/978-3-319-15057-4
12. Caceres BA, Brody A, Luscombe RE, *et al*. A systematic review of cardiovascular disease in sexual minorities. *Am J Public Health*. 2017;107(4):e13–e21. doi: 10.2105/AJPH.2016.303630
13. Blosnich J, Jarrett T, Horn K. Disparities in smoking and acute respiratory illnesses among sexual minority young adults. *Lung*. 2010;188(5):401–407. doi: 10.1007/s00408-010-9244-5
14. Fishbein M, Cappella JN. The role of theory in developing effective health communications. *J Commun*. 2006;56(S1):S1–S17. doi: 10.1111/j.1460-2466.2006.00280.x
15. Azagba S, Ebling T, Adekeye OT, Shan L. Mental health condition indicators and e-cigarette use among sexual and gender minority youth. *J Affect Disord*. 2022;319:1–7. doi: 10.1016/j.jad.2022.09.032
16. Doxbeck CR, Jaeger JA, Bleasdale JM. 2021. Understanding pathways to e-cigarette use across sexual identity: a multi-group structural equation model. *Addict Behav*. 2021;114:106748. doi: 10.1016/j.addbeh.2020.106748
17. Donaldson CD, Stupplebeen DA, Couch ET, *et al*. Perceived discrimination and youth vaping: the role of intersectional identities. *Drug Alcohol Depend*. 2024;260:111313. doi: 10.1016/j.drugalcdep.2024.111313
18. Azagba S, Ebling T, Shan L. Sexual minority youth E-cigarette use. *Pediatrics*. 2023;151(3):e2022058414. doi: 10.1542/peds.2022-058414
19. Lee J, Tan ASL. Intersectionality of sexual orientation with race and ethnicity and associations with E-cigarette use status among U.S. Youth. *Am J Prev Med*. 2022;63(5):669–680. doi: 10.1016/j.amepre.2022.06.013
20. Gamarel KE, Watson RJ, Mouzoon R, *et al*. Family rejection and cigarette smoking among sexual and gender minority adolescents in the United States. *Int J Behav Med*. 2020;27(2):179–187. doi: 10.1007/s12529-019-09846-8
21. Soneji S, Knutzen KE, Tan AS, *et al*. Online tobacco marketing among US adolescent sexual, gender, racial, and ethnic minorities. *Addict Behav*. 2019;95:189–196. doi: 10.1016/j.addbeh.2019.03.015
22. Newcomb ME, Heinz AJ, Birkett M, Mustanski B. A longitudinal examination of risk and protective factors for cigarette smoking among lesbian, gay, bisexual and transgender youth. *J Adolesc Health*. 2014;54(5):558–564. doi: 10.1016/j.jadohealth.2013.10.208
23. Dermody SS, McGinley J, Eckstrand K, Marshal MP. Sexual minority female youth and substance use disparities across development. *J LGBT Youth*. 2020;17(2):214–229. doi: 10.1080/19361653.2019.1598313
24. Zeller M. Evolving "The Real Cost" campaign to address the rising epidemic of youth E-cigarette use. *Am J Prev Med*. 2019;56(2 suppl 1):S76–S78. doi: 10.1016/j.amepre.2018.09.005
25. Truth Initiative. New TikTok challenge kicks off national truth® campaign. 2020. https://truthinitiative.org/press/press-release/new-tiktok-challenge-kicks-national-truthr-campaign-underscoring-young-peoples. Accessed April 6, 2023.
26. California Department of Public Health. *Dangers of Vaping | Nicotine = Brain Poison (Extended Version)*.; 2019. https://www.youtube.com/watch?v=_frd00RIS-w. Accessed April 6, 2023.
27. Ramo DE, Meacham MC, Kaur M, *et al*. Development of a social media-based intervention targeting tobacco use and heavy episodic drinking in young adults. *Addict Sci Clin Pract*. 2019;14(1):14. doi: 10.1186/s13722-019-0141-9
28. Rideout V, Fox S. Digital Health practices, social media use, and mental well-being among teens and young adults in the U.S. *Artic Abstr Rep*. 2018. https://digitalcommons.psjhealth.org/publications/1093
29. Emory K, Buchting FO, Trinidad DR, Vera L, Emery SL. Lesbian, gay, bisexual, and transgender (LGBT) View it Differently Than Non-LGBT: exposure to tobacco-related couponing, E-cigarette Advertisements, and Anti-tobacco Messages on Social and Traditional Media. *Nicotine Tob Res*. 2019;21(4):513–522. doi: 10.1093/ntr/nty049
30. Schwappach DLB. Queer Quit: gay smokers' perspectives on a culturally specific smoking cessation service. *Health Expect*. 2009;12(4):383–395. doi: 10.1111/j.1369-7625.2009.00550.x
31. Walls NE, Wisneski H. Evaluation of smoking cessation classes for the lesbian, gay, bisexual, and transgender community. *J Soc Serv Res*. 2011;37(1):99–111. doi: 10.1080/01488376.2011.524531
32. Baskerville NB, Wong K, Shuh A, *et al*. A qualitative study of tobacco interventions for LGBTQ+ youth and young adults: overarching themes and key learnings. *BMC Public Health*. 2018;18(1):155. doi: 10.1186/s12889-018-5050-4
33. Ma J, Kraus AJ, Owens C, *et al*. Perspectives on cigarette use, vaping, and antitobacco campaigns among adolescent sexual minority males and gender diverse youth. *LGBT Health*. 2022;9(7):479–488. doi: 10.1089/lgbt.2021.0460

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34. Baskerville NB, Dash D, Shuh A, *et al*. Tobacco use cessation interventions for lesbian, gay, bisexual, transgender and queer youth and young adults: a scoping review. *Prev Med Rep*. 2017;6:53–62. doi: 10.1016/j.pmedr.2017.02.004
35. McQuoid J, Durazo A, Mooney E, *et al*. Tobacco cessation and prevention interventions for sexual and/or gender minority-identified people and the theories that underpin them: a scoping review. *Nicotine Tob Res*. 2023;25(6):1065–1073. doi: 10.1093/ntr/ntad018
36. Ford KL, Albritton T, Dunn TA, *et al*. Youth Study Recruitment Using Paid Advertising on Instagram, Snapchat, and Facebook: Cross-Sectional Survey Study. *JMIR Public Health Surveillance*. 2019;5(4):e14080. doi: 10.2196/14080
37. Deterding NM, Waters MC. Flexible coding of in-depth interviews: a twenty-first-century approach. *Sociol Methods Res*. 2021;50(2):708–739. doi: 10.1177/0049124118799377
38. Giesen L, Roeser A. Structuring a team-based approach to coding qualitative data. *Int J Qual Methods*. 2020;19:160940692096870. doi: 10.1177/1609406920968700
39. Kreuter MW, Lukwago SN, Bucholtz RDDC, Clark EM, Sanders-Thompson V. Achieving cultural appropriateness in health promotion programs: targeted and tailored approaches. *Health Educ Behav*. 2003;30(2):133–146. doi: 10.1177/1090198102251021
40. Cowgill BO, Herrmann A, Richardson J, *et al*. Understanding E-cigarette knowledge and use among d/deaf and hard of hearing students and the need for tailored prevention programming: a Qualitative Study. *Am Ann Deaf*. 2020;165(3):335–352.
41. Fallin A, Neilands TB, Jordan JW, Ling PM. Social branding to decrease lesbian, gay, bisexual, and transgender young adult smoking. *Nicotine Tob Res*. 2015;17(8):983–989. doi: 10.1093/ntr/ntu265
42. McCabe E, Amarbayan M(, Rabi S, *et al*. Youth engagement in mental health research: a systematic review. *Health Expect*. 2023;26(1):30–50. doi: 10.1111/hex.13650
43. LePine SE, Peasley-Miklus C, Farrington ML, *et al*. Ongoing refinement and adaptation are required to address participant deception in Online Nicotine and Tobacco Research Studies. *Nicotine Tob Res*. 2023;25(1):170–172. doi: 10.1093/ntr/ntac194

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