Addictive Behaviors 130 (2022) 107307

Contents lists available at ScienceDirect

Addictive Behaviors

journal homepage: www.elsevier.com/locate/addictbeh

The impact of e-cigarette product placement in music videos on susceptibility to use e-cigarettes among young adults: An experimental investigation

Scott I. Donaldson [a], Allison Dormanesh [a], Patricia Escobedo [a], Anuja Majmundar [b], Matthew Kirkpatrick [a,c], Jon-Patrick Allem [a,*]

[a] Department of Population and Public Health Sciences, Keck School of Medicine, University of Southern California, Los Angeles, CA
[b] Tobacco Control Research, Surveillance and Health Equity Science, American Cancer Society, Inc., Kennesaw, GA
[c] Department of Psychology, University of Southern California, Los Angeles, CA

ARTICLE INFO

Keywords:
Vaping
E-cigarettes
Social media
Marketing
Young adults
Experimental design
Susceptibility
Intention to try
Product placement
Music videos

ABSTRACT

Introduction: Product placement in music videos is a growing promotional strategy. This study examined the impact of e-cigarette product placement and imagery in music videos on susceptibility to use e-cigarettes among young adults.

Methods: A non-probability sample of young adults (18 to 24) in Southern California were recruited to participate in an experiment over Zoom. Participants were randomized into a treatment or a control group. The treatment group watched seven music videos with e-cigarette product placement and imagery. The control group watched the same seven music videos with all e-cigarette product placement and imagery digitally removed. Participants completed a questionnaire after watching the music videos. The focus of the analysis was on susceptibility to use e-cigarettes in the future among never users ($n = 303$).

Results: Participants in the treatment group who had never used e-cigarettes were more likely to report intentions to try e-cigarettes in the future ($OR = 1.94$, 95% CI [1.08, 3.54], compared to participants in the control group. Participants in the treatment group who had never used e-cigarettes were more likely to report peer influence ($OR = 1.97$, 95% CI [1.19, 3.32], compared to participants in the control group. While these subitems of susceptibility to use e-cigarettes were statistically significant, the relationship between the treatment group and the composite measure of susceptibility was not.

Conclusion: Exposure to e-cigarette product placement in music videos may increase young adults' intentions to try e-cigarettes in the future. Federal, state, and local tobacco control regulatory bodies should consider strategies to reduce e-cigarette product placement in music videos.

1. Introduction

Young adult e-cigarette use is a public health concern in the U.S (U.S. Food and Administration, 2021; Gallup, 2021). E-cigarette use among young adults is partly attributable to the promotional tactics that e-cigarette companies use to target them (U.S. Department of Health and Human Service, 2021). Research has shown that e-cigarette companies utilize product placement in music videos that appear on platforms (e.g., YouTube) popular among young adults (Majmundar et al., 2021; Knutzen et al., 2018). For example, Escobedo et al., identified songs on the Billboard Hot 100 list in 2018 with official music videos. They found that e-cigarette product placement and imagery appeared in seven music videos viewed over a billion times (Escobedo et al., 2020). Additionally, Majmundar et al., found that exposure to e-cigarette product placement in music videos was associated with lifetime and past-30-day e-cigarette use in a representative sample of young adults (18 to 24) in California (Majmundar et al., 2021). They found that among young adults with any exposure to such music videos, participants younger than 21 years of age (i.e., under the legal tobacco purchasing age in the U.S.) were more likely to report lifetime e-cigarette use compared with those aged 21 years and older (Majmundar et al., 2021).

Social cognitive theory suggests that behavior is learned and

* Corresponding author at: 2001 N Soto Street, 3rd Floor, SSB 312D, Los Angeles, CA 90032.
E-mail address: allem@usc.edu (J.-P. Allem).

https://doi.org/10.1016/j.addbeh.2022.107307
Received 23 September 2021; Received in revised form 21 January 2022; Accepted 12 March 2022
Available online 15 March 2022

reinforced by observing or modeling others (Bandura, 2001; Bandura, 2001). Popular music videos that juxtapose social and rewarding experiences with e-cigarette brands can be considered socializing forces for young adults, molding their views of what is normative, attractive, and rewarding (Sargent et al., 2002). The sexual image of e-cigarette use that often appears in music videos can make vaping more salient and lead young adults to associate e-cigarette use with its short-term benefits and related positive outcome expectations (Allem et al., 2019).

To date, steps have been taken to prevent e-cigarette companies from promoting e-cigarettes to young adults. For example, the Los Angeles City Attorney's Office secured an injunction against an e-cigarette manufacturer that prohibits them from engaging in product placement in music videos in the future (Los Angeles City Attorney, 2021). While restrictions are being implemented to prevent this type of promotional practice, the impact of exposure to e-cigarette product placement in music videos on subsequent e-cigarette use susceptibility is still unknown. As such, experimental research that demonstrates temporal precedence between exposure to such product placement and e-cigarette-related outcomes is needed. The current study addresses an important gap in the literature; it used an experimental design to expose participants to e-cigarette product placement and imagery and examined the impact on susceptibility to use e-cigarettes among young adults who had never used e-cigarettes.

2. Methods

2.1. Participants and procedure

Participants were recruited from July 31, 2020, to January 19, 2022, through in-person recruitment, flyers, emailing community college and university student organizations and faculty, listservs, newsletters and paid Facebook and Instagram advertisements. Each potential participant completed a prescreening survey to determine eligibility. To participate in this study, individuals had to be between 18 and 24 years of age, have access to a computer or laptop with a webcam, have internet access, and live in California. California has a diverse population of young adults with recent research showing that e-cigarette use is on the rise among young adults in the state (Leventhal et al., 2021).

To achieve a diverse sample, individuals were invited to participate using a stratified sampling procedure which selected participants based on gender identity, race/ethnicity, and sexual orientation using sociodemographic proportions. In other words, we used the prescreening survey to help balance participants across gender and race/ethnicity groups in the initial study sample. E-cigarette use (lifetime or current) was not a requirement to participate in the study (King et al., 1994).

All in-person human subjects research was suspended by the University due to the COVID-19 pandemic. Therefore, the study was conducted entirely on Zoom, a video conferencing platform. To complete the study, participants met with members of the research team who provided instructions and monitored participant activity throughout the study. Using Zoom, all participants watched seven music videos in succession, then completed an online questionnaire. Participants shared their screens and had webcams and audio on while watching the music videos. They were instructed to stop sharing their screens while completing the questionnaire to ensure confidentiality.

For this experiment, participants were randomized into a treatment group or a control group. The music videos used in this experiment were selected from prior research that identified music videos with e-cigarette product placement and imagery (Majmundar et al., 2021; Knutzen et al., 2018). Six groups of video sequences (three in the treatment group and three in the control group), were created to help prevent order effects. Participants were randomly assigned one of three video sequences in their respective group. Participants in the treatment group watched seven music videos with e-cigarette product placement and imagery. Likewise, participants in the control group watched the same seven music videos, but with all e-cigarette product placement and imagery digitally removed without disrupting audio or video quality. All participants completed the same online questionnaire after watching the music videos. The study took around 50 minutes to complete, and participants received a $45 Amazon gift card for completing the study. All data collection procedures were approved by the University's Institutional Review Board.

2.2. Participant characteristics

This study employed a battery of questions to determine that randomization was successful in balancing our treatment and control groups on pretreatment variables. For example, research has shown that exposure to music videos with product placement was associated with e-cigarette use (Majmundar et al., 2021; Escobedo et al., 2020). As a result, before watching the music videos, all participants were asked, "have you seen any of the following music videos," followed by the list of seven music video titles and corresponding artists. A total score was computed to measure the degree of prior exposure to music videos with product placement.

As part of the questionnaire, participants were asked "which gender identity do you most identify with?" Responses were coded as female, male, or other. Other included transgender female, transgender male, gender variant/non-conforming, not listed, or prefer not to answer. Race/ethnicity was assessed with the item, "how do you describe yourself?" Racial/ethnic identity response options included Asian, Black or African American, Hispanic, Latino/a, Multiracial, Non-Hispanic White, American Indian or Alaska Native, Native Hawaiian or Pacific Islander, or I prefer not to answer. The Other category was created due to small cell sizes and was comprised of participants who stated that they were American Indian or Alaska Native, Native Hawaiian or Pacific Islander, or that they preferred not to answer. Participants reported their ages ranging from 18 to 24.

Three questions assessed how often (0-*Never* to 4-*Always*) participants viewed advertisements from tobacco products (e.g., Juul, Puff Bar, cigarette, cigar, cigarillo, e-cigarette, e-hookah, smoking tobacco, waterpipe, other) on the internet, in magazines, and in-stores, which were adapted from the Centers for Disease Control and Prevention's National Youth Tobacco Survey (Centers for Disease Control and Prevention (2021)). Respondents reported how often they encountered ads, defined as "a message or picture from a tobacco or nicotine brand to sell the product, not just a person using the product" from (0-*Never* to 4-*Always)*. Consistent with past research (Majmundar et al., 2021; Centers for Disease Control and Prevention, 2021), respondents that reported "never" being exposed to all ten tobacco products on the internet, in magazines, and in-stores were coded as "not exposed to tobacco advertisements." All other response options were coded as "exposed to tobacco advertisements.".

Since social media use has been associated with greater susceptibility to use e-cigarettes (Vogel et al., 2021), and may be associated with exposure to music videos that appear on social media platforms, participants were asked to report their social media use across ten platforms, including YouTube, Facebook, Reddit, Twitter, TikTok, Pinterest, Snapchat, Tumblr, Instagram and other. Responses included 0-*I do not use this form of social media*, 1-*Several times a day*, 2-*Daily*, 3-*Weekly*, and 4-*Monthly*.

2.3. Dependent variable

Lifetime, past six months, and past 30-day e-cigarette use was measured with the item "Have you used any of the following electronic nicotine devices?" Respondents reported yes, no, or I don't know to eight devices, including disposable device (e.g., Puff Bar), Juul, other pod mod, vape pen, rechargeable device, mod or mech-mod rechargeable device, box mod, or another type of electronic nicotine device. E-cigarette use was coded into four categories: never use, lifetime use, past 6-month use, and past 30-day use. Participants that reported that they

have not used any electronic nicotine devices (e.g., disposable device, Juul, other pod, vape pen, rechargeable, mod, box mod) in their lifetime were considered never users ($n = 303$). This group of never users were asked questions about susceptibility to use e-cigarette in the future and was the focus of the analysis.

Past validation studies supported three items, in addition to a composite score, to measure susceptibility to use e-cigarettes. Prior research has shown that measures of susceptibility to use tobacco products have been successful in predicting future tobacco use among young adults (Hébert et al., 2017; Pierce et al., 1996; Strong et al., 2015). These items focused on intentions to try, curiosity, and peer influence, which were computed into an overall susceptibility to use e-cigarettes score. The intentions to try e-cigarettes item asked, "Do you think that you will try vaping soon?" from 1-*Definitely yes* to 4-*Definitely no*. The curiosity item asked, "Have you ever been curious about vaping (that is, using an e-cigarette or other electronic nicotine device)?" The curiosity item was measured from 1 to *Very curious* to 4-*Not at all curious*. The peer influence item asked, "If one of your best friends were to offer you an electronic nicotine device for vaping, would you use it?" measured from 1-*Definitely yes* to 4-*Definitely no*. Response options were reverse coded, and a composite score out of 12 was computed for each participant. Item responses "Definitely no" or "Not at all curious" for all three items and an associated composite score of <=3 was recoded as "not susceptible to use e-cigarettes," while all composite scores above 3 were coded as "susceptible to use e-cigarettes." Cronbach's alpha for the overall susceptibility to use e-cigarettes measure was in the acceptable range (α=0.73).

2.4. Data analysis

Chi-square tests of independence were conducted to check for balance between the treatment group and the control group on gender identity, age, race/ethnicity, past tobacco advertisement exposure, past music video exposure, and social media use (Table 1). Nonsignificant differences were found between the treatment and control group, suggesting a balanced research design was achieved. Logistic regression was used to assess the relationship between the treatment group and susceptibility to use e-cigarettes, among those who had never used e-cigarettes (n = 303), controlling for gender identity, age, race/ethnicity, past tobacco advertisement exposure, past music video exposure, and social media use. Additionally, we examined the relationship between the treatment group and the subitems from the susceptibility to use e-cigarettes measure, including intentions to use, curiosity, and peer influence. We reported odds ratios and 95% confidence intervals based on the recommendation to use indices of effect size and precision when reporting statistical findings (Munafò & Paul, 2015). All analyses were conducted in the R statistical program (R: A language and environment for statistical computing, 2009).

Table 1
Sociodemographic characteristics of participants who never used e-cigarettes.

	Treatment ($n = 153$)	Control ($n = 150$)	p value
Variable	% (n)	% (n)	
Gender			0.788
Female	56.9% (87)	54.0% (81)	
Male	39.9% (61)	44.0% (66)	
Other[a]	3.2 % (5)	2.0% (3)	
Race/Ethnicity			0.403
Asian	34.0% (52)	38.0% (57)	
Black	6.5% (10)	6.6% (10)	
Hispanic	10.5% (16)	12.7% (19)	
Latino	10.5% (16)	12.7% (19)	
Multiracial	13.7% (21)	6.7% (10)	
NH-White	22.9% (35)	19.3% (29)	
Other[b]	1.9% (3)	4.0% (6)	
Past tobacco advertisement exposure			0.133
Yes	96.1% (147)	96.0% (144)	
No	3.9% (6)	4.0% (6)	
Prior music video exposure			0.454
0	64.7% (99)	66.0% (99)	
1	14.4% (22)	16.0% (24)	
2	7.8% (12)	8.0% (12)	
3	5.2% (8)	4.7% (7)	
4	5.9% (9)	4.0% (6)	
>5	2.0% (3)	1.3% (2)	
Daily social media use			0.134
Yes	74.5% (114)	66.7% (100)	
No	25.5% (39)	33.3% (50)	
Age			0.644
Mean (SD)	20.9 (1.9)	20.8 (1.8)	

Note. Other[a] = transgender female, transgender male, gender variant/non-conforming, not listed, or prefer not to answer; NH = non-Hispanic; Other[b] = American Indian or Alaska native, native Hawaiian or pacific islander, I prefer not to answer.

3. Results

3.1. Sociodemographic characteristics

Table 1 presents descriptive statistics and probability values of pre-treatment differences between the treatment group and the control group.

3.2. Susceptibility to use e-cigarettes

Participants in the treatment group who had never used e-cigarettes were more likely to report intentions to try e-cigarettes in the future ($OR = 1.94$, 95% CI [1.08, 3.54], compared to participants in the control group (Table 2). Participants in the treatment group who had never used e-cigarettes were more likely to report peer influence ($OR = 1.97$, 95% CI [1.19, 3.32], compared to participants in the control group. While these subitems of susceptibility to use e-cigarettes were statistically significant, the relationship between the treatment group and the control group on the composite measure of susceptibility to use e-cigarettes among never users was statistically insignificant.

4. Discussion

This study used an experimental design to expose participants to e-cigarette product placement and imagery and examined the impact on susceptibility to use e-cigarettes among young adults who had never used e-cigarettes. It found that exposure to music videos with e-cigarette product placement and imagery impacted intentions to try e-cigarettes in the future among young adults who had never used e-cigarettes. It also found that exposure to music videos with e-cigarette product placement impacted peer influence among young adults who had never used e-cigarettes. In other words, participants in the treatment condition were more likely to report that they would consider using an e-cigarette

Table 2
The experimental effect of music videos with product placement and imagery on susceptibility to use e-cigarettes among never users.

	Susceptibility to use composite measure	Intentions to try subitem	Curiosity subitem	Peer influence subitem
Experimental Effect	1.45 [0.90, 2.37] $n = 303$	1.94 [1.08, 3.54] $n = 303$	1.10 [0.68, 1.78] $n = 303$	1.97 [1.19, 3.32] $n = 303$

Note. Numbers in cells are odds ratios with 95% confidence intervals and sample size. An individual cell describes the relationship between the experimental condition and an outcome of interest. All models controlled for gender identity, age, race/ethnicity, past tobacco advertisement exposure, past music video exposure, and social media use.

if offered one by a friend, compared to participants in the control condition. The relationship between exposure to music videos with e-cigarette product placement was not significant with the composite measure of susceptibility to use e-cigarettes.

This study adds to the growing multi-disciplinary research on the impact of product placement and imagery in music videos on health-related attitudes and behaviors. Prior work suggested that product placement is commonplace in Billboard Hot 100 music videos, featuring popular and influential celebrities, and promoting products through predominantly visual and audiovisual means (Sánchez-Olmos & Castelló-Martínez, 2020; Burkhalter & Thornton, 2014). Initial research has shown that music videos are recommended to friends, and watched repeatedly, among young adults and that websites like YouTube facilitate video sharing and consecutive views in concentrated periods of time (Cranwell et al., 2015). As a result, seeing music videos multiple times may prime expectancy, driving participants to seek out videos again, which could have additive or reinforcing effects on attitudes and behaviors. Repeated exposure to brand placement in music videos may have a positive effect on brand memory, brand-related attitudes, intentions to buy and intentions to recommend the brand to others (Davtyan et al., 2020). Presenting a product without explicitly disclosing a paid promotion, along with appealing features such as celebrities and music, may prime audiences to memorize and potentially like the product (Matthes & Naderer, 2016). As such, using this promotional strategy to promote e-cigarette use can impact young adults e-cigarette-related behaviors.

Findings from this study were consistent with earlier research linking exposure to smoking in movies to tobacco use among adolescents (Burkhalter & Thornton, 2014; Sargent, 2005). This study corroborates the cross-sectional findings from prior work using an experimental research design with young adults (Majmundar et al., 2021). Taken together, this study provides timely insights for evidence-based public health regulations and interventions that could educate young adults on the adverse effects of targeted e-cigarette promotional practices. Findings suggest an urgent need to regulate e-cigarette product placement in music videos. Many aspects of e-cigarette promotions are not addressed by the 1999 Master Settlement Agreement (MSA), including product placement in motion pictures and music videos (Master settlement agreement, 2021). Additionally, in 2016, while extending its regulatory authority over e-cigarettes, the U.S. Food and Drug Administration (FDA) did not restrict e-cigarette promotions other than mandating health warnings on all tobacco products' advertisements. Expanding the FDA's purview to restrict e-cigarette product placement in music videos is a step towards comprehensive e-cigarette promotional regulations.

4.1. Limitations

Participants were recruited using a non-probability sample in Southern California and may not be representative of the U.S. population of young adults. Prerequisites for participation included internet access and availability of a laptop and camera, which may limit the generalizability of the findings to all socioeconomic groups in California. The experiment was delivered over Zoom, which may have influenced participant engagement. The treatment group consisted of 54 seconds of e-cigarette product exposure across all seven videos, which is significantly less exposure than the average time youth spend watching videos each day (Washington Post, 2021). This study did not point out or highlight the product placement in each music video in the treatment condition. As a result, this study may have underestimated the impact of product placement or imagery in music videos. Future research should replicate this study in-person. In addition, future research should modify the degree of product placement exposure and assess participant recognition of exposure to product placement. Finally, prior exposure to music videos and tobacco advertisements were measured by self-report, which may be subject to recall bias.

5. Conclusion

Exposure to e-cigarette product placement in music videos may increase young adults' intentions to try e-cigarettes. Tobacco control agencies at the federal, state and city-level should enact comprehensive policies prohibiting e-cigarette product placement and imagery in music videos in the future.

6. Role of funding sources

This project was partially supported by funds provided by The Regents of the University of California, Research Grants Program Office, Tobacco-Related Diseases Research Program, Grant Number No. 28KT-0003. The opinions, findings, and conclusions herein are those of the authors and not necessarily represent those of The Regents of the University of California, or any of its programs. The funding source had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

7. Contributors

All authors have seen and approved the final version of the manuscript being submitted. The article is the authors' original work, hasn't received prior publication and isn't under consideration for publication elsewhere. Concept and design: Jon-Patrick Allem, Matthew Kirkpatrick, and Allison Dormanesh. Acquisition, analysis, or interpretation of data: Jon-Patrick Allem, Allison Dormanesh, Matthew. Kirkpatrick, Patricia Escobedo, and Scott Donaldson. Drafting of the manuscript: Scott Donaldson. Critical revision and final approval of manuscript: Jon-Patrick Allem, Allison Dormanesh, Patricia Escobedo, Anuja Majmundar, and Matthew Kirkpatrick. Statistical Analysis: Scott Donaldson. Obtained funding: Jon-Patrick Allem

CRediT authorship contribution statement

Scott I. Donaldson: Conceptualization, Methodology, Formal analysis, Data curation, Writing – original draft. **Allison Dormanesh:** Conceptualization, Investigation, Data curation, Writing – review & editing, Project administration. **Patricia Escobedo:** Investigation, Writing – review & editing, Project administration. **Anuja Majmundar:** Writing – review & editing. **Matthew Kirkpatrick:** Conceptualization, Methodology, Writing – review & editing. **Jon-Patrick Allem:** Conceptualization, Methodology, Writing – review & editing, Supervision, Project administration, Funding acquisition.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

Allem, J. P., Escobedo, P., Cruz, T. B., & Unger, J. B. (2019). Vape pen product placement in popular music videos. *Addictive Behaviors, 93*, 263.

Bandura, A. (2001). Social cognitive theory of mass communication. *Media Psychology, 3*(3), 265–299.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52*(1), 1–26.

Burkhalter, J. N., & Thornton, C. G. (2014). Advertising to the beat: An analysis of brand placements in hip-hop music videos. *Journal of Marketing Communications, 20*(5), 366–382.

Centers for Disease Control and Prevention. (2021). *National youth tobacco survey (nyts)*. Accessed June 18, 2021. https://www.cdc.gov/tobacco/data_statistics/surveys/nyts/index.htm.

Cranwell, J., Murray, R., Lewis, S., Leonardi-Bee, J., Dockrell, M., & Britton, J. (2015). Adolescents' exposure to tobacco and alcohol content in YouTube music videos. *Addiction, 110*(4), 703–711.

Davtyan, D., Cunningham, I., & Tashchian, A. (2020). Effectiveness of brand placements in music videos on viewers' brand memory, brand attitude and behavioral intentions. *European Journal of Marketing*.

Escobedo, P., Rosenthal, E. L., Saucier, C. J., et al. (2020). Electronic cigarette product placement and imagery in popular music videos. *Nicotine & tobacco research. Published online*. https://doi.org/10.1093/ntr/ntaa273

Gallup. (2021). *What percentage of Americans vape?*. Accessed September 21, 2021. https://news.gallup.com/poll/267413/percentage-americans-vape.aspx.

Hébert, E. T., Case, K. R., Kelder, S. H., Delk, J., Perry, C. L., & Harrell, M. B. (2017). Exposure and engagement with tobacco- and e-cigarette–related social media. *Journal of Adolescent Health, 61*(3), 371–377. https://doi.org/10.1016/j.jadohealth.2017.04.003

King, G., King, G., Keohane, R. O., & Verba, S. (1994). *Designing Social Inquiry: Scientific Inference in Qualitative Research*. STU - Student edition: Princeton University Press.

Knutzen, K. E., Moran, M. B., & Soneji, S. (2018). Combustible and Electronic Tobacco and Marijuana Products in Hip-Hop Music Videos, 2013–2017. *JAMAInternal Medicine, 178*(12), 1608–1615.

Leventhal, A. M., Hongying, D., Barrington-Trimis, J. L., Tackett, A. P., Pedersen, E. R., & Tran, D. D. (2021). Disposable E-Cigarette Use Prevalence, Correlates, and Associations with Previous Tobacco Product Use in Young Adults. *Nicotine & Tobacco Research*.

Los Angeles City Attorney. (2021). *Feuer secures injunction, $1.2-million penalty against vape company for youth targeted marketing*. Accessed June 16, 2021. https://www.lacityattorney.org/post/feuer-secures-injunction-1-2-million-penalty-against-vape-company-for-youth-targeted-marketing.

Majmundar, A., Unger, J. B., Cruz, T. B., Kirkpatrick, M. G., & Allem, J. P. (2021). Exposure to e-cigarette product placement in music videos is associated with vaping among young adults. *Health Education & Behavior*. Published online 2021: 10901981211003867-10901981211003867. doi:10.1177/10901981211003867.

Master settlement agreement. Accessed September 22, 2021. Available at: http://www.naag.org/cigmsa.rtf.

Matthes, J., & Naderer, B. (2016). Product placement disclosures: Exploring the moderating effect of placement frequency on brand responses via persuasion knowledge. *International Journal of Advertising, 35*(2), 185–199.

Munafò, M. R., & Paul, W. E. (2015). Guidelines on statistical reporting at Nicotine & Tobacco research. *Nicotine & Tobacco Research, 17*(11), 1295–1296. https://doi.org/10.1093/ntr/ntv131

Pierce, J. P., Choi, W. S., Gilpin, E. A., Farkas, A. J., & Merritt, R. K. (1996). Validation of susceptibility as a predictor of which adolescents take up smoking in the United States. *Health Psychology., 15*(5), 355–361. https://doi.org/10.1037/0278-6133.15.5.355

R: A language and environment for statistical computing. (2009). *R Core Team. R foundation for statistical computing*.

Sánchez-Olmos, C., & Castelló-Martínez, A. (2020). Brand Placement in Music Videos: Artists, Brands and Products Appearances in the Billboard Hot 100 from 2003 to 2016. *Journal of Promotion Management, 26*(6), 874–892.

Sargent, J. D., Dalton, M. A., Beach, M. L., Mott, L. A., Tickle, J. J., Ahrens, M. B., et al. (2002). Viewing tobacco use in movies: Does it shape attitudes that mediate adolescent smoking? *American Journal of Preventive Medicine, 22*(3), 137–145.

Sargent, J. D. (2005). Smoking in movies: impact on adolescent smoking [published correction appears in Adolesc Med Clin. 2006 Oct;17(3):809]. Adolescent Medicine *Clinics, 16*(2), 345-ix. doi:10.1016/j.admecli.2005.02.003.

Strong, D. R., Hartman, S. J., Nodora, J., et al. (2015). Predictive validity of the expanded susceptibility to smoke index. *Nicotine & Tobacco Research., 17*(7), 862–869. https://doi.org/10.1093/ntr/ntu254

U.S. Department of Health and Human Service. (2021). *E-cigarette use among youth and young adults: A report of the surgeon general*. Accessed September 9, 2021. https://e-cigarettes.surgeongeneral.gov/documents/2016_SGR_Full_Report_non-508.pdf.

U.S. Food and Drug Administration. (2021). *Youth tobacco use: Results from the national youth tobacco survey*. Accessed June 14, 2021. https://www.fda.gov/tobacco-products/youth-and-tobacco/youth-tobacco-use-results-national-youth-tobacco-survey.

Vogel, E. A., Ramo, D. E., Rubinstein, M. L., et al. (2021). Effects of Social Media on Adolescents' Willingness and Intention to Use E-Cigarettes: An Experimental Investigation. *Nicotine & Tobacco Research, 23*(4), 694–701. https://doi.org/10.1093/ntr/ntaa003

Washington Post. (2021). *Tweens, teens and screens: The average time kids spend watching online videos has doubled in 4 years*. Accessed September 22, 2021. https://www.washingtonpost.com/technology/2019/10/29/survey-average-time-young-people-spend-watching-videos-mostly-youtube-has-doubled-since/.