E-cigarette imagery in Netflix scripted television and movies popular among young adults: A content analysis

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ABSTRACT

Introduction: Research is needed to understand the frequency of e-cigarette impressions in scripted television and movies, especially in scripted content with characters and storylines that may appeal to young adults. This study aimed to determine the extent of e-cigarette-related imagery and dialogue in Netflix content popular with young adults. We also determine the demographics and character qualities of actors shown holding e-cigarettes.

Methods: Nielsen ratings data were used to compile a list of the most popular Netflix original films and TV shows among U.S. viewers 18–24 years old between June 1, 2020, and May 31, 2021. We used a sample of 12 films and 113 TV episodes from 12 series. Three coders were trained to analyze a total of 101 h of content for the presence of e-cigarettes, level of use, type of characters holding e-cigarettes, brand visibility, and the presence of vaping-related dialogue. Twenty percent of all episodes/films were double coded to ensure reliability.

Results: Out of 125 titles, 16 (13%) had e-cigarette-related content. Thirteen titles (10%) showed at least one character holding an e-cigarette, and three others mentioned vaping without showing e-cigarettes. The total time of e-cigarettes onscreen amounted to 399 s and the average screen time for e-cigarettes was 31 s. Ninety-nine percent of the time an e-cigarette appeared on screen it was being held by a character.

Conclusion: This study documented recent e-cigarette imagery found on Netflix and demonstrates the need for health communication campaigns to denormalize e-cigarette use, particularly among susceptible populations, such as young adults.

1. Introduction

The tobacco industry has employed a variety of marketing strategies that have targeted young and young adults and have been found to promote an increase in smoking behaviors (Biener & Siegel, 2000; Lovato et al., 2011; Pierce & Gilpin, 1995; Rigotti et al., 2005). In addition to paid advertisements, the tobacco industry has employed methods that combine positive tobacco images and entertainment (National Cancer Institute, 2008). One strategy that received a great deal of empirical attention was tobacco product placement and smoking in movies. For example, cross-sectional (Sargent et al., 2005), and longitudinal (Dalton et al., 2003), surveys have shown that greater exposure to smoking in movies is associated with trying smoking, even after controlling for potential confounders. In a longitudinal study of a representative sample of U.S. adolescents, it was found that exposure to smoking in movies was associated with becoming an established smoker (Sargent et al., 2007). The association between smoking in movies and young adult smoking behavior has been shown to exhibit a dose–response relationship: the more a young adult was exposed to smoking in movies, the more likely they would have smoked in the past 30 days or have become an established smoker (Song et al., 2007). Experimental studies have supported a causal argument, demonstrating that exposure to movies with smoking is associated with more favorable attitudes toward smokers (Gibson & Maurer, 2000), and increased self-reported intentions to smoke (Hines et al., 2000; Pechmann & Shih, 1999).

As a result of the multi-state Master Settlement Agreement (MSA), paid product placement of combustible cigarettes and chewing tobacco in television and motion pictures was restricted, however, the MSA offered no restriction for e-cigarette products (National Association of Attorneys General, 2000). In other words, the MSA covers big tobacco...
companies that signed the agreement but does not cover newer products and companies. As such, e-cigarette manufacturers may use television and movies as vehicles to promote their products and attempt to normalize vaping among viewers. To date, there has been little research on the prevalence of e-cigarette imagery in television and movies. A study done by the Truth Initiative in 2019 showed that e-cigarettes were rare in the 2016–17 cable/broadcast season; the authors pointed out that all e-cigarette depictions were found on Netflix’s original productions (Truth Initiative, 2019). The authors also reported that the amount of tobacco depictions on Netflix almost tripled from 2015–16 seasons to 2016–17 seasons, specifically on youth-rated programs (i.e., TV-Y7, TV-PG) (Truth Initiative, 2019).

Given the rapidly changing e-cigarette marketplace and the popularity of e-cigarettes among young adults (National Center for Chronic Disease Prevention and Health Promotion (US) Office on Smoking and Health, 2010), there is a need to identify e-cigarette imagery in a recent sample of scripted entertainment popular among this age group. Scripted entertainment can be particularly influential in shaping the attitudes and behaviors of young people, for example, Dal Cin and colleagues suggested that transportation theory, or the idea that viewers are affected by stories because of their immersion into the narrative, and identification with the storyline and characters, explains the relationship between exposure to smoking in movies and smoking behavior (Dal Cin et al., 2007). As a result, this study paid special attention to the demographics and role size of characters found using e-cigarettes in popular Netflix content.

With over 70 million subscribers in the U.S. and Canada, Netflix is currently the most popular streaming-only service globally (Stoll, 2021). Given the increasing popularity of streaming services in general and Netflix in particular—Netflix content provides an ideal opportunity to identify and analyze e-cigarette representations in television and movies. Findings from this study may point to further need for health communication campaigns to denormalize e-cigarette use, particularly among susceptible populations, such as young adults.

2. Methods

2.1. Sample generation

This study aimed to analyze scripted, Netflix original content popular among young adults ages 18–24. To this end, this study identified the most-watched Netflix original content among adults ages 18–24 from June 1, 2020—May 31, 2021, based on ratings data from Nielsen Media Research. The Nielsen ratings data were collected at the series level and not the episode level, preventing the identification of the most-watched episodes of any given show. As a result, for TV series, this study analyzed all episodes in the 2020–2021 season, resulting in a final sample of 125 titles (see Appendix A), amounting to 101 h of content (78 h of TV content and 23 h of film content). Four films and 47 TV episodes were rated PG-13 or TV-14 or below. While Netflix pledged in 2017 that it would no longer include visual depictions of smoking or e-cigarette use except for reasons of historical or factual accuracy in original TV shows rated TV-14 or below or original films rated PG-13 or below (Evans, 2019), this study included content with these ratings to monitor whether Netflix was following through on its pledge to limit tobacco-related depictions. As the entertainment overcoming resistance model would argue (Moyer-Gusé, 2008), scripted, narrative content is most likely to shape the attitudes and behaviors of viewers of TV and movies through identification with compelling characters and transportation into the narrative. As such, this study excluded documentaries and reality shows. Additionally, period content (i.e., titles that primarily took place before 1990), and content set in a fantastical or supernatural universe in which e-cigarette use would not realistically appear were also excluded. However, content set in the real world with supernatural elements was included, so long as it was realistic enough to expect it might have e-cigarette depictions. This study selected the 12 most watched films and 12 most watched TV series from the remaining list, achieving a balance of media formats.

2.2. Coding procedures

The study team identified the TV series or film title, format, rating, and genre for each title, as made available on Netflix. The study team also evaluated the following variables: the number of e-cigarettes shown on screen, duration of e-cigarette appearances, number of separate characters holding e-cigarettes, length of time characters held e-cigarettes, presence of e-cigarette-related dialogue (including health risks), visibility of e-cigarette brand information, and length of the episode. The study team recorded the character name for each character identified as holding an e-cigarette. Character and actor names were recorded to calculate reliability for character-level items. Perceived age (high school age or younger, younger than 21) was recoded. Younger than 21 and high school age or younger were overlapping variables designed to get at the same construct since age is not immediately apparent, and characters may or may not be represented as students. Perceived ethnicity, gender, role size, the valence of character representation (positive, negative, neutral), actor name, and actor age were recorded at the time of release. Characters were counted at the episode level, not the series level. Thus, the same character in a TV series that holds an e-cigarette in two separate episodes would count as two separate characters.

Three coders were trained to recognize e-cigarettes and code the titles for relevant content. Two training videos were coded as a pilot test. The training videos were a film in the sample, and a TV episode not in the sample (from HBO’s Mare of Easttown). The research team discussed inconsistencies with the coders, who then re-coded the training videos until their responses matched those of the research team. Coders were instructed to watch each episode at least two times. The coders did not attempt to distinguish between tobacco and marijuana, as many e-cigarette devices can be used to deliver either product. Data were entered into a survey form hosted on Qualtrics (see Appendix B for full codebook).

2.3. Reliability

Twenty percent (20%) of titles (n = 25) were double coded by two independent coders to establish inter-rater reliability. Initially, 12 titles were randomly selected from the sample, and discrepancies were discussed and resolved with the research team. However, only 2 of these 12 episodes included e-cigarette content. As such, a second round of coding was performed with episodes purposely selected. The second group of episodes analyzed for reliability consisted of 13 episodes that were initially coded as including e-cigarette content. Most variables had strong reliability (see Appendix C). Reliability for numeric variables was calculated using Krippendorf’s Alpha, while reliability for nominal variables was calculated using Cohen’s Kappa. However, we were unable to detect any brand visibility in our sample. As a result, percent agreement between coders was provided for the brand visibility variable in lieu of Cohen’s Kappa, which required some variability for meaningful calculation. Coders were in 100% agreement on the absence of brand visibility. Additionally, character valence did not achieve adequate standards of reliability (κ = 0.56, despite multiple rounds of training. We believe this was due to the morally ambiguous behaviors of complex characters who were shown holding e-cigarettes.

3. Results

3.1. Title level

Out of 125 titles, 16 (13%) had e-cigarette-related content. Thirteen titles (10%) showed at least one character holding an e-cigarette, and three others mentioned vaping without showing e-cigarettes. The total
The PG-13 film includes the health-related line "smokers are for chokers," and briefly referenced vaping. A character reports that vaping marijuana makes it "still weed." In one case, a character expresses resigned sadness by joking that he is "likely as Walt putting his vape pen down." Finally, during one character's comedy routine, he briefly mentions "vaping at the pier." In all these instances, vaping is part of a punchline.

### 3.2. Character level

Out of the 20 characters shown holding e-cigarettes, the average time holding an e-cigarette was 20 s. No characters were shown holding more than one vaping device. Of the 20 characters who held an e-cigarette, 13 were men, and 12 were white. Thirteen were major characters. The average age of actors playing e-cigarette-holding characters was 26 years old, and 12 of the 20 actors (60%) were confirmed to be age 21 or older (Table 3). However, 16 of the 20 characters (80%) were meant to be in high school and under 21 years old. Nine characters who held an e-cigarette (45%) were portrayed in a "positive" light (Table 4).

### 4. Discussion

This study analyzed a total of 101 h of Netflix scripted content for the presence of e-cigarettes, level of use, type of characters holding e-cigarettes, visibility of e-cigarette brand information, and the presence of vaping-related dialogue. It identified 16 titles that had e-cigarette-related content and 13 titles that showed at least one character holding an e-cigarette, and 3 others that mentioned vaping without showing e-cigarettes. Twenty separate characters were shown holding an e-cigarette. No titles showed e-cigarette brand identifiers.

This study’s findings add to the literature on tobacco product placement and smoking in movies (Dalton et al., 2003; Gibson & Maurer, 2000; Hines et al., 2000; Pechmann & Shih, 1999; Sargent et al., 2005, 2007; Song et al., 2007). Exposure to pro-tobacco behaviors in television or film may alter young adults' harm perceptions and attitudes toward e-cigarettes, and consequently they may initiate or continue tobacco use. For instance, Tickel et al. demonstrated that among youth who never smoked, liking movie stars that smoked frequently in films was associated with intentions to smoke and smoking initiation (Tickle et al., 2006). Youth exposed to smoking in media also had increased positive expectancies about smoking, which then lead to greater intention to smoke (Tickle et al., 2006). In a sample of young adults, Dal Cin et al. found that identifying with the protagonist characters that smoked on screen led to greater implicit association of smoking with the self (for both smokers and non-smokers) (Dal Cin et al., 2007). Exposure to smoking in media can resonate with young adults without showing any e-cigarettes or vaping activity. Each of these mentions constitutes an offhand, joking reference. In one case, a character expresses resigned sadness by joking that he will soon be "vaping with the goth kids." In another instance, a smart student expresses incredulity by making an e-cigarette user the butt of a joke: "[That is as likely as] Walt putting his vape pen down."
and subsequently effect their smoking behavior. While Netflix pledged in 2017 that it would no longer include visual depictions of smoking and e-cigarette use in original TV shows rated TV-14 or below or original films rated PG-13 or below (Evans, 2019), this policy did not extend to content popular with young adults. Future film and TV titles with e-cigarette imagery could receive a rating of R or TV-MA (mature

| Name of film or TV series | Media type | Season # | Episode # | Rating | e-cigarette Dialogue | e-cigarette health dialogue |
|--------------------------|------------|----------|-----------|--------|-----------------------|----------------------------|
| Fate: The Winx Saga      | TV         | 1        | 2         | TV-MA  | Yes                   | No                         |
| Grand Army               | TV         | 1        | 6         | TV-MA  | Yes                   | No                         |
| Hubie Halloween          | Movie      | NA       | NA        | PG-13  | Yes                   | Yes                        |
| Mr. Iglesias             | TV         | 1        | 7         | TV-14  | Yes                   | No                         |
| Mr. Iglesias             | TV         | 1        | 10        | TV-14  | Yes                   | No                         |
| Mr. Iglesias             | TV         | 1        | 3         | TV-14  | Yes                   | No                         |
| Outer Banks              | TV         | 1        | 9         | TV-MA  | Yes                   | Yes                        |

Note. * = films rated PG-13 or below, or TV shows rated TV-14 or below, that did not comply with Netflix’s pledge to no longer include visual depictions of smoking and e-cigarette use.

| Name of film or TV series | Media type | Season # | Episode # | Rating | e-cigarette Dialogue | e-cigarette health dialogue |
|--------------------------|------------|----------|-----------|--------|-----------------------|----------------------------|
| Fate: The Winx Saga      | TV         | 1        | 2         | TV-MA  | Yes                   | No                         |
| Grand Army               | TV         | 1        | 6         | TV-MA  | Yes                   | No                         |
| Hubie Halloween          | Movie      | NA       | NA        | PG-13  | Yes                   | Yes                        |
| Mr. Iglesias             | TV         | 1        | 7         | TV-14  | Yes                   | No                         |
| Mr. Iglesias             | TV         | 1        | 10        | TV-14  | Yes                   | No                         |
| Mr. Iglesias             | TV         | 1        | 3         | TV-14  | Yes                   | No                         |
| Outer Banks              | TV         | 1        | 9         | TV-MA  | Yes                   | Yes                        |

Note. * = films rated PG-13 or below, or TV shows rated TV-14 or below, that did not comply with Netflix’s pledge to no longer include visual depictions of smoking and e-cigarette use.

* = Not available.

| Character | Film/series title | Season | Episode | Rating | Gender | Race | Younger than 21 | High school | Actor age |
|-----------|-------------------|--------|---------|--------|--------|------|-----------------|-------------|-----------|
| Mikey Guzman | Army of the Dead | NA | NA | R | Man | Hispanic/Latix | No | No | 43 |
| Luc       | Emily in Paris    | 1 | 1 | TV-MA | Man | White | No | No | 46 |
| Beatrix   | Fate: The Winx Saga | 1 | 2 | TV-MA | Woman | White | Yes | Yes | 19 |
| Riven     | Fate: The Winx Saga | 1 | 2 | TV-MA | Man | White | Yes | Yes | 26 |
| George Wright | Grand Army | 1 | 3 | TV-MA | Man | White | Yes | Yes | 21 |
| Joey Del Marco | Grand Army | 1 | 3 | TV-MA | Woman | White | Yes | Yes | 21 |
| Leila Kwan Zimmer | Grand Army | 1 | 6 | TV-MA | Woman | White | Yes | Yes | 19 |
| Omar Biller | Grand Army | 1 | 6 | TV-MA | Man | Middle Eastern/SA | Yes | Yes | 19 |
| Tim Delaney | Grand Army | 1 | 3 | TV-MA | Man | White | Yes | Yes | 23 |
| Unccredited #1  | Grand Army | 1 | 1 | TV-MA | Woman | Can’t tell | Yes | Yes | NA |
| Unccredited #2  | Grand Army | 1 | 1 | TV-MA | Woman | Can’t tell | Yes | Yes | NA |
| Frankenstein Kid | Hubie Halloween | NA | NA | PG-13 | Man | White | Yes | Yes | 19 |
| Marla Grayson | I Care a Lot | NA | NA | R | Woman | White | No | No | 42 |
| Uncreditted | Bad Trip | NA | NA | TV-MA | Man | White | No | No | NA |
| J.J. #1    | Outer Banks       | 1 | 1 | TV-MA | Man | White | Yes | Yes | 23 |
| J.J. #2    | Outer Banks       | 1 | 2 | TV-MA | Man | White | Yes | Yes | 23 |
| J.J. #3    | Outer Banks       | 1 | 9 | TV-MA | Man | White | Yes | Yes | 23 |
| Kiara      | Outer Banks       | 1 | 1 | TV-MA | Woman | Mixed/other | Yes | Yes | 22 |
| Pope       | Outer Banks       | 1 | 9 | TV-MA | Man | Black | Yes | Yes | 22 |
| Uncreditted | Outer Banks | 1 | 3 | TV-MA | Man | Can’t tell | Yes | Yes | NA |

Note. * = films rated PG-13 or below, or TV shows rated TV-14 or below, that did not comply with Netflix’s pledge to no longer include visual depictions of smoking and e-cigarette use.

* = Not available.

| Character | Film/series title | Season | Episode | Rating | Role size | Valence |
|-----------|-------------------|--------|---------|--------|-----------|---------|
| Mikey Guzman | Army of the Dead | NA | NA | R | Minor | Positive |
| Luc       | Emily in Paris    | 1 | 1 | TV-MA | Major | Positive |
| Beatrix   | Fate: The Winx Saga | 1 | 2 | TV-MA | Major | Negative |
| Riven     | Fate: The Winx Saga | 1 | 2 | TV-MA | Major | Negative |
| George Wright | Grand Army | 1 | 3 | TV-MA | Major | Positive |
| Leila Kwan Zimmer | Grand Army | 1 | 6 | TV-MA | Major | Negative |
| Omar Biller | Grand Army | 1 | 6 | TV-MA | Minor | Neutral |
| Tim Delaney | Grand Army | 1 | 3 | TV-MA | Major | Neutral |
| Uncreditted #1  | Grand Army | 1 | 1 | TV-MA | Nonspeaking | Neutral |
| Uncreditted #2  | Grand Army | 1 | 1 | TV-MA | Nonspeaking | Neutral |
| Frankenstein Kid | Hubie Halloween | NA | NA | PG-13 | Minor | Neutral |
| Marla Grayson | I Care a Lot | NA | NA | R | Major | Neutral |
| Uncreditted | Bad Trip | NA | NA | TV-MA | Minor | Positive |
| J.J. #1    | Outer Banks       | 1 | 1 | TV-MA | Major | Positive |
| J.J. #2    | Outer Banks       | 1 | 2 | TV-MA | Major | Positive |
| J.J. #3    | Outer Banks       | 1 | 9 | TV-MA | Major | Positive |
| Kiara      | Outer Banks       | 1 | 1 | TV-MA | Major | Positive |
| Pope       | Outer Banks       | 1 | 9 | TV-MA | Major | Positive |
| Uncreditted | Outer Banks | 1 | 3 | TV-MA | Nonspeaking | Neutral |

Note. * = films rated PG-13 or below, or TV shows rated TV-14 or below, that did not comply with Netflix’s pledge to no longer include visual depictions of smoking and e-cigarette use.

* = Not available.
The findings from this study demonstrate the need to denormalize e-cigarette imagery found in forms of scripted entertainment popular among young adults.

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CRediT authorship contribution statement

Jon-Patrick Allem: Conceptualization, Methodology, Data curation, Writing – original draft, Writing – review & editing, Supervision, Funding acquisition. Shawn P. Van Valkenburgh: Methodology, Formal analysis, Investigation, Data curation, Writing – review & editing, Project administration. Scott I. Donaldson: Writing – review & editing. Allison Dormanesh: Writing – review & editing, Project administration. Terence C. Kelley: Writing – review & editing, Project administration. Erica L. Rosenthal: Investigation, Data curation, Writing – review & editing, Supervision, Project administration.

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.

Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.addbeh.2022.100444.

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