

# *Euphoria*'s Hidden Voices: Examining Emotional Resonance and Shared Substance Use Experience of Viewers on Reddit

Layla Bouzoubaa, Rezvaneh Rezapour

College of Computing & Informatics  
Drexel University, Philadelphia, PA,  
{layla.bouzoubaa, shadi.rezapour}@drexel.edu

## Abstract

Media's representation of substance use disorder can have both positive and negative impacts by raising awareness and reducing stigma, while also perpetuating harmful stereotypes and creating barriers to treatment for those dealing with substance use disorder. This duality is reflected in the mixed reviews that the popular HBO show, *Euphoria*, has received for its depiction of addiction and drug use. In this paper, we employ a mixed-method approach, using natural language processing and qualitative analysis, to examine how viewers of *Euphoria* discuss substance use on Reddit. Using word similarity analysis, we compare the language between viewers active on drug subreddits ( $E_D$ ) and those who are not ( $E_E$ ), revealing a signal of drug encounters and/or an awareness of the consequences of unsafe drug practice within the  $E_D$  community. In addition, we extract posts with reference to personal experiences with drugs associated with the show and perform thematic and emotion analysis to identify the depth and magnitude of *Euphoria*'s impact on people. This analysis revealed five key themes: how addiction is portrayed, mental health and trauma experiences, character development and relationships, exploration of youth identity, and the show's artistic style. Our study highlights the importance of nuanced depictions of substance use disorder in media, illustrating their impact on individuals from vulnerable communities with relevant personal experiences.

## Introduction

**Warning:** This paper includes language and content that may be offensive or triggering.

Popular art forms undeniably play a role in shaping people's worldviews (Rezapour and Diesner 2017; Nunez-Smith et al. 2010). Such a role has been acknowledged (whether accurately or inaccurately) in public discourse and policy in the US since at least the implementation of Hollywood's "Hays Code" (History Matters n.d.). Concern over harmful media content echoes through warnings about explicit language in popular music (Recording Industry Association of America (RIAA) n.d.), the Motion Picture Association of America's standardized rating system (Motion Picture Association n.d.), parental guidelines for television viewership (TV Parental Guidelines Monitoring Board n.d.),

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etc. Indeed, the content provider, HBO, has even implemented help-lines for viewers of one of its more controversial shows: *Euphoria* (HBO 2020).

Yet even as hyper-mediation greases the wheels of potentially harmful media consumption, it provides a means of analyzing the wheels' motion (e.g., (Sarker et al. 2016; Ahn and Vassileva 2016; Lu et al. 2018)). With this in mind, we aim to understand how viewers of *Euphoria* relate to the depiction of substance use, particularly among those with a lived experience with drugs. Specifically, we investigate the following research questions:

**RQ1:** How does the language used by *Euphoria* viewers around topics of substance use differ if the author has a potential experience with drugs?

**RQ2:** How does disclosure of personal drug experiences influence the emotional tone among *Euphoria* viewers?

**RQ3:** What key themes emerge when viewers who disclose personal drug use experiences discuss *Euphoria*?

We used natural language processing (NLP) and thematic analysis (TA) to answer these questions (Braun and Clarke 2006). We employed these methods on data drawn from proxy populations available on Reddit. Substance users are a hidden population: unlike those with medical or legal records associated with substance use disorder (SUD), such people are not easily identifiable through engagement with public records or the like. As such, we turned to posts made across a combination of subreddits: *r/Euphoria* and a set of 18 popular drug-related subreddits. We interpret posting in *r/Euphoria* as a proxy for viewership of *Euphoria*; we similarly interpret posting in any of the drug-related subreddits described above as a reasonable proxy for membership in (or adjacent to) the hidden community of substance users. We gave primary focus to posts made by users who contribute to *r/Euphoria* and at least one drug-related subreddit.

We found that *Euphoria*'s viewers often share their own experiences with SUD in *r/Euphoria*. Such posts indicate both positive (e.g., relatability) and negative impacts (e.g., relapses, further drug use, etc.) related to depictions of substance use in *Euphoria*. Substance users who watch *Euphoria* communicate on Reddit using language that signifies personal struggles with substance use. Thus, through NLP-driven analysis (i.e., word2vec) of posts made across *r/Euphoria* described above, we were able to determine that our proxy population of substance users who watch *Eupho-*

ria describe greater clinical awareness of the negative consequences of drug use yet are more emotionally charged (i.e., use words that cause reactions in a reader).

Our work offers three contributions:

- **Positive Identification and Addiction Perception:** We provide probabilistic evidence that viewers with substance use experiences (SUE) who engage with the show *Euphoria* identify with its themes in a positive way, while simultaneously acknowledging the negative aspects of addiction;
- **Social Media Data for Hidden Populations:** We demonstrate the usefulness of using publicly available social media data to learn about hidden populations, like people with SUE;
- **Data Modeling and Sharing:** To promote further research, data, and models used in this study are available at [https://github.com/social-nlp-lab/euphoria\\_cs](https://github.com/social-nlp-lab/euphoria_cs).

## Related Work

Popular art forms (e.g., television, film, etc.) that center around substance use are gaining popularity among teens and younger audiences (Motyka and Al-Imam 2021)<sup>1</sup>. Such increased popularity occurs in parallel to major public health problems related to substance use (e.g., (National Center for Drug Abuse Statistics 2022)). In this section, we present relevant background information and engage with an interdisciplinary set of literature to lay the contextual foundation for the RQs our work seeks to answer.

### Substance Use in the US: The Broad Context

Substance use is a major public health concern in the US. Since 1999, the number of overdose deaths among young people increased nearly 500% (National Center for Drug Abuse Statistics 2022). Between 2015 and 2019, unintentional overdose deaths among young people aged 10-24 resulted in the loss of an estimated 1.25 million years of life (Hall et al. 2022). In 2021, the Centers for Disease Control and Prevention (CDC) reported a 28.5% increase in general overdose deaths compared to the previous years (Centers for Disease Control and Prevention 2021). Projections indicate that by 2029, drug overdoses may account for as many as one million deaths per year (Humphreys et al. 2022). Teens in the United States are estimated to take in roughly 85 drug references a day (Primack et al. 2008). Indeed, several studies indicate that a majority of popular media content depicts harmful behavior (e.g., substance use, unprotected sex, etc.) (Primack et al. 2008; Gunasekera, Chapman, and Campbell 2005). This information forms the broader public health-related context for our present work.

### Social Media as a Site for Studying Substance Use and Media Messages

Analysis of substance use-related content on Reddit has gained popularity in recent years. This surge in interest can

<sup>1</sup>We have chosen the language “substance use” rather than the medicalized language of “substance use disorder” in order to avoid undue stigmatization of users who are not clinically “disordered” in their behavior.

be attributed to the broad availability of data and the growing communities on the platform dedicated to discussions surrounding substance use (Bouzoubaa, Young, and Reza-pour 2023). Lu et al. (2018), for example, used Reddit data to train a binary classifier that predicts a user’s transition from casual drug discussion to discussions on drug-specific recovery forums. Balsamo, Bajardi, and Panisson (2019) used posts from opioid-related subreddits to derive correlations between the geographic prevalence of opioid overdose deaths and the geolocation of user posts that referenced opioid use. Sarker et al. (2022a) examined Reddit posts to identify the nature and level of co-occurrence between opioids and stimulants among people who use opioids. Kepner, Meacham, and Nobles (2022) used Reddit to explore various types of stigmatization that individuals seek help for. Kaufman et al. (2021) studied posts and comments on *Euphoria*’s subreddit and analyzed them for themes relevant to substance use, reactions to *Euphoria* and its main character (Rue), and mental health concerns. Masanet, Ventura, and Ballesté (2022) studied the series through the lens of transnormativity and inclusion.

Our work builds upon the aforementioned studies by exploring contextual similarities surrounding themes related to substance use. We analyze Reddit users’ language to examine the direct and indirect impacts of the show on its audience and to identify individuals who may be at a higher risk of developing a substance use disorder; those who frequently mention drug use, and those who are more likely struggling with addiction.

### Euphoria Data on Reddit

In this study, we chose to analyze HBO’s *Euphoria*, a highly watched, debated, and controversial television series on HBO (Masanet, Ventura, and Ballesté 2022), since the show has attracted a viewership of at least 19 million, making it one of the most popular programs of recent years (Maas 2022).

*Euphoria* is an American teen drama television series that focuses on the complex dynamics of a group of teenagers navigating a world of drugs, sex, and traumatic experiences. The show has been praised for its inclusion, aesthetic, and for challenging the cinematic and television tradition around issues of identity. However, some find its depictions of drug use and abuse, strong language, and violence (both sexual and physical) troubling (Pochmara 2023; Madani 2021). Critics have voiced their concerns over the potential effects these representations could have on younger, more impressionable viewers.

Fears that the series could trigger those with SUD have led to warnings preceding episodes and HBO setting up a free crisis hotline. There is understandable concern around the show’s main themes, given the current rise of opioid and poly-substance overdose deaths in the United States. Many feel that the show glamorizes, and possibly normalizes drug use, fearing it could lead teens to engage in harmful behavior (Parents Television and Media Council 2022; Kaufman et al. 2021; Madani 2021), particularly with content like substance use, sexual assault, and violence - themes that are heavily depicted in the series.

	Group	Num. of Posts	Num. of Unique Users	Avg. Post Length
Group $E_E$	<i>r/Euphoria</i>	28,301	13,558	264.7
Group $E_D$	<i>r/Euphoria</i> $\cap$ 18 drug subreddits	1,746	889	308.3

Table 1: Number of posts in each groups of subreddit, Group  $E_E$  represents posts made by users only active on *r/euphoria*, Group  $E_D$  represents posts made by users active on *r/euphoria* and at least one drug subreddit.

## Reddit Data Collection

Reddit is a social media platform that has become increasingly popular in recent years, offering a pseudo-anonymous environment that provides a safe space to talk about stigmatized topics. More specifically, Reddit is “a network of communities where people can dive into their interests, hobbies, and passions”<sup>2</sup>. Reddit consists of a large and robust substance-using user community and has been extensively used in peer-reviewed research related to substance use (Sarker et al. 2022b; Garg et al. 2021; Graves et al. 2021).

We extracted all posts from *r/Euphoria* subreddit ( $N = 30,047$ ), spanning from June 2019 to December 2022. We also extracted posts from 18 drug subreddits that are commonly abused (National Institute on Drug Abuse 2024) and are heavily portrayed and used in the show. This list includes *r/ambien*, *r/benzodiazepines*, *r/cannabis*, *r/cocaine*, *r/LSD*, *r/MDMA*, *r/opiates*, *r/Psychedelics*, *r/shrooms*, *r/meth*, *r/ketamine*, *r/mescaline*, *r/kratom*, *r/leaves*, *r/trees*, *r/fentanyl*, *r/DMT*, and *r/adderall*. Posts were extracted during the same timespan, from June 2019 to December 2022.

## Data Cleaning

While most Reddit posts are text-based, users can also upload images and videos along with their posts. In our study, we only consider the textual content of the posts, which includes the title and body of the post. We filtered out removed posts, hyperlinks, polls, and potential spam content to focus on the text that was relevant to our analysis. To clean the data, we used standard textual preprocessing methods that have been validated in previous studies (Vijayarani et al. 2015). After these initial cleaning steps, we tokenized the posts using *spaCy* (Honnibal et al. 2020).

To group posts, we analyzed user IDs from the 19 subreddits to identify active users across them. We divided posts from *r/Euphoria* into two groups: posts whose authors are active in at least one of 18 drug subreddits (Group  $E_D$ ), and posts whose authors have *not* been active in any of the drug subreddits (Group  $E_E$ ). Table 1 shows the final count of posts in each group and subreddit.

## Ethical Considerations

We only use publicly available data that can be retrieved using the Python-Reddit API Wrapper (PRAW)<sup>3</sup>. None of the subreddits in this study require membership before viewing content. No private information was obtained. We also acknowledge that *Euphoria* viewers who disclose drug use experiences might be a vulnerable population, prone to neg-

ative consequences of works like this, like stigmatization. Our data collection and method underwent review by the Institutional Review Board (IRB) at our institution and was deemed “exempt,” indicating that the use of publicly available data did not pose any additional harm to individuals.

## Method

### Contextual Representation Around Substance Use

To understand how *Euphoria* viewers discuss substance use, particularly whether their language differs based on potential personal experiences with drugs (RQ1), we employed word2vec (Mikolov et al. 2013). This model captures the contextual meaning and semantic relationships between words based on how often they appear together in a corpus. We considered three keyword classes to analyze viewer discussions: (1) terms related to people who use drugs (PWUD) (Volkow, Gordon, and Koob 2021), (2) drugs depicted in the show and commonly abused (National Institute on Drug Abuse 2024), and (3) viewer connection attributes like personal experiences and social identity. These keywords are shown in Table 2. We trained separate word2vec models using posts from two viewer groups  $E_E$  (those who are active only on the *Euphoria* subreddit) and  $E_D$  (those active on *Euphoria* and other drug-related subreddits), to identify potential differences in users’ language.

To account for the smaller number of posts in the  $E_D$  group, we used a skip-gram model during training. This approach helps us gain insights from the data despite the lower sample size. Each model was trained for five iterations with optimized learning rates and sampling parameters, and both corpora were mapped to the same 100-dimensional feature space with a 5-word window size. We then formed keyword vectors by averaging the vectors of each morphological variation of a keyword (e.g., “addict” and “addicts”) weighted by their frequency. Nearest neighbors for each keyword were identified by calculating the cosine similarity between the keyword vector and all other vectors in the embedding space.

### Classification & Evaluation of Emotion Around Drug Use and Euphoria

To explore how *Euphoria* viewers who disclose personal drug experiences engage with the show and discuss their experiences (RQ2), we focused on posts within the  $E_D$  group. We employed a two-step approach for this classification. First, we conducted a manual content analysis on a random sample of 40 posts from  $E_D$ . Our team, with expertise in this domain, annotated these posts to identify posts that mentioned personal experiences with drug use and those that did not. For example, a post like “A friend turned me on to this

<sup>2</sup><http://reddit.com/>

<sup>3</sup><https://praw.readthedocs.io/en/stable/>

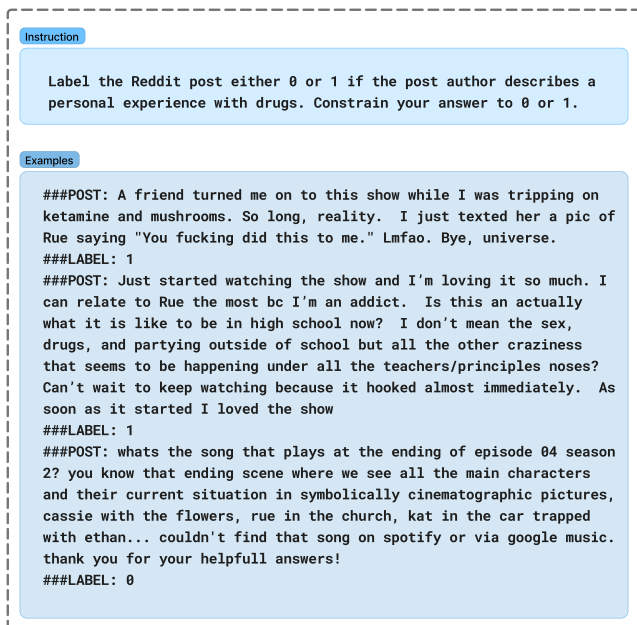


Figure 1: Prompt used with GPT-4 to tag personal drug experience disclosure in posts on *r/Euphoria*.

show, while I was tripping on ketamine and mushrooms.” would be labeled as True as it directly references drug use experience. We developed a standardized annotation guide to ensure consistency among annotators. Inter-rater agreement, measured by Kappa, was around 0.62, indicating substantial agreement between annotators. Any discrepancies were resolved through discussion to reach a consensus.

To classify the remaining 1,706 posts in  $E_D$  more efficiently, we leveraged GPT-4 (gpt-4-0125-preview) (OpenAI 2023), with a three-shot classification approach. For this purpose, we prompted the model and provided it with three manually labeled examples of posts that disclose personal drug experiences. The model’s labels were then compared to our manual annotations. We observed a high degree of consistency, giving us confidence in the model’s ability to accurately label the remaining data. Figure 1 shows the prompt and examples used to annotate the posts. As a result, all posts tagged as personal experiences with drugs ( $N = 106$ ) were grouped as  $E_{DP}$ .

Finally, we used a pre-trained, fine-tuned RoBERTa (Liu et al. 2019) model to classify the emotional tone of posts

Keyword Class	Keywords
Person	addict(s), junkie, addiction, misuse, abuse, abuser, overdose, abstinence, abstinent, recovery, binge, relapse, clean, sober, detox, trip, habit, withdrawal
Drug	cocaine, mushrooms, ecstasy, opiate(s), heroin, opioid(s), ketamine, percocet, lsd, xanax, marijuana, methamphetamine, mdma
Connection	accuracy, accurate, sympathy, sympathize, connect, connection, understand, understanding, empathy, empathize, identity, identify, relate, relatable, relating, represent, representation, resonate, similar

Table 2: Selected keywords associated with references to a person who uses drugs, the specific drug, and the types of connections viewers experience with a show.

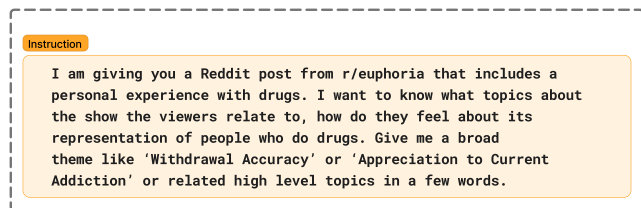


Figure 2: Zero-shot prompt to extract latent themes with GPT-4 from posts with a personal drug experience disclosed.

within  $E_{DP}$ ,  $E_D$ , and  $E_E$ . This model was chosen for its effectiveness in emotion classification tasks and ability to capture emotional nuance in texts from Reddit (Adoma, Henry, and Chen 2020). The GoEmotions model (Demszky et al. 2020) provides a comprehensive range of emotion labels, including basic emotions like joy, anger, sadness, and fear, along with more complex emotions such as surprise, relief, and embarrassment.

## Identifying Latent Themes

Following Hitch (2023), we used GPT-4 for thematic analysis. To identify sub-themes in each post in the  $E_{DP}$  dataset, we used a zero-shot approach using the prompt shown in Figure 2. No additional training or fine-tuning was provided. GPT-4’s summaries were then manually analyzed to extract overarching themes. These sub-themes were then grouped based on conceptual similarity and iterative refinement. This process resulted in themes representing core topics discussed in relation to *Euphoria* by viewers who disclosed personal drug experiences. For example, a post mentioning “struggling with cravings” and “feeling alone” yielded sub-themes of “addiction struggle” and “isolation.”

## Findings

### Language Use and Drug Use Experiences

Our analysis of word2vec models showed different characteristics in substance use language of those active only on the *Euphoria* subreddit and those active on *Euphoria* and drug-related subreddits.

**Keyword Analysis** For keywords like “recovery,”  $E_D$  posts used more descriptive language, with words like “under-rated” and “exaggerated,” compared to  $E_E$  which leaned towards terms like “dependency” and “meds.” This can suggest a potential difference in focus, with  $E_D$  viewers po-

Group	Num. of Posts	Avg. Post Length
$E_{DP}$	106	1,243.5
$E_{D_{noP}}$	1,640	247.7

Table 3: Number of posts in  $E_D$  ( $N = 1,746$ ) that disclose a personal drug experience.  $E_{DP}$  is the subset including experiences and  $E_{D_{noP}}$  includes posts with no experiences mentioned.

tentially discussing personal experiences of recovery or perceived portrayals in the show.

Similarly, the nearest neighbors for the “use” keyword differed between groups.  $E_E$  viewers used words like “glamorizes” and “glorifies,” suggesting a critical perspective on how the show portrays drug use. In contrast,  $E_D$  viewers used terms like “experience” and “portrayal,” potentially indicating a focus on personal experiences or how those experiences are reflected in the show.

**Addiction and Withdrawal Representation** Analyzing keywords related to addiction and withdrawal revealed further insights.  $E_D$  posts used words like “beautiful,” “friend,” and “real” in the context of “addict,” suggesting a potentially more empathetic or understanding perspective. This differs from  $E_E$  posts in which terms like “opiates” and “heroin” alongside “withdrawal” were used, reflecting a focus on the substances depicted in the show.

**Connection to the Show** The word “perfect” (or “perfectly”) appeared more frequently in  $E_D$  groups’ nearest neighbors for keywords related to connection with the show, such as “accurate” and “relate.” These vectors also included “personally” and a reference to “methadone,” a medication used for opioid-use disorder treatment. This pattern might suggest that viewers who disclose personal drug experiences find specific aspects of the show relatable or even offer a sense of validation (e.g., “perfectly” capturing their own withdrawal experiences or finding the portrayal of addiction “accurate”).

In contrast, for  $E_E$  viewers, “accurate” was associated with a wider range of terms like “realistic,” “unrealistic,” “controversial,” “refreshing,” and “edgy.” This broader range of terms suggests a more diverse range of opinions on the show’s portrayal of these topics within the general Euphoria subreddit audience. A complete list of nearest neighbors to keywords can be found in the Appendix, Table 5.

### Drug Use Experiences and Emotional Tone

Using GPT-4, we were able to classify the disclosure of a personal drug experience within  $E_D$  posts. Out of 1,706 posts in this group, 106 were identified as containing disclosures of personal drug experiences ( $E_{DP}$ ). This suggests that a substantial portion (around 6.2%) of discussions within this group involve users directly sharing their experiences (Table 3).

To understand how *Euphoria* viewers who disclose personal drug experiences engage with the show (RQ2), we analyzed the emotional tone of these posts within  $E_{DP}$  (posts within  $E_D$  with disclosed drug experiences),  $E_{D_{noP}}$  (posts within  $E_D$  without disclosed experiences), and  $E_E$ .

Theme	Sub-Themes	N
Addiction Representation	Accuracy of addiction portrayal	14
	Emotional resonance with addiction experiences	12
	Withdrawal accuracy	11
	Impact of addiction representation on viewers	8
	Complexity of addiction and recovery	5
Mental Health and Trauma	Mental health representation	10
	Trauma and its effects	6
	Coping mechanisms	4
	Mental health and substance abuse	4
	Emotional impact of storytelling	3
Character Development & Relationships	Character development and relatability	7
	Relationship dynamics and change	4
	Complexity of relationships	3
	Personal identification with characters	3
	Family dynamics	3
Youth and Identity	Youth and substance abuse	7
	Identity and exploration	4
	Sexuality and identity	4
	Impact of social media and online presence	1
	LGBTQ+ community perspectives	1
Art and Style	Authenticity of representation	7
	Impact of visual representation	4
	Soundtrack connection	2
	Appreciation for artistic elements	2
	Impact of media on personal growth	1

Table 4: Frequency of sub-themes and themes produced by thematic analysis of posts from  $E_{DP}$  ( $N = 106$ ).

As shown in Figure 3, posts within  $E_{DP}$  expressed a higher prevalence of positive emotions, with *love* and *curiosity* identified as the top two most frequent emotions, suggesting that viewers who disclose personal experience might engage with the show in a more emotionally invested way, finding aspects relatable or inspiring curiosity about what is depicted. In contrast, posts in the non-disclosing  $E_D$  group exhibited a more neutral emotional tone. *Neutrality*, followed by *curiosity* and *love* were the top three most frequent emotions observed in this group (Figure 3). This suggests a potentially more observational or analytical approach to the show’s content among viewers who do not disclose a drug use experience. Similarly, posts within the  $E_E$  group also displayed a predominantly *neutral* tone, followed by *curiosity* and *confusion*. This mixed emotional tone may suggest the general audience is more engaged with discussions around the show.

### Latent Themes and Drug Experience Disclosure

To explore the underlying themes associated with personal drug use experiences and *Euphoria* (RQ3), we employed an LLM-augmented thematic analysis approach with GPT-4. Analyzing posts within the  $E_{DP}$  dataset revealed five key themes, as shown in Table 4.

**Addiction representation:** Nearly half (47%) of the posts included language related to how addiction is portrayed in the show. This encompasses discussions about addiction itself, withdrawal experiences, and the complexities of overcoming addiction. Eight posts specifically mentioned the impact of the show’s portrayal of addiction, with one viewer stating:

“That Rue special was truly next level. As a recovering addict, it felt like a deeply personal conversation where raw truths kept hitting me. I rewatched it to absorb everything because it was that powerful. It’s hard to explain that kind of raw experience if you haven’t been through something similar.”

This suggests that some viewers who disclose drug experiences find the show’s portrayal relatable or even valuable for

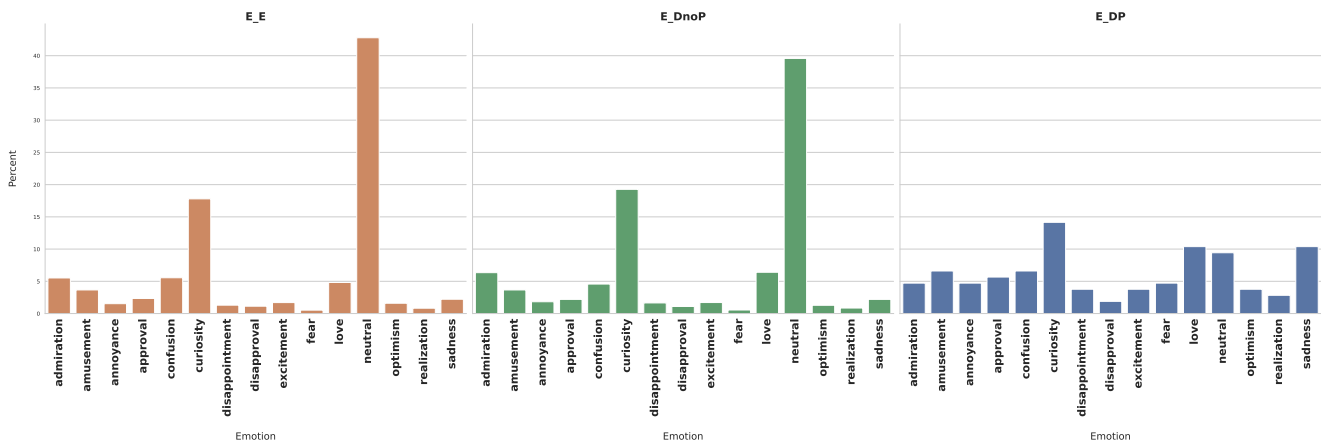


Figure 3: Primary emotional tone of posts in  $E_{DP}$  ( $N = 106$ ),  $E_D$  (no personal experience disclosed ( $N = 1,640$ )), and  $E_E$  ( $N = 28,301$ ).

raising awareness.

**Mental Health and Trauma:** A significant portion of posts (25%) also discussed themes related to mental health and its representation in *Euphoria*. Viewers explored how the show portrays mental health struggles, often specifically in relation to trauma. One viewer commented:

“Euphoria has helped me grapple with a difficult loss.

I recently lost my best friend to suicide, and it’s left me feeling devastated. It’s hard to face the world after losing someone who’s been a part of your life for 10 years.”

This finding highlights how viewers who disclose drug experiences might see a connection between substance use and mental health issues depicted in the show.

**Character Development and Relationships:** Discussions within  $E_{DP}$  also included themes related to character development and relationships within *Euphoria*. Viewers discussed their perspectives on character motivations and how relationships are portrayed, potentially reflecting on their own experiences.

“This is why I’m hooked on Euphoria. It uses storytelling to reveal what addiction and recovery \*really\* look like. It shows the depths of desperation and darkness someone could face, but it also reveals the quiet conversations about life and human nature that can emerge when you hit rock bottom.”

**Youth and Identity:** Another significant theme was centered around the exploration of youth and identity, particularly how substance use intersects with self-discovery, gender, and identity formation.

“As a transgender teen, I appreciate how Euphoria portrays a trans character’s experience. There’s a scene where the character is looking in the mirror, and it captures the way we all see flaws in ourselves, even if it might be related to things others wouldn’t notice. It felt very real.”

**Art and Style:** The final theme focused on discussions related to the show’s artistic style and visual aesthetics.

“I’m so fascinated by how Euphoria influences its teenage audience. It inspired me to be more bold with my style. Their makeup artist has this philosophy about embracing your individuality, and now my outfits and makeup are totally out there – I love feeling that freedom.”

The thematic analysis revealed a range of topics suggesting that viewers in  $E_{DP}$  engaged with the show beyond entertainment, often finding connections to addiction portrayal and mental health struggles. More importantly, these themes reflect a broader societal context where issues such as addiction, mental health, and identity are intertwined with the personal stories and challenges faced by the audience, indicating that *Euphoria* not only resonates deeply with its viewers but also serves as a means for dialogue and understanding about complex, often stigmatized topics such as SUD.

## Discussion

Our analysis of personal experiences within the  $E_D$  subset revealed that viewers of the show found the depictions of SUD to be relatable. This finding aligns with research highlighting the underrepresentation of vulnerable populations like those with SUD in traditional research methods, often leading to a skewed understanding of their experiences (Gehlert and Mozersky 2018). People with SUD are frequently portrayed negatively in media, contributing to public stigma and hindering help-seeking behaviors (McGinty, Kennedy-Hendricks, and Barry 2019).

**Exploring Duality of Portrayals:** While some viewers find the portrayal relatable (RQ2), others might have more critical perspectives. The show’s depiction of drug use can be seen both positively and negatively. On the one hand, it can help to raise awareness of the dangers of drug use and addiction, which our data suggests resonates with viewers (e.g., emotional responses). On the other hand, it could also be seen as glamorizing drug use, especially for young viewers. It is important to acknowledge the limitations of this study in capturing the full range of viewer experiences. However, our



use of social media data from *Euphoria* discussions on Reddit provides valuable insights into a previously unexplored area. This approach complements traditional research methods by offering a window into audience reception and potentially vulnerable viewers who might not readily participate in surveys or interviews.

**Finding Resonance and Challenging Stigma:** Our findings suggest that *Euphoria*'s portrayal fosters a sense of understanding and belonging, particularly among viewers with a prior drug use experience ( $E_{DP}$ ). Social Identity Theory suggests that people seek out groups where they feel a sense of belonging and shared experiences (Stets and Burke 2000). This highlights the potential of media to shape how people with SUE/SUD perceive themselves by providing a sense of validation and reduce feelings of isolation often associated with SUD (Nieweglowski et al. 2018; Earnshaw 2020; Witte, Wright, and Stinson 2019). By portraying characters struggling with addiction, *Euphoria* could potentially contribute to destigmatizing drug use experiences, especially coupled with the ability to connect with others in online communities like Reddit.

**Pushing for Accurate Representation:** With these findings, we can advocate for more nuanced and realistic portrayals of addiction in media. Accurate representation can challenge negative stereotypes and promote empathy towards those with SUD. This aligns with existing research highlighting the role of media in shaping public perception (Gehlert and Mozersky 2018; McGinty, Kennedy-Hendricks, and Barry 2019; Diesner, Rezapour, and Jiang 2016). While *Euphoria* might not be universally praised for its portrayal (Rosenblatt 2022), our findings demonstrate its ability to resonate with viewers who have experience with drug use. This resonance can be a starting point for discussions about addiction and recovery, potentially leading to a more accurate and empathetic portrayal of SUD in future media content.

### Limitations

Our study has several limitations that should be considered when interpreting the findings. The selection of keywords used to analyze language use within the study was limited. While excluding euphemisms for substances (e.g., "acid," "oxy") aimed to reduce noise in the analysis, it is possible that viewers who disclose drug experiences might also use these terms. This limitation could potentially underestimate the prevalence of certain drug-related discussions within the *Euphoria* subreddit.

Also, word2vec models are known to inherit biases present in their training data (Brunet et al. 2019). In the context of this study, the model might have been biased towards certain portrayals of drug use based on the data it was trained on. Additionally, word2vec struggles to capture complex relationships between words and concepts. This could limit the model's ability to fully capture the nuances of language used by viewers. Finally, the findings of this study are based on discussions within a specific online community (i.e., *Euphoria* subreddit). Viewers who actively participate in online drug-related communities might have different experiences or perspectives compared to the general *Euphoria*

audience. Therefore, the results may not be generalizable to the broader population of *Euphoria* viewers.

### Conclusion

In this study, we explored how viewers of the television show *Euphoria* discuss their experiences with substance use on Reddit, focusing on language use, emotional tone, and underlying themes. Our analysis revealed that viewers who disclose personal drug experiences engage with the show in a more emotionally invested way, expressing curiosity and even finding various aspects of the show relatable. Additionally, the thematic analysis identified discussions around addiction portrayal, mental health struggles, and identity formation. While our findings cannot definitively determine *Euphoria*'s overall impact on viewers with SUD, they do highlight the potential for relatable portrayals to create a space for validation and connection. Future research with a broader scope and focus on clinical populations could provide complementary insights into the potential influence of media portrayals on viewers struggling with SUD.

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## Keyword Nearest Neighbors

Using word2vec, we extracted word vectors with the closest cosine distance to the selected keyword for each viewer group,  $E_E$  (viewers who are not active in any drug-related subreddit) and  $E_D$  (viewers who are also active in drug-related subreddits), shown in Table 5. Each word2vec model was trained for five iterations with optimized learning rates and sampling parameters, and both corpora were mapped to the same 100-dimensional feature space with a 5-word window size.

keyword	$E_D$	$E_E$
<b>addict</b>	addiction, body, drug, use, without, sober, world, beautiful, abusive, friend	recovering, opiate, alcoholic, functioning, addicted, disease, severe, daughter, suicidal, recovery
<b>addiction</b>	addict, body, use, problems, issues, amount, drug, sort, mental, real	addictions, struggles, illness, struggle, dependency, grief, severe, depression, substance, suicidal
<b>sober</b>	tried, pills, addicted, brought, became, abusive, train, turned, pass, crying	clean, recovery, stayed, burden, relapsed, relapsing, rehab, quit, stable, od
<b>recovery</b>	effects, methadone, somehow, underrated, force, situations, quick, exaggerated, healthy, awkward	functional, dependency, meds, opiates, stable, debt, na, void, functioning, replace
<b>relapse</b>	planned, realizing, knowing, easily, girlfriend, lying, word, full, admit, yes	od, overdose, relapsed, overdosed, relapsing, intervention, wreck, overdoses, overdosing, oding
<b>binge</b>	finish, smoke, order, reference, ideas, early, major, impact, highschool, frame	binged, awhile, bingeing, patiently, lockdown, cancelled, premiered, genera, finishing, newest
<b>trip</b>	step, calls, mdma, introduced, safety, locked, stopped, bullshit, tears, emotions	bike, rink, riding, relapses, roller, homecoming, overdoses, returned, snorts, disappear
<b>overdose</b>	admit, snap, waking, acts, caused, forgot, study, information, helping, lying	od, relapse, overdosing, rehab, overdosed, withdrawal, heroin, opiates, coma, intervention
<b>abuser</b>		abusive, asshole, persona, ideal, narcissist, affair, manipulator, controlling, betraying, psychotic
<b>abuse</b>	vulnerable, alcohol, gen, teenage, negative, usage, fatal, heroin, speaking, touch	domestic, substance, hatred, manipulation, suffered, violence, weakness, intimacy, narcissistic, cycle
<b>junkie</b>		conveniently, interrogated, withdrawing, heroine, fearing, intensely, sadistic, frightened, clown, gaining
<b>use</b>	experience, dealers, abuse, front, portrayal, alcohol, body, sort, amount, ass	glamorizes, glorifies, glorifying, recreational, replace, glamorize, afford, partying, usage, encourage
<b>user</b>		gx, communities, vw, sv, qa, redbubble, sq, gov, wikipedia, gzp
<b>habit</b>		snorted, trade, severity, intravenous, narcotics, fuel, quitting, enabling, tests, replace
<b>clean</b>	confident, angry, sober, addicted, shes, brought, trans, leaving, abusive, teenager	sober, stayed, quit, rehab, relapsing, manages, quitting, desperately, meds, staying
<b>detox</b>		gems, epidemic, lolol, filling, dang, quitting, swallow, narcan, emo, righteous
<b>withdrawal</b>	teenage, lots, heroin, substance, positive, perfectly, quiet, underrated, bunch, actress	opiates, withdrawals, depressive, heroin, escape, debt, opioid, prescription, alcohol, recovery
<b>cocaine</b>		meth, medications, mixing, marijuana, methods, adulthood, traffickers, amounts, usage, hierarchy
<b>heroin</b>	substance, acid, negative, xanax, atleast, heavily, annoyed, spending, behavior, cameras	coke, fentanyl, snorted, prescribed, pills, xanax, overdosing, smoked, medication, opiates
<b>marijuana</b>		cookies, meth, methods, counselor, substantial, chronic, giveaway, adrenaline, conversion, necessity
<b>opiate</b>	depictions, naked, alcohol, passing, water, support, moments, negative, unrealistic, film	opioid, severe, opioids, prescription, ocd, navigating, recovered, adhd, trafficker, functioning
<b>xanax</b>	negative, acid, lmfao, substance, paper, heroin, lack, moving, hearing, spending	psych, wine, psychiatric, drank, facility, grounds, valium, snorted, prescribed, escaping
<b>ecstasy</b>		fmv, mv, throwback, drawings, embroidered, eyebrows, pen, wip, martinez, boophoria
<b>lsd</b>		panning, dedication, dangerously, simp, swallow, talents, acoustic, sidelines, demanding, cupcake
<b>mdma</b>	hour, fent, opioids, ugly, safety, brings, growing, separate, lmfao, leads	
<b>accurate</b>	positive, perfectly, clear, teenage, methadone, race, alot, argue, lots, effort	realistic, active, representation, exaggerated, unrealistic, complexity, controversial, refreshing, depiction, edgy
<b>identity</b>	brings, acts, hes, except, growing, doses, recorded, hour, separate, text	gender, crisis, perception, exploration, repressing, struggles, activities, obsessive, repression, suppress
<b>identify</b>		provide, recognize, represent, reminding, evolving, tips, apply, manage, tools, carry
<b>connect</b>	terrible, unless, femininity, follow, worried, fake, lose, deserved, air, forgot	communicate, interacts, benefit, perceive, recognize, apply, disliking, represent, appeal, expects
<b>representation</b>	reference, soul, dropped, listen, non, flush, moral, major, drop, comfortable	perceive, experiment, impacts, relating, retcon, appeal, navigate, contributes, manage, remarkable
<b>empathize</b>		sympathize, succeed, contribute, romanticize, platonically, communicate, root, disliking, analyze, appeal
<b>understand</b>	seem, fuck, wrong, care, either, genuinely, kill, give, exactly, try	condone, justifying, dislike, subjective, comprehend, sympathize, judge, worry, immature, analyze
<b>sympathy</b>	hes, terrible, femininity, treats, identity, stupid, changed, text, badly, acts	empathize, communicate, bash, root, defend, justifying, claim, romanticize, sympathise, succeed
<b>similar</b>	recently, mostly, worked, enjoying, boogie, sponsor, mac, skins, ive, essentially	familiar, tied, strange, represent, tony, eerily, references, names, identical, identify
<b>relate</b>	development, personally, realize, weren, perfect, wear, enough, damn, horrible, excited	dislike, relatable, compare, analyze, empathize, represent, relation, relates, disliked, identify

Table 5: Keywords and their top 10 nearest neighbors based on cosine similarity for posts in group  $E_D$  and  $E_E$ . Keywords that did not meet the minimum frequency (5) are excluded and thus are empty.