The characterizations and the anonymity of comments: A case study on Lizzo's videos

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SUMMARY

Social media platforms have become a very popular means of communication, especially among adolescents. Despite controversies surrounding the link between social media use and negative mental health outcomes, people are using social media increasingly. Even celebrities are growingly relying on social media to engage with their audiences, but negative comments are becoming a growing concern. We examined the types of criticism and praise that celebrities receive in their social media comments, focusing on Lizzo, an American musician, rapper, and social media influencer with millions of followers on Instagram, to investigate the comments from the public. Additionally, we focused on analyzing the types of comments posted and examined whether anonymous usernames (e.g., "NYC123") were more likely to post negative comments. We analyzed and categorized comments from 10 YouTube videos about Lizzo and found that there were approximately 1.72 times more positive comments than negative ones. Among the negative comments, the category which has the highest percentage was the comments that mentioned physical appearance. Among the positive comments, the category which has the lowest percentage was the comment that mentioned body positivity. Furthermore, our analysis revealed that comments were 1.532 times more likely to be anonymous when commenting negative comments. To address this issue and promote better mental health for individuals, we recommend YouTube to make it compulsory for users to verify their real names and display them when posting comments and facilitating the removal of negative comments.

INTRODUCTION

Social media, an Internet-based communication tool, has revolutionized the way people connect, share information, and engage with others through various platforms such as Facebook, Twitter (now rebranded as X), Instagram, YouTube, LinkedIn, and TikTok. Social media offers opportunities for virtual communities to form around shared interests or goals (1).

While social media has opened new avenues for businesses, political campaigns, and social movements to reach wider audiences, it has also given rise to some concerning issues. Online hate speech, cyberbullying, and the spread of misinformation are some of the challenges associated with its use (2). This is particularly of concern among adolescents as they are increasingly using social media platforms to extensively communicate with others. A 2022 Pew Research Center Youth Survey of 1,316 US teens aged 13-17 highlighted the extensive usage of platforms like YouTube and Instagram among young adults, indicating their significant online presence (3).

Some research suggests a notable correlation between social media usage and mental health and behavioral issues, warranting further investigation (4). A systematic review of 50 articles identified a negative link between social media use and mental well-being in adolescents, and it correlated with a higher risk for depression (5). With increased social media communication, not all feedback from followers is positive, and there are complications from having online interaction through commenting. There has been a lack of effective filtering tools to remove inappropriate comments. Over time, the ratio of positive to negative comments on social media has become almost equal, with negative comments becoming more frequent (6). Moreover, online bullying is a significant issue, with a prevalence of 35.4% among adolescents, and it is associated with severe consequences such as depressive symptoms, substance use, and suicidal ideation (7).

Social media has emerged as a crucial communication channel for celebrities, providing them with convenient ways to connect with their audience and grow their influence. A study has shown that people who follow celebrities on social media are more likely to experience symptoms of depression and social anxiety, with a significant percentage expressing dissatisfaction with their body image (8). Moreover, social media usage, especially on Instagram which uses visual contents, has also been associated with the development of eating disorders like orthorexia nervosa (9).

Social media also affects celebrities as well. Many celebrities have spoken out about their mental health struggles, especially in response to negative comments they receive on social media. For instance, Lizzo, in an episode of her reality TV series, candidly revealed breaking down on Instagram Live due to negative social media comments, emphasizing that her anxiety persists (10). The tragic suicide of British TV presenter and personality Caroline Flack in 2020 following online scrutiny and abuse further underscores the urgency of understanding how negative comments can profoundly influence celebrities' well-being (11). Other prominent figures like Justin Bieber, Leslie Jones, and Demi Lovato have also publicly addressed the detrimental impact of social media on their mental health (12). Furthermore, research has shown that online anonymity increases online trolling and online bullying (13,14).

In light of these findings, it is crucial to understand the negative consequences of social media usage and promote

healthy online behaviors. In our case study, we aimed to understand the distribution and types of positive and negative comments that a celebrity receives. Additionally, we hypothesized that anonymous usernames are more likely to be associated with negative comments. To test our hypotheses, we analyzed the types of comments on 10 YouTube videos about Lizzo videos looking for positive and negative comments along with the usernames associated with each type of comment. By answering these hypotheses, we sought to provide insights into the characteristics of positive and negative comments, specifically focusing on Lizzo's experiences. We found that overall there were more positive comments than the negative ones. Among the negative comments, comments about physical appearance occurred the most often. We also saw that comments were more likely to be anonymous when commenting negatively. To prevent anonymous accounts, social media platforms such as YouTube should implement a mandatory policy requiring users to verify and display their real names. This way, negative comments may decrease as individuals would be restricted from misusing anonymity.

RESULTS

To understand the distribution of comments across different feedback categories, 307 comments from 10 of Lizzo's Live performance YouTube videos were analyzed. Comments from the videos were categorized into positive, negative, or neutral by determining contents of the comments. Positive comments were categorized into "expression of admiration or love", "complimenting their talent", "generally positive", "appreciation or body positivity", and "others." Negative comments were classified into "physical appearance", "generally mean", "racism", "swearing", and "others." Overall results showed that positive comments accounted for 52.2% of the total, followed by negative comments at 30.3% and neutral comments at 17.5% (**Figure 1**). We employed a two tailed t-test to validate the significance of the difference between the number of each comment-category. The difference between positive and neutral, and positive and negative comments each yielded a statistically significant difference with p-values of 0.027 and 0.00023, respectively.
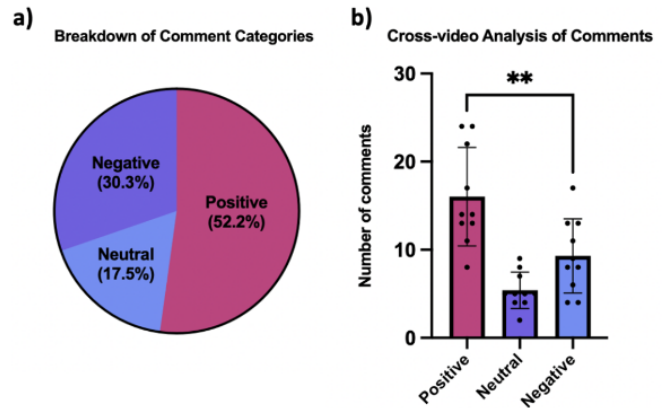

Figure 1: Analysis of the distribution of comments across different feedback categories. a) Breakdown of comment categories for all 10 YouTube videos. b) Cross-video analysis of the average number of positive (16 ± 5.57), neutral (5.4 ± 2.06), and negative (9.3 ± 4.21) comments per video. n = 10. Two tailed t-test, *p = 0.027, **p = 0.00023.

Of the negative comments, 57.0% (n = 52) were "generally mean", 25.8% (n = 25) were comments about Lizzo's appearance, 10.7% (n = 12) were "other", 4.3% (n = 4) included swearing, and 2.2% (n = 2) included racism. In the positive comments category, general positive comments accounted for 48.8% (n = 77), followed by admiration and love at 30% (n = 47), admiration for talent at 15% (n = 24), and body positivity at 6.2% (n = 12). It is noteworthy that comments about Lizzo's appearance accounted for 25.8% (n = 24) of negative comments, while only 6.2% (n = 12) of her positive comments (**Figure 2**).

Analyzing user behavior in positive and negative comment categories yielded interesting observations. About 52.5% (n = 84) of users who left positive comments had a username including what appeared to be a real name (e.g., James Smith, Michell Brown, etc.), while 49.5% (n = 47) of users who left negative comments had a username that appeared to be their real name. This result suggests that anonymity does not substantially affect the nature of comments, as only a 3%
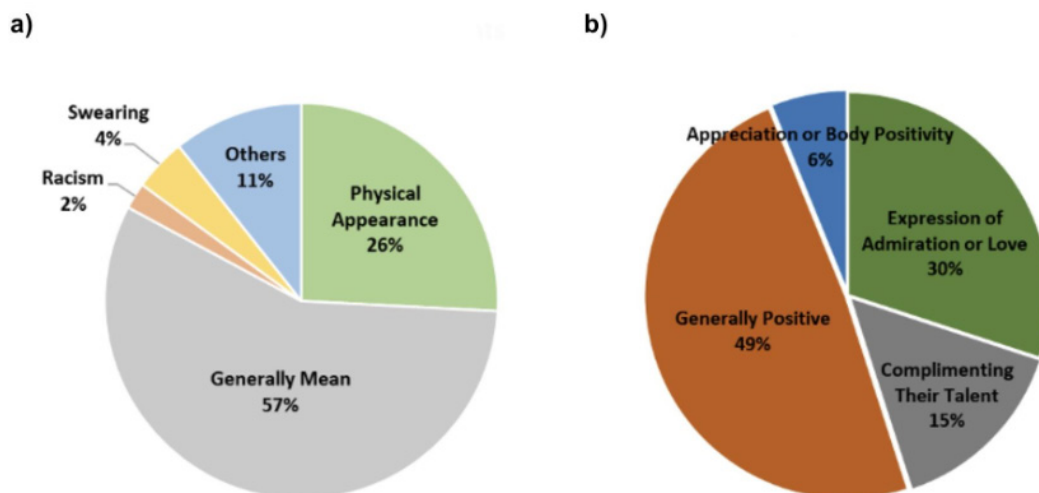

Figure 2: Categorization of comments into positive and negative categories. a) Breakdown of negative comment (n = 92) categories across all 10 YouTube videos combined. b) Breakdown of positive comment (n = 159) categories across all 10 YouTube videos.

difference was found between the two categories (**Figure 3A-B**).

However, analyzing user behavior revealed some interesting insights into identity bias in using real versus anonymous usernames in various comment categories. 66.6% (n = 16) of people displayed an anonymous username (e.g., "yellow fish", "abc123") out of the people negatively commenting on Lizzo's appearance (n = 24). On the other hand, 43.4% (n = 23) of respondents had anonymous usernames for generally mean comments (n = 53). By calculating the percent increase, we found that people are about 1.534 times more likely to hide their identity when commenting on Lizzo's appearance than when making generally mean comments. These results reveal varying degrees of preference for anonymity among users, with a high propensity for anonymity associated with discussing appearance **(Figure 3C)**.

DISCUSSION

In this study, we investigated the type of social media comments with a specific focus on singer Lizzo. Our study is distinct from other research on social media impacting individuals' mental health, as it specifically examines celebrities, who experience significantly more public attention than non-celebrities. By focusing on Lizzo and exploring the correlation between anonymity and the likelihood of posting a negative review, the study contributes unique insights to the existing literature.

Our analysis of 307 comments collected from 10 YouTube videos provided valuable insights into comment distribution and user behavior. The results showed that positive reviews accounted for the majority, making up 52.2% of the total, followed by negative reviews at 30.3%, and neutral reviews at 17.5%. Cross analysis among 10 videos showed the average number of positive (16 ± 5.57), neutral (5.4 ± 2.06), and negative (9.3 ± 4.21) comments per video.

We found that positive comments were approximately 1.72 times more prevalent than negative comments. Additionally, the most common category of negative comments focused on Lizzo's physical appearance, while the lowest number of positive comments related to body positivity. Despite the minor percentage difference between the percentage of anonymous usernames displayed when making negative comments over the percentage of anonymous usernames making positive comments, it is worth noting that negative comments on social media have been linked to anxiety, depression, and even suicide (15). Regarding the hate comments, in general, Lizzo publicly spoke about how hurtful it was to read (16).

Analyzing negative reviews in detail, the study found that the majority of the comments (57.0%) fell into the "generally mean" category, while 25.8% were based on Lizzo's physical appearance. Conversely, only a small portion (6.2%) of positive reviews praised Lizzo's appearance. Comments concerning Lizzo's appearance may be influenced by societal beauty standards and the prevalent scrutiny of body image in mainstream media and online platforms, often leading celebrities, particularly those challenging conventional beauty norms, to become targets of disparaging comments about their appearance. Our findings resonate with other studies that explored the effect of social media use and body dissatisfaction (17). This suggests that anyone who posts on the internet, may be experiencing more negative mental health and body dissatisfaction by engaging in social media.
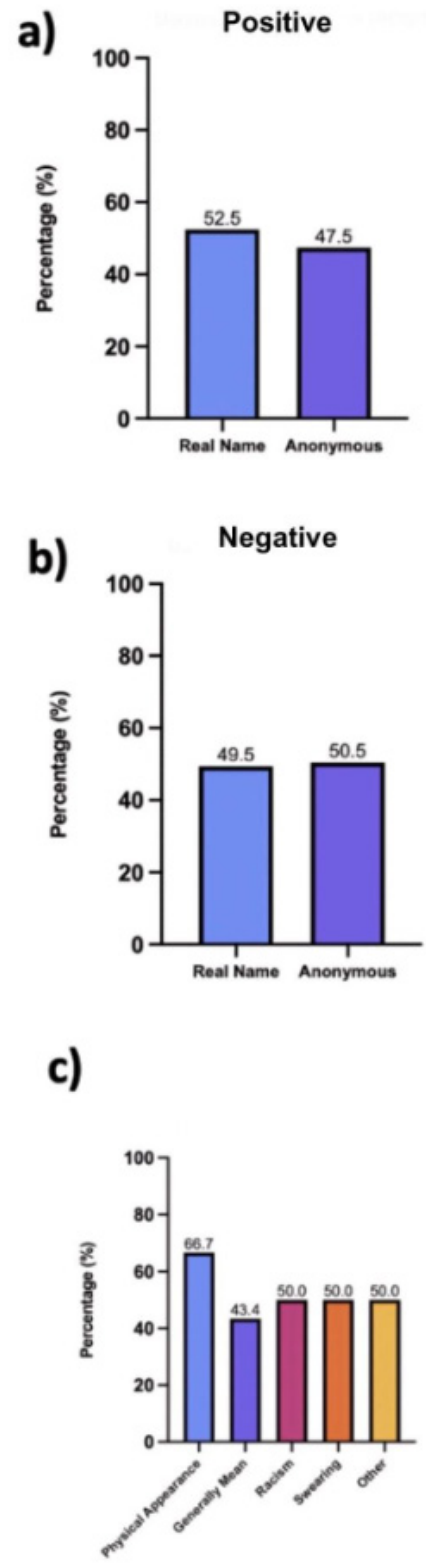

Figure 3: Distribution of usernames across all 10 YouTube videos. a) Positive and b) negative comments categorized based on whether the username is determined to be a real name or anonymous (Table 4). In the anonymous category, usernames changed by 3% between positive and negative comments. c) Percentage of anonymous usernames in each negative comment (n = 92) category from collected data.

Is the comment positive or negative?	Definition	Examples	Coding Rules
Positive	Optimistic and healthy comments that help the celebrity.	"UGH I LOVE HER." (Video 1, 5th comment) "This is so empowering." (Video 1, 15th comment)	The comments must clearly show admiration or love towards the celebrity.
Negative	Statement that expresses aversion, which may affect the mental well-being of a celebrity negatively.	"I don't hate her because she is black.. there are dozens of other reasons... gag" (Video 1, 22nd comment) "Lizzy, you're overweight, and it's teaching young children that being overweight is ok." (Video 1, 14th comment)	The comments must clearly show hate towards the celebrity.
Neutral	Comments that are unrelated to the video or being neither positive nor negative.	"View vet." (Video 1, Comment 3) "3:21 church!!!!" (Video 2, Comment 21)	The comment is either unrelated to the video, has random emojis, or does not talk about the celebrity. Neither positivity nor negativity can be seen from the comments.

Table 1: Definition of each category: positive, negative, and neutral. Example of each category and coding rules.

What are the main reasons cited for the negative comments?	Definition	Examples	Coding Rules
Physical appearance	Comments that describe or put hate on the celebrity's physical appearance, including face or body.	"she a goot size" (Video 2, Comment 7)	The comment must be offensive and be related to the appearance of the celebrity.
Racism	Comments that show racism towards the celebrity.	"I don't hate her because she is black.. there are dozens of other reasons... gag" (Video 1, 22nd comment)	The comment must show racism and discrimination towards the celebrity.
Swearing	Comments that swear at the celebrity with hate speech.	"fck u lizzy although i like you, you r pretty whor" (Video 1, Comment 10)	The comment must have swear words or emoji that represents swearing.
General Mean	Comments that are not related to physical appearance, racism, swearing, but shows negativity.	"Yall NEED JESUS WHAT has happened to this world. Guess yall will follow her right off the cliff to one world everything and getting the mark" (Video 1, Comment 12)	The comments clearly show hate towards the celebrity, but not related to physical appearance, racism or swearing.
Others	Comments such as emojis that can't be classified into the categories above, and negative comments that are about different people.	"gross ass jack harlow had to Spoil ending by picking his nose omg" (Video 3, Comment 19)	If the comments cannot be categorized into physical appearance, generally mean, racism, or swearing, it should be classified into the corresponding category. Use of emojis fall into this category.

Table 2: Question 2: What are the descriptions for the negative comments? Definition of each category, examples, and coding rules.

Moreover, the analysis revealed intriguing findings regarding anonymity preferences. Using the odds ratio, users displayed 1.534 more anonymous usernames when commenting on appearance compared to making "generally mean" comments. Approximately 66.6% of individuals displayed anonymous usernames when commenting on physical appearance, while 43.4% chose anonymity when making a "generally mean" comment. This is an interesting finding that needs further research about psycho-social behavior. Our postulation is that this may be attributed to the subjective nature of such comments, which can attract social stigma and backlash. By hiding their identity, users may seek to protect themselves from potential online harassment and retaliation from those who disagree with their opinions on physical appearance and who might have a similar physical appearance as her. On the other hand, "generally mean" comments might not offend anyone who is reading the comment but the celebrity himself or herself.

The study presents three limitations. Firstly, the sample size of 307 comments could be considered small, posing challenges for generalization. Furthermore, the videos were from one particular celebrity, which shows a small dataset and may display bias. Future research may benefit from studying other celebrities or Instagram influencers and gather larger data to analyze. Secondly, the anonymity of usernames on YouTube poses a limitation, as the platform does not require users to provide their real names when creating an account. Thus, the research question about whether a person's username is anonymous, or a real name cannot be fully verified.

To address negative comments, we suggest that YouTube make it mandatory for users to verify their real names and display them when engaging on the platform. This measure could lead to a reduction in negative comments that impact individuals' mental health and mitigate the adverse effects of social media.

In conclusion, the results obtained from the analysis of comments and user behavior provide valuable insights into the types of comments, the relationship between different comment categories, the display of real names, and the preference for anonymity. These findings contribute to a better understanding of the prevalence and nature of positive and negative comments exhibited by users in expressing their perspectives. The study sheds light on the challenges celebrities face with negative comments on social media platforms, particularly YouTube, and adds to our understanding of the types of comments that could potentially affect the mental health and well-being of celebrities.

MATERIALS AND METHODS

We analyzed 10 live performance videos of Lizzo on YouTube. The selection criteria for the videos were based on the highest number of views and whether they were live performances.

A total of 307 comments were collected from the selected videos. We used four key questions to analyze the comments, and categorize them: **1)** Is the comment positive or negative? (**Table 1**), **2)** what are the main reasons cited for the negative comments? (**Table 2**), **3)** what are the main reasons cited for the positive comments? (**Table 3**), and **4)** are usernames associated with each comment appearing to be real names? (**Table 4**).

The second and third questions were categorized based on the result of the first question, which determined whether

What are the main reasons cited for the positive comments?	Definition	Example	Coding Rule
Expression of admiration or love	The comment shows positivity towards the celebrity.	"UGH I LOVE HER." (Video 1, 5th comment)	The comment clearly shows love towards the celebrity.
Complimenting their talent	The comment praises the celebrity on their skills.	"She need it to be on the super bowl!!!!! Vocals on point talent, a show that its visual entertaining... so sad" (Video 2, Comment 1)	The comment clearly praises the celebrity's talent and expresses their admiration towards it.
Appreciation or Body Positivity	The comment shows positivity considering the celebrity's body and physical appearance.	"She is so fucking cute" (Video 1, Comment 14)	The comment is optimistic about physical appearance.
Generally Positive	The comment is not categorized into expression of admiration or love, complimenting their talent, or appreciation or body positivity, but shows positivity towards the celebrity.	"I need Lizzo and Bruno Mars collab asap" (Video 2, Comment 3)	The comment is an emoji, or not among any other categories such as expression of admiration or love, complimenting their talent, or appreciation or body positivity, but shows positivity towards the celebrity.

Table 3: Question 3: What are the main reasons cited for the positive comments? Definition of each category, examples, and coding rules.

What were the usernames associated with each comment?	Definition	Example	Coding Rules
Appears to be real name	Usernames that appear to be real name, which might be their actual names or not.	John Smith, Michelle Brown	The username must appear to be a real name, not any random words.
Any words	Usernames that use random words.	Yellow Bunny, Small Cat	The username must be random words, not alphabets.
Initials or random alphabets	Usernames with initials or random alphabets and numbers.	NYC123, UCLIJ	The usernames must be totally random, with random numbers and alphabets that cannot be understood.

Table 4: Question 4: What were the usernames associated with each comment? Definition of each category, examples, and coding rules.

a comment was positive or negative. When comments could fall into multiple categories, the student investigator chose a category that best suited the comment and the primary investigator also reviewed and agreed or disagreed with the categorization. This process was done until the student investigator and primary investigator all agreed.

We used descriptive statistics to quantify the percentage of comments that were positive, negative, or neutral and to explore the relationships between comment categories. Data were represented as a mean ± standard deviation for three comment categories and the statistical analysis was performed using SPSS software 27 (SPSS Inc., Chicago, IL, USA). A two-tailed t-test was used for statistical analysis between two groups and statistical significance was considered at $p < 0.05$. Additionally, Graphpad Prism v9.3.1 (Free Trial) and Excel v16.72 were used to represent the data visually and show the breakdown of positive, neutral, and negative comments and the cross-video analysis and breakdown of comment distributions amongst categories. To analyze the anonymity of each comment category, we used the odd's ratio.

REFERENCES
1. Bekalu, M. A., et al. "Association of Social Media Use with Social Well-Being, Positive Mental Health, and Self-Rated Health: Disentangling Routine Use from Emotional Connection to Use." *Health Education & Behavior,* vol. 46, no. 2, Dec. 2019, https://doi.org/10.1177/1090198119863768.
2. S. Vosoughi., et al. "The Spread of True and False News Online." *Science*, vol 359, no. 6380, Mar. 2018, https://doi.org/10.1126/science.aap9559
3. "Teens, Social Media and Technology 2022." *Pew Research Center.* www.pewresearch.org/internet/2022/08/10/teens-social-media-and-technology-2022/. Accessed May 01, 2023.
4. Shah, J., et al. "New Age Technology and Social Media: Adolescent Psychosocial Implications and the Need for Protective Measures." *Current Opinion in Pediatrics*, vol. 31, no. 1, Feb. 2019, https://doi.org/10.1097/MOP.0000000000000714
5. Santos, R. M. S., et al. "The Associations between Screen Time and Mental Health in Adolescents: A Systematic Review." *BMC Psychology*, vol. 11, no. 127, Apr. 2023, https://doi.org/10.1186/s40359-023-01166-7
6. "Analysis of 11 Billion Mentions: Social Media Is More Negative Than Ever." *Mention.* mention.com/en/blog/social-media-mentions-analysis. Accessed May 21, 2023.
7. Bottino, S. M., et al. "Cyberbullying and Adolescent Mental Health: Systematic Review." *Cad Saude Publica,* vol. 31, no. 3, Mar. 2015, https://doi.org/10.1590/0102-311x00036114
8. Charmaraman, L., et al. "Early Adolescent Social Media-Related Body Dissatisfaction: Associations with Depressive Symptoms, Social Anxiety, Peers, and Celebrities." *Journal of Developmental Behavioral Pediatrics*, vol. 42, no. 5, July 2021, https://doi.org/10.1097/DBP.0000000000000911
9. Turner, P. G., and C. E. Lefevre. "Instagram Use Is Linked to Increased Symptoms of Orthorexia Nervosa." *Eating and Weight Disorders*, vol. 22, no. 2, Mar. 2017, https://doi.org/10.1007/s40519-017-0364-2
10. "Lizzo: Facebook and Instagram remove abusive comments from singer's accounts." *BBC.Com*, 19 Aug. 2021, https://www.bbc.com/news/entertainment-arts-58267704. Accessed 4 Sep. 2024.
11. Picheta, Rob. "Caroline Flack, 'Love Island,' and the Industry of Outrage Surrounding the Star's Death | CNN Business." *CNN*, Cable News Network, 18 Feb. 2020, www.cnn.com/2020/02/17/media/caroline-flack-death-reaction-scli-gbr-intl/index.html.
12. Chan, Stephanie. "Justin Bieber and Other Celebs Who Have Quit Social Media." *The Hollywood Reporter*, 16 Aug. 2016, www.hollywoodreporter.com/lists/justin-bieber-celebs-who-have-920042/demi-lovato-6/. Accessed 11 Sept. 2024.
13. Nitschinsk, Lewis et al. "The Disinhibiting Effects of Anonymity Increase Online Trolling." *Cyberpsychology, behavior and social networking,* vol. 25, no. 6, Jun. 2022,

https://doi.org/10.1089/cyber.2022.00

14. Jeon, Yongwoog Andrew, et al. "Weight Stigma Goes Viral on the Internet: Systematic Assessment of YouTube Comments Attacking Overweight Men and Women." *Interactive Journal of Medical Research,* vol. 7, no. 1, Mar. 2018, https://doi.org/10.2196/ijmr.9182

15. Hamm, Michele P, et al. Prevalence and effect of cyberbullying on children and young people: A scoping review of social media studies. *JAMA Pediatrics*, vol. 169, no. 8, https://doi.org/10.1001/jamapediatrics.2015.0944

16. "Lizzo Tearfully Calls out 'fatphobic' and 'Racist' Hate Following 'Rumors' Release." *NBCNews.Com*, NBCUniversal News Group, 16 Aug. 2021, www.nbcnews.com/pop-culture/pop-culture-news/lizzo-tearfully-calls-out-fatphobic-racist-hate-following-rumors-release-n1276920. Accessed 14 Oct. 2023.

17. Rounsefell, Kim et al. "Social media, body image and food choices in healthy young adults: A mixed methods systematic review." *Nutrition & Dietetics: The Journal of the Dietitians Association of Australia*, vol. 77, no. 1, Feb. 2020, https://doi.org/10.1111/1747-0080.12581