

# X Marks the Spot: An Examination of X and Its Transformation from Twitter

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**Abstract:** This study examines X and perceptions and opinions related to the platform since Elon Musk took it over. We address the following research question: 1) What role do the characteristics of users of X have on their opinions and attitudes of the social media platform? A large-scale survey was conducted with 408 participants recruited from Amazon’s Mechanical Turk. Only a small subset of participants do not use X (15%), while a large percentage (39%) of those who do use it do so for less than five hours per week. A small number (11%) of participants use it more than 20 hours a week. A plurality of participants (37.3%) believed that individuals should be at least 18 years old to use X, while others thought 16 (17.0%) or 17 (2.9%) was old enough. The study also explores differences in opinions and use of X since Musk took over the company, as well as perceptions related to the role government should play with respect to the regulation of social media in general. Differences based on demographics are also explored, as well as political party affiliation. Those that identify as Republican have seen their opinions related to X, its policies, and Musk increase much more than those that identify as Democrat. A subset of participants (N=121) that identified X as one of the two social media platforms they used the most were asked additional questions related to their use of the platform. A plurality of participants (39.2%) indicated they were personally better off with X, while others were either not sure (28.0%) or believed their life was not better as a result (32.8%). In contrast, when they were asked whether society is better off with the existence of X, participants were evenly split between ‘yes’ and ‘no’ at 36.8% each, followed by those that were not sure (26.4%). Limitations, implications, and directions for future research are explored.

**Keywords:** Social Media, X, Twitter, User Behavior, Perceptions, Opinions, Political Party Affiliation

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## 1. Introduction

Social media has had a significant influence on many aspects of our everyday lives (Kross et al., 2021). Although is not entirely clear whether that influence has been positive, negative, or somewhere in the middle (Ortiz-Ospina and Roser, 2024), it is difficult to escape the fact that social media has become a regular part of our fabric as a society. And while some social media platforms have come and gone, e.g., MySpace and Friendster (Corry, 2022), others have remade themselves in the wake of a change in ownership and leadership, such as Elon Musk’s takeover of Twitter—later renamed to X (Wang et al., 2024).

In the current paper, it is this remake of Twitter into X and the change in leadership that we are most interested in exploring. To do so, we address the following research question: What role do the characteristics of users of X have on their opinions and attitudes of the social media platform?

The remainder of the paper is organized as follows. First, we provide some relevant background information by exploring the literature related to X. Next, we discuss the methods used to explore the two research questions. Then, we provide the results of our study and subsequent analysis. Finally, we discuss the results and their implications and conclude with some final remarks.

## 2. Background

In this section, we discuss X as a social media platform, social issues, research issues, the demographics of X users, and then how X compares to other social media platforms.

### 2.1 X as a Social Media Platform

X is a social media platform that allows users to microblog short messages called tweets no longer than 280 characters. X gives users the ability to communicate with other users through likes, replies, quote tweets, and retweets by following content without the requirement of reciprocation (Kwak et al., 2010). User’s friends and followers can see each other’s tweets and interact with each other. The X platform is a popular tool for gathering real-time data for research in numerous fields such as social media analysis, political polarisation, healthcare applications, finance, and stock predictions, estimation of disaster destruction, and marketing to track consumer sentiment (Weller et al., 2014). X has developed application programming interfaces (API) to allow researchers

to analyse data. Four categories can be extracted from X platform data and can be utilized for predictive analysis: user features, time features, interaction features, and text features (Salemdeeb and Sahmoud, 2023).

But as X was bought by Elon Musk who renamed the platform from Twitter to X, the platform has expectedly changed. He and newly installed CEO Linda Yaccarino have sought to make the platform an “everything, super” app powered by AI where X becomes the future of unlimited interactivity centred in “audio, video, messaging, payments/banking - creating a global marketplace for ideas, goods, services, and opportunities,” which Yaccarino describes (Stokel-Walker, 2023). However, this brings in the question of whether this “WeChat model” will be successful as competition increases and users become sceptical of the increased involvement in users’ lives (Peters, 2023).

## **2.2 Social Issues**

Since Musk transformed X into what is now known as X, the platform has lost some of its core features. Musk’s ambition of turning X into an “everything app” and changes to the platform sparks debate about whether X will lose its users and unique value proposition of being a central hub for news. It has been over two years since Musk bought Twitter. The service has lost advertisers and users (Ortutay, 2023). With misinformation and even disinformation intensifying after the dismissal of X’s Trust and Safety advisory group, content moderation, regular users, and even the European Union have warned the CEO about possible implications (Yeo, 2023).

It is not just an issue with the new content and purpose of the platform, there is also a huge risk with switching names and domains. The rushed Twitter rebrand poses the perfect opportunity to send phishing email requests to users, presenting cybersecurity risks (Collins, 2023). X has also experienced many technical glitches since Musk bought the platform and revamped its operating procedures and content moderation policies and recently experienced widespread issues with hyperlinks not opening properly (Mastrangelo, 2023). The impact of such changes is reflected in a 2023 analysis of current and recent X users, where 25% of those surveyed said they were not at all likely to be on X a year from the time of the survey. The users’ average number of tweets per month also declined by around 25% following Musk’s purchase of the site (Dinesh and Odabaş, 2023). It is difficult to be sure where X will stand in the future and whether it will achieve success as an “everything app,” but it is clear that Musk will continue to champion the transition nonetheless.

## **2.3 Research Issues**

From a communication phenomenon for micro-blogging, X has now become an experiment for Musk’s latest goal of ‘revolutionizing’ the social media landscape. Historically, X has been a playground for academic research through its free application programming interface to which thousands of papers were written based on this data (Kaphle et al., 2022). That all changed when Musk put the API behind a paywall.

Moreover, there has also been a documented rise in hate speech towards minorities on X since Musk acquired the platform. This concern comes after X’s lawsuit against the Center for Countering Digital Hate after this documentation, raising the question that if researchers cannot study X via the API anymore, how can hate speech on the platform be tracked and what does it mean for the future? X’s new paid structure has lowered the number of posts and messages on the platform, making reliable research difficult to find moving forward since Musk is continually reprimanding researchers that call the platform out (Klepper and Ortutay, 2024). This has inspired researchers to engage in other platforms such as Reddit, Facebook, and Instagram.

## **2.4 Demographics and X**

In 2023, X was ranked as the 14th most popular social networking site worldwide. How did the rebrand impact X’s target audience? While other platforms have targeted individuals under 18 years old, X has maintained a unique customer base, attracting a variety of age groups, genders, income levels, education levels, and ethnic groups (Hughes, 2019).

Considering the breakdown of X users’ age groups, individuals aged 25-49 years old made up 59.2% of all users and individuals aged 18-24 comprised 17.1% of all total users. X has strategically targeted young adults that will continue to use the platform as they get older (Chen, X. et al., 2015).

X users also tend to be wealthier than the general public, with X users reporting a household income of \$75,000 or higher for 41% of all users compared to 32% of the general population. This can be correlated with higher education levels where 42% of adult X users have at least a bachelor’s degree compared to 31% of the overall public.

## 2.5 Other Social Media Platforms

Out of all the top 10 most popular social media platforms, X seems to attract the most different users due its UI, quick messaging system, and low character limit that makes it easy for users to share and access content (Lee and Song, 2022). However, there are correlations and differences in target user behaviour and UI between other platforms. When comparing the demographics of X users compared to platforms like Instagram and Facebook, a typical X user seems to be a young adult male, for Instagram a teenage female, and for Facebook, a millennial female.

The concepts of Instagram, Facebook, Snapchat, Reddit, and TikTok differ as well. For example, Snapchat encourages ‘living in the moment’ through sharing pictures and videos temporarily, matching the lifestyle of teenagers and young adults. Facebook’s unique value proposition is to simply make the world a more open and connected place, a place that provides information and news, attracting millennials and older adults that want to stay connected. Instagram encourages effortless interaction through photo and video sharing, offering temporary and permanent post and sharing options. Reddit’s unique value proposition is its wealth of user-generated content that offers a space for discussion, learning, and information on specific topics.

## 3. Methods

In order to address the previously noted research question, a large-scale survey was administered. Amazon’s Mechanical Turk (MTurk) was used for participant recruitment with Qualtrics used as the survey platform. IRB approval was sought and obtained prior to data collection commencing. This study qualified for exempt status. Prior to individuals participating in the survey, informed consent was obtained from them. Participants were compensated \$6 for their time and effort. When asked how the time and effort required to complete the survey for the compensation received compared to similar projects, 74% of the participants indicated it was easier for the money or comparable to other projects. Another 26% participants indicated more effort was required for the compensation received.

MTurk is known for providing a useful platform for researchers conducting certain types of research, such as surveys (Dupuis, Endicott-Popovsky and Crossler, 2013). To address quality control concerns, multiple attention check questions were embedded throughout the survey (Dupuis, Renaud and Searle, 2022).

In the current study, multiple qualifiers were used to ensure a high-quality participant pool. Additionally, five quality control questions were embedded within the survey itself. Three of these posed questions that had obvious answers (i.e., ‘select agree to get paid’), while the other two consisted of repeated demographic questions (i.e., gender identity and ethnicity) appearing at both the beginning and end of the survey. If there was a mismatch in their responses then their work was rejected.

After 13.2% of the responses were rejected due to quality control failures, there were 408 remaining responses available for analysis. Table 1 provides the demographics of our sample based on gender identity, ethnicity, and education. A slight majority of participants identified as male (56.1%) and most participants were White (79.2%). Additionally, most participants were under 40 (55.4%) and had a Bachelor’s degree or higher (69.6%).

**Table 1: Demographics of Research Participants**

<b>Gender</b>	<b>N</b>	<b>%</b>
Female	176	43.10%
Male	229	56.10%
Non-Binary	1	0.20%
Prefer not to say	2	0.50%
<b>Ethnicity</b>	<b>N</b>	<b>%</b>
Asian / Pacific Islander	43	10.50%
Black / African-American	27	6.60%

White / Caucasian	323	79.20%
Hispanic	10	2.50%
Other / Multi-Racial	5	1.20%
<b>Age</b>	<b>N</b>	<b>%</b>
20-29	64	15.70%
30-39	162	39.70%
40-49	80	19.60%
50-59	59	14.50%
60-69	36	8.80%
70-79	7	1.70%
<b>Education</b>	<b>N</b>	<b>%</b>
Did not Graduate HS	2	0.50%
Graduated HS / GED	41	10.00%
Some College	46	11.30%
Associate's Degree	35	8.60%
Bachelor's Degree	235	57.60%
Master's Degree or Greater	49	12.00%

#### 4. Results, Analysis, and Discussion

Next, we discuss the results of the study so that we may address the previously noted research questions.

##### 4.1 Social Media Use

In addition to better understanding the usage characteristics of our participants that use X, we also asked them about their social media use in general. Table 2 identifies how frequently our participants use a variety of social media platforms. Only a small subset of our sample does not use X (15%). Among those that do use X, 39% use it less than five hours per week and 19% use it between five and 10 hours per week. Another 17% use it between 10 and 20 hours per week, while 11% use it more than 20 hours per week.

**Table 2: Social Media Use in Hours Per Week**

Platform	0	< 5	< 10	< 20	20+
X / Twitter	15%	39%	19%	17%	11%
Facebook	7%	33%	16%	19%	24%
Instagram	11%	35%	13%	21%	19%
TikTok	31%	36%	15%	12%	6%
SnapChat	52%	25%	11%	8%	4%
Reddit	8%	43%	23%	18%	9%
BeReal	68%	15%	8%	6%	2%
Pinterest	33%	43%	13%	8%	3%
Truth Social	64%	19%	9%	6%	2%

##### 4.2 Usage and Opinions Since Musk Assumed Ownership and Control

We were also interested in how their usage of X and their opinions around Musk may have changed since he assumed ownership and control of the social media platform. Our analysis is limited to those that currently use X. We asked participants about their usage and satisfaction with the platform, positive opinion regarding content moderation policies, positive opinion of Musk, and negative opinion of Musk. Table 3 indicates whether it has

decreased, stayed about the same, or increased. With respect to usage of the platform, 29.2% of participants indicated that it decreased for them, while 70.7% noted that it either stayed about the same or increased. Satisfaction with X has decreased compared to the amount it has increased. More individuals indicated that their opinion on content moderation policies, as well as both their favourable and unfavourable opinion of Musk increased rather than decreased. The table also examines differences based on political party affiliation. For all five questions, Republicans generally had much more favourable opinions of X, its policies, and Musk when compared to Democrats. Independent samples t-test performed for each of these questions indicates the differences were statistically significant in all cases ( $p < .001$ ).

**Table 3: Changes in Usage and Opinion**

	Decreased	Same	Increased	N	Mean
<b>Usage</b>	29.2%	35.2%	35.5%	366	2.06
Democrats	34.3%	32.3%	33.3%	198	1.99
Republicans	9.2%	32.2%	58.6%	87	2.49
<b>Satisfaction</b>	35.8%	36.3%	27.9%	344	1.92
Democrats	47.3%	35.2%	17.6%	182	1.70
Republicans	5.9%	36.5%	57.6%	85	2.52

<b>Opinion on Content Moderation Policies</b>	35.2%	27.7%	37.1%	361	2.02
Democrats	43.7%	22.1%	34.2%	199	1.90
Republicans	8.3%	32.1%	59.5%	84	2.51
<b>Positive Opinion of Elon Musk</b>	33.9%	24.3%	41.8%	378	2.08
Democrats	44.6%	18.6%	36.8%	204	1.92
Republicans	6.6%	22.0%	71.4%	91	2.65
<b>Negative Opinion of Elon Musk</b>	31.4%	28.6%	40.0%	370	2.09
Democrats	28.4%	22.1%	49.5%	204	2.21
Republicans	51.1%	34.1%	14.8%	88	1.64

### 4.3 Minimum age to use X

Social media platforms may pose harm to individuals, especially those that are younger. We asked participants how old they believed someone should be to use X. A plurality of responses (37.3%) suggested someone should be at least 18 to use X, while others believed 16 (17.0%) or 17 (2.9%) was old enough to use X. Yet, some thought individuals as young as 13 (11.5%), 14 (8.1%), or 15 (7.4%) was old enough. Finally, a small subset of responses (15.7%) indicated those under 13 should be able to use X.

### 4.4 Perceptions on Government's Role

Beyond the minimum age an individual should be to use X, we also wanted to know what their thoughts were on the role government should have with respect to regulating social media platforms in general. When asked if government should do more to regulate social media companies, a large number of participants indicated either 'yes' (46.8%) or 'maybe' (28.4%). A comparatively small number responded either 'no' (16.9%) or 'not sure' (7.8%).

The behaviour of younger individuals and social media use has long been a concern, especially given the rise of cyberbullying and how young some individuals are when they begin using social media (Martin et al., 2018). Regret of what they post is common (Xie and Kang, 2015). Thus, we asked them if the government should do more to protect younger individuals from the possible harms of social media. While some responded either 'no' (6.6%) or 'not sure' (7.1%), others suggested this should be done only for individuals under 10 (6.1%) or 13 (30.9%). Almost half of the participants (49.3%) suggested the government should do more to protect all younger individuals under the age of 18.

While social media may help provide a sense of connectedness for older adults (Sinclair and Grieve, 2017), they are often limited in their ability to use it as effectively as younger individuals due to lower levels of self-efficacy (Chen, Y. and Gao, 2023). Therefore, we asked them if the government should do more to protect older individuals from the harm of social media. A large number of participants indicated that either the government should not do more to protect older adults (25.7%) or they were not sure (19.6%). For those that did believe the government should do more, they indicated it should be done only for those 50 and over (9.6%), 55 and over (7.6%), 60 and over (10.3%), 65 and over (15.4%), 70 and over (7.6%), 75 and older (2.2%), and finally only those 80 and over (2.0%).

Finally, we asked participants if the government should do more to protect all individuals from the possible harm of social media companies. Most (58.1%) indicated that the government should do more, while 19.9% indicated they were not sure. Still others (22.1%) thought that the government should not do more to protect all individuals from the possible harm of social media companies.

#### 4.5 Are we Better off With X?

While social media platforms may be popular and attract a significant amount of attention, are we personally and collectively better off as a result of their existence? We asked participants this question as it related to X. A plurality of participants (39.2%) indicated they were personally better off, while others were either not sure (28.0%) or believed their life was not better as a result (32.8%). In contrast, when they were asked whether society is better off with the existence of X, participants were evenly split between 'yes' and 'no' at 36.8% each, followed by those that were not sure (26.4%).

#### 4.6 Differences Based on Demographics

There are many features available to end users on the X platform. We assessed how the importance of some of these features varied based on gender identification and age. With respect to gender identification, an independent-samples t-test was conducted to compare those that identified as female with those that identify as male. There was a significant difference in the rating of how important participants believed the ability to obtain news on social media was for females ( $M=3.37$ ,  $SD=1.346$ ) and males ( $M=3.69$ ,  $SD=1.274$ ) with those that identified as male believing that feature was more important;  $t(402)=2.47$ ,  $p = .014$ . However, when we examined the same question in the context of X, a significant difference was not found  $t(121)=0.847$ ,  $p = .399$ . A 10-item ranking of features was used for this question.

Additionally, there was a significant difference in the rating of how important participants believed the ability to catch up with family and friends on X was for females ( $M=3.93$ ,  $SD=1.238$ ) and males ( $M=3.59$ ,  $SD=1.182$ ) with those that identified as female believing that feature was more important;  $t(402)=-2.76$ ,  $p = .006$ . However, when we examined the same question in the context of X, a significant difference was not found  $t(121)=0.540$ ,  $p = .590$ . A 10-item ranking of features was used for this question.

When examining X, there was a significant difference in the rating of how happy participants were regarding the ability to reply to a tweet on X was for females ( $M=4.29$ ,  $SD=0.716$ ) and males ( $M=3.89$ ,  $SD=1.054$ ) with those that identified as female feeling happier about this feature;  $t(121)=-2.494$ ,  $p = .014$ . A 7-point Likert scale was used for this question. Also, there was a significant difference in the rating of how happy participants were regarding the ability to share content on X was for females ( $M=4.68$ ,  $SD=2.161$ ) and males ( $M=5.59$ ,  $SD=2.362$ ) with those that identified as male feeling happier about this feature;  $t(121)=2.053$ ,  $p = .042$ . A 7-point Likert scale was used for this question.

We also examined differences based on political party affiliation, which gained prominence more recently as Musk changed moderation policies to those more favourable to conservative personalities and became a public supporter of Donald Trump. We compared users of X that identified as a Republican ( $N=40$ ) with those that identified as a Democrat ( $N=58$ ). Table 4 illustrates where significant differences were found.

**Table 4: Differences Based on Political Party Affiliation**

Topic	Party	M	SD	t	Sig.	DF
Reply to a Tweet	Republican	4.35	0.83359	2.931	0.004	96
	Democrat	3.7759	1.02672			
Scroll through 'For You'	Republican	4.025	0.97369	2.662	0.009	94
	Democrat	3.431	1.22992			
Scroll through 'Happening Now'	Republican	3.925	1.0225	3.034	0.003	96
	Democrat	3.2414	1.14417			
Scroll through 'Trending'	Republican	3.9	1.00766	2.725	0.008	96
	Democrat	3.2759	1.18163			
Don't Post Controversial Content	Republican	2.5	1.03775	-2.169	0.033	96
	Democrat	2.931	0.91502			
Refrain from Posting Content that may Offend	Republican	2.35	1.02657	-3.14	0.002	73
	Democrat	2.9655	0.83699			
Level of Privacy Offered by X is Adequate	Republican	3.125	0.64798	2.676	0.009	96
	Democrat	2.7069	0.89851			
Spend Time on Image Post	Republican	3.1	0.87119	2.686	0.009	95
	Democrat	2.614	0.88144			

Overall, those that identify as Republican are generally more satisfied with the various features of X, such as replying to a tweet, scrolling through 'For You,' 'Happening Now,' and 'Trending.' Additionally, Republicans generally spend more time on image posts than those that identify as Democrat. In contrast, Democrats were less likely to post controversial content or post content that may offend others. Also, Democrats were less likely to think that the privacy offered by X was adequate.

## 5. Conclusion

In this exploratory study, we examined the following research question: 1) What role do the characteristics of users of X have on their opinions and attitudes of the social media platform? In the results we obtained, the most striking differences are found with respect to political party affiliation (Tables 3 and 4). This notably includes favourability opinions regarding the platforms, its policies, and Musk with Democrats having much more negative opinions when compared to Republicans.

### 5.1 Limitations

There are three primary limitations that we will discuss here. First, there is an incentive for research participants to complete the survey as quickly as possible since it allows them to move onto their next MTurk platform opportunity sooner. And while most of our participants (74%) believed the compensation received was better or comparable to those in similar projects they completed, it is nonetheless beneficial for them to complete it as quickly as possible. This may result in less attention than other participant pools. The quality control questions we employed help mitigate this to a certain extent, but it is not possible to determine the full level of attention and care of their responses.

Second, common method bias is a potential issue given that a single research method was employed—a survey (Podsakoff et al., 2003). The use of multiple quality control procedures and the level of anonymity provided by the platform help mitigate this concern to some degree, but the concern cannot be alleviated fully. Finally, we asked participants in part about their opinions and attitudes and how they may have changed. However, this was done at a single point in time. It is possible that they may not be able to accurately reflect on how their opinions and attitudes have changed and thus a longitudinal study would have been able to more accurately capture these changes.

## 5.2 Future Work

In the future, it will be worthwhile to further examine some of these differences, including through open-ended questions and semi-structured interviews. Additionally, a larger and unresolved question is what this all means for democracy, especially as X and Musk have become more favourable to Republicans, conservative ideology, and authoritarianism. As authoritarianism has seen a recent upsurge, the potential consequences may be far-reaching given the power of social media in developing, advancing, and changing public opinion.

## References

- Chen, Xin, Wang, Yu, Agichtein, Eugene and Wang, Fusheng (2015). A Comparative Study of Demographic Attribute Inference in Twitter. *Proceedings of the International AAAI Conference on Web and Social Media*, 9(1), p. 590–593, doi:10.1609/icwsm.v9i1.14656.
- Chen, Yue and Gao, Qin (2023). Effects of social media self-efficacy on informational use, loneliness, and self-esteem of older adults. *International Journal of Human–Computer Interaction*, 39(5), p. 1121–1133.
- Collins, Barry (2023). The X-Rated Problem With Twitter’s New Name For Millions Of Users. *Forbes*. <https://www.forbes.com/sites/barrycollins/2023/07/24/the-x-rated-problem-with-twitthers-new-name-for-millions-of-users/> [Accessed: 2024-01-01].
- Corry, Frances (2022). Why does a platform die? Diagnosing platform death at Friendster’s end. *Internet Histories*, 6(1–2), p. 31–47, doi:10.1080/24701475.2021.1985360.
- Dinesh, Shradha and Odabaş, Meltem (2023). 8 facts about Americans and Twitter as it rebrands to X. *Pew Research Center*, 2023-07-26. <https://www.pewresearch.org/short-reads/2023/07/26/8-facts-about-americans-and-twitter-as-it-rebrands-to-x/> [Accessed: 2024-01-01].
- Dupuis, Marc, Endicott-Popovsky, Barbara and Crossler, Robert (2013). An Analysis of the Use of Amazon’s Mechanical Turk for Survey Research in the Cloud. In: *International Conference on Cloud Security Management*. Presented at the International Conference on Cloud Security Management, Seattle, Washington.
- Dupuis, Marc, Renaud, Karen and Searle, Rosalind (2022). Crowdsourcing Quality Concerns: An Examination of Amazon’s Mechanical Turk. In: *The 23rd Annual Conference on Information Technology Education*. Presented at the SIGITE ’22: The 23rd Annual Conference on Information Technology Education, Chicago IL USA: ACM, p. 127–129.
- Hughes, Stefan Wojcik and Adam (2019). Sizing Up Twitter Users. *Pew Research Center: Internet, Science & Tech*, 2019-04-24. <https://www.pewresearch.org/internet/2019/04/24/sizing-up-twitter-users/> [Accessed: 2024-03-19].
- Kaphle, Sabitra, Kornhaber, Rachel, Hunt, Susan, Watson, Roger and Cleary, Michelle (2022). When is public private? Tweets, privacy and consent in health research. *Nurse Education in Practice*, 63, p. 103396, doi:10.1016/j.nepr.2022.103396.
- Klepper, David and Ortutay, Barbara (2024). *Musk’s X asks judge to penalize nonprofit researchers tracking rise of hate speech on platform* | AP News. AP News. <https://apnews.com/article/x-hate-speech-twitter-musk-lawsuit-9bde87d4c2bbb4b0e3ce3709ba7df475> [Accessed: 2024-10-22].
- Kross, Ethan, Verduyn, Philippe, Sheppes, Gal, Costello, Cory K., Jonides, John and Ybarra, Oscar (2021). Social media and well-being: Pitfalls, progress, and next steps. *Trends in cognitive sciences*, 25(1), p. 55–66.
- Kwak, Haewoon, Lee, Changhyun, Park, Hosung and Moon, Sue (2010). What is Twitter, a social network or a news media? In: *Proceedings of the 19th international conference on World wide web*. New York, NY, USA: Association for Computing Machinery, p. 591–600.
- Lee, Kang-Pyo and Song, Suyong (2022). Developing insights from the collective voice of target users in Twitter. *Journal of Big Data*, 9(1), p. 75, doi:10.1186/s40537-022-00611-5.
- Martin, Florence, Wang, Chuang, Petty, Teresa, Wang, Weichao and Wilkins, Patti (2018). Middle school students’ social media use. *Journal of Educational Technology & Society*, 21(1), p. 213–224.
- Mastrangelo, Dominick (2023). X experiences widespread broken link issues. *The Hill*, 2023-12-13. <https://thehill.com/policy/technology/4358499-x-twitter-broken-link-issues/> [Accessed: 2024-01-01].
- Ortiz-Ospina, Esteban and Roser, Max (2024). Are Facebook and other social media platforms bad for our well-being? *Our world in data*.
- Ortutay, Barbara (2023). *Twitter takeover: 1 year later, X struggles with advertising, usage* | AP News. AP News. <https://apnews.com/article/twitter-x-elon-musk-takeover-anniversary-ac2cb6419d93d64086cc9ad980c5a57a> [Accessed: 2024-10-22].
- Peters, Jay (2023). *For Elon Musk, X equals everything*. The Verge. <https://www.theverge.com/2023/7/26/23808796/elon-musks-x-everything-app-vision> [Accessed: 2024-01-01].
- Podsakoff, Philip M., MacKenzie, Scott B., Lee, Jeong-Yeon and Podsakoff, Nathan P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of applied psychology*, 88(5), p. 879.
- Salemdeeb, Mohammed and Sahnoud, Shaaban (2023). What to predict from Twitter Data? In: *2023 3rd International Conference on Computing and Information Technology (ICCIIT)*. Presented at the 2023 3rd International Conference on Computing and Information Technology (ICCIIT), Tabuk, Saudi Arabia: IEEE, p. 237–242.
- Sinclair, Tara J. and Grieve, Rachel (2017). Facebook as a source of social connectedness in older adults. *Computers in Human Behavior*, 66, p. 363–369, doi:10.1016/j.chb.2016.10.003.

- Stokel-Walker, Chris (2023). Why is Twitter becoming X? *New Scientist*, 259(3449), p. 9, doi:10.1016/S0262-4079(23)01398-2.
- Wang, Rui, Zhang, Yini, Suk, Jiyoung and Holland Levin, Sara (2024). Empowered or Constrained in Platform Governance? An Analysis of Twitter Users' Responses to Elon Musk's Takeover. *Social Media+ Society*, 10(3), p. 20563051241277606.
- Weller, Katrin, Bruns, Axel, Burgess, Jean, Mahrt, Merja and Puschmann, Cornelius (2014). Twitter and society: An introduction. In: Bruns, A., Mahrt, M., Weller, K., Burgess, J., and Puschmann, C. (eds.) *Twitter and society [Digital Formations, Volume 89]*. United States of America: Peter Lang Publishing, p. xxix–xxxviii.
- Xie, Wenjing and Kang, Cheeyoun (2015). See you, see me: Teenagers' self-disclosure and regret of posting on social network site. *Computers in Human Behavior*, 52, p. 398–407, doi:10.1016/j.chb.2015.05.059.
- Yeo, Amanda (2023). *EU warns Elon Musk: Fix Twitter/X's disinformation problem or face penalties*. Mashable. <https://mashable.com/article/twitter-x-disinformation-european-union-hamas-israel> [Accessed: 2024-01-01].