

# **The Effect of TikTok Usage on Feelings of Loneliness in American Users**

A Research Paper submitted to the Department of Engineering and Society

Presented to the Faculty of the School of Engineering and Applied Science

University of Virginia • Charlottesville, Virginia

In Partial Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

**Alex Chan**

Spring, 2023

On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

Advisor

MC Forelle, Department of Engineering and Society

## Introduction

When I'm feeling down, I tend to find myself scrolling through TikTok to help distract my mind. After a few hours, I eventually get off my phone and end up feeling worse than when I started. There are even times where I would elect to stay in for a night to look on the app over talking with my friends. At other times, when I am in a happier state of mind, I rarely check TikTok, and when I do, it is only for a few minutes at most. Meanwhile, every day I see a roommate of mine scroll on TikTok for hours, yet he continues on with his days happily and completely unaffected emotionally. This nonchalant and sociable friend of mine, in contrast to my more introverted self, spurred me to wonder how the trend-setting app affected its users' mentality.

Social media has become a worldwide phenomenon over the past couple decades, being used by 4.26 billion people worldwide in 2021 (Dixon, 2022). With such a technological innovation having as large of a reach as it does, there are bound to be studies on how these social networking sites impact people from their personal privacy to mental well-being. One such example is a documentary made in 2017 called *The Social Dilemma*, which investigated the renowned company Facebook and found evidence that suggested the app negatively affected its users' mental health by prioritizing user engagement and commercialization over well-being. Resources like this are necessary to help educate both the producers and consumers of social media applications and hopefully lead to a more refined product.

After just a few years since its birth in 2017, a new social media platform called TikTok has emerged and quickly risen in popularity (Shutsko, 2020). TikTok has already managed to retain over one billion monthly active users worldwide as of October 2022 (Doyle, 2022). Despite being the new kid on the block and grabbing the attention of numerous consumers, I

have never heard anyone mention the underlying effects the app could have on one's mental health. Therefore, I began to look into the topic only to find less information than I hoped for.

Moreover, with the recent pandemic due to Covid-19, further investigation into TikTok is becoming even more important. A survey in April of 2020 found that 35% of respondents in America had increased social media usage early in the period of quarantining (Nguyen et al., 2020). Apart from social media, people used other virtual methods to communicate with others, such as making a simple phone call. Regardless of the means, many were unable to have face-to-face interactions like they used to, leading to less engaging conversations and weaker relationships to form (Plumridge, 2020). Consequently, there was a small, but still significant spike of 5% in the prevalence of loneliness of people across four different continents from the self-containment period (Winerman, 2022). Considering that a recent study by Latikka et al. (2022) discovered that social media users with pre-existing feelings of loneliness could feel worse and develop more mental issues in the long-run with increased media usage, I urge for a refocus on mental implications of social media usage.

As a result, in this paper I urge that further research is necessary on how TikTok may affect feelings of loneliness in American users based on what is known of previous social media platforms and early research of TikTok in other countries. For my paper, I gather academic journals containing research on TikTok and other social media applications' usage and their effect on mental health and feelings of loneliness through surveys, polls, and interviews. I analyze these sources with a focus on the social factors and motivations involved with users as determined by the researchers, keeping the STS framework Actor Network Theory in mind. Through my literature review and analysis, I found how the effect of older social media sites on a users' mental well-being depended on many factors, such as the user's motives for using the

platform. Additionally, I learned that early research on TikTok agreed with this sentiment. However, I also discovered a gap in the current research on TikTok. Mainly, there was a severe lack of research done on United States populations regarding TikTok usage and its effects on loneliness and mental health. Thus, I concluded that there is an insufficient amount of research on how TikTok usage affects the mental and social well-being of users in the United States and further research is necessary.

### **Framework and Methods**

For my STS framework, I will be using Latour's Actor Network Theory where both humans and nonhumans are considered equally when looking at the associations that contribute to a technological system (1992). There are a few key concepts I will focus on from Actor Network Theory termed delegation and subscription/de-inscription. Delegation is a concept involving replacing a typically less skilled human actor with an upgraded nonhuman actor. Subscription/De-inscription is the reaction of human and nonhuman actors regarding whether they accept/reject and follow through with the roles delegated to them. I will use this framework along with these key terms to analyze the use of TikTok, a nonhuman actor, as a replacement for the human actors of in-person social relationships to identify whether this delegation has impacted sentiments of loneliness in users.

To support my claim that more research on the emotional effects of TikTok on American users is needed, I will gather secondary sources on both TikTok and other social media sites such as Facebook, Twitter, Instagram, and Snapchat. These sources will mainly consist of academic journal articles containing research and datasets on users' mental state during and after using one of the aforementioned apps. Because TikTok is still young, I will focus on research published within the last 5 years and include studies from all over the world. Sources on other social media

sites will not be limited to the last 5 years since many of them have existed for much longer, but geographic location of those on studies will also vary. I will make sure to contextualize the studies I utilize, all of which will be obtained through UVA library databases, Web of Science, and Google Scholar.

Many of the academic journal articles I procure are studies that utilize surveys and polls to research their topics regarding TikTok or short-form videos. When reviewing such literature, I will focus on the same social factors the researchers considered to inquire upon, specifically the social motives TikTok users had prior to using the app. In other words, I will examine a content analysis through the lens of Actor Network Theory with a focus on the delegation of the TikTok application as a replacement for in-person relationships.

### **Literature Review & Analysis**

Many social media platforms have been found to have varying impacts on users' feelings of loneliness depending on numerous factors such as user location and demographics. A study by Bonsaksen et al. demonstrated that more time spent on the social media sites of Facebook, Twitter, and LinkedIn was associated with more loneliness in users across Norway, United Kingdom, United States, and Australia (2023). Considering that the study occurred a few years after the Covid-19 pandemic, it is suggested that the sentiment of loneliness in the studied users lasted over the span of several years. Overall, there was a general consensus that social media negatively affects users' mental health, or at least that increased usage was correlated with negative consequences, including feelings of loneliness. However, sometimes just a change of scenery can change the findings of such correlations. For instance, an American study on people during Covid-19 by Awao et al. (2022) found that increased usage of Facebook and video chat apps provided higher social support (better social well-being and mental state). Here, it was

determined that the usage of some social media platforms positively correlated with users' mental health, which contradicts with the previous study by Bonsaksen et al. that looked at multiple different countries. Another factor on how users can be impacted is their age, which is demonstrated in a cross-sectional study on Americans and possible coping mechanisms during Covid-19. Here, Teater et al. found that older adults (56 years or older) who used social media sites like Facebook and Instagram experienced lower levels of loneliness while for younger adults (18-35 years of age), social media use was not associated with loneliness (2021). From users' geographic locations to their demographic backgrounds, there are numerous factors that may and will sway the impact of social media.

Compared to older social media sites that have been studied such as Twitter and Facebook, TikTok is unique thanks to its use of advanced algorithms. TikTok still provides many tools that you may find on other platforms such as easily accessible background music, filters, and augmented reality effects (Kovács et al., 2022). However, TikTok is the first app to combine the concepts of short form videos, one of the most popular types of social media among millennials, and usage of big data analysis to better personalize a user's experience and create an addictive app (Kovács et al., 2022). As a note, short-form videos are videos that are typically no longer than 60 seconds, as was the case for the earlier stages of TikTok (Montenegro, 2021). Furthermore, big data refers to the vast amounts of information that is extracted due to the innovation of technologies like social media, which ultimately require more advanced processing techniques. (Jimenez-Marquez et al., 2019). Other examples of areas that have led to big data collection include services in shopping, banking, education and health, and more to allow for more advanced algorithms (Hariri et al., 2019). The use of such big data has allowed for the implementation of artificial intelligence to determine what is displayed onto a user's 'For You'

page, which has successfully led to people staying on the platform longer than intended (Montag et al., 2021). The introduction of these new features in social media have not only allowed TikTok to make a name for itself, but also created another social outlet and source of possible addiction for users. As a result of TikTok's popularity, some studies do already exist on the potential impact of TikTok usage on users' sentiments of loneliness, but before diving into that, it is important to first understand the motivations behind using the app.

People use TikTok for many reasons, such as for entertainment or to find social groups. A study by Bossen and Kottasz found that the primary reason for people using TikTok was gratification of entertainment, while other contributory behaviors included the desire to express themselves and expand their social network (2020). Another study by Montag et al. even directly references Bossen and Kottasz's study, specifically looking into and agreeing with the motive of the gratification theory, which is simply the idea that the use of media like TikTok leads to the gratification of one's desires. Additionally, a study by Dong & Xie identified multiple motives to use TikTok from both the viewer and creator side. From the viewing perspective, six motives, consisting of seeking novelty, habit, relationship maintenance, releasing pressure, killing time, and escaping, were discovered and surveyed in the research. Meanwhile, three motives, consisting of pursuing fame, recording and sharing, and satisfying curiosity, were found for the creating side of TikTok (2022). While all of these motives are relatively expected for any social media platform, many of them are still indicative of a desire to socialize through online means. And thanks to TikTok's use of short form videos and big data algorithms mentioned earlier, it is easier than ever to find new people and express oneself, unlike on Twitter or Instagram, with text or photos respectively. In other words, many users are subscribing to the role of TikTok as a means of social interaction. This idea aligns with initial studies on TikTok; however, as was

found with other social media platforms, the way users respond to TikTok use depends on certain factors.

Early research in various countries suggests that TikTok does affect users' mental health, but how they're affected depends on the motivations behind the app's usage. Studies in China by Dong & Xie (2022) and Tang et al. (2021) discovered that longer use of TikTok over time corresponded with reduced time spent with in-person relations such as family. Again, here it is conveyed that users, at least in China, are accepting the delegation of TikTok as a means to socialize in replacement of human actors like family. Furthermore, the study by Dong & Xie (2022) also found that watching short-form videos with the intent of escaping from reality positively correlated with loneliness while watching with the motive to maintain current relationships correlated positively with life satisfaction. In other words, users who used the app to distract themselves from reality felt lonelier while users who went on the app to perhaps support the content of a friend felt less lonely. The research by Dong & Xie in China suggests that the effect of TikTok usage depends on the users' motives, where using the application simply acted as a catalyst for one's initial mental state.

Both of the studies in China generally agreed with one another, and some might believe that it is acceptable to generalize results from studies across different countries. However, in spite of what we can learn from these other studies, there are limits to how far we can extrapolate, and thus research specifically designed to be on TikTok usage and its effect of feelings of loneliness in American users is still necessary. For instance, research by Masciantonio et al. (2021) which included subjects from multiple European countries (French, Belgian, Swiss, etc.) found that actively or passively using TikTok had no association with a user's overall mental well-being. The same was determined for users that had used the app with

the mindsets of looking for social support or making upward social comparisons, there was no association with mental well-being. In this study by Masciantonio et al., some countries did find similar results, in this case France, Belgium, and Switzerland. Conversely, the study in China by Tang et al. (2021) found that a user's perceived usefulness and ease of use of TikTok were strong predictors of positive emotions and relations experienced. As opposed to the study by Masciantonio et al., which found no association between perception of TikTok use and well-being, Tang et al. did determine user perception of the application to be heavily associated with user well-being. Another example is the study by Bonsaken et al. mentioned earlier. In this cross-country analysis, people in Norway were actually found to have lower levels of loneliness compared to those of the other three countries (United Kingdom, United States, Australia) despite social media usage (2023). There are many differences among countries, systematic and cultural, that may change how consumers are affected by certain technologies. Therefore, the fact that I was unable to locate a study on United States populations regarding TikTok usage's effect on user loneliness is alarming since it is difficult to extrapolate findings from other population groups on account of cultural differences.

There are studies that exist on other social media platforms regarding American populations, but as in the case with location, findings on other applications can not be generalized to newer ones like TikTok. For example, in the study by Masciantonio et al. (2021), the use of multiple social networking sites was examined to determine their effects on user well-being based on active versus passive use. As a note, active usage was defined to be when a user directly interacted with others, such as through commenting on or posting content. Meanwhile, passive usage was defined as when a user simply consumes content without direct interaction with others (Masciantonio et al., 2021). It was found that passive usage of Facebook was

associated with lower well-being while active usage of Instagram and Twitter were associated with greater social support and life satisfaction. Meanwhile, TikTok was found to have no association with user well-being regardless of active or passive usage. As Masciantonio et al. discovered, just because one social media platform has been suggested to affect its users one way, does not mean such a conclusion can be extrapolated to all social media sites. Hence, new research is needed to truly understand the implications of using the newer app TikTok for American populations.

## **Conclusion**

In summary, it is not fair to jump to conclusions based on assumptions where results are extrapolated from one subject to another. No matter how similar two things may seem, such as Instagram and TikTok in this case, any little difference in combination with numerous possible factors could lead to drastically different ways in how a product impacts its consumers. With there being a severe lack of current research on United States populations regarding the effect of TikTok usage on loneliness in users, there should be a greater push for new such research.

The hope is that people like American researchers, especially those in the field of social sciences, may read my paper and decide to take matters into their own hands and develop a research project surrounding the impact of TikTok usage on loneliness in American users. Additionally, software engineers who are working for, or will work for, a newer corporation like TikTok or a future social media company may become more aware that their product could have unexpected consequences and thus urge for extensive research on their own technologies. As an example, a future researcher could perform a study on TikTok involving U.S. populations where

they focus more on the aspect of loneliness, such as looking at TikTok usage vs. the quantity and quality of in-person relationships.

At the very least, many other countries have thankfully already begun to do more research on the mental and emotional effects of TikTok usage, so there are resources available in designing a study in the United States. This suggests that there are those who still care to examine newer social media platforms instead of simply inferring their impact based on past cases like Facebook.

## References

- Awao, S., Park, C. L., Russell, B. S., & Fendrich, M. (2022). Social Media Use Early in the Pandemic Predicted Later Social Well-Being and Mental Health in a National Online Sample of Adults in the United States. *Behavioral Medicine, 0*(0), 1–10.  
<https://doi.org/10.1080/08964289.2022.2069667>
- Bonsaksen, T., Ruffolo, M., Price, D., Leung, J., Thygesen, H., Lamph, G., ... Geirdal, A. Ø. (2023). Associations between social media use and loneliness in a cross-national population: Do motives for social media use matter? *Health Psychology and Behavioral Medicine, 11*(1), 2158089. <https://doi.org/10.1080/21642850.2022.2158089>
- Bucknell Bossen, C., & Kottasz, R. (2020). Uses and gratifications sought by pre-adolescent and adolescent TikTok consumers. *Young Consumers, 21*(4), 463–478.  
<https://doi.org/10.1108/YC-07-2020-1186>
- Dixon, S. (2022, September 16). Number of worldwide social network users 2027. Retrieved October 26, 2022, from Statista website: <https://www.statista.com/statistics/278414/number-of-worldwide-social-network-users/>
- Dong, Z., & Xie, T. (2022, April 21). *Why People Love Short-Form Videos? The Motivations for Using Tiktok and Implications for Well-Being* [SSRN Scholarly Paper]. Rochester, NY.  
<https://doi.org/10.2139/ssrn.4089602>
- Doyle, B. (2022, October 9). TikTok Statistics—Everything You Need to Know [Oct 2022 Update]. Retrieved October 26, 2022, from Wallaroo Media website:  
<https://wallaroomedia.com/blog/social-media/tiktok-statistics/>

- Hariri, R. H., Fredericks, E. M., & Bowers, K. M. (2019). Uncertainty in big data analytics: Survey, opportunities, and challenges. *Journal of Big Data*, 6(1), 44.  
<https://doi.org/10.1186/s40537-019-0206-3>
- Jimenez-Marquez, J. L., Gonzalez-Carrasco, I., Lopez-Cuadrado, J. L., & Ruiz-Mezcua, B. (2019). Towards a big data framework for analyzing social media content. *International Journal of Information Management*, 44, 1–12.  
<https://doi.org/10.1016/j.ijinfomgt.2018.09.003>
- Kovács, J., Barbosa, L., Barros, L., Volpi, Y. D., Veloso, C. M., Walter, C. E., & Au-Yong-Oliveira, M. (2022). Understanding the Impact of TikTok A Study of TikTok’s Strategy and Its Impact on Users’ Lives. In *Innovations and Social Media Analytics in a Digital Society*. CRC Press.
- Latikka, R., Koivula, A., Oksa, R., Savela, N., & Oksanen, A. (2022). Loneliness and psychological distress before and during the COVID-19 pandemic: Relationships with social media identity bubbles. *Social Science & Medicine*, 293, 114674.  
<https://doi.org/10.1016/j.socscimed.2021.114674>
- Latour, B. (1992) 'Where are the missing masses? The sociology of a few mundane artifacts', in Bijker, W. E. and Law, J. (eds) *Shaping Technology/Building Society: Studies in Sociotechnical Change*, Cambridge, MA, MIT Press, pp. 225-58.
- Masciantonio, A., Bourguignon, D., Bouchat, P., Balty, M., & Rimé, B. (2021, March 11). Don’t put all social network sites in one basket: Facebook, Instagram, Twitter, TikTok, and their relations with well-being during the COVID-19 pandemic | PLOS ONE. Retrieved October 26, 2022, from  
<https://journals.plos.org/plosone/article?id=10.1371%2Fjournal.pone.0248384>

- Montag, C., Yang, H., & Elhai, J. D. (2021). On the Psychology of TikTok Use: A First Glimpse From Empirical Findings. *Frontiers in Public Health*, 9. Retrieved from <https://www.frontiersin.org/articles/10.3389/fpubh.2021.641673>
- Montenegro, L. (2021, August 27). Council Post: The Rise Of Short-Form Video: TikTok Is Changing The Game. Forbes. Retrieved from <https://www.forbes.com/sites/forbesagencycouncil/2021/08/27/the-rise-of-short-form-video-tiktok-is-changing-the-game/>
- Nguyen, M. H., Gruber, J., Fuchs, J., Marler, W., Hunsaker, A., & Hargittai, E. (2020). Changes in Digital Communication During the COVID-19 Global Pandemic: Implications for Digital Inequality and Future Research. *Social Media + Society*, 6(3), 2056305120948255. <https://doi.org/10.1177/2056305120948255>
- Orlowski, J. (Director). (2020). *The Social Dilemma* [Film]. Exposure Labs; Agent Pictures; Argent Pictures; The Space Program.
- Plumridge, N. (2020, April 13). Communication: Online vs. Face-to-Face Interactions. Retrieved October 26, 2022, from Psychminds website: <https://psychminds.com/communication-online-vs-face-to-face-interactions/>
- Shutsko, A. (2020). User-Generated Short Video Content in Social Media. A Case Study of TikTok. In G. Meiselwitz (Ed.), *Social Computing and Social Media. Participation, User Experience, Consumer Experience, and Applications of Social Computing* (pp. 108–125). Cham: Springer International Publishing. [https://doi.org/10.1007/978-3-030-49576-3\\_8](https://doi.org/10.1007/978-3-030-49576-3_8)
- Tang, L., Omar, S. Z., Bolong, J., & Mohd Zawawi, J. W. (2021). Influence Of Tiktok Usage Toward Positive Emotion And Relationship. *European Proceedings of Social and*

*Behavioural Sciences, Breaking the Barriers, Inspiring Tomorrow.*

<https://doi.org/10.15405/epsbs.2021.06.02.36>

Teater, B., Chonody, J. M., & Hannan, K. (2021). Meeting social needs and loneliness in a time of social distancing under COVID-19: A comparison among young, middle, and older adults. *Journal of Human Behavior in the Social Environment*, 31(1–4), 43–59.

<https://doi.org/10.1080/10911359.2020.1835777>

Winerman, L. (2022). COVID-19 pandemic led to increase in loneliness around the world.

Retrieved October 26, 2022, from [Https://www.apa.org](https://www.apa.org) website:

<https://www.apa.org/news/press/releases/2022/05/covid-19-increase-loneliness>