

# **Teen Instagram Addiction**

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

**Decker Bristow**

Spring 2024

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

Peter Norton, Department of Engineering and Society

## **Teen Instagram Addiction**

“I feel tremendous guilt,” confessed the former Vice President of user growth at Facebook, Chamath Palihapitiya (Stanford Graduate School of Business, 2017). His guilt stems from his participation in exploiting consumer behavior while working on the social media platform. Facebook, now Meta, owns Instagram, a social media platform with a large teenage user base. In the US, teens and Instagram are competing to shape perceptions of the proper place of the platform in teens’ lives. Teen’s use of social media is rising in the US. One study shows that 95 percent of teens are online, and 62 percent are on Instagram (Vogels, 2023). In an advisory, the US Surgeon General has warned that social media can be detrimental to youth mental health (OSG, 2023). Barry (2017) found that social media accounts correlate to DSM-5 symptoms of inattention, ODD, anxiety and depression. Because Instagram earns its revenue from advertisements, the company strives to maximize user time on the platform (Larsen, 2023). Teenagers in the US are spending an average of 4.8 hours each day on social media, about an hour of which is on Instagram (Rothwell, 2023). Some recovering teens later started advocacies for teens’ health online. Health professionals want to keep adolescents safe online and protect teen mental health. Instagram defends its platform by claiming that its safety features protect teens. Instagram is an addictive platform that exploits teens’ psychological reward system. It has failed to supply teens with effective preventive features, leaving them defenseless.

## **Review of Research**

Many studies link social media use to mental health. The US Surgeon General states that 46 percent of adolescents aged 13-17 feel social media hurts their body image, almost two thirds of teens view hate-content online, and excessive use hurts sleep patterns and can cause depression (OSG, 2023). A study in the Journal of Adolescence reports that “greater overall social media use, nighttime-specific social media use and emotional investment in social media were each associated with poorer sleep quality and higher levels of anxiety and depression” (Woods and Scott, 2016). A 2017 study shows that “parent and adolescent reports of the number of adolescents’ social media accounts were moderately correlated with parent-reported DSM-5 symptoms of inattention, hyperactivity/impulsivity, ODD, anxiety, and depressive symptoms, as well as adolescent-reported fear of missing out (FoMO) and loneliness” (Barry 2017). Another 2017 study shows how social networking sites (SNS) addictions have altered brain structure: “people with high SNS addiction scores have a pruned amygdala, which is presumably involved in generating strong impulsive behaviors” (He, Turel, and Bechara, 2017). One review of 50 studies concluded that “social media usage leads to body image concerns, eating disorders/disordered eating and poor mental health via the mediating pathways of social comparison, thin / fit ideal internalization, and self-objectification” (Dane and Bhatia, 2023).

Teens tend to be self conscious. One study on adolescents’ attunement to social evaluation finds that “adolescents display heightened sensitivity to social evaluation at various levels of complexity” (Somerville, 2013). Teens also have increased rates of social media addiction. Generation Z spends the most time of any age range on social media with 35 percent spending more than 2 hours online (Coe, Doy, Enomoto, and Healy, 2023). One study concluded that 24.4 percent of teens are addicted to social media (Caner, 2022).

Many researchers compare the dopamine release patterns from social media to gambling. Gambling takes advantage of a psychological operant conditioning method called variable ratio reinforcement scheduling where reward comes at random intervals creating an unpredictable response rate. This phenomenon gives lottery games addictive power over players (Cherry, 2023). Psychologist, Dr. Mark Griffiths, compares the “unpredictability and randomness” of social media likes, comments, and new content to the reward in variable reinforcement scheduling: “The rewards are what psychologists refer to as variable reinforcement schedules and is one of the main reasons why social media users repeatedly check their screens” (Griffiths, 2019).

Default bias suggests that people prefer to continue as they have done in the past. They will also choose a default option when presented with multiple choices, as inaction feels like one is not making a decision. It is a method of behavioral economics where choice architecture influences a user’s decision. Behavioral economist, Dan Ariely, says in his 2008 TED Talk: “we don’t actually know our preferences that well. And because we don’t know our preferences that well, we’re susceptible to all of these influences from external forces” (Ariely, 2008). One study tested default bias across different default-setting rules and found that “default bias is stronger with intentionally-set defaults than with randomly-set defaults” (Freeman, Tong, and Zrill, 2021). Unit bias is the “tendency for people to want to complete a unit of a given item or task” as people “get satisfaction from completing it” (Hunt, 2018). One 2006 study on free food samples found that “the amount of food people select increases when the unit presented increases” showing that people will choose to eat more depending on unit bias (Geier, Rozin, and Doros, 2006).

## **Addictive Platform for Youth**

Instagram built an addictive platform geared towards youth. Instagram's three main content sources, Feed, Explore, and Reels, all employ infinite (bottomless) scroll. Aza Raskin is the designer who feels he must 'forever atone' for creating the infinite scroll design. In a Netflix documentary focusing on the design of Instagram, Raskin says he failed to realize that infinite scroll "removed the stopping cues" associated with scrolling through content, so it has "literally wasted hundreds of millions of human hours." He compares this to drinking: "when I'm drinking a glass of wine I stop drinking when I finish my glass, and I think 'Do I want more?'" (Sorrentino, Roma, Chowles, & Dadich, 2019). Instagram was built in a way that takes advantage of humans' bias to complete tasks in units leading to increased time spent on the app. There is never a single unit of Instagram content to look through, so users are not given a stopping cue and scroll for longer.

Instagram is like a pocket dopamine delivery device; each notification could be the one that makes the user happy. With every scroll, the user could find a post that resonates with them. Chamath Palihapitiya, former vice president of user growth at Facebook, says on the subject: "the short-term, dopamine-driven feedback loops that we have created are destroying how society works" (Stanford Graduate School of Business, 2017). In 2016, Instagram switched its content delivery to prioritize user preference using advanced recommendation algorithms leading to a more addictive platform. The Townsend Recovery center says that "this personalization creates an echo chamber where individuals only see content that aligns with their interests and beliefs, leading to a self-reinforcing cycle of use" (Julius, 2023). This change increases the reward rate and reward quality in the variable ratio reinforcement schedule..

Teens desire to fit in with their peers. They often crave social praise and popularity. Stonewater Adolescent Recovery Center, writes on their website that “teens can become more susceptible to social media addiction because of the constant pressure to conform and fit in with their peers. The need for validation and approval online can quickly become an addiction” (Stonewater Recovery, 2023). Clinical psychologist, Jenny Perkel, connects teens’ heightened social concern to their profuse social media use. She explains that teens highly value their “peer group, their position in that peer group, their popularity, and their friendships.” She goes on to say that teens “make connections on the internet with anyone who is available to them” and that any teen without online friends stands out (Perkel, 2022). The inherently addictive nature of Instagram coupled with teen’s propensity to conform yields a platform teens cannot resist.

TikTok, a new and rapidly popular social media platform has grown to be the fifth largest behind Instagram. Their short video form of content has proved very popular; over three 3/4 of Generation Z believe TikTok is addictive (Surfshark, 2023). Instagram recognized the immediate success of the video clip form of entertainment and released their own competitor feature, Instagram Reels. The Instagram website describes Reels as “a new way to create and discover short, entertaining videos on Instagram” (Instagram, 2020). Adam Mosseri, Instagram CEO, defends Instagram’s progression towards video content saying “if you look at what people share on Instagram that’s shifting more and more to videos over time. If you look at what people like and consume and view on Instagram, that's also shifting more and more to video over time” (Mosseri, 2022). The Instagram site makes Reels seem like a fun new way to interact online, and Mosseri describes this shift to video as if the demand for it forced the changes. However, he admits that videos are consumed more than photos implying users will spend more time online when interacting with videos.

## **Instagram's Failed Intervention Features**

Instagram has released a plethora of features aimed to help protect teens online. They sound proud to say that they've "developed more than 30 tools and features to help support teens and their parents" (Instagram, 2024). One of the most prominent features is the parental controls where parents can manage their child's interactions, content they see, and time spent on the app (Meta, n.d.). According to the Instagram help pages, "initially, only teens could send invitations" to enable parental controls. However, now parents can "send invitations to their teens to initiate supervision" (Instagram, 2022). Parental controls are off by default and both the child and parent must initialize them with a back and forth invitation process. This paired with the fact that the parent and guardian's guide to Instagram is a 69 page document make it no surprise that "internal data from Instagram shared with The Washington Post indicated that only 10 percent of teens had enabled parental controls on their accounts as of 2022, and of those who did, less than 10 percent of parents actually adjusted any settings" (Hunter, 2024). This implies that less than 1 percent of teens' Instagram accounts are affected by parental controls rendering this feature effectively useless.

In 2021, Instagram released a feature that allows the user to turn on reminders to take a break at a desired time interval with the purpose of keeping "young people even safer on Instagram" so that "people feel good about the time they spend on Instagram." Mosseri cites that "early test results show that once teens set the reminders, more than 90 percent of them keep them on" (Mosseri, 2021). While sounding promising, studies show that this feature might have the opposite effect. Mosseri comments on the persistence of this feature, but fails to discuss its effectiveness. One study tested the effect of self imposed and suggested time reminders on time

spent on various screen activities including social media. The researchers concluded that this experiment “provides further evidence that setting a time limit can lead people to spend more time on the associated activity.” They believe that users treat time reminders like a budget; once set, users feel like they are free to use all of the time allotted and feel better about time spent beyond the reminder. (Silverman, Jackie and Srna, 2023).

Instagram tested a feature for two years where posts’ likes were hidden to others. On the subject, CEO Adam Mosseri says “It’s about young people. The idea is to try to depressurize instagram - make it less of a competition - give people more space to focus on connecting with people that they love - things that inspire them, but it’s really focused on young people” (Mosseri, 2019). After testing, Instagram released the hidden likes feature as an optional setting. The default setting is to display likes, and as default bias would predict, this feature is not frequently used. According to CreatorIQ, only 5.1 percent of accounts with less than 10k followers and 3.3 percent of accounts with 10k-100k followers hide their likes (CreatorIQ, 2021). Due to default bias and user preference, this is another feature ineffective at helping teens with social media addiction.

### **Teens Susceptible to Instagram Addiction:**

As individuals, teens are often powerless to help themselves against social media addiction. Teens have the highest rates of social media addiction and spend the most amount of time online of any age group. High school senior, Morgan Mase, says “13 to 14 is about the age where everyone feels really insecure and unsure of who they are, and for me Instagram definitely extrapolated those insecurities.” Another high school senior, Devin, and her friends band together in deleting social media during exam times citing that “generally Instagram and



Snapchat are the first to go” (Notopoulos, 2018). PBS NewsHour follows the story of two boys, Gus and Connor, through their tribulations caused by Instagram. They were close friends, but Connor’s insecurities grew seeing Gus online with other friends: “I would see you and your other friends posting pictures, posting Instagram stories. I just felt like there was an itch under my skin.” After constant Instagram messaging, “you were DMing me, like, every hour,” Gus confronted his friend requesting distance. Connor spent time off Instagram and feels that now that he is less connected online, they can reconnect as friends (PBS NewsHour, 2023).

Instagram claims that their platform is not addictive. In December of 2021 Adam Mosseri, testified to the senate about protecting youth on the platform. Senator Blumenthal states “Instagram is addictive. That's the view that has been repeated again and again and again by people who are experts in this field.” In context of how the “UK code restricts instagram's use of addictive design,” Blumenthal asks Mosseri if the US should follow suit in imposing such restrictions. Mosseri responds: “Senator, respectfully I don't believe the research suggests that our products are addictive. Research actually shows that on 11 of 12 difficult issues that teens face, teens that are struggling said instagram helps more than harms” (Reuters, 2021). Mosseri denies the allegations and deflects by citing research on a different topic.

In several instances, teenage Instagram addiction survivors have turned back to help other addicted teens. Emma Lembke is a junior at Washington University in St. Louis studying political science. In 2023, she testified before the senate judiciary committee on the harms of social media. She made her first social media account, Instagram, at age 12 at which point she felt it “seemed almost magical.” Lembe pours out her story testifying:

I was met with a harsh reality. Social media was not magic. It was an illusion, a product that was predicated on maximizing my attention at the cost of my well-being. As my

screen time increased, my mental and physical health suffered. The constant quantification of my worth through likes, comments, and followers heightened my anxiety and deepened my depression. As a young woman the constant exposure to unrealistic body standards and harmful recommended content led me towards disordered eating and severely damaged my sense of self. But no matter the harm incurred, addictive features like autoplay and the endless scroll pulled me back into the online world where I continued to suffer and there I remained for over three years mindlessly scrolling for five to six hours a day.

Lembke followed her own powerful story by urging that this is not an isolated incident. She discussed the hundreds of stories that she has heard from youth around the world as the founder of the advocacy, LOG OFF (Accountable Tech, 2023). LOG OFF strives to promote healthy relationships between young people and social media. Their goals are to reduce teens' time spent online and encourage online balance for wellbeing (LOG OFF, n.d.). Lembke experienced the sufferings of social media addiction first hand, and has dedicated her time to helping the youth of tomorrow.

Sophie Szew first downloaded Instagram on her 10th birthday to fit in with her peers. She was quickly inundated with “step by step regimens on how to starve [herself] to death.” While in high school, Szew was hospitalized and told that she had “about two weeks to live” because her “heart, liver, and kidneys were all failing”. In 2023, Szew testified before the California State Senate Judiciary Committee on the hearing for a new bill to fine social media companies for harming children with addictive content. She told her story of how she nearly died from an eating disorder that she believes would have been avoided “without having seen those images [on Instagram] as a 10 year old.” During her testimony, Szew says: “standing with me today are

millions of young people whose worlds were destroyed because social media companies knowingly and negligently risk our lives for the sake of profit and capitalize upon our vulnerability.” She also spoke with President Biden who she begged for his “commitment right now to change this for young folk” (Spectrum News, 2023; LookUp, 2023). Szew is a sophomore at Stanford where she advocates for child safety online.

Larissa May is a digital wellness activist and the founder of HalfTheStory, a nonprofit that believes that “knowledge is power and a world that thrives with technology is possible. A world where teens aren’t consumed by unregulated algorithms” (halfthestory, n.d.). In 2022, she testified in front of the California State Legislature in support of the Social Media Duty to Children’s Act to hold social media companies financially accountable for using addictive algorithms harmful to youth. May testifies: “I remember the day I got my first smartphone. I downloaded Instagram. My brain was never the same. It was my drug of choice. I spent 10 to 12 hours a day seeking the dopamine hit, the false sense of connection, friendship, and acceptance.” After two years of addiction, she was suicidal. During her freshman year at Vanderbilt University, she was “dragged across campus” by her RA and entered a psychiatric center where she received help. May promises that she is not alone with her struggle: “Unfortunately, my story is the story of millions of young people around the United States today” (May, 2022; TodayShow, 2023). May educates the youth of the United States on how to practice safe use of social media.

## **Conclusion**

Instagram is a platform that was intentionally built to be addictive with ample features designed to increase user engagement. A myriad of their teen safety features have either little

effect or even the opposite effect. Teens around the country have experienced addiction to the platform with varying levels of severity, yet the Instagram CEO denies these allegations. In each addicted teen's story, the teens were powerless to prevent or aid their affliction. Armed with the tales of their sufferings, many teens fight for change and to educate youth to break the cycle of addiction. Instagram manages to avoid regulation by deflecting criticism with carefully worded rhetoric and by releasing ineffective features guised as solutions. Lessons learned about Instagram's ability to persist in harming youth despite opposition could be useful in researching other industries such as tobacco, fashion/beauty, gambling, and entertainment.

## References

- Accountable Tech. (2023, February 14). Youth Activist Emma Lembke Testifies on Online Harms Before Senate Judiciary Committee [Video]. YouTube.  
<https://www.youtube.com/watch?v=w8eGJnc2A1E>
- Ariely, D. (2008, December). Are we in control of our own decisions? [Video]. TED Conferences.  
[https://www.ted.com/talks/dan\\_ariely\\_are\\_we\\_in\\_control\\_of\\_our\\_own\\_decisions?](https://www.ted.com/talks/dan_ariely_are_we_in_control_of_our_own_decisions?)
- Caner, N., Efe, Y. S., & Başdaş, Ö. (2022, June 6). The contribution of social media addiction to adolescent life: Social Appearance Anxiety. *Current psychology* (New Brunswick, N.J.).  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9169592/>
- Cherry, K. (2023, November 8). Variable-Ratio Schedule Characteristics and Examples. Verywell Mind.  
<https://www.verywellmind.com/what-is-a-variable-ratio-schedule-2796012#:~:> Coe, E.,
- CreatorIQ. (2021, August 5). Less than 3% of Instagram creators are hiding public like counts.  
<https://www.creatoriq.com/blog/less-than-3-of-instagram-creators-are-hiding-public-like-counts>
- Dane A, Bhatia K. The social media diet: A scoping review to investigate the association between social media, body image and eating disorders amongst young people. *PLOS Glob Public Health*. 2023 Mar 22;3(3):e0001091. doi: 10.1371/journal.pgph.0001091. PMID: 36962983; PMCID: PMC10032524.
- Doy, A., Enomoto, K., & Healy, C. (2023, April 28). Gen Z mental health: The impact of tech and Social Media. McKinsey & Company.  
<https://www.mckinsey.com/mhi/our-insights/gen-z-mental-health-the-impact-of-tech-and-social-media>
- Freeman, D. J., Tong, H. T., & Zrill, L. (2021, July 21). Default-Setting and Default Bias: Does the Choice Architect Matter? Simon Fraser University.
- Geier, A. B., Rozin, P., & Doros, G. (2006). Unit Bias: A New Heuristic That Helps Explain the Effect of Portion Size on Food Intake. *Psychological Science*, 17(6), 521-525.  
<https://doi.org/10.1111/j.1467-9280.2006.01738.x>
- Griffiths, M. D. (2019, January 4). Adolescent social media use. *Psychology Today*.  
<https://www.psychologytoday.com/us/blog/in-excess/201901/adolescent-social-media-use>
- halfthestory. (n.d.). About: #halfthestory life unfiltered. About | #HalfTheStory Life Unfiltered.  
<https://www.halfthestoryproject.com/aboutus>
- He Q, Turel O, Bechara A. Brain anatomy alterations associated with Social Networking Site (SNS) addiction. *Sci Rep*. 2017 Mar 23;7:45064. doi: 10.1038/srep45064. PMID: 28332625; PMCID: PMC5362930.
- Hunt, P. (2022, December 15). What is unit bias?: Unit bias – lirio bias brief. Lirio.  
<https://lirio.com/blog/unit-bias-lirio-bias-brief/>

- Hunter, T. (2024, January 31). 3 social media safety settings to check. The Washington Post.  
<https://www.washingtonpost.com/technology/2024/01/31/social-media-teen-safety-settings>
- Instagram. (2020, August 5). Introducing Instagram reels. About Instagram.  
<https://about.instagram.com/blog/announcements/introducing-instagram-reels-announcement>
- Instagram. (2022, June 14). New tools and resources for parents and teens in VR and on Instagram: Instagram blog. About Instagram.  
<https://about.instagram.com/blog/announcements/tools-and-resources-for-parents-and-teens-in-vr-and-on-instagram>
- Instagram. (2024, January 25). Introducing Stricter Message Settings for Teens on Instagram and Facebook.  
<https://about.instagram.com/blog/announcements/new-parental-controls-and-teen-privacy-defaults/>
- Julius, S. (2023, October 31). Social Media Addiction: A modern-day phenomenon. Townsend Recovery Detox and Drug Rehab Center.  
<https://www.townsendla.com/blog/social-media-addiction>
- Larsen, R. (2023, December 6). Understanding the Instagram business and revenue model: Explained. Untaylored.  
<https://www.untaylored.com/post/understanding-the-instagram-business-and-revenue-model-explained>
- LOG OFF. (n.d.). About Us. <https://www.logoffmovement.org/about/>
- LookUp. (2023, April 28). Sophie Szew's 2023 Testimony for SB 287 [Video]. YouTube.  
<https://www.youtube.com/watch?v=Sa8lbApovJ0&t=32s>
- May, L. [@#HalfTheStory]. (2022, May 5). 2022 Advocacy [Video]. Vimeo.  
<https://vimeo.com/706394380>
- Meta. (n.d.). A parent and guardian's guide to Instagram.
- Mosseri, A. (2021, December 7). Raising the Standard for Protecting Teens and Supporting Parents Online. About Instagram.  
<https://about.instagram.com/blog/announcements/raising-the-standard-for-protecting-teens-and-supporting-parents-online>
- Mosseri, A. [@WIRED]. (2019, November 8). WATCH: Instagram CEO Adam Mosseri announces that the platform will start hiding likes for US audiences starting next week [Post]. X. <https://twitter.com/WIRED/status/1192962986224128005>
- Mosseri, A. [@mosseri]. (2022, July 26). There's a lot happening on Instagram right now. I wanted to address a few things we're working on to make [Post]. X.  
<https://twitter.com/mosseri/status/1551890839584088065>
- Notopoulos, K. (2018, April 7). Teens might be the only ones actually willing to quit social media. BuzzFeed News.

<https://www.buzzfeednews.com/article/katienotopoulos/teens-also-sometimes-quit-social-media>

- Pachucki, M., Ozer, E., Barrat, A., Cattuto, C. (2014, April 15). Mental health and social networks in early adolescence: A dynamic study of objectively-measured social interaction behaviors, *Social Science & Medicine*, Volume 125, 2015, Pages 40-50, ISSN 0277-9536, <https://doi.org/10.1016/j.socscimed.2014.04.015>.  
(<https://www.sciencedirect.com/science/article/pii/S0277953614002391>)
- PBS NewsHour. (2023, December 22). How getting off Instagram saved my friendship [Video]. YouTube. [https://www.youtube.com/watch?v=S\\_xpS6clQ9o](https://www.youtube.com/watch?v=S_xpS6clQ9o)
- Perkel29, J. (2022, July 29). Why teenagers can't resist Social Media. *Psychology Today*. <https://www.psychologytoday.com/us/blog/21st-century-childhood/202207/why-teenagers-cant-resist-social-media>
- Reuters. (2021, December 8). LIVE: Instagram CEO Adam Mosseri testifies to Senate about protecting children [Video]. YouTube. [https://www.youtube.com/watch?v=EnHFv\\_b7lQg&t=1326s](https://www.youtube.com/watch?v=EnHFv_b7lQg&t=1326s)
- Rothwell, J. (2023, October 13). Teens spend average of 4.8 hours on social media per day. Gallup.com. <https://news.gallup.com/poll/512576/teens-spend-average-hours-social-media-per-day.aspx>
- Silverman, Jackie and Srna, Shalena and Etkin, Jordan, Does Setting a Time Limit Affect Time Spent? (March 7, 2023). Available at SSRN: <https://ssrn.com/abstract=4381779> or <http://dx.doi.org/10.2139/ssrn.4381779>
- Somerville, L. H. (2013). The Teenage Brain: Sensitivity to Social Evaluation. *Current Directions in Psychological Science*, 22(2), 121-127. <https://doi.org/10.1177/0963721413476512>
- Spectrum News. (2023, May 25). Youth Advocates Call for Accountability for Social Media. <https://spectrumnews1.com/ca/la-west/inside-the-issues/2023/05/25/social-media-and-children--why-youth-advocates-are-calling-for-accountability-->
- Stanford Graduate School of Business. (2017, November 13). Chamath Palihapitiya, Founder and CEO Social Capital, on Money as an Instrument of Change [Video]. YouTube. <https://www.youtube.com/watch?v=PMotykw0SIk>
- Stonewater Recovery. (2023, February 6). How social media addiction affects teens. Stonewater Adolescent Recovery. <https://www.stonewaterrecovery.com/adolescent-treatment-blog/how-social-media-addiction-affects-teens#:~:>
- SurfShark. (August 1, 2023). TikTok effects on mental health and digital addiction concerns among users in the United States as of May 2023, by generation [Graph]. In Statista. Retrieved March 12, 2024, from <https://www.statista.com/statistics/1409808/tiktok-us-opinions-mental-health-effects-by-generation/>

- TodayShow. (2023, October 20). Once consumed by social media, now she raises the alarm about kids and phones. TODAY.com.  
<https://www.today.com/parents/teens/larissa-may-social-media-teens-rcna121192?search=larissa+may>
- U.S. Surgeon General's Advisory. (2023). Social Media and youth mental health - hhs.gov. Social Media and Youth Mental Health.  
<https://www.hhs.gov/sites/default/files/sg-youth-mental-health-social-media-advisory.pdf>
- Vogels, E. A. (2023, April 24). Teens and social media: Key findings from Pew Research Center Surveys. Pew Research Center.  
<https://www.pewresearch.org/short-reads/2023/04/24/teens-and-social-media-key-findings-from-pew-research-center-surveys/>
- Woods, H. C., & Scott, H. (2016, June 10). #Sleepyteens: Social media use in adolescence is associated with poor sleep quality, anxiety, depression and low self-esteem. *Journal of Adolescence*. <https://www.sciencedirect.com/science/article/abs/pii/S0140197116300343>