Social media effects on digital reading literacy

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Abstract

The objective of this preliminary analysis research is to discern the correlation between adolescents' social media use and digital reading literacy abilities. The strength and type of relationship is determined through a conjunction of secondary sources and primary research held through observational data present on public social media posts. The conducted primary research investigates digital literacy, first in a sociopolitical context by measuring the general ability to discern false from factual information, and secondly, in a youth-associated social media fitness context by measuring the ability to differentiate technical work-out from unrealistic appearance ideals and self-appearance pressures. The results displayed a correlation between social media use and the ability to interact with digital information in general. The majority of users believed the information on social media, irrespective of its factual or false content. For self-related social media posts, the majority of users commented on factual information such as the workout routine; yet, a considerable 39% commented on idealistic body appearances. The findings of this study suggest that digital literacy is needed to support metacognition and self-reflection in the daily interactions with social media posts in the various sociopolitical and self-related contexts. Future studies are warranted on mental health outcomes in relation to social media use and digital literacy trainings to identify feasible recommendations for adolescents and instructors to prevent mental health problems associated with socio-emotional and socio-political pressures through social media.

Introduction

The pandemic-related school lockdowns in spring 2020 curtailed in-person social connections and exacerbated psychological distress with risk for developing mental health

problems in youth during the pandemic (Kiss et al., 2022, p. 2). These altered social interactions from the pandemic have undoubtedly changed the way adolescents interact with digital media, as seen by the increase of social media use (Gao et al., 2020, p.5). The heightened social media use during the pandemic has negative implications on adolescents' mental health and correlates with the ability to apply digital technologies to interface with information. Here, digital reading literacy is understood as the ability to discern false from factual information, and to discern factual content from one's self-image and wellbeing. This can be interrogated by analyzing how social media posts affect individual thoughts and behaviors and specifically by comparing individuals' responses to differing social media types and implications for mental health.

Social interactions are important for mental health in adolescents and the reduced in-person contact during the pandemic with school closures and lockdowns means that teenagers will seek other forms of social interaction, often through social media. The effect social media has on their mental health shows divergent results in studies (see Magson et al., 2021, p. 54). While exposure to social media posts on covid-related issues increased anxiety overall (Gao et al., 2020, p. 4) and with an even greater effect in female than male study participants (Kiss et al., 2022, p. 392; Liu et al., 2022, p. 253), meaningful social media use (Maheux et al, 2021, p. 744) and video gaming (Ellis et al., 2020, p. 5) were found to be successful strategies to cope with pandemic-induced social disconnection issues. Thus, the type of social media that adolescents interact with has significant consequences on psychological distress and wellbeing. Importantly, the form of social media consumed has connotations to teenagers' ability on how to interface with digital media and interpret information.

Digital reading literacy is important for the development of adolescents as it allows for critical thinking through online content and aids in the recognition of false information. With

virtual and social distant learning becoming the norm at the height of the pandemic, students increasingly interacted with digital media, most often with social media. This can put adolescents at risk for problematic social media use that affects self-esteem, mood, sleep habits, and ultimately mental health. Here, adolescents' comprehension and reflection of one's own thought processes, i.e, metacognition, in interaction with digital sources is a significant ability and defines digital reading literacy with a specific emphasis on understanding communication digitally. Chen et. al. (2021) uncovered that awareness in how one perceives digital media in conjunction with social media use had the greatest correlation with digital reading literacy (p.12). Providing adolescents with methods to interact with digital media is important to foster the positive effects digital media can have, such as the speed of information and social networking. Donelle et al. (2021) discovered that children most often retained information found through self-directed exploration or observations, which makes social media exposure increasingly crucial in modern child development (p. 4). With the pandemic and online schooling, this form of learning is now at the forefront of modern education. Consequently, digital and news literacy is becoming more consequential as with increased social media use also increased misinformation spreads. The speed by which misinformation can spread has, for example, been observed by Qanon's conspiracies, which became popularized through digital blog consumption. The dangers of digital and social media are paramount, and even when adolescents are equipped with digital literacy techniques to enhance metacognition in evaluating the content and intent of a post, information bias can still occur. The pandemic has had an undoubtful effect on the increased usage of digital media and the implications of digital media use for teenagers' ability to use digital technologies and interact with information have only been exacerbated.

The quality of interactions that adolescents have with digital media are related to metacognition, the ability to recognize depth to online content and how it affects their self perception, self-esteem, mood, and mental health. Since metacognition can support mental health, it is important to comprehend the potential effects of the pandemic on adolescent girls' and boys' wellbeing. Research reports gender differences in regard to mental health challenges among youth. Magson and colleagues (2021) examined anxiety and depression variance among adolescent girls and boys before and during the pandemic in Australia. They found increased anxiety and depression during the pandemic in boys and girls but it was more pronounced in girls, because (as moderation analyses revealed) the implemented restrictions affecting social interaction greatly impeded adolescent girls from employing their most commonly used coping strategies (relying on their peer network for emotional support) (p. 7). However, facing social distancing restrictions, school closures, and even lock downs for extended periods of time has influenced people regardless of gender all over the world. Due to the increased use of digital spaces over the pandemic, the way people interact on social media has changed. For example, influencers were able to become more famous and prominent on social media among youth. Exploring the digital fitness industry over the pandemic, one can assume that youths' self perception of their bodies can change after viewing repeated content from jacked content creators, where a significant amount use steroids. This then could have a correlation to increased body dysmorphia among adolescents which directly affects their mental health (see e.g., Gordon et al., 2020, p. 34). Digital reading illiteracy and the inability to discern false from factual information can have far reaching socio-political and socio-emotional consequences for one's self-image and behaviors that can amplify psychological distress and undermine overall wellbeing.

Methods

Observational data was used from public posts on Instagram and Tiktok regarding a series of current world events to assess the ability to discern false from factual information, and regarding youth-associated fitness posts to assess the ability to discern work-out information from unrealistic appearance ideals. For the first study, posts were observed from both the ongoing Ukraine conflict and coronavirus pandemic. This type of research best fits this academic research paper by investigating the effects of social media literacy on perceptions and social behavior in correlation to the pandemic. Screen captures and images of Instagram posts supplement the documentation of information. Posts were categorized as false or factual based on secondary and tertiary sources, such as the British Broadcast Service and New York times that either backed up or analyzed the post to be misleading, from the current information available. The top 75 related comments on each post were analyzed to determine the relative number (%) of people who believed the content of the posts or not (public opinion on posts). For the second study, two fitness influencers posts were observed, one by a young woman, and one by a young man. This type of research best fits the question of social media influence on self-perceptions and social behavior about two years into the pandemic. Again, screen captures and images of Tiktoc and Instagram posts supplement the documentation of information. For the fitness posts, the top 50 related comments were analyzed to determine the relative number (%) of work-out comments versus appearance related comments. Observational data are increasingly used by researchers to observe trends in social behaviors as these data are more easily and frequently available through digital media. Specifically for this study, aimed to investigate social media usage and its effects, observational data display the best and most accurate form of data

acquisition. Future research should implement a variety of observational and longitudinal statistical surveys that allow for more in depth analysis.

Results

To investigate the role of digital literacy on the ability to discern false from factual information, and the ability to discern technical fitness information from appearance pressures, two sets of social media posts were analyzed: first, social media posts that can be categorized within the sociopolitical context and secondly, social media posts that can be categorized within the body image context.

Sociopolitical social media posts. A total of 225 comments were analyzed between three instagram posts regarding current events during the writing of this paper. Two posts were in relation to the ongoing invasion of Russia in Ukraine and one post was analyzed by WHO regarding the omicron variant. Social media sites try to recognize misinformation and stop the spread of such posts by removing or hiding inaccurate posts, thus making uncensored data collection for this paper more difficult. The first post in the analysis proved to be inaccurate news regarding the Russian invasion of Ukraine (see the post below; Figure 1, left bar).

britishmemes

Is there a more iconic photo right now from Ukraine? Mayor of Kyiv Vitali Klitschko defending his country 🇺🇦

Missing Context. The same information was reviewed by independent fact-checkers in another post.

143,846 likes

British Memes [@britishmemes]. (2022, February 26). A multimillionaire but he chooses to stay and fight 💪 UA [Instagram Photo]. Retrieved from https://www.instagram.com/p/Cab_or-qjKP/?utm_medium=copy_link.

The second post that was analyzed is by CNN and proved to be accurate by outside sources. The post is a video and views of the post are public with over 2 million people having seen it to date.
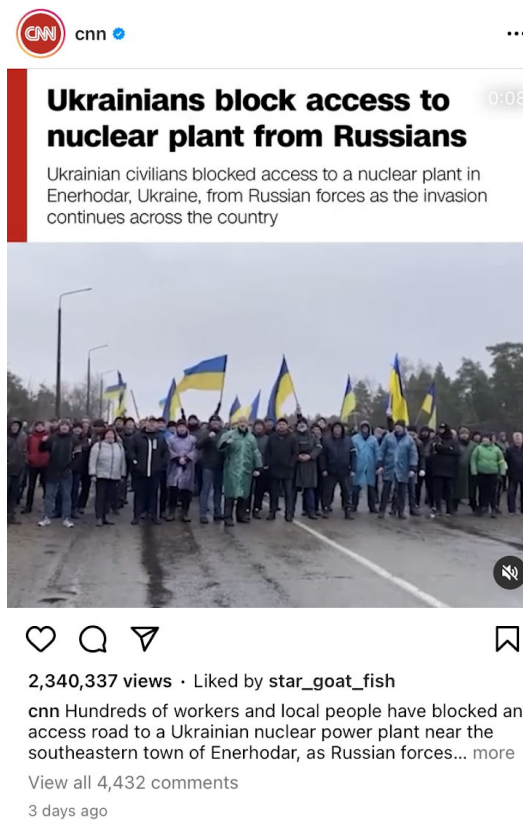
Although this post is proven to be accurate, a multitude of comments questioned the post's legitimacy, as seen by this Instagram user tom_sky (Figure 1, middle bar). Note that *replies* to comments and *likes* to comments were outside the scope of this research.
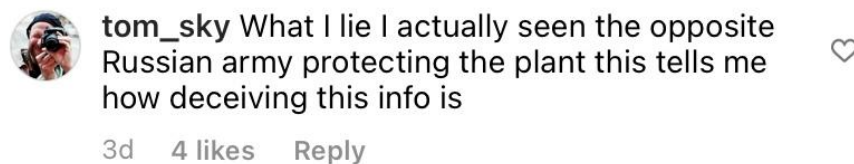
The most interesting findings, however, came when analyzing a post from the World Health Organization (WHO) regarding the omicron coronavirus variant. Although this post is widely proven to be accurate, the greatest number of people deemed the information to be false, between all posts analyzed (Figure 1, right bar).

By analyzing these data and summarizing them into a graph, the ratio between what users

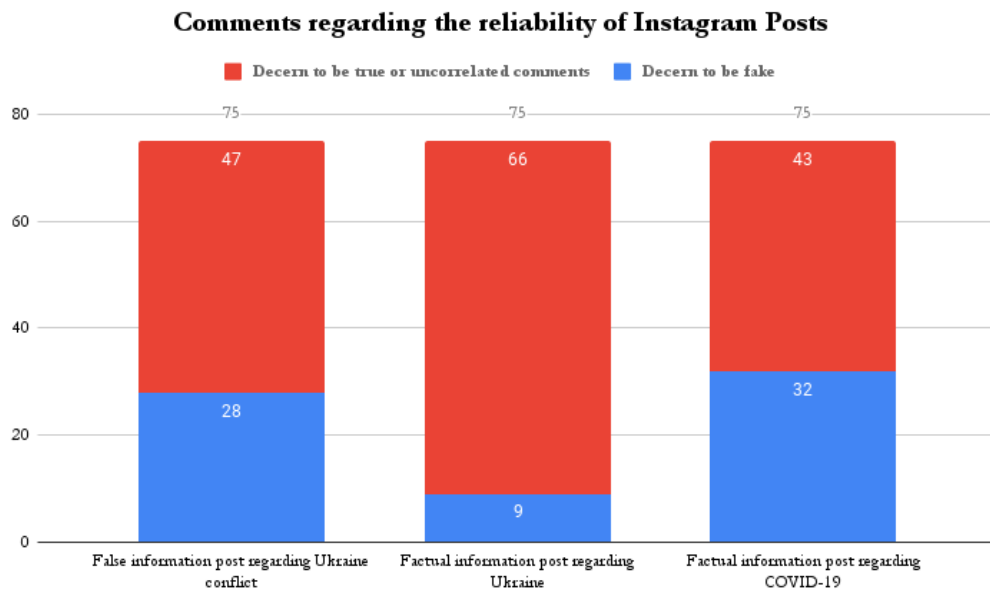believed information to be accurate or false is readily displayed.

Comments regarding the reliability of Instagram Posts

Figure 1. Ukraine invasion and Covid-19 posts. Bar graph of social media posts and responses. Left bar: false post regarding Ukraine invasion; middle bar: factual post regarding Ukraine invasion; right bar: factual post regarding omicon coronavirus variant. Red: number of post endorsements; Blue: number of post rejections.

Fitness social media posts. A total of 100 comments were analyzed between a Tiktok and an Instagram post regarding current fitness workouts during the writing of this paper. The two posts were by male (JPG) and female (carolinegirvan) young coaches, each showing body pictures and exercises to enhance the amount of muscle.

JPG coaching [@jpgcoaching]. (2022, March 16). 2 exercises each for chest and back and one for Delts … [Tiktok Video]. Retrieved from https://vm.tiktok.com/TTPdfnjwSN/

Caroline Girvan[@carolinegrivan]. (2022, January 2). Hello everyone! … [Instagram Photo]. Retrieved from https://www.instagram.com/p/CYPrnWbo9Uz/?utm_medium=copy_link.

Analyzing the 50 top-related comments of each post showed that the majority of reactions were related to the workout routines (Figure 2, red graphs), for example user ben_hudgins commented on JPG coaching's Tiktok "How much protein can we eat in a meal that actually counts towards our daily goal? Does too much in one sitting just turn to waste". Although the post's factual content was on providing information on the workout routines itself, an average of 39 % of all comments from both posts were related to body image, for example user ivette1024 commented

"... she's jacked and gorgeous 😍😍😍😍" . This ratio was descriptively slightly higher for the 'female fitness post' 42 %) than for the 'male fitness post' (36%), with a difference of only 6%. Figure 2 depicts these data in a graph showing the ratio between users commenting on factual information such as the workout routine users commenting on idealistic body appearances.
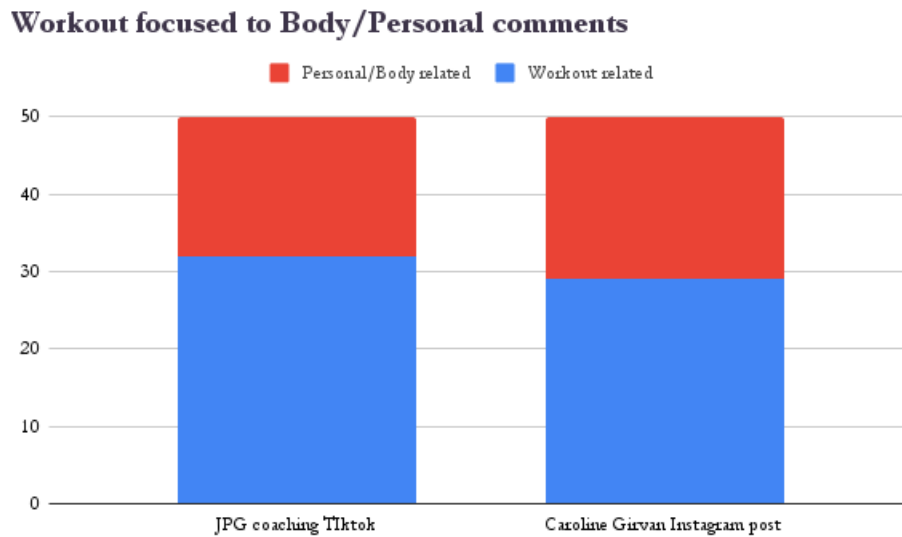

Workout focused to Body/Personal comments

Figure 2. Fitness posts. Bar graph of social media posts and responses. Left bar: new work-out routine post by a female coach; right bar: work-out routine post by a male coach. Red: number of personal/body image endorsements; Blue: number of workout endorsements

Discussion

This paper investigated the effect of social media use on cognition and behavior by analyzing a variety of social media posts that included the Ukraine invasion, Covid-19, and fitness exercises. Researching socio-political posts was aimed at gaining information on digital reading literacy, i.e., the ability to discern false from factual information. Researching fitness posts aimed at gaining knowledge on digital literacy on social/self-image content related to discerning factual (work-out) information from unrealistic appearance ideals. The latter has been

previously associated with poor mental health outcomes in adolescents including eating disorders (Gordon et al., 2020, p. 27) and bigorexia (Pater et al., 2019, p. 1). Overall, the results of this study conducted in February and March 2020, i.e., two years into the pandemic, indicate a dramatic gap between social media exposure and digital literacy, with potential untoward consequences for mental health beyond those posed by the pandemic. The herein provided preliminary evidence shows that the majority of users believed the information posted on social media. For fitness posts showing exercise routines, a considerable proportion of social media users endorsed the idealistic body appearances displayed in the posts. These findings suggest that digital literacy training is urgently needed.

For the three socio-political posts analyzed herein, a main overlapping finding was that the majority of users tended to trust and believe the information they came across, irrespective of its factual or false content. Another interesting trend discovered by this analysis was the way users considered information in regards to political ideologies. Within the USA, the reactions to the Ukraine conflict is mainly homogenous between conservatives and liberals; however, COVID-19 has increasingly become a political issue, suggesting that users care more about remaining 'loyal' to a political ideology than accepting factual information as accurate. Comparing the two Ukraine posts, 28 comments (37 %) clearly rejected the false post, while only 9 comments (12%) rejected the factual posts. This is a 25% difference, which indicates that a significant number of Instagram users have the capability to differentiate between false and accurate information when disregarding political ideologies. By contrast, when comparing the two factual posts, one about the Ukraine and one about the coronavirus variant, an astonishing 32 comments (43 %) rejected the latter post (although it was correct). This is in stark contrast to the 12% of disbelievers for the factual Ukraine post. When future research is conducted on the

correlation between digital reading literacy and social media, the confounding effect of political ideologies and politics should be integrated when formulating feasible solutions.

The analysis of the two social media fitness posts on muscle enhancing exercises by a male and a female coach shows that the majority of users commented on the workout routines itself, yet a substantial amount of comments endorsed the idealistic body image in the posts. Importantly, muscle building behaviors among adolescents are due to socio-cultural factors that can influence adolescents' body image, forcing many youth to engage in muscle enhancing activities to promote leanness and muscle tone (Eisenberg et al., 2012, p. 1020). During the pandemic, youth's social media time increased and with it the pursuit of unattainable appearance ideals (Gordon et al., 2020, p. 28). The constant social media exposure promotes the internalization of appearance ideals, which then can lead to dissatisfaction with one's own body appearance affecting confidence and wellbeing. Although gender differences have been noted for mental health problems with women and girls expressing more depression and anxiety symptoms prior and during the pandemic than men and boys, results for a sexual dimorphism for mental health problems in conjunction with social media use are inconclusive (Liu et al., 2022, p. 249) (Magson et al., 2021, p. 54). Due to the nature of social media posts and alias names, the current analysis was not able to differentiate female and male user comments, but instead compared the social media post of a woman to that of a man. Although 6% more comments of the 'female post' than the 'male post' endorsed the portrayed idealistic body image, this difference was marginal for the selected fitness-related social media content.

These preliminary analyses provide insight into the thoughts and responses of people to social media use. As social media use has increased during the pandemic, recent research clearly

denotes the mental health burden of pandemic-related social media exposure and the importance of digital literacy to interface with information across digital platforms.

Conclusion

Digital literacy is needed to discern accurate from false information, enhance socially and personally meaningful social media use, and reduce the enhanced mental health burden in the wake of the Covid-19 pandemic. In turn, social media's psychological effects implicates teenagers' ability to use digital technologies to interface with information. Thus, implementing feasible solutions should consider how to best use digital media as an effective tool to combat increases of mental health problems. As social media use is on the rise particularly among adolescents, Chen and colleagues (2021) suggest, instructors should focus on best practices to implement social media for online classes (p. 12). Goal-oriented learning has shown to increase digital literacy and social connections, which directly helps adolescents navigate adjustments brought on by the pandemic (p. 12). Through the implementation of best social media use practices, a direct focus can be placed on adolescents through the school system. Instructors play a key role in preventing negative effects of the pandemic on mental health, and are best equipped to help the next generation.

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