

**Understanding the Impact of Misinformation on Adolescents Through the Lens of Critical
Thinking**

Jiashan Song

The Affiliated Shenzhen School of Guangdong Experimental High School

Abstract

In the age of social media, adolescents are increasingly exposed to vast amounts of information, much of which can be misleading or false. As they navigate this complex digital world, their developing cognitive abilities, particularly critical thinking skills, are put to the test. This paper explores the crucial role of critical thinking in mitigating the impact of social media misinformation on adolescents. It examines how misinformation affects cognitive development, particularly in areas like decision-making and logical reasoning. By analyzing the ways misinformation can distort adolescents' belief systems and lead to harmful real-world behaviors, this paper emphasizes the importance of fostering critical thinking as a protective approach. Furthermore, the paper discusses the efforts of social media platforms to combat misinformation through technological means, such as fact-checking and artificial intelligence, and argues that these strategies must be complemented by strengthened critical thinking skills in adolescents. Ultimately, the paper highlights adolescents' vulnerability grounded in their developmental complexity. The heightened sensitivity to social feedback and the still-maturing brain regions responsible for self-control make it difficult for them to distinguish truth from falsehood, which can lead to distorted beliefs and unhealthy behaviors that may persist into adulthood. Therefore, addressing the impact of misinformation on adolescents can not only safeguard their immediate cognitive development but also protect their long-term well-being.

Keywords: Adolescents, Social media, Misinformation, Cognitive development, Critical thinking

Understanding the Impact of Misinformation on Adolescents Through the Lens of Critical Thinking

Since the advent of the internet, the amount of information available to us has grown exponentially, particularly through social media. This has offered new opportunities and challenges for adolescents, more so than for any previous generation. While social media can be a powerful tool for communication, it also has the potential to spread misinformation, which is false or misleading content that often circulates unintentionally (Wu et al., 2019). This phenomenon is particularly concerning for adolescents, whose cognitive development is at a crucial stage. Adolescence, defined as the period between the ages of 10 and 19, is a time of significant physical, cognitive, and psychosocial changes that influence how adolescents feel, think, make decisions, and interact with their surroundings (World Health Organization, 2021). During this time, adolescents are particularly susceptible to external influences, including misinformation, due to their developing critical thinking skills and their increasing reliance on social media as a primary source of information. Given the formative nature of this developmental stage, it is crucial to understand how exposure to misinformation during adolescence can impact their cognitive development and belief systems.

Cognitive development of adolescents

Cognitive development involves the growth and maturation of various mental processes, including perception, memory, problem solving, and critical thinking (American Psychological Association, n.d.). Among these abilities, critical thinking, in particular, is vital for navigating the complex landscape of social media. It acts as a weapon against the spread of misinformation, enabling individuals to question, analyze, and discern the credibility of the information they encounter (Dharmastuti et al., 2020). However, adolescents often struggle to apply critical

thinking when exposed to misinformation, particularly in the case of fake news where misinformation is intentionally distorted (Wu et al., 2019).

A study by Mansur et al. (2021) highlighted adolescents' difficulties in critically evaluating misinformation and fake news, particularly in three key areas: concept transformation, logic, and decision-making. Concept transformation involves deep understanding and cognitive processing (Zirbel, 2009), logic refers to the scientific reasoning process (O'Sullivan, 2017), and decision-making is the cognitive process of selecting a belief or action from among various alternatives (Reed, 2012). Mansur et al. (2021) found that exposure to misinformation can significantly hinder these cognitive processes, leading to poor judgment and flawed reasoning.

When information is designed to deceive and mislead consumers, adolescents will find false content more difficult to detect (Kumar & Shah, 2018). This further hampers their ability to process and assess information accurately. This means that without well-developed critical thinking skills, adolescents are more likely to accept misinformation as truth. Thus, fostering critical thinking abilities in adolescents is important to mitigate the impact of misinformation on their cognitive development.

Belief systems and behaviors in adolescents

Belief system, another psychological aspect that can be influenced by social media misinformation, is defined as interconnected sets of ideas and attitudes (Converse, 1964). For adolescents, these belief systems are still forming and are influenced by the information they consume on social media. Adolescents tend to search for information on social media related to entertainment and they are longing to stay informed and to know the social activities of friends (Kietzmann et al., 2011). Consequently, the constant exposure to friends' posts, trending topics, and viral content shapes the way adolescents perceive the society and their place within it.

Social media has been linked to various issues affecting adolescents, such as body image concerns, academic pressure, and low self-esteem (Bryant, 2018). For instance, misinformation related to body image can lead to unhealthy behaviors, including disordered eating. There is a tendency where girls objectifying themselves influenced by someone else's opinions on their own appearance on social media, potentially causing problems such as eating pathology (Meier & Gray, 2014). Meier and Gray (2014) have shown that the more time adolescents spend viewing photos that reinforce unrealistic beauty standards, the more likely they will develop negative body image and self-esteem issues (Meier & Gray, 2014). The process is cyclical: exposure to idealized images leads to self-objectification, which in turn reinforces the distorted beliefs that drive harmful behaviors.

In this way, misinformation acts as a catalyst, shaking adolescents' belief systems and translating into real-world actions that can have serious consequences. This cycle of misinformation and its impact on belief systems highlights the critical role of critical thinking in breaking the chain of influence.

The role of social media platforms

Misinformation spreads quickly on social media with possible negative influence on adolescent's perception and behavior. Given that social media is the main driver to circulate misinformation due to its user-generated contents, its role in combating information is certainly at the heart of the problem. Social media companies have been urged to implement strategies that identify, correct, and control the spread of misinformation. One of these strategies is using fact-checking services, which involves specialized teams assessing the accuracy of claims, stories, and posts to determine whether the information is true, false, or misleading (Bode & Vraga, 2018). Another effective strategy is promoting authoritative sources of information and scientific

evidence, which can help counteract the spread of falsehoods (Oh et al., 2018). The idea is that once adolescents realize that the information is false, they are less likely to share that information with others. In fact, social media platforms themselves can act as an active participant in the fight against misinformation (Bhardwaj & Kumar, 2023) by putting restrictions on their platforms to reduce circulation of misinformation (Luo et al., 2022). For example, platforms can employ algorithms designed to flag potentially misleading content and alert users to the possibility of misinformation.

Additionally, artificial intelligence (AI) technologies have been proposed as a tool to aid in the detection and correction of misinformation. However, the use of AI in this context is not without its challenges. While AI techniques can be employed to detect patterns of misinformation, they can also be manipulated to deceive people by creating and disseminating fake content (Aï meur et al., 2023). Therefore, there are still some limitations of the current approaches, including strategies adopted by social media platforms and the use of AI technologies, in combating the spreading of misinformation. In this case, the effectiveness of these strategies may depend on its integration with human oversight and the promotion of critical thinking among users, particularly adolescents. The ability of critical thinking is especially important for adolescents, as it enables them to identify credible contents and make correct judgements in the world of misinformation.

Adolescents as a critical group

Adolescents are often referred to as “digital immigrants” due to their inherent familiarity with technologies and internet (Prensky, 2001). They grow up in a multiscreen society and navigate the world where digital interaction is prevailing. Yet, their cognitive development makes them particularly vulnerable to the influence of misinformation (Schriber & Guyer, 2016).

During adolescence, the brain undergoes substantial biological changes that affect their self-perception, social interaction, and decision-making (Blakemore & Mills, 2014; Pfeifer & Allen, 2021). During adolescent development, brain regions associated with the desire for attention, feedback, and reinforcement from peers become more sensitive, which leads adolescents desire for attention from their peers. Meanwhile, the brain regions involved in self-control have not fully matured, which can result in difficulties in discerning truth from falsehood (American Psychological Association, 2024). This unique intersection between adolescents' psychological needs and their physical development increases their susceptibility to misinformation than other age groups.

Adolescence is a crucial stage of development and is often marked by an overt identity crisis, as described by Erikson (1968). Identity formation is particularly rooted in the experiences and challenges of adolescence (Erikson, 1968, p. 122). During this key phase, exposure to misinformation can severely distort their cognitive development, leading to flawed reasoning, biased beliefs, and poor decision-making skills (Blakemore & Mills, 2014). For instance, absorbing misinformation related to body image can result in unhealthy behaviors, such as disordered eating pathology (Meier & Gray, 2014). Furthermore, since everyone must go through adolescence, a stage that bridges childhood and adulthood, the beliefs and values that adolescents develop during this time may continue in their adulthood (Westbrook et al., 2023). The internalization of misconceptions and biases during adolescence can have long-term negative effects on an adolescent's life. Therefore, addressing misinformation among adolescents is essential for both their immediate cognitive development and their long-term well-being.

Conclusion

In conclusion, the impact of social media misinformation on adolescents' cognitive development and belief systems cannot be underestimated. Adolescents' unique vulnerabilities, coupled with their reliance on digital media, make them a critical group in the discussion of misinformation. Enhancing their critical thinking skills is key to empowering them to navigate the digital landscape safely and responsibly. Social media platforms must also take proactive steps to combat misinformation, but the ultimate safeguard lies in educating adolescents to think critically in a world where information, both true and false, is only a click away.

References

- Aïmeur, E., Amri, S., & Brassard, G. (2023). Fake news, disinformation and misinformation in social media: a review. *Social Network Analysis and Mining*, 13(1), 30.
- American Psychological Association. (2024, April). *Potential risks of content, features, and functions: The science of how social media affects youth*. Retrieved August 27, 2024, from <https://www.apa.org/topics/social-media-internet/youth-social-media-2024>
- American Psychological Association. (n.d.). Cognitive development. In *APA Dictionary of Psychology*. Retrieved August 27, 2024, from <https://dictionary.apa.org/cognitive-development>
- Bhardwaj, A., & Kumar, V. (2023). Social media as an enabler to combat misinformation. In *Pandemics in the Age of Social Media* (pp. 1-15). Routledge.
- Blakemore, S. J., & Mills, K. L. (2014). Is adolescence a sensitive period for sociocultural processing? *Annual review of psychology*, 65(1), 187-207.
- Bode, L., & Vraga, E. K. (2018). See something, say something: Correction of global health misinformation on social media. *Health communication*, 33(9), 1131-1140.
- Bryant, A. (2018). The effect of social media on the physical, social emotional, and cognitive development of adolescents. *Honors Senior Capstone Projects*. 37.
- Converse, P. E. (2006). The nature of belief systems in mass publics (1964). *Critical review*, 18(1-3), 1-74.
- Dharmastuti, A., Wiyono, B. B., Hitipeuw, I., & Rahmawati, H. (2020). Adolescent critical thinking prior to social media information sharing. *International Journal of Innovation, Creativity and Change*, 13(10), 1195-1213.
- Erikson, E. H. (1994). *Identity and the life cycle*. WW Norton & company.

- Kietzmann, J. H., Hermkens, K., McCarthy, I. P., & Silvestre, B. S. (2011). Social media? Get serious! Understanding the functional building blocks of social media. *Business horizons*, 54(3), 241-251.
- Kumar, S., & Shah, N. (2018). False information on web and social media: A survey. *arXiv preprint arXiv:1804.08559*.
- Luo, M., Hancock, J. T., & Markowitz, D. M. (2022). Credibility perceptions and detection accuracy of fake news headlines on social media: Effects of truth-bias and endorsement cues. *Communication Research*, 49(2), 171-195.
- Mansur, S., Saragih, N., Ritonga, R., & Damayanti, N. (2021). Fake news on social media and adolescent's cognition. *Jurnal ASPIKOM*, 6(1), 29-41.
- Meier, E. P., & Gray, J. (2014). Facebook photo activity associated with body image disturbance in adolescent girls. *Cyberpsychology, behavior, and social networking*, 17(4), 199-206.
- Oh, O., Gupta, P., Agrawal, M., & Rao, H. R. (2018). ICT mediated rumor beliefs and resulting user actions during a community crisis. *Government Information Quarterly*, 35(2), 243-258.
- O'sullivan, M. (2017). *An Analysis of Gilbert Ryle's The Concept of Mind*. Macat Library.
- Pfeifer, J. H., & Allen, N. B. (2021). Puberty initiates cascading relationships between neurodevelopmental, social, and internalizing processes across adolescence. *Biological Psychiatry*, 89(2), 99-108.
- Prensky, M. (2001). Digital natives, digital immigrants part 2: Do they really think differently? *On the horizon*, 9(6), 1-6.
- Seel, N. M. (Ed.). (2011). *Encyclopedia of the Sciences of Learning*. Springer Science & Business Media.

Schriber, R. A., & Guyer, A. E. (2016). Adolescent neurobiological susceptibility to social context. *Developmental cognitive neuroscience, 19*, 1-18.

Westbrook, V., Wegener, D. T., & Susmann, M. W. (2023). Mechanisms in continued influence: The impact of misinformation corrections on source perceptions. *Memory & Cognition, 51*(6), 1317-1330.

World Health Organization. (2021, November 17). *Mental health of adolescents*. Retrieved August 27, 2024, from <https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health>

Wu, L., Morstatter, F., Carley, K. M., & Liu, H. (2019). Misinformation in social media: definition, manipulation, and detection. *ACM SIGKDD explorations newsletter, 21*(2), 80-90

Zirbel, E. L. (2004). Framework for conceptual change. *Astronomy Education Review, 3*(1), 62-76.