

Fake News, Real Harm: The Impact of Social Media Misinformation on Adolescents'

Cognitive Perceptions and Belief Systems

Abstract

Adolescents are increasingly engaging with social media, which has become a major source of information and communication in their lives. It now serves as a primary source of news for many teenagers, one third of whom report relying on social media more than any other medium to obtain new information (Ku et al., 2019). Many are concerned that the spread of misinformation on these platforms poses significant challenges to adolescents' cognition and beliefs, which will in turn impact their real-world behaviors. Research has shown that a substantial portion of users have unwittingly shared false information online (Chadwick & Vaccari, 2019), and the algorithms designed to filter content often struggle to distinguish between factual and misleading information (Del Vicario et al., 2016). This essay examines the impact of exposure to misinformation on adolescents' cognitive development and belief systems. It focuses on adolescence, in particular, due to its significance in cognitive maturation. Ultimately, it concludes by exploring some of the ongoing efforts of social media platforms to combat misinformation, before proposing that more could be done to protect younger users.

1. Adolescents' Development of Cognition and Beliefs

Adolescence is a critical stage of cognitive development because there are significant changes in brain structure and function during this period which are crucial for the formation of beliefs and decision-making processes. For instance, rapid learning and adaptation is facilitated through heightened neuroplasticity. Though it is essential for learning skills necessary for adulthood, such plasticity also makes adolescents particularly susceptible to external influences, including but not limited to misinformation encountered on social media (Blakemore & Choudhury, 2006). This is offset to some extent by a second cognitive development associated with adolescence, namely, the

refinement of executive functions such as reasoning, problem-solving, and the ability to differentiate between credible and non-credible sources of information (Steinberg, 2005). However, it is important to recognize that the prefrontal cortex, which governs these executive functions, is still maturing at this time, meaning adolescents nonetheless rely to a greater extent on emotional and instinctual responses than do their elders (Casey, Jones, & Hare, 2008).

In addition to developments in brain structure, adolescence is also marked by the formation of personal beliefs and worldviews, which are influenced by both peer interactions and the broader media environment, including social media. Personal beliefs are best understood as packed mental images of the world as we have experienced it (Dweck, 2017). These beliefs are highly significant in that they fundamentally influence not only our future interactions with the world, but also our understanding of past events, and expectations for the future. For this reason, the integration of information from social media into adolescents' belief systems can have profound implications. Research has shown that repeated exposure to certain types of content, even if false, can lead to the internalization of these ideas, making them part of the individual's belief structure (Fazio, Brashier, Payne, & Marsh, 2015). This phenomenon, known as the "illusory truth effect", suggests that familiarity with information, regardless of its accuracy, can increase its perceived truthfulness. Given the increasing frequency with which adolescents are now encountering new information on social media, they are particularly vulnerable to incorporating misinformation into their developing belief systems.

2. The Exposure to Misinformation and Its Impact

The widespread availability of information on social media platforms is a double-edged sword: while adolescents have greater access to diverse sources of knowledge, they are also exposed to a significant amount of misinformation. Misinformation, defined as false or misleading information spread regardless of intent to deceive, can have several detrimental effects on adolescents. One of

the primary risks of adolescents being exposed to misinformation is its potential ability to distort their understanding and perception of reality. When adolescents are forming their beliefs about the world, repeated exposure to false information can lead to misconceptions that are difficult to correct. For example, studies have shown that adolescents who are exposed to misinformation about health-related topics, such as vaccines, are more likely to develop and maintain erroneous beliefs that can influence their real-world behaviors, such as vaccine hesitancy (Betsch et al., 2010). Furthermore, misinformation can exacerbate cognitive biases, such as confirmation bias, where individuals favor information that confirms their preexisting beliefs and dismiss information that contradicts them. Adolescents, whose critical thinking skills are still developing, are particularly prone to this bias (Kahneman, 2011). Such biases can lead to the reinforcement of false beliefs, creating echo chambers where misinformation is continually validated and amplified within social networks. The risk is particularly grave for those adolescents of lower cognitive ability: a study conducted by Mansur et al. (2021) demonstrated that a higher level of cognitive ability positively correlates with a lower understanding of hoax content among adolescent respondents, meaning those of lower cognitive ability are more at risk of synthesizing hoax content into their worldviews.

If hoax content is synthesized in this way it can lead to various negative psychological outcomes, such as depression and anxiety. On that front, absorbing misinformation can create confusion and anxiety, particularly when it contradicts trusted sources or previously held beliefs. Adolescents, who are in the process of establishing their identity and understanding of the world, may struggle with the cognitive dissonance created by conflicting information (Festinger, 1957). This dissonance can lead to increased stress and uncertainty, which can negatively impact mental health. For instance, during the COVID-19 pandemic, the large volumes of misleading or false information concerning the virus circulating online caused health anxiety, especially for adolescents. A study conducted by Islam et al. (2020) used cognitive load theory to investigate misinformation sharing and social media fatigue during the pandemic. It was found that during COVID-19, there was an

abundance of imprecise, ambiguous, and inaccurate information, the spreading of which caused information overload and health worries. The researchers found that whereas prior knowledge and well-organized content lessened a learner's intrinsic cognitive burden, large amounts of misinformation often increased it; though adopting a practice of investigating claims in more depth prevented users from disseminating unreliable information, it also put more strain on their cognitive systems, leading to a rise in overall weariness. In other words, investigating and combatting social media misinformation also takes a psychological toll on adolescents' minds.

3. The Role of Social Media Platforms in Combating Misinformation

For this reason, it is vitally important that the burden of combatting misinformation does not fall solely on the shoulders of individual users. The responsibility lies principally with those who run social media platforms, most of whom have begun to take more proactive steps to combat its spread. Such efforts include the development of algorithms designed to detect and flag false information, the promotion of credible sources, and partnerships with fact-checking organizations. However, the efficacy of these measures remains a topic of debate. Algorithms designed to identify and mitigate misinformation often face challenges due to the sheer volume of content generated on social media platforms. They can also struggle with context, failing to differentiate between satire, opinion, and deliberate misinformation (Pennycook & Rand, 2018). This limitation underscores the need for more sophisticated approaches that can better understand the nuances of online content. Fact-checking initiatives have also become a central component of social media platforms' strategies to address misinformation, with platforms like Facebook and Twitter establishing partnerships with independent fact-checking organizations to review content and label it as misleading if necessary. While these efforts have shown some success, they are not without drawbacks. Fact-checking is often a reactive process, occurring after misinformation has already been shared and potentially internalized by users (Graves, 2018). Moreover, there is evidence to suggest that labeling information as false can sometimes have the opposite effect, reinforcing the beliefs of individuals

who are already predisposed to distrust mainstream media (Nyhan & Reifler, 2010). Educational initiatives aimed at improving digital literacy among adolescents are another critical aspect of combating misinformation. By teaching young users how to evaluate the information they encounter online critically, social media platforms can empower them to make more informed decisions. Programs that focus on recognizing credible sources, understanding the nature of algorithms, and identifying common forms of misinformation have been implemented in various educational settings with positive results (Leu et al., 2015). Despite these efforts, it is clear that combating misinformation on social media is an ongoing challenge. The dynamic nature of social media, combined with the rapid spread of information, means that strategies must continuously evolve to keep pace with new forms of misinformation and the methods used to disseminate it. Moreover, the role of social media companies in balancing content moderation with free speech remains a contentious issue, particularly as platforms face pressure from both governments and users to address misinformation without overstepping their bounds (Gillespie, 2018).

Conclusion

Ultimately, the impact of misinformation on adolescents is profound, influencing their cognitive development, belief systems, and behaviors. As social media continues to play a central role in their lives, it is crucial to understand the unique vulnerabilities that adolescents face during this critical period of development. While social media platforms are actively working to combat the spread of misinformation, the challenges they face are significant, and their efforts must be continually monitored and refined to protect young users. Future research should focus on developing more effective strategies for misinformation detection, devising new ways of improving digital literacy among adolescents, and exploring the long-term effects of misinformation exposure on this vulnerable population.

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