Original Paper

Research on Algorithm Literacy and Media Behavior of "Lurkers"

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Abstract

In the intricate process of information dissemination, a chain-like relationship of interdependence and dynamic flow has been established among channels, sources, and receivers. At the terminal end of this chain, specifically the receiver side, a non-explicit behavioral pattern merits particular attention. This thesis explores the behavioral characteristics and underlying psychological motivations of "lurkers" in the context of algorithm recommendations and media content consumption. It is argued that "lurkers" typically possess a certain level of algorithm literacy, enabling them to scrutinize algorithm-recommended content with a rational attitude and maintain a cautious and observational stance when using media. Notably, "lurking" behavior can be both a conscious and unconscious act. This study provides a new perspective and reference for enhancing the efficiency of information chain dissemination.

Keywords

"Lurkers", Algorithm Literacy, Media Behavior

1. Introduction

Initially designed to solve problems and enhance efficiency, algorithms have evolved beyond their practical roots of problem-solving and optimization. In the era of intelligent media, algorithms have come to dominate crucial aspects of media content production and media development itself. In this era, algorithms and data have become integral parts of content production and distribution mechanisms (Wang, 2024). With their expanding application in social media, a series of issues have surfaced:

breaches of user data privacy, the emergence of "filter bubble" phenomena, value deficits, and information overload, all contributing to user unease. In such an algorithmic environment, users have developed diverse attitudes and behavioral responses towards algorithmic "black boxes," with "lurkers" being one of the unique reaction patterns.

2. Tracing the Origins of Algorithm Literacy and Media Literacy

The concept of algorithm literacy has been frequently mentioned in previous research. Over the decades, communication studies have explored users' skills in acquiring, processing, and evaluating information through new technologies under various terminologies (Anne, 2023). "Media literacy" is often interpreted as a matter of subjectivity within the scope of audience-media interaction (Gu, 2024), emphasizing an individual's ability to think, judge, and act independently when engaging with media. People are increasingly aware of the power of media in shaping images and building understanding of the surrounding world. The practice of media literacy is often viewed as an extension of this awareness and a response to the dominance of media culture (Potter, 2010). In discussing "digital literacy," researchers have described it as an individual's ability to organize and execute action plans (Art, Albarracin, Eagly, Beecham, Lindberg & Merrill, 2009) in response to potential future scenarios. Algorithm literacy, derived from media literacy, aims to cultivate coexistence with algorithms (Xu & Wang, 2022).

However, in most cases, algorithm literacy can be interpreted as the dimension of algorithm awareness, while media literacy covers a broader scope with certain differences. In comprehending the connotation and extension of these concepts, media literacy focuses on cultivating individuals' abilities in selective reception, critical interpretation, and creative dissemination of information in a diverse media environment. In contrast, algorithm literacy emphasizes individuals' understanding of algorithm principles, application capabilities, and professional skills in terms of algorithm design, analysis, and optimization. The differences in application fields and professional requirements are reflected in the fact that media literacy emphasizes individuals' information dissemination and critical thinking skills to adapt to constantly changing media environments, while algorithm literacy attaches more importance to cultivating individuals' computational thinking, data analysis, and software development skills to adapt to the rapid development and application needs of algorithmic technology.

In the media landscape, algorithm literacy primarily derives from concepts such as information literacy, digital literacy, and media literacy (Song, Zhao, & Zhu, 2023). Media literacy and algorithm literacy

collaboratively mould individuals' information behavior patterns. Media literacy emphasizes the cultivation of individuals' judgment and comprehension of information, including effective screening, accurate interpretation, and critical evaluation of information, thereby influencing individuals' navigation ability in the vast ocean of information.In contrast, algorithm literacy necessitates a profound understanding of the fundamental concepts and operational logic of algorithms, as well as a clear grasp of algorithm recommendation mechanisms. For "lurkers", possessing algorithm literacy facilitates a more rational approach to understanding and responding to information streams, comprehending how information is filtered and delivered. These two literacies complement each other, collectively molding individuals' media attitudes within the media environment.

Our study of "lurkers" reveals that their media behavior is influenced, to some extent, by algorithms. As recipients of information, their algorithm literacy enables them to gain insight into the working mechanisms of algorithms, thereby optimizing information reception strategies and effectively reducing the distress of information overload. Through the cultivation of algorithm literacy, they learn to tame algorithms, harness technology, and identify and escape the "black box (Zhu, 2024)". Simultaneously, they remain vigilant in identifying algorithmic biases and maintaining independent judgment. Furthermore, algorithm literacy enhances their efficiency and accuracy in information acquisition, enabling them to precisely locate valuable information sources and avoid getting lost in vast amounts of information. Media literacy and algorithm literacy are pivotal in the media attitudes of "lurkers." Media literacy provides them with a framework for judging and understanding information, while algorithm literacy endows them with the ability to deeply analyze information flows. These two literacies are interdependent, influencing users' media attitudes in a complementary manner.

3. The Relationship between Media Attitude and Media Behavior

Individuals with a high degree of algorithm literacy often have a clearer understanding of the role of algorithms in information dissemination, including their potential biases, limitations, and customized push of personal information. This cognition affects individuals' acceptance and trust in media content, thereby shaping their unique media attitude. For example, when individuals realize that algorithms may push relevant content based on their browsing history, they are likely to adopt a more cautious stance towards the information presented by the media.

Media attitude refers to an individual's evaluation and tendency towards media and its disseminated content, which directly affects the individual's media behavior. Under the influence of algorithm

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literacy, individuals' media attitudes may become more rational and critical, further guiding changes in their media behavior. Media attitude, as an individual's comprehensive evaluation and predisposition towards media and its disseminated content, constitutes an important psychological basis for media use behavior. It reflects not only an individual's preferences and aversions towards media but also deeply embodies an individual's interpretation, trust, and dependence on media information. This attitude, to a large extent, directly shapes and influences an individual's media behavior patterns.

Under the influence of algorithm literacy, individuals' media attitudes are likely to undergo significant changes, tending to become more rational and critical. Algorithm literacy equips people with the ability to deeply understand the mechanism of media information dissemination, enabling them to maintain a cautious and independent mindset when engaging with media content. The change in individuals' media attitudes does not happen overnight but gradually forms through continuous interaction between individuals and the media environment. Specifically, individuals with a high degree of algorithm literacy may prioritize the diversity and objectivity of information when using media. They are likely to actively seek information from different sources to avoid being limited by the content pushed by a single algorithm (Zhang, 2023). Additionally, they may focus more on the authenticity and accuracy of information, engaging in thorough verification and reflection on the content disseminated by the media.

Furthermore, a high degree of emphasis on information authenticity and accuracy is also a hallmark of this type of individual's media behavior. They are well aware that in the digital era, the speed and reach of dissemination of false and misleading information are unprecedented. Therefore, when encountering any media content, they engage in thorough verification and reflection to avoid being misled by inaccuracies.. This rigorous information processing approach not only enhances their own information literacy but also injects more rationality and criticality into the entire society's information dissemination environment.

Notably, with the continuous advancement and widespread application of algorithmic technology, the influence of algorithm literacy on the media ecosystem is becoming increasingly significant. On the one hand, a high degree of algorithm literacy motivates individuals to participate more actively in the process of information dissemination. They are no longer merely passive recipients of information but have transformed into active selectors and disseminators of information (Zhang, 2011). This role transformation both improves the efficiency and quality of information dissemination and empowers individuals with more autonomy and discourse power.

4. Examination of Algorithm Literacy Among "Lurkers"

"Lurkers" are a relatively silent group in online communities, often maintaining anonymity to protect their privacy and remain cautious of potential risks in the digital environment. These participants primarily emerge as information receivers, preferring to silently observe, browse, and internalize various types of information rather than actively engaging in discussions or publicly voicing opinions. Their behavioral patterns reflect a deliberate approach to information processing rather than impromptu expression. Despite their low-profile presence, their media behavior plays a significant role in the dynamic development of online communities. Meanwhile, we should recognize that the motivations for audience participation are highly implicit, and conclusions drawn solely from analyzing the various manifestations left by information recipients reflecting their specific emotional psychology within a given context are bound to be distorted and inapplicable (Song, Huang, & Jun, 2018).

The anti-algorithm recommendation consciousness of "lurkers" may indicate a high level of algorithm awareness. Recognizing and resisting algorithmic recommendations requires an understanding of algorithms. If "lurkers" can identify the existence of recommendation algorithms and remain alert to their impacts, it indicates that they possess a certain level of cognitive understanding of the basic working principles of algorithms and their potential implications. This cognitive understanding stems from in-depth learning and comprehension of algorithms, thus reflecting a high degree of algorithm awareness. This behavioral pattern may also make "lurkers" more attuned to changes induced by algorithm recommendations. As they are often in a state of observation and learning, they are more likely to notice the influence of algorithmic recommendations on information flows, thereby remaining vigilant against potential biases or limitations of algorithms. "Lurkers" with anti-algorithm recommendation consciousness may be more inclined to actively seek diversified information sources rather than relying solely on algorithm recommendations. This proactive information-seeking behavior reflects their critical thinking towards algorithms, which is a crucial component of algorithm literacy.

5. Subjective and Objective Decision-Making Analysis of "Lurkers"

5.1 Impact of Personality Traits

Introverted and Observant Personality: "Lurkers" typically exhibit introverted, preferring observation over active engagement.. They generally avoid drawing attention to themselves, opting instead to think and analyze from the sidelines. This trait predisposes them to be quiet observers in the community rather than active participants, deriving satisfaction from absorbing information and knowledge through

observation rather than direct interaction.

Strong Desire for Security: Such individuals may avoid becoming the center of attention in real life. They fear that public speaking may attract unnecessary attention, criticism, or attacks, so they choose to lurk to protect their inner sense of security.

5.2 Algorithm Literacy and Careful Attitude towards Information Processing

High Algorithm Literacy: "Lurkers" often possess a certain understanding of the algorithmic logic behind online platforms. They know how information is pushed and are aware of potential biases in these algorithms. Therefore, they are more cautious when receiving information and are less susceptible to algorithmic influence.

Deliberate Information Processing: When faced with various information and opinions on the internet, they do not accept them readily but conduct in-depth thinking and analysis. They only selectively absorb information after confirming its authenticity and value. This cautious attitude makes them appear more mature and rational in information processing.

5.3 Deep Consideration of Privacy and Security

Strong Privacy Protection Awareness: In the digital era, the risk of personal information leakage is ubiquitous. For "lurkers," safeguarding personal privacy is paramount. They choose to lurk, partly to reduce the exposure of personal information and thus lower the risk of privacy breaches.

High Alertness to Network Security: They are acutely aware of the complexity of the online environment and maintain a high level of vigilance regarding network security issues. They do not readily disclose personal information or click on unknown links. This security awareness makes them more cautious in their online behavior.

5.4 Specific Role Positioning in the Community

Unique Observer Perspective: "Lurkers" often assume the role of observers within the community. By lurking, they aim to gain a comprehensive understanding of community dynamics and member interactions. This unique vantage point allows them to view issues and phenomena within the community more objectively.

5.5 Social Anxiety and Choice under Pressure

Driven by Social Anxiety: In public social settings, some individuals may feel pressure and anxiety. For "lurkers," lurking serves as a way to alleviate such pressure and anxiety. They may fear public speaking, worrying that their opinions will not be accepted or criticized.

Strategy to Avoid Direct Conflict: Public discussions often lead to conflicts and disputes over differing

opinions. "Lurkers" choose to lurk to avoid direct involvement in such conflicts, maintaining a neutral observational attitude. This allows them to understand various viewpoints without personally participating, thus reducing potential conflicts and disputes.

6. Conscious and Unconscious "Lurking"

In the study of media behavior among "lurkers," conscious and unconscious "lurking" represent two distinct states, reflecting participants' diverse mindsets and purposes within online communities.

Conscious "Lurking": This form of lurking involves participants who are aware of their silence or low profile and intentionally choose not to engage publicly or deeply in community discussions. This behavior is often motivated by specific goals, such as observing community dynamics, gathering information, or avoiding unnecessary disputes. Participants may wish to remain inconspicuous to avoid being the center of attention or may be in an observational and learning phase, not yet ready to publicly express their opinions. Some may also opt for conscious lurking due to considerations of personal privacy and security.

Unconscious "lurking," on the other hand, occurs when participants are not explicitly aware of their silence. They may habitually browse without contributing to discussions, driven by inertia, habits, or unfamiliarity with the community environment. Participants may lack motivation or interest in participating in discussions or may feel that their opinions will not be valued. The design of the community interface, user experience, and community atmosphere can also influence participants' lurking behavior. Both conscious and unconscious "lurking" behaviors are prevalent in online communities, reflecting participants' varying psychological motivations and levels of engagement.

When delving into the underlying reasons for conscious and unconscious "lurking," distinct psychological motivations emerge. Conscious "lurkers" often base their behavior on a self-protection mechanism. They fear that public speaking may expose their weaknesses or invite unnecessary criticism, thus choosing to remain silent to avoid potential risks. Additionally, introverted personality traits lead them to observe rather than actively express themselves in social settings, making "lurking" a comfortable participation method. When processing information and making decisions, they tend to be more cautious, taking time to observe and reflect to ensure that their statements or actions are wise.

In contrast, unconscious "lurkers" behavior often arises from habits and inertia. They may not have a clear motivation to participate in community discussions, preferring to browse information passively. Additionally, some may lack confidence in their opinions or sufficient motivation to speak publicly,

inadvertently choosing to "lurk." When faced with unfamiliar community scenarios or topics, they may opt for silence out of fear of making mistakes or being ridiculed. These psychological factors collectively constitute the behavior pattern of unconscious "lurkers."

From a sociological perspective, certain cultures and social groups revere maintaining a low profile and humility as virtues, which may predispose individuals to "lurking" rather than public speaking. The anonymity and complexity of the online environment can exacerbate feelings of uncertainty and unease, prompting individuals to "lurk" as a risk-aversion strategy. In sociological terms, if the media community atmosphere is unwelcoming or lacks inclusiveness, individuals may unintentionally choose to "lurk" to avoid conflict or negative feedback. In some instances, individuals may be influenced by social conformity and unconsciously follow the majority's choice of remaining silent rather than speaking out. Similar to traditional media, social media can also lead to the spiral of silence, where individuals with differing opinions may choose to suppress their views and remain silent out of fear of isolation, even if they do speak up, their voices are often ignored or rejected by the masses (Yang, 2023). The vast amount of information available online can also contribute to this behavior, as individuals may become "lurkers" due to information overload or difficulty in making choices, finding it easier to browse than participate in discussions.

7. Conclusion

Analyzing the algorithm literacy and media behavior of "lurkers" reveals that this group often possesses a high level of algorithm awareness and media literacy, enabling them to maintain a rational and critical attitude in complex information environments. Their behavior reflects a cautious response to algorithm recommendations and a deep consideration of personal privacy and security. The diverse and complex behavior patterns of "lurkers" illustrates varying mindsets and levels of engagement among individuals in online communities. Understanding these two types of "lurking" behaviors provides a comprehensive view of "lurkers" media attitudes and behavioral characteristics, offering new insights for social media platforms to optimize user experience and enhance community activity. This study also underscores the importance of   algorithm literacy and media literacy in individual information behavior. As algorithmic technology continues to advance and become more pervasive, enhancing individuals' algorithm literacy and media literacy is crucial for helping them adapt to the digital information environment and improving the efficiency of information dissemination.

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