

Algorithmic Personalization, Free Will, and Psychological Agency among Generation Z

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Abstract. *The rapid growth of social media has transformed how Generation Z accesses and processes information through algorithmic personalization. While recommendation algorithms improve the efficiency and relevance of content delivery, they also raise concerns regarding their influence on autonomous decision-making and critical reflection. This study explores how algorithmic personalization shapes Generation Z's information environment and examines its implications from philosophical and psychological perspectives. Using a qualitative literature review, twenty-five national and international publications were systematically analyzed through thematic analysis. The findings indicate that algorithmic personalization reinforces filter bubbles and echo chambers, limiting exposure to diverse viewpoints and reducing opportunities for reflective thinking. Philosophically, these conditions challenge the concept of free will by questioning the extent to which decisions remain autonomous when information is algorithmically curated. Psychologically, algorithmic environments may weaken psychological agency by influencing intentionality, self-regulation, and self-reflection. However, the study argues that algorithms do not eliminate human autonomy; rather, they reshape the conditions under which it is exercised. Consequently, algorithmic awareness, digital literacy, and critical reflection become essential for maintaining autonomous decision-making in digital environments. Integrating philosophical and psychological perspectives provides a more comprehensive understanding of human autonomy and agency in the era of algorithmic personalization.*

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INTRODUCTION

Digital technology has transformed not only how people communicate but also how they search for information, develop opinions, and make everyday decisions (Cinelli et al., 2021; Kirschner, 2024). For Generation Z, who have grown up alongside smartphones, social media, and artificial intelligence, digital platforms have become the primary gateway to knowledge, entertainment, social interaction, and even identity formation (Swart, 2021; Kirschner, 2024; Nurjanah et al., 2024). Unlike previous generations that relied heavily on television, newspapers, or face to face discussions. Generation Z increasingly experiences the world through algorithm-driven platforms such as TikTok, Instagram, YouTube, and X (Ernst, 2024; Komara & Widjaya, 2024). As a result, much of what they know and believe is influenced by information selected through automated recommendation systems rather than by their own deliberate search (Swart, 2021; Trattner et al., 2022; Ernst, 2024).

The technology behind these platforms is known as algorithmic personalization. By continuously collecting data such as viewing history, likes, comments, search behaviour, and interaction patterns, algorithms predict the content that users are most likely to engage with (Swart, 2021; Trattner et al., 2022). This system offers clear benefits by making information easier to access, reducing information overload, and providing content that aligns with users' interests (Trattner et al., 2022; Khambatta et al., 2023). However, the relevance and engagement, users are repeatedly exposed to similar ideas while alternative viewpoints gradually become less visible (Grossetti et al., 2021; Yang et al., 2023). Over time, this selective exposure may narrow the diversity of information individuals encounter and reduce opportunities to critically evaluate different perspectives (Kaluža, 2021; Marin, 2022; Ernst, 2024).

This phenomenon has attracted increasing attention in communication and media studies. Previous research has shown that algorithmic personalization contributes to the emergence of filter bubbles and echo chambers, where individuals repeatedly encounter information that confirms their existing beliefs while having limited exposure to opposing viewpoints (Cinelli et al., 2021; Grossetti et al., 2021; Kaluža, 2021). Such digital environments may reinforce confirmation bias, increase ideological polarization, and encourage passive patterns of information consumption rather than active and reflective learning (Modgil et al., 2022; Bak-Coleman et al., 2021; Ledwich et al., 2022). Although personalized recommendation systems are designed to improve user experience, they may also unintentionally shape how people perceive reality and construct their understanding of social issues (Bonicalzi et al., 2023; del Valle & Lara, 2024).

Beyond influencing information exposure, algorithmic personalization also reshapes the epistemic conditions through which knowledge is constructed and legitimized (Marin, 2022; Mittelstadt, 2023). Hidayatulloh (2025) argues that digital algorithms no longer function merely as technological tools for distributing information but increasingly mediate authority, rationality, and the production of knowledge in cyberspace. Consequently, individuals are not only exposed to personalized information but also to algorithmically structured ways of interpreting reality (Vaassen, 2022; Holm, 2023). This broader epistemic transformation provides an important foundation for understanding why critical reflection and autonomous judgment may become increasingly challenging within digitally curated environments (Bonicalzi et al., 2023; Pérez-Verdugo & Barandiaran, 2024).

These concerns are particularly relevant for Generation Z, a generation that spends a substantial portion of its daily life in digital environments (Kirschner, 2024; Sari et al., 2025). Adolescence and early adulthood are important developmental stages during which individuals form their identities, values, and long-term goals. During this period, the ability to think critically, evaluate evidence, and consider multiple perspectives plays a crucial role in making informed decisions (Niza et al., 2022; Nurjanah et al., 2024). When information is increasingly filtered through algorithms, there is growing concern that young people may gradually rely on personalized recommendations rather than reflective reasoning when interpreting information or making judgements (Swart, 2021; Ernst, 2024; Kirschner, 2024). Consequently, the challenge is no longer limited to gaining access to information but extends to maintaining the ability to think independently in environments that continuously compete for attention (Madary, 2022; Botes, 2023).

While studies in social media algorithms have expanded rapidly over the past decade, most have focused on user engagement, digital behaviour, recommendation systems, or information consumption (Trattner et al., 2022; Bojic, 2024). Comparatively fewer studies have examined how algorithmic personalization influences critical reflection, particularly by integrating insights from both philosophy and psychology. Existing research often treats algorithms as technological tools or communication systems, whereas their broader implications for human autonomy and decision-making remain underexplored (del Valle & Lara, 2024; Bonicalzi et al., 2023). This gap becomes even more apparent in studies involving Generation Z in Indonesia, where

interdisciplinary discussions connecting digital technology, philosophy, and psychology are still relatively limited (Komara & Widjaya, 2024; Nurjanah et al., 2024).

From a philosophical perspective, these developments raise fundamental questions about free will. Philosophers have long debated whether human beings genuinely make independent choices or whether their decisions are shaped by external influences. Kant (2012) viewed freedom as the capacity to act according to rational principles rather than immediate impulses. Human beings are always responsible for their choices because freedom is inseparable from human existence. More recently, Dennett (2015) suggested that free will can coexist with external influences as long as individuals retain the ability to reflect, evaluate reasons, and make deliberate decisions. Although these perspectives differ, they share an important assumption: genuine freedom requires reflective thinking (Pérez-Verdugo & Barandiaran, 2024; Botes, 2023). If reflection is gradually weakened by algorithmically curated information environments, the quality of human freedom itself becomes an important philosophical concern (Madary, 2022; Bonicalzi et al., 2023).

From a psychological perspective, the issue can be understood through psychological agency, a concept introduced by Bandura (2006) to describe individuals' capacity to intentionally direct their thoughts, regulate their behaviour, anticipate consequences, and reflect upon their own actions. Psychological agency emphasizes that people are not passive recipients of environmental influences but active participants in shaping their own lives (Koskela & Paloniemi, 2022). Nevertheless, environments that continuously direct attention and behaviour may reduce opportunities for intentional self-regulation and reflective judgement (Madary, 2022; Botes, 2023). In digital contexts where algorithms increasingly influence what people read, watch, and discuss, understanding how psychological agency operates becomes particularly important (Fink et al., 2024; Hua et al., 2026).

Rather than viewing algorithms as forces that completely determine human behaviour, this study argues that they reshape the informational environments in which decisions are made (Robertson et al., 2023; Nyhan et al., 2023). The central issue is therefore not whether Generation Z still possesses free will or psychological agency, but whether the conditions necessary to exercise these capacities are gradually changing (Pérez-Verdugo & Barandiaran, 2024; Fink et al., 2024). As personalized digital environments become more sophisticated, critical reflection may become increasingly difficult, making autonomous decision-making more challenging even when individuals believe they are acting freely (Vaassen, 2022; del Valle & Lara, 2024; Hua et al., 2026).

Based on this concern, the present study examines the relationship between algorithmic personalization, critical reflection, free will, and psychological agency through a qualitative literature review. Unlike previous studies that focus primarily on digital behaviour or technological performance, this research offers an interdisciplinary perspective by combining philosophical theories of free will with psychological theories of agency to explain how algorithmic systems influence reflective thinking among Generation Z (Marin, 2022; Koskela & Paloniemi, 2022; Bonicalzi et al., 2023). By integrating these perspectives, the study seeks to provide a more comprehensive understanding of human autonomy in the digital era and contribute to ongoing discussions in the ethical and psychological implications of algorithm-driven technologies (Bojic, 2024; Pérez-Verdugo & Barandiaran, 2024).

METHODS

This study employed a qualitative literature review to examine how algorithmic personalization influences the critical reflection of Generation Z and to explore its implications from the perspectives of free will and psychological agency. Rather than collecting primary empirical data, this study synthesized findings from previous scholarly works to develop a comprehensive understanding of the relationship between digital algorithms, human autonomy, and reflective decision-making. A literature review was considered the most appropriate approach because the research seeks to integrate philosophical and psychological perspectives that have often been discussed separately in previous studies. The literature search was

conducted between May and June 2026 using several reputable academic databases, including Google Scholar, Scopus, Web of Science, Science Direct, Springer Link, Taylor & Francis Online, Sage Journals, Frontiers, and Garuda. To ensure comprehensive coverage of the topic, the search employed combinations of keywords related to algorithmic personalization, social media algorithms, filter bubbles, echo chambers, critical thinking, Generation Z, free will, psychological agency, human agency, and digital autonomy. Searching multiple databases and combining different keywords increased the likelihood of identifying relevant studies from philosophy, psychology, communication, and media studies. To ensure the quality and relevance of the viewed literature, explicit inclusion and exclusion criteria were established before the screening process. The review included peer-reviewed journal articles published between 2015 and 2025, as well as classical philosophical and psychological works that provide the theoretical foundations for the concepts of free will and psychological agency. Only publications written in English or Indonesian and indexed in reputable academic databases or publishers were considered. Studies were selected if they discussed algorithmic personalization, recommendation systems, filter bubbles, echo chambers, critical reflection, free will, psychological agency, or closely related concepts. Opinion articles, non-peer-reviewed publications, and sources that did not directly address the research focus were excluded from the review.

The literature selection followed the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework to enhance transparency and methodological rigor throughout the review process. Initially, 150 records were identified through database searches. After screening titles and abstracts for relevance, 75 articles remained for further evaluation. A full-text assessment resulted in 32 eligible studies, and 25 publications were ultimately included in the final analysis because they provided the strongest theoretical and empirical contributions to the research objectives. This systematic selection process ensured that the review was based on credible, relevant, and high-quality academic sources. The selected literature was analyzed using thematic analysis, following the approach proposed by Braun and Clarke (2006, 2021). This analytical method enabled the identification of recurring concepts, relationships, and patterns across the reviewed studies. The analysis focused on five interconnected themes: (1) algorithmic personalization and patterns of information exposure, (2) filter bubbles and echo chambers as barriers to critical reflection, (3) philosophical perspectives on free will, (4) psychological perspectives on human agency, and (5) the implications of algorithmic personalization for autonomy and decision-making among Generation Z.

These themes were then integrated into a conceptual synthesis to explain how digital algorithms influence reflective thinking through both philosophical and psychological lenses. To strengthen the credibility of the findings, this review employed source triangulation by comparing evidence from international and national journal articles, academic books, and foundational theoretical works. Priority was given to peer-reviewed publications and well-established philosophical and psychological theories to ensure the reliability of the analysis. Rather than relying on a single discipline, the study intentionally combined perspectives from philosophy, psychology, communication, and digital media studies to produce a more comprehensive interpretation of algorithmic personalization and its influence on Generation Z. This interdisciplinary approach increases the trustworthiness of the findings while offering a broader understanding of human autonomy and psychological agency in contemporary digital environments

RESULTS AND DISCUSSION

The literature reviewed in this study consistently shows that personalization has become one of the most influential forces shaping how Generation Z accesses, interprets, and responds to information. While recommendation systems were originally developed to improve user experience by delivering relevant content, the reviewed studies suggest that their influence extends beyond information management. Algorithms increasingly shape the conditions under which individuals develop opinions, evaluate evidence, and make everyday decisions. Consequently, the discussion is no longer limited to technological efficiency but expands to

broader philosophical and psychological questions concerning critical reflection, autonomy, and human agency. The final review included 23 key studies that directly addressed algorithmic personalization, filter bubbles, echo chambers, critical reflection, free will, psychological agency, and digital autonomy. Table 1 summarizes the principal characteristics and findings of these studies, which served as the foundation for the thematic synthesis presented in the subsequent sections.

Table 1. Summary of Included Studies

No.	Author (Year)	Article Title / Topic	Key Findings Relevant to This Study
1	Ahmmad et al. (2025)	Social media algorithms	Algorithms contribute to filter bubbles and echo chambers, influencing youth information consumption.
2	Anisti et al. (2024)	Digital literacy	Critical thinking and digital literacy are essential competencies for Generation Z.
3	Areeb et al. (2023)	Recommender systems	Recommendation systems may narrow information diversity through filter bubbles.
4	Bandura (2001)	Human agency	Human beings are active agents capable of intentional action and self-regulation.
5	Bandura (2006)	Psychological agency	Agency consists of intentionality, forethought, self-reactiveness, and self-reflectiveness.
6	Boeker & Urman (2022)	TikTok personalization	User interactions and viewing behaviour shape personalized recommendations.
7	Cinelli et al. (2021)	Echo chambers	Social media reinforces homogeneous interaction and ideological clustering.
8	Dennett (2015)	Free will	Human freedom remains compatible with external influences through reflective reasoning.
9	Eder & Sehl (2025)	Algorithmic awareness	Awareness of personalization improves users' critical evaluation of online information.
10	Hardiman (2021)	Digital philosophy	Digital culture requires reflective distance to preserve human autonomy.
11	Hidayatulloh (2025)	Algorithmic authority	Algorithms reshape authority, rationality, and knowledge construction in cyberspace.
12	Joseph (2025)	Algorithmic self	Artificial intelligence influence's identity, introspection, and agency.
13	Kant (1785/2012)	Free will	Freedom is grounded in rational autonomy and moral reasoning.
14	Khulwa et al. (2025)	TikTok engagement	Algorithm awareness predicts Generation Z's engagement with TikTok.
15	Lee et al. (2023)	Agentic social media use	Intentional social media use strengthens psychological agency and well-being.
16	Pabubung (2021)	AI ethics	Ethical education is necessary alongside advances in artificial intelligence.
17	Pabubung (2023)	Human dignity	AI creates new ethical challenges related to autonomy and human dignity.
18	Pariser (2011)	Filter bubble	Personalized filtering limits exposure to diverse information.
19	Rahman et al. (2025)	Information consumption	Social media algorithms influence information consumption patterns among Generation Z.
20	Rydenfelt et al. (2025)	Autonomy	Algorithms reshape the conditions under which autonomy is exercised.

21	Sahebi & Formosa (2022)	Digital autonomy	Social media may subtly undermine individual autonomy.
22	Spohr (2017)	Polarization	Filter bubbles increase selective exposure and ideological polarization.
23	Susser et al. (2019)	Online manipulation	Digital manipulation operates through hidden algorithmic influences on decision-making.

Table 1 shows that the reviewed studies consistently highlight the broad influence of algorithmic personalization beyond content recommendation. Collectively, these studies demonstrate that personalized digital environments shape information exposure, reinforce filter bubbles and echo chambers, and influence critical reflection, psychological agency, and autonomous decision-making among Generation Z. These recurring findings provide the empirical and conceptual foundation for the thematic discussion presented in the following sections. Unlike previous studies that primarily examined algorithmic personalization from the perspectives of communication, marketing, or user engagement, this review synthesizes philosophical and psychological perspectives to explain how personalized digital environments may influence reflective thinking. Across the selected literature, a consistent pattern emerges: algorithmic systems shape information exposure, selective exposure contributes to filter bubbles and echo chambers, and these environments may gradually weaken opportunities for critical reflection. This relationship forms the basis for understanding how digital technologies may influence both free will and psychological agency among Generation Z.

Algorithmic Personalization and Information Exposure

Algorithmic personalization operates by continuously collecting and analyzing users' behavioural data, including viewing history, search activity, interaction patterns, watch time, and personal preferences. Based on these data, recommendation systems predict which content is most likely to attract users' attention and maximize engagement. As a result, individuals are no longer exposed to identical information but instead experience highly personalized digital environments that differ from one user to another. For Generation Z, this personalized information environment has become a normal part of everyday life. Social media platforms are no longer simply communication tools; they function as primary sources of news, education, entertainment, political discussion, lifestyle information, and identity exploration. Consequently, algorithms increasingly influence not only what information users receive but also the sequence, frequency, and visibility of that information.

The reviewed literature indicates that personalized recommendations provide several practical advantages. Users can quickly discover information relevant to their interests, reducing the time required to search for desired content. Personalized systems also help users navigate the overwhelming amount of information available online by filtering content according to individual preferences. These benefits explain why algorithmic recommendation systems have become central features of nearly every major social media platform. Despite these advantages, personalization also creates significant challenges. Because recommendation systems prioritize previous preferences, users are repeatedly exposed to information that confirms existing interests and beliefs. Exposure to alternative perspectives gradually becomes less frequent, not because opposing information disappears entirely, but because algorithms consider it less relevant or less engaging. Over time, the diversity of information available to users becomes increasingly limited.

This pattern is particularly important for Generation Z because adolescence and early adulthood represent critical stages of cognitive and psychosocial development. During these periods, individuals actively construct personal values, political opinions, career aspirations, and social identities. Exposure to diverse perspectives supports reflective thinking by encouraging individuals to compare arguments, evaluate evidence, and reconsider previous assumptions. Conversely, when information environments become increasingly homogeneous, opportunities for such reflection may gradually decline. The findings therefore suggest that algorithmic

personalization should not be understood merely as a technological mechanism for improving efficiency. Instead, it functions as a social environment that subtly shapes learning experiences, attention, and cognitive development. Although users remain free to search for alternative information, their daily digital experiences are increasingly structured by recommendation systems operating largely outside conscious awareness.

This perspective is consistent with Hidayatulloh's (2025) argument that algorithmic systems increasingly function as epistemic mediators rather than neutral communication technologies. By determining which information becomes visible, credible, and repeatedly encountered, algorithms indirectly influence the processes through which individuals develop beliefs, construct meaning, and evaluate knowledge. Thus, algorithmic personalization shapes not only what Generation Z knows but also how they come to know it, making reflective engagement with information increasingly important.

Filter Bubbles, Echo Chambers, and the Decline of Critical Reflection

One of the most consistent findings across the reviewed literature is the relationship between algorithmic personalization and the emergence of filter bubbles and echo chambers. Although these concepts are closely related, they describe different mechanisms through which information diversity becomes increasingly limited. A filter bubble occurs when recommendation algorithms selectively display information based on previous user behaviour. As algorithms continuously learn users' preference, they increasingly recommend content similar to what users have previously consumed. Consequently, individuals encounter fewer perspectives that challenge their existing beliefs, even though alternative viewpoints remain available elsewhere on the platform.

Echo chambers, on the other hand, develop through the interaction between algorithmic recommendations and users' own social behaviour. Individuals naturally tend to follow people with similar values, engage with familiar opinions, and avoid conflicting viewpoints. Algorithms reinforce these tendencies by recommending communities and content that generate high engagement, creating environments in which similar ideas are repeatedly circulated and rarely questioned. Together, these mechanisms reduce opportunities for critical reflection. Critical reflection requires individuals to pause before accepting information, examine different perspectives, evaluate supporting evidence, and consider alternative explanations. However, algorithm-driven environments often prioritize speed, emotional engagement, and repeated exposure over careful deliberation. Information is presented in rapid succession, encouraging immediate reactions rather than thoughtful evaluation.

For Generation Z, this issue extends beyond digital media consumption. Critical reflection is closely related to identity formation, moral reasoning, and independent decision-making. Individuals who regularly encounter diverse viewpoints are more likely to develop flexible thinking and stronger evaluative skills. In contrast, those who are primarily exposed to reinforcing information may gradually become more confident in existing beliefs without fully examining their validity. Importantly, the reviewed literature does not suggest that Generation Z lacks critical thinking abilities. Rather, it indicates that the architecture of digital platforms may create environments where reflective thinking is exercised less frequently. In other words, the challenge lies not in individual capability but in the conditions under which that capability is practiced.

From a psychological perspective, this phenomenon can also be understood as a shift from reflective processing toward more automatic and reactive forms of information processing. As personalized content becomes increasingly predictable and emotionally engaging, individuals may rely more heavily on intuitive judgments than on deliberate reasoning. Such patterns do not necessarily eliminate critical thinking but may reduce the motivation and opportunity to engage in it consistently. Taken together, these findings suggest that filter bubbles and echo chambers represent more than communication phenomena. They are environments that shape how individuals learn, evaluate information, and construct reality. Consequently, discussions

surrounding algorithmic personalization should extend beyond technological performance and consider their broader implications for cognitive development, psychological well-being, and human autonomy.

Free Will in Algorithmic Environments: A Philosophical Perspective

The influence of algorithmic personalization extends beyond information consumption and enters a more fundamental philosophical question concerning human freedom. Every day, social media users appear to make countless independent choices, such as deciding which videos to watch, which opinions to support, or which communities to join. At first glance, these decisions seem entirely voluntary. However, when the information available to users has already been filtered and prioritized by recommendation systems, an important question arises: How free are these choices if the options themselves have been shaped by algorithms?

From a philosophical perspective, this question challenges the meaning of free will in contemporary digital society. Rather than asking whether people can still make choices, the issue becomes whether those choices are made through genuine reflection or are increasingly guided by digital environments designed to predict and influence behaviour. Kant (2012) viewed freedom as the capacity to act according to rational principles rather than immediate desires or external pressures. Genuine freedom, therefore, requires individuals to examine reasons, evaluate alternatives, and make decisions through autonomous judgment. Within algorithmically personalized environments, this ideal becomes increasingly difficult to achieve. Recommendation systems continuously present information that aligns with users' previous interests, reducing opportunities to question assumptions or encounter competing viewpoints. Consequently, individuals may still experience the feeling of making independent choices while having fewer opportunities to exercise rational autonomy fully.

A complementary perspective is by arguing that human beings are fundamentally free because they are always responsible for the choices they make. External circumstances may influence decisions, but they never completely remove individual responsibility. Applied to digital environments, Sartre's philosophy suggests that Generation Z should not simply be viewed as passive victims of recommendation algorithms. Instead, they remain responsible for questioning the information they receive, recognizing the influence of digital systems, and consciously deciding how they engage with online content. Authentic freedom requires awareness. Individuals who fail to recognize how external conditions shape their decisions risk acting in what he describes as *'bad faith'*, accepting externally constructed realities without critically examining them. Within algorithmic environments, this raises an important concern. When users are unaware that their information has been selectively curated, they may believe they are acting freely while their perspectives have gradually been shaped through repeated exposure to personalized content.

Dennett (2015) provides a more contemporary interpretation through this theory of compatibilism. He argues that free will does not require complete independence from external influences because human decisions are always shaped by biological, social, and environmental factors. What matters is whether individuals retain the capacity to evaluate reasons, anticipate consequences, revise beliefs, and learn from experience. From this perspective, algorithms do not automatically eliminate free will. Instead, they become one of many environmental influences that individuals must learn to recognize and manage.

This contemporary philosophical discussion can be further enriched by Hidayatulloh's (2025) analysis of algorithmically mediated cyberspace. He argues that digital platforms do not merely change the speed of information circulation but fundamentally transform authority, rationality, and the production of knowledge by shifting legitimacy from traditional scholarly structures toward algorithmic visibility and user engagement. While his discussion focuses on religious knowledge, the underlying philosophical insight is equally relevant to broader digital environments: algorithms increasingly shape the epistemic conditions under which individuals evaluate information and make decisions. Consequently, preserving human autonomy requires

not only freedom to choose but also the capacity to critically examine the algorithmic structures that influence those choices.

These philosophical perspectives suggest that algorithmic personalization should not be understood as a force that completely removes human freedom. Rather, it changes the conditions under which freedom is exercised. In digital environments, autonomy depends less on the mere availability of choices and more on individuals' ability to critically reflect upon the information that shapes those choices. Consequently, maintaining free will in the digital era increasingly requires awareness of how algorithmic systems influence everyday thinking and decision-making.

Psychological Agency in the Digital Era

While philosophy helps explain the meaning of freedom, psychology provides insight into the cognitive and behavioural processes that enable individuals to exercise that freedom. This study adopts Bandura's concept of psychological agency to explain how Generation Z navigates increasingly personalized digital environments. According to Bandura (2006), individuals are active agents rather than passive recipients of environmental influences. They intentionally pursue goals, regulate their own behaviour, anticipate future consequences, and reflect upon their experiences. These capacities allow people to make meaningful decisions despite the many external factors that surround them.

Within social media environments, however, exercising psychological agency has become increasingly challenging. Personalized recommendation systems continuously direct users toward content predicted to maximize engagement. As a result, individuals may enter digital platforms with one purpose but gradually spend considerable time consuming algorithmically recommended content that was never intentionally sought. Although users remain physically in control of their actions, the direction of their attention is increasingly influenced by automated systems.

This situation affects each component of psychological agency. Intentionality may weaken when users no longer determine their own information goals but instead follow endless recommendation feeds. Forethought becomes more limited when rapid and emotionally engaging content encourages immediate reactions rather than careful consideration of long-term consequences. Self-regulation becomes more difficult as personalized platforms are intentionally designed to maintain attention for extended periods. Finally, self-reflection, the component most closely related to this study, may gradually decline when individuals become accustomed to accepting information without questioning why it appears or how it influences their beliefs.

The reviewed literature suggests that these changes do not occur because Generation Z lacks cognitive ability. Rather, they emerge from continuous interaction with digital environments specifically designed to optimize engagement. Algorithms subtly shape attention, preferences, and habits through repeated exposure, making reflective thinking less likely to occur spontaneously. Nevertheless, psychological agency should not be viewed as something that disappears in digital environments. Individuals remain capable of regulating their behaviour, questioning digital content, and deliberating seeking diverse sources of information. Studies on algorithmic awareness indicate that users who understand how recommendation systems operate are more likely to critically evaluate online information instead of passively accepting personalized content. This finding highlights the importance of digital literacy, not merely as technical competence but as the ability to recognize and evaluate the invisible mechanisms influencing everyday decisions. From this perspective, strengthening psychological agency requires more than reducing screen time or limiting social media use. It involves cultivating reflective habits, encouraging intentional information seeking, and developing awareness of how digital environments shape thinking and behaviour. These competencies become increasingly important as algorithmic personalization continues to influence nearly every aspect of contemporary life.

Conceptual Synthesis: From Algorithmic Personalization to Human Autonomy

The literature reviewed in this study reveals a consistent relationship between algorithmic personalization, critical reflection, free will, and psychological agency. Rather than functioning as isolated concepts, these elements interact through a dynamic process that gradually shapes how Generation Z understands information and make decisions. The process begins with algorithmic personalization, where recommendation systems selectively organize information according to users' previous behaviours and preferences. Continuous exposure to similar content encourages the development of filter bubbles and echo chambers, reducing opportunities to encounter alternative perspectives. As information becomes increasingly homogeneous, opportunities for critical reflection also become more limited because individuals are less frequently challenged to question existing assumptions or evaluate competing arguments.

Reduced critical reflection has broader consequences for both philosophy and psychology. From a philosophical perspective, it affects the quality of free will, since autonomous decision-making depends on the ability to deliberate rationally before making choices. From a psychological perspective, it influences psychological agency by weakening intentional self-regulation, reflective judgment, and conscious decision-making. Consequently, the central concern is not that algorithms determine human behaviour entirely but that they reshape the environments in which autonomy is exercised. Hidayatulloh (2025) suggests that algorithmic environments transform not only patterns of information exposure but also the epistemic structures through which authority and rationality are constructed. Integrating this perspective with philosophical theories of free will and psychological theories of agency suggests that algorithmic personalization influences human autonomy through changes in the quality of reflective reasoning rather than through direct behavioural determination. This relationship can be summarized conceptually as follows:

Algorithmic Personalization > Selective Information Exposure > Filter Bubbles and Echo
Chambers > Reduced Critical Reflection > Weakened Reflective Autonomy > Less Deliberative
Decision-Making

This conceptual framework represents the primary contribution of the present study because it integrates philosophical and psychological perspective into a single explanatory model. Rather than viewing algorithms solely as technological tools, the framework demonstrates how digital environments influence the reflective processes that support human freedom and agency

Implications of the Study

The findings of this review have important implications for philosophy, psychology, education, and digital technology. From a philosophical perspective, the study suggests that discussions of free will must increasingly consider algorithmic environments as contemporary contexts in which human freedom is exercised. Freedom can no longer be understood solely as the existence of choices but must also include awareness of the forces shaping those choices. The findings also contribute to digital literacy education. Existing digital literacy programs often emphasize technical skills, such as evaluating online sources or protecting personal data.

While these remain important, the present review argues that digital literacy should also include understanding how recommendation algorithms influence attention, beliefs, and decision-making. Such awareness encourages users to engage with digital information more critically and responsibly. Finally, the study highlights the ethical responsibility of digital platform providers. Recommendation systems should not focus exclusively on maximizing engagement but should also support information diversity, algorithmic transparency, and users' long-term cognitive well-being. Designing technologies that encourage reflection rather than continuous engagement may help preserve human autonomy within increasingly personalized digital environments.

CONCLUSION

The literature indicates that algorithmic personalization has transformed not only how Generation Z consumes information but also the conditions under which critical thinking, free will, and psychological agency are exercised. The evidence reviewed does not support an overly deterministic view that algorithms completely control human behaviour. Instead, it suggests a more nuanced understanding: algorithms subtly reshape informational environments, influencing how people learn, reflect, and make decisions while still leaving room for human agency.

SUGGESTION

Accordingly, the greatest challenge facing Generation Z is no longer gaining access to information but preserving the ability to think critically within environments specifically designed to personalize attention. Strengthening reflective thinking, algorithmic awareness, and psychological agency therefore becomes essential for ensuring that technological advancement continues to support, rather than diminish, human autonomy.

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