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Heuristic and Systematic Processing on Social Media: Pathways from Literacy to Fact-Checking Behavior

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Abstract

Misinformation circulating on social media presents a critical challenge for journalism and media education in the digital age. Beyond individual news consumption, it reflects broader concerns about cognitive processing and the cultivation of transversal competencies that underpin responsible digital citizenship. This study examines how foundational literacy shapes online fact-checking behavior through the mediating role of news literacy and whether this relationship is moderated by heuristic–systematic processing within social media environments. An online survey of South Korean college students was conducted, and moderated mediation analysis revealed that foundational literacy indirectly fosters fact-checking through enhanced news literacy. However, reliance on heuristic shortcuts weakened this pathway, highlighting how cognitive biases can undermine critical verification in digital contexts. These findings suggest that journalism education would benefit from moving beyond functional skills to incorporate awareness of platform-driven information flows, reflective media engagement, and critical evaluation into curricula. By positioning news literacy as a core competency for contemporary digital environments, this study contributes to ongoing discussions on how higher education can prepare future journalists and media users to navigate complex, technology-mediated information ecosystems with ethical and epistemic responsibility.

Keywords: news literacy; fact-checking behavior; social media processing; heuristic processing; systematic processing

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1. Introduction

Across the globe, younger generations increasingly consume information through digital and social media platforms, where news and entertainment appear in rapid succession (Shearer, 2023). These environments promote fragmented attention and quick judgments, making sustained engagement with long-form or complex texts progressively more difficult (Deloitte, 2022). Dual-processing models help explain this shift: while systematic processing involves slow, effortful evaluation, heuristic processing relies on rapid, cue-based judgments shaped by headlines, visuals, or popularity signals (Johnson & Ewbank, 2018). Emerging evidence suggests that systematic forms of engagement are becoming less common. As reported in The Atlantic, even students at highly selective U.S. universities now struggle to complete book-length reading assignments, a trend attributed to the dominance of short-form digital media (Horowitch, 2014). This shift toward heuristic, surface-level processing raises important questions about how younger generations evaluate the credibility of news encountered on social media.

In South Korea, evolving digital habits mirror broader shifts in how individuals process information online. The 2023 National Reading Survey reported that more than half of students now associate "reading" with smartphone-based activities such as Webtoons and web novels—formats that encourage quick, surface-level engagement. Over 70% of adults similarly view online text and social media posts as legitimate reading. Within a dual-processing framework, these patterns reflect greater reliance on heuristic processing, where judgments are formed rapidly using minimal cues (Johnson & Ewbank, 2018). Korea's exceptionally high smartphone penetration (99.6% among teenagers) further reinforces this tendency (Korea Communications Commission, 2023). These habits have implications for both foundational literacy and news literacy, which require deeper comprehension, evaluation, and credibility assessment. Supporting this concern, the OECD (2021) found that although Korean secondary students perform well in general reading proficiency, they struggle to distinguish facts from opinions and to assess source credibility—skills central to both foundational and news literacy (OECD, 2021). Together, these trends underscore the need to understand literacy not only as text comprehension but also as the ability to critically evaluate digital information within algorithmically structured environments.

These trends underscore the need to view literacy as more than the ability to read and comprehend text. In today's media ecosystem—where news, entertainment, and user-generated content intermingle—literacy also requires the capacity to judge credibility, recognize bias, and understand the communicative intent behind online information. Within this broader framework, news literacy operates as a crucial extension of foundational literacy, enabling individuals to navigate digitally networked platforms, verify sources, and participate responsibly in public discourse (Johnson & Ewbank, 2018). This expanded view is especially important for college-aged emerging adults, who are entering a formative stage of civic engagement and increasingly encounter information through digital channels. Accordingly, universities must move beyond traditional knowledge transmission to cultivate integrated literacies—media, news, and data-informed platform literacy—that equip students to critically assess information and act as informed global citizens. Developing these competencies is essential for higher education's social mission: preparing individuals to contribute to democratic communication and public life in an artificial intelligence (AI)-mediated media environment.

Prior research has identified several antecedents to news literacy, such as educational attainment, political bias, trust in the media, and overall frequency of media use. However, relatively little attention has been given to the influence of specific patterns of social media engagement on the development of news literacy competencies. Addressing this gap, the present study applies an information-processing model to examine how distinct modes of social media use—ranging from heuristic, surface-level browsing to systematic, in-depth engagement—affect college students' levels of news literacy and their ability to critically evaluate, verify, and respond to online content. Rather than treating social media use as a singular, quantitative measure, this study recognizes the diversity inherent in everyday digital practices. Depending on the context, individuals may engage deeply with news content—reading thoroughly, reflecting, or evaluating perspectives when the topic feels relevant or important. In other situations, they may interact more passively, quickly scanning headlines, browsing videos, or relying on surface-level cues during casual use. These differing modes of engagement not only influence how news is consumed but also shape the development of critical news literacy and verification behaviors. By focusing on engagement styles within social media platforms, the study links individual literacy skills to broader issues of civic responsibility and digital citizenship.

This study examines South Korean college students—a population immersed in one of the world's most digitally connected societies—to explore how digital media environments

shape news literacy and critical information engagement. It first evaluates foundational literacy skills, including reading comprehension, vocabulary, language proficiency, and critical reasoning, which form the cognitive basis for higher-order media competencies. Building on this foundation, the analysis investigates how these skills foster news literacy and subsequently influence fact-checking behaviors. Particular attention is given to the moderating role of social media use, distinguishing between systematic and heuristic modes of information processing.

By integrating literacy dimensions with cognitive processing models, this study advances understanding of how individuals engage with news content and credibility in algorithmically mediated environments. The findings offer implications for education in digital media literacy, highlighting the need to equip learners with the cognitive and ethical competencies required to navigate misinformation, interpret mediated realities critically, and participate responsibly in digital publics. Ultimately, the study underscores how literacy development and reflective media use can strengthen civic resilience and promote informed engagement in the evolving media ecosystem.

2. Theoretical Background and Research Model

2.1. Foundational Literacy as Precursor to News Literacy

Foundational literacy refers to the core cognitive competencies that enable individuals to decode, comprehend, and interpret written information across contexts. These skills include reading comprehension, vocabulary knowledge, inferential reasoning, and comprehension monitoring—capacities that form the cognitive substrate for all higher-order literacies. Prior research highlights the centrality of these abilities: Potter (2004) identifies foundational skills as the basis of all media literacies; Mihailidis (2008) argues that without them, individuals cannot critically evaluate or interpret media messages; and Ashley et al. (2013) demonstrate that language proficiency predicts students' ability to detect bias and assess credibility. Similarly, Maksl et al. (2015) emphasize that general reading skills underpin interpretation of news structure and logic, while Miller et al. (2024) show that stronger language abilities reduce susceptibility to low-veracity disinformation.

Although foundational literacy offers important cognitive grounding, it is not sufficient on its own in digital environments where rapid news flows, user-generated content, and algorithmic personalization require additional skills such as evaluation, verification, and credibility assessment. In this sense, foundational literacy serves as the cognitive base from which more specialized literacies—such as news literacy—develop. It equips individuals with the prerequisite ability to understand texts, integrate new information, and reason critically, thereby enabling the more advanced evaluative processes necessary for assessing credibility, navigating digital content, and participating responsibly in networked information ecosystems.

2.2. News Literacy in Social Media Environment

News literacy refers to the ability to critically evaluate news content by assessing source credibility, verifying information accuracy, and recognizing misinformation within complex digital environments (Ashley et al., 2017; Tully et al., 2011). Unlike foundational literacy, which centers on comprehension and cognitive processing, news literacy encompasses higher-order evaluative, ethical, and civic competencies. These skills enable individuals not only to interpret information but also to judge its trustworthiness, understand its production context, and reflect on the social implications of sharing or amplifying it.

In the contemporary digital society, news literacy extends beyond functional skills of accessing and analyzing information to include ethical reflection, systems awareness, and civic participation. Individuals now function simultaneously as consumers, curators,

and co-creators of content. They navigate hybrid information environments where credible journalism, influencer discourse, entertainment, and synthetic AI-generated media coexist and compete for attention. Within such ecosystems, competencies like source evaluation, credibility judgment, and evidence-based reasoning are essential not only for personal discernment but also for sustaining collective trust in information systems (Hobbs, 2011; Jenkins & Purushotma, 2009; Garrett, 2017; Fleming, 2013).

Drawing on prior frameworks, news literacy can be conceptualized across three interrelated domains—creation, circulation, and participation—each aligned with the ethical and civic objectives of transformative media education:

- Creation involves understanding how information is produced through journalistic, institutional processes, including data sourcing, verification, and transparency (Tully et al., 2011; Swart, 2023). Awareness of credible sourcing—such as diverse perspectives, traceable data, or disclosure of AI assistance—enables students to distinguish authentic content from manipulative or deceptive information (Hinsley & Holton, 2021).
- Circulation refers to awareness of how information flows through digital networks and algorithms. Literate users recognize how personalization systems and engagement metrics shape exposure and interpretation, cultivating what can be termed algorithmic awareness (Du, 2023; Edgerly, 2017; Loh et al., 2023).
- Participation encompasses civic and ethical engagement, such as commenting, sharing, or correcting misinformation. These practices illustrate participatory literacy, combining critical reasoning with empathy, respect, and accountability in digital discourse (Jenkins & Purushotma, 2009; Huber et al., 2022).

Collectively, these domains frame news literacy as a core competency that prepares students to act as reflective and responsible digital citizens. Understanding how such competencies manifest in everyday social media use—especially through heuristic and systematic processing—clarifies the cognitive pathways through which future media education can foster resilience against misinformation.

2.3. Systematic-Heuristic Processing Model in Digital Engagement

As digital natives, college students rely heavily on social media for news consumption, making the nature of their platform use a critical factor in shaping news literacy (Ku et al., 2019; Musgrove et al., 2018). Prior research shows that active news-seeking behaviors—such as following reputable outlets, comparing perspectives, and cross-verifying information—are associated with higher levels of news literacy (Maksl et al., 2015; Ku et al., 2019; Musgrove et al., 2018). In contrast, passive exposure to personalized content streams without reflective engagement is linked to lower discernment and greater susceptibility to misinformation (Vraga et al., 2015). Adolescents who demonstrate stronger critical thinking about news also tend to monitor sources more carefully, question how content is filtered or recommended, and show higher intrinsic motivation to engage with credible information (Ku et al., 2019).

The dual-processing model offers a useful framework for understanding these differences (Chaiken, 1980; Petty & Cacioppo, 1986). Systematic processing involves deliberate, analytic engagement, such as reading content thoroughly, evaluating arguments, and cross-checking sources (Chaiken, 1980; Javed et al., 2024; Lee & Hong, 2021). Social interaction—for example, discussing news with peers—can further encourage this mode by promoting accountability and evidence-based reasoning (Marchi, 2012). In contrast, heuristic processing relies on rapid, cue-based judgments shaped by surface signals like headlines, visuals, or source familiarity (Chaiken, 1980). Social media platforms—particularly those emphasizing short-form, high-volume content such as Instagram, YouTube, TikTok, and

X—tend to amplify heuristic cues, where likes, follower counts, or trending labels can stand in for credibility (Ku et al., 2019; Meijer & Kormelink, 2015). These environments encourage quick, low-effort judgments rather than reflective evaluation, contributing to weaker news literacy and reduced verification behaviors.

Thus, understanding how individuals alternate between systematic and heuristic processing is essential for explaining variability in news literacy. While systematic processing supports careful evaluation, heuristic processing favors speed and convenience, often at the expense of accuracy. Examining these modes within everyday social media use helps clarify how processing tendencies shape individuals' ability to evaluate news and engage responsibly in digital information environments.

2.4. Proposed Moderated Mediation Model

Based on contemporary theories of literacy and the dual processing, this study proposes a moderated mediation model. The model suggests that foundational literacy is expected to enhance news literacy (H1), which in turn predicts online fact-checking behavior (H2). Foundational literacy is also posited to directly predict online fact-checking behavior (H3), with news literacy mediating this relationship (H4). The strength of these associations is hypothesized to vary by processing style: systematic processors—who engage in deliberate reading, reflective writing, and thoughtful commenting—are expected to show a stronger link between foundational literacy and news literacy (H5a), whereas heuristic processors—who rely on skimming, short-form videos, or casual conversations—are expected to show a weaker link between news literacy and online fact-checking (H5b). The research model is presented in Figure 1.

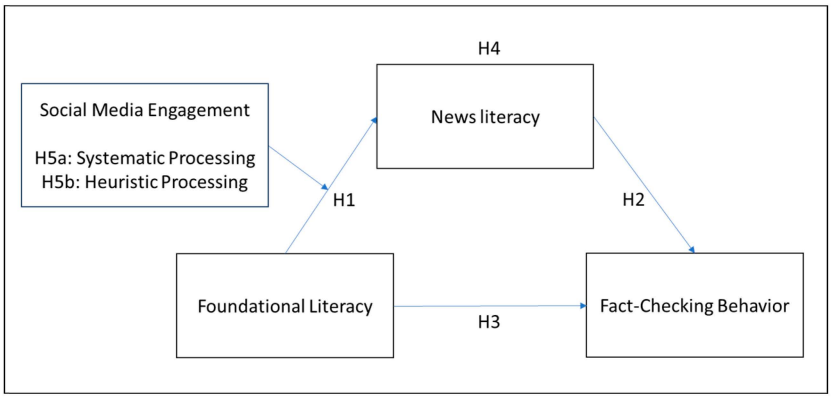


Figure 1. Conceptual Moderated Mediation Model of Foundational Literacy, News Literacy, and Fact-Checking Behavior.

2.5. Hypotheses

H1: *Foundational literacy positively predicts news literacy.*

H2: *News literacy positively predicts online fact-checking.*

H3: *Foundational literacy positively predicts online fact-checking.*

H4: *News literacy mediates the effect of foundational literacy on online fact-checking.*

H5a: *The link between foundational literacy and news literacy is stronger among systematic processors.*

H5b: *The link between news literacy and online fact-checking is weaker among heuristic processors.*

3. Method

3.1. Sample and Data Collection

A sample size of 200 was determined to ensure adequate statistical power for the planned linear regression analyses. Based on Cohen's (1988) guidelines for a medium effect size ($f2 = 0.15$), four predictors, an alpha of 0.05, and power of 0.80, the minimum required sample was approximately 85. An online survey was conducted by Macromill Embrain Co. Ltd. (Seoul, Republic of Korea), a Korean marketing and public opinion research firm that operates nationally certified online panels. Data were collected during the third to the last week of March 2025. Quotas were matched to the age distribution of the Seoul metropolitan population to ensure representativeness. Only currently enrolled college students aged 18–25 residing in Seoul and the surrounding metropolitan area were eligible to participate. Potential participants were provided with an information page detailing the study's background and purpose, research procedures, potential benefits and risks, participant responsibilities, and the right to withdraw from the survey at any time. The form also included a section on consent for data collection and use, as well as the researchers' contact information. Participants provided informed consent by checking an 'I agree' box before accessing the survey, ensuring voluntary participation in line with ethical guidelines. Participants were 200 college students. Their age ranged from 18 to 25 years (M = 21.80, SD = 1.86), with 105 (52.5%) males and 95 (47.5%) females (See Table 1).

Table 1. Information processing type and classification of social media use.

Type	Social Media Engagement
Heuristic processing	"I understand content mainly through titles, reading only superficially." "I judge credibility based on follower counts or the number of 'likes.'" "I make judgments based on my prior beliefs."
Systematic processing	"I carefully read the full content to grasp the main ideas." "I evaluate the logical validity of the arguments." "I seek additional information before making judgments."

3.2. Procedures and Measures

Data were collected through an online survey structured into five sequential sections. In the first section, participants completed a foundational literacy assessment consisting of 10 items adapted from the adult literacy test developed by the Educational Broadcasting System (EBS), South Korea's public educational broadcaster, for the program Your Literacy+ as part of its nationally distributed adult literacy program. To ensure transparency, we note that the items cover multiple subskills: (a) vocabulary and idiomatic expressions (Q1–Q3), (b) lexical choice and standard usage (Q2, Q5), (c) inferential and pragmatic understanding (Q4), (d) comprehension of informational texts (Q6, Q10), (e) reasoning about factual information (Q7, Q9), and (f) interpretation and critical evaluation of visual information (Q8). Together, these items are intended to capture foundational literacy as a broad cognitive competency supporting comprehension, inference, and information interpretation. Each quiz was worth one point, resulting in a total possible score ranging from 0 to 10 (EBS, 2025).

The second section measured participants' news literacy, emphasizing their ability to critically evaluate online information, interpret media messages, and engage responsibly in the creation and circulation of digital news. Seven items were adapted from prior news-literacy research and conceptually informed by studies examining how young adults access, evaluate, and engage with news in digital environments (Fleming, 2013; Swart, 2023; Edgerly, 2017). Because earlier instruments were developed primarily for traditional journalism settings, items were updated to reflect contemporary social media dynamics.

Participants responded on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree) to statements assessing their understanding that: (1) economic or political interests can influence how news is produced and emphasized—reflecting Fleming's (2013) emphasis on source motives and institutional influences; (2) headlines and visuals are often designed to attract attention or guide interpretation, consistent with research on framing and persuasive design; (3) news content may include bias or selective emphasis; (4) emotional or sensational language can shape audience perceptions; (5) personalization systems determine which news users encounter, aligning with Swart's (2023) findings on news curation and high-choice information environments; (6) engagement metrics such as likes, shares, and comments drive the circulation and prominence of certain stories; and (7) individuals should evaluate the credibility and potential consequences of sharing news—an expectation grounded in both Swart's (2023) and Edgerly's (2017) observations that young adults engage in selective verification and deliberate sharing practices.

The third section assessed online fact-checking behaviors, evaluating participants' tendencies to verify and cross-check the accuracy of news before accepting or disseminating it online. Three items were adapted from surveys used by Huber et al. (2022) and Pennycook and Rand (2021) to assess key fact-checking behaviors. The items examined participants' tendencies to (1) re-examine information and cross-check facts using additional news sources (e.g., other outlets, TV, newspapers), (2) check the accuracy of information by consulting official government sources such as government websites or public information portals, and (3) verify information before sharing it with others. A three-item scale was used because prior studies consistently operationalize fact-checking as a concise set of core verification actions, and a brief behavior-focused measure captures these essential behaviors without redundancy. Participants rated each behavior on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The fourth section gathered information about participants' patterns of social media use. 13 items assessing the frequency of their engagement in various online activities over the past week were used referenced from the Media Audience Survey by the Korea Press Foundation (2024). As shown in Table 1, based on dual-processing theory, heuristic social media use referred to behaviors making quick judgments about social media content based on surface-level cues such as titles, captions, number of followers, or "likes," rather than engaging in in-depth analysis. It also relies on one's preexisting beliefs and simple indicators, allowing users to process information with minimal cognitive effort. Systematic social media use entails carefully examining the full content of social media posts, evaluating the logical validity of arguments, and seeking additional information if needed. It requires deliberate, effortful analysis to form well-grounded judgment. Participants reported their frequency of engagement for each behavior using a 5-point scale ranging from 1 (never) to 5 (very often).

Finally, the fifth section collected demographic information, including participants' different academic years and genders, with cumulative GPAs reported on a 4.0 scale. This distribution allows for a comprehensive analysis of students' characteristics in relation to their academic field, year level, and academic performance.

4. Results

4.1. Descriptive Analysis

As shown in Table 2, the participants in this study comprised 52.5% of male and 47.5% of female undergraduate students from diverse academic backgrounds, categorized into five major fields: Humanities and Social Sciences (n = 83, 41.5%), Engineering (n = 62, 31.0%), Natural Sciences (n = 26, 13.0%), Arts, Performance, and Athletics (n = 22, 11.0%), and Medical Sciences (n = 7, 3.5%). The sample included 105 males (52.5%) and 95 females

(47.5%) students. 200 Participants were distributed across academic years as follows: freshmen (n = 33), sophomores (n = 56), juniors (n = 45), and seniors (n = 66).

Table 2. Demographic characteristics of participants (N = 200).

	Demographic Characteristics	*n*	Valid %
Gender	Men	105	52.5
	Women	95	47.5
Grade	Freshmen	33	16.5
	Sophomore	56	28.0
	Junior	45	22.5
	Senior	66	33.0
Major [1]	Humanities/Social Science	83	41.5
	Engineering	62	31.0
	Natural Sciences	26	13.0
	Arts, Performance, and Athletics	22	11.0
	Medical Sciences	7	3.5
GPA	Below 2.0	4	2.0
	2.00–2.49	2	1.0
	2.50–2.99	9	4.5
	3.00–3.49	32	16.0
	3.50–3.99	78	39.0
	4.00	56	28.0
	Decline to answer	19	9.5
		200	100

[1] The following table categorizes participants by broad academic fields. Each category encompasses a range of related subfields; for example, "Humanities and Social Sciences" includes majors such as Business, Education, Journalism, and Political Science.

4.2. Hypotheses Testing

Table 3 presents the descriptive statistics for the key constructs measured in this study. The internal consistency for all multi-item scales exceeded the acceptable threshold of 0.70, indicating satisfactory reliability (Nunnally & Bernstein, 1994).

Table 3. Descriptive and correlations analysis and measurement reliability.

Variables	M	SD	α	FL	NL	SP	HP	FCB
Foundational Literacy (FL)	5.93	1.72						
News Literacy (NL)	3.62	0.63	0.84	0.21 **				
Systematic Processing (SP)	2.41	0.72	0.79	0.13	0.13			
Heuristic Processing (HP)	2.66	0.60	0.74	−0.03	−0.11	0.21		
Fact-Checking Behaviors (FCB)	3.59	0.67	0.81	0.07	0.69 **	0.18 **	0.14	

Note: M = Mean; SD = Standard Deviation, α = Cronbach's alpha, FL = Foundational Literacy, NL = News Literacy, SP = Systematic Processing, HP = Heuristic Processing, FCB = Fact-Checking Behavior, ** $p < 0.01$.

To test the proposed hypotheses, Hayes' (2017) PROCESS macro (Model 7) was employed to estimate parameters for both the mediation and moderated mediation effects. The significance of the indirect and moderated mediation effects was assessed using the bias-corrected percentile bootstrap method with 5000 iterations, generating 95% bias-corrected confidence intervals (CIs). All models controlled for participants' age, gender, cumulative GPA, and weekly non-work internet use.

4.2.1. Mediation Effect of News Literacy

As presented in Table 4, foundational literacy (FL) was positively associated with news literacy (NL), and NL was positively associated with fact-checking behavior (FCB), supporting H1 and H2. However, FL did not have a significant direct effect on FCB, indicating that this H3 was not supported. H4 predicted that NL would mediate the relationship between FL and FCB. The analysis revealed a significant indirect effect of FL on FCB via NL, thereby supporting H4.

Table 4. Mediating effect of NL in the relationship between FL and news FCB.

	β	**SE**	**t**	**R^2**	
Mediating variable (NL) Model				0.10 ***	
FL	0.08 *	0.03	2.96		
Dependent variable (FCB) Model				0.49 ***	
FL	−0.03	0.02	−1.40		
NL	0.75 ***	0.06	13.04		
	Effect	SE	t	CI	
				LL	UL
Direct effect (FL → FCB)	−0.03	0.02	−1.40	−0.07	0.01
	Effect	Boot SE	t	Boot CI	
				LL	UL
Indirect effect (FL → NL → FCB)	0.07	0.03		0.01	0.15

Note: All models were controlled for age, gender, grade level, and GPA. β = Standardized Regression Coefficient, SE = Standard Error, t = t-statistics, R^2 = Coefficient of Determination, FL = Foundational Literacy, NL = News Literacy, FCB = Fact-Checking Behavior, CI = confidence interval; LL = lower limit; UL = upper limit. * $p < 0.01$, *** $p < 0.001$. Bootstrap sample size = 5000.

4.2.2. Moderated Effect of Heuristic Processing

H5 proposed that the type of social media processing would moderate the relationships specified in the model. H5a predicted that the association between foundational literacy (FL) and news literacy (NL) would be stronger under systematic processing, whereas H5b expected that the link between news literacy and fact-checking behavior (FCB) would be weaker under heuristic processing. As shown in Table 5, H5a was not supported, as systematic processing did not significantly moderate the FL–NL pathway. In contrast, H5b was supported: heuristic processing significantly weakened the indirect effect of FL on FCB through NL, indicating a negative moderated mediation effect.

Table 5. Moderated mediation effect of systematic and heuristic processing.

	β	**SE**	**t**	**R^2**	
Mediating variable (NL) Model				0.10 ***	
FL	0.08 *	0.03	2.96		
	Effect	SE	t	CI	
				LL	UL
FL × SP	0.02	0.03		−0.04	0.09
FL × HP	−0.11	0.06		0.02	0.10

Note: All models were controlled for age, gender, grade level, and GPA. β = Standardized Regression Coefficient, SE = Standard Error, t = t-statistics, R^2 = Coefficient of Determination, CI = confidence interval; LL = lower limit; UL = upper limit, FL = Foundational Literacy, NL = News Literacy, SP = Systematic Processing, HP = Heuristic Processing. * $p < 0.01$, *** $p < 0.001$. Bootstrap sample size = 5000.

Figure 2 presents the simple-slope plots for the moderation analyses. The left panel illustrates how HP moderates the relationship between FL and NL. As shown, the slope becomes noticeably flatter at higher levels of HP, indicating that the positive effect of FL on NL weakens when individuals engage more heuristically with online content. In contrast, the right panel shows that SP does not meaningfully change the FL–NL association; the slopes for low, mean, and high SP are nearly parallel. Together, these figures visually reinforce the statistical results, showing a negative moderation effect for HP (H5a not supported, H5b supported) and no comparable moderation effect for SP.

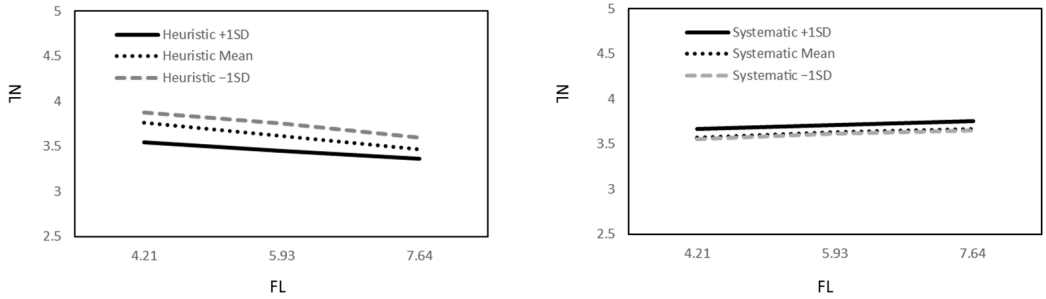


Figure 2. Simple-Slope Plots for the Moderating Effects of HP and SP.

5. Discussion

The findings of this study offer a perspective on the interplay among foundational literacy, news literacy, and fact-checking behavior. As hypothesized, foundational literacy was positively associated with news literacy (supporting H1), indicating that general literacy competencies—such as vocabulary knowledge, reading comprehension, and information retrieval—can contribute to the development of domain-specific skills like news literacy. However, foundational literacy alone did not significantly predict college students' engagement in online fact-checking behavior (H3 not supported). This result implies that while foundational skills are essential, they are insufficient on their own for navigating the complexities of digital news environments, which demand higher-order abilities such as critical source evaluation, misinformation detection, and an understanding of digital media systems and structures.

News literacy was positively associated with fact-checking behavior, supporting H2 reinforcing the central role of digital news literacy as a critical competency that enables individuals to assess the accuracy of online information before accepting or sharing it. These findings highlight the crucial importance of news literacy in navigating curated news feeds on social media. Furthermore, the mediation analysis supported H4 by demonstrating that news literacy serves as a significant mediating mechanism between foundational literacy and fact-checking behavior. Even though foundational literacy alone did not predict fact-checking behavior, it indirectly influenced fact-checking behavior through the development of news literacy. This finding highlights the importance of fostering news-specific critical skills as a bridge between general literacy and responsible news consumption.

The findings related to H5 provide important insights into how different modes of social media engagement influence the pathway from foundational literacy to fact-checking behavior through news literacy. Although systematic processing did not significantly moderate this pathway (H5a), heuristic processing showed a significant negative moderating effect (H5b). Specifically, the indirect effect of foundational literacy on fact-checking behavior via news literacy was weaker among individuals who primarily engage with content in a heuristic manner.

This asymmetry can be better understood by examining the behaviors measured in Table 1. The systematic processing items capture effortful, analytic activities—such as

reading full content, evaluating the logic of arguments, and seeking additional information. Such behaviors tend to occur when users are motivated or when content feels relevant, meaning systematic processing may not be consistently activated during routine, fast-paced social media use. This context-dependent activation helps explain why systematic processing did not strengthen the foundational literacy–news literacy relationship, resulting in H5a not being supported. In contrast, the heuristic processing items reflect quick, surface-level engagement—such as relying on titles, likes, follower counts, or prior beliefs—that aligns closely with typical patterns of interaction on many social media platforms. Because these cues are readily available and require minimal cognitive effort, heuristic engagement is more easily triggered by platform design features that emphasize speed, visual prominence, and popularity signals. When individuals rely on such cues, they are less likely to draw on their news literacy skills to verify information, thereby weakening the news literacy–fact-checking link. This mechanism accounts for the significant moderation observed for heuristic processing (H5b).

These dynamics parallel broader international trends. The 2025 Reuters Digital News Report highlights that younger audiences across regions increasingly encounter news incidentally on social and video platforms and often struggle to assess the credibility of what they see (Newman et al., 2025). Although many report growing awareness of how algorithms shape news exposure, this awareness does not consistently translate into more critical evaluation or verification. Instead, credibility judgments frequently rely on surface-level signals such as popularity metrics or trending labels—patterns that mirror the heuristic processing tendencies observed in this study. Additionally, while young people express concerns about misinformation, relatively few consistently fact-check before sharing content (Newman et al., 2025). These global patterns reinforce the present findings by illustrating how platform-driven, cue-based modes of exposure can weaken the application of literacy skills, even in highly educated populations.

Taken together, the results align with dual-process theories, which distinguish between fast, cue-driven processing and slower, analytic evaluation. Social media environments often amplify the former through recommendation systems and interface designs that prioritize immediacy, emotionally charged content, and engagement metrics. Such conditions reduce opportunities for users to engage in deeper assessment, even when they possess strong foundational or news literacy skills. Consequently, the findings highlight the importance of fostering digital literacy that supports more reflective forms of online engagement and designing interventions that help users pause, evaluate, and verify information within these high-velocity digital spaces.

6. Conclusions

This study advances our understanding of how foundational literacy, news literacy, and patterns of social media engagement interact to shape fact-checking behavior in digitally mediated information environments. The findings show that while foundational literacy provides the cognitive groundwork for responsible online engagement, its positive influence operates largely through news literacy, which equips learners with the analytical and ethical skills needed to assess content. However, this relationship is substantially weakened when individuals rely on heuristic processing—rapid, cue-based judgments shaped by attention-grabbing signals and social feedback mechanisms. In other words, even students with strong literacy skills may not apply them effectively when their engagement is superficial or emotionally driven. These results underscore the importance of cultivating news literacy as a competency that integrates cognitive rigor with reflective awareness, empathy, and integrity in digital participation.

The significance of these findings extends beyond individual media behavior to the broader agenda of media education. In an era where journalism increasingly intersects with algorithmic systems and participatory platforms, higher education is encouraged to cultivate competencies that empower students to act as discerning and ethical communicators. This shift calls for pedagogical frameworks that integrate critical thinking, ethical reasoning, and civic responsibility into the analysis, creation, and circulation of digital news.

Practical interventions can help operationalize these goals. Structured source-comparison tasks, bias-detection workshops, and scaffolded annotation activities encourage students to pause, reflect, and critically interpret digital information flows. For example, examining how a single news story is framed across multiple outlets can illuminate editorial choices and ideological leanings. Likewise, classroom simulations of personalized feeds or gamified fact-checking projects can turn media critique into an active, collaborative learning process that links theoretical concepts with journalistic practice.

Another relevant dimension concerns platform awareness and AI literacy. As AI increasingly shapes what users see and how content circulates, media education can provide opportunities to understand how recommendation systems influence visibility, virality, and emotional engagement. Guiding questions such as "Why am I seeing this post?" or "What cues might the system be optimizing for?" promote metacognitive awareness of digital gatekeeping and personalization dynamics. Embedding such reflective inquiry within journalism and communication curricula enables students to navigate and interrogate opaque technological infrastructures with greater agency and accountability.

Taken together, these insights position news literacy as both a cornerstone of civic engagement and a foundation for responsible journalism in AI-mediated societies. By integrating reflective engagement, transparency about platform dynamics, and ethical deliberation into teaching practice, universities can foster digital citizens capable of sustaining democratic discourse and media trust. In doing so, higher education advances its social mission—supporting journalism's role as a public good and contributing to a more trustworthy information ecosystem.

Nevertheless, several limitations should be acknowledged. First, reliance on self-reported data may introduce recall or social desirability bias, and such bias may persist even though the survey was administered anonymously, item order was randomized, and all items were phrased behaviorally rather than evaluatively to reduce socially desirable responding. Although the three-item measure of fact-checking behavior reflects core verification actions highlighted in prior research, it captures only a limited subset of students' broader fact-checking practices. Future studies could complement self-reports with behavioral tracking, performance-based verification tasks, or more comprehensive item sets to obtain more objective indicators. Second, the sample of South Korean college students limits the generalizability of the findings across cultural and institutional contexts; further research should examine diverse populations and educational systems to test the universality of these patterns. Third, the study conceptualized social media engagement primarily through heuristic and systematic processing but did not fully address motivational or emotional drivers. Future work should explore how curiosity, enjoyment, or anxiety interact with cognitive processing to influence digital engagement. Finally, because the study relies on cross-sectional data, the mediated relationships should be interpreted with caution in terms of temporal sequencing or causality. For example, although the model assumes that foundational literacy contributes to stronger news literacy, which in turn promotes fact-checking, it is also plausible that students who engage more frequently in verification become increasingly attentive to news production processes, thereby enhancing their news literacy over time. Longitudinal or experimental research would help

clarify the directionality of these relationships and examine how literacy competencies and verification behaviors develop over time.

By addressing these limitations, future research can deepen understanding of news literacy in algorithmically curated media environments. Such work will help educators and policymakers design pedagogical models that are not only effective in improving critical information skills today but also sustainable for the future—ensuring that students acquire enduring capacities for reflection, ethical judgment, and social responsibility in a rapidly evolving digital world.

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