Media Literacy Positively Associates with Health Misinformation Discernment and Inversely with Correction Acceptance

Bo Hu[a b], Chang Lu[b c #], Xing-Da Ju[b c #]

[a] School of Social and Behavioral Science, Nanjing University, China

[b] School of Psychology, Northeast Normal University, China

[c] Jilin Provincial Key Laboratory of Cognitive Neuroscience and Brain Development, China

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Correspondence concerning this article should be addressed to follow:

Xing-Da Ju, School of Psychology, Northeast Normal University, Changchun, China 130024, juxd513@nenu.edu.cn.

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Abstract

Health-related misinformation is widespread online and can adversely affect public well-being. This study examines whether media literacy can effectively combat health misinformation by influencing key stages of the misinformation process: initial credibility discernment, sharing decisions, and response to corrections. We conducted a cross-sectional online survey in China with 693 respondents, assessing their ability to discern misinformation (using both mean rating difference and ROC-based methods), willingness to share information, and continued belief in misinformation after corrections. Results indicated that higher media literacy was associated with better credibility discernment of health information. Media literacy did not significantly associate with sharing discernment; however, respondents with higher media literacy scores exhibited a stronger continued influence effect. Additionally, participants with greater credibility discernment were more discerning in sharing information, although neither discernment index was related to the magnitude of the continued influence effect. These findings highlight a double-edged sword: while media literacy enhances the recognition of false information, it may also engender confidence that makes individuals less receptive to valid corrections. Interventions aiming to combat health misinformation should account for both the beneficial and potentially counterproductive effects of media literacy. The widespread dissemination of health misinformation on the Internet has a detrimental effect on people's lives.

Keywords: Health misinformation; Media literacy; Credibility discernment; Sharing discernment; Continued influence effect of misinformation

Media Literacy Positively Associates with Health Misinformation Discernment While Amplifying the Continued Influence After Correction

Introduction

The Internet has revolutionized the way people access information, becoming an indispensable part of daily life. Serving as a gateway to knowledge and communication, it has transformed numerous aspects of society. However, this digital landscape also presents significant challenges, particularly regarding the widespread dissemination of health misinformation (Starvaggi et al., 2024). Health misinformation poses substantial threats to individuals' physical and mental well-being. Given its alarming prevalence and potential negative impact, society is confronting what has been termed an infodemic (Gallotti et al., 2020). This term reflects the rapid spread of health misinformation, affecting individuals, communities, and nations (Del Vicario et al., 2016; Grinberg et al., 2019). Developing effective measures to address and mitigate the effects of health misinformation has become a pressing concern in contemporary society (Chan & Albarracín, 2023).

Literature Review

Health Misinformation Credibility and Sharing

Health misinformation can be defined as a health-related claim that is based on anecdotal evidence, is false, or is misleading due to a lack of existing scientific knowledge (Chou et al., 2018; Suarez-Lledo & Alvarez-Galvez, 2021). When individuals encounter such information, they typically evaluate its accuracy and decide how to respond communicatively, for example, whether to share it with friends or on social media (Apuke & Omar, 2020; Geers et al., 2024). The present study is restricted to these two stages, credibility evaluation and sharing decisions, because the subsequent step of acting on the content (e.g., changing one’s health behavior)

entails additional motivational and resource-based factors that lie outside our theoretical model and measurement scope.

The reasons why people misperceive or spread health misinformation are commonly explained by two theoretical perspectives: the identity-based model and the inattention model (van der Linden, 2022; Ziemer & Rothmund, 2024). The identity-based model suggests that people spread misinformation based on their identities, such as the characteristics of the groups they belong to (Van Bavel et al., 2024). Notably, group identity could influence the spread of accurate information as well, but research to date has primarily focused on identity's role in spreading misinformation. On the other hand, the inattention model posits that people's lower ability to distinguish misinformation is due to a lack of attention (Pennycook & Rand, 2019). Limited time and cognitive resources to assess the accuracy of information hinder people's ability to accurately identify such content. People prefer to maintain consistency between their shared choices and accuracy judgments (Atad & David, 2024; Guo et al., 2023; X. Lu et al., 2022). They are more likely to share news that they believe is true (Altay et al., 2021). Studies have suggested that higher perceived accuracy of content reduces people's intention to share health-related misinformation and increases their intention to share health-related accurate information (Matchanova et al., 2024; Piksa et al., 2023; Rijo & Waldzus, 2023; Saling et al., 2023).

The credibility and sharing of health misinformation have often been studied in conjunction. In these studies, participants were provided with revised news materials and asked to report the information's perceived credibility and their intention to share it (Basol et al., 2021; Su, Lee, et al., 2022). Previous studies have often evaluated people's discernment by measuring the perceived credibility of information and their sharing intentions for both true and false health

content separately (Basol et al., 2021; Roozenbeek & van der Linden, 2019). In intervention studies, focusing solely on the credibility assessment of misinformation can lead to potential negative effects, such as general distrust of accurate information (Hameleers & van der Meer, 2023; Lyons et al., 2024; van der Meer et al., 2023). This suggests that both real information and misinformation should be jointly evaluated.

This study adopts self-report measures to capture how individuals deal with health-related information. Although credibility discernment is, in principle, a cognitive skill for judging accuracy, our questionnaire operationalizes it as respondents' subjective perception of their accuracy-checking ability in the evaluation stage (Fendt et al., 2023; Modirrousta-Galian & Higham, 2023). By contrast, sharing discernment taps the behavioral intention that follows evaluation: the willingness to pass along items considered reliable while withholding those deemed unreliable (Roozenbeek et al., 2022). Accordingly, we advance the following hypothesis:

H1: Credibility discernment is positively related to sharing discernment.

There is an ongoing discussion regarding the methods for assessing discernment. Most studies employ the mean-rating-difference method to calculate discernment, which involves computing the difference between the mean ratings assigned to real information and misinformation (Pennycook et al., 2020; Roozenbeek et al., 2022). This method cannot separate the effects of subjective evaluation and standard setting, making it inaccurate for reflecting changes in discernment (Modirrousta-Galian & Higham, 2023). Changes in standard configurations can significantly affect the mean rating difference even if the discernment remains unchanged (Higham et al., 2023). Researchers have suggested using the receiver operating characteristic (ROC) curve method based on signal detection theory. Unlike the mean difference scores, the area under the curve (AUC) is less affected by configuration changes and is a more

reliable indicator of discernment. Given the inconsistent results when evaluating interventions using different measures of credibility discernment, we propose the following research question:

RQ1: Is the relationship between credibility discernment and sharing discernment consistent across discernment methods?

Correcting Health Misinformation

Given the widespread nature of health misinformation, communicators need to correct false claims, and they would also need to reassess their strategies for public education (Chan & Albarracín, 2023; U. K. H. Ecker et al., 2022; Porter & Wood, 2024; Walter & Murphy, 2018). However, the public would probably not trust the corrected information directly (Hameleers, 2024). Relinquishing previously held misinformation is challenging for individuals, even after corrections (Ramsey et al., 2024). The continued influence effect of misinformation (CIEM), also known as the illusory truth effect (Lewandowsky et al., 2012; Begg et al., 1992; Udry & Barber, 2024), describes how individuals' cognition and behavior may still be influenced by prior misinformation, despite subsequent corrections.

The explanation for the CIEM is primarily based on the memory model and integration account (U. K. H. Ecker et al., 2022). According to the memory model, information is organized in interconnected networks, and its availability depends on the activation levels (Kemp et al., 2024). When new information contradicting the encoded information is learned, both the original and corrective information coexist and compete for activation (U. K. Ecker et al., 2010; Gordon et al., 2019; Shtulman & Valcarcel, 2012). The integration account attributes the CIEM to inadequate encoding and integration of corrective information with the original misinformation in memory. It holds that effective updating requires the reader to detect a mismatch, keep both representations active in working memory, and integrate them through elaborative processing;

the better this integration, the stronger the correction becomes relative to the misinformation. Conversely, if any part of this process fails, the original misconception remains dominant and the CIEM persists (Kendeou et al., 2014, 2019).

Although there is no direct research linking health misinformation discernment to CIEM, some studies have explored the relationship between discernment and the effectiveness of corrections. There was a significant negative correlation between believing health misinformation and believing corrections. Interventions that increase attention have been shown to reduce beliefs about health misinformation and increase beliefs about corrections (Kim et al., 2021). This aligns with the Heuristic–Systematic Model (HSM); deeper systematic processing of content generally improves judgment and leads to more stable, well-founded beliefs (Chaiken & Ledgerwood, 2012; Eagly & Chaiken, 1993). Limited time and cognitive resources hinder people's ability to accurately identify content.

Some researchers explain CIEM through motivated reasoning, suggesting that when individuals with false beliefs encounter corrections, they may feel that their original attitudes are challenged and refuse to accept new information (Jerit & Barabas, 2012; Zhang et al., 2022). This corresponds to the inattention and identity-based models. However, the empirical relationship between discernment and the CIEM remains unsettled. Credibility discernment should facilitate correction uptake because it limits the initial encoding of misinformation and prioritizes the corrective trace in memory. Some evidence supports this view: individuals who place higher trust in corrections also report greater news engagement and lower reliance on the original claim (S. Lu & Zhong, 2022). Yet other work finds little sign of motivated reasoning once a clear correction is presented (Goldfarb & Kriner, 2017), suggesting that credibility judgments alone do not always predict memory updating.

Sharing discernment provides an additional, under-examined pathway to CIEM. Deciding whether to pass information on is not merely a social act; it re-activates the message in memory and publicly commits the sharer to its content. When people uncritically share misinformation, this rehearsal and endorsement strengthen the erroneous trace, making later corrections less effective. Conversely, selective sharing that favors verified content may reduce the rehearsal of misinformation and thereby attenuate CIEM. Notably, interventions that boost information acceptance—encouraging users to heed accuracy prompts—sometimes increase belief in health myths without enhancing acceptance of the correction itself (Butler et al., 2024). Such findings imply that the act of sharing can magnify or dampen a message's mnemonic footprint, independently of credibility judgments. These gaps motivate a closer look at how each discernment facet shapes residual reliance on misinformation after correction :

RQ2: How do credibility discernment and sharing discernment relate to CIEM?

Media Literacy and Health Misinformation

Media literacy, encompassing active inquiry and critical thinking skills, equips individuals with tools to navigate the vast amount of information they encounter in the digital landscape (Bulger & Davison, 2018). As health misinformation proliferates and digital technologies continue to advance, enhancing media literacy has become a crucial strategy for combating the dissemination of health misinformation (Ho & Ye, 2024; Kbaier et al., 2024; Lee & Ramazan, 2021).

The Media Literacy Theory of Change (MLTC) provides a foundational framework for addressing health misinformation (Austin & Domgaard, 2024). Originating from the Message Interpretation Process (MIP) model (Bergsma & Carney, 2008), the MLTC emphasizes the cognitive and affective processes involved in interpreting media messages. Initially developed to

understand how individuals engage with media content, the MIP model highlights critical thinking about both the source and the content of messages. The MLTC recognizes media literacy as a process that combines skills in accessing, analyzing, and interpreting media messages with an emphasis on decision-making and behavioral outcomes. In the context of health misinformation, by fostering critical evaluation of both the source and the content, the MLTC aids in developing evidence-based beliefs while reducing reliance on emotionally driven responses. Such critical thinking skills are particularly valuable in countering persuasive misinformation that exploits emotional appeals (Martel et al., 2020; Peng et al., 2023). Furthermore, the MLTC underscores the importance of interventions like lateral reading (verifying claims by checking multiple sources) and content evaluation (critically examining the content's credibility), which equip individuals to discern reliable health information and thereby reduce the broader societal consequences of health misinformation (Spracklin & Espina, 2024).

Researchers have explored the impact of media literacy on addressing health misinformation (Ho & Ye, 2024; C. Lu et al., 2024; Ziapour et al., 2024). For example, Su et al. (2022) demonstrated that individuals with higher levels of media literacy exhibit a greater ability to discern COVID-19-related health misinformation. However, some studies indicate that media literacy is not related to susceptibility to misinformation (Jones-Jang et al., 2021) and may even backfire by giving individuals misplaced confidence in their ability to discern misinformation (Boyd, 2017). For example, Lyons et al. (2024) demonstrated that health-focused media literacy interventions increased skepticism toward both accurate health information and health misinformation.

Previous research has clarified how media literacy underpins credibility discernment, yet its implications for sharing discernment remain less fully mapped. The MLTC treats responsible

dissemination as a behavioral endpoint: once individuals have accessed and analyzed a claim, they must decide whether it is appropriate to amplify it. Instruction that highlights lateral reading, source tracing, and accuracy prompts, therefore, not only sharpens belief accuracy but also shapes the normative preference to share only vetted information. Empirical work supports this mechanism. A large-scale experiment showed that brief media literacy tips increased both accuracy-based sharing and rejection of false headlines (Altay et al., 2024). Likewise, accuracy-prompt interventions consistently reduce willingness to forward misinformation on social media while leaving the sharing of true news unchanged or enhanced (Pennycook, Epstein, et al., 2021a). Previous research has provided valuable insights into the relationship between media literacy and credibility discernment, as well as sharing discernment. However, further investigation is required to fully understand the role of media literacy in countering health misinformation. Based on the current study, we propose the following hypothesis:

H2. Media literacy is positively related to credibility discernment.

H3. Media literacy is positively related to sharing discernment.

Although earlier studies have illuminated the link between media literacy and the detection of health misinformation, much less is known about how media literacy shapes people's willingness to abandon their own inaccurate beliefs once they encounter corrective evidence (self-correction). The few studies that have tested this updating process report conflicting results.

On the one hand, media literacy may enhance CIEM. Individuals with high media literacy skills may develop a sense of overconfidence in their ability to recognize and resist media manipulation. This overconfidence can lead to complacency, whereby individuals become less vigilant when critically evaluating media messages. When misinformation is corrected, they may reject the correction and continue trusting their previous beliefs; in other words, a highly media-

literate person would probably not trust a correction that contradicts what they originally concluded.

When misinformation is corrected, they may reject corrective information and trust their previous beliefs. For example, intervention studies have found that after media literacy interventions, individuals' attitudes toward correcting misinformation did not change and even had negative effects (E. Vraga et al., 2022). On the other hand, media literacy may weaken CIEM. Media literacy not only equips people to locate diverse sources and weigh competing claims but also furnishes the cognitive ability and motivation needed for systematic processing—the deeper, argument-based mode of evaluation described by the HSM. Systematic processing typically produces beliefs that are internally coherent and resistant to superficial persuasion, yet it also obliges the individual to re-examine prior beliefs whenever strong new evidence appears. When a well-substantiated correction challenges previously accepted information, highly media-literate individuals are motivated and able to scrutinize the new evidence, compare it with their existing mental model, and update that model if the correction proves more compelling. Empirically, media literacy has been linked to a stronger intention to correct one's misinformation (Borah & Lorenzano, 2023; Xiao & Yang, 2023), consistent with the HSM prediction that systematic reprocessing facilitates belief revision when corrective arguments are of high quality. Given the scarcity and inconsistency of current research on media literacy and misinformation correction, we propose the following research question:

RQ3. How does media literacy relate to CIEM?

The Present Study

This study aims to examine the role of media literacy in combating health misinformation from a more comprehensive perspective. Drawing on the media literacy theory of change, the

researchers begin by analyzing the relationships between credibility discernment, sharing discernment, and CIEM. Subsequently, we investigated the relationship between media literacy and these variables. The findings of this study enhance our understanding of the health misinformation communication process.

Methodology

Participants

The present study employed a self-administered, cross-sectional online survey, with participants recruited through convenience sampling on an online platform; consequently, the study relied on a non-probability sample. All instruments were distributed and collected from 1 to 15 June 2022 via the Chinese crowdsourcing platform Wenjuanxing (www.wjx.cn), which functions similarly to Prolific Academic or Amazon Mechanical Turk and has been shown to yield more demographically representative samples than other Chinese crowdsourcing platforms (Del Ponte et al., 2024). Recruitment advertisements, posted on the platform's web and mobile portals, stated two inclusion criteria: respondents had to be at least 18 years old and reside in mainland China. After following the survey link or scanning a QR code, prospective participants read an electronic informed-consent statement and indicated agreement before proceeding. The questionnaire required approximately five to ten minutes. Wenjuanxing's built-in controls blocked duplicate submissions from the same account or IP address, and no personally identifying data beyond age, gender, educational attainment, and province of residence was collected.

The required sample size was calculated using the approach provided by Soper (2024), anticipated effect size $f^2 = 0.15$, statistical power level = 0.95, probability level = 0.05, number of predictors = 9 (including key independent variables and demographic controls), and the

minimum required sample size was 167[1]. To ensure adequate power and heterogeneity, we initially distributed 1,000 questionnaires. Quality-control criteria were applied post-collection: 307 submissions with completion times under one minute or failed attention-check items were removed, because such rapid or inattentive responses compromise reliability and validity (Meade & Craig, 2012). The final analytic sample comprised 693 respondents (retention rate = 69.3 %), which is a relatively common response rate (Bolt et al., 2014). Respondents from 29 out of 34 provinces participated, providing wide geographic coverage. A total of 47.2% of respondents identified as male, and 88.5 % were university students; the mean age was 21.87 years (*SD* = 2.00). Each participant received 5 RMB (≈ USD 1) for completing the survey.

Procedure

The measurement procedure in this study was divided into two parts: health misinformation discernment and CIEM.

First, we measured health-misinformation discernment. Following Pennycook and Binnendyk (2021), verified news materials from Chinese official fake news debunking platforms (e.g., https://www.piyao.org.cn) were used, focusing on health themes. As Weibo serves as the primary source of information in China (Liao et al., 2020), the news materials were edited to resemble Weibo posts to ensure that they are similar to the information that people are exposed to in their daily lives. To mitigate potential influences, information publishers and interactions

[1] Predictors were Gender, Education, Age, Social media use, Credibility discernment using the mean rating difference approach, Sharing discernment using the mean rating difference approach, Credibility discernment using the ROC approach, Sharing discernment using the ROC approach, CIEM, and Media literacy. Soper (2024) provides an online platform where the minimum sample size required can be calculated automatically by entering the above variables based on the existing literature (Christopher Westland, 2010; Cohen, 2013).

are obscured (Gimpel et al., 2021; Zerback et al., 2021). Each participant viewed ten posts (five real and five fake) and reported the credibility of the posts and their intention to share them.

Second, the measurement of CIEM utilized an adapted measurement employing the warehouse fire paradigm (Gordon et al., 2017), which is the most prevalent method for CIEM assessment (Connor Desai & Reimers, 2019; U. K. H. Ecker et al., 2022). It presents readers with an unfolding incident report, later withdraws a critical causal detail, and finally gauges whether people still rely on that retracted detail when answering inference questions. In the present study, we adapted this paradigm to a health-news context. Participants read two brief news stories about health events. For each story, we created a corrected version and a control version that differed only in sentence two. In the corrected version, sentence two introduced a piece of health-related misinformation, whereas in the control version, it offered neutral background information. Later, sentence 5, identical across versions, either retracted the misinformation (corrected condition) or served as an ordinary detail (control condition). All other sentences were filler content unrelated to the manipulation. Each participant read one story in the corrected form and the other in the control form, then answered three inferential questions per story: reliance on the retracted detail indexed CIEM. Table 1 provides an example of measuring CIEM.

Table 1.

Examples of Measurement Components for Continued Influence Effects of Misinformation.

Sentence	Content
1	A new strain of avian flu has been identified by medical professionals
2 Control version	*Reports indicate that this flu is a mutation of the H5N1 strain.*
2 Corrected version	*Reports indicate that this flu is highly contagious and may create an epidemic.*
3	The strain was first identified in the Royal London Hospital.
4	The patient had recently returned from a holiday to China.
5	Doctors have clarified that there is absolutely no risk to the public.
6	The last major incident concerning bird flu occurred in 2007.

Note: The content of the sentences is consistent, except for the second sentence, which is expressed differently in the different versions.

To minimize material influence on the participants (Pennycook, Binnendyk, et al., 2021), we designed two questionnaires for random distribution (containing different health misinformation and CIEM materials), with each participant receiving one randomly. Two sets of questionnaires were pretested, and the results indicated no significant differences in credibility discernment, sharing discernment, or CIEM (*ps* > .05).

After reading and signing the informed consent form, participants assessed the accuracy of the news materials and indicated their intention to share them. Subsequently, participants answered the set of questions designed to measure the CIEM. Finally, the participants completed measures of media literacy, social media use, and demographics (age, gender, education level, and residence). Each participant received five RMB (nearly one dollar) in compensation.

Measurement

Endogenous Variables

Credibility discernment: For each post, participants rated its accuracy on a five-point Likert scale (1 = totally not accurate, 5 = very accurate). For the mean rating difference method, we refer to the method of Pennycook et al. (2019), where credibility discernment was calculated as the perceived accuracy score of real information minus that of health misinformation (M = 0.31, SD = 1.08). Following Higham et al. (2023), ROC was selected because our design fulfilled the three pre-conditions for bias-free discrimination analysis: (1) a seven-point accuracy-confidence scale supplied multiple decision thresholds; (2) each participant judged both targets (verified headlines) and lures (misinformation headlines); and (3) our theoretical interest lay in sensitivity (accurate vs. inaccurate discernment) rather than in individual response conservatism. AUC, therefore, serves as a criterion-independent index that is robust to shifts in overall response tendency. For the ROC method, we refer to the method of Higham et al. (2023). To create the ROC curve, we first calculated the area above the highest scale value for each distribution. Then, the areas between each subsequent pair of criteria were sequentially added to the cumulative total to form new points (false alarm rates and hit rates). This process continues until all criteria are used, ending with point (1, 1). These points are plotted on the ROC curve, with false alarm rates on the x-axis and hit rates on the y-axis (M = 0.57, SD = 0.18). A higher score indicates greater credibility discernment (α = .770).

Sharing discernment: For each post, participants were asked about their sharing intention on a five-point Likert scale (1 = unwilling to share, 5 = very willing to share). The sharing discernment is calculated the same as the credibility discernment (mean rating difference method: M = 0.23, SD = 0.81; ROC method: M = 0.56, SD = 0.17). A higher score indicates greater sharing discernment (α = .867).

Continued influence effect of misinformation (CIEM): To assess participants' reliance on misinformation correction, each report was followed by three reasoning questions (using a five-point Likert scale, 1 = strongly disagree, 5 = strongly agree). All questions targeted crucial information from the fifth sentence, present in both the control and retraction reports. For example, they were asked, "Based on this incident, should measures designed to prevent fires be reviewed?" A higher score on this scale indicates a higher CIEM score (Brydges et al., 2018), implying a diminished inclination to accept the correction of misinformation (M = 0.11, SD = 0.31, α = .888).

Media literacy: Participants were asked to respond on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree) to 22 items. For example, "I have a strong sense of information acquisition," and "I can skillfully use search engines, QQ, Weibo, WeChat, etc., for information retrieval." These items were adapted from a previous study (Li, 2017). A higher score indicates greater media literacy (M = 3.92, SD = 0.58, α = .930).

Exogenous Variables

We controlled for the following demographic variables: gender, age, and education level. Since we expected participants to be frequent social media users (Su, 2021), social media use was considered as a control variable. Participants were asked to indicate how often they used social media (1 = less than one hour every day, 5 = more than seven hours every day (M = 4.06, SD = 0.72).

Data Analysis

This study used linear mixed models for statistical analysis, treating participants' exposure to different misinformation groups as random effects. Data analysis was conducted using the *lme4* package in R (Bates et al., 2015).

Result

The correlations of the variables are shown in Table 1. To check for common method bias, we performed Harman's single-factor test (Harman, 1976). The results confirm that there is no problem with common method bias in the data because the total variance extracted by one factor is 18.31%, which is less than the recommended threshold of 50%.

Table 2.

Correlations of Variables.

Variable	1	2	3	4	5	6	7	8	9
1. Gender	—								
2. Education	–.00	—							
3. Age	–.02	.52***	—						
4. SMU	.02	.02	.11**	—					
5. ML	.06	.00	.05	.24***	—				
6. CD-diff	.06	–.00	–.03	.02	.10**	—			
7. SD-diff	–.00	–.03	–.02	.10*	.13***	.56***	—		
8. CD-ROC	.10*	.04	–.01	.02	.13***	.56***	.44***	—	
9. SD-ROC	–.01	.03	.04	.09*	.06	.42***	.62***	.56***	—
10. CIEM	–.04	.02	.05	.01	.35***	.06	.00	–.00	–.00

Note. * p < .05. ** p < .01. *** p < .001. SMU: Social media use; ML: Media literacy; CD-diff: Credibility discernment using the mean rating difference approach; SD-diff: Sharing discernment using the mean rating difference approach; CD-ROC: Credibility discernment using the ROC approach; SD-ROC: Sharing discernment using the ROC approach; CIEM: Continued influence effect of misinformation.

Table 2 shows the relationship between credibility discernment and sharing discernment, as well as CIEM. For H1 and RQ1, credibility discernment is positively associated with sharing

discernment, both using the mean rating difference method ($b = 0.420$, $p < .001$) and the ROC method ($b = 0.536$, $p < .001$), which supports H1. For RQ2, credibility discernment is positively associated with CIEM using the mean rating difference method (b = 0.092, $p < .05$), but not with the ROC method ($b = 0.030$, $p > .05$). The relationship between sharing discernment and CIEM is not significant, regardless of the mean rating difference method (b = -0.068, $p > .05$) or the ROC method ($b = -0.043$, $p > .05$).

Table 3 shows the relationship between media literacy and three other variables: credibility discernment, sharing discernment, and CIEM. For H2, media literacy is significantly positively associated with credibility discernment using both the mean rating difference method ($b = 0.183$, $p < .05$) and the ROC method ($b = 0.040$, $p < .001$), which supports H2. For H3, sharing discernment is positively associated with CIEM using the mean rating difference method ($b = 0.151$, $p < .01$) but not with the ROC method ($b = 0.012$, $p > .05$), which partially supports H3. For RQ3, media literacy is significantly positively associated with CIEM ($b = 0.667$, $p < .001$).

Table 3.

Relationship between sharing discernment and credibility discernment with CIEM.

	SD-diff	SD-ROC	CIEM	CIEM
(Intercept)	–0.174	0.155*	–0.471	–0.434
	(0.319)	(0.069)	(0.511)	(0.528)
Gender	–0.057	–0.021*	–0.088	–0.077
	(0.051)	(0.011)	(0.081)	(0.082)
Education	–0.084	–0.003	–0.049	–0.040
	(0.081)	(0.017)	(0.130)	(0.130)
Age	0.003	0.003	0.032	0.031
	(0.015)	(0.003)	(0.024)	(0.024)
SMU	0.094**	0.017*	0.014	0.011
	(0.035)	(0.007)	(0.057)	(0.057)
CD-diff	0.420***		0.092*	
	(0.024)		(0.046)	
CD-ROC		0.536***		0.030
		(0.030)		(0.275)
SD-diff			–0.068	
			(0.061)	
SD-ROC				–0.043
				(0.291)
R2	0.323	0.325	0.010	0.004

Note. Unstandardized regression coefficients are displayed with standard errors in parentheses. * $p < .05$. ** $p < .01$. *** $p < .001$. SMU: Social media use; CD-diff: Credibility discernment using the mean rating difference approach; SD-diff: Sharing discernment using the mean rating difference approach; CD-ROC: Credibility discernment using the ROC approach; SD-ROC: Sharing discernment using the ROC approach; CIEM: Continued influence effect of misinformation.

Table 4.

Relationship between media literacy and credibility discernment, sharing discernment, and CIEM.

	CD-diff	CD-ROC	SD-diff	SD-ROC	CIEM
(Intercept)	–0.172	0.417***	–0.458	0.409***	–2.333***
	(0.554)	(0.092)	(0.413)	(0.088)	(0.515)
Gender	0.114	0.032*	–0.014	–0.004	–0.122
	(0.082)	(0.014)	(0.061)	(0.013)	(0.076)
Education	0.054	0.027	–0.059	0.011	–0.016
	(0.131)	(0.022)	(0.097)	(0.021)	(0.122)
Age	–0.022	–0.003	–0.007	0.001	0.023
	(0.024)	(0.004)	(0.018)	(0.004)	(0.022)
SMU	0.003	–0.003	0.081	0.018	–0.115*
	(0.059)	(0.010)	(0.044)	(0.009)	(0.055)
ML	0.183*	0.040***	0.151**	0.012	0.667***
	(0.072)	(0.012)	(0.054)	(0.011)	(0.067)
R2	0.014	0.027	0.022	0.010	0.129

Note. Unstandardized regression coefficients are displayed with standard errors in parentheses. * $p < .05$. ** $p < .01$. *** $p < .001$. SMU: Social media use; ML: Media literacy; CD-diff: Credibility discernment using the mean rating difference approach; SD-diff: Sharing discernment using the mean rating difference approach; CD-ROC: Credibility discernment using the ROC approach; SD-ROC: Sharing discernment using the ROC approach; CIEM: Continued influence effect of misinformation.

Discussion

This study aimed to delve into the intricate relationship between credibility discernment, sharing discernment, and CIEM with media literacy in China. Credibility discernment is positively associated with sharing discernment, but neither is related to CIEM. Media literacy was positively associated with credibility discernment and CIEM but was not related to sharing

discernment. The findings of this study unveiled several new insights that have practical implications for countering health misinformation.

First, the study revealed a strong positive correlation between credibility and sharing discernment. This result resonates with previous research, which has primarily focused on perceived accuracy and sharing intentions (Altay et al., 2021; Buchanan, 2021). This finding suggests that individuals are naturally inclined to share information they perceive as accurate. In other words, people are more likely to propagate information that they believe is true (Pennycook, Epstein, et al., 2021b; t'Serstevens et al., 2022). Additionally, the study found a weak positive correlation between credibility discernment and CIEM using the mean rating difference method, but not using the ROC method. According to Higham et al. (2023), the ROC method provides more robust results, suggesting that an individual's ability to discern health misinformation is not significantly related to their belief in subsequent corrections. This highlights the complexity of the CIEM cognitive process, indicating that even if individuals can identify health misinformation, their acceptance of corrective information is influenced by cognitive biases, motivated reasoning, information source credibility, and sociocultural background (Denner et al., 2023; Walter & Tukachinsky, 2020).

Furthermore, this study explored the role of media literacy in addressing health misinformation. The results demonstrate a positive association between media literacy and credibility discernment. This finding aligns harmoniously with prior research, which posits that individuals with enhanced media literacy skills tend to adopt a more critical stance when evaluating information, particularly in the context of health misinformation (Ashley et al., 2017; Su, Lee, et al., 2022). However, the study found a positive correlation between media literacy and sharing discernment using the mean rating difference method, but not using the ROC

method. This suggests that media literacy is not significantly related to the quality of the information individuals share. A possible reason is that, unlike discerning health misinformation, the motivation behind sharing information involves more social and emotional factors (Ahmed et al., 2023; An et al., 2023; Rocha et al., 2023). This provides new insights within the context of the Media Literacy Theory of Change (MLTC).

However, an intriguing discovery emerged when examining the relationship between media literacy and CIEM. Individuals scoring high on media literacy displayed a larger CIEM, indicating greater resistance to relinquishing the original falsehood after correction. The negative effect of media literacy may stem from overconfidence in initial information acquisition (Lackner et al., 2023). Individuals with advanced media literacy evaluate the credibility of information from a broader range of perspectives upon initial exposure(Amazeen & Bucy, 2019; Kahne & Bowyer, 2017). Their comprehensive processing of original information often solidifies their beliefs (Ayers & Reder, 1998), making them more impervious to subsequent corrections. This finding contrasts with Xiao & Yang (2023), possibly due to their focus on subjective assessment (personal subjective experience), while this study's CIEM paradigm concentrates on potential cognitive tendencies. Related intervention studies have also found that media literacy information can help people resist health misinformation but does not necessarily make them more receptive to corrections (E. Vraga et al., 2022; E. K. Vraga et al., 2022).

These findings illuminate the complex dynamics of credibility discernment, sharing discernment, and CIEM with media literacy, and provide valuable insights for effectively combating health misinformation. Although media literacy is widely advocated as a potent tool in the battle against health misinformation, it is imperative to consider both its positive and negative implications. Media literacy empowers individuals to identify reliable information and

exercise critical thinking; however, it can also impede the correction of health misinformation owing to cognitive biases and pre-existing beliefs, and its impact on the quality of information sharing may also be limited. Therefore, any interventions or initiatives rooted in media literacy should be designed with a comprehensive understanding of these dual effects to maximize their impact.

Our findings indicate that the link between discernment and CIEM magnitude appears markedly stronger when discernment is indexed by the mean-difference method than when it is summarized with the ROC method. Signal-detection theory explains this discrepancy: the mean rating difference metric is sensitive to shifts in the overall decision criterion, so participants who generally rate headlines more conservatively or liberally will display an inflated gap even if their underlying ability to discriminate true from false content has not improved (Macmillan & Creelman, 2004). The ROC method, in contrast, integrates performance across all possible criteria and therefore offers a bias-free estimate of sensitivity. Relying on the mean rating difference method alone can thus overstate how sharply individuals separate fact from fiction. We recommend reporting the ROC method in addition to traditional difference scores to obtain a more balanced perspective on discriminatory ability.

Recommendations

Media literacy interventions should be designed with an awareness of their dual effects. Educators and health communicators are encouraged to continue improving public media literacy to enhance misinformation discernment, but they should also cultivate openness to well-evidenced corrections. Strategies might include teaching about cognitive biases that cause overconfidence, thereby mitigating the tendency of highly media-literate individuals to dismiss corrections.

We recommend that future studies investigate the underlying mechanisms identified. For example, examining whether overconfidence or source distrust drives the heightened CIEM among highly media literacy individuals. Causality between media literacy and the continued influence effect. Additionally, research should be conducted in more diverse populations (older adults, non-student groups, and different cultures) to test the generalizability of these findings.

Limitation

It is essential to acknowledge the inherent limitations of this study. First, the participants consisted predominantly of highly educated young adults (university students) recruited online, rather than a random cross-section of the population. Although this demographic represents a significant proportion of social media users (Wang et al., 2019), the non-probability sampling and homogeneous nature of the sample may limit the generalizability of our findings. For example, our student participants might on average be more media-savvy. This could potentially inflate overall discernment levels. Therefore, while our statistical tests are valid for the sample, caution is warranted in extrapolating the exact effect sizes to the general population. Future research should aim to encompass more diverse and culturally representative groups to ensure the generalizability of the findings (Brashier, 2024). Second, the measure of media literacy in this study was self-reported, which is a common method for assessing media literacy (Li, 2017; Su, Borah, et al., 2022; Tian, 2022). However, web- and behavior-based measurement indicators can provide new perspectives for assessing individual media literacy performance (McGrew, 2020). In future research, different approaches could be employed to assess media literacy skills, as needed. Lastly, we did not delve into the underlying psychological mechanisms behind these relationships, as doing so was beyond the scope of our survey-based study. Our focus was on identifying the relationships; exploring mechanisms would require additional experimental or

longitudinal research. Future studies should examine these mechanisms in depth to further illuminate how and why media literacy influences misinformation correction.

Conclusion

This study underscores that media literacy has a double-edged impact on the health misinformation process. While greater media literacy improves the ability to distinguish true from false health information, it may simultaneously exacerbate the continued influence effect after correction. This nuanced finding contributes to a more comprehensive understanding of how misinformation spreads and persists, highlighting the importance of addressing both the beneficial and adverse effects of media literacy.

Data Availability Statement

Details of measurement materials and analyses script are available via Open Science Framework (https://osf.io/h96am/).

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