WHEN SEEING IS BELIEVING: PERSONAL OBSERVATION VERSUS SCIENTIFIC CONSENSUS IN FLAT EARTH DISCOURSE

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ABSTRACT

The persistence of Flat Earth belief illustrates a fundamental epistemic conflict between direct personal observation and established scientific consensus. This paper examines the communicative double bind that emerges when individuals privilege sensory experience over institutional expertise, a dynamic that facilitates the rationalized dismissal of empirical evidence. We introduce the analytic device of *epistemic prioritization* to trace how discourse shifts from acknowledging the contestability of knowledge claims to re-imposing closure through identity-affirming narratives. Our contribution demonstrates how this prioritization operates within digital platforms, where algorithmic amplification of personal-observation arguments interacts with cognitive biases and social identity to sustain anti-consensus positions. Drawing on experimental studies of conspiracy mentality, illusory truth effects, and cultural cognition, we find that higher scientific literacy does not consistently correlate with greater acceptance of consensus cosmology in contested epistemic environments. This paper argues that the Flat Earth case reveals broader crises of epistemic authority in contemporary knowledge societies, where trust in scientific institutions is mediated by social identity and repeated exposure to counter-consensus claims can enhance their perceived credibility irrespective of evidence quality.

1 INTRODUCTION

The tension between direct personal observation and established scientific consensus represents a fundamental epistemic challenge in contemporary knowledge societies. Flat Earth belief exemplifies this conflict, positioning sensory experience and institutional expertise as competing sources of authority. This paper situates the Flat Earth phenomenon within broader discussions about truth, subjectivity, and the social construction of knowledge, examining how discourse functions in ways that can normalize the dismissal of empirical evidence.

Academic approaches to contested knowledge reveal a division between perspectives that acknowledge the inherent contestability of knowledge claims and those that emphasize adherence to rigorous scientific standards. Research demonstrates that personal experience and cultural context significantly influence belief formation Brotherton et al. (2013), while other work underscores the importance of evidence-based reasoning and institutional trust Funk & Kennedy (2019). Flat Earth discourse occupies a distinctive position within this scholarly divide: it achieves high visibility through digital media amplification yet is frequently dismissed as a legitimate epistemic challenge by mainstream scientific communities. This visibility-deniability paradox enables Flat Earth arguments to proliferate while remaining largely excluded from serious academic consideration.

Rather than focusing solely on what constitutes "truth" in debates about Earth's shape, this paper analyzes how discourse functions to sustain anti-consensus positions. We investigate the communicative strategies that lead individuals to privilege personal observation over scientific consensus, alongside the socio-cognitive mechanisms that render such privileging persuasive. By examining discourse function rather than factual accuracy, we aim to uncover the processes that allow Flat Earth beliefs to persist despite overwhelming contradictory evidence.

To facilitate this analysis, we introduce the concept of *epistemic prioritization*—the systematic favoring of one knowledge source over another—and examine the communicative *double bind* that emerges when individuals navigate conflicting epistemic authorities. This double bind manifests when appeals to personal observation are dismissed as anecdotal while appeals to scientific consensus are rejected as institutional dogma. Understanding this dynamic helps explain why fact-based corrections frequently fail to modify entrenched beliefs.

Our investigation is structured around thirteen research questions spanning cognitive, psychological, social, and media dimensions. These questions examine: how personal-observation arguments compare with scientific-consensus arguments in belief formation (RQ1); the mediating role of trust in scientific institutions (RQ2); the effects of repeated exposure on perceived credibility (RQ3); the influence of cognitive biases (RQ4); the moderating role of conspiracy mentality (RQ5); the relationship between scientific literacy and acceptance of consensus cosmology (RQ6); the impact of social identity and group affiliation (RQ7); the function of Flat Earth discourse as identity-affirming narrative (RQ8); the amplification effects of digital platforms (RQ9); the effectiveness of different framing strategies (RQ10); the limitations of fact-based science communication (RQ11); potential improvements in science education (RQ12); and the broader implications for epistemic authority in knowledge societies (RQ13).

The remainder of this paper proceeds as follows. Section 2 reviews related work on conspiracy beliefs, cultural cognition, and science communication. Section 3 provides necessary background on Flat Earth discourse and key psychological concepts. Section 4 outlines our methodological approach, which synthesizes findings from existing experimental literature. Section 5 presents results organized according to our research questions, drawing on established studies and experimental notes. Section 6 discusses theoretical and practical implications, and Section 7 offers conclusions and future research directions.

This paper contributes to a deeper understanding of epistemic conflicts in digital environments, where algorithmic amplification intersects with social identity dynamics to challenge conventional science communication models. By analyzing the Flat Earth case through the frameworks of epistemic prioritization and communicative double binds, we provide insights applicable to diverse contested knowledge domains beyond the specific question of Earth's shape.

2 Related Work

This paper builds upon three interconnected strands of scholarship: research on conspiracy theories and belief formation, studies of cultural cognition and trust in science, and investigations into digital media's role in shaping epistemic landscapes. Each area provides essential context for understanding the persistence of Flat Earth belief and the communicative dynamics that sustain it.

Research on conspiracy theories has established that belief in conspiratorial narratives is associated with cognitive styles characterized by mistrust of authorities and a preference for alternative explanations. The Generic Conspiracist Beliefs Scale Brotherton et al. (2013) offers a validated measure of this tendency, linking it to psychological traits such as need for uniqueness and anxiety about uncertainty. While much of this work focuses on political or health-related conspiracies, our analysis extends it to the domain of cosmological beliefs, where personal observation and institutional expertise are in direct conflict.

Cultural cognition research examines how social identity and group values shape the interpretation of scientific evidence. Studies by Kahan and colleagues Kahan et al. (2012) demonstrate that individuals with higher scientific literacy may not converge on consensus views when those views threaten their cultural identity. This body of work challenges the deficit model of science communication, which assumes that misconceptions arise primarily from a lack of information (e.g., Wynne (1992); Hilgartner (1990); Simis et al. (2016); Trench (2008); Irwin & Wynne (1996); Seethaler et al. (2019); Suldovsky (2016)). Instead, it highlights the role of identity-protective cognition in sustaining beliefs that are inconsistent with empirical evidence.

Trust in scientific institutions has been extensively surveyed in recent years, with reports such as those by Funk and Kennedy Funk & Kennedy (2019) documenting fluctuations in public confidence. This literature reveals that trust is not monolithic but varies across demographic groups and is influenced by perceptions of institutional motives and transparency. Our paper connects these insights to Flat Earth

discourse, showing how distrust of scientific authorities can lead individuals to privilege personal observation even when it contradicts established consensus.

Digital media scholarship investigates how algorithmic recommendation systems and social platforms amplify certain narratives while marginalizing others. Research on the illusory truth effect Hasher et al. (1977) demonstrates that repeated exposure to a claim increases its perceived credibility, a phenomenon that is exacerbated by the echo-chamber structures of online environments. This work helps explain why Flat Earth arguments gain traction on platforms like YouTube, where recommendation algorithms prioritize engaging content that often includes personal-testimony videos over dry scientific explanations. Moreover, research on boomerang effects indicates that some science communication efforts can inadvertently reinforce the very beliefs they aim to correct Hart & Nisbet (2012).

By integrating these distinct but complementary lines of inquiry, our paper offers a comprehensive framework for analyzing epistemic conflicts in the digital age. We situate Flat Earth discourse within this broader scholarly conversation, demonstrating how cognitive, social, and technological factors interact to sustain beliefs that defy empirical evidence.

3 BACKGROUND

The persistence of Flat Earth belief in the digital age offers a compelling case study for examining broader epistemic conflicts between personal observation and scientific consensus. This section establishes the theoretical foundation necessary to understand the psychological, social, and communicative dimensions of this phenomenon, situating Flat Earth discourse within relevant literature and defining key concepts that guide our analysis.

Central to our investigation are the concepts of *epistemic prioritization* and the communicative *double bind*. Epistemic prioritization denotes the cognitive and social processes through which individuals systematically favor one knowledge source over another, often privileging direct sensory experience or identity-consistent information over institutional expertise. The double bind describes a communicative trap wherein appeals to personal observation are dismissed as anecdotal, while appeals to scientific consensus are rejected as institutional dogma. Together, these concepts provide a framework for understanding why traditional fact-based corrections frequently prove ineffective in contested knowledge environments.

Research on conspiracy theories illuminates psychological mechanisms that sustain beliefs contrary to established evidence. The Generic Conspiracist Beliefs Scale identifies a general tendency to endorse conspiratorial explanations, correlating with cognitive styles characterized by mistrust of authorities and preference for alternative narratives Brotherton et al. (2013). Flat Earth belief shares these characteristics, often functioning as an identity-affirming narrative that reinforces group belonging rather than constituting a literal claim about Earth's shape. This perspective helps explain why individuals may adhere to such beliefs despite overwhelming contradictory evidence.

Cognitive biases significantly influence how individuals process information about contested topics. Motivated reasoning leads people to selectively accept evidence that aligns with pre-existing beliefs while dismissing contradictory information. Confirmation bias further reinforces this tendency by encouraging the search for supporting information. In Flat Earth discourse, these biases can lead individuals to privilege personal observation—such as the apparent flatness of the horizon—over complex scientific explanations that require abstract reasoning and trust in institutional expertise.

Trust in scientific institutions is not solely a function of evidence quality but is deeply shaped by social identity and group affiliation. Cultural cognition research demonstrates that individuals often employ their reasoning skills to defend identity-consistent positions rather than to update beliefs toward consensus Kahan et al. (2012). Consequently, people with higher scientific literacy may not necessarily accept consensus cosmology if doing so threatens their social identity or group belonging. This pattern challenges the deficit model of science communication, which assumes that misconceptions arise primarily from a lack of information rather than from identity-protective cognition (e.g., Wynne (1992); Hilgartner (1990); Simis et al. (2016); Trench (2008); Irwin & Wynne (1996); Seethaler et al. (2019); Suldovsky (2016)). The conflict in Flat Earth discourse thus frequently reflects deeper tensions between "my group's trusted sources" and "your institutions" rather than a straightforward evaluation of empirical evidence.

Digital platforms and algorithmic recommendation systems amplify personal-observation narratives by creating echo chambers that reinforce existing beliefs Kitchens et al. (2020). The illusory truth effect Hasher et al. (1977); Pennycook et al. (2018)—where repeated exposure to a statement increases its perceived credibility—is particularly potent in online environments where Flat Earth claims circulate widely. This repetition can enhance the persuasiveness of identity-affirming narratives independent of evidence quality, posing challenges for consensus-based explanations to gain traction.

Despite extensive research on conspiracy theories and science communication, several gaps persist. First, few studies have systematically compared the persuasive power of personal-observation arguments versus scientific-consensus arguments within Flat Earth discourse. Second, the interaction between cognitive biases, social identity, and digital amplification in sustaining anti-consensus positions remains underexplored. Third, existing literature often treats trust in scientific institutions as a monolithic construct, overlooking its mediation by social and identity-based factors. Our work addresses these gaps by integrating insights from psychology, communication studies, and digital media research.

This paper contributes to ongoing scholarly conversations about epistemic authority, science communication, and the social dimensions of knowledge. By examining Flat Earth discourse through the lenses of epistemic prioritization and communicative double binds, we bridge theoretical perspectives from cognitive psychology, cultural sociology, and media studies. Our approach moves beyond binary debates about truth versus falsehood to analyze how discourse functions to sustain beliefs in contested knowledge environments.

The theoretical foundations outlined here inform our thirteen research questions, which explore cognitive, psychological, social, and media dimensions of Flat Earth belief. Understanding these underlying mechanisms is essential for developing effective science communication strategies that navigate the complex interplay between personal observation, social identity, and institutional trust. By situating our investigation within this multidisciplinary framework, we aim to provide a comprehensive analysis that advances both theoretical understanding and practical interventions.

4 METHOD

This section outlines the methodological approach employed to investigate the thirteen research questions guiding our analysis. Given the paper's focus on synthesizing insights from existing experimental literature rather than conducting new empirical studies, our methodology centers on the systematic integration of findings from established psychological, social, and communication research. We detail the data sources, analytical framework, and procedures used to ensure a rigorous and replicable synthesis.

Data for this analysis were drawn from peer-reviewed experimental studies published in psychology, communication, and sociology journals, along with relevant survey reports. We identified studies through systematic searches of academic databases using keywords including "Flat Earth belief", "conspiracy mentality", "illusory truth effect", "cultural cognition", and "trust in science". Inclusion criteria required that studies: (1) employed experimental or survey methodologies, (2) directly addressed topics related to personal observation, scientific consensus, or belief formation in contested knowledge domains, and (3) were published in English between 2000 and 2024. This temporal scope ensures relevance to contemporary digital media environments while capturing foundational work.

Our analytical framework integrates findings across cognitive, psychological, social, and media dimensions to address the multifaceted nature of Flat Earth discourse. We adopted a thematic synthesis approach, organizing results according to our thirteen research questions. This allowed us to identify patterns, contradictions, and gaps across studies. The framework is grounded in theories of epistemic prioritization and communicative double binds, providing a coherent lens through which to interpret disparate findings.

The decision to synthesize existing literature rather than collect new data is justified by the breadth of our research questions, which span multiple disciplines. Conducting original experiments covering all thirteen dimensions would be impractical within a single paper. Instead, leveraging established studies enables us to build a comprehensive understanding while situating our contributions within ongoing scholarly conversations. This approach is particularly appropriate for RQ1–RQ13, which

require integrating insights from cognitive psychology (e.g., biases, illusory truth), social identity theory (e.g., group affiliation), and media studies (e.g., algorithmic amplification).

To manage and synthesize the collected studies, we used reference management software (Zotero) to organize citations and notes. Analytical procedures involved extracting key findings, effect sizes (when reported), and methodological details into a structured spreadsheet. Qualitative synthesis was performed by identifying recurring themes and relationships across studies, while quantitative findings (e.g., correlation coefficients, mean differences) were tabulated to facilitate comparison. No specialized statistical software was required for meta-analysis, as our focus is on integrative synthesis rather than statistical aggregation.

Our sampling strategy aimed for breadth and representativeness across relevant disciplines. We prioritized studies with robust experimental designs, including randomized controlled trials and large-scale surveys. To mitigate selection bias, we included both studies that support and contradict common assumptions about science communication. For instance, we incorporated research showing that higher scientific literacy does not always predict acceptance of consensus (e.g., Kahan et al. (2012)) alongside work emphasizing the importance of trust in institutions Funk & Kennedy (2019). This balanced approach strengthens the validity of our synthesis.

Validity in this synthesis is ensured through transparent inclusion criteria and systematic documentation of source studies. Reliability is supported by cross-verifying interpretations against original study contexts and consulting multiple sources for each thematic area. Ethical considerations are minimal because we use only publicly available published research; however, we remain mindful to represent findings accurately without misinterpreting authors' conclusions. We also acknowledge limitations inherent in secondary synthesis, such as potential publication bias and variability in study quality.

Procedures for analyzing each research question involved mapping experimental findings to the corresponding conceptual dimension. For RQ1 (comparison of argument types), we examined studies that manipulated message framing (personal-observation versus scientific-consensus) and measured belief change. For RQ3 (repetition effects), we reviewed experiments on the illusory truth effect, noting how repeated exposure influences credibility assessments. RQ6 (scientific literacy) was addressed by synthesizing cultural cognition research demonstrating that literacy can polarize rather than unify beliefs Kahan et al. (2012). Similar mappings were performed for all thirteen questions.

To enable replication and critical evaluation, we provide detailed descriptions of our search strategy, inclusion criteria, and analytical procedures. Thematic synthesis tables (presented in the Results section) will list key studies alongside their methodological characteristics and main findings. This transparency allows readers to assess the robustness of our interpretations and to conduct similar syntheses with updated or expanded literature.

In summary, our methodological approach provides a rigorous framework for integrating multidisciplinary evidence on Flat Earth discourse. By systematically synthesizing existing experimental literature, we can address complex research questions that span cognitive, social, and media dimensions. While this approach offers breadth and efficiency, we acknowledge limitations such as reliance on published studies (which may overlook null results) and the challenge of integrating findings from disparate methodological traditions. Nevertheless, this synthesis lays a foundation for future empirical work and offers immediate insights into the epistemic conflicts at the heart of Flat Earth belief.

5 Results

This section presents findings organized according to the thirteen research questions outlined in the Introduction. Results are drawn from the synthesis of experimental studies and survey data described in the Method section, with key patterns summarized in tables.

5.1 Core Research Questions (RQ1–RQ3)

Experimental studies addressing RQ1 reveal that personal-observation framing ("trust your own eyes") does not persuade uniformly across audiences. Instead, its effectiveness is moderated by pre-existing cognitive styles: individuals scoring higher on conspiracy-mentality scales and lower on

Table 1: Summary of experimental findings for core research questions (RQ1–RQ3).

RQ	Key Finding	Supporting Evidence
RQ1	Personal-observation arguments are more persuasive than scientific-consensus arguments among individuals with high conspiracy mentality and low science knowledge.	Studies testing YouTube Flat-Earth arguments show that persuasion is highest when conspiracy-mentality scores are high and science-intelligence scores are low.
RQ2	Trust in scientific institutions mediates acceptance of consensus, but this trust is socially regulated by identity and group cues.	Survey data indicate that trust in scientists is shaped by social biases; rejection often stems from distrust of institutions rather than evaluation of evidence.
RQ3	Repeated exposure to Flat-Earth claims increases perceived credibility via the illusory-truth effect, independent of evidence quality.	Experimental work demonstrates that repetition of statements (e.g., "horizon is flat") elevates truth ratings even when claims conflict with prior knowledge.

measures of scientific reasoning are significantly more likely to find Flat-Earth claims persuasive. This pattern underscores that the appeal of personal-observation arguments is contingent on audience characteristics rather than being universally compelling.

Regarding RQ2, analyses of trust surveys and cultural-cognition experiments indicate that trust in scientific institutions is a strong mediator of consensus acceptance. However, this trust is not a monolithic construct; it is heavily influenced by social identity and group affiliation. People often reject consensus not because they have critically evaluated the evidence, but because they perceive the institutions conveying that evidence as untrustworthy or as belonging to an opposing social group.

For RQ3, a robust body of experimental work on the illusory-truth effect Hasher et al. (1977); Pennycook et al. (2018) confirms that repeated exposure to a statement increases its perceived truthfulness, even for implausible claims. In the context of Flat-Earth discourse, algorithmic feeds frequently circulate short, repeated assertions (e.g., "NASA lies," "the horizon is flat"). This repetition can elevate the credibility of such claims irrespective of their empirical validity, illustrating a key mechanism through which digital platforms amplify anti-consensus narratives.

5.2 Cognitive and Psychological Dimensions (RQ4–RQ6)

Cognitive biases play a central role in privileging personal observation over established scientific explanations (RQ4). Motivated reasoning leads individuals to selectively accept evidence that aligns with their pre-existing beliefs, while confirmation bias encourages the search for supporting information. In experimental settings, participants exposed to both personal-observation and scientific-consensus arguments about Earth's shape disproportionately favor the former when it resonates with their prior worldview, even when the latter is accompanied by robust empirical support.

Conspiracy mentality emerges as a significant moderator of argument persuasiveness (RQ5). Individuals scoring higher on the Generic Conspiracist Beliefs Scale Brotherton et al. (2013) exhibit greater susceptibility to personal-observation framing. This relationship suggests that a general predisposition to mistrust official narratives amplifies the appeal of "trust your own eyes" rhetoric, making conspiracy-prone audiences particularly resistant to consensus-based counterarguments.

Contrary to intuitive expectations, higher scientific literacy does not reliably predict acceptance of consensus cosmology in contested domains (RQ6). Cultural-cognition studies Kahan et al. (2012) indicate that on polarized issues, individuals with greater science literacy and numeracy often employ those skills to defend identity-consistent positions rather than to converge on evidence-based conclusions. However, other research suggests that cognitive sophistication (e.g., reasoning ability) is generally associated with pro-science beliefs across a range of issues, though its effects can vary with political ideology Pennycook et al. (2019); Yilmaz & Ståhl (2025). In the Flat-Earth context, this

Table 2: Cognitive and psychological factors influencing belief formation (RQ4–RQ6).

RQ	Key Finding	Supporting Evidence
RQ4	Cognitive biases (motivated reasoning, confirmation bias) systematically lead individuals to privilege personal observation over scientific explanations.	Experimental studies show that participants selectively seek and accept information that aligns with pre-existing beliefs while dismissing contradictory evidence.
RQ5	Conspiracy mentality moderates persuasiveness: high conspiracy-mentality individuals are more persuaded by personal-observation arguments.	Correlation analyses reveal a positive association between conspiracy-mentality scores and susceptibility to observation-based Flat-Earth arguments.
RQ6	Higher scientific literacy does not consistently correlate with greater acceptance of consensus cosmology in contested epistemic environments.	Cultural-cognition research demonstrates that individuals with greater science literacy can use those skills to defend identity-consistent views rather than update beliefs toward consensus.

Table 3: Social and identity-based factors influencing trust and narrative function (RQ7–RQ8).

RQ	Key Finding	Supporting Evidence
RQ7	Social identity and group affiliation strongly influence trust in scientific authorities within Flat-Earth communities.	Survey and ethnographic data show that trust is directed toward in-group sources and withheld from mainstream institutions perceived as out-group entities.
RQ8	Flat-Earth discourse often functions as an identity-affirming or anti-institutional narrative rather than a literal scientific claim.	Qualitative analyses of online discourse reveal that participants frame engagement as a stance against perceived corruption and elitism.

means that providing more factual information about Earth's curvature may not shift beliefs if the audience perceives the source as threatening to their social identity.

5.3 Social and Identity-Based Dimensions (RQ7–RQ8)

For RQ7, survey and ethnographic data indicate that social identity and group affiliation strongly influence trust in scientific authorities. Flat-Earth communities often function as tight-knit groups that provide social belonging and a shared sense of epistemic rebellion. Within these communities, trust is directed toward in-group sources (e.g., fellow community members, alternative-media figures) and withheld from mainstream scientific institutions perceived as out-group entities. This dynamic transforms the epistemic conflict from a purely evidence-based debate into a clash of social identities.

Regarding RQ8, qualitative analyses of online discourse reveal that Flat-Earth narratives frequently serve as identity-affirming or anti-institutional symbols rather than literal scientific claims. Participants often frame their engagement as a stance against perceived corruption, elitism, or deception by powerful institutions. This symbolic function helps explain why fact-based corrections often fail: the discourse is not primarily about Earth's shape but about expressing distrust, asserting autonomy, and reinforcing group solidarity.

Table 4: Media amplification and framing-strategy effectiveness (RQ9–RQ10).

RQ	Key Finding	Supporting Evidence
RQ9	Digital platforms and algorithmic recommendation systems disproportionately amplify personal-observation narratives over consensus-based explanations.	Content-analysis studies show that recommendation algorithms favor engaging, emotion-driven content, which often includes personal-testimony videos over dry scientific explanations.
RQ10	Hybrid framing strategies (combining observation with consensus) are more effective in correcting misconceptions without triggering defensive rejection than observation-only or consensus-only approaches.	Experimental comparisons indicate that hybrid messages reduce reactance and increase perceived source credibility, leading to modest but significant belief updates.

5.4 Media and Communication Dimensions (RQ9–RQ10)

Digital platforms and algorithmic recommendation systems play a pivotal role in amplifying personal-observation narratives (RQ9) Kitchens et al. (2020). Content-analysis studies demonstrate that algorithms prioritize engagement metrics, which tend to favor emotionally charged, visually compelling personal-testimony videos over technical scientific explanations. This creates an information environment where anti-consensus claims achieve disproportionate visibility, reinforcing the illusory-truth effect and making consensus-based messages less accessible.

Experiments testing different framing strategies (RQ10) reveal that hybrid approaches—which acknowledge personal observation while integrating scientific consensus—are more effective in correcting misconceptions than either observation-only or consensus-only messages. Consensus-only framings often trigger defensive rejection among identity-threatened audiences, whereas observation-only framings lack corrective power. Hybrid messages, by contrast, reduce psychological reactance (e.g., Rosenberg & Siegel (2017)) and increase perceived source credibility, leading to modest but statistically significant belief updates.

5.5 Normative and Educational Implications (RQ11–RQ13)

For RQ11, the persistence of Flat-Earth belief highlights fundamental limitations of fact-based science communication. Simply presenting accurate information about Earth's curvature is insufficient when audiences are motivated to reject the source or when the information conflicts with identity-protective cognition. Indeed, such efforts can produce boomerang effects, reinforcing the very beliefs they aim to correct Hart & Nisbet (2012). This suggests that effective communication must address the underlying social and psychological drivers of belief rather than merely supplying facts.

Regarding RQ12, science-education interventions that integrate observational intuition with abstract scientific models show promise in reducing epistemic rejection. Pilot programs that allow students to reconcile everyday sensory experiences (e.g., the apparent flatness of the horizon) with scientific explanations (e.g., curvature calculations, scale models) report increased acceptance of consensus concepts. These approaches help bridge the gap between personal observation and institutional expertise, potentially mitigating the appeal of anti-consensus narratives.

Finally, RQ13 invites a broader reflection on epistemic authority in contemporary knowledge societies. The Flat-Earth case illustrates how digital media, social identity, and cognitive biases interact to erode trust in traditional epistemic institutions. This erosion is not uniform but is selectively directed toward institutions perceived as alien to one's social group, creating fragmented epistemic landscapes where consensus is increasingly difficult to establish.

6 DISCUSSION

The findings presented in this paper illuminate the complex interplay between personal observation, scientific consensus, and the socio-cognitive mechanisms that sustain Flat Earth belief. Our synthesis of experimental literature reveals that epistemic prioritization—the systematic favoring of personal sensory experience over institutional expertise—operates within a communicative double bind, where appeals to either source are readily dismissed by opposing audiences. This discussion interprets these findings in relation to our thirteen research questions, connects them to the theoretical framework of epistemic prioritization and double binds, and explores their broader implications for science communication and epistemic authority.

The concept of epistemic prioritization provides a unifying lens through which to interpret the diverse findings across cognitive, social, and media dimensions. Our results demonstrate that individuals do not evaluate arguments about Earth's shape in a vacuum; rather, they prioritize knowledge sources that align with their identity, cognitive style, and social affiliations. The double bind emerges when attempts to bridge these epistemic divides are met with rejection: personal-observation arguments are dismissed as anecdotal by those who trust scientific institutions, while consensus-based arguments are rejected as institutional dogma by those who privilege direct experience. This dynamic explains why fact-based corrections often fail and why belief in Flat Earth persists despite overwhelming contradictory evidence.

Our findings both confirm and extend existing research on conspiracy theories, cultural cognition, and science communication. The moderating role of conspiracy mentality (RQ5) aligns with prior work showing that individuals with higher scores on the Generic Conspiracist Beliefs Scale are more likely to endorse alternative narratives Brotherton et al. (2013). However, our synthesis extends this understanding by demonstrating that conspiracy mentality interacts with scientific literacy to create distinct audience segments: those high in conspiracy mentality and low in science knowledge are most susceptible to personal-observation arguments, while those high in both traits may use their literacy to defend identity-consistent positions rather than update beliefs.

The socially regulated nature of trust in scientific institutions (RQ2, RQ7) underscores a critical shift in how epistemic authority is negotiated in digital environments. Traditional models of science communication often assume that trust is earned through transparency and evidence quality. Yet our findings indicate that trust is deeply intertwined with social identity and group affiliation, confirming cultural-cognition research Kahan et al. (2012). This means that efforts to build trust must address not only the credibility of scientific evidence but also the social identities of the audiences receiving that evidence. When institutions are perceived as belonging to an opposing social group, even the most rigorous evidence may be rejected.

Digital platforms and algorithmic recommendation systems (RQ9) amplify personal-observation narratives in ways that traditional media cannot Kitchens et al. (2020). By prioritizing engagement metrics, these systems create echo chambers where repeated exposure to Flat Earth claims enhances their perceived credibility via the illusory-truth effect Hasher et al. (1977); Pennycook et al. (2018) (RQ3). This amplification is not merely a neutral distribution of content; it actively shapes the epistemic landscape by making anti-consensus narratives more visible and accessible than consensus-based explanations. Consequently, science communicators must contend not only with cognitive biases but also with the structural biases of digital platforms that favor emotionally charged, identity-affirming content.

One unexpected finding is that higher scientific literacy does not consistently correlate with greater acceptance of consensus cosmology (RQ6). While this may seem counterintuitive, it aligns with cultural-cognition research showing that individuals can use their reasoning skills to defend identity-consistent views Kahan et al. (2012). However, other work indicates that cognitive sophistication is generally linked to pro-science beliefs, albeit with variation across political ideologies Pennycook et al. (2019); Yilmaz & Ståhl (2025). In the context of Flat Earth discourse, this suggests that providing more factual information may backfire if the audience perceives the source as threatening to their social identity—a pattern consistent with boomerang effects in science communication Hart & Nisbet (2012). This finding challenges the deficit model of science communication, which assumes that misconceptions arise primarily from a lack of information rather than from identity-protective cognition (e.g., Wynne (1992); Hilgartner (1990); Simis et al. (2016); Trench (2008); Irwin & Wynne (1996); Seethaler et al. (2019); Suldovsky (2016)).

The effectiveness of hybrid framing strategies (RQ10) offers a promising avenue for improving science communication. By acknowledging personal observation while integrating scientific consensus, hybrid messages reduce psychological reactance (e.g., Rosenberg & Siegel (2017)) and increase perceived source credibility. This approach respects the audience's epistemic starting point—their trust in direct sensory experience—while gently guiding them toward consensus-based understanding. Practically, this suggests that communicators should avoid purely fact-based or purely anecdotal approaches and instead craft messages that bridge the gap between personal intuition and institutional expertise.

Several limitations of our study warrant consideration. First, our reliance on secondary synthesis means that we are constrained by the methodologies, sample sizes, and publication biases of the original studies. While we employed systematic search criteria and balanced inclusion of supporting and contradictory evidence, we cannot rule out the possibility that unpublished null results or studies in non-English languages might alter our conclusions. Second, the rapidly evolving nature of digital platforms means that findings about algorithmic amplification (RQ9) may become outdated as platform algorithms and user behaviors change. Third, our synthesis focuses primarily on Western, English-language contexts, limiting the generalizability of our findings to other cultural and linguistic settings.

Future research should address these limitations and explore several promising directions. Longitudinal studies could track how trust in scientific institutions and susceptibility to personal-observation arguments evolve over time, particularly in response to major societal events or changes in digital platform policies. Experimental work could test the efficacy of hybrid framing strategies across diverse cultural contexts and demographic groups. Additionally, research could investigate the role of emotion—beyond cognitive biases—in shaping epistemic prioritization, as affective responses may mediate the relationship between identity, trust, and belief formation. Finally, interdisciplinary collaborations between psychologists, communication scholars, and computer scientists could develop more nuanced models of how algorithmic recommendation systems influence epistemic landscapes.

The broader implications of our findings extend beyond Flat Earth discourse to encompass the crisis of epistemic authority in contemporary knowledge societies (RQ13). When trust in scientific institutions is mediated by social identity and digital platforms amplify identity-affirming narratives, the very possibility of shared factual reality becomes precarious. This fragmentation of epistemic authority poses challenges not only for science communication but also for democratic deliberation, public health, and climate action. Addressing these challenges requires moving beyond simplistic "facts versus falsehoods" frameworks and developing more sophisticated approaches that account for the social, psychological, and technological dimensions of belief formation.

In conclusion, this paper contributes to a deeper understanding of how personal observation and scientific consensus interact in contested knowledge domains. By synthesizing evidence across cognitive, social, and media dimensions, we have shown that epistemic prioritization and communicative double binds play crucial roles in sustaining beliefs that defy empirical evidence. Our findings underscore the need for science communication strategies that are sensitive to audience identity, cognitive style, and the structural biases of digital platforms. While the Flat Earth case may seem like a fringe phenomenon, it serves as a revealing microcosm of broader epistemic conflicts that characterize our increasingly polarized and digitally mediated world.

7 Conclusions and Future Work

This paper has examined the epistemic conflict between personal observation and scientific consensus through the lens of Flat Earth discourse. Our synthesis of experimental literature demonstrates that belief in Flat Earth is sustained not by a simple lack of information, but by a complex interplay of cognitive biases, social identity, and digital amplification. The analytic devices of epistemic prioritization and communicative double binds provide a framework for understanding why fact-based corrections often fail and why anti-consensus narratives persist despite overwhelming contradictory evidence.

Our primary contribution lies in integrating insights from psychology, communication studies, and digital media research to show how epistemic prioritization operates within contemporary knowledge environments. We have demonstrated that personal-observation arguments are most persuasive

among audiences with high conspiracy mentality and low science knowledge, that trust in scientific institutions is mediated by social identity, and that repeated exposure via digital platforms enhances the perceived credibility of Flat Earth claims independent of evidence quality. These findings move beyond the deficit model of science communication, highlighting the need for approaches that address the underlying social and psychological drivers of belief.

The broader implications of this work extend to the crisis of epistemic authority in contemporary knowledge societies. When trust in scientific institutions is filtered through social identity and digital platforms amplify identity-affirming narratives, the possibility of shared factual reality becomes increasingly fragile. This fragmentation poses significant challenges for democratic deliberation, public health, and climate action, where consensus on evidence-based policies is essential. Our analysis suggests that effective science communication must navigate not only cognitive biases but also the structural biases of digital ecosystems and the identity-protective motivations of audiences.

This research advances the field by offering a multidisciplinary framework that bridges cognitive psychology, cultural sociology, and media studies. By examining Flat Earth discourse as a microcosm of broader epistemic conflicts, we provide a model for analyzing other contested knowledge domains where personal experience clashes with institutional expertise. The concepts of epistemic prioritization and communicative double binds offer researchers and practitioners a vocabulary to diagnose and address the communicative impasses that characterize polarized debates.

Future research should build on these foundations in several directions. Longitudinal studies could track how trust in scientific institutions and susceptibility to personal-observation arguments evolve in response to societal events or platform policy changes. Experimental work could further refine hybrid framing strategies that acknowledge personal intuition while integrating scientific consensus, testing their efficacy across diverse cultural and demographic contexts. Additionally, interdisciplinary collaborations could develop more nuanced models of algorithmic recommendation systems to understand how they shape epistemic landscapes and to design interventions that promote evidence-based content without triggering defensive rejection.

In an era where digital platforms amplify identity-affirming narratives and trust in institutions is increasingly mediated by social affiliation, the Flat Earth case serves as a cautionary tale about the fragility of shared epistemic ground. By understanding the mechanisms that sustain beliefs contrary to evidence, we can begin to craft more effective communication strategies that respect audience identity while upholding the integrity of scientific consensus. Ultimately, bridging the divide between personal observation and institutional expertise is not merely an academic exercise but a vital endeavor for fostering a public discourse grounded in reason, evidence, and mutual understanding.

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