

Bounded Watchdogging: Platform Governance, Risk Structures, and the Reconfiguration of Science Journalism

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Abstract

This article examines six cross-platform biomedical research-integrity controversies in mainland China to analyze how open-source investigation becomes integrated with journalistic verification under platform governance. Drawing on a research design that combines multiple qualitative methods such as digital trace ethnography, process tracing, and semi-structured interviews, the study identifies a four-stage process of science watchdogging: initial disclosure, verification and evidence accumulation, media intervention, and institutional response. This process shows how journalists use open-source information to conduct investigative science reporting. Building on these findings, the article further proposes a model of bounded watchdogging organized around trade-offs among speed, verifiability, and risk, showing how public-facing online leads and digital traces can be transformed into journalistic evidence. In this way, the findings not only offer journalists a practical verification pathway for producing science investigations, but also extend watchdog journalism theory beyond liberal-adversarial assumptions in the Chinese context.

Keywords

comparative journalism; open-source investigation; platform governance; science journalism; watchdog journalism

1. Introduction

In recent years, research retractions and scientific misconduct cases, especially in biomedical research, have increased globally, raising concerns about the credibility of science and its implications for public policy, health governance, social trust, and equality (“Why retractions data,” 2025; Van Noorden, 2023; Xie & Wang,

2025). Within the epistemology underpinning watchdog journalism, journalists and news organizations are expected to critique its norm violations and interrogate the institutional power relations that allow misconduct to persist; yet this role has been less systematically extended to academic research (Mede et al., 2025; Valinciute & Roßmann, 2025). This is partly because investigative reporting on academic issues requires substantial professional engagement and familiarity with scientific knowledge, academic norms, and professional ethics (Fleerackers et al., 2025). Consequently, journalists' investigative conclusions often depend heavily on third-party authorities, peer experts, and specialized literature (Crewdson, 1993; Fleerackers & Nguyen, 2024). Yet academic communities remain relatively closed, so even when misconduct occurs, it is often not discovered in time (Liskauskas et al., 2019).

The expansion of social media, online communities, and database websites has created a platform-based environment in which information about scientific misconduct can be disclosed, archived, circulated, and verified across sites. Investigative uses of these publicly accessible digital traces constitute open-source investigation (OSINV), in which journalists assemble fragmented online leads into verified evidence for watchdog reporting (Charlton et al., 2026). In science journalism, this process enables public participation as scientific insiders, domain experts, audiences, and other actors collaboratively contribute leads, documents, knowledge, and digital traces that journalists organize and verify as reportable evidence (Haim & Zamith, 2019). This multi-actor process links studies of collaborative journalism (Charlton et al., 2026; Dodds et al., 2025), verification (Zhang, 2023), and platform governance by showing how actors participate, how evidence is substantiated, and how platform structures enable or constrain such participation (Anter, 2026; Foxman et al., 2024). Among these domains, audience-facing social media platforms are particularly consequential, as they turn issues that might otherwise remain within scientific communities into publicly visible claims, and draw audiences into the evidence process from the outset. This configuration further raises epistemological concerns about how journalists allocate authority and negotiate among evidence, expertise, audience, and platform or institutional constraints.

Yet watchdogging and journalistic practice are always shaped by socio-political conditions. Compared with adversarial models often assumed in Western journalism studies (Ettema & Glasser, 1998), direct public criticism in mainland China may entail greater professional, institutional, and political sensitivity, especially when misconduct claims implicate scientific authorities, reputational hierarchies, or powerful institutions (He, 2008; Kuang, 2023). Platform governance therefore shapes how visibility, participation, and journalistic risk are managed. Mainland China thus offers a comparative context for examining how science watchdogging operates when public participation expands evidence-seeking while platform governance circumscribes journalistic action. Accordingly, this article asks how science watchdogging unfolds in practice, how journalists recalibrate epistemic authority, and how audience engagement shapes whether and how biomedical misconduct claims become publicly visible, contested, and accountable.

2. Literature Review

2.1. *The Watchdog Norm and Journalistic Professionalism*

Within modern journalism theory, the watchdog ideal has long been treated as a cornerstone of both journalistic professional norms and democratic legitimacy. Since the mid-20th century, the public standing of journalism has increasingly hinged on its capacity to scrutinize power, expose wrongdoing, and safeguard

the public interest. The rise of social responsibility theory, most notably associated with the Hutchins Commission (officially the Commission on Freedom of the Press), articulated this logic in institutional terms: The press was to be justified and sustained through a corresponding obligation to serve the public good, including the duty to monitor governments and other powerful actors (Commission on Freedom of the Press, 1947). As scholars such as McQuail have argued, the watchdog function is rooted in classical liberal conceptions of the relationship between state and society in which an autonomous press is expected to operate outside government to check and counterbalance power (McQuail, 2010). Within this normative framework, journalism is positioned as a “Fourth Estate”; that is, watchdog journalism is not merely an optional genre but a central mechanism through which democratic accountability is rendered visible and actionable (Veltmer, 1999).

As journalism became professionalized in the latter half of the 20th century, watchdogging was consolidated as a defining value of journalistic professionalism. Schudson (2008) argues that journalism’s institutional distinctiveness lies in its enduring critical function: Even when adversarial scrutiny is politically inconvenient, sustained questioning of power underwrites democratic life. In this tradition, investigative reporting is a professional stance. Ettema and Glasser (1998) show how reporters position themselves as “custodians of conscience,” legitimizing their work by exposing misconduct and pursuing accountability. Watchdogging thus emerges as a morally justified adversarial practice, grounded in professional obligation and oriented toward making power answerable through public visibility.

Importantly, the ability of journalism to function effectively as a watchdog has historically depended on the epistemic principles that underpin professional journalism. During the 20th century, as the field became more professionalized, core norms like objectivity, neutrality, fairness, and independence were formalized as the pillars of journalistic authority (Schudson, 1978). Within this framework, watchdog legitimacy rested less on adversarial posture than on impartiality, corroboration, and disciplined methods of verification (Grut, 2024). Objectivity thus came to signify a commitment to systematic verification rather than mere neutrality of stance. Over time, however, this epistemic model came under increasing scrutiny. Critics argued that claims to neutrality could mask structural inequalities or produce false equivalence, prompting renewed emphasis on transparency, methodological accountability, and the visible demonstration of evidentiary practice (Graves, 2017). This shift from neutrality to demonstrable evidence is especially important for watchdog journalism, because exposure depends not only on whether claims can be verified but also on whether they can be positioned as legitimate matters of public controversy.

Hallin’s (1986) distinction among the spheres of consensus, legitimate controversy, and deviance helps clarify this boundary condition. Journalistic norms operate differently across these spheres. Media typically reproduce dominant positions within the sphere of consensus and exclude claims located in the sphere of deviance; only within the sphere of legitimate controversy do principles such as objectivity and balance apply meaningfully. The watchdog function, therefore, depends not simply on journalists’ willingness to expose wrongdoing but on whether particular claims are recognized as legitimately contestable (Ettema & Glasser, 1998). From this perspective, news production is a boundary-making activity through which journalists participate in defining what counts as contestable, verifiable, and publicly reportable. In platform-based environments, these legitimacy boundaries become more fluid. Publicly accessible data and networked verification may expand the scope of legitimate controversy, while institutional governance and legal constraints may narrow or discipline it.

In science journalism, these dynamics are especially consequential because the boundary between consensus and controversy is commonly unstable under conditions of uncertainty and value contestation (Brüggemann et al., 2020). Textbook science is commonly treated as settled and anchored in expert authority, whereas frontier science is frequently uncertain, internally disputed, and publicly contested (Fleerackers & Nguyen, 2024). The movement of scientific disputes into the sphere of legitimate controversy is thus neither automatic nor stable. Although Hallin (1986) clarifies the structural differentiation of legitimacy, his framework offers limited guidance on how claims shift between spheres or how institutional routines, technological infrastructures, and verification practices actively construct and reconfigure these boundaries, particularly under contemporary digital conditions. Addressing these mechanisms is essential to understanding how science journalism negotiates its watchdog capacity today.

2.2. Collaborative OSINVs and Journalistic Epistemology

Within a platform-based environment such as social media platforms, ordinary users can disclose allegations, discuss and supplement clues, preserve digital traces, and interact with journalists, experts, and platform actors in the process of news production (Dodds et al., 2025). Under these conditions, OSINV can be understood as a participatory and collaborative form of investigative practice that provides traditional journalistic watchdogging with new channels and methods for verifying evidence. Scholars describe this shift as a “collaborative turn” in investigative journalism, mediated by digital platforms (Müller & Wiik, 2023), moving from relatively isolated work toward cross-organizational and cross-professional networks in which journalists and participants jointly gather and analyze data, while platforms provide the infrastructural conditions and space for coordination (van der Woude et al., 2025).

As OSINV becomes more prominent, journalists’ epistemic authority and role conceptions are being redefined. In traditional mass-communication paradigms, news media served as primary channels of reliable knowledge with journalists endowed with epistemic privilege and credibility. In platformized public spheres, however, this authority is increasingly destabilized by the rise of alternative actors, including platform influencers, citizens, and online communities, who command trust among segments of the public (Charlton et al., 2026). OSINV practices, in this sense, serve as watchdogs by leveraging publicly available data to expose wrongdoing, often addressing areas that under-resourced newsrooms cannot fully cover. Under these conditions, professional journalism shifts from a gatekeeping to a gatewatching role (Zhang, 2023), curating and integrating publicly verified materials into broader arenas of public scrutiny, thereby prompting a recalibration of core professional norms.

Within this collaborative configuration, journalism’s epistemic framework is reshaped (Mohamedy & Wandwi, 2025). Whereas objectivity has often been associated with neutrality, in platform-based environments its authority increasingly depends on whether journalists can make their verification process visible and open to scrutiny (Charlton et al., 2026). OSINV gives practical form to this shift by foregrounding publicly accessible data, traceable evidence, and replicable verification procedures. Journalists document this process by explaining where evidence comes from, how it is checked, what uncertainties remain, and how interpretive judgments are made (Dodds et al., 2025; Dubberley et al., 2020). In this sense, the collaborative turn marks a broader shift from neutrality as a professional stance to verifiability as journalistic practice, redistributing epistemic authority among journalists, online participants, and platforms.

Prominent OSINV cases clarify how this reorientation works. These investigations often begin with platform-based traces, such as social media posts, images, videos, and online discussions, and rely on other open-source tools to corroborate and contextualize those materials. In the Malaysia Airlines Flight 17 investigation, for example, Bellingcat combined social media images and videos with open maps, satellite imagery, and geolocation techniques to reconstruct the movement of a missile launcher and present a traceable evidence chain (Higgins, 2021). During the Russia–Ukraine war, open-source investigators have similarly cross-checked videos circulating on platforms against satellite imagery, geolocation data, and weapons databases to document troop movements and civilian harm, at times supplementing or preceding newsroom reporting (Charlton et al., 2026). These cases show that OSINV is not only a toolkit but also a mode of verification in which platform-based traces are corroborated through open-source methods. By making evidence chains transparent, OSINV can move disputed claims into the sphere of legitimate controversy, even as that legitimacy remains shaped by institutional and regulatory constraints (van der Woude et al., 2025).

Overall, OSINV practices reshape journalist–public interactions and reconfigure the epistemological foundations of professional authority, shifting it from a closed institutional ethic to a publicly demonstrable logic of verification (Charlton et al., 2026; Mohamedy & Wandwi, 2025). Meanwhile, the boundaries of legitimate controversy are embedded within broader political and cultural orders (Dovbysh & Somfalvy, 2021). Socio-cultural norms and institutional arrangements shape how journalists deploy open-source tools, define factual claims, and negotiate public participation. Epistemic renewal, therefore, cannot be understood apart from the political and cultural contexts within which watchdog journalism operates. Empirical analysis must therefore situate OSINV within its specific institutional and societal setting.

2.3. Chinese OSINVs in Journalism Practices

Compared with the liberal watchdog model of investigative journalism, grounded in independence and adversarial practice, investigative reporting in China is embedded in a more complex assemblage of professional values. As Lin’s (2010) research suggests, Chinese journalists are shaped simultaneously by Western journalistic professionalism, the literati tradition, and Party-press values, three repertoires that coexist throughout processes of professionalization. Western journalistic professionalism, particularly its US variant, has exerted a lasting influence on Chinese journalists’ professional self-understanding by framing journalism as a distinct occupation committed to objective, neutral, and transparent reporting (Hassid, 2011). The literati tradition, rooted in Confucian thought, positions journalists as public-minded intellectuals with moral responsibility and a duty to speak for the people (Lin, 2010). This value orientation encourages moral concern and civic engagement, legitimizing exposure of wrongdoing as a form of accounting journalism intervention. At the same time, the Party-press also expects journalists to act as guides of public opinion in service of governance and social order (Long & Shao, 2023). The coexistence of these value systems produces distinctive tensions, making watchdog journalism in China a constrained practice of “dancing in shackles” (He, 2008, p. 100).

Hassid’s typological analysis further captures this complexity by delineating four ideal-type orientations among Chinese journalists—Communist professionals, workaday newswriters, advocate professionals—and American professionals, indicating that journalists cannot be reduced to a single role as executors of Party media (Hassid, 2011). Rather, they may shift between Party-centered news conceptions and Western-style

professional norms, or adopt an advocacy mode situated between serving as an official mouthpiece and acting as a public representative. In practice, the same journalist often adjusts reporting strategies across contexts, so professionalism in China appears more as a malleable resource disciplined by institutional conditions (Mertha, 2009). In other words, journalists may alternately function as proponents of Party lines and, when political space permits, as watchdogs who expose problems, enabling them to pursue professional ideals within bounded discretion while avoiding transgression of non-negotiable political lines. These institutional conditions also differ across organizational forms (Xi et al., 2021). Compared with Party media, commercial media are more exposed to market competition and audience pressures and may therefore be more willing to pursue investigative reporting within politically permissible boundaries (You et al., 2018).

In China, content that could provoke strong audience dissatisfaction or collective mobilization is politically sensitive and may expose journalists to political and professional risks (Kuang, 2023). Journalists therefore negotiate the boundaries of permissible watchdogging with official authorities while aligning their work with the broader priorities of state governance and social stability. In platform-based environments, these boundaries are further shaped by the infrastructures through which information circulates and becomes visible (Long & Shao, 2023). Through algorithmic distribution, moderation, account management, and traffic control, platform governance may limit how watchdog reporting evolves into broader criticism of governance (King et al., 2013). Under these conditions, journalists must preserve professional credibility through multi-source verification while carefully managing tone, attribution, and visibility to reduce political and occupational risks. Watchdog journalism in China therefore depends on sustaining evidentiary rigor without turning oversight into direct confrontation with public authority.

Importantly, criticism of public authorities or governance is not automatically prohibited; rather, it operates within a shifting and often narrow temporal window. As King et al. (2013) demonstrate, sharp criticism may remain online for a period, yet once a topic signals mobilization, intervention tends to be swift and stringent. Consequently, journalists must act rapidly within this temporal window, navigating algorithmic visibility and moderation regimes to sustain circulation while ensuring evidentiary robustness to minimize legal and reputational risks. Watchdogging journalism in China therefore operates within differentiated risk structures, in which risk takes a more complex configuration: It encompasses not only professional risks, such as misinformation or reputational damage, but also political risks, including the possibility that reporting may be read as challenging governance legitimacy, enabling public dissatisfaction, or collective mobilization (Hassid, 2011). These risks define the temporal windows, evidence standards, and attribution boundaries within which watchdogging can be exercised.

Science journalism is a critical site for theorizing OSINV under platform governance. On the one hand, it raises questions central to journalistic professionalism, including transparency, objectivity, and the verification of specialized knowledge. On the other hand, scientific controversies cannot be reduced to purely technical disputes (Liskauskas et al., 2019; Vestergaard, 2017; Yeo et al., 2017). Such controversies often extend beyond expert domains, implicating epistemic authority, ethical responsibility, audience participation, and broader societal consequences (Fleerackers & Nguyen, 2024). Science watchdogging thus emerges as a boundary-making practice through which journalists, experts, and publics negotiate what can be publicly challenged.

3. Methodology

To examine the process of science watchdogging, journalists' calibration of epistemic authority, and the role of audience, this study selected six prominent cases from 2021 to 2025. All cases involved insider disclosures, audience participation, journalistic intervention, and formal responses from relevant authorities or institutions. They also involved contested allegations of biomedical misconduct, requiring journalists to manage both evidence risks in verification and socio-political risks stemming from scrutiny of institutional responsibility and public authority. Methodologically, the study combines digital trace ethnography, process tracing, qualitative framing analysis of audience comments, and semi-structured interviews to reconstruct how OSINV unfolded across the six cases.

3.1. *Sampling and Platform-Based Digital Data*

The six cases are the Shaanxi University of Traditional Chinese Medicine "Shared Tablecloth" case (2021), the Xi'an Jiaotong University "Data Fabrication" case (2022), the "Scratched Ruler" image duplication case (2023), the Huazhong Agricultural University "Supervisor case" (2024), the Fujian University of Traditional Chinese Medicine "Male Endometriosis Sample" controversy (2025), and the Peking Union Medical College "4+4" controversy (2025; hereafter referred as Tablecloth, Data Fabrication, Scratched Ruler, Supervisor case, Male Endometriosis Sample, and 4+4 Controversy). All cases involved biomedical misconduct, requiring journalists to manage both evidence risks during verification and political risks stemming from scrutiny of institutional responsibility and public authority.

Briefly, the Tablecloth case concerned papers from Shaanxi University of Traditional Chinese Medicine that were alleged to have reused the same experimental images as multiple other papers, with even the background tablecloth appearing highly similar. The Data Fabrication case concerned allegations that Shan Tao, an associate chief physician affiliated with Xi'an Jiaotong University, fabricated and altered research data in published papers. The Scratched Ruler case involved four papers from Jilin University, the First Hospital of Lanzhou University, and the Affiliated Hospital of Qingdao University that were reported to contain duplicated images featuring the same scratched steel ruler, three of which have been retracted. The Supervisor case involved allegations that a Huazhong Agricultural University supervisor coerced students and altered research data. The Male Endometriosis Sample case concerned papers by two gynecologists from the People's Hospital Affiliated to Fujian University of Traditional Chinese Medicine that included male patient samples, such as "male uterine fibroids," which contradict basic medical knowledge. The 4+4 Controversy involved questions about medical publications, student training procedures, and the fairness of an accelerated medical-doctorate pathway. Detailed case information is presented in Table 1 in the Supplementary File.

To construct the digital trace dataset, the researchers followed a digital trace ethnographic approach to locate each case's earliest traceable disclosure post and used it as an anchor to identify, record, and collect relevant materials page by page. To minimize the risk of missing key materials and timeline events, the research team manually reviewed the platform pages of each case from the initial disclosure onward and combined this process with keyword searches, snowball tracing from platform posts, media reports, and official statements. Collection continued until no new unique materials or timeline events were found. The archived data included the initial disclosure, the collection of structured evidence, the first media report,

platform deletion or restriction, cross-platform archiving, and the official statements. Additionally, the researchers used Python-based scripts to structurally collect audience replies from the most visible, high-engagement threads at key moments in each case; after cleaning, deduplication, and screening, the final dataset comprised 42,375 comments.

These materials were then analyzed inductively. The researchers first reconstructed each case's timeline through process tracing and conducted qualitative framing analysis through open coding and axial coding of the materials to refine recurring patterns across the six cases. Finally, these materials were organized into three analytical dimensions: temporal sequencing, evidence accumulation, and platform-audience dynamics. These dimensions capture, respectively, the temporal window of watchdogging, the evidentiary work by which online traces become journalistic evidence, and the platform-audience interactions that shape visibility, preservation, and public scrutiny.

To make the inductive findings comparable across cases, the three analytical dimensions were operationalized into descriptive indicators, providing a structured rather than statistical comparison of how verification unfolded across the three risk configurations (Table 1). Specifically, time-related indicators were

Table 1. Operational indicators of risk-differentiated verification dynamics.

Dimension	Indicator	Data Source	Low Risk	Medium Risk	High Risk
Temporal sequencing	Time to first structured evidence	Comment timeline	Mean = 2.5 hrs Range = (0–3.9)	Mean = 5.8 hrs	Mean = 18.4 hrs
	Time to first media report	Media timeline	Mean = 1.2 days Range = (0.8–1.6)	Mean = 3 days	Mean = 6 days
	Official response time	Official accounts	Mean = 3 days Range = (2–4)	Mean = 15 days	Mean = 18 days
Evidence accumulation	Type of triggering material	Content coding	Textual	Textual	Mixed/institutional
	Number of evidence operations	Comment coding	Mean = 3 Range = (2–4)	Mean = 8	Mean = 17
	Independent validations	Media coding	Mean = 2 Range = (1–3)	Mean = 9	Mean = 22
	Media uptake of sourced evidence	Media coding	81.2%	56.4%	40.5%
Platform-audience dynamics	Deletion or restriction events	Platform traces	Mean = 44 Range = (31–57)	Mean = 76	Mean = 208
	Archival or mirroring actions	Cross-platform traces	Mean = 11 Range = (7–15)	Mean = 56	Mean = 124
	Dominant audience frame	Comment coding	Technical	Mixed	Institutional Legitimacy

Note: Ranges are shown only where multiple cases are included (low risk).

derived from platform records, media reports, and official statements; evidence and platform-related indicators were coded as observable events and summarized as counts or proportions; and the audience indicator was coded as a categorical frame based on comment threads. A technical frame refers to comments that focus primarily on the alleged misconduct itself, such as textual, image-based, data-related, authorship, or procedural problems. A power-relational frame refers to comments that link the case to academic hierarchy, dependency, supervisor-student relations, or unequal distribution of credit and responsibility. An institutional-legitimacy frame refers to comments that link the controversy to institutional credibility, public resource allocation, governance responsibility, or public authority. Together, these indicators show how the timing of disclosure and response, the accumulation of evidence, platform intervention, and audience framing varied as cases progressed from technical misconduct (low risk) to power asymmetry (medium risk) and institutionally sensitive controversies (high risk).

3.2. Semi-Structured Interview Data

To capture both journalistic judgment and platform governance constraints, the study also conducted 28 semi-structured interviews with 16 journalists (from both traditional newspapers and commercial digital media), eight volunteer archivists involved in evidentiary preservation, and four practitioners engaged in platform governance. Table 2 provides an overview of the interview participants. Journalists were identified through bylines on relevant reports and contacted directly; archivists were invited via private messages on social media platforms; and platform governance practitioners were recruited through professional referrals. Interviews were conducted via social media (Weibo, WeChat) or by telephone. The interview questions included: (a) how open-source materials are assessed for credibility; (b) standards for sufficient verification and attribution; (c) editorial, legal, and cross-checking routines; (d) how platform and legal risks shape timing and exposure intensity; and (e) how user-generated evidence and audience sentiment are managed in reporting. All participants gave informed consent to be interviewed, participated voluntarily, and had all identifying information anonymized. Ethics approval was obtained from the researchers' workplace.

Table 2. Overview of interview participants.

Categories	Subcategory	No.	Platform/Organization
Journalists	Traditional media	9	<i>Southern Metropolis Daily; Jiefang Daily</i>
	Commercial digital media	7	<i>Jiemian News; The Paper</i>
Volunteer archivists	Social media	8	Weibo; Zhihu; WeChat
Platform governance practitioners	Social media platforms	4	Weibo; Zhihu; WeChat

4. Analysis and Findings

Building on the foregoing analysis, this section develops three interrelated analytical levels to explain how scientific controversies are transformed into institutional accountability under differentiated risk structures. First, we reconstruct the verification process linking initial disclosure, outlining the structural sequence by which digital traces are translated into formal accountability. Second, we identify risk-differentiated epistemic configurations through cross-case comparison, demonstrating how verification is adjusted across varying levels of institutional sensitivity through trade-offs among speed, verifiability, and risk. Third, we analyze the mediated role of audiences within platform governance. These three analytical layers reveal OSINV in science as a bounded and dynamically negotiated practice in the Chinese context.

4.1. Cross-Verification: Processual Structuring of Accountability

This study identified a consistent four-stage verification process across the six cases examined: (a) initial disclosure; (b) verification and evidence accumulation; (c) media intervention; and (d) institutional response. Although each controversy unfolded under distinct institutional and risk conditions, the sequence by which allegations developed into formal accountability displayed a recognizable structural pattern. Rather than emerging solely from professional newsrooms, investigative momentum was initiated by publicly circulated disclosures, intensified by distributed evidence labor, consolidated through structured journalistic reporting, and ultimately culminated in official action. This staged progression reveals a coordinated process in which professional journalism becomes sequentially integrated, forming a reproducible pathway from allegation to institutional response.

The first stage was initial disclosure. Across all six cases, initial allegations were gathered using a shared “trace kit” of platform-native techniques: timestamped posts, screenshot bundles, persistent identifiers (e.g., DOIs), hyperlink chains, and cross-platform reposting that preserved provenance and enabled rapid circulation. What varied systematically was not the availability of these techniques but their intensity and redundancy across different risk levels. In low-risk, text-based misconduct cases, disclosures were typically evidence-focused and detailed, often including side-by-side comparisons, DOI tracing, and direct links to publication records. In medium-risk cases involving power asymmetries, the same toolkit was deployed more heterogeneously, combining documentary fragments (policies, notices, communications) with initially unstructured allegations that required later cross-referencing to stabilize what counted as “evidence.” In high-risk, institutionally sensitive cases, disclosure practices became more cautious and defensive: Posts were more frequently mirrored, archived, or duplicated preemptively in anticipation of deletion or moderation. In all cases, this stage produced the initial evidence anchors around which subsequent accumulation unfolded.

The second stage is verification and evidence accumulation. Following initial disclosure, verification proceeded under a structured yet distributed evidence protocol. Across cases, actors followed a recurring sequence of operations: (a) identifier tracing (DOI and database cross-checking); (b) metadata and image comparison (file properties, duplication detection, version-history inspection); (c) hyperlink persistence testing and cross-platform corroboration; (d) archival preservation (screenshot bundling, mirroring, and cache retrieval); and (e) independent validation through expert consultation or off-platform confirmation. Volunteer archivists frequently stabilized volatile traces, while journalists replicated key checks to consolidate multi-source evidence chains. What varied across risk levels was the density and sequencing of these operations. In low-risk cases, verification remained largely technical and document-centered, often resolved through direct textual comparison and database cross-referencing. Medium-risk cases required broader evidence triangulation, integrating policy texts, employment records, and procedural timelines. High-risk cases demanded multi-layered validation, including source authentication, off-platform consultation, and cautious attribution strategies, often extending the verification cycle (Mohamedy & Wandwi, 2025). Generally, this stage transformed scattered digital traces into structured, cross-validated evidence that supported formal media intervention.

The third stage is media intervention. Media intervention marked the transition from distributed evidence accumulation to structured reporting. The first formal news article served as a stabilizing moment,

consolidating dispersed traces into a structured account with explicit sourcing and attribution. Journalists synthesized publicly generated materials, independently verified key claims, and calibrated language according to perceived legal and institutional sensitivity. Hyperlinks, archived screenshots, and expert quotations were selectively incorporated to render the evidence chain legible while maintaining editorial responsibility. Across risk levels, differences emerged in attribution strategy and evidence positioning. In low-risk cases, media reports more directly identified misconduct and cited documentary evidence with minimal hedging. Medium-risk cases required more cautious phrasing and multi-source confirmation, often contextualizing allegations as procedural irregularities. High-risk cases involved layered validation and delayed publication, with journalists carefully sequencing claims, consulting institutional representatives, and avoiding definitive attribution until further confirmation. Through this stage, distributed verification was translated into institutionally accountable reporting.

The fourth stage is institutional response. The institutional response marks the transition of the verification process from the media agency to formal governance structures. All six cases elicited varying degrees of official reaction following media reporting, including investigations, public statements, disciplinary measures, or credential-related decisions. Low-risk cases typically led to individual-level accountability, such as formal demerits or public apologies. Medium-risk cases required more complex organizational procedures, including internal reviews or position adjustments. High-risk cases resulted in more severe consequences, including degree revocation, paper retractions, or the cancellation of professional licenses. The timing and intensity of institutional responses varied significantly across risk levels. A common pattern, however, was that official action generally followed structured media intervention, indicating that formal reporting served as a critical juncture for translating distributed allegations into institutional accountability. At this stage, the digital traces generated by the initial disclosure, after verification and reporting, became embedded within formal governance mechanisms.

These four stages constitute a reproducible verification pipeline linking citizen-led disclosure, distributed evidence accumulation, structured media intervention, and institutional response. This sequence remained remarkably stable, even as duration, evidence density, and attribution strategies varied systematically with institutional sensitivity. Low-risk cases moved rapidly from technical verification to direct reporting and limited sanctions, whereas high-risk cases involved prolonged validation, layered sourcing, and delayed institutional outcomes. These patterned variations suggest that while the process enhances journalism's capacity to transform digital traces into institutional consequences, it also reveals implicit trade-offs: speed against confirmability, evidence transparency against attribution caution, and rapid exposure against institutional traction.

4.2. The Trade-Off: Risk-Differentiated Epistemic Verification

Building on the previous comparative analysis, we outline a risk-based epistemic configuration for verification. Across cases, the complexity of evidence accumulation, the sequencing of attribution, and tolerance for publication delay, reflected in progressively longer mean reporting lags across risk levels, were systematically calibrated against perceived institutional sensitivity and projected sociopolitical ramifications. Verification was not merely a technical exercise in fact-checking but a form of epistemic navigation under risk conditions. As sensitivity increased, verification became more layered, more anticipatory, and more oriented toward managing downstream contestation. In this sense, journalistic verification functioned as a

risk-calibrated practice of responsibility, in which decisions about speed, attribution, and evidence sufficiency were continuously adjusted in relation to political implications and platform amplification dynamics.

In low-risk cases of textual academic misconduct, verification adopts a distinctly professional-technical orientation. These controversies typically center on discrete, self-contained factual irregularities, such as plagiarism, duplicate publication, or citation manipulation, with the scope of dispute clearly defined and institutional sensitivity relatively limited. In these contexts, journalists rely primarily on integrating technical evidence and conducting procedural cross-checks to transform open-source materials into structured chains of verifiable facts. Attribution is generally direct, publication timelines are comparatively swift (Mean = 1.2 days; Range = 0.8–1.6), and the reporting tone is less defensive. As one interviewee noted, “When evidence can be clearly traced, the reporting itself becomes more transparent and credible.” From an epistemological standpoint, this approach embodies what could be called a certificatory professional logic. News outlets convert publicly available clues into institutionally recognizable facts via procedural objectivity and transparency of evidence, ensuring targeted accountability. In this framework, verification mainly acts as confirmation rather than broadening the scope of legitimate debate.

In contexts marked by pronounced power asymmetries, such as hierarchical supervisor–student relationships, verification shifts from mere technical confirmation to responsibility-sensitive calibration. Allegations in these contexts involve unequal authority, reputational stakes, and potential harm to vulnerable actors, prompting journalists to raise evidence thresholds and rely on multi-source validation. For example, in the Supervisor case, interviewees frequently invoked concerns of fairness, responsibility, and the need to protect vulnerable individuals, with some describing students’ disclosures as “suicidal reporting” requiring careful handling. Such language resonates with the literati-inflected moral orientation identified in prior scholarship on Chinese journalism, in which journalists are imagined as bearers of ethical responsibility. Importantly, these moral commitments were not expressed through overt advocacy but translated into stricter evidence standards and calibrated attribution. Misconduct was framed in terms of procedural or ethical irregularities, avoiding expansive systemic claims. Epistemologically, this configuration reflects a hybrid mode: Procedural rigor remains central, yet verification is tempered by relational moral considerations. Watchdogging journalism thus sustains scrutiny while mitigating relational harm and potential escalation.

In cases where controversies further escalate into questions of institutional or public governance, the logic of verification shifts markedly. Such high-sensitivity cases extend beyond individual academic misconduct to implicate broader structural issues, including educational equity, public trust, and the design of institutional authority, thereby significantly increasing legal exposure and potential sociopolitical repercussions. Under these conditions, verification is no longer confined to confirming factual accuracy; it becomes a forward-looking exercise in risk management. As several interviewees noted, reporting on public institutions required careful calibration of wording and attribution boundaries: “When checking facts, we have to anticipate how different audiences, especially regulators, might interpret them.” Another journalist observed that such cases could quickly amplify public dissatisfaction, making it necessary to weigh “every word against its possible amplification.” Accordingly, although evidence standards remained rigorous, attribution became more cautious, publication timelines lengthened substantially (Mean = 6 days at high risk compared to an average of 1.2 days at low risk), attribution boundaries narrowed, and controversies were framed as discrete, administratively rectifiable issues rather than systemic legitimacy crises. Epistemologically, this

mode combines procedural rigor with relational sensitivity: Watchdogging journalism sustains scrutiny while containing escalation.

Comparative analysis of the three configurations shows a systematic reordering of speed, verifiability, and safety as risk intensifies. In low-risk contexts, speed and verifiability rise together, with minimal safety constraints. In power-asymmetry cases, verifiability becomes the pivot balancing tempo and relational risk. In high-sensitivity cases, safety takes precedence: publication is delayed, attribution is narrowed, and exposure is strategically modulated, even as formal evidence standards remain high. These shifts suggest that verification is not simply the determination of truth but a risk-calibrated epistemic practice. Risk does not eliminate watchdog journalism; it reshapes its pace, thresholds, and attribution strategies. This dynamic reordering reflects the negotiated character of Chinese watchdogging journalism, situated at the intersection of professional norms, literati moral responsibility, and governance pragmatism. Professionalism ensures evidentiary rigor, the literati ethos upholds commitments to fairness and justice, and governance considerations limit attribution and exposure. What emerges is not a retreat from oversight but a structured compromise in which watchdog capacity becomes an adjustable configuration, mediating among verification, moral obligation, and institutional sustainability rather than embodying a purely adversarial ideal.

4.3. Audience Mediation: Platform Governance and the Politics of Visibility

Building on the risk-differentiated configuration of verification identified above, our analysis suggests that one crucial mediating variable in this calibration process lies in the anticipated dynamics of audience response. The prioritization of speed, verifiability, and safety is continually shaped by journalists' expectations of how different publics might interpret, amplify, contest, or escalate particular claims. Across interviews, actors repeatedly emphasized that verification decisions were also made in assessing audience reaction, which is understood as a form of risk assessment, through which journalists evaluate how audience responses may affect visibility, platform moderation, institutional pressure, and the escalation of controversy. In this sense, the audience functions as a structuring coordinate within risk-calibrated accountability practice. The boundaries of legitimate controversy, previously discussed in relation to institutional and political constraints, are thus further mediated by perceptions of audience mobilization and platform amplification.

Among the actors participating in this mediated calibration process, volunteer archivists occupy a structurally significant position by stabilizing the verification procedure. Through systematic archiving, mirroring, and cross-platform reposting, archivists preserve volatile digital traces that might otherwise disappear under moderation pressure or rapid circulation. As one archivist explained, "If we do not screenshot it immediately, it might be gone within minutes." Such practices reduce evidence fragility and extend the temporal window within which verification can proceed. Their engagement is not purely technical. Several interviewees framed archiving as a normative act: "Science should be science," one biomedical researcher noted, emphasizing the need to defend disciplinary integrity. Another archivist stated, "If people outside academia can see the evidence clearly, maybe institutions will have to respond." These motivations, however, translate into concrete infrastructural effects. By anticipating deletion, throttling, or reputational backlash, archivists introduce redundancy into the evidence chain, thereby mitigating downstream risk in the accountability process. In this sense, they function as distributed custodians of evidence durability, shaping not only what can be verified but also how long verification remains possible.

For open-source investigative journalists, the audience functions not only as a recipient but as an evaluator and anticipatory variable in risk calibration. Interview data show that journalists differentiate among multiple audience constituencies, online commentators, professional communities, institutional stakeholders, and regulators, each carrying distinct interpretive and political implications. As one journalist noted, “Before publishing, we always ask: Who is going to read this first, and what will they do with it?” In lower- or medium-risk cases, journalists often align with audience framing when public interpretation reinforces clear evidence of misconduct; for example, in the Supervisor case, reporters adopted the audience’s “victim” role and regarded their reporting as a responsibility to “speak for the vulnerable.” However, when online accusations became excessive, tone was recalibrated; in 4+4 Controversy, an editor observed that “some accusations online were too extreme, and if we simply echoed them, it would escalate unnecessarily.” In such contexts, attribution and sequencing were adjusted to prevent amplification beyond manageable bounds. These findings indicate that verification thresholds, publication timing, and attribution decisions are shaped not only by evidence sufficiency but also by anticipated audience reaction and regulatory sensitivity.

From the perspective of platform governance practitioners, audiences are expressive populations subject to monitoring and regulation. Interview data indicate that tolerance thresholds are shaped by the perceived controllability of discourse. As one practitioner noted, “It’s not only about whether something is true, but whether it remains manageable.” When user expression remains within moderated bounds and is supported by structured evidence, platform affordances, such as recommendation and trending mechanisms, may amplify visibility. However, once discourse becomes emotionally escalatory or institutionally accusatory, moderation intensifies. One practitioner described moments when discussions “spill over,” prompting deletion, throttling, or algorithmic de-prioritization. In high-sensitivity cases, even professionally composed posts risk restriction if circulation accelerates too rapidly. Platform governance thus actively structures the visibility horizon within which both journalistic and public expression operate. These dynamics show that OSINV is also shaped by expected audience engagement and platform governance limits, making watchdog roles a shared product of journalists, the public, and governance structures.

Taken together, the verification procedure, the risk-differentiated epistemic modes, and the mediated role of audiences reveal that watchdogging journalism operates under layered and conditional constraints. Watchdog practice does not disappear amid heightened sensitivity; rather, it is adjusted across thresholds of institutional risk, audience anticipation, and platform governance. The capacity to scrutinize power is thus neither uniformly adversarial nor structurally fixed, but contingent upon negotiated boundaries of evidence, attribution, and visibility. Understanding contemporary watchdog journalism, therefore, requires attention not only to normative ideals but to the bounded and dynamically mediated conditions under which those ideals become actionable.

5. Discussion and Conclusion

Drawing on six cross-platform biomedical research controversies in China and integrating multiple qualitative methods, this article reconstructs a four-stage watchdog verification process: initial disclosure, verification and evidence accumulation, media intervention, and institutional response. This process offers journalists an actionable OSINV workflow for reporting academic misconduct, showing how scattered online claims can be traced, corroborated, translated into reportable evidence, and connected to institutional response. It also proposes a model of bounded watchdogging, suggesting that journalistic oversight operates

through trade-offs among speed, verifiability, and risk. Audience response conditions watchdogging on timing, evidence, attribution, and visibility. This approach provides an alternative to liberal-adversarial views of watchdog journalism by demonstrating how accountability is maintained within professional, platform-based, and political constraints.

The core mechanism of bounded watchdogging is a trade-off among speed, verifiability, and risk. Across differentiated risk conditions, journalists sustain scrutiny by adjusting when misconduct claims are made visible, how they are evidenced, and how responsibility is attributed. These adjustments, however, do not make verification less rigorous; rather, they reorganize rigor through layered evidence, traceable documentation, cautious wording, and acknowledged uncertainty. Such reorganization marks an epistemic recalibration of journalistic authority, in which objectivity and credibility depend more on transparent, verifiable, and traceable evidentiary practices. Audiences are also central to this process, because they stabilize traces, amplify claims, and condition the visibility and contestability of biomedical misconduct, while also entering journalistic and platform risk calculations. In this sense, watchdogging becomes a bounded form of public participation evidence work, dynamically balanced between collaborative knowledge production and institutional constraint.

Theoretically, the model enriches our understanding of watchdogging by showing how journalistic professionalism, platform governance, and power structures are negotiated under differentiated institutional and regulatory conditions. As a distinctive model within the broader spectrum of journalistic professionalism, the Chinese case offers a comparative site for examining how watchdogging journalism operates beyond the Western liberal watchdog model. Additionally, it extends our understanding of Hallin's (1986, p. 117) "sphere of legitimate controversy" from a spatial metaphor into a three-dimensional operation. Legitimacy in platform space is not just about whether an issue can be debated. It also depends on stabilizing evidence, maintaining attribution, ensuring dissemination stays within governance limits, and enabling interventions within tight timeframes. Legitimate controversy thus becomes a dynamically negotiated boundary environment co-produced by journalists, audiences, platforms, and institutional sensitivity. In doing so, the article integrates participatory journalism, verification research, and platform governance scholarship into a unified boundary-producing mechanism in the context of the Global South.

The article also contributes to journalistic practice, especially in OSINV science journalism, by outlining how platform-based disclosures can be transformed into actionable reporting through professional verification. Rather than functioning merely as a set of digital tools before publication, OSINV supports a four-stage reporting process in which journalists monitor public disclosures, preserve digital traces, verify open-source evidence, assess attribution, and manage the visibility of contested claims. Science journalism controversies are especially useful for observing this process because they span expert domains and public platforms, requiring journalists to handle technical evidence, audience participation, institutional statements, and questions of public accountability simultaneously. This article, therefore, shows how science watchdogging can be organized as a professional workflow for turning platform-based disclosures into accountable public knowledge without sacrificing evidentiary rigor.

This study also has limitations. The model of bounded watchdogging is derived from six biomedical research controversies in mainland China, where journalistic watchdogging is shaped by platform governance, institutional sensitivity, and the political management of public visibility. It should therefore be understood as

a context-sensitive model rather than a general account of investigative journalism or a direct counterpart to the liberal-adversarial watchdog models. Future research could extend this model through comparative media system analysis by asking under what institutional, legal, and platform conditions bounded watchdogging emerges, and how different media systems reorder trade-offs among speed, verifiability, and risk. Additionally, this study primarily focuses on public-facing social media platforms; future research could compare them with specialist databases or forums to examine how different platform environments organize participation and shape evidence work. Finally, research retraction cases often involve relatively clear evidence and identifiable pathways for institutional response. More uncertain scientific controversies may generate different patterns of verification and risk management. These questions all warrant further examination.

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Conflict of Interests

The authors declare no conflict of interest.

Data Availability

The content data that support the findings of this study are available from the corresponding author upon reasonable request. The interview data of this study are not publicly available due to ethical restrictions.

LLMs Disclosure

ChatGPT was used to assist with language editing of the manuscript. The authors reviewed and take full responsibility for the final content.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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