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Explain Yourself: How Corrections and Epistemic Explanations Impact the Public's Trust in Science Reporting

Maura de Vos ^a, Kalypso Iordanou ^a and Clark A. Chinn ^b

^aUniversity of Central Lancashire Cyprus, Larnaka, Cyprus; ^bGraduate School of Education, Rutgers University, New Brunswick, NJ, USA

ABSTRACT

News media are a crucial source of secondary scientific information to the public, making it essential for informed societal and individual decision-making. Yet they are not without errors. To prevent the spread of inaccurate claims, many news organizations will publish corrections to earlier stories. How exactly this practice is perceived by the public, however, remains poorly understood. This study examines how corrections to science and technology news articles and epistemic explanations on the value of such corrections impact readers' trust in the author, article, and journalism. Participants ($N=178$) were randomly assigned to one of four groups varying in the presentation of corrections and epistemic explanations in a 2×2 factorial design. Results revealed that corrections reduced trust in the author's perceived expertise. Epistemic explanations, however, improved trust in the article and author and mitigated some negative impacts of corrections on trust in journalism. Implications based on the results are discussed for journalists reporting on science and technology and science literacy.

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In contemporary democracies citizens rely heavily on news media to inform their opinions and decisions of complex social issues, scientific developments, and policy choices. The media are a major epistemological institution, influencing public knowledge daily (Ekström and Westlund 2019). The public's trust in journalists is therefore not only of commercial value for news organizations but also a democratic necessity (McNair 2009). Audiences must regard journalism and journalists as broadly credible if they are to inform public debate, foster accountability, and support evidence-based decision-making. As the media landscape has continued to grow more complex, there has been a decline in public trust. For instance, in the United States trust in mass media fell from 54% in 2016 to around 40% by 2023 (Brenan 2023). This decline is important for science communication because news has long been the public's main source of information about science and related policy issues (European Commission 2021; Funk, Gottfried, and Mitchell 2017).

CONTACT Maura de Vos  Mde-vos1@uclan.ac.uk

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Despite this responsibility journalists face significant challenges in maintaining accuracy while preserving speed (Juntunen 2010). Although journalists ought to adhere to professional obligations for accurate information delivery (Kovach and Rosenstiel 2021; van Dalen 2019), news reporting certainly includes inaccuracies (Maier 2005). Workforce reductions and competition to publish first intensify time pressure in a 24/7 ecosystem, which can reduce verification and accuracy (Lewis and Cushion 2009; Marjoribanks et al. 2022; Martin 2017). At the same time, digital dissemination enables rapid access but also rapid spread of inaccuracies (Buchanan 2020; Vosoughi, Roy, and Aral 2018). In response, news organizations routinely update online stories and issue corrections to rectify errors to initial stories (Rhodes, Roschke, and Sepessy 2019; Timmerman and Bronselaer 2022). This is especially consequential in science reporting, where lay audiences depend on news media to interpret fast-moving evidence and related policy issues that affect everyday decisions. How corrections are perceived and their impact on readers is, however, not well understood. Corrections are a core accountability mechanism, but visible corrections may also be read as evidence of earlier failure, potentially reducing trust. Accordingly, it is not only a question of whether publications should be updated, but *how* corrections are communicated. This study tests whether epistemic explanations (i.e., brief justifications for why corrections matter for accuracy and integrity) can mitigate trust declines while preserving the accountability benefits of visible corrections. In doing so, this study extends corrections research by examining *how* correction framing shapes audience responses. It also applies the METI framework of epistemic trustworthiness (Hendriks, Kienhues, and Bromme 2015) to evaluate how corrections influence perceived trustworthiness in science reporting.

How Do Readers Perceive Corrections to Earlier News Stories?

Prior research on the impact of corrections on the public's perceptions of journalism highlights a "corrections dilemma" as described by Freitag et al. (2023): While retractions and corrections can increase readers' belief accuracy and hence, better inform them, they can also diminish the public's trust in the source. Corrections and the open communication of them are understood as tools that help keep journalists accountable to the public (see, for instance, Cornish 2010; Karlsson 2013; Kovach and Rosenstiel 2021). They help by upholding transparency efforts (Karlsson and Clerwall 2018), which can build credibility and trust (Meier 2009). Although empirical findings are scarce, some evidence suggests that increasing transparency (commonly materialized by providing details to the reader, such as why and how a story was written) is linked with increased credibility evaluations as well as increased intentions to engage with news media (Curry and Stroud 2019). Transparency efforts are, however, not well defined in literature. One applicable concept of it is the correction of mistakes published. Appelman and Hettinga (2020) highlighted that transparency in correcting errors can enhance the public's perception of a media's credibility, which was measured based on how accurate, authentic, and believable a story was. The study compared the impact of corrections on the media outlet reputation of an online-only outlet (*Yahoo.com*) and an online story of a traditional newspaper (*The New York Times*). Readers were less critical and skeptical of corrections in the traditional outlet than the online-only one. Appelman and Hettinga focused on a politically controversial topic in their study. The materials used involved legislation surrounding

transgender bathrooms – a highly polarized topic in the US (Castle 2018). Notably, political orientation influenced how corrections were perceived. Whether corrections of online publications from a traditional outlet would be perceived as more skeptical on less polarizing topics, such as scientific findings, remains to be empirically addressed.

Nonetheless, issuing corrections is widely recognized as a professional obligation for maintaining journalistic integrity. Industry codes and standards explicitly emphasize updating and correcting information over the life of a story (Kampf & Daskal, 2014). For instance, the Society of Professional Journalists explicitly states that journalists should “Gather, update and *correct* information throughout the life of a news story.” (SPJ n.d.). Similarly, the International Federation of Journalists’ Global Charter of Ethics notes that “The journalist shall do the utmost to rectify any errors or published information which is found to be inaccurate in a timely, explicit, complete and transparent manner.” (IFJ 2019). In line, legacy news media outlets articulate comparable expectations: the Associated Press emphasizes that corrections should be made promptly, clearly labeled as corrections, and made visible to both subscribers and audiences (AP 2024), and Reuters’ standards emphasize that accuracy is “sacrosanct” and that errors should be corrected transparently (Reuters 2015). The New York Times emphasizes that error corrections need to be in allocated prominent spaces (NYT 2025). Together, these guidelines position visible corrections as a core accountability practice. Yet, empirical work suggests that corrections can nonetheless carry reputational costs, motivating the present study’s focus on how corrections are communicated.

Some research shows that corrections to inaccurate information can be effective in reducing acceptance of false claims (e.g., Clayton et al. 2020; Stoeckel et al. 2024). There is also some evidence for corrections correcting misinformation in certain circumstances, such as providing details (Prike and Ecker 2023). Similarly, journalistic fact-checks have been shown to increase the accuracy of readers’ factual beliefs and knowledge on inaccurate claims made by presidential candidates (Nyhan et al. 2020). However, the processes by which corrections impact readers of online news articles—as well as how they impact trust—are still being investigated.

Freitag et al. (2023) examined the effects of tweet retractions and skeptical third-party tweets on participants’ accuracy in recognizing false claims and their trust in news sources. Participants were shown a series of tweets, including one false claim by a news organization. The false claim used was based on an authentic tweet from 2014. Two major news organizations were forced to retract a claim they made previously due to the questionable credibility of their source. The false claim involved a sensational topic involving a Canadian jihadist leaving Canada to become an ISIS executioner. The study measured changes in belief accuracy (the accuracy of participants’ belief in the false claim) and trust in the organization after exposure to additional tweets, a retraction from the news organization, a critical tweet from a third party, or both. In comparison to control conditions (no retractions), a retraction by the news outlet increased belief accuracy (correctly stating that the claim was false). but significantly decreased trust in the news organization. Third party tweets that were critical of the news organization also led to decreased trust but had a lesser impact on belief accuracy. These findings highlight a dilemma for news outlets: News organizations can prevent the spread of mis- or disinformation through retracting inaccurate stories, but this comes at the cost of diminished trust in the organization by its audience. However, it should be noted that Freitag et al.

(2023) employed an extreme type of correction in their study—a complete retraction of an earlier story, which was quite sensational, as well. Furthermore, their study focused on a social media setting of news consumption. Would the same findings occur with less extreme kinds of corrections of a more ordinary type?

Freitag et al.'s findings suggest that the public “punishes” news organizations for issuing corrections by reducing trust in the organization. However, survey data indicate that the public view admitting mistakes as an important journalistic value (see Gibson et al. 2022). Dutch adults reported that it is a very important journalistic practice to openly admit and correct mistakes (van der Wurff and Schoenbach 2014). Another European survey found that making corrections was the third most important transparency tool listed by a sample of Swedish participants (Karlsson and Clerwall 2018). However, these positive attitudes do not always translate into trust when corrections are witnessed in practice. For instance, Karlsson, Clerwall, and Nord (2014) examined the impact of various transparency practices – one of them corrections – on source and message credibility ratings of journalistic articles. Virtually no or merely small effects were found. Corrections had no effect on any of the dependent measures (source, message, actor credibility). Results from focus groups by Karlsson and Clerwall (2018) produced comparable findings. Participants were asked to describe “good”, “ideal”, and “credible” journalism. The topic of correction was not brought up outside of a “brief mention” (p. 1926) that was not further discussed by participants. Although the studies discussed indicate that admitting mistakes is valued by the public, it remains unclear how this impacts trust when errors are acknowledged and explained in science reporting. Do journalistic practices such as correcting inaccurate stories impact readers’ perceived trustworthiness?

Trust and Epistemic Trustworthiness in News About Science and Technology

News coverage of science and technology plays an important role in informing and educating the public on scientific issues (Geller et al. 2005; Secko, Amend, and Friday 2013). This role can only be fulfilled if the public trusts the journalist communicating the science (Usher 2019; van Dalen 2019; Wintterlin 2020). Because members of the public only have a bounded understanding of science (Bromme and Goldman 2014), they must rely on secondhand evaluations on whom to trust (Bromme and Hendriks 2024). This is inherently risky because there is no guarantee that the trustee will deliver what they seek (see for instance, McCraw 2015; Resnik 2011). Hendriks, Kienhues, and Bromme (2015) explained that a trustee’s expertise (domain-specific skills), benevolence (acting independently of profit motives and beneficial for the trustor), and integrity (acting according to guidelines or principles acceptable for the trustor) determine their trustworthiness. Accordingly, Hendriks, Kienhues, and Bromme (2015) designed the Muenster Epistemic Trustworthiness Inventory (METI) to measure trust in communicators of knowledge (i.e., experts, scientists) along these three dimensions. These dimensions can be applied to science reporters and outlets: audiences ask whether the journalist understands the topic (expertise), is committed to informing rather than manipulating them (benevolence), and adheres to professional norms such as accuracy, verification and correction (integrity).

Currently, news media outlets are transparent in their approaches to corrections but rarely provide context beyond the facts. Few studies (as far as we are aware) have explicitly examined the impact of corrections on the trustworthiness of science and

technology reporting. However, studies investigating trust in science have found that being “self-corrective” can increase the trustworthiness of researchers (Altenmüller, Nuding, and Gollwitzer 2021). Lay participants assigned higher benevolence to researchers who admitted self-criticism (doubts about previous studies and findings). Simultaneously, voicing reform intentions (on implementing transparency efforts in work) had positive effects on trustworthiness and credibility. Whether or not these kinds of transparency efforts translate into trust in science and technology reporting and journalism more broadly speaking, remains uncertain. Rather than merely acknowledging that a mistake was made, perhaps providing reasons for the importance of corrections can act as a reminder to readers as to why corrections should take place. In principle, such reasons can be used in any domain of journalism where evidence and accuracy are central (arguably all of them). In the present study we examine them in the context of news about science and technology, where audiences are particularly dependent on journalistic mediation and where the stakes of inaccurate reporting can be high. By making verification and self-correction visible, epistemic explanations should speak directly to METI’s dimensions of expertise (knowing how to check), integrity (following norms of accuracy and correction), and benevolence (acting in the audience’s epistemic interest).

Science Journalism and our Empirical Focus

Definitions of science journalism and journalists vary, but many emphasize that the field is more than journalists occasionally writing about science. Fahy and Nisbet (2011) describe science journalists as occupying a distinct professional role that has diversified in digital media, including functions such as curation, civic education, and watchdogging. Fairbank (2024) similarly argues that science journalism is defined not only by topic but by the capacity to competently scrutinize scientific claims. Guenther et al. (2019) add that it involves routines for representing evidence and (un)certainly transparently and accurately, including limitations and funding contexts. Across these perspectives, science journalism is characterized by specialized roles and epistemic practices.

Simultaneously, large-scale work focusing on the experiences of science journalists themselves shows that in practice the boundaries are blurry. For instance, Massarani et al. (2021) define science journalists pragmatically as professionals who self-identify as such, since no formal certification exists. The global self-proclaimed science journalists in their report work across a wide range of topics: biological and physiological science, environment, technology, health and medicine, and climate change emerge as the five most frequently covered areas. Most publish via digital outlets of legacy and online-only media. The authors explicitly note that “reporting about science in the news media” is an obvious starting point, but that many journalists move fluidly between science and other beats, and that “science journalist” is as much a contextual professional identity as a rigid occupational category.

These debates motivate two clarifications for the present study. First, it is reasonable to treat science- and technology-related reporting as part of the broader ecology of science journalism. Second, we avoid overgeneralization: our stimuli were two authentic articles from a legacy outlet (*The New York Times*) related to science and technology, but we did not assess whether their authors meet stricter occupational or epistemic definitions of “science journalist.” Accordingly, we restrict our claims to readers’ responses to

corrections and epistemic explanations in legacy news coverage of science topics, rather than to science journalism as a profession.

The Present Study

The current study examines how corrections and epistemic explanations shape readers' trust in the author, the article, and journalism more broadly. Epistemic explanations were brief statements explaining why verification and post-publication correction are part of responsible reporting, and corrections were presented as short notes describing two fixes made to earlier versions of each article. Using two science- and technology-related articles from *The New York Times* as stimuli, we randomly assigned participants to a 2 × 2 design (corrections present vs. absent; epistemic explanation present vs. absent). Participants rated trust in the author, the article, and journalism (pre/post), and provided open-ended explanations for their judgments.

This study contributes to journalism and science reporting research in three ways. First, it extends work on the “corrections dilemma” by examining audience responses to routine corrections in legacy news coverage of scientific topics, rather than extreme retractions of sensational social media content. Second, it tests whether adding epistemic explanations (making the reasons for verification and correction explicit) can mitigate potential trust costs of corrections. Third, by using the METI dimensions of expertise, benevolence and integrity, it provides a more fine-grained view of how corrections and explanations shape different facets of epistemic trust in journalists and their articles.

The study aims to answer the following research questions:

(RQ1) Do epistemic explanations and/or corrections impact readers' perceived trust in the author or in the article?

(RQ2) Do epistemic explanations and/or corrections impact readers' general level of trust in journalism?

Method

Participants

Participants ($N = 178$) were recruited through three channels: (1) a university research participation system (Sona Systems, 3%), (2) SurveyCircle (an online platform connecting researchers with study participants, 83%), (3) unpaid recruitment via personal networks, including posts on Facebook and Instagram (14%). All participants completed the survey via Qualtrics. Because a single anonymous Qualtrics link was used across channels, recruitment source was not recorded at the individual response level; thus, the social media/personal networks figure reflects the remainder after accounting for SurveyCircle and Sona completions. The data set used for analysis was smaller than the original one ($N = 239$), which resulted after excluding incomplete responses and those that failed the attention checks.

Most participants were identified as female ($n = 121$, 68.00%) or male ($n = 51$, 28.70%) and the remaining identified as transgender male ($n = 1$, 0.6%), non-conforming ($n = 1$, 0.6%), or preferred not to say ($n = 4$, 1.10%). Participants were primarily White/Caucasian

(52.3%), with the remainder identifying as other ethnicities (47.7%). Most had at least some university education, with the largest groups holding a bachelor's (39.9%) or master's degree (18.5%). About half were aged 18–25 (52.2%), with the remaining participants distributed across older age groups.

Design

A 2 (epistemic explanation vs. no epistemic explanation) $\times$ 2 (corrections vs. no corrections) between-subjects design was used in this study. Participants were randomly assigned to one of the four conditions, which varied according to exposure (a) to corrections made to the article after initial publication and (b) to a short paragraph above the article presenting an epistemic explanation on the value of corrections (see the supplemental file for the full vignettes). Prior to reading these materials, participants reported their demographic information (age, gender, education, and ethnicity). Participants' trust in the journalist author and trust in the articles were assessed after reading the articles. Their trust in journalism was assessed both before and after reading the articles.

Participants read two vignettes adapted from authentic *New York Times* articles published in January 2023 (one from "Science" and one from "Artificial Intelligence"). The stories were summarized to comparable length (<450 words) and retained their original titles: *A.I. Turns Its Artistry to Creating New Human Proteins* (Vignette A) and *The Toxin That Helps Oyster Mushrooms Devour Worm Flesh* (Vignette B). We selected these articles because they (a) concerned socially relevant but not strongly polarized science/technology topics and (b) contained specific factual details that could plausibly be corrected without changing the central claim, allowing us to model routine corrections rather than full retractions.

All participants read vignette A followed by vignette B, with both vignettes presented in the same condition. In the epistemic explanation conditions, participants saw the following paragraph above each article:

"The article below was published by a major newspaper. This paper includes, as one of its core journalistic principles, the following statement:

Revision and verifying are critical practices in journalism as it ensures the accuracy and credibility of the information reported. This is commonly done through double-checking information and cross-checking information with sources, as well as updating already published articles when new information becomes available. This practice helps to prevent the spread of misinformation and disinformation, which is particularly important in today's digital age where news can spread quickly and easily."

In correction conditions, we added a short correction note at the end of each article describing two post-publication edits (with dates): one moderately important factual correction (e.g., in text A, that the name of the AI used by the researchers was incorrect; in text B, that it was not the presence of the toxin in the mushroom that was surprising, but rather the amount of the toxin), and minor correction (e.g., in text A, an incorrect year was reported and in vignette B an incorrect location). The corrections in each article addressed issues that did not affect the main ideas presented in the story but were modest issues.

Measures

Trust in Journalism

Participants' trust in journalism was measured using five items ($\alpha = .79$) (e.g., "Journalists often lie or exaggerate"). On a 6-point scale, participants indicated the degree to which they agreed or disagreed with each item from "I fully disagree" to "I fully agree." This measure was administered both before and after participants read the designated articles, using identical items at each instance. Mean scores were calculated for each individual item across both time points. Subsequently, an overall mean score – representing participants' trust in journalism – was derived by averaging these item means.

Trust in the News Article

Participants' trust in the news article was examined with three 6-likert scale questions ($\alpha = .76$) ("The article is trustworthy.", "I trust that the information was accurate and truthful.", "I do not trust that the journalist depicted the topic truthfully."). Items were administered after participants read each article. Mean scores were first calculated for each question for both articles. An overall mean score was then derived by averaging these individual item means across the two articles.

Trust in the Author

The METI was used to measure participants' perceptions of the journalist-author of the vignettes. This measurement examines laypeople's evaluations of experts online, who are evaluated in three dimensions: expertise, integrity, and benevolence. Hendriks, Kienhues, and Bromme (2015) demonstrated that the METI is appropriately sensitive to variations in source characteristics, thus confirming its reliability for measuring laypeople's epistemic trust in experts. It was presented in the form of a bi-polar matrix, representing opposite descriptions (e.g., ethical – unethical) on a 6-point scale. For current analysis, mean scores were first computed for each item within the three dimensions. These means were then averaged to yield a mean score for each dimension, combining scores after reading both articles.

Open-Ended Questions

Finally, two open-ended questions gave participants the opportunity to add any relevant information they might have believed was left out and provide context to their METI scores ("Please provide a brief explanation on why you chose to give those scores regarding the author of the article.", "Is there anything that you would like to add on the trustworthiness of science journalism that was not addressed in the survey?").

Attention and Manipulation Checks

To make sure that participants were paying attention to the task and were not answering randomly, we added two attention checks, 6-point Likert scale questions about basic information provided in the texts (e.g., "Did the article that you just read discuss the topic of AI or oyster mushrooms?"). We also tested whether the manipulation was successful with two questions (i.e., "Did the journalist that wrote the article edit any information after first publishing it?" "Did the article mention the practice of revising and verifying?"- Response options: "Yes", "No", "There was no information about this.").

Procedure

Prior to data collection, the Cyprus National Bioethics Committee granted ethical approval. When opening the link to the study participants were first informed of the study's aims and design.

We are interested in individuals' views on journalists and their line of work. You will be presented with two newspaper articles and asked to answer some questions about it. Please be assured that your responses will be kept completely confidential.

After providing their consent to continue, participants reported demographics (age, gender, ethnicity, education) and completed a measure of general trust in journalism. They were then randomly assigned to one of four conditions and instructed to read two online newspaper articles and rate their impressions of the journalist and the article (*"Now we will ask you to read the first of two newspaper articles that was published by a major newspaper. Afterwards you will have to answer a few questions regarding the information and the author."*).

Results

Participants who failed the attention checks, that is, failed to correctly answer which topic was discussed after both articles were excluded from any of the following analysis. Descriptive statistics can be found in several tables: [Table 1](#) presents the descriptive statistics for each METI dimension and the presence or absence of the epistemic explanation and/or corrections. [Table 2](#) illustrates the descriptive statistics for article trust scores. Finally, [Table 3](#) displays the descriptive statistics for pre- and post-test scores for general trust in journalism. All data files are publicly available in the Figshare repository [10.6084/m9.figshare.27740901].

Author Trust (METI)

After calculating the mean scores of each dimension of the METI, two-way ANOVAs were performed to evaluate the effects of corrections and epistemic explanation on Author Trust. We pursued separate analysis for each dimension of the METI.

Results showed significant effects only for the expertise dimension. There was a significant main effect of epistemic explanation ($F(1, 174) = 3.93, p = .049, \eta^2 = .022$) and a significant main effect of corrections ($F(1, 174) = 11.18, p = .001, \eta^2 = .060$). No significant

Table 1. Descriptive statistics for trust in author (METI dimensions).

Epistemic explanation	Corrections	Expertise*			Integrity			Benevolence		
		<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>
Absent	Absent	4.46	.80	47	4.15	.82	47	4.32	.72	47
	Present	4.05	.81	40	4.01	.90	40	3.96	.86	40
	Total	4.27	.82	87	4.08	.85	87	4.15	.80	87
Present	Absent	4.73	.76	48	4.34	.76	48	4.28	.91	48
	Present	4.29	1.02	43	4.28	1.07	43	4.34	1.07	43
	Total	4.52	.91	91	4.31	.92	91	4.31	.98	91
Total	Absent	4.60	.78	95	4.25	.79	95	4.30	.82	95
	Present	4.18	.93	83	4.15	.99	83	4.16	.98	83
	Total	4.40	.88	178	4.20	.89	178	4.23	.90	178

Note. Two-way ANOVAs (2×2) were conducted separately for each METI dimension. Expertise: main effect of epistemic explanation, $p = .049, \eta^2 = .022$; main effect of corrections, $p = .001, \eta^2 = .060$; interaction ns. Integrity and benevolence: all effects ns.

Table 2. Descriptive statistics for trust in article scores.

Epistemic explanation*	Corrections	<i>M</i>	<i>SD</i>	<i>N</i>
Absent	Absent	4.09	.64	47
	Present	3.78	.63	40
	Total	3.95	.65	87
Present	Absent	4.12	.54	48
	Present	4.14	.65	43
	Total	4.12	.60	91
Total	Absent	4.10	.59	95
	Present	3.96	.67	83
	Total	4.04	.62	178

Note. Two-way ANOVA: main effect of epistemic explanation, $p = .039$, $\eta^2 = .024$; main effect of corrections ns; interaction ns.

interaction effect ($F(1, 174) = .02$, $p = .885$, $Eta^2 = .000$) was found for the expertise scores. As shown in Table 1, participants in the epistemic explanation conditions ($M = 4.52$, $SD = .91$) had higher scores compared with those in the no-epistemic-explanation conditions ($M = 4.27$, $SD = .82$). Although epistemic explanation had a positive effect on author trust, corrections had a negative effect. Participants who were not exposed to corrections exhibited higher expertise scores for the author ($M = 4.60$, $SD = .78$) compared with those who read articles that included corrections ($M = 4.18$; $SD = .93$). Results were not significant either for the integrity ($F(1, 174) = 3.01$, $p = .085$, $Eta^2 = .017$) nor the benevolence scores ($F(1, 174) = 1.56$, $p = .213$, $Eta^2 = .009$).

Article Trust

A two-way ANOVA to evaluate the effects of epistemic explanation and corrections on Article Trust revealed a significant main effect of epistemic explanation on article trust ($F(1, 174) = 4.32$, $p = .039$, $Eta^2 = .024$). However, there was neither a significant main effect of corrections ($F(1, 174) = 2.47$, $p = .118$, $Eta^2 = .014$) nor an interaction effect ($F(1, 174) = 3.10$, $p = .080$, $Eta^2 = .017$). As seen in Table 2, participants who were exposed to the epistemic explanation had higher Article trust scores than those who were not.

Table 3. Descriptive statistics for trust in journalism.

Trust in Journalism	Epistemic explanation	Corrections	<i>M</i>	<i>SD</i>	<i>N</i>
Pre-Test Scores	Absent	Absent	3.55	.78	47
		Present	3.37	.77	40
		Total	3.47	.78	87
	Present	Absent	3.28	.80	48
		Present	3.51	.79	43
		Total	3.39	.80	91
Post-Test Scores*	Absent	Absent	3.62	.63	47
		Present	3.30	.70	40
		Total	3.47	.68	87
	Present	Absent	3.45	.83	48
		Present	3.64	.77	43
		Total	3.54	.80	91
Total	Total	Absent	3.53	.74	95
		Present	3.48	.75	83
		Total	3.51	.74	178

Note. Pre-test: no significant main or interaction effects. Post-test: epistemic explanation $\times$ corrections interaction, $p = .022$, $\eta^2 = .030$; main effects ns.

Participants in conditions with the epistemic explanation had higher scores ($M = 4.12$, $SD = .60$) than those in conditions without the epistemic explanation ($M = 3.95$, $SD = .65$).

Trust in Journalism

A two-way ANOVA examining the effects of epistemic explanation and corrections on trust in journalism before reading the text showed no significant effect of epistemic explanation ($F(1, 174) = .28$, $p = .600$, $\text{Eta}^2 = .002$) or of corrections ($F(1, 174) = .04$, $p = .835$, $\text{Eta}^2 = .000$); in addition, the interaction ($F(1, 174) = 2.97$, $p = .086$, $\text{Eta}^2 = .017$) was not significant. A two-way ANOVA examining the effects after reading the articles showed that there was a significant interaction effect of epistemic explanation and corrections ($F(1, 174) = 5.34$, $p = .022$, $\text{Eta}^2 = .030$), with neither of the two having significant main effects ($F(1, 174) = .59$, $p = .444$, $\text{Eta}^2 = .003$) and ($F(1, 174) = .34$, $p = .561$, $\text{Eta}^2 = .002$), respectfully. When there was no epistemic explanation, scores with corrections ($M = 3.30$, $SD = .70$) were lower than scores with no corrections ($M = 3.62$, $SD = .63$) (see Table 3). When the epistemic explanation was present, the corrections did not influence participants' trust in journalism ($M = 3.45$, $SD = .83$ with corrections; $M = 3.64$, $SD = .77$ without corrections). See Figure 1 for a better understanding of the interaction.

Themes from the Open-Ended Questions Across Conditions

Open-ended responses were coded by a single researcher using categories developed in consultation with the research team. Given the absence of inter-coder reliability testing, these findings are presented as exploratory and illustrative rather than as systematic qualitative analysis (see Table 4 in the supplemental file).

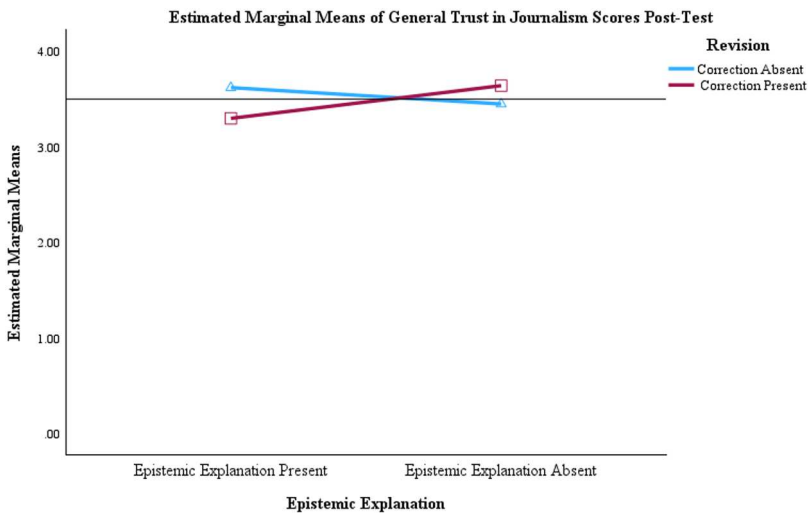


Figure 1. Illustrating the estimated marginal means for general trust in journalism scores after reading the articles. The blue line represents scores for conditions in which corrections were absent, whereas the red line represents scores for conditions in which corrections were present.

Most participants provided a response ($N = 150$, 84.27%), primarily to the first open-ended question ($N = 108$, 60.67%). Responses clustered around a small number of themes, including perceived missing context, skepticism toward journalists' integrity, and evaluations of corrections. In correction conditions, participants more often criticized corrections than praised them: several respondents viewed corrections as evidence that the journalist "should have gotten it right" initially (e.g., "[...] *editing of missed important information makes me more distrusting*"), while a smaller number commended the transparency of fixing errors (e.g., "*I gave high scores for ethical questions because both of the authors corrected their mistakes*").

Discussion

The present study examined how corrections and epistemic explanations in legacy news coverage of science and technology shape readers' trust in an author, article, and journalism. Three main patterns emerged.

First, corrections carried a cost: they reduced perceived expertise of the author, even though they did not significantly undermine trust in the article itself. Second, epistemic explanations, short statements that justified why correcting errors is part of responsible journalism, had a positive effect on trust in both author and article and moderated the effect of corrections on general trust in journalism. With no explanation, corrections reduced trust in journalism; with an explanation, this decline was less apparent, and overall trust in journalism was higher. Third, exploratory open-ended responses showed that readers remained ambivalent: even when they were explicitly told why corrections matter, a substantial number still interpreted corrections negatively or expressed skepticism. The findings suggest that corrections can function both as evidence of professional accountability and as a cue of incompetence, and epistemic explanations can shift the balance somewhat.

The Negative Impact of Corrections – Extending the Corrections Dilemma

Our findings expand on the "corrections dilemma" discussed by Freitag et al. (2023). Like their study, we find that acknowledging an earlier error has a trust cost. However, the scenario in Freitag et al.'s study involved the total retraction of a highly sensational claim, which can be viewed as a serious breach of journalistic practice. The core story was in error. People may expect that news outlets should avoid such major errors and making them—even after proper correction—reflects badly on the accuracy of the news organization. However, our study extends this finding to much more innocuous corrections. In our materials, the corrections were of modest or minor elements of the news story (e.g., the name of the AI involved, along with a date). The core story was not in error, and yet printing a correction of an earlier error led to reduced trust in the expertise of the journalist.

While Appelman and Hettinga (2021) compared the impact of corrections between an online exclusive and an online publication of a traditional newspaper outlet, our study only focused on the latter. In their study, participants were less skeptical about corrections in the traditional outlet. While we did not compare corrections between outlets, we found that participants were skeptical of the corrections, even without a politically polarizing topic present.

It may be the case that readers believe that errors of the sort made in the vignettes in this study arise from inadequate carefulness when the news organization crafts and vets the original story. Note that the corrections in these vignettes were in principle avoidable. They did not arise because new information or new evidence became available; rather, the reporters could presumably have avoided the mistakes with more time, care, and checking. But in the context of the fierce pressure to report news first and produce many stories quickly (Davies 2011; Lewis and Cushion 2009), it means that the errors that are likely to ensue will have a negative impact on trust in journalists and (science) reporting. Future research might examine if corrections are also detrimental to trust in journalists when the correction arises from new information becoming available that was not available earlier. Especially in the context of science, with ever-evolving findings, this is an important topic for future research. Would science reporters still be penalized for correcting information that was simply not available at the time of publishing?

The current study further extends the findings by Freitag et al. (2023). Whereas Freitag et al. focused on news presented on social media, this study centered on online newspaper articles. Research by Karlsen and Aalberg (2023) suggests that news encountered on social media is generally met with more skepticism, which could influence how corrections are perceived depending on the medium. Our finding that trust is lowered in our design heightens the challenges posed by the corrections dilemma, extending beyond social media.

The Positive Impact of Epistemic Explanation

On a more positive note, this study reveals that an epistemic explanation of the value of corrections can mitigate—although not eliminate—the decline in trustworthiness. When readers were explicitly told how and why corrections contribute to accuracy and accountability, they seemed more inclined to interpret corrections more positively than their no-explanation counterparts. Conceptually, this aligns with the view of journalism as an epistemic practice: newsrooms are not only information distributors but institutions that verify claims, monitor their output, and revise content when needed (Ekström and Westlund 2019; Fairbank 2024; Kovach and Rosenstiel 2021). Our results suggest that making these epistemic routines visible might have measurable impact on trust, especially along the dimension of expertise.

The impact of these explanations remains modest and selective. Explanations did not significantly change ratings of benevolence or integrity, and it did not fully neutralize negative reactions to corrections. Exploratory open-ended responses indicate that some participants still viewed the correction as an avoidable mistake. When journalists made minor errors that could arguably been avoided with more care, participants viewed this as reflecting lower expertise (with items such as competent/incompetent, professional/unprofessional, or qualified/unqualified) rather than lower benevolence (with items such as ethical/unethical, moral/immoral) or lower integrity (with items such as fair/unfair or just/unjust). Given that the correction involved errors of facts rather than matters of ethics or justice such as deliberate deceit, it seems reasonable for participants to lower ratings of expertise but not benevolence or integrity. Answers from the open-ended questions further revealed that a number of participants objected

to the corrections despite having read the epistemic explanation. Was this due to participants not believing the explanation? Answering this question falls outside of the scope of the current study. Future research could investigate what might influence the trustworthiness of science and technology reporters in the integrity and benevolence dimensions – or what information would be needed for participants to find corrections to be more valuable. Moreover, future research could examine which characteristics should be included in an epistemic explanation to increase its efficacy on author trustworthiness.

The Role of Textual Factors in Information Processing

Our findings extend beyond the specific impacts of epistemic explanations and corrections on public trust in science and technology reporting, contributing to the understanding of how textual factors influence information processing. The variance in trust scores across conditions illustrates that factors such as explanations and corrections significantly shape how individuals process relevant information. Our findings highlight the role of textual factors in shaping how individuals engage with information. The way information is presented, and the context provided can significantly impact reader perceptions and trust. We hypothesize that individual factors, particularly their epistemic beliefs (fundamental views individuals hold regarding knowledge), interact with textual factors and influence how they approach and engage with information (Hendriks et al. 2020; Iordanou, Kendeou, and Zembylas 2020; Kuhn and Iordanou 2022). Future research can explore further this hypothesis using a variety of research methods, such as interviews and thinking aloud tasks to receive detailed explanations by participants. These approaches could provide more nuanced insights into how individuals interpret and react to journalistic practices in science reporting, particularly in the context of corrections and transparency.

Limitations and Future Research

While the study provides insights into how audiences perceive corrections in science reporting, several limitations constrain its applicability.

First, our design maximized exposure to corrections and explanations. Participants encountered clearly visible correction while reading the article, and those in the explanation conditions read a prominent, standardized paragraph about the value of corrections. In everyday news use, online journalism is characterized by a continuous, “liquid” flow of content (Widholm 2015) in which articles are frequently updated. Readers rarely return to previously read articles (only a small percentage revisit stories on mobile; Mitchell, Stocking, and Matsa 2016) and may not notice corrections at all. Similarly, explanations would need to compete with headlines, images and other textual elements. Our findings therefore estimate the potential impact of corrections and explanations under ideal exposure conditions, not the actual impact in typical news consumption.

Second, our study does not capture the full complexity of contemporary newsroom practice. Journalists work under intense deadline pressure, must produce content for multiple platforms simultaneously, and often operate with limited resources (Guenther et al. 2019; Hayes 2024). These conditions shape editorial decisions and limit what is realistic in

day-to-day reporting. Implementing epistemic explanations alongside every correction may be normatively attractive but practically difficult, especially for smaller newsrooms.

Third, methodological limitations should be noted. The statistical power was small to moderate, and gender was not equally distributed across participants, with the majority being female. Recruitment drew on both student populations and the general public, which may limit the generalizability of the results. Prior knowledge or familiarity of participants with the topics were not assessed, which might have influenced their trust judgments. The qualitative analysis of open-ended responses was exploratory and based on a single coder. The responses should be interpreted cautiously and seen as suggestive of audience reasoning patterns rather than as a definitive typology.

Future research should expand on our findings by (a) investigating the impact of corrections on the perceived trustworthiness of science journalism across various populations, (b) using larger samples to increase statistical power, and (c) explicitly measuring prior topic knowledge to examine how it shapes responses to corrections and epistemic explanations. Further work is also needed to test whether the positive influence of epistemic explanations on trust endures over time, for example in longitudinal designs, which would have important implications for science communication and education. Finally, research suggests that correction placement and format (e.g., simple versus refutational narratives) can affect both belief accuracy and perceptions of corrections (Wang and Huang 2023). Finally, our stimuli consisted of two articles from a single legacy outlet. It remains an open question whether similar patterns would emerge in other outlets or other topics (e.g., politics, crime, local news). Future studies could vary correction format, placement, and the presence of epistemic explanations to identify combinations that best promote both accurate beliefs and trust in journalistic coverage of science and technology.

Implications for Education and Journalism Practice

This study has implications for both education and journalism practice. Considering that corrections had negative effects on perceived trust, students and readers might benefit from learning about the value of corrections. Helping them understand why corrections are a core part of journalism's epistemic responsibility (instead of a mere admission of failure) could contribute to sustaining trust in news as an epistemic institution. Although students might expect journalists reporting on science and technology to "get the facts right" prior to publishing, mistakes are likely unavoidable in the current environment of journalism which publishes numerous stories 24/7 (Davies 2011; Lewis and Cushion 2009; Martin 2017). If students came to understand that making corrections is better than the alternative (doing nothing and thereby spreading inaccurate information), they might view journalists making corrections more positively when they encounter them. The fact that some participants saw corrections as problematic even after reading an explanation of why they are valuable suggests that more extensive instructional interventions could be warranted. Through encouraging a better understanding that corrections are preferable to the spread of misinformation prior to encountering them in genuine settings, educators can equip individuals with a more resilient and critical mindset that values transparency and accountability in journalism and scientific communication. This might encourage future readers to appreciate journalistic practices such as correcting mistakes.

For journalism practice, our findings underscore the value and limits of epistemic explanations. Brief explanations about verification and correction can nudge readers toward interpreting corrections more positively and bolster perceived expertise and article trust, at least in the current study. At the same time, the effect sizes are modest; some readers remain skeptical even when explanations are provided, and real-world constraints make it unlikely that such explanations can accompany every correction. Epistemic explanations should therefore be seen as one tool among many in a broader repertoire of transparency practices (e.g., making methods and sources visible, communicating uncertainty, linking to underlying data), rather than a stand-alone solution to the trust problem. Other research suggests that transparency efforts can increase trust in scientists (e.g., Ioannidis, Antoniou & de Vos, 2026; Rosman et al. 2022; Schneider et al. 2022; Steijaert, Schaap, and Riet 2021). Communicating scientific uncertainty, for instance, could potentially also increase trust in those reporting on science and technology, not just scientists. Future research should investigate the broader potential of epistemic explanations and other journalistic practices on trust in journalists and journalism.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

Data Availability Statement

All data is publicly available at the figshare repository [<https://doi.org/10.6084/m9.figshare.27740901.v1>].

ORCID

Maura de Vos  <http://orcid.org/0009-0001-3085-589X>

Kalypso Ioannidou  <http://orcid.org/0000-0001-5930-9393>

Clark A. Chinn  <http://orcid.org/0000-0002-5663-7794>

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