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Article

Covid-19 Research in Alternative News Media: Evidencing and Counterevidencing Practices

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Abstract
The Covid-19 pandemic has been accompanied by an excess of accurate and inaccurate information (infodemic) that has prevented people from finding reliable guidance in decision-making. Non-professional but popular science communicators—some with a political agenda—supply the public with scientific knowledge regarding Covid-19. This kind of communication represents a worrisome force in societal discourses on science-related political issues. This article explores online content (*N* = 108 articles) of two popular German "alternative news" media (*NachDenkSeiten* and *PI News*) that present and evaluate biomedical research concerning Covid-19. Using thematic analysis, we investigated how scientific evidence was presented and questioned. Regarding the theoretical background, we drew on the concept of "evidencing practices" and ideas from argumentation theory. More specifically, we studied the use of the following three evidencing and counterevidencing practices: references to Data/Methods, references to Experts/Authorities, and Narratives. The results indicate that the studied alternative news media generally purport to report on science using the same argumentation mechanisms as those employed in science journalism in legacy media. However, a deeper analysis reveals that argumentation directions mostly follow preexisting ideologies and political agendas against Covid-19 policies, which leads to science coverage that contradicts common epistemic authorities and evidence. Finally, we discuss the possible implications of our findings for audience views and consider strategies for countering the rejection of scientific evidence.

Keywords
alternative news media; argumentation theory; counterevidencing practice; Covid-19; science communication

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1. Introduction

The Covid-19 pandemic represents a historically almost unprecedented period of economic, political, and sanitary disruptions (Strydhorst & Landrum, 2022, p. 534). To date, there have been approximately 633 million cases of Covid-19 and 6.6 million related deaths (World Health Organization, 2023). Moreover, the Covid-19 pandemic, instead of being a purely medical topic, has been accompanied by an "infodemic." This term refers to an excess of (online) information—accurate as well as inaccurate—that prevents people from finding reliable guidance in decision-making (World Health Organization, 2020).

Even though pandemics have always functioned as breeding grounds for incorrect information and conspiracy theories (Schade et al., 2021, p. 140), the Covid-19 pandemic is the first "to hit a digitized and networked society" (Frischlich & Humprecht, 2021, p. 9). Every online user can share scientific information with a broad audience, while expertise becomes hyperaccessible (Brubaker, 2021). As a result, the number, diversity, and quality of communicators and sources beyond established media that supply the public with the latest

scientific knowledge regarding Covid-19 has expanded in an alarming fashion. Considering that even well-trained science journalists struggle to create scientifically sound reports about Covid-19 evidence (Schäfer, 2020), non-professional voices found in online media may present a worrisome force in Covid-19 discourses.

In Germany, Boberg et al. (2020) identified the so-called alternative news media as a major force fueling the infodemic. Research on the new mediators of public knowledge mostly agrees that these actors mainly spread information and interpretations that contradict established media, politics, and science (Holt et al., 2019). By doing so, they clash with established science journalism, which mostly follows the scientific and governmental Covid-19 assessments and recommendations (Maurer et al., 2021, p. 28), and contribute to the public's increasing distrust of pandemic-related authorities (e.g., politicians and virologists). Considering the remarkable role that alternative news media play in people's Covid-19-related media repertoires (Viehmann et al., 2020), to better understand the discourse on the pandemic, it is necessary to examine alternative news media as scientific information sources and Covid-19 science communicators in detail. In the science news of legacy media, scientific evidence is used to support research-based findings and conclusions (Kinnebrock et al., 2019). During the pandemic, information has been permeated with references to scientific evidence. When alternative news media attempt to refute this kind of evidence, they need to refer to it and undermine it to make their point. However, little is known about the ways in which alternative communicators treat scientific evidence and what (alternative) discursive evaluation strategies they adopt (Neuberger et al., 2019, pp. 179–180).

The present study addresses this research gap by focusing on Covid-19 science news coverage and argumentation strategies of alternative news media. In terms of theoretical background, we build on the concept of "evidencing practices" (Kinnebrock et al., 2019) and ideas from argumentation theory (Barnes et al., 2018, 2020). Evidencing practices are an evaluation mechanism employed by science communicators and can be defined as "textual (or visual) strategies to support a claim as 'true' or 'valid' " (Kinnebrock et al., 2019). Regarding print media journalism, three common evidencing practices have been identified: Data/Methods, Experts/Authorities, and Narratives (Kinnebrock et al., 2019). When exploring evidencing practices in the online content of alternative news media, we also examined argumentation strategies for countering or criticizing scientific Covid-19 evidence. Therefore, we combined ideas from argumentation theory regarding attacks on scientific claims (Barnes et al., 2018, 2020) with the concept of evidencing practices, arguing that common evidencing practices can also be applied as *counterevidencing* practices by alternative news media—for instance, by using the Data/Methods of a study to criticize it and classify its claims as "untrue" or "invalid." In terms of our empirical investigation, we concentrated on the application and use patterns of evidencing *and*/*or* counterevidencing practices—in short, (counter)evidencing practices—in the online content of two popular German alternative news media, *NachDenkSeiten* and *PI News*, focusing on their presentations and evaluations of biomedical studies concerning Covid-19. We investigated the extent to which alternative news media apply argumentation strategies from science journalism and argumentation theory and explored what themes and functions characterize alternative news media's uses of those strategies. Regarding methodology, we employed deductive main categories to identify the text parts in which (counter)evidencing practices were applied and inductive approaches to thematically categorize the themes and functions of these (counter)evidencing practices.

In the following, we first address theoretical questions related to alternative news media as science communicators as well as (counter)evidencing practices and argumentation theory (Sections 2 and 3). Then, we discuss our study goals and methodological approach (Sections 4 and 5). Finally, we present our findings according to our research questions (Section 6) and examine their implications for audience views as well as consider strategies for countering the rejection of scientific evidence (Section 7).

2. Alternative News Media as Science Communicators

In light of rising online media consumption, Ehlers and Zachmann (2019, p. 19) identified actors that used to be marginalized but now participate online in societal debates on what scientific knowledge counts as true or false, thus becoming part of scientific evidence production. As the new possibilities of online participation and news production have provoked a kind of "hyperaccessibility of expertise" (Brubaker, 2021, p. 75), scientific knowledge is no longer accepted automatically, and researchers' authority is no longer unquestionable (Ehlers & Zachmann, 2019, p. 9; Marres, 2018, p. 423). Moreover, scientific knowledge must compete with "alternative facts," which question the credibility and persuasiveness of scientific arguments and epistemic authorities (Gierth & Bromme, 2020; Neuberger et al., 2019, p. 167). Furthermore, science communication in legacy media needs to handle the new rhetorical strategies of science deniers, such as singling out highly specific data points out of all available data while ignoring others ("cherry-picking" evidence) or inventing "fake experts" (see Betsch et al., 2019; Lewandowsky et al., 2022; Schmid & Betsch, 2019). According to Kienhues et al. (2020) and Neuberger et al. (2019), these trends have led to an erosion of common knowledge bases and challenged established hierarchies of knowledge providers, paving the way for an era of post-truthism and alternative access to reality. In this context, previous studies have identified various dangers stemming from different forms of epistemological

fragmentation, such as counter-knowledge, pseudoscience, anti-intellectualism, and ideological negotiations of expertise (see Eslen-Ziya, 2022; Marres, 2018; Marwick & Partin, 2022; Merkley, 2020). We assume that alternative news media represent an important jigsaw piece in this process of changing societal knowledge systems (Ylä-Anttila, 2018).

However, some "conceptual confusion" remains regarding the definitions and key features of alternative news media (see Holt, 2020; Schwarzenegger, 2021, pp. 100–101). In our study, following the relational understanding of Holt et al. (2019), we expected alternative news media to tendentiously contradict established politics and media. Alternative news media "represent a proclaimed and/or (self-)perceived corrective," pretend to take up the news disregarded by "mainstream" institutions (Holt et al., 2019, p. 862), and/or offer "re-narrations'' of news and events (see Doerr & Gardner, 2022). Regarding the Covid-19 pandemic in the German context, Boberg et al. (2020) found that alternative news media steadily reported popular conspiracy theories and rumors concerning Covid-19 (see Boberg et al., 2020, p. 15). Moreover, the content included a constant negative tone toward the establishment, public institutions, and the handling of the pandemic and its political and scientific consequences (Boberg et al., 2020, p. 17). Boberg et al. (2020, pp. 17–20) summarized the situation by saying that alternative news media "contribute to public confusion" by "constructing a contradictory, menacing, and distrusting worldview, which calls any official statement into question."

3. (Counter)Evidencing Practices and Argumentation Theory

From a science communication perspective, we still do not know much about the spread of Covid-19 information in and through alternative news media or what specific criteria are applied to evaluate scientific information (Neuberger et al., 2019, pp. 179–180). We assume that science communicators generally do not apply established scientific evaluation and evidence production criteria (Merton, 1942), using, instead, other mechanisms to rate facts and claims as true or trustful (Post, 2013). Kinnebrock et al. (2019) referred to more or less scientific evaluation mechanisms performed by science communicators as "evidencing practices" and defined them as "textual (or visual) strategies to support a claim as 'true' or 'valid.'" Investigating print media journalism, Kinnebrock et al. (2019) identified the following three common evidencing practices: Data/Methods, Experts/Authorities, and Narratives.

First, references to Data/Methods support findings by describing methodological parameters, study designs, and/or statistical procedures and numbers. This evidencing practice is closest to scientific logic, which builds on state-of-the-art methods, procedures, and conventions to support the validity and veracity of findings (Merton, 1973) and plays an indispensable role in scientific evaluation and peer regulation. References to Experts/Authorities represent an evidencing practice that is more easily usable in journalism. This practice includes (a) naming, describing, or attributing the source of the claim that implies authority (e.g., prestigious journals, research institutions, or highly regarded researchers) and (b) referencing external scientific and nonscientific experts (e.g., representatives of media, economy, or politics) to support reported research. Finally, Narratives constitute a journalistic evidencing practice whereby abstract scientific findings are transformed into representations of events and characters (e.g., patients and scientists) to convey scientific facts in the familiar shape of everyday communication (see Kinnebrock et al., 2019). Kinnebrock et al. (2019) described the use of Narratives as a highly persuasive strategy for science communicators that has the unique potential to contextualize and transform scientific knowledge into a language appropriate for both professional *and* mass audiences.

These evidencing practices are similar to the argumentation heuristics from argumentation theory (Barnes et al., 2018, 2020). References to Data/Methods and Experts/Authorities correspond to the argumentation heuristics that Barnes et al. (2018, 2020) called direct and indirect evaluations of scientific claims. As a theoretical background, Barnes et al. (2018, 2020) use the heuristic-systematic model (Chaiken, 1987). The use of Data/Methods and Experts/Authorities as evidencing practices is considered heuristics because it is not the strength of the arguments that facilitates persuasion but the heuristic cues that indicate (but do not prove) the legitimacy of the findings. For example, stating that a study was published in the journal *Nature* does not prove the truthfulness of the study; rather, it references the journal's good reputation to project the image of solid science onto the findings. Likewise, interviewing the director of a research institute relies on the anticipated trust that people have toward science and scientists to validate scientific findings. In the heuristic-systematic model, such cues are considered message or source characteristics. In this context, Barnes et al. (2018) studied the user effects of direct and indirect attacks on scientific claims. They defined direct evaluations as references to the empirical foundations of claims and indirect evaluations as references to the credibility of those who generate the data and support the scientific claims. Barnes et al. (2018, 2020) also described indirect evaluations as arguments "ad hominem" or "second-hand evaluations" because they represent a type of argumentation that allows people to avoid the complexity inherent in most science claims (Bondy, 2015; Yap, 2013, p. 99). Ad hominem attacks can refer to (alleged) conflicts of interest, past misconducts, or missing competence or education (Barnes et al., 2018), thus touching on the expertise, morality, or personal characteristics of participating actors. The evidencing practice of

Experts/Authorities also includes references to external experts (Kinnebrock et al., 2019). In argumentation theory, this practice is mirrored in arguments "ad verecundiam" (see Woods & Walton, 1974). According to Barnes et al. (2020), such arguments include appeals to source quantity, an argument for or against a scientific claim based on the number of people agreeing or disagreeing with it.

4. Present Study

In our study, we combined insights from argumentation theory with the concept of evidencing practices in legacy media to investigate the argumentation strategies that alternative news media use to evaluate Covid-19 research and affirm or reject the science behind it. We assumed that such strategies are not necessarily employed by all science communicators—Science communicators differ not only from scientists but also from one another in terms of their specific contexts and strategies for explaining, accepting, and rejecting scientific knowledge and arguments (Ehlers & Zachmann, 2019, p. 19). Therefore, we expected science communicators in alternative news media to use a specific set of evaluation mechanisms and to apply the evaluation mechanisms of legacy media differently when reporting and evaluating research. More specifically, we first considered whether and to what extent argumentation strategies known from science journalism and argumentation theory are applied in alternative news media (RQ1a). Then, we explored what themes and evaluation dimensions characterize the use of these argumentation strategies in alternative news media (RQ1b) and what functions they fulfill (RQ2).

Based on argumentation theory and the concept of evidencing practices, we developed a new taxonomy of (counter)evidencing practices that serve as heuristic categories for analyzing alternative news media discourse on Covid-19 research. We kept the category of Data/Methods because it represents the main connection between evidencing in science and in the media. Moreover, this category is consistent with both the concept of evidencing practices and argumentation theory ("direct evaluations of scientific claims"). We also retained Narratives, a common practice of mediating reality (Kinnebrock et al., 2019). However, we split the category of Experts/Authorities into two parts. First, we considered references to the original source of a scientific claim or finding, such as the researchers that conducted the study, the institutions in which the study was conducted, or the journals in which it was published ("source of the claim"). Second, we examined references to authorities and external experts inside and outside the scientific field ("external experts"), such as scientists commenting on other scientists' studies, representatives of society, or media representatives. We argue that common evidencing practices can also be used as *counterevidencing* practices by alternative news media—for instance, by using Data/Methods of a study to criticize it and classify its claims as "untrue" or "invalid." Therefore, we considered evidencing (supporting a scientific claim) and counterevidencing (refuting a scientific claim) practices—in short, (counter)evidencing practices—to identify situations in which alternative news media turn against the consensus of the scientific community regarding specific aspects of Covid-19 and to analyze the tools for doing so. In our analysis, we included reports about studies cited in scientific outlets and studies cited only in other media. In summary, we developed a taxonomy of the following three (counter)evidencing practices to analyze how alternative news media cover Covid-19 research:

1. References to Data/Methods;
2. References to Experts/Authorities, including (a) references to the source of the claim and (b) references to external experts;
3. Narratives.

We assumed that several (counter)evidencing practices can be combined in a single overarching argument for or against a research claim. For instance, cited external experts can use Data/Methods in their argumentation or the source of the claim can be evaluated by Narratives.

5. Methods

To answer our research questions, we conducted a thematic analysis (Braun & Clarke, 2006) of online content of German alternative news media (*NachDenkSeiten* and *PI News*). The alternative news media we selected represent divergent political views from different sides of the political spectrum and rank among the most popular sites (Doerr & Gardner, 2022; Similarweb, 2023a, 2023b). Both alternative news media represent some kind of "proclaimed and/or (self-)perceived corrective" (Holt et al., 2019, p. 862), describing themselves as either an information source for those distrusting the mainstream opinion makers and the agenda of mainstream media as well as a contact point for citizens who think about societal problems on their own (https://www.nachdenkseiten.de) or as a mainstream-corrective institution that sheds light on ignored or falsely framed topics and fights against the human rights violations of German citizens (https://www.pi-news.net).

Using the search functions available on the websites of the alternative news media, we selected articles (a) published between February 2020 and December 2021 and (b) focused on the presentation and evaluation of biomedical studies concerning Covid-19. The chosen timeframe ensured the inclusion of different phases of the Covid-19 pandemic (see Schilling et al., 2022). The focus on biomedical Covid-19 studies included, for instance, research from virology, biotechnology, and epidemiology on Covid-19 vaccination, medication, and virus mutations but excluded research on the social

and economic consequences of the pandemic. We used keywords related to science journalism (German words for "science," "scientist," "research," "researcher," and "study") in combination with keywords related to the pandemic ("corona" and "covid") and scanned the results for relevant articles. The final sample comprised 108 articles.

During the analysis, we coded the text parts of the 108 studied articles dealing with biomedical studies (coding units, n = 294). In a pretest with 13 articles, two trained coders achieved perfect agreement (Cohen's κ = 1.000; p < 0.001) by identifying 30 coding units, which represented approximately 10% of our full sample (Neuendorf, 2002). In the first step, to answer RQ1a, we used the three (counter)evidencing practices as deductive main categories to initially code the material and identify text parts containing one or more of the three (counter)evidencing practices (see coding scheme in the Supplementary Material). During this essential step, Cohen's κ coefficients (Cohen, 1960; Feng, 2015) were calculated to compute inter-rater reliability. Processing 30 coding units, two trained coders reached excellent (Landis & Koch, 1977) agreements (between κ = 0.895 and κ = 0.911) across all (counter)evidencing practices. Table 1 demonstrates that all coefficients were highly significant, which indicates that the subsample of the reliability test was large enough to form a reliable basis for statistical comparison (see Früh, 2017, p. 180). To answer RQ1b, the text coded according to the three main categories was differentiated into subcategories, with specific themes further refining the categories (see Section 6 and the coding scheme in the Supplementary Material). Finally, we inductively pinpointed the functions of the identified argumentation strategies by analyzing the contexts of the referenced study presentations and evaluations, as well as the ways in which the data in general employed (counter)evidencing practices (RQ2).

6. Results

6.1. (Counter)Evidencing Practices

First, we identified the regular use of all (counter)evidencing practices. Throughout the coding process, we remained vigilant of other (counter)evidencing practices. However, the deductive categories proved to be sufficient to classify all instances that served to support or reject research as (in)valid based on the three existing practices. The 294 study presentations that we coded were most commonly characterized by references to Data/Methods (74.15%) and Experts/Authorities (81.97%). Narratives were identified in 32.31% of the study presentations (see Table 2).

6.1.1. References to Data/Methods

We identified references to Data/Methods as a highly common (counter)evidencing practice in the material.

Table 1. Inter-rater reliability in identifying (counter)evidencing practices (Cohen's κ).

(Counter)evidencing practices	Inter-rater reliability (n = 30 coding units)	
	κ	p
1. References to Data/Methods	0.902	<0.001
2. References to Experts/Authorities	0.895	<0.001
2a. References to the source of the claim	0.927	<0.001
2b. References to external experts	0.862	<0.001
3. Narratives	0.911	<0.001

Notes: We used dichotomous coding for (counter)evidencing practices (0 = *practice absent*, 1 = *practice present*); all numbers for κ have been quadratically weighted.

Table 2. Frequencies of (counter)evidencing practices.

(Counter)evidencing Practices	Coding frequencies (n = 294 studies)	
	n	%
1. References to Data/Methods	218	74.15%
2. References to Experts/Authorities	241	81.97%
2a. References to the source of the claim	127	43.20%
2b. References to external experts	114	38.78%
3. Narratives	95	32.31%

Notes: We used dichotomous coding (0 = *practice absent*, 1 = *practice present*) regardless of the direction of the references (evidencing or counterevidencing practice); multiple coding at the level of different (counter)evidencing practices was possible; all figures were rounded to two decimal places.

Parts of the examined articles were highly professional by entirely focusing on discussions of Data/Methods related parameters (e.g., in articles P36 and N27; see Supplementary Material; "P[number]" represents an article in *PI News*, while "N[number]" represents an article in *NachDenkSeiten*) or using scientific citation standards and comparatively analyzing great amounts of divergent Covid-19 study results based on Data/Methods (e.g., N58 and N66). Regarding the themes and concrete content of Data/Methods, we found that such references were often related to findings, theories, and/or methods. Findings were often described in terms of general quality, usefulness, plausibility, correctness, consistency, and traceability of interpretations (e.g., P1, P30, N22, N44, N45, and N51). Sometimes, findings were also discussed in terms of the informative value and significance of the discovered statistical intersections (e.g., P15, N35, and N49). Theories could be evaluated according to the quality of their hypotheses (e.g., P7 and N5) or their scientific terminology (e.g., N58). Regarding references to methods, the articles discussed sample sizes and representativeness (e.g., P38, N14, and N49), the appropriateness and limitations of the methods used, analysis strategies, method-related statistical numbers (e.g., P6, P18, N33, N58, and N59), the study design and reliability (e.g., P26, N28, and N68), and the adherence to research standards and rules of clean academic working (e.g., P23, N11, and N16). Of course, in many cases, the three themes overlapped. For instance, reported statistical information was often difficult to categorize because it could be related to findings (e.g., reporting on statistical relationships) and methods (e.g., reporting on the reliability measures of survey instruments).

6.1.2. References to Experts/Authorities

Regarding the first part of this (counter)evidencing practice—references to the source of the claim (2a)—we identified references to expertise, morality, and/or the characteristics of actors, institutions, and journals directly associated with the reported research. Expertise could be conveyed implicitly or explicitly: implicitly by naming and briefly describing the involved research institutions, academic journals, or the academic status and professional functions (PhD, professor, director, etc.) of researchers (e.g., P12, P22, N29, and N49) and explicitly by directly evaluating the experience, competence, and relevant expert knowledge of the actors involved (e.g., P35 and N47). The morality of the involved actors was evaluated in terms of research ethics (e.g., N21 and N37), commitment to public welfare (e.g., N59), past misconduct or good deeds (e.g., N12 and N21), the secrecy of information and research (e.g., P6 and N65), and the existence of potential conflicts of interest. The latter could involve, for example, discussions of the political susceptibility of the researchers (e.g., P10) or of potentially competing financial, political, or prestige-related motives (e.g., N2, N27, N45, and N67), a theme that was highly prominent within the data. Finally, the involved actors were sometimes described in terms of their characteristics by rating personality traits that were rather irrelevant to the claim, such as the actors' open-mindedness, popularity, or willingness to cooperate with media representatives (e.g., P12, P35, and N15).

The analysis of the second part of this (counter)evidencing practice—references to external experts (2b)—revealed that, in many cases, the investigated alternative news media cited or relied on external experts to evaluate the reported research. This role was fulfilled by, among others, scientists or scientific collectives (e.g., P3, N40, and N66), scientific journals (e.g., N22 and N24), a broad range of more or less established media organizations or journalists (e.g., P10, N18, and N29), online blogs and portals (e.g., P18 and P36), representatives of medical institutions or public health authorities (e.g., N6 and N36), politicians or political institutions (e.g., P17 and N48), economic experts (e.g., N24 and N44), or individual citizens (e.g., N50). We also identified appeals to source quantity and references to common collective knowledge and experiences to (de-)value reported research (e.g., P20, P29, and N66). As for references to Data/Methods, the themes of references to Experts/Authorities also overlapped (e.g., references that involved expertise and morality at the same time or references to external experts having affiliations with several societal fields at the same time).

6.1.3. Narratives

In our analysis, we found that Narratives were often combined with one of the other two (counter)evidencing practices—in many cases, to emphasize the direction of evaluation. For instance, Narratives were used to portray and explain study procedures (e.g., N31), to describe the personal careers of research actors (e.g., N68), to highlight people influenced by study results (e.g., P7 and N10), to analyze research actors' motives for conducting a study (e.g., N5 and N7), or to exemplify the misconducts and scandals of the involved research actors (e.g., N21 and N24). Moreover, these functions of Narratives overlapped as well (see Sections 6.1.1 and 6.1.2). However, in accordance with previous research (see Sections 3 and 4), we assumed that Narratives mostly functioned as bridges between the abstractness of the scientific claims and findings on the one hand and the fates, experiences, and attitudes of the people and institutions associated with specific research on the other.

6.2. Functions of (Counter)Evidencing Practices

The fact that similar mechanisms can also be found in traditional science journalism led us to focus on the specifics of (counter)evidencing practices in alternative news media and to investigate how specific (counter)evidencing practices fit into the presumed

anti-mainstream agenda of alternative news media. Consequently, we analyzed the functions of the related argumentation strategies by examining how the studied articles embedded (counter)evidencing practices and expressed evaluations along with ideologies, prototypical stories, and similar motives for reporting on Covid-19 science. To be more precise, we identified a relationship between the use of either evidencing or counterevidencing practices and their respective functions, which we will discuss for each practice by considering typical cases.

6.2.1. References to Data/Methods

In the following example, a recently published study was presented as valid (evidencing practice) by referring to sample size and statistical results as well as describing its experimental arrangement as "large-scale" and the practical implementation of the study as "meticulously monitored'':

> We indicate a study recently published in the *New England Medical Journal* investigating the case of corona "control strategies" under military supervision. First, 3,000 recruits from the US marines had to undergo two weeks of strict quarantine as part of a large-scale experimental arrangement. Then, the recruits were kept in military barracks for 14 days and had to follow strict hygiene regulations, distance control, face-mask duties, and regulations to minimize social contact. They were meticulously monitored. The result after one month: Both soldiers who initially tested negative and soldiers who were not tested beforehand showed, in the end, positive rates of approximately 2%. (N28; all direct citations translated from German)

The use of this evidencing practice in the context of the article's overall argumentation shows that the Data/Methods of the presented study may be evaluated positively because it is supposedly excellent research ignored by the mainstream. In this article, the so-called mainstream media, science, and politicians are criticized for downplaying and not using this highly important knowledge. It also highlights the alleged low efficacy of the anti-Covid-19 measures implemented by so-called mainstream politicians and scientists. To compare, the following example involves a study that is invalidated by referring to its Data/Methods (counterevidencing practice):

> Regarding the development of their vaccine candidate, Pfizer, together with the German biotech company BioNTech, want to conduct an intermediate examination after only 32—also mild—Covid-19 infections among study participants. Then, if six cases of illness are assigned to vaccinated participants and the rest are assigned to the control group that received a placebo, this should, according to Pfizer, prove the effectiveness of the vaccine and justify an emergency admission. (N22)

In this paragraph, a BioNTech–Pfizer study on the efficiency of their vaccine candidate is criticized in terms of its study design and statistical procedures. The article claims that the companies formulated claims that were too strong and far-reaching regarding the effectiveness of their vaccine in relation to their actually rather poor and hasty methodological approach. Clearly, negative evaluations of methodological procedures serve the function of devaluing one of the government's great hopes in fighting the Covid-19 pandemic. In addition, it is a starting point for sowing doubts about government-endorsed vaccination.

6.2.2. References to Experts/Authorities

New research was also commonly validated (evidencing practice) by referring to the source of the claim (2a)—for instance, by describing the involved researcher as "internationally acknowledged" and the journal in which the work was published as "highly regarded": "Already on January 4th, an article of the internationally acknowledged expert in the effectiveness and safety of drug substance, Assistant Professor Peter Doshi from Baltimore (USA), appeared in the highly regarded *British Medical Journal*" (P26). When investigating why this study and the referenced actors were evaluated positively, we identified connections with Covid-19-related political motives. According to the article, Peter Doshi's work sheds light on common vaccines not being as effective as proclaimed. To the writer's surprise, his work was supposedly ignored by the mainstream because the results would not fit the mainstream's narrative of crises and the importance of mass vaccination.

At the same time, references to the source of the claim could also serve to invalidate a study (counterevidencing practice): "This operetta-like causality seems to be an expression of political wishful thinking. Christoph Richter has no scientific competence at all regarding medical or even epidemiological questions" (P35). In this case, the article criticizes a study that proposed a connection between a region's infection numbers and its proportion of right-wing party Alternative for Germany voters. The study authors assumed that Alternative for Germany supporters might be less willing to follow official anti-Covid-19 measures and thus face a higher risk of becoming infected, while people strictly following anti-Covid-19 measures might face lower risks of infection. A confirmation of this hypothesis would have underlined the usefulness of the government's anti-Covid-19 measures at the time. In the article, the study's assumption was completely rejected, not only by arguing about misguided causality but also by claiming that its author, Christoph Richter, showed a complete lack of "scientific competence" concerning "medical or even epidemiological questions." Questioning the study author's expertise

fulfils the function of diminishing the government's competence to adequately handle the pandemic.

In the context of this (counter)evidencing practice of Experts/Authorities, below is an example of referring to external experts (2b) to validate a biomedical Covid-19 study (evidencing practice):

> It can be assumed that nowadays, the Spanish flu would cause way fewer deaths. Considering that no one still contests the existence of a high number corona-infected people with no or very mild symptoms as well as the fact that many Covid-19 victims died *with*, not *because of*, the virus, Streeck should know the truth, not the Johns Hopkins University. (P2, emphasis in the original)

This article reports on a case study conducted by virologist Hendrik Streeck in the German region of Heinsberg, known for having suffered diverse superspreading events at the very beginning of the crisis. Streeck and his team investigated how many people had antibodies against SARS-CoV-2. They found that there was a high number of unrecorded cases in the region of Heinsberg, which was five to 10 times higher than the assumed infection numbers. This result was employed to relativize and reduce the claimed mortality rate of Covid-19 as well as to question the extant anti-Covid-19 measures. In the cited excerpt, the robustness of Streeck's findings is strengthened by appealing to source quantity and claiming that *everyone* already knows that these findings must be true and "yet *no one* contests" (P2, emphasis added) them. Thus, this reference to external experts and source quantity supports the presented study and is used to question the official guidelines for fighting Covid-19. At the same time, references to external experts can also serve to devalue reported Covid-19 research (counterevidencing practice):

> First of all, there was criticism of the mathematical model underlying Report 9. The *Daily Mail* presented this headline on May 17, 2020: "Computer code for Prof. Lockdown's (Neil Ferguson) model, which predicted 500,000 would die from Covid-19 [in Great Britain] and inspired Britain's Stay Home plan, is a 'mess which would get you fired in private industry,' say data experts." (N24)

External experts (in this case, the tabloid *Daily Mail* in relation to data experts) are cited to evaluate the computer model of scientist Neil Ferguson as "a mess which would get you fired in private industry." An examination of the context revealed that the use of this counterevidencing practice served to delegitimize a scientist who consulted the government and inspired Britain's stay-at-home plan. By using the label "Prof. Lockdown" to refer to Neil Ferguson, this example also contains a reference to the source of the claim (2a).

6.2.3. Narratives

In the following example, the last argumentation strategy, Narratives, is used to support the reported research (evidencing practice):

> Dr. Stefan Tasler has a PhD in organic chemistry and has been working in the biotech sector with a focus on active pharmaceutical ingredient research and development for 20 years. During this time, he has intensively studied the functioning of the immune system in the context of autoimmune diseases. Later, he became a research director. Between 2016 and 2019, he was part of the dual leadership of a subsidiary of BioNTech before going into research on Alzheimer's disease as vice president of Drug Discovery & Development. (N68)

The article discusses some of Tasler's research and gives him space to make highly critical comments on extant vaccine projects. The authors use a narrative to describe the personal career of this researcher. They point out different areas in which Tasler has scientific experience as well as his academic degree (PhD), responsible positions (director), and lengthy experience regarding the relevant topics (more than 20 years). The narrative element underscores the researcher's experience and expertise, fulfilling the function of supporting a scientist who criticizes established vaccine projects that are important for the German government's long-term strategy of controlling Covid-19. At the same time, Narratives can also be used to invalidate research (counterevidencing practice):

> But Pfizer has a globally bad reputation. In the mid-1990s, this US company carried out illegal and fraudulent meningitis (brain fever) tests on children in African Nigeria. During the tests with the experimental medicine Trovan, 11 children died, and dozens suffered lifetime disabilities….The company succeeded in designing a clinical study for the experimental Trovan compound in six weeks, although the risks and complications associated with such tests usually require one year to make an appropriate assessment. (N21)

This article tells a story of Pfizer's past misconduct from the mid-1990s: The US company is said to have carried out illegal and fraudulent meningitis tests on children in African Nigeria. The article reports that 11 children died. This narrative functions as a strong devaluation of Pfizer by questioning the company's professional and moral qualities. The implication is that if Pfizer has done morally reprehensible things in the past, it cannot be more conscientious in its research on Covid-19 vaccines.

7. Discussion and Conclusions

To summarize, the examined alternative news media used the same argumentation strategies as those found

in traditional science journalism. However, the evaluations offered in the articles were transfused with ideological evaluations, prototypical stories, and a contrarian agenda regarding Covid-19 policies. On the surface, the articles reported on science. After a deeper analysis, it became clear that the content was used to undermine scientific claims confirming a (preliminary) consensus of the scientific community regarding certain aspects of Covid-19. Similarly, in both alternative news media, evidencing practices were typically used in connection with research supposedly ignored by the so-called mainstream and research to call for a renegotiation of Covid-19 politics. The content often emphasized research that supposedly had not received the public interest it deserved and that would have paved the way for the easing of anti-Covid-19 measures. The emphasis fell on the studies and claims that rejected the consensus of the scientific community and that were often conducted by researchers who had been expelled from their scientific communities and deemed unreliable by their peers; alternative news media judged them to be geniuses who had been ostracized and downplayed. Counterevidencing practices were often employed in connection with research supporting extant Covid-19 policies as well as research conducted by public health institutions and well-established scientists—for example, the German Robert Koch Institute, the American Johns Hopkins University, and scientists serving as government consultants.

Furthermore, the examined alternative news media were not skeptical of science in general, as is sometimes assumed. In some cases, their science news coverage contained calls for a stronger reliance on science—that is, for *other*, *alternative* science resisting the consensus of the scientific community regarding specific aspects of Covid-19. However, by generally rejecting *common* epistemic authorities and evidence, the alternative news media accelerated the processes of gradually destabilizing well-established expertise and evidence. Therefore, the identified argumentation schemes are, to some degree, similar to the typical strategies of strict science deniers, such as cherry-picking evidence or inventing fake experts (see Section 2). In any case, our investigation indicates an enormous bias within alternative news media when dealing with scientific knowledge regarding Covid-19. As re-narrators (Doerr & Gardner, 2022) and re-evaluators of science news, these organizations constitute a quite worrisome force in societal Covid-19 discourses.

Our research is limited to the German case, specifically two alternative news media. In future research, some of the themes and functions of (counter)evidencing practices identified here should be examined in broader samples and in other countries as well as comparatively applied to other science communicators. Moreover, although our study provides in-depth analyses of the exact techniques in (counter)evidencing practices, we did not perform a quantitative analysis of the categories. Therefore, we cannot infer the frequencies or co-occurrences of the (counter)evidencing practices. Quantitative research on (counter)evidencing practices and their co-occurrence would be an important step in this domain.

Our findings also have implications for audience views. The counter-mainstream science news coverage may increase public uncertainty and confusion regarding Covid-19, casting doubts on the effectiveness of related political measures. The constant stream of "science reporting" in alternative news media may undermine professional accounts in legacy media. For example, audiences may be exposed to both sources and get the impression of deep discord in science. Finally, competing forms of reporting may produce the sensation of not understanding or being incapable of understanding science—a negative predictor of overall trust in science (Bromme et al., 2022). Audiences of alternative news media are confronted with science news that is primarily guided by ideological motives and evaluated in terms of its usefulness for ideological or political aims, which mostly involve arguing for a change in Covid-19 politics and questioning well-evidenced research. Thus, the consumption of anti-mainstream media can result in a lack of trust in science, which can impact Covid-19-related health decisions. Previous research has already hinted at strong correlations between the consumption of alternative news media and distrust in the establishment as well as support for radical anti-vaccination movements or the violation of official Covid-19 guidelines (Frischlich & Humprecht, 2021; Lange & Monscheuer, 2021; Soveri et al., 2021).

Given that neither Covid-19 nor dubious nonprofessional science communicators are likely to disappear any time soon, potential strategies for countering the rejection of scientific evidence are urgently needed. To make audiences more resilient and critical in their consumption of science news, it may be fruitful to investigate techniques for correcting inaccurate information online (Schade et al., 2021), means of strengthening established science journalism (Wormer, 2020, p. 467), strategies to argumentatively counter science denialism (Lewandowsky et al., 2022; Schmid & Betsch, 2019), and ways of increasing audience members' media and science literacy (Kienhues et al., 2020; Wolling et al., 2021, p. 16).

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Conflict of Interests

The authors declare no conflict of interests.

Supplementary Material

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

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